

# Silverton Wind Farm

Community Consultative Committee  
Meeting No.CCC-023

Thursday, 27 July 2017



# Agenda

1

Welcome

2

Previous  
minutes

3

Project update

- Overview
- Wind Farm Works
- Connection Works

4

Community  
relations  
update

5

Topics of interest

- Visual impact  
assessment
- Horses and wind  
farms

6

Other  
business



# 1. Welcome



## 2. Previous minutes



## 2. Previous minutes

### Action items



Item	Action	Status	Who
5.19.01	AGL to arrange site tour for interested Silverton community members and the Broken Hill City Council.	Open	KL – 5/17
5.20.03	AGL is continuing to seek information from the horse stud farm and riding centre which has the Delabore Wind Farm operating on its land.	Open	AGL – 7/17
4.22.05	Naomi Schmidt to forward copy of email from Mark Coulton on telecommunication upgrade options to AGL	Open	NS – 6/17

- Overview
- Wind Farm Works
- Connection Works

## 3. Project update

# 3. Project update

## Silverton Wind Farm



### Silverton Wind Farm

- Located in the Barrier Ranges approximately 5km north of the Silverton township
- Generation capacity of 200 MW
- Wind turbines: 58 x GE 3.43-130
- Annual Energy Production (AEP)
  - ~780,000 MWh (capacity factor of 44.5%)
  - Powering more than 137,000 average Australian homes
- Connects into TransGrid's existing 220 kV substation at Broken Hill
- Design life of 25 years



# 3. Project update

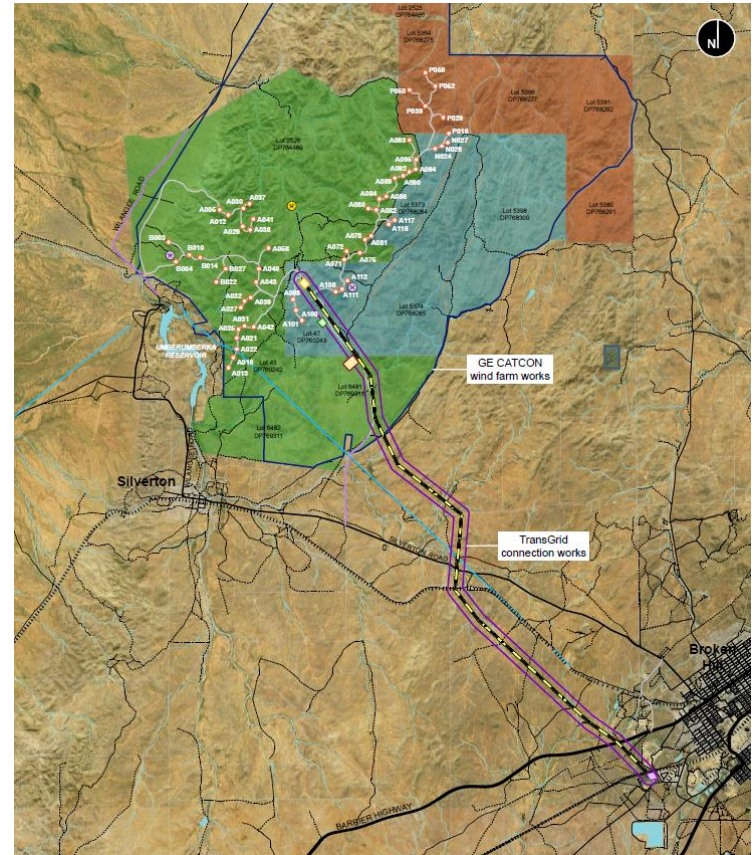
## Silverton Wind Farm



### Scope of works

- Silverton Wind Farm consists of two main scope of work:
  - Wind Farm Works (GE-CATCON)
  - Connection Works (TransGrid)
- AGL has prepared an Overview Environmental Management Strategy (OEMS) in accordance with the project approval
- Overview activities include
  - Community enhancement
  - Community consultative committee
  - Project website

<https://www.agl.com.au/about-agl/how-we-source-energy/renewable-energy/silverton-wind-farm>





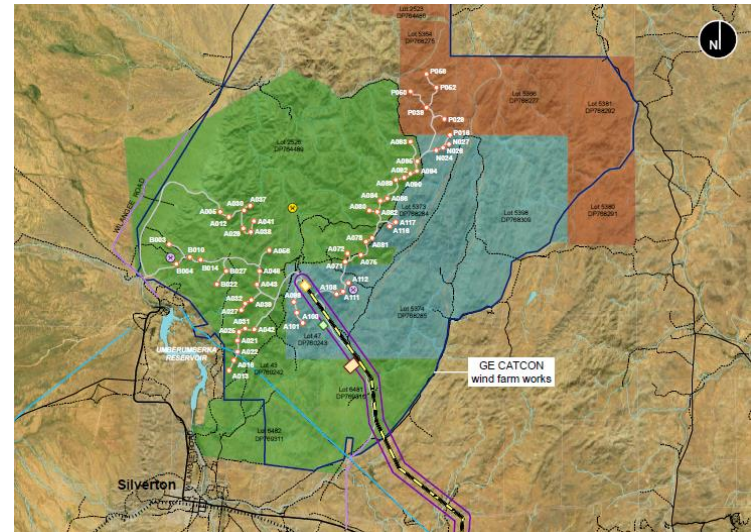
# 3. Project update

## Silverton Wind Farm



### Wind Farm Works

- GE-CATCON (joint venture) has been engaged to deliver the wind farm works
  - Engineer, Procure, Construct (EPC) Contract
- Scope of works, includes
  - 58 x GE 3.43-130 wind turbines
  - 33kV electrical reticulation (underground and overhead) and 33kV switchyard
  - Site access roads and O&M buildings
- Pre-construction minor works commenced on 4 April 2017
- Construction works commenced on 11 May 2017



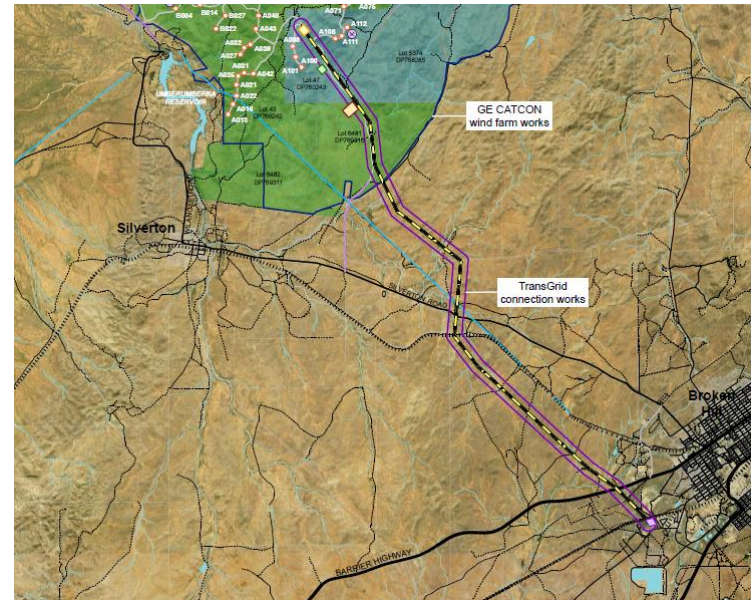
# 3. Project update

## Silverton Wind Farm



### Connection Works

- TransGrid (Network Services Provider) has been engaged to deliver the connection works for the wind farm
  - Project Agreement (construction)
- Scope of works, includes
  - Wind farm 220kV substation
  - ~25km of 220kV transmission line
  - New circuit breaker in TransGrid's existing 220kV Broken Hill substation
  - Communication works (within network)
- Construction works commenced on early June 2017 (bulk earthworks to the wind farm 220kV substation)



# 3. Project update

## Wind Farm Works



### Construction works

- GE-CATCON has progressed the following construction works:
  - Access road to the wind farm 220kV substation has been completed
  - Cleared ~20km of access roads
  - Bulk earthworks for the 220kV wind farm substation bench and adjacent 33kV switchyard bench
  - Five wind turbine foundation have been excavated

### External roadworks

- GE-CATCON commenced maintenance activities along Daydream Mine Road





# 3. Project update

## Wind Farm Works



### Construction works

- Progress photos





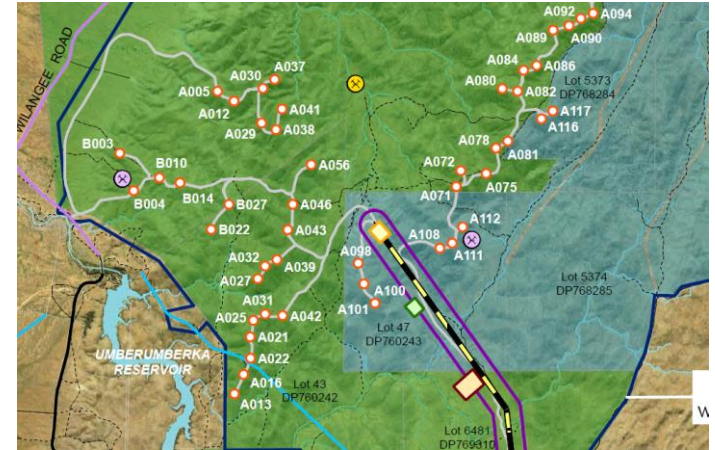
# 3. Project update

## Wind Farm Works



### Onsite Rock and Sand Quarries

- Preliminary geotechnical investigations were complete to determine potential quarry locations within the southern portion of the wind farm.
- Extractive licences were obtained for two rock quarries and one sand quarry (refer to map) in January 2017.
- Mawsons completed geotechnical investigations in order to validate the suitability of the material for use in concrete.
- Mawsons assessment concluded:
  - The presence of secondary mineralisation means that the rock quarries would not be suitable; and
  - Local sand would need to be taken off site for washing
- Material will now be sourced from local suppliers:
  - Aggregates (Mawsons Broken Hill Quarries)
  - Natural Sand (Consolidated Mining & Civil)
- GE-CATCON has updated the traffic management plan to address the new source of material from local suppliers.



# 3. Project update

## Wind Farm Works



### Road Upgrade and Maintenance Strategy

- GE-CATCON has revised the Road Upgrade and Maintenance Strategy (revision 2) to incorporate the alignment assessment along Silverton Road.
- The Road Upgrade and Maintenance Strategy forms the basis of the external roadworks, including:
  - Broken Hill Short bypass
  - Silverton Road / Daydream Mine Road intersection
  - Daydream Mine Road maintenance and upgrade (incl site access)
  - Silverton Road maintenance and pull over bays
- AGL is progressing Works Authorisation Deeds (WADs) with RMS in parallel with GE-CATCON completing the detailed design of the agreed concepts.

Revision	Reason for Revisions	Date of Revision
2	Issued for Construction	
Prepared by:	C. Patterson	30.06.17
Reviewed by:	P. Busolin	03.07.17
Approved by:	P. Busolin	03.07.17

Doc No: B1-2-5	Rev: 2	Rev Date: 30.06.17	Authorised by: Project Manager	Page 1 of 37
S:\4.3. Document Control\4.6. Level B1 Documentation\B1-2-5 Road Upgrade & Maintenance Strategy\B1-2-5 Road Upgrade and Maintenance Strategy_B1.docx				

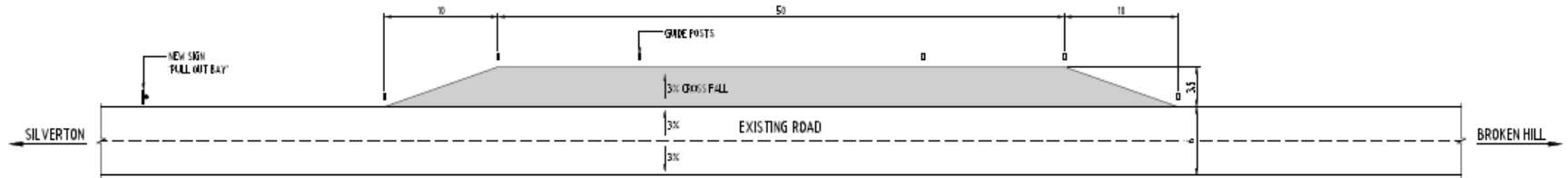
# 3. Project update

## Wind Farm Works

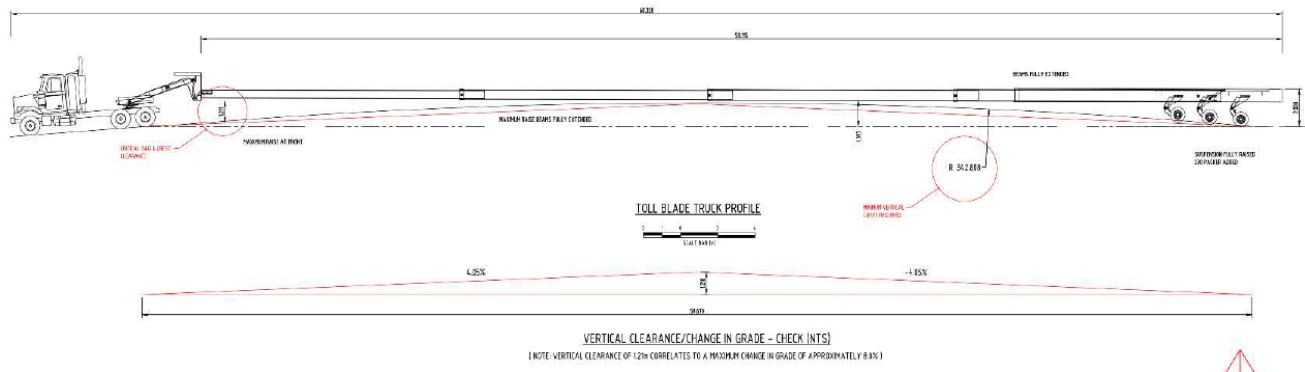


### Road Upgrade and Maintenance Strategy

- Two pull over bays at approx. 5km apart on Silverton Road between Daydream Mine Road and the Bypass Road.



SILVERTON ROAD PASSING BAY DETAIL  
SCALE 1:100



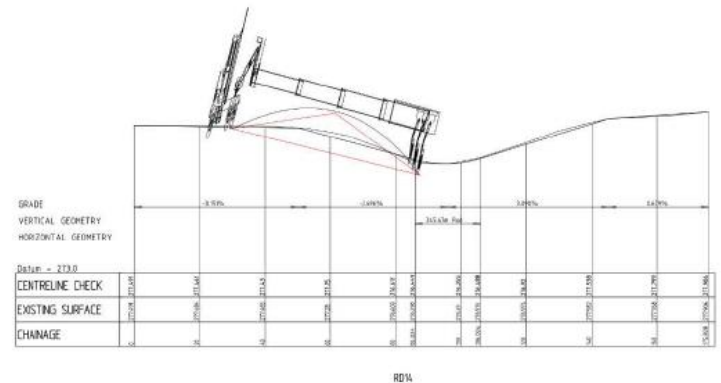
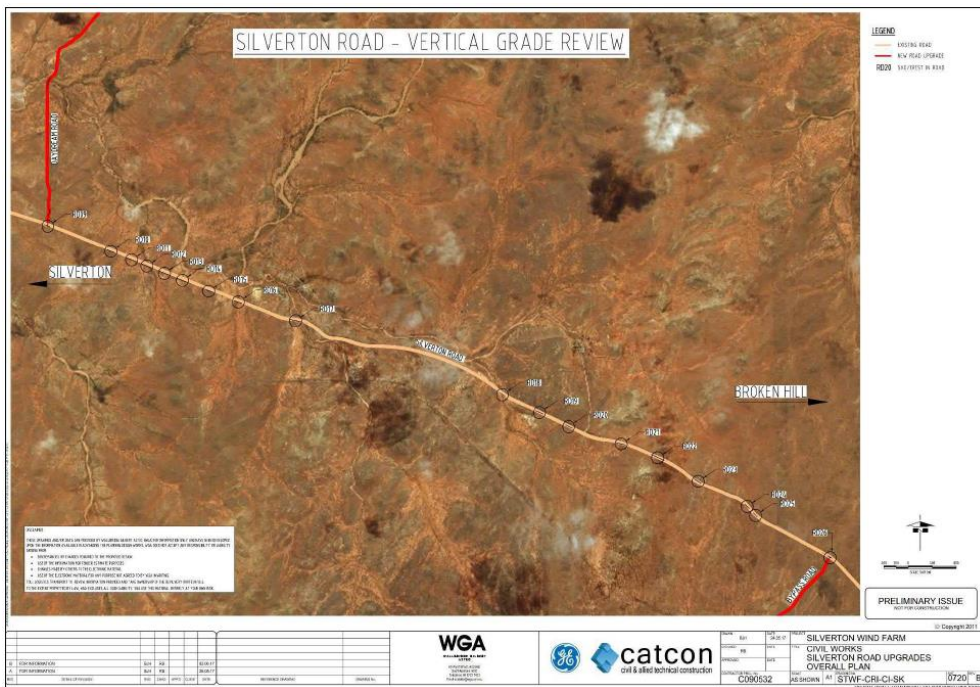
# 3. Project update

## Wind Farm Works



### Road Upgrade and Maintenance Strategy

- Survey of all floodways along Silverton Road (between Broken Hill and Daydream Mine Road) has been completed to ensure safe movement of over dimensional loads to and from Silverton Wind Farm site. The assessment has confirmed that no upgrades to the existing floodways are required.





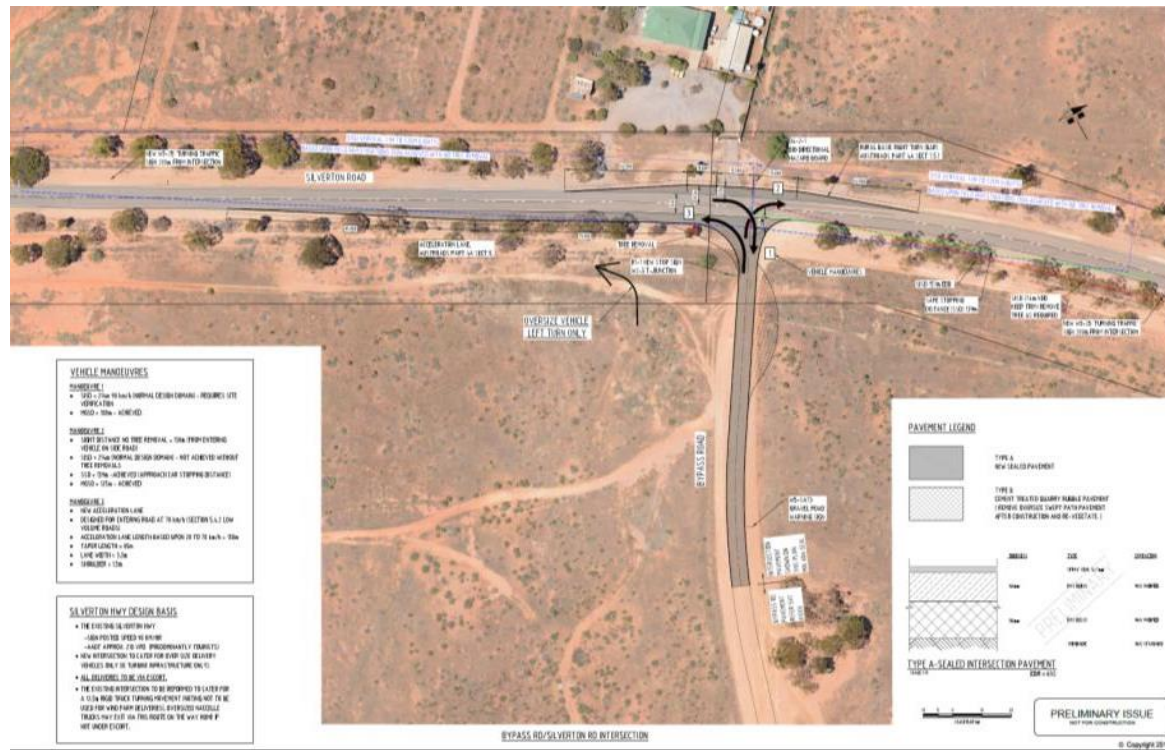
# 3. Project update

## Wind Farm Works



### Road Upgrade and Maintenance Strategy

- Short bypass (Silverton Road intersection)



# 3. Project update

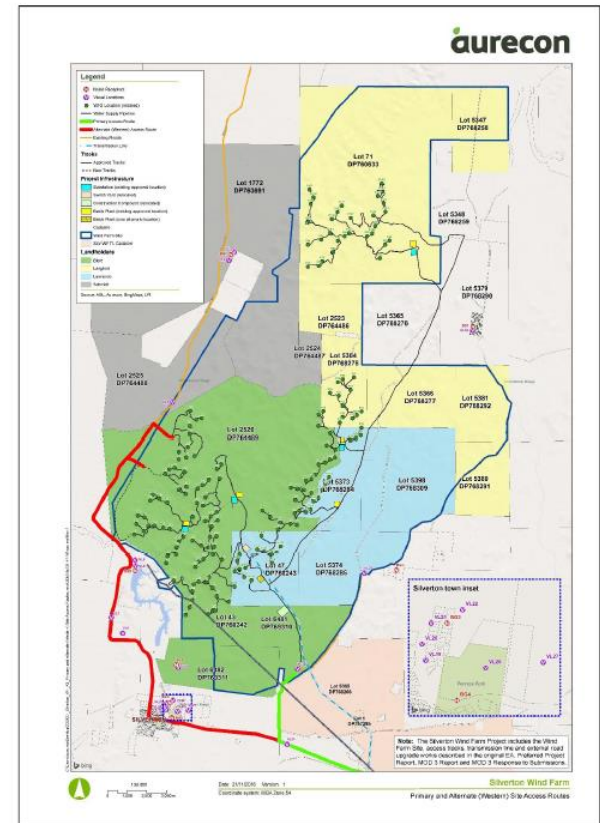
## Wind Farm Works



### Traffic Management Plan

- GE-CATCON has revised the Traffic Management Plan (revision 3) to incorporate comments from RMS and the Silverton Village Committee.
- Key amendments to the TMP are shown below:
  - Alternate (Western) Access Route will only be used for emergencies and/or unavoidable (primary access via Daydream Mine Rd)
  - Use of the Western Access Route would require a separate special permit with RMS and require consultation with the Silverton Village Committee and the CCC.
  - Increased vehicle movements due to the importing of aggregate and sand (from local suppliers) for concrete. As a result of importing aggregates and sands to the site, the net increase in truck movements per day will be 2.7.
  - BHCC Local Traffic Committee held on 4 July 2017 involved Broken Hill Police Representative (oversized and over-dimensional loads will be under police escort)

APPENDIX 7  
HEAVY AND OVER-DIMENSIONAL VEHICLE ROUTES



# 3. Project update

## Wind Farm Works



### Industry Briefing

- AGL together with GE-CATCON conducted an industry briefing on Tuesday, 31 January 2017 at Silverton and Broken Hill
- Employment opportunities
  - Up to 150 jobs during the peak of construction
  - Up to 10 full time jobs during the operations phase

### Local Participation

- Currently ~45 construction workers with just under 40% from the local area.
- High involvement of local suppliers

### GE-CATCON Silverton contacts

- WF Procurement: [silvertonwf@catcon.com.au](mailto:silvertonwf@catcon.com.au)
- WF Employment: [hr@catcon.com.au](mailto:hr@catcon.com.au)



# 3. Project update

## Silverton Wind Farm



### Local suppliers

- Delivery of the Silverton Wind Farm to date has involved the following local suppliers / contractors
  - Attards Transport
  - Avis
  - Barrier Daily Truth
  - Boss Construction
  - Broken Hill Hire & Engineering Services
  - Broken Hill Mini Excavators
  - Broken Hill Nissan
  - Broken Hill Skip Bins
  - Cresswell Drilling
  - Globe Timber Mills & Joinery
  - Goodyear Autocare
  - Hertz
  - Interhealth Broken Hill
  - Lawrence Engineering
  - Mawsons Concrete & Quarries
  - My Maid Support
  - RPF Resources & Rural Supplies
  - Schembri Earthmovers
  - Silver City Plumbing
  - Silver Haven Motor Inn
  - Silverton Civil
  - Silverton Hotel
  - Solcon Trading
  - SouthState Industrial Supplies
  - Tasco Petroleum



# 3. Project update

## Wind Farm Works

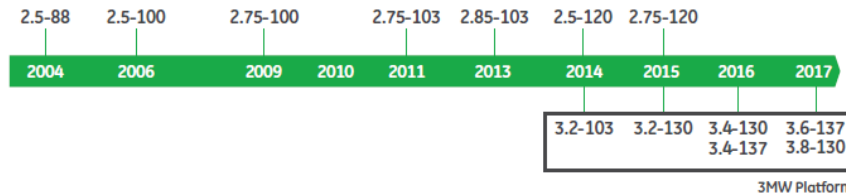


### Type wind turbine – GE 3.43-130

- Type Wind Turbine is installed in Wieringermeer, Holland (shown in photo).
- Nameplate of 3.43 MW with a 130m rotor and hub height of 110m
- The 3MW platform machines are an evolution of the 2.5MW turbine, developed in 2004.
- The GE 3.4-130 has up to 30% higher Annual Energy Production (AEP), compared to its predecessor the 3.2-103.

### Building Upon Proven Technology

Model introduction in Europe



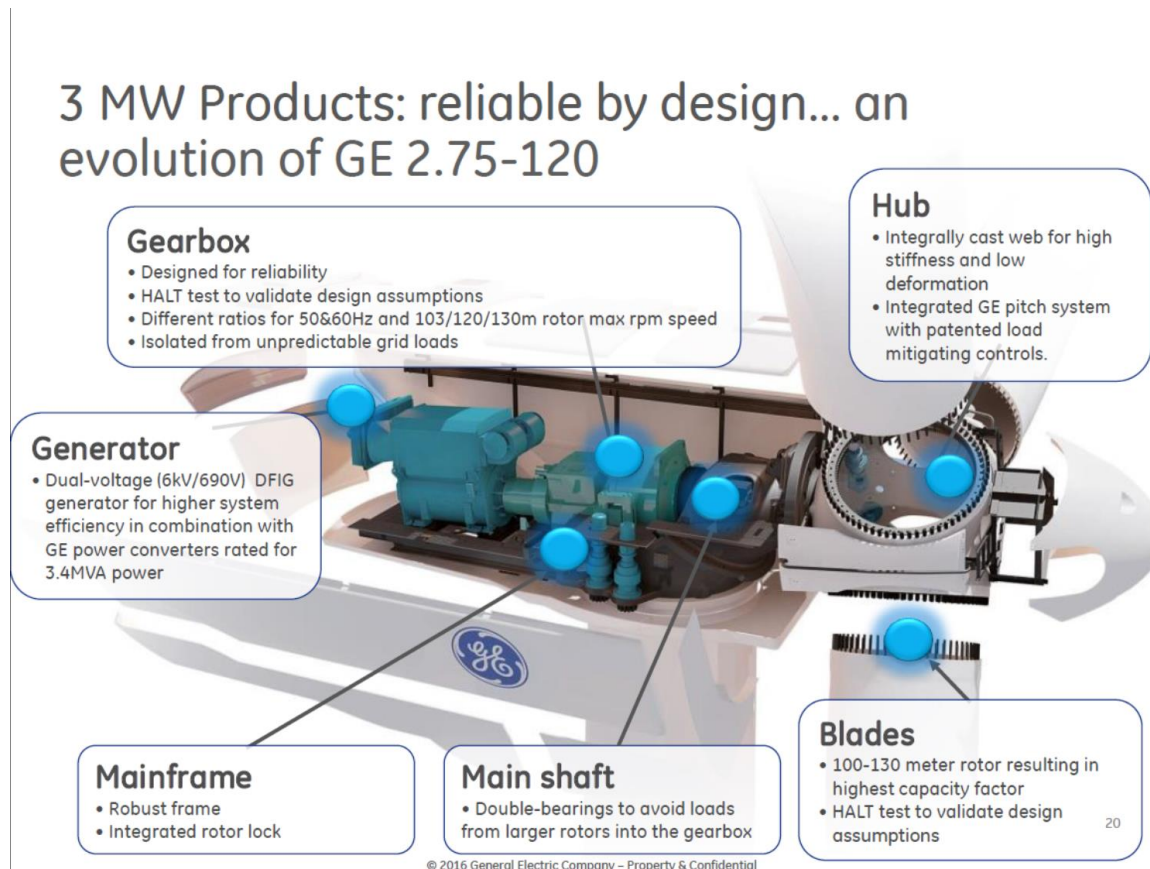
# 3. Project update

## Wind Farm Works



### Wind turbine GE 3.43-130

- Inside the GE 3.43-130 wind turbine



# 3. Project update

## Wind Farm Works



### Turbine Manufacturing

- Wind Turbine
  - Manufactured in Germany
  - Consists of the Nacelle, Hub and electrical equipment which forms the Down Tower Assembly
  - Subcomponents are being purchased and transported to the GE assembly factory. Assembly of these components is has commenced, with the first shipment around September 2017.
- Towers
  - Manufactured in Vietnam
  - Production has commenced and welding has been complete for 80 sections
  - The first shipment around October 2017
- Blades
  - Manufactured in Spain
  - ~26% blade sets have been manufactured as at end June 2017. The blades are 63.7m with the first shipment expected to around September 2017.





# 3. Project update

## Connection Works



### TransGrid presentation





# 3. Project update

## Connection Works



### Existing 220kV Substation

- The Point of Connection (POC) for the Silverton Wind Farm will be in TransGrid's existing 220kV substation in Broken Hill.
- The scope of works includes:
  - Foundations for electrical equipment / bay.
  - 220kV circuit breaker and associated high voltage equipment.
  - Landing pole for 220kV overhead line connection
  - Secondary systems (i.e. protection, control & metering)



TransGrid's existing Broken Hill 220kV Substation.

# 3. Project update

## Connection Works



### Existing 220kV Substation Progress Update

CPP Mobilisation to Broken Hill Substation – early August 2017

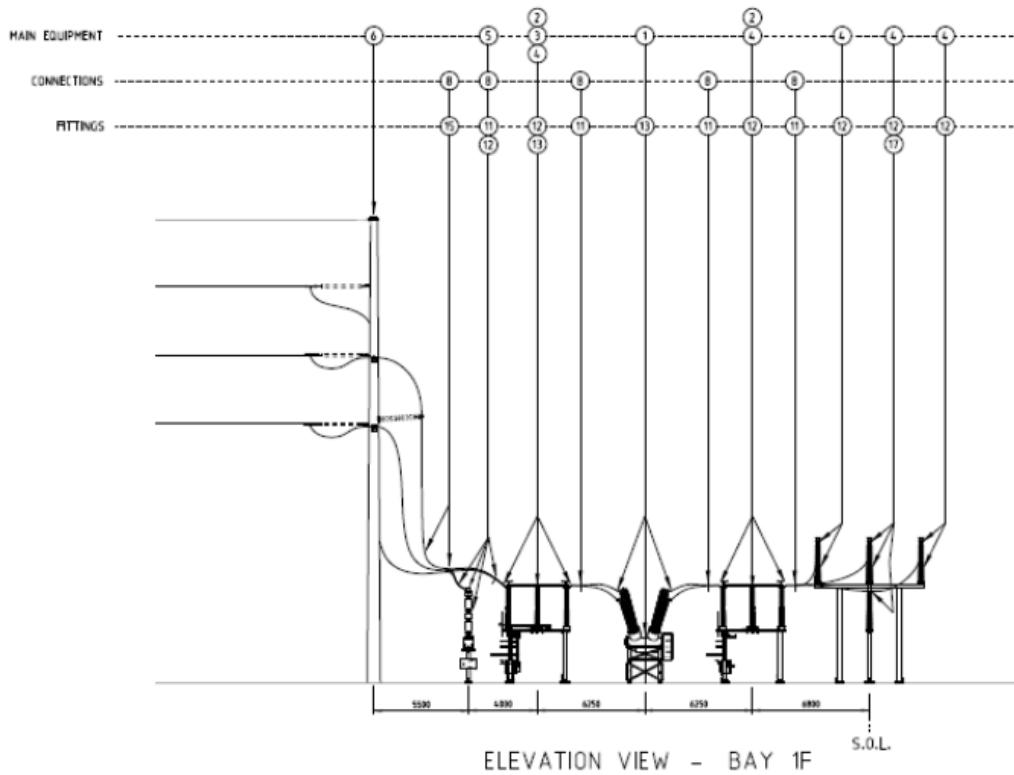


Location of new 220kV switch bay

Location of the new 220kV Switchbay

# 3. Project update

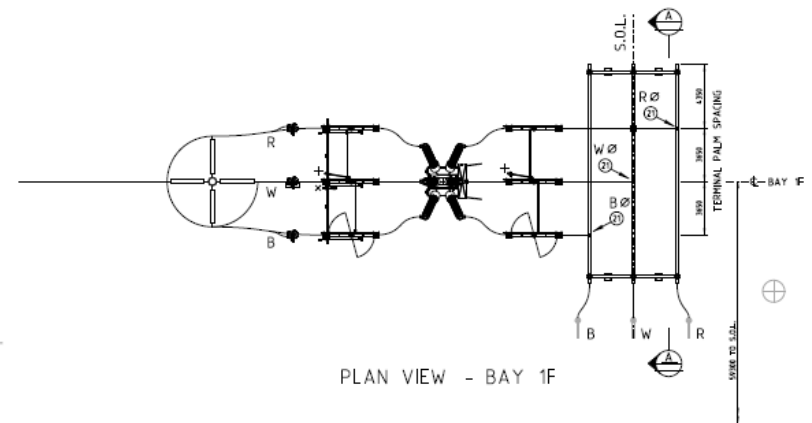
## Connection Works



### Existing 220kV Substation Look Ahead

Detailed Civil Works – early August 2017

High Voltage Equipment fit-out – late September 2017



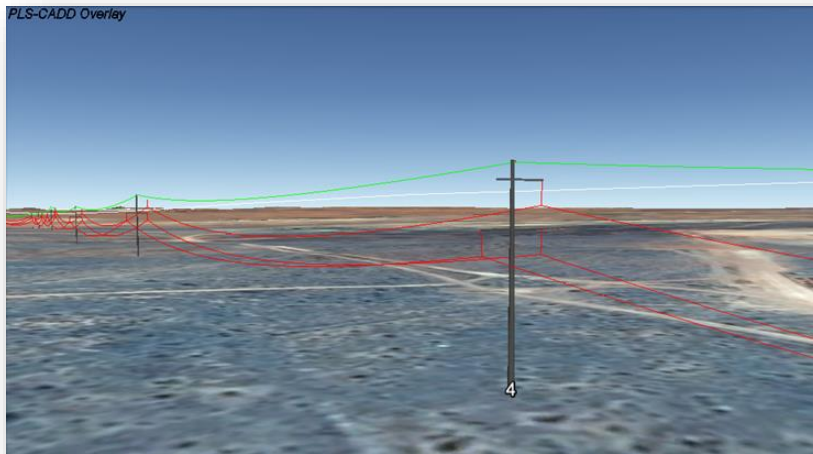
# 3. Project update

## Connection Works



### 220kV Transmission Line

- The Silverton Wind Farm is connected to the National Electricity Market (NEM) via the ~25km of 220kV transmission line to the Point of Connection (POC).
- The scope of works includes:
  - Single galvanized steel poles and associated footings
  - Three phase conductor and Optical Ground Wire (OPGW)
  - Insulators



220kV Transmission Line Design from Broken Hill Substation



Typical 220kV Transmission Line Single pole, single circuit arrangement.

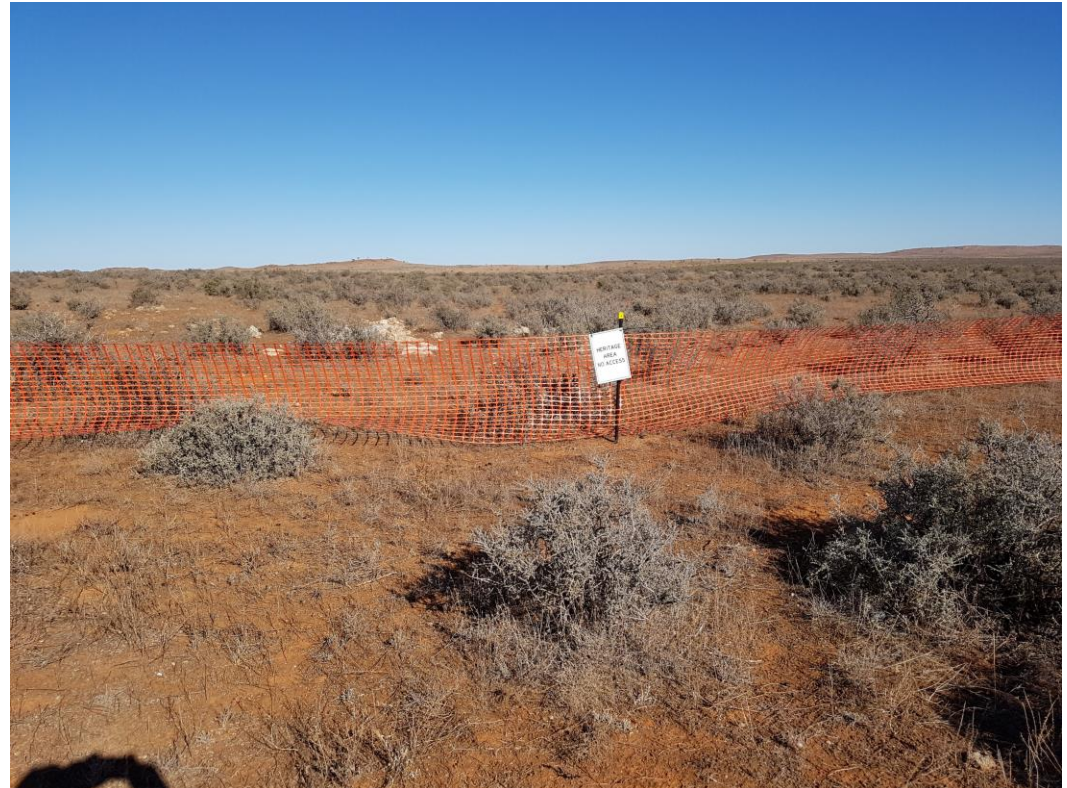


# 3. Project update

## Connection Works



### 220kV Transmission Line Progress Update



TransGrid and its contractor CPP-NJ completed barricading identified Heritage and biodiversity constraints along the transmission line route.



# 3. Project update

## Connection Works



### 220kV Transmission Line Progress Update



Known Aboriginal heritage site near the Silverton Wind Farm substation barricaded

#### **Other activities completed:**

Pole location survey and pegging - completed

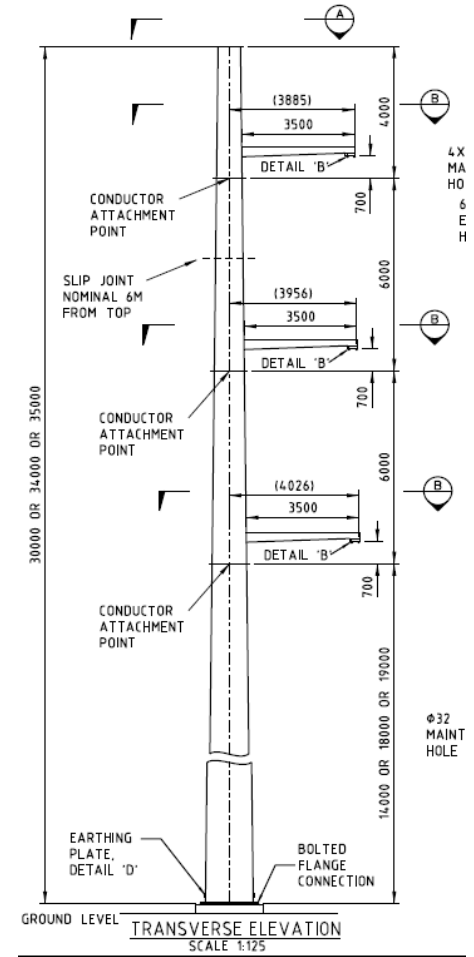
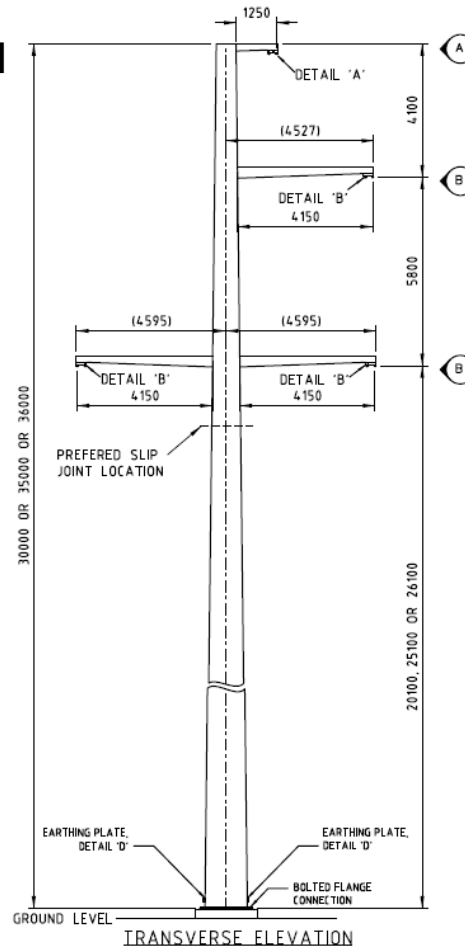
# 3. Project update

## Connection Works



### 220kV Transmission Line Look Ahead

- Easement clearing – early August 2017
- Transmission Line Footing Foundations – late August 2017



# 3. Project update

## Connection Works



### 220kV Wind Farm Substation Scope of Works

- The Silverton Wind Farm generation will be transmitted to the 220kV network of TransGrid via the 220kV wind farm substation with a step up transformer from 33kV to 220kV.
- The scope of works includes:
  - Bunded transformer foundation
  - 220/33kV power transformer
  - 220kV Switchbay
  - Combined Secondary Systems & Auxiliary Services building (SSB/ASB)



Typical Secondary Systems Building (SSB)



Typical bunded transformer at 220/22kV



# 3. Project update

Connection Works



## Silverton 220kV Substation Progress Update



Silverton Wind Farm Substation Bench Completed

# 3. Project update

## Connection Works



### Silverton 220kV Substation Progress Update



Silverton Wind Farm Substation Bench Completed





# 3. Project update

## Connection Works



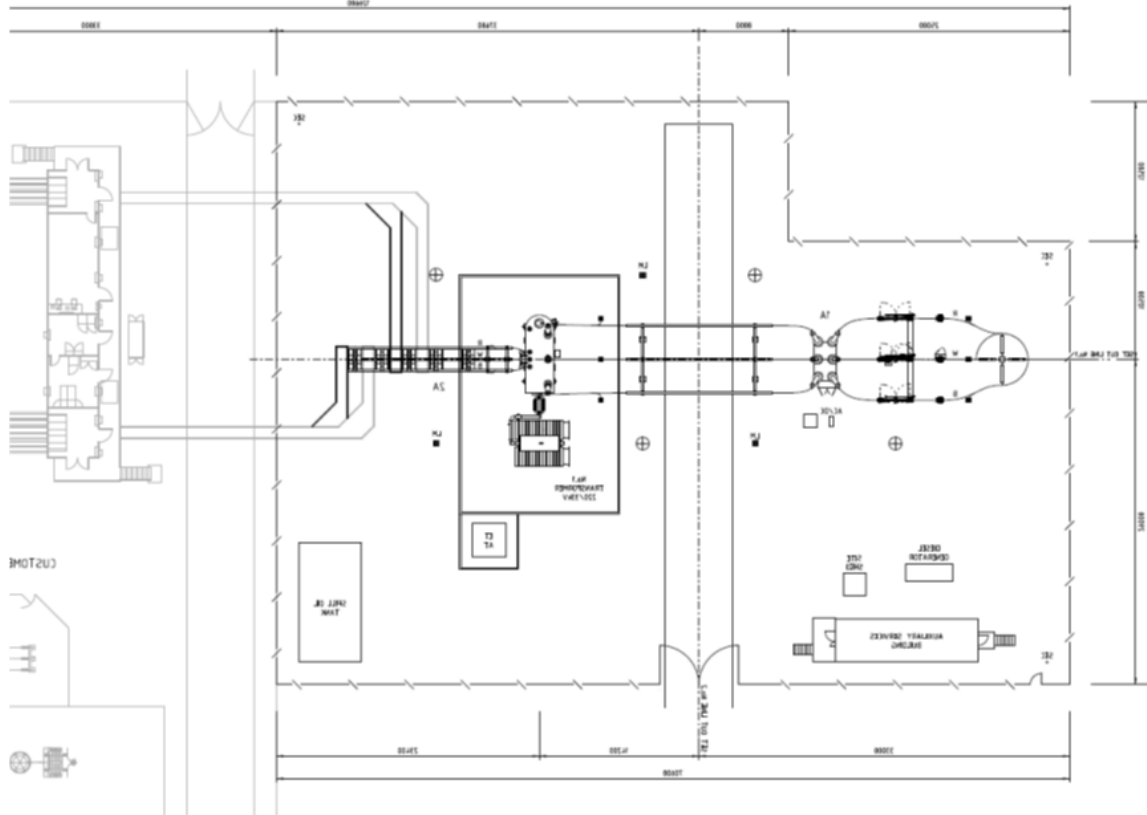
### Silverton 220kV Substation Progress Update



CPP mobilised to site – completed site establishment

# 3. Project update

## Connection Works



### 220kV Wind Farm Substation Look Ahead

- Civil works for drainage system, road works and transformer bund – early August 2017
- Substation Fence – late August 2017
- High Voltage Equipment footings – mid September 2017



# 3. Project update

## Connection Works

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- We are excited to support AGL in delivering this great project and committed to do so in a manner that minimises landowner and community disruption and inconvenience.
- To ensure we are able to address your concerns for the project - we welcome your feedback.
- If you would like to provide feedback or require further information – please visit <https://www.transgrid.com.au> or Freecall 1800 222 537



## 4. Community relations update

# 4. Community relations update

## Community enhancement program



### Community Enhancement Program

AGL will prepare a Community Enhancement Program for the Silverton Wind Farm within 6 months of the commencement of construction, in accordance with condition 18 (schedule 2) of the project approval.

- Silverton Community Fund
  - \$15,000 per year + CPI (life of project)
- Solar Silverton Program
  - 5kW solar PV for leaseholder and residences within 10 km of project.
- Water tank program
- Mobile reception program
  - Contribute up to \$50,000 for mobile reception improvement works





# 4. Community relations update

## Community enhancement program



### Silverton Community Fund

- AGL's corporate community investment program consists of activities that span community investment and benefit sharing
- Supporting local community initiatives, projects and events
- AGL aims to deliver community wide benefits, encourage innovation in and support for issues of community significance, and build and maintain strong relationships with communities
- AGL's values of Safe, Sustainable, Inclusive and Focused are to be reflected in initiatives, projects and events under this program

Silverton  
residential  
and  
business  
offer



# 4. Community relations update

## Community enhancement program



### Silverton Community Fund

AGL Values	Focus Area	Example
<b>Inclusive</b>	Diversity, inclusion and human rights	Partnerships which create opportunities for harnessing our diversity and enriching cultural experiences
<b>Safety</b>	Healthy lifestyle & wellbeing	Programs and initiatives promoting healthy lifestyles through education and participation
<b>Focused</b>	Energy affordability	Programs which create value to AGL customers; programs that create education and awareness of how to save energy in the home or business
<b>Sustainable</b>	Transition to a sustainable low carbon economy	Projects which provide an economic benefit to local projects, initiatives and operations

# 4. Community relations update

## Community enhancement program



### Solar Silverton Program

- AGL has completed preliminary consultation with Silverton residents
  - Apr-May 2017
- AGL Solar has completed desktop assessment of local capability
  - Four local Clean Energy Council (CEC) accredited installers
  - AGL is meeting with these four local installers to understand their availability
- AGL Solar will need to further inspect the Silverton property to assess the following:
  - Structural → condition of roof
  - Hazardous materials → No asbestos
  - Electrical → condition of switchboard
- Installation will depend upon the property inspection and availability of local installers.





# 4. Community relations update

## Community enhancement program



### Water Tank Program

- AGL has progressed quotes for water tanks with potential supplier and installers (plumbers)
- AGL will need to arrange for property inspections to assess the following:
  - Structural → ground condition
  - Connection → roof drainage
- Installation will depend upon property inspections and availability of local suppliers and installers



# 4. Community relations update

## Community enhancement program



### Mobile Reception Program

- AGL has been working with Telstra on mobile reception coverage options in Silverton, and have identified a 4GX solution
  - Installation of a 20m monopole at Telstra's Silverton Exchange site with a 4GX small cell which will provide 4G 700 MHz coverage to the Silverton Village



Proposed 4G small cell location



A typical 20m monopole with an omni antenna configuration

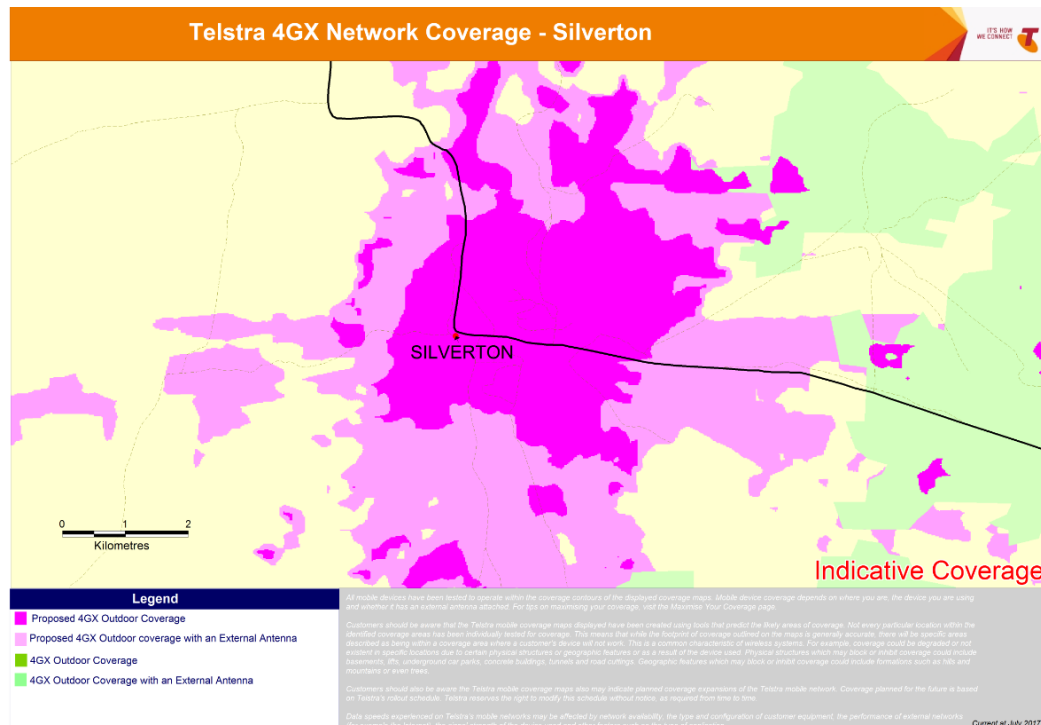
# 4. Community relations update

## Community enhancement program



### Mobile Reception Program

- The coverage predications below provide and indicative view of the coverage the proposed 4GX small cell would provide
- This solution is 4GX only, a 4GX (4G 700 MHz) compatible device will be required to benefit from the improved coverage this small cell will offer. HD calling (also known as VoLTE or voice over 4G) compatibility will also be required in order to make voice calls.





# 4. Community relations update

## Visual impact mitigation



### Visual Impact Mitigation

AGL issued notification to the Silverton residents in accordance with condition 2 (schedule 3) of the project approval in relation to the visual impact mitigation measures outlined in condition 1 (schedule 3).

- Owners within 6km of any wind turbine forming the Silverton Wind Farm may request additional visual mitigation measures (such as landscaping and vegetation screening) at their residence to reduce visual impact of the wind turbines.
- Owners have the right to request the implementation of these additional visual mitigation measures at their residence at any time within 3 years of the commencement of construction.

*The identification of appropriate visual impact mitigation measures will be easier following the construction of the wind turbines.*



# 4. Community relations update

## Community engagement



### Silverton Information Centre

- AGL will be utilising the old butchers shop in Silverton during the construction of the wind farm to provide project information and updates

### Community information

AGL contact details for community and project information are shown below:

- P: 1800-039-600
- E: [AGLcommunity@agl.com.au](mailto:AGLcommunity@agl.com.au)
- W: <https://www.agl.com.au/about-agl/how-we-source-energy/renewable-energy/silverton-wind-farm>

### Construction information

GE-CATCON will provide contact details on the project signage for construction related queries.



- Blasting
- Visual impact assessment
- Horse and wind farms

5. Topics of interest

# 5. Topics of interest

## Site access road blasting



### Blasting

GE-CATCON has undertaken low powder blast in accordance with condition 11 and 12 (schedule 3) of the project approval.

- Similar to the daily 7:45pm blast in Broken Hill
- Blast will be designed, monitored and recorded
- Strict access controls will be in place around the blast site
- Further blasting may be undertaken depending on the requirements for excavation and the quality of the rock

*Play video Silverton blast*





# 5. Topics of interest

## Visual impact assessment



### Modification 3

- AGL has engaged Green Bean Design to prepare photo montages of the planned Silverton Wind Farm showing the 58 wind turbines – similar to the photo shown below.
- Photo montages are planned to be prepared prior to the next CCC meeting in September 2017.



# 5. Topics of interest

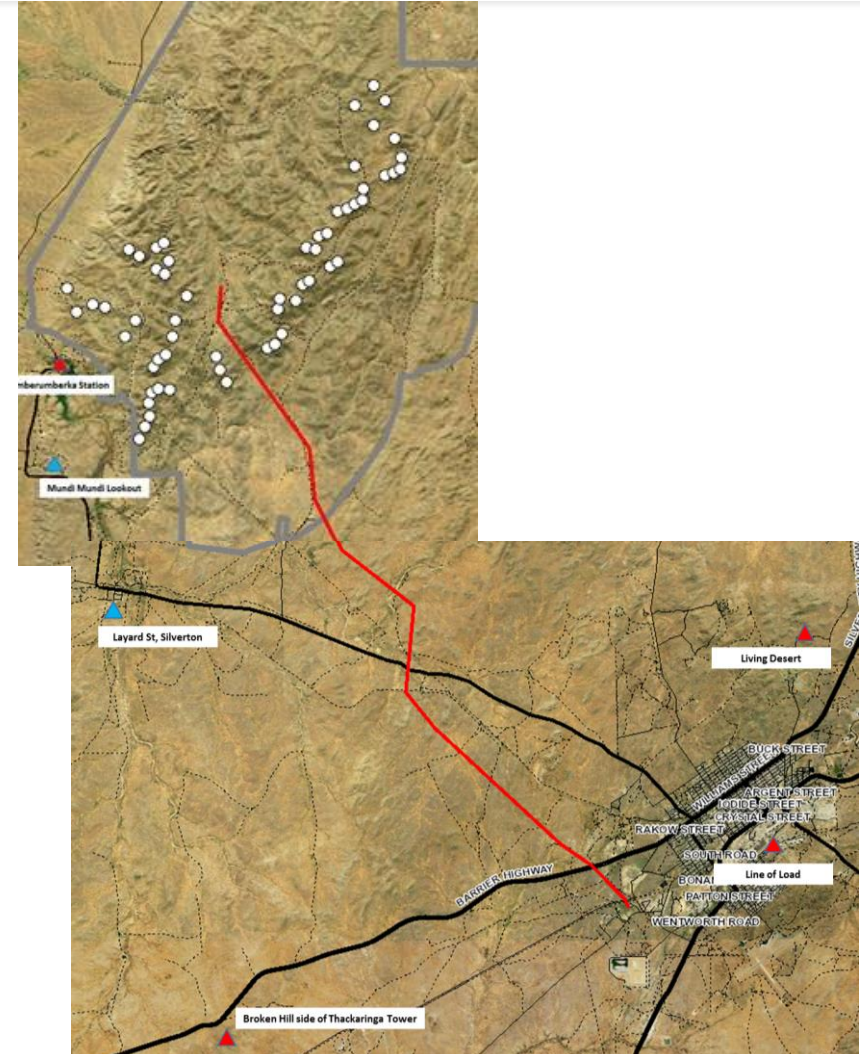
## Visual impact assessment



### Silverton Wind Farm

Green Bean Design will prepare photomontages from the following six locations (developed with the community):

- Silverton township
- Mundi Mundi lookout
- Umberumberka House
- Desert Sculpture (Living Desert)
  - Closer view than the Line of Load
- North Silverton
- Thackaringa Tower (Broken Hill side)



# 5. Topics of interest

## Horses and wind farm



### Delabole Wind Farm

- Delabole Wind Farm was the UK's first commercial wind farm, established in 1991. A horse stud farm and riding centre operates at the wind farm
- Originally the wind farm consisted of 10 turbines, a few years ago these were replaced with four new technology turbines which also increased the generation capacity output of the wind farm.
- Good Energy owns Delabole Wind Farm and we are looking to establish contact
  - <https://www.goodenergy.co.uk/our-energy/our-energy-farms/our-wind-farms/delabole-wind-farm/>





## 6. Other business



## Silverton Wind Farm

### Community Consultative Committee (CCC)

- Next meeting
  - Thursday, 21 September 2017
  - Time (TBC)
  - Silverton Municipal Chambers, Silverton

*Note: NSW school holidays from Sat, 23 September to Sun, 8 October 2017*



Next meeting

## Contact

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AGL Energy

Silverton Wind Farm

1800-039-600

[AGLcommunity@agl.com.au](mailto:AGLcommunity@agl.com.au)