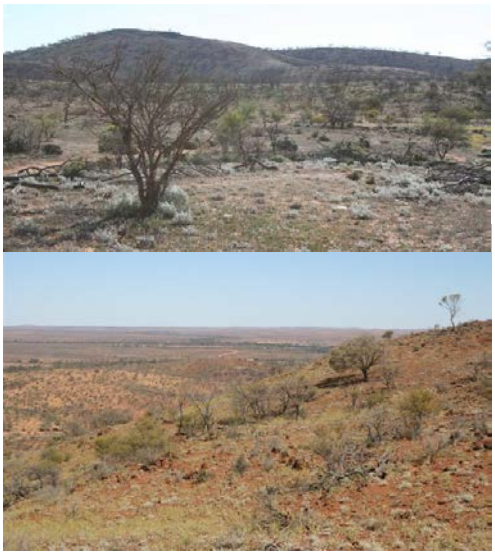
Submissions Report Modification 3

SILVERTON WIND FARM



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TABLES

ACRONYMS AND ABBREVIATIONS

CCC	Community Consultative Committee
DPE	(NSW) Department of Planning and Environment
EPA	(NSW) Environment Protection Authority
ha	Hectares
km	Kilometres
m	Metres
MW	megawatt
NOW	NSW Office of Water
NSW	New South Wales
OEH	(NSW) Office of Environment and Heritage, formerly Department of Environment, Climate Change and Water
Proponent	Silverton Wind Farm Developments Pty Ltd
PPR	Preferred Project Report
SOC	Statements of Commitment. Commitments of the proposal, required to be implemented as part of the project's approval.
BHCC	Broken Hill City Council
WSC	Wentworth Shire Council
The project	The Silverton Wind Farm project
SWF	Silverton Wind Farm

1 INTRODUCTION

1.1 PURPOSE

This Submissions Report has been prepared by NGH Environmental, based on input and advice from the Proponent, Silverton Wind Farm Developments Pty Ltd (SWFD) which is wholly owned by AGL Energy Limited (AGL). It considers and responds to the 12 submissions received during the public exhibition of the Modification 3 Report - Silverton Wind Farm, prepared by NGH Environmental in July 2016. Of these 12 submissions, nine were received from government agencies and organisations and three were received from members of the public (only two of which were expressed as objections).

As well as providing a response to each issue raised in the submissions, this report clarifies and provides updated assessment for a number of specific aspects of the modified project. It also outlines the changes proposed to the Project Approval conditions and statements of commitment, where necessary to address concerns and requirements of submissions or otherwise provide for the efficient and successful development of the Silverton Wind Farm (**SWF**).

The proposed modification does not include any change to the currently approved indicative turbine layout, other than the removal of a number of turbine locations. Rather, the key modifications decrease the number of turbines from 282 to a maximum of 172, while increasing the dimensions and capacity of each turbine. An updated set of maps is provided in Appendix A which shows the updated indicative turbine locations, access road network and location of ancillary facilities such as the switchyard, substations, batch plants and compound sites. It is noted that as the project progresses, the layout is becoming more refined and consequently there are some minor changes to roads and ancillary facilities based on constructability and improved environmental outcomes. The final infrastructure layout will be submitted to Department of Planning and Environment (DPE) prior to construction, in accordance with existing conditions of approval.

1.2 BACKGROUND

1.2.1 Project approval

The SWF project is located in the Barrier Ranges of New South Wales, approximately 5 km from the Silverton township and 25 km north-west of Broken Hill.

The project was approved on 24 May 2009, under Part 3A of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) (the **Approved Project**).

Project Approval was granted for the construction, operation and decommissioning of 282 wind turbines, and associated infrastructure (identified as Stage 1). Concept Plan Approval was also granted at that time for the construction, operation and decommissioning of up to an additional 316 wind turbines and associated infrastructure (Stage 2), bringing the total to 598 turbines for Stage 1 and 2 combined.

1.2.2 Modification history

Since being granted, the Project Approval has been modified on two occasions. The first and second modifications dealt only with extending the approval, to allow the project to be constructed in a time of greater market certainty, regarding Australia's renewable energy policy and the global financial context. The third modification application forms the subject of this report.

Modification 1

A modification to the Project Approval (documented in Modification 1 Report, prepared by NGH Environmental 2013) was granted on 11 April 2014 to extend the lapsing date by two years to 24 May 2016 (NSW Government Department of Planning 2014). No other elements of the Approved Project were changed as a result of approval of Modification 1, although several conditions in the approval were updated.

Modification 2

A second modification to the Project Approval (documented in Modification 2 Report, prepared by AGL 2016) was granted on 3 June 2016. This further extended the lapsing date by an additional 2 years, until 24 May 2018, so as to allow adequate time for AGL to:

- Review and update the project in line with current technology and energy market circumstances;
- Consult with DPE and the local community / landholders on potential modifications to the project; and
- If required, lodge a more substantive Project Approval modification taking into account the above.

No other elements of the Approved Project were changed as a result of approval of this modification, although again, several conditions of the Project Approval were updated at this time.

Modification 3

The third modification application was submitted in July 2016 (documented in Modification 3 Report; NGH Environmental 2016). This Submission Report considers and responds to the issues raised in public and agency submissions relating to proposed modifications to the SWF approval, documented in the Modification 3 Report.

Modification 3 seeks to:

- Decrease the number of turbines overall (including removal of all Stage 2 Concept Approval infrastructure[1]);
- Present an updated indicative layout for the project; and
- Increase the capacity and height of remaining turbines;
- Clarify additional potential water sources for construction; and
- Allow for potential phasing of construction including separating of the wind farm and electrical transmission scope of works.

The Modification 3 Report also addressed changes to the conservation status of specific species and communities, known to occur onsite, since the approval was originally granted.

As noted in Section 2.1.2 of the Modification 3 Report, the Preferred Project and Submissions Report (Silverton Wind Farm Developments 2009) describes Stage 1 of the Silverton Wind Farm as 282 wind turbines). The Modification 3 Report proposes to reduce the total number of turbines included in Stage 1 to up to 172 turbines. The Stage 2 turbines (an additional 316 turbines which took the total turbine number to 598) and associated infrastructure will no longer be developed.

[1] The Concept Approval is proposed to be surrendered, as confirmation that Stage 2 would not be developed at any future date under existing approvals.

This is a substantial reduction in turbine numbers, which constitutes only 61% of the original turbines proposed for Stage 1 (as described in the Preferred Project Report) and 29% of the full Project (being Stage 2 which was the subject of the Concept Plan Approval).

SWFD is likely to construct the turbines in phases, with the result that the initial install capacity (refer to Section 1.7.1 of the Modification 3 Report) may require less than 172 turbines.

As outlined in the Environmental Assessment for the Proposed Silverton Wind Farm, prepared by NGH Environmental, August 2008 (EA, 2008) the indicative project layout, including turbine locations, will be finalised prior to construction, once a construction contractor has been appointed and following final turbine selection and further technical investigations (including geotechnical and detailed constructability analysis).

An updated plan of the final turbine number and layout for the initial phase, which will include location changes to access roads as contemplated by section 2.1.2 of the Modification 3 Report, will be submitted for the approval of the Secretary of DPE in accordance with condition 2.2A of the Project Approval.

2 JUSTIFICATION FOR THE MODIFICATION

As outlined in the Modification 3 Report, the development of the Silverton Wind Farm will assist in realising the three goals in the NSW Renewable Energy Action Plan which was released in September 2013:

- Deliver renewable energy investment in NSW
- Build community support – AGL will continue engaging with the Silverton township and surrounding areas
- Grow renewable energy expertise – specifically, the Modification 3 Application is seeking to deploy the latest development in wind turbine technology

2.1 RENEWABLE ENERGY GENERATION

The Silverton Wind Farm site has a high quality wind resource and the project will contribute to meeting the Australian Government, NSW Government and AGL greenhouse gas emissions and renewable energy policies. These include:

- The Australian Government's commitment to reduce the country's greenhouse gas emissions by between 26-28% below 2005 levels by 2030;
- The Australian Government's Renewable Energy Target scheme which aims to source 33,000 GWh of electricity from large-scale renewable power stations;
- The NSW Government's Renewable Energy Action Plan which aims to attract renewable energy investment, build community support and grow renewable energy expertise in the state;
- AGL's Greenhouse Gas Policy in which AGL commits to decarbonise its electricity generation portfolio by 2050 and to continue to invest in new renewable and near-zero emission technologies.

AGL is Australia's largest private developer and operator of renewable energy having already invested $3 billion in renewable energy investments over the last decade. In addition to this, AGL announced the Powering Australian Renewables Fund (PARF) in February 2016 to support the commitments made in its Greenhouse Gas Policy.

The PARF is an innovative funding vehicle designed to stimulate investment in renewable energy projects. Instead of financing single renewable assets, the PARF provides an opportunity for investors to finance a portfolio of renewable assets. The PARF aims to initially invest in around 1,000 MW of large-scale renewable assets with a value of up to $3 billion. It is anticipated that the Silverton Wind Farm will be the first greenfield investment made by the PARF.

2.2 ECONOMIC, COMMUNITY AND ENVIRONMENTAL BENEFITS

The capital value of the Silverton Wind Farm will be between $400 million and $500 million. Construction of the project will provide significant benefit to the local and NSW economies. It is estimated[2] that the project could generate:

[2] Based on analysis of the economic impact of AGL's Hallett wind farms by Sinclair Knight Merz: https://www.agl.com.au/~/media/AGL/About%20AGL/Documents/How%20We%20Source%20Energy/Wind%20Envi

- Up to 150 jobs during the peak of construction, with the development of a local industry participation plan for the project.
- Regional project development and construction expenditure in the order of $40 million.
- A community fund of approximately $15,000 per year to assist in funding community and environmental projects that provide on-going benefits to the Silverton community.
- Increased local expenditure on food and accommodation due to the influx of workers to the region.
- Improvement in local infrastructure in the Silverton region.

The construction of the project will provide protection and improved management of sensitive local biodiversity features including the Barrier Range Dragon and Porcupine Grass CEEC critically endangered ecological community.

ronment/Coopers%20Gap%20Wind%20Farm/Assessment%20and%20Reports/2011/Missing%20PDFs/South%20Australia%20Economic%20Impact%20Report%20Halletts.pdf

3 CONSULTATION

3.1 PUBLIC EXHIBITION

The Silverton Wind Farm Modification 3 Report was placed on public exhibition from 5 August 2016 to 29 August 2016.

During public exhibition, the Modification Report and supporting appendices were available on the Department of Planning and Environment's (DPE's) Major Projects website (www.majorprojects.planning.nsw.gov.au) and the Proponent's website (https://www.agl.com.au/about-agl/how-we-source-energy/renewable-energy/silverton-wind-farm/environment).

Hard copy documents were available at the following locations:

- Department of Planning and Environment: Information Centre, 23-33 Bridge Street, Sydney
- Broken Hill City Council, Administrative Centre, 240 Blende Street, Broken Hill
- Wentworth Shire Council, 26-28 Adelaide Street, Wentworth
- Silverton Hotel, Layard Street, Silverton
- Nature Conservation Council: Level 14, 338 Pitt Street, Sydney

3.2 CONSULTATION

Following AGL's acquisition of the SWF in March 2012, AGL engaged with the Silverton community by establishing the SWF Community Consultative Committee (CCC), and has continued working consultatively with the community, sharing information, discussing topics of interest and addressing issues and concerns. AGL, is committed to consulting with the community in a timely manner about matters that affect those communities in which AGL operates. AGL's primary objective is to deliver best practice community engagement throughout the project phases. To ensure this is achieved, AGL employs appropriately experienced stakeholder engagement professionals to manage, deliver and monitor best practise community consultation activities and initiatives.

3.2.1 Community Consultative Committee (CCC)

The CCC meetings have been determined in consultation with CCC members from the Silverton community. AGL advises the CCC members when key project events or milestones are coming up and discusses their preferred time to meet. In the early phases of the wind farm's development, CCC meetings were being held monthly, then as the project slowed in line with the market uncertainty around the Renewable Energy Target, the CCC advised they would like to meet with less frequency, unless there was something to discuss. They agreed to meet on an 'as needs' basis. At each CCC meeting AGL asks members to determine when the group would like to meet next. The meeting dates and times are discussed and agreed on by a show of hands or by general consensus. Often the agreed meeting dates have coincided with project events or milestones.

As the project has gained momentum in 2016, AGL has met with the CCC in accordance with the member's wishes. There have been three CCC meetings in 2016 following our announcement of the PARF in February 2016. Between the CCC meetings, AGL has provided information to the CCC members either electronically or via post about project topics that may be of interest to the group. The CCC is always encouraged to provide feedback and to suggest topics of interest for discussion with the group and AGL's

Community Stakeholder Relations Manager is always available to meet with the CCC members or individuals in addition to CCC meetings and often meets informally with community members.

3.2.2 Changes to turbine locations as a result of community feedback

AGL has also received feedback from the community independent of the Modification 3 application process, regarding the removal or relocation of turbines from certain areas. AGL has taken this feedback into consideration in in developing the Modification 3 layout, and has made a number of changes to the turbine locations as a result.

In particular, the updated Modification 3 indicative layout has removed several turbines located near the project boundaries for the turbines closest to Silverton (the closest approved turbine location was originally 4.6km from the centre of Silverton, and now the closest turbine is located 5.5km from the centre of Silverton) and Aboriginal cultural heritage items. The final location of turbines will be consistent with the Project Statements of Commitment, to ensure that impacts on EEC and cultural heritage are avoided or minimised.

3.2.3 Summary of consultation

To enable the wider community opportunity to learn more about the project and Modification 3, in addition to the CCC meetings, AGL held two community information drop in sessions for Modification 3 on 17 August 2016.

Five people attended the Silverton session. There was interest expressed by attendees in the number of turbines and how the wind farm would look from Silverton, in addition to interest in potential employment opportunities and economic benefits generated from the wind farm.

The second session was held at Broken Hill attracted around 15 people who were interested to know more about the project, when it was being constructed, and there was also strong interest in employment opportunities generated by the project.

The following consultation, specific to Modification 3, has been undertaken as part of AGL's regular consultation program for the project:

- The modification and the submission process was discussed at the CCC meetings on 28 April 2016 and 28 July 2016
- Submission information was displayed on the Silverton notice board behind the Youth Hall
- Meetings were held with the Silverton Village Committee and Broken Hill City Council
- One on one meetings were held with the pastoralist turbine hosts
- One on one meetings were held with two members of the community
- Emails with all the CCC documents and modification information was sent to several government agencies, as well as individuals and businesses on the Silverton CCC list and the wider community stakeholder list
- Letters with all the CCC information, modification information and offering one on one briefings were posted to the Silverton community
- Two public information drop in sessions about the project and Modification 3 were held during the public exhibition period on Wednesday 17 August 2016 between 11am-2pm and between 3pm-6pm.

- Advertisements were placed in Barrier Daily Truth newspaper on 23 and 25 July 2016 inviting the wider community to the CCC meeting on the 28th July 2016 and mentioning Modification 3.
- Advertisements were also read out over radio stations 2BH, Hill FM and 2DRYFM for three days prior to, and on the day of, the public information drop in sessions.

In addition to the community consultation, the following stakeholders were consulted with specific to the Modification 3 Report.

- Department of Industry (Resources and Energy) – correspondence and face to face meeting
- CASA, Air Services, Department of Defence and the Aerial Agricultural Association of Australia
- EPA (Office of Environment and Heritage) – correspondence, draft reports and phone conference
- ANDBAC Mining Exploration
- Silver City Minerals
- National Wind Farm Commissioner

Table 3-12 in the Modification 3 Report summarises the community and stakeholder consultation that has occurred for the modification. It identifies the stakeholder and activity, the date of consultation, the issues raised and AGL's response.

The level of consultation is consistent with the requirements of the SWFD's Community Stakeholder Engagement Plan. The plan sets out the framework for how AGL engages with the project's community and stakeholders. The plan's preparation has taken into consideration:

- Community Engagement Guidelines for the Australian Wind Industry (Clean Energy Council, 2013)
- Best Practice Community Engagement in Wind Development, (Lane and Hicks, 2014)
- Foundations of Public Participation (International Association for Public Participation (IAP2), 2013)
- Community Consultative Committee Guidelines (Department of Planning and Environment, 2016)

The plan also takes into account the Draft *NSW Planning Guidelines Windfarms 2011* and will be updated in line with the final version of the Draft Wind Energy: Assessment Policy, which was exhibited in draft form during August and September 2016.

4 RESPONSES TO ISSUES

4.1 SUMMARY OF SUBMISSIONS RECEIVED

Submissions on the Modification 3 Report were received by DPE until the 9 September 2016. A total of 12 submissions were received; nine from government agencies and organisations and three from members of the public.

Of the nine government agencies submissions, seven provided comments and two supported the modification. Of the three public submissions, two were categorized as objections. The third submission provided comments. A summary of the submissions received is shown in the table below.

Table 4-1 Summary of responses received

Ref No.	Submitter	Date	Nature
1	Wentworth Shire Council	4 Aug 2016	Comment
2	Individual 1	26 Aug 2016	Objects
3	Civil Aviation Safety Authority (CASA)	23 Aug 2016	Comment
4	Department of Primary Industries (DPI)	29 Aug 2016	Comment
5	NSW Environmental Protection Authority (EPA)	29 Aug 2016	Supportive
6	Office of Environment & Heritage (OEH)	30 Aug 2016	Comment
7	NSW Telco Authority	29 Aug 2016	Comment
8	Individual 2	28 Aug 2016	Objects
9	Roads & Maritime Services	30 Aug 2016	Comment
10	Individual 3	No date	Comment
11	Department of Industry, Division of Resources & Energy (RE)	2 Sept 2016	Supportive
12	Airservices Australia	7 Sept 2016	Comments

All issues that have been raised by individual community members and government agencies, whether they relate to the overall project or aspects of the modification, have been considered in this Submissions Report. Many issues raised were similar in nature and so have been grouped via the issue raised. The issues raised include:

- Landscape and visual impact
- Aviation (aircraft hazard and impact)
- Noise impacts
- Biodiversity impacts
- Hydrology (water, water quality and water table impacts)

- Geology and soils
- Traffic and transport
- Indigenous and non-indigenous heritage impacts
- Mineral exploitation impacts
- Community wellbeing
- Tourism impacts
- Film and art impact
- Health and safety

The table below summarises the key issues raised during the submissions and provides a response, citing relevant additional information where required.

The responses were prepared with input from relevant specialists including:

- Andrew Homewood, Green Bean Design (GBD)
- Gustaf Reutersward , SLR consulting
- Mel Dunn, SGS Australia (SGS HART Aviation)

4.2 RESPONSE TO SUBMISSIONS RAISED

Issue (relevant submissions)	Summary of issue raised	Proponent's response
Landscape and visual impact		
Photomontages Individual 1 (Ref. No. 2)	The photomontages are badly done	The photomontages have been prepared with regard to the general guidelines set out in the Scottish Natural Heritage (2006) *Visual representation of windfarms: good practice guidance* and the *British Landscape Institute Advice Note* 01/11 (March 2011). The photomontage preparation method is detailed in the SWF Mod 3 VIA report, Section 9 Photomontages.
Individual 1 (Ref. No. 2)	The montages are not a true representation of the view we see from the various locations represented	Four of the original photomontages presented in the SWF Landscape and Visual Impact Assessment (LVIA 2008) were selected and included in the Mod 3 VIA report. The four original photomontages were illustrated with the corresponding Mod 3 photomontages to illustrate the magnitude of visual effect between the approved and proposed layouts and wind turbine configurations. While the photomontages were not requested by the NSW Department of Planning and Environment, the provision of photomontages as part of the Modification 3 VIA report was considered useful to illustrate representative views from surrounding view locations. The selected photomontage locations included: • Private residential/homestead locations • Public lookout • Village streetscape areas The photomontage locations are considered to be representative of views which are typically seen from areas surrounding the approved and proposed wind farm development.
Impacts on tourism DPE Individual 1 (Ref. No. 2) Individual 2 (Ref. No. 8)	The Visual Impact Assessment did not include the nationally renowned filming and tourism destination hot spot of Sunset Hill Lookout.	The SWF LVIA 2008 included an assessment of views from Eldee Station and surrounds toward the approved SWF project. Green Bean Design (GBD) visited a lookout location above and to the east of the Eldee Station homestead with the property owner during field work undertaken in 2008. There is a lack of publically available information on the Sunset Hill Lookout's value as a filming destination and it does not appear to be designated or registered as a landmark or iconic landscape feature. It is understood that the lookout is located on private property. and noted that the lookout is referred to on the Eldee Station website (http://www.eldeestation.com/4wd-tours.html) which notes

Issue (relevant submissions)	Summary of issue raised	Proponent's response
Individual 3 (Ref. No. 10)		that the lookout may be accessed for a fee by accommodated guests via 4 wheel drive for '*wine or beer with finger food and a comfortable seat to watch the sun set over the Iconic Mundi Mundi Plains.'* While the approved SWF turbines will be visible from the Sunset Hill Lookout for accommodated guests who chose to visit the lookout, the SWF Mod 3 wind turbines will not be visible within the general field of view extending west toward sunsets over the Mundi Mundi Plain. The LVIA (2008) included assessments from lookouts on the western edge of the Barrier Range including the publically accessible Mundi Mundi Plains Lookout. Specifically the LVIA (2008) noted that: *'There are two dedicated lookout areas within the vicinity of the Silverton Wind Farm, the Mundi Mundi lookout and a small lookout platform to the side of the exit road from the Umberumberka reservoir visitor area. Both lookouts have extensive views to the west over the Mundi Mundi Plain. The Mundi Mundi lookout has no restricted access, and visitation occurs all year round, including evening visitation for sunset views across the Mundi Mundi Plain. Access to the Umberumberka reservoir lookout is restricted between the hours of 8.30am and 3.30pm'.* General viewing areas within the Umberumberka reservoir precinct, including the picnic and car park area extend toward the man made reservoir and a line of hills and ridgeline to the east of the reservoir and not toward the Mundi Mundi Plain. As noted above there is a dedicated (and sign posted lookout) on the reservoir exit road with views across the Plain. The LVIA (2008) noted a *'view north and east from lower car park and amenities building across portions of the reservoir and dam. Views generally contained by landform rising to the east of the reservoir and by tree planting around the car park area'*. The LVIA (2008) recorded a Low visual impact for the original Stage 1 and Stage 2 wind turbine layouts. The SWF Mod 3 wind turbine layout has excluded four wind turbines to the east and north east of the reservoir, including two in a proximate location relative to the reservoir. GBD note that during their site inspection in July 2016 the picnic area within the Umberumberka had been closed to public access and there was no water in the reservoir. The LVIA (2008) also considered the potential impact on sunset views and noted that: *'The locality surrounding the Silverton Wind Farm includes a number of vantage points for sunset views for both visitors to, and residents of, Silverton and Broken Hill. The sunsets around Silverton can at times, provide an intense and dramatic landscape feature.* *Although sunsets can be viewed from many surrounding areas, the principal viewpoints include a section of the Silverton Road to the south of the Limestone property, the Sculpture Park and the Mundi Mundi lookout.*

Issue (relevant submissions)	Summary of issue raised	Proponent's response
		Sunset views from areas to the west and east of the wind farm site will incorporate full and partial views toward the Silverton Wind Farm from a range of distances; however it is unlikely that any potential lighting, including lighting for aviation safety, will have any significant negative impact on the appearance or appreciation of sunset views. *Views directly west from the Mundi Mundi lookout are unlikely to include a direct line of sight toward the Phase 1 and 2 wind turbines, although wind turbine structures may occur in peripheral vision for sunset views at this location'.* It is noted that the overall visual impact has been assessed as being less than the approved layout, due to the reduced number of turbines proposed and the removal of some turbines closest to the Silverton township.
Impacts on tourism DPE Individual 1 (Ref. No. 2) Individual 2 (Ref. No. 8) Individual 3 (Ref. No. 10)	Consideration of visual impacts on tourism activities and locations when selecting turbine locations.	The SWF LVIA 2008 report considered the potential impact of the approved SWF on tourism. The LVIA 2008 noted that: *'In Broken Hill and Silverton, where tourism is an important part of the local economy, any significant development that will alter the physical appearance of the landscape may be perceived as having a potential negative impact on tourism; however the results of research outlined above suggest that wind farms do not necessarily have a negative impact on tourist visitation and do not discourage people travelling to destinations that have wind turbines. This does not suggest that every wind farm development will become a long term tourist attraction and guarantee a pattern of regular or return visitation.* *The Silverton Wind Farm, one of the largest to be proposed in the southern hemisphere, will create a significant regional landmark, which will have the potential to draw additional tourist visitation including those with an interest in wind farms or alternative energy'.* GBD considers that the Silverton Wind Farm Modification 3 layout would have no additional impact on the consideration of visual impacts on tourism.

Issue (relevant submissions)	Summary of issue raised	Proponent's response
Aviation (aircraft hazard and impact)		
Failure to Identify a number of local airfields DPE CASA (Ref. No. 3) Individual 3 (Ref. No. 10)	Implications of turbines for operations at these locations such as turbulence circling approach and departure procedures. The effects of turbulence on light planes in particular when located within the aviation circuit of airfield at Eldee Station or helipad at Daydream Mine given such close proximity. That turbulence can occur up to 2.2 kilometres down wind of a turbine. The studies carried overseas only include up to 3.6MW with far less height than this modification being asked by AGL. CASA suggested when planning the location of the turbines that approaches and departures from the airstrip be considered and the station owners consulted.	The potential effect of downstream wake turbulence from wind turbines was reviewed by Aviation experts SGS Hart Aviation (SGSHA). This found a diverse range of views in relation to this issue. Research into wake turbulence has been largely theoretical and based on wind tunnel studies with little, if any, practical studies undertaken. Following investigations, SGSHA reached the considered opinion, based on the prevailing views in current academic and industry research, that the velocity deficit is recovered to approximately 85% of the original at 10 rotor diameters (~1.4km in the case of the proposed turbines for the Silverton Wind Farm) and turbulence is down to about 15% at 16 rotor diameters (~2.24km in the case of the proposed turbines for the Silverton Wind Farm). Eldee Airstrip (located in Appendix A.5) is located 3.92 kilometres (km) from the nearest proposed wind turbines, which is approximately 28 rotor diameters downstream of the site. From this, SGSHA formed the view that there would be no effects of wake turbulence from the nearest proposed wind turbine experienced at the Eldee Station Airstrip. One issue that was not identified by SGSHA in the review of literature was the question of possible wake *drift*. SGSHA are of the view that there may be wake drift (up, down or sideways), but that this is unlikely to occur until significant velocity deficit has occurred. SGSHA believe that the overall effect would likely be no more than generally expected turbulence. As such SGSHA considered that where a distance to an airstrip exceeds 16 rotor diameters (~2.24km) that the existence of wake drift from any operating area of an airstrip would not impact on the use of the airstrip. In respect of actual operations from Eldee Airstrip, the strip direction at the Eldee Station Airstrip is a north – north west alignment. This is a favourable direction for operations to and from the airstrip to avoid the proposed wind farm. When the wind is from the west, take off operations to the west would not be affected at all. Landing operations from the east may be potentially affected by wake turbulence from those nearby wind turbines proposed and the approach may be required to be a curved approach to ensure avoidance of the proposed wind turbines. When the wind is from an easterly direction, landings from the west would not be affected at all. Take offs to the east may be potentially affected by wake turbulence from those nearby wind turbines proposed and the take-off may be required to be a curved take-off to ensure avoidance with the proposed wind turbines. Based on the distance from the closest proposed wind

Issue (relevant submissions)	Summary of issue raised	Proponent's response
		turbine (approximately 3.92km), SGSHA is of the view that safety issues would be of no concern for all proposed operations at Eldee Station Airstrip. Daydream Mine is located 5.5 km from the closest proposed wind turbine on the Silverton Wind Farm. SGSHA have identified that any helicopter operations from Daydream Mine would not be affected by the presence of the proposed Silverton Wind Farm. SGSHA have identified that any helicopter or fixed wing operations within the confines of the proposed Silverton Wind Farm boundaries are potentially unsafe and are not recommended. Further, there is an absolute need for the presence of the wind farm to be identified on all relevant aeronautical maps. These are matters already addressed in the SGS HART Aviation assessment report. In the submission prepared by CASA they identify that: *"in assessing CASA's duty of care, we consider the proposal in its proposed format unlikely to be a hazard to aviation safety given the current levels of limited civilian air activity in the area. "* Further CASA recommend that the approaches and departures from the Eldee Station airstrip be considered and Station owners consulted. AGL will continue to liaise with Eldee Station owners in relation to the wind farm proposal, and commit to notifying them of the final position of wind turbines. This updated commitment is included in Section 5.6 of this report: Consolidated list of changes.
Local Airfields CASA (Ref. No. 3) Individual 3 (Ref. No. 10)	Landing area nearby at Eldee Station which was not considered by the Aeronautical Assessment The closest airfield being only 0.72 nautical miles away from Silverton windfarm boundary on Eldee Station and at least 6 others. Failed to identify the multitude of aircraft operating in the Airspace over SWF.	Comments on the Eldee Station Airstrip are discussed in the previous response. The airstrips identified in submission 10, including Eldee Station, are uncertified airstrips and one can assume that, with the exception of Eldee Station, which has a web site and specific comments in respect of this airstrip, that all the airstrips listed are for local and itinerant small aircraft and are utilised only as local property airstrips. The majority of these air strips (including the Eldee Station airstrip) were also identified in the document titled Aircraft Hazard Assessment of the Proposed Silverton Wind Farm (2008), provided as an Appendix of the SWF EA (NGH Environmental 2008). This identified the airstrips as 'minor, private' airstrips. Distances of the airstrips identified in submission no. 10 are included below: -

Airstrip	**Closet turbine**	**Distance**
Eldee	P089	3.92km
Daydream	A115	5.44km
Mundi	A013	17.65km
Wilangee	P149	18.52km
Nine Mile	A104	21.64km
Thackeringa	A013	28.7km

Issue (relevant submissions)	Summary of issue raised	Proponent's response
		The location of the closest airstrip, Eldee, is included in the map titled 'Receivers' included in Appendix A.5. Based on this analysis, landing and take-off operations from these airstrips will not be affected by the presence of the proposed Silverton Wind Farm. This conclusion is supported in Submission No. 3, from CASA, who identify that: *'in assessing CASA's duty of care, we consider the proposal in its proposed format unlikely to be a hazard to aviation safety given the current levels of limited civilian air activity in the area."*
Airservices and Broken Hill Airport DPE CASA (Ref. No. 3) Airservices Australia (Ref. No. 12)	Progress with Airservices Australia and Broken Hill Airport on the proposed changes to the LSALT should be provided. Casa recommends that the proposal only proceed if both Airservices and the operators of Broken Hill Airport agree to the changes.	Airservices Australia was provided with a copy of the aviation assessment submitted with the Modification 3 Report on 20 June 2016. An acknowledgement was received on 21 June and further advice as to the wind farm layout was provided by SGSHA to Airservices. A subsequent communication was received on 7 July indicating that the Airservices' assessment could take up to 6 weeks. On 6 September, Airservices responded (Submission 12) indicating that certain procedures at Broken Hill Airport would be affected by the proposed Silverton Wind Farm development, but provided options to accommodate the wind farm. AGL commit to liaising with Broken Hill Airport in relation to the wind farm impacting on certain procedures at Broken Hill Airport that would result from the proposed Silverton Wind Farm development. This updated commitment is included in Section 5.6 of this report: Consolidated list of changes.
Flight paths CASA (Ref. No. 3)	Pilots are permitted to fly as low as 500ft, the turbines will reach a height of 594 ft.	The increased height of the turbines was assessed by SGSHA in the Report on Aviation Related Issues for the Silverton Wind Farm prepared as part of the Modification. It was concluded that while the proposed maximum height of the wind turbines (180m) is proposed to be above 500 ft. (~152.4m) is such that the tips of the blades will penetrate navigable airspace, although this is some cause for concern (as detailed in Section 3.5.2 of the Report on Aviation Related Issues for the Silverton Wind Farm), the overall risk is considered to be such that the installation of obstacle lights is not required in accordance with CASA MOS 139. This conclusion is supported in Submission No. 3, from CASA, who identify that: *"in assessing CASA's duty of care, we consider the proposal in its proposed format unlikely to be a hazard to aviation safety given the current levels of limited civilian air activity in the area."*
Lighting	As military aircraft operate to lower heights than civilian aircraft Department of Defence should be contacted to	The Department of Defence was provided with a copy of the SGSHA assessment on 20 June 2016. The Department of Defence provided a detailed response on 9 July 2016 indicating no concerns and

Issue (relevant submissions)	Summary of issue raised	Proponent's response
CASA (Ref. No. 3)	confirm that they do not have concerns with the windfarm not being lit.	confirming their previous position stated in their letter of 9 February 2009.
Locations CASA (Ref. No. 3)	Once completed, the coordinates and survey heights of each turbine must be reported to the Airservices Australia email.	This is a requirement of Condition 2.54 of the existing Project Approval, which states; *'Prior to the commencement of operation, the following information shall be provided by the Proponent to the Commonwealth Department of Defence, Airservices Australia and Civil Aviation Safety Authority to inform these agencies of the wind farm's location:* *a) "as constructed" coordinates in latitude and longitude of each WTG;* *b) final height of each WTG in Australian Height Datum; and* *c) ground level at the base of each WTG in Australian Height Datum.'*
Interference Individual 3 (Ref. No. 10)	The interference of the SWF at the existing height nor the new height of up to 180 metres with circling altitude, approach and departure altitudes and the lowest safe altitude (LSALT) and Obstacle Limitation Surface (OLS) particularly for airfield adjacent to boundary.	It has been assessed that there are no airstrips or helipads in the vicinity which require any special considerations. LSALT matters in respect of overflying flight paths are a matter for Airservices to consider.
Eldee mul**ticom** Individual 3 (Ref. No. 10)	That "Eldee Multicom" has legal boundaries, as do all Multicoms. These are: 3nm radius from the physical centre of our runway – is called the "Circuit Area" (Area where a/craft organise themselves in a Circuit pattern in preparation to land). The SWF breaches the 3nm circuit. Eldee Station is a national Award Winning Tourism destination with many aircraft landings. That the outside of the Circuit area is the Multicom Boundary. This boundary is a 5nm radius around the same physical centres of your runway, starting at Ground Level, extending upwards to 3000" Above Ground Level. The SWF breaches the 5nm circuit.	The Multicom principle (simply summarised) is related to the use of a common radio frequency in the vicinity of non-controlled aerodromes (like Eldee) for the reporting of traffic movements. The Multicom is not mandatory with legal boundaries.
Activities in the air space Individual 3 (Ref.	That there are at least six types of light and medium powered aircraft using the airspace over and around the SWF. That aircraft are used for at least ten different activities in this air	While six types of light and medium powered aircraft may be utilising the airspace over and around the Silverton Wind Farm and those aircraft used for at least ten different activities in this air space, the aviation assessment prepared by SGSHA reached the considered view that the level of such operations

Issue (relevant submissions)	Summary of issue raised	Proponent's response
No. 10)	space.	in the vicinity of the proposed Silverton Wind Farm is such that obstacle lights is not necessary. SGSHA is of the view that sufficient safety issues will be covered provided the wind farm and its associated wind turbines are identified on the relevant aviation maps to ensure that all aircraft operators in the region are aware of their existence.
Mitigation Airservices Australia (Ref. No. 12)	The maximum height of the wind turbines without affecting any procedures is 518.16m/1700ft AHD, however subject to agreement from CASA and the aerodrome operator, the following mitigations could be implemented to accommodate the wind farm: • The 25nm MSA could be raised to 3000ft; • The 10nm MSA for the VOR/NDB could be raised to 3000ft. • The DME/GNSS arrival initial approach could also be amended to be at 14nm from the • VOR/NDB; and • The minimum altitude could be raised to 3000ft between 25nm and 14nm.	Airservices provided an email response indicating that certain procedures at Broken Hill Airport would be affected by the proposed SWF development, but provided options to accommodate the wind farm. AGL commit to liaising with Broken Hill Airport in relation to the wind farm impacting on certain procedures at Broken Hill Airport that would result from the proposed Silverton Wind Farm development. This updated commitment is included in Section 5.6 of this report: Consolidated list of changes.
Location of monitoring masts and powerlines Airservices Australia (Ref. No. 12)	The locations for 6 wind monitoring masts and the powerlines have not been confirmed yet. When the locations are known, please submit them to Airport Developments for a further assessment.	Noted.

Issue (relevant submissions)	Summary of issue raised	Proponent's response
Noise impacts		
Increase in size of turbines Individual 1 (Ref. No. 2) Individual 3 (Ref. No. 10)	No noise assessment above 3.6 MW wind turbine's though AGL are asking to increase dimension and capacity up to 5MW for the remaining turbines.	The SWF Modification 3 noise impact assessment report evaluated wind turbines in the 3 MW to 3.6 MW capacity range, which are currently being considered by the Proponent as part of a competitive tender process. The worst case noise profile and spectrum approach adopted in the report provides for a conservatively high noise level prediction that would likely provide sufficient margin to cater for even larger wind turbines, were they to become available in the future. Notwithstanding the above, it is a requirement under the Project Approval conditions for the project to present a revised noise assessment with the final selected wind turbine model (regardless of its generating capacity) and wind farm layout and ensure that it meets the noise limits for the project (Condition 2.21).
Increase in size of turbines Individual 1 (Ref. No. 2) Individual 3 (Ref. No. 10)	No data presented for onshore 5MW wind turbine's which have been developed and sold in Europe by reputable manufacturers and suppliers since 2014.	Only a very limited number of onshore wind turbines of 5MW capacity or greater have been developed to a commercially available production level. A review of other publicly available documents provides Sound Power Level estimates in the range 102 dBA to 107.5 dBA. The data used in the worst case noise profile and spectrum would therefore likely cover wind turbines in this capacity range. Notwithstanding the above, it is a requirement for the project to present a Revised Noise Assessment with the final selected wind turbine model (regardless of its generating capacity) and wind farm layout and ensure that it meets the noise limits for the project (Condition 2.21).
Increase in size of turbines Individual 3 (Ref. No. 10)	Sunset Hill Lookout as a receptor for analysis due to location within the wind farm boundary. Noise contour maps show this site falls within the 44db and 41db contours but only for 3.6MW and not 5MW turbines. This could make speaking etc., very difficult according to the WHO. This would destroy the outback ambience and usability that Sunset Lookout Hill is nationally known for.	In NSW wind farm noise is assessed using the South Australian EPA Guidelines. Under these guidelines Sunset Hill Lookout is not considered a noise sensitive receptor, as it is not a dwelling. Notwithstanding the above, the NSW Industrial Noise Policy (INP) does have an amenity criteria for *"Areas specifically reserved for passive recreation (e.g. National Park)"* with a recommended acceptable noise level of 50 dBA and a recommended maximum level of 55 dBA.

Issue (relevant submissions)	Summary of issue raised	Proponent's response
		The World Health Organisations *Guideline for Community Noise* documents numerous technical sources and study papers with respect to noise levels and interference with communication. For a typical speaker to listener distance of 1 metre the guideline observes that "*Speech in a relaxed conversation is 100% intelligible in background levels of 35 dBA, and can be understood fairly well in background levels of 45 dBA.* *Speech with more vocal effort can be understood when background sound pressure levels is about 65 dBA."* It should be noted that noise levels in the range 41 dBA to 44 dBA are typical of that found in most open plan office environments, where speech communication and intelligibility is important. On the basis that: • The predicted noise level is likely to be conservatively high owing to the 'worst case' noise profile assumed and the conservative nature of a number of the prediction algorithm assumptions (e.g. downwind propagation and directly from all wind turbines simultaneously), • Wind farm noise levels will easily comply with NSW INP amenity criteria for outdoor passive recreation areas, • Wind farm noise levels will be below that which the WHO considers that a relaxed conversation would be *100% intelligible or understood fairly well,* • Wind farm noise levels would be below that experienced in most open plan office environments, On that basis, it is most unlikely that there would be difficulty speaking at this location.
Conditions EPA (Ref. No. 5)	Retain conditions 2.7-2.15, replace condition 2.20 and 2.21. retain 2.22,2.25-2.28.	In the EPAs submission, it suggests replacing the current operational noise limits for the project, as conditioned in Condition 2.20 of the Project Approval is as per below:

Issue (relevant submissions)	Summary of issue raised	Proponent's response

2.20a For the purpose of determining compliance with condition 2.20, the locations and noise limits in the table below apply. The locations referred to in the table below are defined in condition 2.20B.

Location	$L_{eq(10minute)}$ NOISE LIMITS (dBA)						
Integer wind speed (m/s) at hub height	**3**	**4**	**5**	**6**	**7**	**8**	**9 or more**
SL6	36	38	39	40	40	41	42
S10, S11, S12, S14, S15, S16, S17a, S17b, S18, S19, S20, S21, S22, S24, S25a, S25b, S27, S28a, S28b, S29	35	35	35	35	35	35	35
SL3	37	37	37	38	38	38	38

Given that the wind speed reference height is now at hub height (previous conditions were at 10m), SLR consider it would be appropriate to extend the wind speed range higher in the table, as in some instances compliance may become more critical at wind speeds of 9 m/s or higher. A tabulated set of data for relevant receptors extending out to wind speeds of 13 m/s is attached in Appendix B.

The noise limits set for S10, S11, S12 etc., (which covers the township of Silverton) are defined by the SA EPA noise limit derived from noise monitoring completed at the Penrose Park North site. The Noise Impact Assessment report (640.11265R1R2) uses the Penrose Park North site monitoring to derive limits for only a limited number of receptors on the north side of Silverton township, whereas the remaining majority of receptors were assigned to the limit derived from the Penrose Park South site, where background noise levels were found to be higher. The Penrose Park North noise limits are effectively equal to the minimum noise limit of the SA EPA Guideline.

On the basis that compliance to the lower noise limits listed in the table will be required to be achieved at the northern most receptors, which are closer to the wind farm, compliance at remaining receptors shall by default also be achieved, irrespective of whether the Penrose Park North or Penrose Park South background data is used to establish the noise limit. On this basis, and given the significant margin of compliance anticipated for the project, the noise limits proposed for the Silverton township receptors (whilst conservatively low for some receptors) are accepted.

In the EPAs submission, suggested Condition 2.21 is as per below:

Issue (relevant submissions)	Summary of issue raised	Proponent's response
		2.21 Replace with: *2.21* The Proponent shall prepare a revised Noise Impact Assessment (NIA) for the final turbine model and turbine layout selected. **The revised NIA is to be prepared in consultation with the EA and** shall be submitted to the Secretary prior to the commissioning of the WTG's. The NIA shall include the noise predictions of the final turbine model and layout selected at each of the receiver locations. The NIA will demonstrate consistency with the EA and the ability of final turbine model and layout to meet the requirements of conditions 2.20: a) These revised noise predictions will become the new limit. The NIA must outline the methodology used to assess tonality.) It is proposed that the sentence " *a) These revised noise predictions will become the new limit"* be deleted. Current EPA & NSW Planning policy (as reflected in the recently exhibited draft Wind Energy: Noise Assessment Bulletin) is to have SA EPA noise limits as the consent limits, not the predicted wind farm level.
Biodiversity impacts		
Management of ecosystems Individual 1 (Ref. No. 2)	No solid information in the report to say how ecological environments will be preserved and managed.	The Project Approval already contains a detailed regime regulating how ecological impacts will be managed. The environmental management framework for the Project is outlined in Section 5 of the Project Approval. It includes preparation of the following documentation: • Condition 5.1 A Construction Environmental Management Plan to be prepared and implemented. This would include a flora and fauna management sub plan (Condition 5.3 (b)) which would outline measures to protect and minimise loss of native vegetation and native fauna habitat. The plan would be developed in consultation with OEH. Important habitat and locations where threatened species, populations and ecological communities would be identified, methods to manage impacts on flora and fauna would be outlined, a weed management strategy would be prepared and rehabilitation details would be described. • Condition 5.5 An Operation Environmental Management Plan to be prepared and implemented. This would include a Rehabilitation and Ecology Management Protocol (Condition 5.6 (b)) which details the measures to mitigate and manage impacts on native

Issue (relevant submissions)	Summary of issue raised	Proponent's response
		ecology during operation and the management of rehabilitation and vegetation on the site. The plan would include a flora and fauna monitoring program for the site. • Statement of Commitment (SOC) 29 is to prepare and implement a recovery plan for the Porcupine Grass – Red Mallee – Gum Coolibah Hummock Grassland vegetation community and for the threatened reptile fauna which utilise this habitat. The purpose of the plan would be to achieve a net gain for this ecological community. • SOC39 is to prepare and implement a goat management plan with a focus on reducing impacts on Porcupine Grass/Red Mallee/ Gum Coolabah/Hummock Grassland. • Condition of 1.17. requires a Decommissioning Environmental Management Plan to be prepared and implemented. This would include an environmental risk analysis and details of how environmental performance will be managed and monitored. In addition: • Condition 3.3 requires that independent environmental auditing of the project be undertaken within two years of the commencement of Operation of the project with one of the requirements being to review the effectiveness of the environmental management of the project, including any environmental impact mitigation works. • Condition 5.1 requires that an Environmental Representative (to be approved by the Secretary) be engaged during construction and throughout the life of the project. The environmental representative would be independent and would oversee the implementation of the all environmental management plans. If the environmental representative considers that there is significant risk of a potential adverse impact on the environment, a recommendation can be made to cease the relevant activity as soon as practical. • The preparation of these plans would ensure that ecological environments will be preserved and managed appropriate to their conservation values. The detailed plans would be based on the final infrastructure layout for the project and updated vegetation mapping.
CEEC Clearing OEH (Ref. No. 6)	OEH consider is unlikely there will not be a significant impact due to the clearing proposed.	Noted. The modified project is likely to require substantially less vegetation clearing than originally proposed.
Clearing impact calculations	OEH require more information on how the clearing impacts were estimated.	Vegetation mapping is available for the broader project site. Significant features (CEEC habitat, Barrier Range Dragon hotspots and significant rocky outcrops) layers are also available (these are mapped in

Issue (relevant submissions)	Summary of issue raised	Proponent's response
OEH (Ref. No. 6)		Appendix A). Clearing estimates were calculated using Arc GIS. The indicative infrastructure layout, presented in Appendix A of the Modification 3 Report, was overlaid with the following assumptions used to define impact areas: • Tracks 6m width (as assumed in the EA) • Turbine footings (30m diameter) • Turbine hardstand (30x70m) Other infrastructure (compounds, transmission lines, substation) were not considered in the Modification 3 Report impact area estimates because their footprint is not likely to change substantially, based on the reduced number of larger turbines (a key driver for the Modification 3 Report). It is acknowledged that the layout and impact areas are estimates using an indicative layout. Detailed environmental management plans would be based on the final infrastructure layout for the project and updated vegetation mapping.
Modification reducing the risk to wildlife OEH (Ref. No. 6)	The environmental report does not provide a rationale for the revised turbine layout.	The proposed modification does not include any change to the currently approved indicative turbine layout, other than the removal of turbines previously proposed. The key modification would see a decrease in the number of turbines from 282 to a maximum of 172, while increasing the dimensions and capacity of each turbine. It is noted that the SWF site is geographically more varied than other NSW wind farm developments in the southern tablelands region, which are generally located on elevated plateaus. The SWF landforms are comprised of rugged ranges with narrow drainage lines and ridges. Factors that influence the infrastructure layout reflect these landscape features. These are primarily: • The wind resource • Constructability • The distribution of biodiversity and heritage constraints In advance of detailed design, a commensurate degree of flexibility is therefore required for the location of infrastructure. This is required to ensure the most efficient layout can be developed, in terms of both

Issue (relevant submissions)	Summary of issue raised	Proponent's response
		cost and minimising the footprint (and environmental impacts) of the project. The assessment methodology reflected this requirement, producing broad vegetation mapping and assessment areas. As outlined in the original EA, the indicative project layout, including turbine locations, will be finalised prior to construction and following final turbine selection and completion of further technical investigations (including geotechnical and detailed constructability analysis). Consistent with the existing approval, an updated plan of the final turbine number and layout, which will include location changes to access roads as contemplated by section 2.1.2 of the Modification 3 Report, will be submitted for the approval of the Secretary of DPE in accordance with condition 2.2A of the Project Approval. In developing the final project layout AGL will: 1. Consult with DPI lands, leaseholders and the CCC as required by Condition 2.2A of the Project Approval; 2. Ensure that all project infrastructure (including internal access roads and connections, the locations of which will need to be finalised to address final turbine locations) remain within the assessed Project Area; 3. Ensure that no turbine will be microsited by more than the 250 metres as contemplated in the original EA; 4. Prepare photomontages to demonstrate to the satisfaction of the Secretary how the visual impacts have been reduced as required by condition 2.2A of the Project Approval; and 5. Ensure that all conditions of the Project Approval and all commitments made in the Statement of Commitments (including commitments regarding visual impact, avoiding and minimising impacts to EEC, cultural heritage and soil/water impacts).
Reducing the risk to wildlife OEH (Ref. No. 6)	Bird and bat risk assessment: • Suggested changes to risk and rating of species • Demonstrating avoidance of raptor nests, caves, mines • Gum Coolibah may grow to 30m (blade clearance). • Justification of lower alienation risk if turbines are 500m apart • Buffers	**Risk and rating of species** The aim of the Appendix B: Bird and Bat Risk Assessment in the Modification 3 Report was primarily to consider any increased risks posed by the taller turbines. It did this using the indicative infrastructure layout. NGH Environmental also took the opportunity to update some aspects of the risk assessment completed earlier for the project. It is noted that an updated risk assessment will be a key component of the Bird and Bat Adaptive Management Plan, which will identify higher risk locations and higher risk species that the monitoring and mitigation strategies will focus on, with reference to the final turbine layout. Additional changes to

Issue (relevant submissions)	Summary of issue raised	Proponent's response
	• Modification of ridge habitat not supported	risk ratings proposed by OEH can be incorporated to guide the program. **Avoidance of nests, caves, mines** Several raptor nests were observed during previous assessments. Even small trees were found to support raptor nests on site. While all nests were not mapped as constraints to be avoided, a current condition of consent is to ensure turbine locations are a minimum of 200 metres away from trees containing stick nests being used by raptors. It is considered that this remains appropriate, based on experiences at other wind farms in Australia. Raptors are thought to be at higher risk of collision due to their tendency to make flights in the rotor swept area (WBPWF FR 2007a). However, a number of studies have found that the risk of collision is extremely low, with birds avoiding the swept area of the turbine blades in over 98% of cases (Biosis Research 2007; Smales and Muir 2005; WBPWF FR 2007b). The ability to meet the existing condition is not affected with the use of fewer taller turbines. It is likely to be easier to meet with fewer turbines. Previous assessment has identified that a small number of caves and overhangs were observed in the rocky and gorge areas of the site. Proximity to shafts and mines was not considered a high risk factor for bats for this project; they were not mapped as constraints to be avoided. The assessment noted that the lack of nearby water reduced the likelihood that bats regularly use these areas. The level of risk is not expected to be increased with the use of fewer, taller turbines. **Gum Coolibah** While this species can grow to 30m in lower areas, in upper ridge locations where turbines are proposed, the Risk Assessment included as an appendix of the Modification 3 Report, assumed it was only likely to reach only 20m. Photos are provided in the Modification 3 Report, Appendix B, to demonstrate the low height of trees in ridge locations where turbines would be located. In the arid zone this tree may be more common to 20 metres (Windmill Outback Nursery 2011). This issue is relevant to considering the distance that birds and bats foraging in and above canopies may be to the rotor sweep area of a turbine. **Alienation risk** The risk assessment stated that the original layout presented in the EA had inter-turbine spacing of approximately 500 metres between turbines. The Modification 3 Report indicative layout is less regular, but has a fewer number of turbines with greater distances between the turbines (particularly in the northern section of the wind farm). As such, NGH Environmental considers that generally, the new layout would pose a lower collision and alienation risk than the original layout; birds and bats have more room to manoeuvre between turbines and a lesser proportion of the air space occupied by the rotor

Issue (relevant submissions)	Summary of issue raised	Proponent's response
		sweep area. **Buffers** It is noted that the New England guideline for buffer distances is based on bat impacts in England. Even so, it is one of the few guides available on this topic. It is noted that no vegetation currently occurs in the rotor sweep area for the indicative layout. As shown in Table 3-3 of the risk assessment, the closest that the tallest vegetation comes is estimated to be 9.5m for Porcupine Grass – Red Mallee- Gum Coolibah Hummock Grassland / Low Sparse Woodland. This is the estimated distance between the top of the tree canopy and the lowest point of the turbine blade rotation and as above, is relevant to considering the distance that birds and bats foraging in and above canopies may be to the rotor sweep area of a turbine. **Modification of ridge habitat** A current commitment of the project includes the provision that: … *if the* [bird and bat operational monitoring] … *demonstrate[s] that further mitigation is required, further turbine ridge habitat modification and enhancement of off-site habitats would be undertaken*. It is noted that management actions that are triggered by the yet to be developed Bird and Bat Adaptive Management Plan must be case specific, informed by the details surrounding the event that triggered the response. It is noted that ridge habitat modification is not supported by OEH. These type of restrictions would be clearly set out in the Bird and Bat Adaptive Management Plan, to guide responses.
Bird and Bat Adaptive Management Plan (BBMAP) OEH (Ref. No. 6)	The plan should be adaptive not just document mortalities. OEH is drafting a guideline for such plans. The plan should be developed in close consultation with OEH. Suggested inclusions in the plan are: • Preconstruction surveys at least 12 months prior to construction • Monitoring needs to be regular so that response times for serious incidents, particularly those involving threatened species, are sufficient to minimise further risk. • The monitoring protocol needs to have a particular focus on the isolated wind turbines, which may provide an increased risk to biodiversity.	It is understood that the aim of the Bird and Bat Adaptive Management Plan is to adapt to monitoring results and not simply document bird and bat mortalities. The wording of the current condition recognises this in requiring: • The need for mitigation measures, reporting on the progress with implementation of such measures, and their success. • The need to clearly identify 'at risk' bird and bat groups. The wording of the existing statement of commitment also recognises this in requiring: '*The need to 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.'* The condition requires approval of the Secretary prior to construction. As a key stakeholder in the

Issue (relevant submissions)	Summary of issue raised	Proponent's response
	• A procedure for response to serious incidents must be part of the protocol. Further, the risk assessment and requirements for base line studies should be included in the plan. Several suggestions are made in OEH's submission.	development of this plan, OEH would be consulted regarding the adequacy of the plan, either by the proponent or DPE directly, and that the items listed in the OEH response (including base line monitoring, response protocols and identification of at risk locations and species) can be effectively incorporated into the plan. However, given the length of surveys proposed by OEH (at least 12 months prior to construction), that they are not contemplated by current approval conditions and their potential to delay the construction program, **it is not proposed that 12 months of preconstruction surveys will be included**.
Inconsistencies in footprint OEH (Ref. No. 6)	Some inconsistencies occur in relation to the clearing footprint; Page 12 identifies it as 10 hectares to be cleared while in Table 3-7 it is listed as 22.1 hectares. Further clarification is required on how the total impact to threatened species and ecological communities has been calculated. There are some tracks in areas where vegetation mapping has not been undertaken.	**Clearing estimates** The difference in the clearing estimates presented is the area occupied by the hard stands. The first set of figures on page 12 of the Modification 3 Report includes hardstands areas, as this section considers the project's 'disturbance footprint'. The tables presented in Section 3 consider 'permanent vegetation removal'. The assumption is that the hardstand areas are not required after construction and can be stabilised and rehabilitated. As such they do not constitute 'permanent vegetation removal'. It is acknowledged that some areas, particularly steep areas lacking topsoil, will be very difficult to establish vegetation cover on, after construction. However, the hardstands will be required to be located on flat ground and are therefore considered likely to be able to support revegetation. It is noted that while the total area of hard stand areas was included within the EA (2008) and SR (2009), the areas were not broken down by vegetation type) and therefore the Modification 3 Report has not attempted to do this retrospectively. It has only noted the temporary areas of disturbance would remain proportional to that assessed in the EA. The methodology for estimating impacts, in advance of the final layout and detailed construction drawings was as stated above; clearing estimates were calculated using Arc GIS. The indicative infrastructure layout, presented in Appendix A, was overlaid on broad vegetation mapping with the following assumptions used to define impact areas: • Tracks 6m width (as assumed in the EA) • Turbine footings (30m diameter) • Turbine hardstand (30x70m) **Access tracks**

Issue (relevant submissions)	Summary of issue raised	Proponent's response
		Six hectares of access track were shown in the Modification 3 Report layout, which extended beyond the wind farm area boundary and also beyond the broad vegetation mapping for the site (shown as 'unknown' vegetation type in the impact area breakdowns). These occurred in two locations: 1. Near the southern entry, adjacent to Mulga /Red Mallee Shrubland and dissecting mapped River Red Gum Woodland. This is the road to Daydream Mine and is existing. Minor upgrades are proposed in the EA and modification report, hence minimal if any vegetation removal is anticipated. This road was included as requiring upgrade in the original EA (2008). It is now included in the list of roads proposed to be upgraded pre-construction (discussed in Section 5 of this report). 2. Between the north and south sectors of the site, adjacent to Mulga / Red Mallee Shrubland and Chenopod Red Mallee Woodland/Shrubland. Most of these areas were subject to further biodiversity and heritage assessment in the Preferred Project and Submissions Report (Silverton Wind Farm Developments with the assistance of NGH Environmental 2009). Vegetation types are now shown for the majority of areas in Appendix A, consistent with what was presented in the 2009 report. It is noted that the EA (2008) addressed the impacts relating to the disturbance of 448 km of tracks. Under the Modification 3 layout, Stage 2 (concept approval) tracks no longer required total 216km and Stage 1 tracks no longer required total 57km. Therefore, the overall disturbance footprints for access tracks for the Modification 3 layout would be reduced by 273km. Specific to the Modification 3 access track layout, it is noted that 97.2ha is the accurate disturbance area calculated in ArcGIS (as presented in Table 3-9 of the Modification 3 Report). The length of the total track network was measured in ArcGIS as 177km and buffered by 6m. The difference in the ArcGIS area (97.2ha) and the simply calculated area (i.e 177km x 6m = 106.2 ha) is due to the number of branches and joins in the buffered network. The procedure aims to exclude overlaps, producing a smaller calculated impact area.
Hydrology (water, water quality and water table impacts)		
Water sources DPE	Adequacy of supplies, including implications for other users and clarification of actual infrastructure proposed, and impacts on other local sources such aquifers	Effective consultation with Essential Water has progressed during the public exhibition period, with regards to securing an allocation of water that would be adequate to meet the construction needs of the project. No issues are expected and the Proponent will be seeking a statement supporting an

Issue (relevant submissions)	Summary of issue raised	Proponent's response
Individual 1 (Ref. No. 2)		allocation. Prior to commencement of construction, the proponent will confirm access to the required volume of construction water and obtain all necessary licences.
Individual 2 (Ref. No. 8)		A water management plan would be prepared as part of the Construction Environmental Management Plan (Condition 5 (3)f)). It is a requirement of this plan to demonstrate that adequate water supplies can be sourced for the project and that any licences or approvals to authorise the extraction may be obtained.
Volumes required DPI (Ref. No. 4)	Water volumes required for the modification should be detailed and the security of the supply from this pipeline. As the footings are significantly larger than the original proposal it is expected the water requirements will increase per footing.	As above, consultation with Essential Water has progressed during the public exhibition period, with regards to securing an allocation of water that would be adequate to meet the construction needs of the project. It is further noted that the Proponent commits to: • Consulting and complying with the requirements of the Dam Safety Committee relating to the safety of Umberumberka Reservoir under the Dams Safety Act 1978, if water is to be sourced from Umberumberka Reservoir. • Avoiding construction impacts to (not including lawfully sourcing water from) the water pipeline that extends between Umberumberka Reservoir and Broken Hill (SU253/HS1).
Ability to access DPI (Ref. No. 4)	Prior to the approval of the project it is recommended the proponent confirm with Essential Water the ability to access the required volume and if there are any concerns in gaining the relevant approvals	Refer to item above.
Water crossings DPI (Ref. No. 4)	It is recommended an additional condition be included to require watercourse crossings to be constructed in accordance with DPI Water's Guidelines for Watercourse Crossings on Waterfront Land.	Noted.
References DPI (Ref. No. 4)	References to NOW and NSW Office of Water in the existing Project Approval should be amended to DPI Water	Noted
Water studies Individual 3 (Ref.	Given that the windfarm disturbance is now 48.3 hectares (previously on 31.2 hectares per turbine site), which is an	As outlined above, the significant reduction in turbine numbers proposed will reduce the overall footprint of the project. In addition, prior to the construction works commencing, AGL has committed to several mitigation measures to ensure that the Project has no material adverse effect on groundwater

Issue (relevant submissions)	Summary of issue raised	Proponent's response
No. 10)	increase of 55% per turbine, why haven't there been any extensive water studies carried out to establish what the affect will be on the ground water for the springs and wells?	and/or aquifers. These include: *2.64 Prior to construction, the Proponent must submit the proposed detailed geotechnical assessment for potential groundwater interception and impact to NOW and Country Energy for review. A copy of NOW's and Country Energy's review must be included in the CEMP.* This report was completed in consultation with local landholders and the CCC, and was provided to DPE in April 2016. It states "*…the drilling program predominantly targeted areas likely to be disturbed by the SWFP, and therefore most (eight of nine) boreholes were drilled on the ridgelines at or nearby to proposed SWFP infrastructure to maximum depths of 25 m (i.e below proposed wind turbine footing depths). Groundwater was not intercepted in the top 25 m at the eight ridgeline drilling locations, demonstrating that there is no groundwater in the elevated positions of the ridgelines. … the outcomes of the hydrogeological investigation demonstrate that groundwater is not present in the elevated areas proposed for construction activities for wind turbines and associated infrastructure*" (EMI 2016).
Impact assessment Individual 3 (Ref. No. 10)	What impact assessments have been carried out in regards to the water still flowing freely in the creek beds through the ranges and out onto the plains? The water from the creek flows provide months of pasture for livestock and native fauna and refresh native flora.	The Modification 3 layout has been designed to avoid any impacts to watercourses and drainage lines that exist within the development site where possible. No specialist assessments have been undertaken because creek flows (volumes or speed) would not be impacted, directly or indirectly by the proposed works and water would not be extracted from these creeks during construction. Where avoidance is not possible, mitigation measures have been prescribed to minimise impacts to these watercourses and drainage lines. A water management plan would be prepared as part of the Construction Environmental Management Plan (Condition 5 (3)f)). The plan would state how water would be managed on the site, to minimise erosion and the discharge of sediments and other pollutants to lands and/or waters throughout the life of the project. The plan would be developed in consultation and to the reasonable satisfaction of DPI Water and Essential Water.
Quarries Individual 3 (Ref. No. 10)	What impact will the extensive quarrying have on the water flow and aquifers of the Barrier Ranges? Why hasn't there been an assessment of these impacts either? There are no onsite quarries identified in any of the submissions to date. Why hasn't this happened yet? Testing has been carried out over the past four years but there are not results included in the documents submitted for the modification 3 for the SWF. What impact will the extensive quarrying have on the water flow and aquifers of the Barrier Ranges? Why hasn't there	The proposed modification will reduce turbine numbers and, hence, the amount of any quarrying required. Further, as noted in the Preferred Project and Submissions Report (2009), the quantity and source of sand, aggregate and other materials cannot be determined accurately until the design and specification for the works (including tracks and foundations) has been completed. To reduce the amount of materials needed on site, it is likely that material excavated for turbine foundations and excavated as part of access track foundations would be used as aggregate for track construction. 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. Concrete aggregate has a much higher quality requirement. Two quarry sites have been investigated. The assessment of quarrying activities at these sites has been subject to a separate environmental assessment pathway and is therefore not relevant to this

Issue (relevant submissions)	Summary of issue raised	Proponent's response
	been an assessment to date?	Modification application. An EIS and REF have been completed to assessment impacts of sand and rock extraction respectively.
Conditions EPA (Ref. No. 5)	Retain 2.59, 2.60, 2.62, 2.63	Noted.
Geology and soils		
Erosion and sediment controls DPI (Ref. No. 4)	The turbine footing disturbance has increased by 17.1ha due to the requirements for larger turbines. Additional erosion and sediment controls would be required.	As outlined above, the significant reduction in turbine numbers proposed will reduce the overall footprint of the project. Accordingly, impacts to soils as a result of Modification 3 layout would be substantially reduced. However, it is agreed that soils that are disturbed at each of the turbine sites would require appropriate management to minimise any erosion and sedimentation risks. This is particularly important in the southern area of the site which is steep and therefore more susceptible to erosion. Detailing the measures to manage soils at the site is a requirement of Condition 5.2 (c) iii. and would be included in the Construction Environmental Management Plan. This would be provided within a Soil and Water Management Plan. It would include procedures for stripping soil, stockpiling soil and stabilising soils. All procedures would be in accordance with the industry standard guideline Managing Urban Stormwater: soils and construction (Landcom 2004). The EA (2008) addressed the impacts relating to the disturbance of 66.1 hectares for turbine footings and hardstands and 448 km of tracks. Disturbance footprints for the proposed modification 3 layout has been reduced to 48.3 ha for turbine footings and 158km of tracks (based on 172 turbines). A total of 17.8 hectares of disturbance for turbine footings and 263km of tracks would no longer be constructed as part of this development.
Conditions EPA (Ref. No. 5)	Retain 2.59, 2.60, 2.62, 2.63	Noted.
Traffic and Transport		
Traffic management Individual 1 (Ref. No. 2)	Will the Department request a traffic management plan? There has been no discussion on this subject for some time and larger turbines would result in changes to the current situation	A Traffic Management Protocol would be prepared as part of the Construction Environmental Management Plan (Condition 5.3a). The management plan would outline management of traffic conflicts that may be generated during the construction of the project. The plan would address requirements of the Roads and Maritime Services, DPI Lands and any other relevant road authority. It

Issue (relevant submissions)	Summary of issue raised	Proponent's response
		would include: • Details of traffic routes for heavy vehicles, including any necessary route or timing restriction for oversized loads • Detailed consideration of measures to be employed to ensure traffic volume acoustic and amenity impacts along the routes are minimised • Detailed consideration of alternative routes (where necessary) • Demonstration that the road structure has the ability to sustain the increased vehicle loads and traffic movements • Demonstration that the structures situated along the vehicles routes would not be adversely impacted from the vibration caused by the additional vehicles travelling on the route; and • Demonstration that all statutory responsibilities with regard to road traffic impacts have been complied with. Traffic impacts as a result of the Modification 3 proposal were considered in the Modification 3 Report. In relation to turbines, it was noted that the larger sized turbines are not anticipated to increase the construction haulage traffic volume and configuration (ie. additional oversized trucks). The proposal would result in a reduction in the wind turbine numbers which would reduce the haulage requirements relating to the transportation of infrastructure to site. This haulage route will form part of the Traffic Management Protocol and will consider the increase in wind turbine component lengths (eg. turbine blades). Importantly, these components would be hauled under escort due to their oversized dimensions. The significant reduction in turbine numbers will result in less traffic impacts overall. In relation to sourcing alternate water source from Umberumberka Reservoir and potential impacts resulting from the haulage of water to the site, the Modification 3 Report concluded that no additional water haulage would be required. The project, as approved, was anticipated to generate an additional 290 vehicles per day on the highways and heavy vehicle routes through Broken Hill. Traffic numbers, types of vehicles, transport routes and transport timeframes would remain the same as previously assessed.
Traffic management Individual 3 (Ref. No. 10)	There haven't been any meetings for Traffic Committee for several years. If there have been meetings then the agenda hasn't been sent to everyone involved for their participation.	A SWF traffic management strategy workshop was held 3 December 2013, the date was determined by the CCC group. The plan to hold a community traffic workshop was discussed at the CCC meeting in 24 October 2013. CCC members were invited to participate in the workshop, with four Silverton CCC

Issue (relevant submissions)	Summary of issue raised	Proponent's response
		members volunteering to participate. The Traffic Management Committee discussed the outcomes of the December workshop at the second traffic management workshop 27 March 2014 and again with the wider community at the CCC meeting held after the traffic workshop 27 March 2014. Feedback from the community at the workshops and CCC meetings has been incorporated into the traffic management strategy. The strategy is still in draft format and it will form an input into the Traffic Management Protocol to be developed by the construction tenderer. There have been no further workshops or meetings about the strategy, however AGL has recently discussed the project's progress with the RMS and with SWF gaining momentum, AGL will refresh the strategy with the community in the coming months.
Indigenous and non-indigenous heritage impacts		
Heritage values EPA (Ref. No. 6)	Reduction of the development footprint for Modification 3 is likely to result in a reduced impact to Aboriginal cultural Heritage (ACH) values	Noted. The footprint would be altered as follows: **Comparing the Modification 3 application to the Project Approval (Stage 1)** The EA (2008) addressed the impacts relating to the disturbance of approximately 31 hectares for turbine footings and hardstands. An increase of 17.1 ha for turbine footings and hardstands would be required if 172 turbines are developed, due to the larger size of turbines and therefore, larger footings and hardstands. 208.45 km of access tracks were assumed in Stage 1. Under the Modification 3 layout, Stage 1 tracks no longer required total 57km (151.45km are now required to access 172 turbine sites). **Comparing the Modification 3 application to the Concept Approval (Stage 2)** The EA (2008) addressed the impacts relating to the disturbance of 66.1 hectares for turbine footings and hardstands and 448 km of tracks. Disturbance footprints for the proposed Modification 3 layout have been reduced to 48.3 ha for turbine footings and 158km of tracks (based on 172 turbines). A total of 17.8 hectares of turbine footings would no longer be disturbed and 263km of tracks would no longer be constructed as part of this Project.
Mineral exploitation impacts		
Exploration licence application RE (Ref. No. 11)	As ELA No 5318 has been lodged since the meeting with AGL in May 2016, GSNSW requests that AGL consult with Proton Geoscience (applicants for ELA No.5318).	AGL can confirm that they have corresponded with the applicant for ELA No.5318, as of 20 September 2016. The applicant was informed that their ELA covered a small part of the southern and south western project area of our proposed Silverton Wind Farm. Other project information including a contact point for further discussion regarding the Silverton Wind Farm project was provided at this time.

Issue (relevant submissions)	Summary of issue raised	Proponent's response
Community well being		
Community consultation DPE Individual 1 (Ref. No. 2) Individual 3 (Ref. No. 10)	Adequacy of community consultation that has been undertaken with the Silverton community by AGL.	Community consultation for the Project has been guided by AGL's Community Stakeholder Engagement Plan. The plan has been prepared by experienced stakeholder engagement professionals to manage, deliver and monitor best practise community consultation activities and initiatives. Its preparation has taken into consideration several best practice documents for community engagement for wind farm development including the Draft NSW Planning Guidelines Windfarms (2011). AGL's primary objective is to deliver best practice community engagement throughout the project phases. The modification 3 report summarises the Table 3-12 in the Modification 3 Report summarises the community and stakeholder consultation that has occurred for the modification. It identifies the stakeholder and activity, the date of consultation, the issues raised and a response. The purpose of this submissions report is to further address concerns regarding the project.
Withholding information Individual 1 (Ref. No. 2)	Perceived unwillingness of AGL to answer questions sent by email or asked at Community Consultative Meetings	The presentations and minutes from the Silverton CCC meetings are placed on the AGL website and provide an overview of the project status and respond to specific questions raised by either the CCC or members from the community. For example, the CCC July provided information in relation to Modification 3, erosion and sedimentation, Barrier Range Dragon (documents were table by a member of the community in April 2016). In addition, information requests are responded to either in writing or in person, and letters are distributed regularly to the Silverton community offering one on one meetings with community members.
Alternative locations DPE Individual 1 (Ref. No. 2) Individual 2 (Ref. No. 8) Individual 3 (Ref. No. 10)	Clarification needs on whether alternative turbine locations as suggested by the community were considered, including the Setback Solution which clusters the turbines over four stations.	The layout of turbines and access roads at the wind farm has been designed with consideration of a variety of factors including wind resource, constructability and community feedback. The following changes to the layout have occurred: • Stage 2 of the wind farm has been removed from the Project initially reducing total turbine numbers from 598 turbines to 282 turbines. This would reduce the visual impact of the project, one of the community's primary concerns. Modification 3 layout further reduces the number of turbines from 282 to up to 172. In consideration of community and other stakeholder feedback, three turbines which had been closest to Silverton were removed from the design. Regarding the Umberumberka car park and residence, of the turbines within 2km of the carpark, 3 would now be removed. Of the turbines within 2km of the residence, 2 would now be removed.

Issue (relevant submissions)	Summary of issue raised	Proponent's response
		The Setback Solution/Compromise plan which was submitted by a landholder in February/March 2016 and was considered by AGL. It involved clustering the turbine locations on Nine Mile, Purnamoota, Eldee and Belmont Stations. The closest turbine would have been 8 kilometres from Silverton. AGL has considered the feedback from the landholder together with the wind resource and construction aspects of each wind turbine location. This has resulted in the removal of the three turbines closest to Silverton. AGL has also taken this additional feedback (Setback Solution) into consideration in developing the Modification 3 layout, and has made some further changes to the turbine locations as a result. It is noted that the project boundary was previously amended in the Preferred Project and Submissions Report (2009) to be further away from Eldee Station. It is also noted that originally, turbines were proposed to be located closer to (and indeed on) Eldee Station, and these turbines have now been removed. In particular, the final Modification 3 layout has removed several turbines located near project boundaries with the turbines closest to Silverton (the closest approved turbine location was originally 4.6km from the centre of Silverton) now located 5.5km from the centre of Silverton) and Aboriginal cultural heritage items. The final project layout will be consistent with the Project Statements of Commitment, to ensure that impacts on site constraints, particularly biodiversity and cultural heritage are avoided / minimised appropriately.
Local communication systems DPE Individual 3 (Ref. No. 10)	Implications for local communication systems such as phone/data signals. If the turbines are constructed to the south west and western side of the wind farm all communications to Eldee station will be totally interrupted.	The EA (2008) assessed the impact the wind farm would have on mobile phone services and concluded that the potential impacts as a result of the operation of the Project would be negligible. Conditions 2.77 of the approval requires that, prior to the commencement of construction, AGL would consult with NSW Government Telecommunications Authority and other registered communications licensees communications licensees (including emergency services), to ensure that risks to radio and phone services are minimised as far as feasible and reasonable. If there are disruptions to the radio communication services lines as a result of the Project, including any disruptions to Eldee Station or any other properties, appropriate remedial measures would be employed to rectify the situation. This would be at a cost to AGL.
Tourism impacts		
Impacts on tourism	Consideration of impacts on tourism activities and locations when selecting turbine locations	AGL understands that tourism is one of Broken Hill's major industries. The EA (2008) discussed the potential for the wind farm, being the largest in NSW, to become one of the tourist attractions in the

Issue (relevant submissions)	Summary of issue raised	Proponent's response
DPE Individual 1 (Ref. No. 2)		region. Even with a reduced number of turbines, the wind farm would remain the largest in NSW. It is also discussed the potential to tourism and visitor facilities to be developed at locations in consultation with local residents and committed to developing a Silverton Community Fund that could be used to promote tourism within the area. A Traffic impact study determined that there may be delays to tourist traffic during construction but the impacts would be manageable with mitigation measures such as minimising disruptions by coordinating construction with local events. The EA discussed impacts to the film and art industry as a result of the wind farm and acknowledges that visual and noise impacts could potentially affect this industry. SOC 130 commits to: *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.* With appropriate measures in place, the impacts on tourism were considered to be acceptable. The Modification 3 Report considered what impacts the use of larger turbines would have on community, facilities or lifestyle impacts. A revised 'Zone of Theoretical Visibility' was produced for the Modification 3 Layout and concluded that no additional areas would be visible based on new turbine parameters.
Tourist surveys Individual 2 (Ref. No. 8)	AGL should be required to do surveys with tourists during the busiest seasons to understand how tourists feel.	During the exhibition period for SWF Modification 3 Application, there was opportunity for tourists to submit submissions about the project. The Modification 3 Report and map set were on display at the Silverton Hotel which is frequented by many tourists. SOCs 77, 85, 100, 126-129 would assist in mitigating impacts on tourists: *77 Provide information signage about the Project and appropriate viewing area at the Mundi Mundi lookout 5 kilometres west of Silverton and on the Silverton Road in the vicinity of Daydream Mine Road to the satisfaction of the RTA.* *85 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* *100 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*

Issue (relevant submissions)	Summary of issue raised	Proponent's response
		extent practical coordinated with local events. *126 Co-ordinate construction activities with local events* *127 Provide wind farm promotional information to the local visitor information centres* *128 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* *129 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*
Film and art impact		
Impacts on Sunset Hill Individual 3 (Ref. No. 10)	The activities of stills photographers, film makers and artists utilising this location at sunrise, during the day, sunset and night time. Eldee Station has featured in many TV programs, commercials, websites, catalogues and brochures.	This is addressed under Landscape and visual impact, Impacts on tourism. In summary, while the approved SWF turbines will be visible from the Sunset Hill Lookout, the SWF Mod 3 wind turbines will not be visible within the general field of view extending west toward sunsets over the Mundi Mundi Plain. The LVIA (2008) also considered the potential impact on sunset views and noted that: *The locality surrounding the Silverton Wind Farm includes a number of vantage points for sunset views for both visitors to, and residents of, Silverton and Broken Hill. The sunsets around Silverton can at times, provide an intense and dramatic landscape feature.* *Although sunsets can be viewed from many surrounding areas, the principal view points include a section of the Silverton Road to the south of the Limestone property, the Sculpture Park and the Mundi Mundi lookout.* *Sunset views from areas to the west and east of the wind farm site will incorporate full and partial views toward the Silverton Wind Farm from a range of distances; however it is unlikely that any potential lighting, including lighting for aviation safety, will have any significant negative impact on the appearance or appreciation of sunset views.* *Views directly west from the Mundi Mundi lookout are unlikely to include a direct line of sight toward the Stage 1 and 2 wind turbines, although wind turbine structures may occur in peripheral vision for sunset views at this location'.*
Health and safety		

Issue (relevant submissions)	Summary of issue raised	Proponent's response
Vibroacoustic Disease Individual 1 (Ref. No. 2)	Concerns about Vibroacoustic Disease (VAD)	Vibroacoustic disease (VAD) is generally considered to be an occupational disease occurring in susceptible workers who have had long-term exposure to large pressure amplitude and low frequency noise systemic pathology caused by excessive exposure to low frequency noise (LFN <or =500Hz)(Branco 1999). There has been no credible scientific evidence that vibroacoustic disease is associated with or caused by wind farms (Chapman 2013). The wind farm Environmental Noise guidelines prepared by the South Australia Environment Protection Authority are the current industry standard in relation to noise generated by wind turbines. The Project would meet all the requirements of this guidelines. This has been demonstrated by the Noise Impact Assessments already undertaken. Conditions of consent require a revised noise assessment to be completed to demonstrate compliance with required noise thresholds. This is discussed in the Noise section above.

5 CLARIFICATIONS

This section of the report outlines a number of clarifications and minor changes which have been made to the project in response to submissions and requests from the DPE. These relate to:

- Preconstruction access upgrades
- Location of infrastructure
- Rotor diameters
- Decommissioning and rehabilitation planning
- Surrender of the Concept Approval

A consolidated list of proposed changes to the conditions of the Project Approval is provided at the end of this section.

5.1 PRECONSTRUCTION WORKS

The Modification 3 Report sought to clarify and enable road upgrades and works to be carried out prior to the commencement of construction so as to enable construction works to be carried out as safely and efficiently as possible while still ensuring an appropriate level of environmental controls.

Three types of 'Pre-Construction Minor Works' are proposed to be carried out prior to the commencement of construction:

1. External road works, for which RMS is the relevant roads authority
2. Internal access track works within the project site boundary
3. Other pre-construction minor works

Each of these are discussed below. It is requested that each of these works be covered by a new definition of 'Pre-Construction Minor Works' to be included in the Project Approval.

5.1.1 External road upgrade works

The original EA (2008) provided for certain works to be carried out on the external road network, to enable access for construction traffic for the construction of the SWF. These works were identified as providing benefits for the local Silverton and Broken Hill communities.

The SWF potentially requires several external roads to be upgraded, including:

- Upgrades to Silverton Road (eg, filling in potholes, improving dips and pull over bays)
- Intersection of Daydream Road and Silverton Road
- Upgrade of Daydream Mine Road
- Potential minor upgrade works to Wilangee Road
- Other works identified in the original traffic impact assessment.

While these road upgrade works already form part of the Approved Project, the Modification 3 Report sought to enable these upgrade works to be carried out prior to the commencement of construction, to enable construction traffic to reach the project site as safely and efficiently as possible.

These road upgrade works do not require substantive vegetation clearing. Required management measures are standard erosion and sediment controls. All road upgrades and repairs would be undertaken in consultation with roads authorities (and regulated under works authorisation deeds / Section 138 Roads Act approvals) as set out in the existing Project Approval conditions 2.61 – 2.62 and 2.46 – 2.48.

The road upgrade works closest to the wind farm site are shown in Appendix A.

In order to enable the external road upgrade works to be carried out prior to the commencement of construction, the proponent seeks that the following text be inserted into the Modified Project Approval:

Prior to the commencement of construction (other than pre-construction minor works), where required, the Applicant shall undertake road upgrades to the reasonable satisfaction of the relevant Roads Authority:

- *Upgrade of Silverton Road*
- *Intersection of Daydream Road and Silverton Road*
- *Upgrade of Daydream Mine Road*
- *Potential minor upgrade works to Wilangee Road*
- *Where required by the relevant Roads Authority, other works identified in the original traffic impact assessment.*

5.1.2 Internal access track works

In order to access the ancillary facility and substation sites, the internal access track off Daydream Mine Road into the Project site (shown in Appendix A) will also need to be upgraded/constructed prior to the commencement of construction.

To clarify this, and to ensure that these track works have appropriate environmental controls, it is requested that the upgrade to the access track off Daydream Mine Road into the Project site:

- Be included in the new 'Pre-Construction Minor Works' definition; and
- Be the subject of a separate 'pre-construction' environmental management plan outlining appropriate environmental controls, to be developed in consultation with DPI Water and OEH.

5.1.3 Other pre-construction minor works

In line with more recent wind farm approvals, it is also proposed to include other 'pre-construction minor works' as follows:

- *Building/road dilapidation surveys*
- *Investigative drilling, excavation or salvage*
- *Minor clearing or translocation of native vegetation*
- *Installation of environmental impact mitigation measures, fencing, enabling works; and*
- *Minor adjustments to services/utilities, etc.*

As with the road upgrades outlined above, these works are allowed in advance of detailed environmental management documentation and its approval, to allow some low risk activities to progress early in the lead up for construction works proper.

5.2 LOCATION OF INFRASTRUCTURE

A key issue for the project is the ability to site infrastructure based on detailed investigations in the detailed design phase. To provide clarity to the community and justification to the consent authority regarding the placement of infrastructure, this section considers requirements for turbine, tracks and ancillary infrastructure separately. The objective is to ensure a transparent mechanism that can demonstrate compliance. This is achieved by using clear micro-siting criteria.

5.2.1 Micrositing turbines, access tracks and electrical reticulation

The entire project area was assessed in original EA (2008), and statements of commitment based on avoiding and minimising impacts form part of the current approval. The original EA sought to retain flexibility to microsite infrastructure within the project area to take into account the site's constraints while ensuring all project commitments and conditions are met. In order to provide greater certainty to the community and other stakeholders, it is proposed the further clarification be provided in the form of clear micrositing criteria for turbines and other project infrastructure.

It is noted that the SWF site is geographically more varied than other NSW wind farm developments in the southern tablelands region, which are generally located on elevated plateaus. The SWF landforms are comprised of rugged ranges with narrow drainage lines and ridges. Factors that influence the infrastructure layout reflect these landscape features. These are primarily:

- The wind resource
- Constructability
- The distribution of biodiversity and heritage constraints

In advance of detailed design, a commensurate degree of flexibility is therefore required for the location of infrastructure. This is required to ensure the most efficient layout can be developed, in terms of both cost and minimising the footprint (and environmental impacts) of the project.

The proposed modification does not include any change to the currently approved indicative turbine layout, other than the removal of a number of turbine locations. Rather, the key modifications decrease the number of turbines from 282 to a maximum of 172, while increasing the dimensions and capacity of each turbine.

As outlined in the original EA, the indicative project layout, including turbine locations, will be finalised prior to construction and following selection of a construction contractor, final turbine selection, completion of further technical investigations and detailed constructability analysis.

Consistent with the existing approval, an updated plan of the final turbine number and layout, which will include location changes to access roads as contemplated by section 2.1.2 of the Modification 3 Report, will be submitted for the approval of the Secretary of DPE in accordance with condition 2.2A of the Project Approval.

In finalising the project layout AGL will apply the following micrositing criteria:

1. Consult with DPI lands, leaseholders and the CCC as required by Condition 2.2A of the Project Approval;
2. Ensure that all project infrastructure (including internal access roads and electrical reticulation, the locations of which will need to be finalised to address the final turbine locations) remain within the assessed Project Area;
3. Ensure that no turbine will be microsited by more than the 250 metres as contemplated in the original EA;
4. Prepare photomontages to demonstrate to the satisfaction of the Secretary how the visual impacts have been reduced as required by condition 2.2A of the Project Approval; and
5. Ensure that all conditions of the Project Approval and all commitments made in the Statement of Commitments (including commitments regarding visual impact, avoiding and minimising impacts to EEC, cultural heritage and soil/water impacts).

Specific to the location of access tracks, the EA illustrated indicative access track locations which were updated in the Modification 3 Report, essentially deleting a large proportion of the network due to the reduced turbine number in Stage 1 and the entire removal of Stage 2 infrastructure. As design details are developed the precision of access track and electrical reticulation will be refined.

While still indicative, this Submissions Report updates the indicative access track layouts (Appendix A). Primarily, it is noted that the network now:

- Includes two tracks to the west of the wind farm site, off Wilangee Road. These tracks were included in the EA (2008) (along with several additional tracks in this area now deleted) were but were not covered in the Modification Report 3. For completeness, these tracks which are likely to be required are now shown on the updated indicative track locations in Appendix A.
- Includes a track running parallel to Wilangee Road (shown as a 'new track' in Appendix A). This track was not included in the EA (2008). It is located mostly within the project site boundaries and is proposed in order to provide internal site access to various turbine clusters, so as to avoid use of the external, public road. This location is considered to be consistent with the intent of the EA and impacts can be managed with existing conditions.
    - Considering biodiversity impacts, the vegetation in this area has been mapped during the biodiversity assessment as Black Bluebush Shrubland and Bluebush Shrubland, a common vegetation type. No significant rocky outcrops are located in this area, it being down off the ridges and onto the plains and lower slopes. It is noted that all vegetation mapping is intended to be updated for the development of the Construction Environmental Management Plan and associated biodiversity subplans.
    - Considering cultural heritage impacts, this area was outside the study area. A statement of commitment addresses such areas, stating additional survey in partnership with the Aboriginal community would be undertaken.

It is noted that the original Environmental Assessment (EA 2008) addressed the impacts relating to the disturbance of 448 km of tracks. Under the Modification 3 layout, Stage 2 (concept approval) tracks no longer required total 216km and Stage 1 tracks no longer required total 57km. Therefore, the overall disturbance footprints for access tracks for the Modification 3 layout would be reduced by 273km.

The updated indicative access track layout is shown in Appendix A. This updated indicative layout will be further refined during detailed design. This may result in some access tracks being microsited by more than 250m while complying with the criteria outlined above.

In accordance with the EA (2008), underground electrical reticulation will connect a section of wind turbines. This underground electrical reticulation will typically follow the site access tracks, however, the route may take a shorter more direct routes between turbines in order to minimise the overall environmental disturbance. Overhead cabling may be used to connect a section of wind turbines to the project switchyard. This would minimise ground disturbance.

5.2.2 Substations, batch plants and ancillary facilities

As design details are developed the locations required for these components will also be improved. While the disturbance footprint (area) required for these components has not changed, new alternative locations for the switch yard, construction compound and batch plant are now shown in Appendix A. The new alternative locations are wholly within the project site boundaries and are considered consistent with the original approval.

The updated indicative infrastructure layout is shown in Appendix A. This will be finalised in accordance with the micrositing criteria outlined above and the existing Project Approval condition 4.1 which applies to 'Ancillary Facilities' and provides as follows:

> *4.1 The sites for Ancillary Facilities must satisfy the following criteria unless otherwise approved through the Construction Environmental Management Plan required under condition 5.2:*
>
> *a) be located within the site;*
>
> *b) have ready access to the road network;*
>
> *c) be located to minimise the need for heavy vehicles to travel through residential areas;*
>
> *d) be sited on relatively level land;*
>
> *e) be separated from nearest residences by at least 200 m (or at least 250 m for a temporary batch plant);*
>
> *f) not require vegetation clearing beyond that already required for the project; and*
>
> *g) not affect the land use of adjacent properties.*

5.3 ROTOR DIAMETER DISCREPANCIES

Within the original EA (2008) and the Modification 3 Report, a number of rotor diameters have been cited. Section 2.2.1 of the Modification 3 Report clearly seeks to increase the maximum rotor diameter to approximately 140m. The largest actual turbine model considered included a rotor with a diameter of approximately 140m which together with a hub height of 100m resulted in a minimum ground clearance of 29.5m. This potential minimum ground clearance of 29.5m was used in the updated bird and bat risk assessment (Appendix B of the Modification 3 Report), to ensure a precautionary / worst case approach, robust to any turbine selected.

Approval is sought as part of this modification to allow up to approximately 140 meters rotor diameter. Refer to Table 5.1 and Figure 5.1 for the maximum rotor diameter and minimum ground clearance considered in the approved versus Modification 3 layouts.

Table 5-1 Approved and modified wind turbines, showing maximum tip heights and rotor diameters

	Approved Turbine from Environmental Assessment 2008	Proposed Turbine in Modification 3 2016
Tip height	Maximum 155m	Maximum 180m
Rotor diameter	Maximum 110m	Nominal 140m.
Hub height	Maximum 100m	Nominal 110m[3]

[3] There may be minor variances to the rotor diameter and hub height, however these would not result in a material change to impacts.

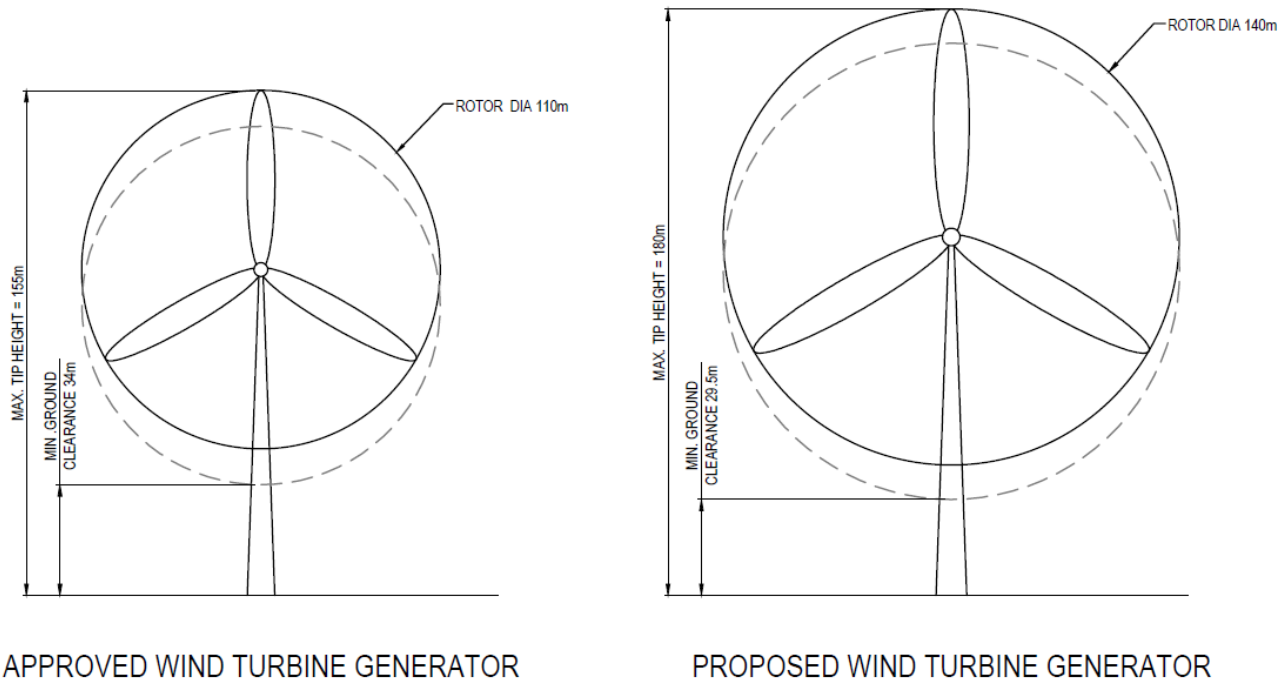


Figure 5-1 Approved and modified wind turbine envelopes, showing maximum rotor diameters (to scale).

5.4 DECOMMISSIONING AND REHABILITATION PLANNING

It is acknowledged that due to valid community comments about the removal of large scale redundant infrastructure, certainty is required regarding how the site will be decommissioned and rehabilitated, in advance of decommissioning.

While the existing approval condition provides for this certainty, it may be interpreted as requiring a level of detail that is not appropriate to the early stages of the project. Further, it does not reflect contemporary wind farm decommissioning conditions.

It is suggested that this condition be reworded to require an objective orientated outline of the plan, rather than specific details, that includes:

1. Clarity regarding review and consultation requirements
2. Clarity regarding that responsibilities of decommissioning (ie that the onus is on the proponent and not the landholder).

Suggested criteria include are set out below.

Table 5-2 Rehabilitation criteria

Feature	Objective
Development site (as a whole)	• Safe, stable and non-polluting • Minimise the visual impact of any above ground ancillary infrastructure agreed to be retained for an alternative use as far as is reasonable and feasible
Revegetation	• Restore native vegetation generally as identified in the EA
Above ground wind turbine infrastructure (excluding wind turbine pads)	• To be decommissioned and removed, unless the Secretary agrees otherwise
Above ground ancillary infrastructure	• To be decommissioned and removed, unless an agreed alternative use is identified to the satisfaction of the Secretary
Internal access roads	• To be decommissioned and removed, unless retention is agreed with the relevant landowners
Land use	• Restore and maintain land capability as described in the EA
Community	• Ensure public safety

5.5 SURRENDER OF CONCEPT APPROVAL

To provide the community and interested stakeholders with increased certainty, it is proposed that the Concept Plan Approval for the remaining 316 turbine locations will be surrendered. This will provide confirmation that Stage 2 would not be developed at any future date under the existing Concept Plan Approval.

5.6 CONSOLIDATED LIST OF CHANGES

The following table summarises changes required, as a result of Modification 3 and the surrender of the Concept Plan Approval.

Table 5-3 Summary changes requested

Issue	Suggested change
Project definition	In the Modified Project Approval, the project description should be to be amended to: • Refer to correct number of wind turbines: up to 172 • Refer to road upgrade works (set out below) • Remove reference to Stage 2 and the Concept Approval
Preconstruction minor works	It is requested that, consistent with recent approvals, the SWF Project allow for *"pre-construction minor works"* as outlined in this report.
Road upgrades (preconstruction)	It is requested that the following external upgrades be included in the Approval: *Prior to the commencement of construction (other than pre-construction minor works), where required, the Applicant shall undertake the following road upgrades to the reasonable satisfaction of the relevant Roads Authority:* • *Upgrade of Silverton Road* • *Intersection of Daydream Road and Silverton Road* • *Upgrade of Daydream Mine Road* • *Potential minor upgrade works to Wilangee Road* • *Where required by the relevant Roads Authority, other works identified in the original traffic impact assessment.*
Staging	As set out in the Modification 3 Report, the approval should reflect the ability to stage the project as follows: 1. Transmission line and substation works (includes works on the wind farm site as well as offsite, within the proposed transmission corridors) 2. Wind turbines and remaining infrastructure (contained within the wind farm site).
Noise assessment for the final turbine model and turbine layout	Condition 2.21 revised criteria: it is requested to revise the criteria provided by the EPA. A tabulated set of data for relevant receptors extending out to wind speeds of 13 m/s is attached in Appendix B of this Submissions Report.
Change to the water pipeline condition	Condition 2.38 addition: it is requested to add the following bold text to this condition. *Avoiding construction impacts to (**not including lawfully sourcing water from**) the water pipeline that extends between Umberumberka Reservoir and Broken Hill (SU253/HS1).*
Water sources	Condition 2.17: It should be stipulated that this condition only applies if water is being sourced from the Umberumberka Reservoir. *The Proponent shall consult with and comply with the requirement of the Dam Safety Committee relating to the safety of Umberumberka Reservoir under the Dams Safety Act 1978, **if water is being sourced from the Umberumberka Reservoir** .*

<table>
<tr><th>Issue</th><th>Suggested change</th></tr>
<tr><td>DPI updates</td><td>DP&E PA 2.53: It is proposed that this condition be modified to reflect any change to project status. For example, 6 monthly reports could be removed unless the project were in active development.

Existing: The Proponent shall within six months of this approval, update DRE of the progress of the consultation process identified in condition 2.51 and 2.52 and provide subsequent updates at maximum intervals of six months from the date of providing the initial update.

Proposed: The Proponent shall update DRE of the progress of the consultation process identified in condition 2.51 and 2.52 at maximum intervals of six months from the date of this approval.</td></tr>
<tr><td>Statements of Commitment (SOC)</td><td>It is noted that Statements of Commitment relating only to Stage 2 or the Concept Approval would not be required and should be deleted.

SOC 112 would be updated to provide certainty to Eldee Station air strip users:

Existing: Notify all relevant authorities (CASA, AirServices, Department of Defence) of the final position of all wind turbines.

Proposed: Notify all relevant authorities (CASA, AirServices, Department of Defence, Broken Hill Airport) and owners of local airfields (Eldee Station) of the final position of all wind turbines</td></tr>
<tr><td>Decommissioning and rehabilitation planning</td><td>Condition 1.12. It is suggested that this condition be reworded to require an objective orientated outline of the plan, rather than specific details, that includes the following rehabilitation criteria:

Feature — Objective
Development site (as a whole) — • Safe, stable and non-polluting; • Minimise the visual impact of any above ground ancillary infrastructure agreed to be retained for an alternative use as far as is reasonable and feasible
Revegetation — • Restore native vegetation generally as identified in the EA
Above ground wind turbine infrastructure (excluding wind turbine pads) — • To be decommissioned and removed, unless the Secretary agrees otherwise
Above ground ancillary infrastructure — • To be decommissioned and removed, unless an agreed alternative use is identified to the satisfaction of the Secretary
Internal access roads — • To be decommissioned and removed, unless retention is agreed with the relevant landowner
Land use — • Restore and maintain land capability as described in the EA
Community — • Ensure public safety</td></tr>
</table>

6 CONCLUSION

6.1 RESPONSES TO SUBMISSIONS

In considering the issues raised in public and agency submissions relating to the proposed Modification 3 application, the proponent has demonstrated that the issues are largely covered by the existing environmental assessments and that the issues can be effectively managed with the implementation of the project specific conditions and environmental management framework that form existing commitments of the project.

One additional measure (a change to SOC 112) is proposed.

As well as providing a response to each issue raised, this report has clarified specific issues and requested specific wording changes to the approval conditions, where necessary to provide for the efficient and successful development of the SWF.

6.2 JUSTIFICATION FOR THE CHANGES

For most impact areas, the Modification 3 Report, when considered with the proposed mitigation measures, would have a lesser environmental impact than the Approved Project. Compared to the original Project and Concept Plan Approval (including Stage 2) for up to 598 turbines, the reduction in turbines proposed is substantial. The lesser number of turbines will reduce impact on:

- Visual amenity impacts for several viewpoints including from the Silverton township
- Bird and bat collision risk
- Native vegetation (when all vegetation types are combined)
- Barrier Range Dragon (*Ctenophorus mirrityana*) 'hot spots' and significant rock outcrop habitat
- Soil and water (potential for erosion and impacts on drainage lines and sensitive features)
- Less heritage sites would be affected, original mitigation strategies would still apply

Additionally,

- Noise impacts would remain compliant with the relevant criteria.
- Aviation risks remain low

Minor changes to existing conditions have been proposed to ensure that any new impacts, where identified, are restricted and would not be unacceptable.

The development of the Silverton Wind Farm will assist in realising the three goals in the NSW Renewable Energy Action Plan which was released in September 2013:

- Deliver renewable energy investment in NSW
- Build community support – AGL will continue engaging with the Silverton township and surrounding areas
- Grow renewable energy expertise – specifically, the Modification 3 Application is seeking to deploy the latest development in wind turbine technology

The Silverton Wind Farm site has a high quality wind resource and the project will contribute to meeting the Australian Government, NSW Government and AGL greenhouse gas emissions and renewable energy policies. Construction of the project will provide significant benefit to the local and NSW economies as well as provide protection and improved management of sensitive local biodiversity features including the Barrier Range Dragon and Porcupine Grass CEEC critically endangered ecological community.

7 REFERENCES

Biosis Research (2007). *Comparison of potential collision risk for birds of four different wind turbines for Flinders Island, Tasmania*. Report submitted to the Department of the Environment and Water Resources, Canberra.

Branco C 1999 The clinical stages of vibroacoustic disease. Paper published by the US National Library of Medicine National Institute of Health. Viewed online 20 September 16 at http://www.ncbi.nlm.nih.gov/pubmed/10189154

British Landscape Institute (March 2011). Photography and photomontage in landscape and visual impact assessment Advice Note 01/11

Chapman S 2013 How the factoid of wind turbines causing 'vibroacoustic disease' came to be 'irrefutably demonstrated'. University of Wollongong, Australia

Green Bean Design (2008). Silverton Wind Farm Landscape and Visual Impact Assessment.

Natural Heritage (2006) Visual representation of windfarms: good practice guidance

NGH Environmental 2008. Silverton Wind Farm Environmental Assessment (EA). Report prepared May 2008.

Silverton Wind Farm Developments, with assistance from NGH Environmental 2009. Preferred Project and Submissions Report (SR). Report prepared January 2009.

Smales, I. & S. Muir (2005). Modelled cumulative impacts on the Tasmanian Wedge-tailed Eagle of wind farms across the species' range. *Report for the Department of the Environment and Heritage*. Melbourne: Biosis Research Pty Ltd. Available from: http://www.environment.gov.au/epbc/publications/pubs/wind-farm-bird-risk-tasmanianwedgetailedeagle.pdf.Muir 2005; WBPWF FR 2007b

Woolnorth Bluff Point Wind Farm Final Report (W.B.P.W.F.FR), (2007a). *Woolnorth Bluff Point Wind Farm Behaviour of Birds Around Turbines Final Report*. Roaring 40s Renewable Energy Pty Ltd, Hobart.

Woolnorth Bluff Point Wind Farm Final Report (W.B.P.W.F.FR), (2007b). *Woolnorth Bluff Point Wind Farm Eagle Observations (16/11/2006 - 18/02/2007) Final Report*. Roaring 40s Renewable Energy Pty Ltd, Hobart.

APPENDIX A MAP SET

This map set has been revised, as described in this Submissions Report, and shows the most up to date indicative infrastructure locations.

A.1 REVISED MODIFICATION 3 LAYOUT

A.1.1 Infrastructure locations (includes infrastructure that would now not be developed).

A.1.2 Proposed infrastructure locations (shows the most up to date indicative infrastructure locations).

aurecon

Legend

- WTG Location (retained)
- WTG Location (no longer required)
- Water Supply Pipeline
- Existing Roads
- External Roads (potentially requiring upgrade works)
- Transmission Line
- Wind Farm Site

Tracks

- Approved Tracks
- Approved Tracks (no longer required)
- New Tracks

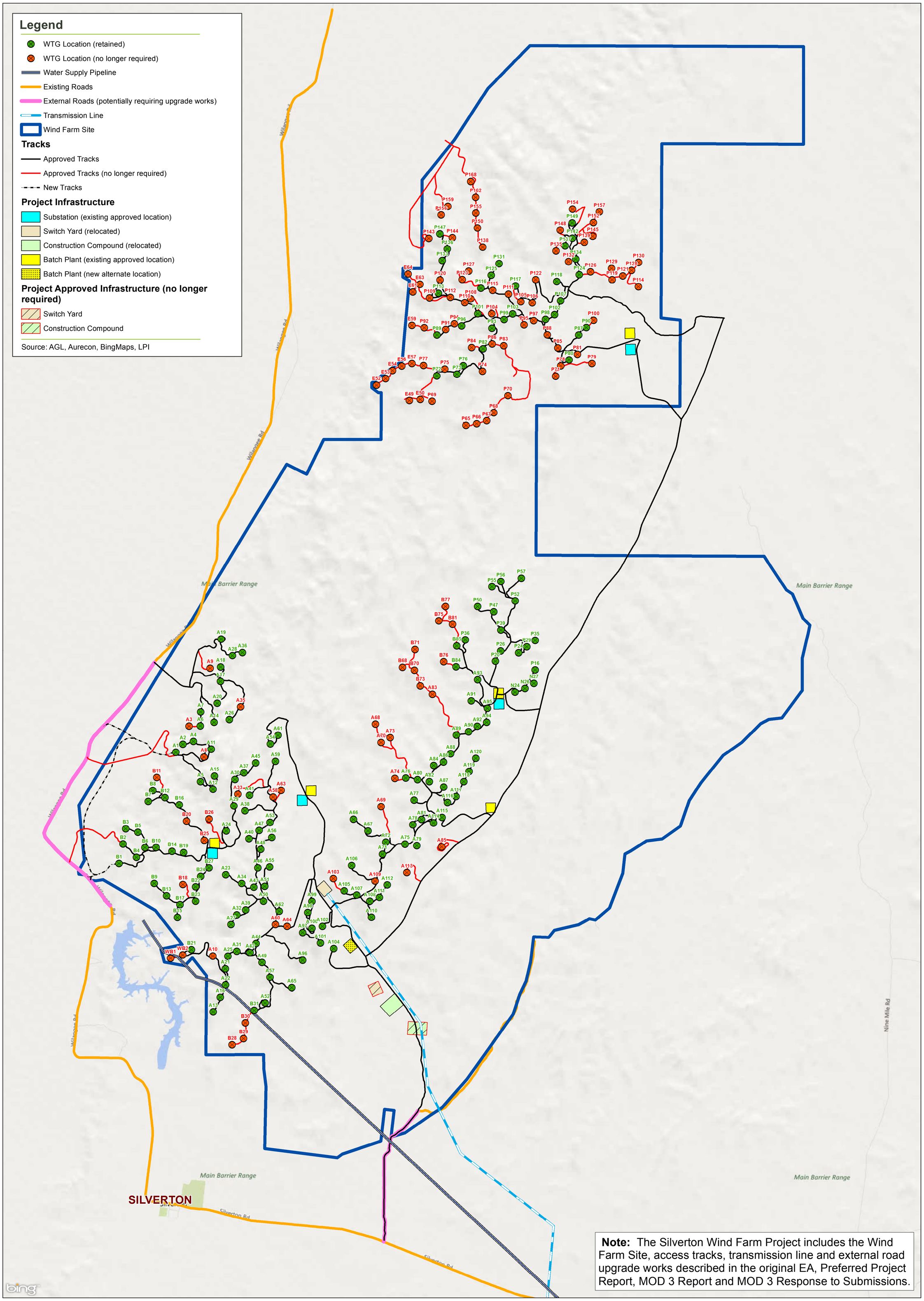
Project Infrastructure

- Substation (existing approved location)
- Switch Yard (relocated)
- Construction Compound (relocated)
- Batch Plant (existing approved location)
- Batch Plant (new alternate location)

Project Approved Infrastructure (no longer required)

- Switch Yard
- Construction Compound

Source: AGL, Aurecon, BingMaps, LPI



Note: The Silverton Wind Farm Project includes the Wind Farm Site, access tracks, transmission line and external road upgrade works described in the original EA, Preferred Project Report, MOD 3 Report and MOD 3 Response to Submissions.

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Date: 27/09/2016 Version: 1

Coordinate system: MGA Zone 54

Silverton Wind Farm

Infrastructure Locations

aurecon

Legend

- WTG Location (retained)
- Water Supply Pipeline
- Existing Roads
- External Roads (potentially requiring upgrade works)
- Transmission Line
- Wind Farm Site

Tracks

- Approved Tracks
- New Tracks

Project Infrastructure

- Substation (existing approved location)
- Switch Yard (relocated)
- Construction Compound (relocated)
- Batch Plant (existing approved location)
- Batch Plant (new alternate location)

Source: AGL, Aurecon, BingMaps, LPI

Willyama Rd

Main Barrier Range

Nine Mile Rd

SILVERTON

Silverton Rd

Note: The Silverton Wind Farm Project includes the Wind Farm Site, access tracks, transmission line and external road upgrade works described in the original EA, Preferred Project Report, MOD 3 Report and MOD 3 Response to Submissions.

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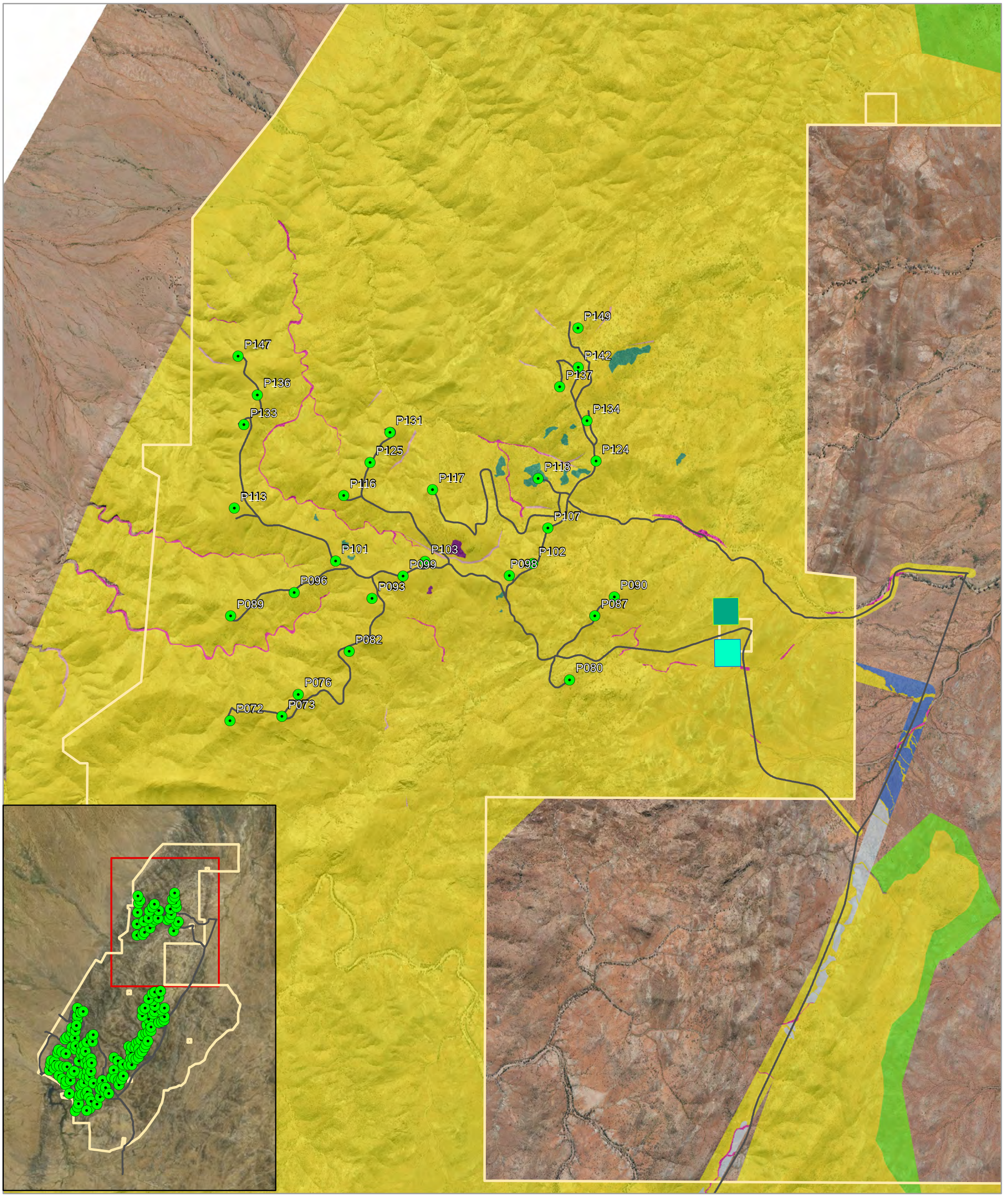
Date: 29/09/2016 Version: 1

Coordinate system: MGA Zone 54

Silverton Wind Farm

Proposed Infrastructure Locations

A.2 VEGETATION TYPES



VEGETATION TYPES - NORTH

Silverton Wind Farm Mod 3

- Wind Farm Site
- Indicatie turbine locations for Mod 3
- Indicative access tracks

Indicative location of project infrastrucutre

- Substation
- Batch Plant

Vegetation types

- Black Bluebush Shrubland (ID153)
- Black Oak Woodland
- Bluebush Shrubland (ID155)
- Chenopod
- Mulga - Dead finish (ID123)
- Mulga/Red Mallee Shrubland (VEG1)
- Prickly wattle Shrubland (ID136)
- River Red Gum woodland (ID41)

0 0.25 0.5 1 Kilometers

A3 @ 1:40000
Ref: 5395 1a
Author: JB

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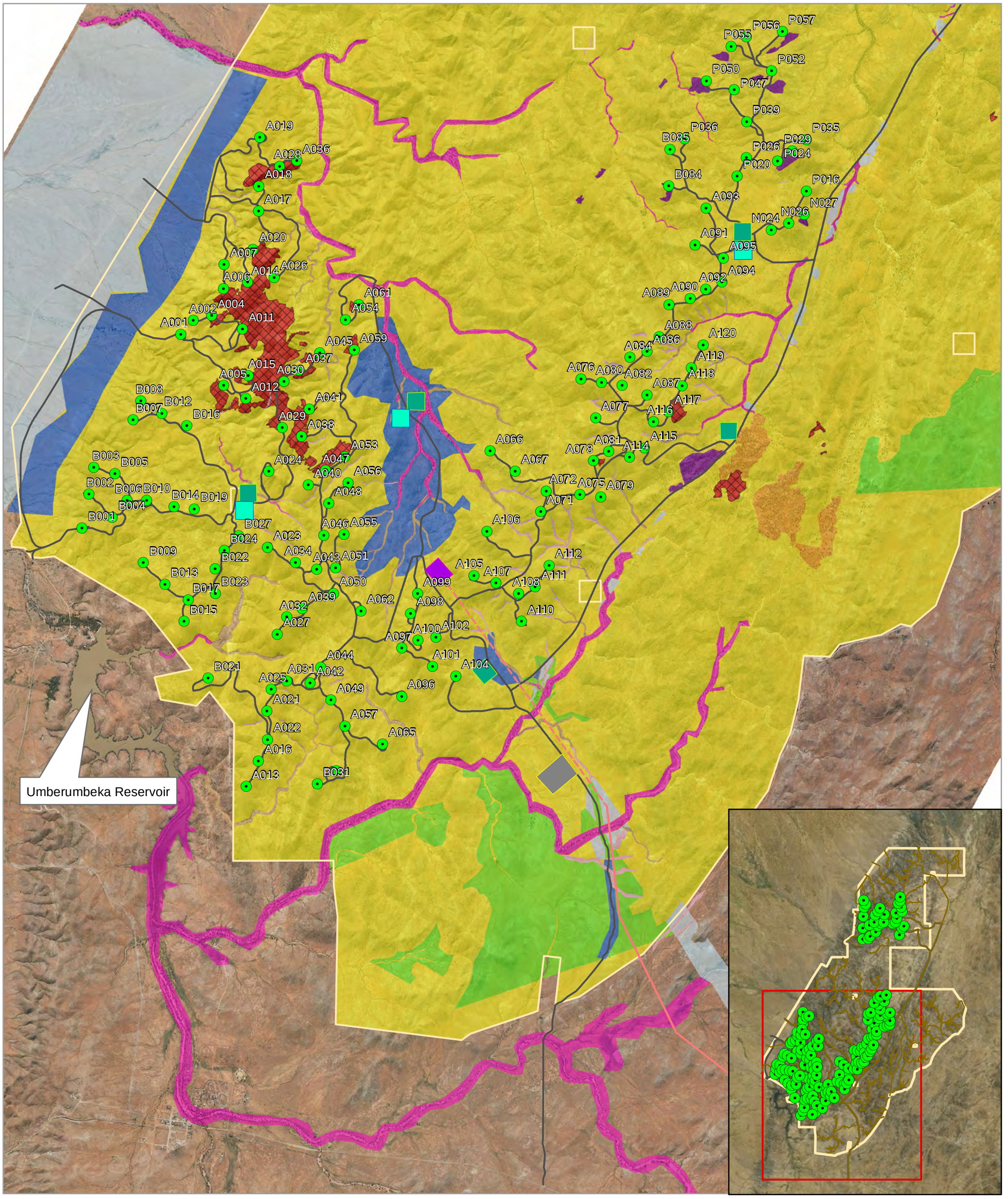
Notes:
- Data collected by NGH Environmental (2012)
- Client data courtesy of Client, received 2013 and 2016



VEGETATION TYPES - SOUTH

Silverton Wind Farm Mod 3

- Wind Farm Site
- Indicatie turbine locations for Mod 3
- Indicative access tracks
- Indicative transmission line

Indicative location of project infrastrucutre

- Substation
- Switch Yard
- Construction Compound
- Batch Plant
- CEEC NSW TSC

Vegetation types

- Black Bluebush Shrubland (ID153)
- Black Oak Woodland
- Bluebush Shrubland (ID155)
- Chenopod
- Chenopod – Red Mallee Woodland/Shrubland (VEG2)
- Mulga - Dead finish (ID123)
- Mulga/Red Mallee Shrubland (VEG1)
- Porcupine Grass sparse woodland (ID359)
- Prickly wattle Shrubland (ID136)
- River Red Gum on rocky creeks
- River Red Gum woodland (ID41)

Notes:
- Data collected by NGH Environmental (2012)
- Client data courtesy of Client, received 2013 and 2016

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Author: JB

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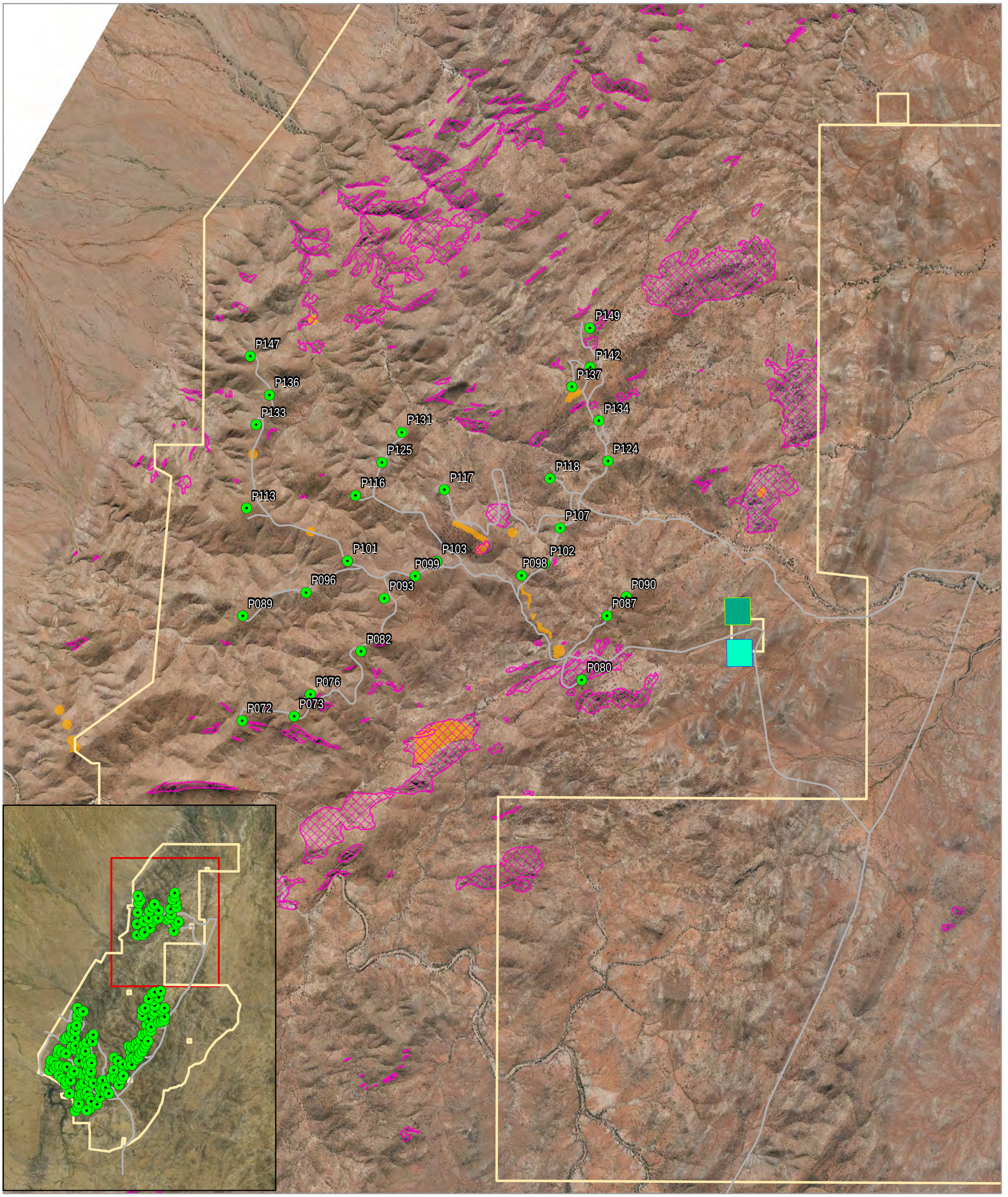
A.3 FAUNA FEATURES



FAUNA FEATURES - NORTH

Silverton Wind Farm Mod 3

- Wind Farm Site
- Indicative turbine locations for Mod 3
- Indicative access tracks

Indicative location of project infrastrucutre

- Substation
- Batch Plant

- Barrier Range Dragon habitat hotspots
- Significant rock outcrop (potential dragon habitat)

0 0.25 0.5 1 Kilometers

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Author: JB

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Notes:
- Data collected by NGH Environmental (2012)
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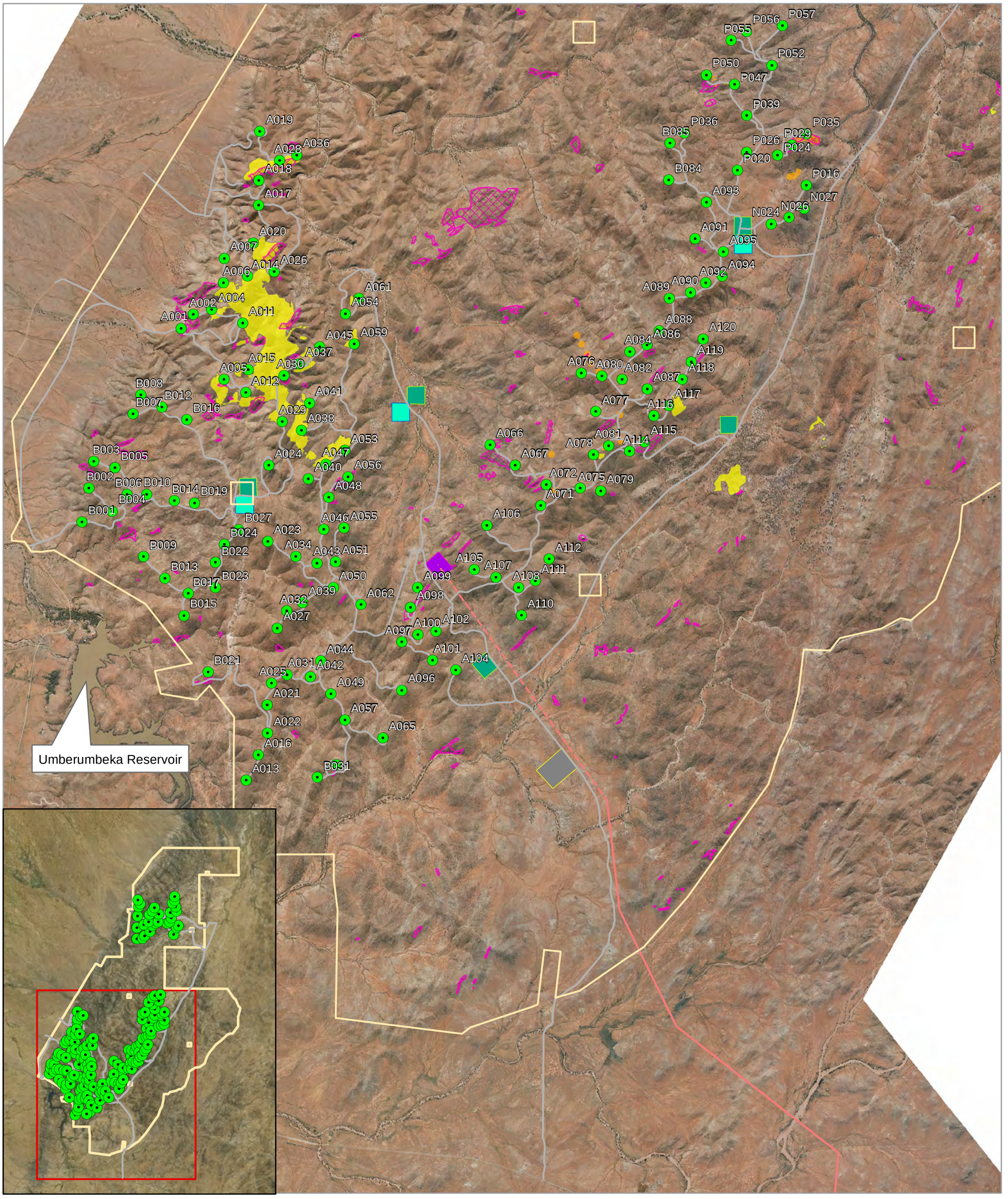

FAUNA FEATURES - SOUTH

Silverton Wind Farm Mod 3

- Wind Farm Site
- Indicative turbine locations for Mod 3
- Indicative access tracks
- Indicative transmission line

Indicative location of project infrastrucutre

- Substation
- Switch Yard
- Construction Compound
- Batch Plant

- Significant rock outcrop (potential dragon habitat)
- Barrier Range Dragon habitat hotspots
- Spinifex (Porcupine CEEC)

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Author: JB

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Notes:
- Data collected by NGH Environmental (2012)
- Client data courtesy of Client, received 2013 and 2016

A.4 HERITAGE FEATURES

HERITAGE FEATURES - NORTH

Silverton Wind Farm Mod 3

- Wind Farm Site
- Indicative turbine locations for Mod 3
- Indicative access tracks

Indicative location of project infrastructure

- Substation
- Batch Plant

- Indigenous sites
- Non-indigenous sites

0 0.25 0.5 1 Kilometers

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Ref: 5395 3a
Author: JB

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Notes:
- Data collected by NGH Environmental (2012)
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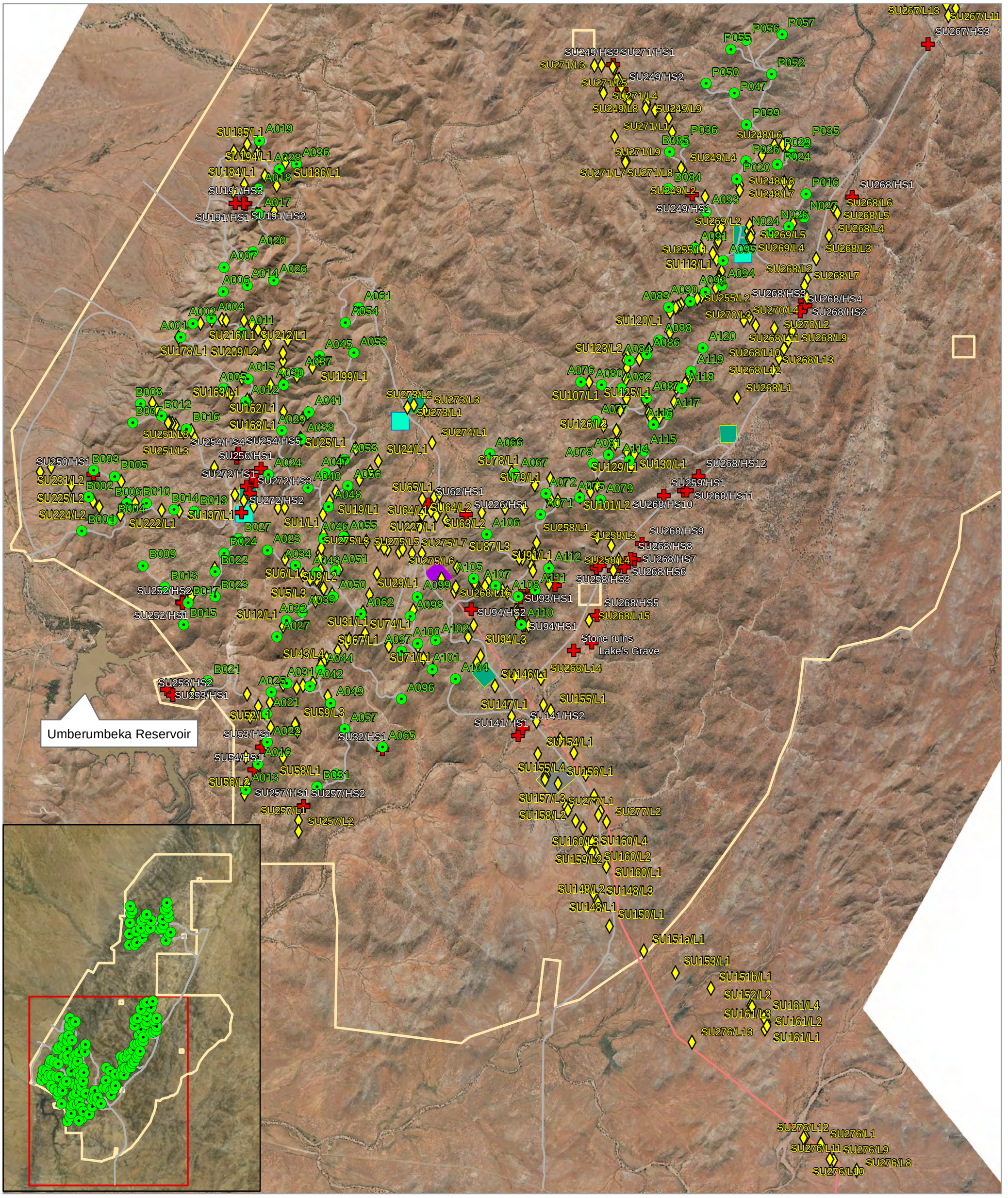

HERITAGE FEATURES - SOUTH

Silverton Wind Farm Mod 3

- Wind Farm Site
- Indicative turbine locations for Mod 3
- Indicative access tracks
- Indicative transmission line

Indicative location of project infrastrucutre

- Substation
- Switch Yard
- Construction Compound
- Batch Plant

- Indigenous sites
- Non-indigenous sites

0 0.5 1 2 Kilometers

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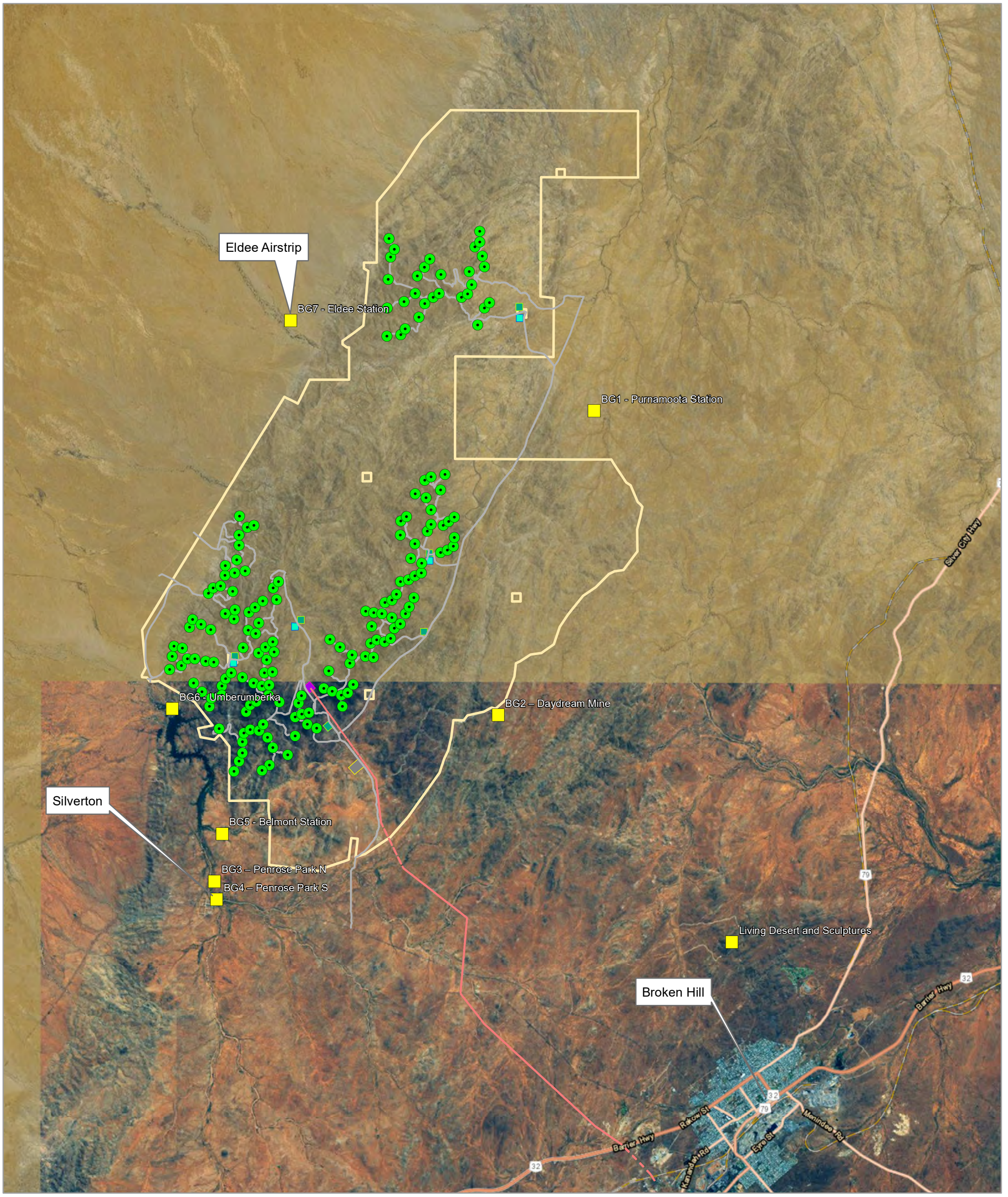
Notes:
- Data collected by NGH Environmental (2012)
- Client data courtesy of Client, received 2013 and 2016

A.5 RECEIVERS



RECEIVERS

Silverton Wind Farm Mod 3

- Receivers
- Wind Farm Site
- Indicative turbine locations for Mod 3
- Indicative transmission line
- Indicative access tracks

Indicative location of project infrastrucutre

- Substation
- Switch Yard
- Construction Compound
- Batch Plant

0 1 2 4 Kilometers

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Ref: 5395 4
Author: JB

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Notes:
- Data collected by NGH Environmental (2012)
- Client data courtesy of Client, received 2013 and 2016

APPENDIX B NOISE CRITERIA

With reference to the EPA's submission, given that the wind speed reference height is now at hub height (previous conditions were at 10m), SLR consider it would be appropriate to extend the wind speed range higher in the table, as in some instances compliance may become more critical at wind speeds of 9 m/s or higher. A tabulated set of data for all receptors extending out to 13 m/s follows.

	Windspeed at 10m AGL	**3.0**	**4.0**	**5.0**	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**	**11.0**	**12.0**
	Windspeed at Hub Height	**4.0**	**5.0**	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**	**11.0**	**12.0**	**13.0**
Background Location:	**BG7 Eldee Station**										
B/G Regression Line	0.0007x3 + 0.0307x2 - 0.3569x + 41.894	41.0	41.0	41.0	41.1	41.4	41.7	42.1	42.6	43.2	44.0
SA EPA Criteria		46.0	46.0	46.0	46.1	46.4	46.7	47.1	47.6	48.2	49.0
NIGHT BG Regression Line	-0.0148x3 + 0.4849x2 - 4.2764x + 46.423	36.1	35.3	35.0	35.2	35.7	36.4	37.3	38.4	39.4	40.3
EPA Night Criteria		41.1	40.3	40.0	40.2	40.7	41.4	42.3	43.4	44.4	45.3
WHO Criteria		46.0	46.0	46.0	46.1	46.4	46.7	47.1	47.6	48.2	49.0
SL2		21.0	22.0	24.0	27.4	30.0	31.7	31.8	31.8	31.8	31.8
Background Location:	**BG6 Umberumberka**										
B/G Regression Line	0.0099x3 - 0.2051x2 + 2.277x + 26.124	32.6	33.6	34.5	35.4	36.3	37.2	38.3	39.5	41.0	42.8
SA EPA Criteria		37.6	38.6	39.5	40.4	41.3	42.2	43.3	44.5	46.0	47.8
NIGHT BG Regression Line	-0.0045x3 + 0.0745x2 + 1.631x + 16.363	23.8	25.8	27.9	29.9	31.9	33.8	35.6	37.3	38.9	40.3
EPA Night Criteria		35.0	35.0	35.0	35.0	36.9	38.8	40.6	42.3	43.9	45.3
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.0	47.8
SL6		30.9	31.9	33.9	37.4	39.9	41.6	41.7	41.7	41.7	41.7
Background Location:	**BG5 Belmont Station**										
B/G Regression Line	0.0049x3 + 0.0304x2 - 0.1579x + 22.307	22.5	22.9	23.5	24.4	25.5	26.9	28.7	30.8	33.3	36.2
SA EPA Criteria		35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.8	38.3	41.2
NIGHT BG Regression Line	-0.0104x3 + 0.4675x2 - 3.7784x + 26.316	18.0	17.8	18.2	19.2	20.7	22.6	24.9	27.5	30.3	33.4
EPA Night Criteria		35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.3	38.4
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
SL9		24.6	25.6	27.6	31.1	33.6	35.3	35.4	35.4	35.4	35.4

	Windspeed at 10m AGL	**3.0**	**4.0**	**5.0**	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**	**11.0**	**12.0**
	Windspeed at Hub Height	**4.0**	**5.0**	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**	**11.0**	**12.0**	**13.0**
Background Location:	**BG3 Penrose North**										
B/G Regression Line	0.0165x3 - 0.2431x2 + 1.007x + 27.491	28.7	28.5	28.3	28.3	28.4	28.9	29.8	31.1	33.1	35.7
SA EPA Criteria		35.0	35.0	35.0	35.0	35.0	35.0	35.0	36.1	38.1	40.7
NIGHT BG Regression Line	0.0057x3 + 0.1112x2 - 2.1343x + 29.363	23.0	22.2	21.8	21.8	22.3	23.3	24.8	26.9	29.6	32.9
EPA Night Criteria		35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	37.9
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
S24a		20.2	21.2	23.2	26.7	29.2	30.9	31.0	31.0	31.0	31.0
S22		21.4	22.4	24.4	27.9	30.4	32.1	32.2	32.2	32.2	32.2
S21		21.2	22.2	24.2	27.7	30.2	31.9	32.0	32.0	32.0	32.0
S20		21.1	22.1	24.1	27.5	30.1	31.8	31.9	31.9	31.9	31.9
S19		20.7	21.7	23.7	27.1	29.7	31.4	31.5	31.5	31.5	31.5
S27		20.7	21.7	23.7	27.2	29.7	31.4	31.5	31.5	31.5	31.5
Background Location:	**BG4 Penrose South**										
B/G Regression Line	0.0157x3 - 0.2252x2 + 0.5004x + 38.792	38.2	37.6	37.1	36.6	36.4	36.5	37.0	37.9	39.5	41.7
SA EPA Criteria		43.2	42.6	42.1	41.6	41.4	41.5	42.0	42.9	44.5	46.7
NIGHT BG Regression Line	-0.0138x3 + 0.6094x2 - 6.2532x + 46.65	30.5	28.9	28.1	28.0	28.6	29.7	31.3	33.2	35.5	38.0
EPA Night Criteria		35.5	35.0	35.0	35.0	35.0	35.0	36.3	38.2	40.5	43.0
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.7
S24b		20.5	21.5	23.4	26.8	29.3	31.0	31.1	31.1	31.1	31.1
S10		20.0	20.9	22.8	26.2	28.7	30.4	30.5	30.5	30.5	30.5
S11		19.6	20.6	22.4	25.8	28.3	30.0	30.1	30.1	30.1	30.1
S12		19.6	20.6	22.5	25.8	28.3	30.0	30.1	30.1	30.1	30.1
S14		20.4	21.3	23.2	26.6	29.1	30.8	30.9	30.9	30.9	30.9
S15		20.2	21.1	23.0	26.4	28.9	30.6	30.7	30.7	30.7	30.7
S16		20.3	21.2	23.1	26.4	29.0	30.6	30.7	30.7	30.7	30.7
S17		20.5	21.5	23.4	26.7	29.2	30.9	31.0	31.0	31.0	31.0
S18		20.4	21.3	23.2	26.6	29.1	30.8	30.9	30.9	30.9	30.9
S25a		20.2	21.1	23.0	26.4	28.9	30.6	30.7	30.7	30.7	30.7
S25b		20.3	21.2	23.1	26.5	29.0	30.7	30.8	30.8	30.8	30.8
S28		20.4	21.4	23.3	26.6	29.1	30.8	30.9	30.9	30.9	30.9
S29		19.7	20.6	22.5	25.9	28.4	30.1	30.2	30.2	30.2	30.2
Background Location:	**BG2 Daydream Mine**										
B/G Regression Line	0.0351x3 - 0.8824x2 + 7.2253x + 13.639	30.7	32.1	32.8	33.0	32.9	32.8	32.8	33.1	33.9	35.6
SA EPA Criteria		35.7	37.1	37.8	38.0	37.9	37.8	37.8	38.1	38.9	40.6
NIGHT BG Regression Line	-0.0029x3 + 0.056x2 + 0.8134x + 19.734	23.7	24.8	26.0	27.2	28.3	29.5	30.6	31.6	32.5	33.4

	Windspeed at 10m AGL	**3.0**	**4.0**	**5.0**	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**	**11.0**	**12.0**
	Windspeed at Hub Height	**4.0**	**5.0**	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**	**11.0**	**12.0**	**13.0**
EPA Night Criteria		35.0	35.0	35.0	35.0	35.0	35.0	35.6	36.6	37.5	38.4
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
SL10		20.8	21.7	23.7	27.0	29.5	31.2	31.3	31.3	31.3	31.3
Background Location:	**BG1 Purnamoota Station**										
B/G Regression Line	-0.0013x3 + 0.0362x2 - 0.0633x + 31.996	32.2	32.4	32.6	32.9	33.1	33.4	33.7	33.9	34.2	34.4
SA EPA Criteria		37.2	37.4	37.6	37.9	38.1	38.4	38.7	38.9	39.2	39.4
NIGHT BG Regression Line	-0.0034x3 + 0.1116x2 - 0.4893x + 23.754	23.4	23.7	24.1	24.6	25.2	25.9	26.6	27.3	28.1	28.8
EPA Night Criteria		35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
SL34		16.1	16.9	18.6	21.8	24.3	25.9	26.0	26.0	26.0	26.0