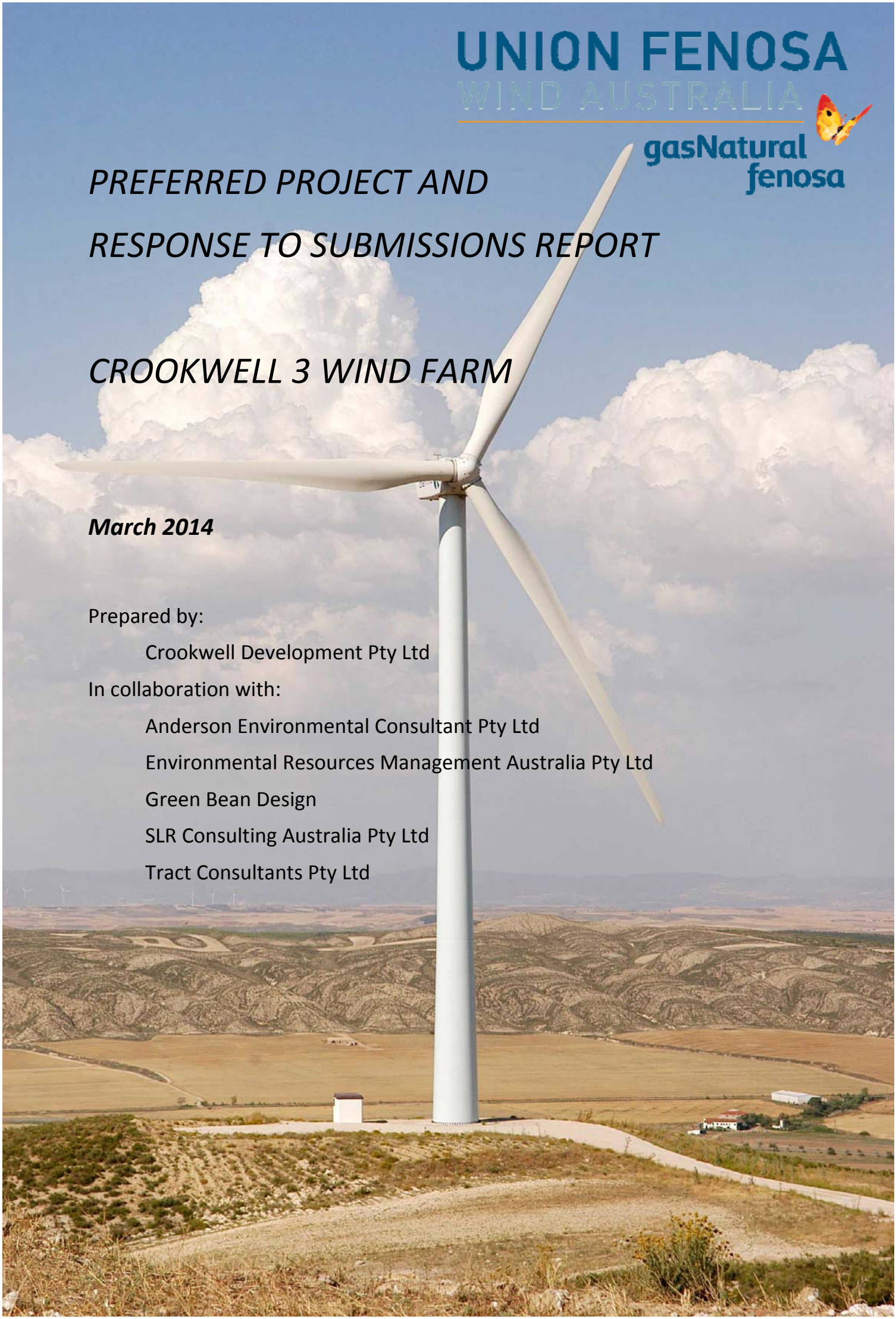

# *PREFERRED PROJECT AND RESPONSE TO SUBMISSIONS REPORT*

# *CROOKWELL 3 WIND FARM*

***March 2014***


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# CROOKWELL 3 WIND FARM

# MAJOR PROJECT APPLICATION NUMBER (MP 10_0034)

## Revision Table:

| Revision | Date of Revision | Description | Prepared By |
|---|---|---|---|
| V0 | 15 April 2013 | Initial draft | SM |
| V1 | 18 April 2013 | Final Report | SM |
| V2 | 17 February 2014 | Revised with Supplementary Information | SM |
| V3 | 24 March 2014 | Revised with Updates to Commitments | SM |

# Executive Summary

Crookwell Development Pty Ltd (CDPL) (the 'proponent') and its successors and assigns, is seeking project approval for the construction and operation of a wind energy facility known as the Crookwell 3 Wind Farm (the 'project').

The project is a Part 3A Major Project under the Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act). The project is also a Critical Infrastructure Project under Part 3A of the EP&A Act as it is a renewable energy project with a peak generating capacity of more than 30 megawatts (MW). As environmental assessment requirements (EARs) for the project were issued under Part 3A prior to its repeal on 1 October 2011, the project is now a transitional Part 3A project under Clause 2(1)(c) of Schedule 6A of the Act. Accordingly, the project will continue to be assessed and determined under Part 3A notwithstanding its repeal.

This Preferred Project and Submissions Response Report has detailed the revised project proposal to include the various design changes and will reduce the overall impact of the proposal to develop the Crookwell 3 wind farm project with up to 29 wind turbines and its associated infrastructure.

The project site is split into two separate parcels to the east and south of the approved Crookwell 2 Wind Farm. This Preferred Project report has found that the proposed wind farm would have a range of negative and positive impacts on the site and region, and that, with appropriate conditions and additional mitigations measures detailed in the statement of commitment, the negative impacts can be minimised.

In relation to the positive impacts, the Environmental Assessment (EA) found that if approved the wind farm would:

- generate up to 40 full time positions during construction, and up to 6 full time ongoing positions during the operation;
- invest $105 million in the economy;
- generate up to 207,295 MWh of clean, renewable energy, enough to power up to 32,117 average households;
- displace 201,698 tonnes of greenhouse gases or the equivalent of taking 46,581 cars off the road; and
- contribute up to $56,000 per year to the Upper Lachlan Shire Council's Community Enhancement Fund, to be spent on local projects benefiting the local community. In addition, the project will contribute up to $46,600 per year to non-participating landowners with dwellings within 2km of proposed wind

turbine locations as part of the project's proposed voluntary Neighbour Benefit Sharing Agreements. In the event any of the non-participating landowners prefer not to enter into the voluntary Neighbour Benefit Sharing Agreement, the surplus funds will be added to the Upper Lachlan Shire Council's Community Enhancement Fund.

Most notably, the proposed wind farm would make a small but important contribution to reducing the dangerous impacts of anthropogenic climate change, such as droughts, floods, extreme weather events and sea level rise.

In relation to the negative impacts, the EA found that the wind farm has the potential to have a low to moderate impact on landscape values, have a limited impact on local communications facilities, increase noise for some residents, and result in the clearing of non-significant vegetation.

These risks can be minimised by the extensive range mitigation measures that would be incorporated into the management plans that would be prepared before construction, and ongoing monitoring on the compliance of the wind farm when constructed to established standards. These revised and enhanced commitments are detailed in Section 8 – Statement of Commitments.

The EA also found that the proposed Crookwell 3 Wind Farm is compatible with the existing land uses of the area and complies with relevant planning and environmental controls applicable to the site.

This Preferred Project Report concludes that the proposed Crookwell 3 Wind Farm project will offer a number of significant benefits and can be constructed with minimal impact to the existing environment by preparing and implementing the mitigation measures detailed in the Statement of Commitments.

If the Crookwell 3 wind farm project is approved, it will share and utilise part of the grid connection infrastructure that has already been approved as part of the Crookwell 2 wind farm project, and significantly enhance the commercial viability of both projects.

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## ABBREVIATIONS

| | |
|---|---|
| AEMO | Australian Energy Market Operator |
| AGL | Above Ground Level |
| AQMP | Air Quality Management Plan |
| ANZECC | The Australian and New Zealand Environment Conservation Council |
| BACI | Before – After – Control - Impact |
| BAL | Basic Left Turn Treatment |
| BAR | Basic Right Turn Treatment |
| BBAMP | Bird and Bat adaptive Management Plan |
| CASA | Civil Aviation Safety Authority |
| CCC | Community Consultative Committee |
| CDPL | Crookwell Development Pty Ltd |
| CEC | Clean Energy Council of Australia |
| CEEC | Critically Endangered Ecological Community |
| CEMP | Construction Environmental Management Plan |
| CHMP | Cultural Heritage Management Plan |
| CNMP | Construction Noise Management Plan |
| dB | Decibel |
| DCP | Development Control Plan |
| DECCW | NSW Department of Environment, Climate Change and Water |
| DGRs | Director General Requirements / Environmental Assessment Requirements |
| DoD | Commonwealth Department of Defence |
| DoP&I | NSW Department of Planning and Infrastructure |
| DPI | NSW Department of Primary Industries |
| DRP | Decommissioning and Rehabilitation Plan |
| EA | Environmental Assessment |
| EEC | Endangered Ecological Community |
| EP&A Act | NSW Environmental Planning and Assessment Act 1979 |
| EPA | NSW Environment Protection Authority |
| EPBC Act | Commonwealth Environment Protection and Biodiversity Conservation Act 1999 |
| EPHC | Environment Protection and Heritage Council |

| | |
|---|---|
| EPA | NSW Environmental Protection Authority |
| EPL | Environment Protection Licence |
| ERM | Environmental Resources Management Australia Pty Ltd |
| ERP | Ecological Restoration Plan |
| F&FMP | Flora and Fauna Management Plan |
| FPC | Foliage Projective Cover |
| GBD | Green Bean Design |
| GWC | Goulburn Mulwaree Council |
| HBTs | Hollow Bearing Trees |
| IER | Independent Expert Review |
| LALC | Local Aboriginal Land Council |
| LGA | Local Government Area |
| LEP | Local Environmental Plan |
| LRET | Large-scale Renewable Energy Target |
| LSALT | Lowest Safe Altitude |
| LVIA | Landscape & Visual Impact Assessment |
| LVIA-SR | Landscape & Visual Impact Assessment Supplementary Report |
| MOS | Manual of Standards |
| MRET | Mandatory Renewable Energy Target |
| NHCMA | Hawkesbury Nepean Catchment Management Authority |
| NHMRC | National Health and Medical Research Council |
| NIA | Noise Impact Assessment |
| NPW Act | National Parks and Wildlife Act 1974 |
| OD | Over Dimensional |
| OEH | NSW Office of Environment & Heritage (Formerly DECCW) |
| OEMP | Operational Environmental Management Plan |
| PAD | Potential Archaeological Deposit |
| POE Act | Protection of the Environment Operations Act 1997 |
| PVP | Property Vegetation Plan |
| RAAF AIS | Royal Australian Air Force - Aeronautical Information Service |
| RET | Renewable Energy Target |
| RFS | NSW Rural Fire Service |
| RMS | NSW Roads and Maritime Services (Formerly RTA) |
| RSA | Rotor Swept Area |

| | |
|---|---|
| RTA | NSW Road Traffic Authority |
| RVMP | Riparian Vegetation Management Plan |
| S&ECP | Sediment and Erosion Control Plan |
| SCA | Sydney Catchment Authority |
| SCHR | Supplementary Aboriginal and Historical Cultural Heritage Assessment Report |
| SER | Supplementary Ecology Report |
| SEWPaC | Commonwealth Department of Sustainability, Environment, Water, Population and Communities |
| SoC | Statement of Commitment |
| TCP | Traffic Control Plan |
| TMP | Transport / Traffic Management Plan |
| TSC Act | NSW Threatened Species Conservation Act 1995 |
| UFWA | Union Fenosa Wind Australia Pty Ltd |
| ULSCS | Upper Lachlan Shire Council |
| VPA | Voluntary Planning Agreement |
| WMP | Water Management Plan |
| WHO | World Health Organisation |
| WMA | Water Management Act 2000 |
| WTG | Wind Turbine Generator |

# 1. Introduction

This Preferred Project and Submissions Response Report (the Report) has been prepared in response to the submissions received following the public exhibition of the Environmental Assessment (EA) (Revision 13, dated October 2012) for the proposed Crookwell 3 wind farm project (the Project). The Report has been further revised to include responses to the additional comments from several agencies in May and June 2013.

The EA was publically exhibited from 1st November 2012 to 6th February 2013 in accordance with Section 75H of the NSW Environmental Planning and Assessment Act 1979 (EP&A) . The publically exhibited EA received a total of 37 submissions, including 11 government agency submissions. The details of the submissions are shown in Section 3 - Consideration of all the submissions.

## 1.1. Purpose of this report

This Report addresses legislative requirements of section 75H(6) of the EP&A Act in consideration of the timing provisions in section 3E(1) of Schedule 6A of the EP&A.

## 1.2. Structure of the report

In consideration of the community submissions and government agency comments to the publically exhibited EA, This Report has been prepared to include:

- Updated details of the project description (Section 2);
- Design changes and amendments to the proposed development and infrastructure (Section 3);
- Consideration of the submissions (Section 4);
- Response to Government Agency Submissions and additional feedback comments (Section 5);
- Response to the Community Submissions (Section 6);
- A revised Statement of Commitments (Section 7);

# 2. Project Description

This chapter details the Project and all associated buildings and works that support the wind energy facility. It also details the major elements of the commissioning, operational and decommissioning phases.

## 2.1. Overview

Crookwell Development Pty Ltd (CDPL), the Proponent, and its successors and assigns, is seeking project approval for the construction and operation of a wind energy facility known as the Crookwell 3 Wind Farm (the Project). The Project is to be located on two separate land parcels known as Crookwell 3 East, with an area of 1,100 ha, and Crookwell 3 South, with an area of 400 ha (the Site).

The final proposed project design is shown in the revised plans *Figure 1 - Indicative Infrastructure Plan, Figure 2 - Indicative Infrastructure Plan - C3 East*, and Figure 3 - Indicative Infrastructure Plan - C3 South.

The project comprises a number of elements, including:

- Up to 29 individual wind turbines standing up to 150 metres at top of blade tip with a capacity of up to 3.4MW each (some of the turbines may be fitted with obstacle lighting as required);
- Up to 29 individual kiosks for the housing of 33kV Transformers and 33kV Switchgears and associated control systems to be located in the vicinity of the wind turbine towers (in some turbine models the kiosk's equipment is integrated within the tower or nacelle);
- Internal unsealed tracks for turbine access;
- Upgrades to local road infrastructure as necessary to provide access to the site;
- An underground electrical and communication cable network linking turbines to each other within the site boundary and then utilising either an underground or overhead connection between the Crookwell 3 site boundaries and the Crookwell 2 site boundary to reach the substation approved as part of the Crookwell 2 Wind Farm;
- Up to three wind monitoring masts fitted with various instruments such as anemometers, wind vanes, temperature gauge and potentially other electrical equipment;

- Up to two temporary concrete batching plants during the construction phase only, to supply concrete for the foundations of the turbines and other associated structures;
- Vegetation removal to allow access to the turbines; and,
- Vegetation replanting to provide rehabilitation and screening.
- Grid connection would be achieved from a connection to the 330kV electricity transmission line which runs through the site. The project would utilise and be connected to the single substation, control room and facilities that form part of the Crookwell 2 Wind Farm. Please refer to *Figure 1 - Indicative Infrastructure Plan*.

The overall development footprint is approximately 2% of the Site area.

## 2.2. Turbine Specifications

The most important element in any wind farm is the wind turbine, often referred to as a Wind Turbine Generator (WTG). Turbines consist of a tall tower with 3 long blades mounted at the top that capture the wind.

The turbine manufacturing industry is dynamic, with new and updated models regularly released. Existing models are often made redundant only a few years after their release. The industry is rapidly growing and benefits from constant innovation and advancement in the efficiency of the turbines.

The major phase of a wind farm's cost is the initial construction, and turbine selection is a critical determinant of this cost. A turbines cost depends on a number of factors including the current economic climate (i.e. whether other wind farms also require supply in the upcoming period) based on competition between suppliers. In order to maintain competition between suppliers of turbines, and that the most up to date turbines can be used, it is important that a project has flexibility to select from a number of different turbine models from alternative suppliers.

To provide this flexibility, the proponent is seeking approval for a maximum turbine 'envelope' rather than a single turbine model. This envelope represents the largest and widest of the eight turbine models under consideration.

Many of the turbine models under consideration are smaller than the maximum envelope. In general, if any of the smaller turbines are utilised for the Crookwell 3 Wind Farm, the impacts described and assessed in this report are likely to be less.

The proposed envelope contemplates that, as a maximum, the turbine would have an overall height of 150 metres when constructed. This envelope includes a tower

of up to 98m in height to the hub, coupled with a 51 metre long blade (excluding hub) and an approximate 2 metre wide hub.

Accordingly, for the purposes of this EA, the largest turbine model under consideration has been assessed in relation to all potential impacts other than noise impacts.

The difference between the various turbine models under consideration are in Table 2-1 - Comparison of Preferred Turbine Models and Sizes shown below.

**Table 2-1 - Comparison of Preferred Turbine Models and Sizes**

| **Turbine Option** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Turbine Model | V90 | MM92 | V100 | GE2.5 | Hybrid |
| No. of Turbines | 29 | | | | |
| Tower Hub Heights (m) | 80<br>95 | 80<br>98 | 80<br>95 | 75<br>85 | 98 |
| Rotor Blade Length (m) | 44 | 46 | 49 | 49 | 51 |
| Rotor Diameter (m) | 90 | 93 | 100 | 100 | 104 |
| Total Height to Tip (m) | 125<br>140 | 127<br>145 | 130<br>145 | 125<br>135 | 150 |
| Turbine Capacity (MW) | 2.0 | 2.0 | 2.0 | 2.5 | 3.4 |
| Total Wind Farm Capacity (MW) | 58 | 58 | 58 | 73 | 99 |

There are some slight differences in the electrical construction of the turbines under consideration. Some of the turbines under consideration have a 690V / 33kV transformer in the nacelle, and 33kV switchgear either in the base of the tower or next to the tower in a kiosk. Some turbines have the 690V / 33kV transformer and the 33kV switchgear in the base of the tower. Other turbines have the 690V / 33kV transformer and the 33kV switchgear on the ground in a kiosk next to the tower.

.

Approved Crookwell 2
Wind Farm (46 Turbines)

MONITORING MAST

SUBSTATION
CROOKWELL 2

PIGMANS HILL

PEJAR DAM

MONITORING MAST

MONITORING MAST

MONITORING MAST

MONITORING MAST

330kV Powerline

330kV Powerline

66kV

C3 East Access
Road Option 2

C3 East Electricity
Easement Option 1

C3 East Electricity
Easement Option 2

C3 East Access
Road Option 3

C3 East Access Road
Option 1 (Preferred)

C3 South Electricity
Easement Option 1

C3 South Electricity Easement
Option 2 (Road Reserve)

C3 South Access
Road Option 1

C3 South Electricity Easement
Option 3 (Council Reserve)

ELMGROVE ROAD
PEJAR RD
PEJAR RD
CROOKWELL ROAD
CROOKWELL ROAD
WOLLONDILLY RIVER
WOLLONDILLY RIVER
WOODHOUSELEE ROAD
WOODHOUSELEE ROAD
GREYWOOD SIDING ROAD
GREYWOOD SIDING ROAD
ST STEPHENS ROAD
FIRST CREEK
PEJAR
PEJAR
STEEVES
STEEVES
MIDDLE
MIDDLE
FIRST
FIRST

UPPER LACHLAN SHIRE / GOULBURN MULWAREE

LEGEND

- WIND FARM SITE
- PROPOSED ACCESS TRACK
- PROPOSED ACCESS TRACK
- ACCESS TRACK TO C2 SUBSTATION
- MAJOR ROAD
- CROWN ROAD RESERVE
- EXISTING VEGETATION
- CABLING OR POWERLINE (NOT ADJACENT TO TRACKS)
- CABLING (EXISTING APPROVED C2)
- TRANSMISSION LINE
- P24 PROPOSED TURBINES
- MONITORING MAST
- 117 DWELLINGS

A3
Scale 1:40000 @ A3
0 600 1200 3000m

# INDICATIVE INFRASTRUCTURE PLAN
## FIGURE 1

CROOKWELL 3 WIND FARM

PROJ./DRG.NO. 0309-0447-30 DI-01 REV. 00 DRAWN J.D. APP'D. A.T. DATE 18.04.2013

Tract

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C3 East Access Road Option 2

PEJAR

330kV Powerline

MONITORING MAST

MONITORING MAST

MONITORING MAST

MONITORING MAST

C3 East Electricity Easement Option 1

C3 East Electricity Easement Option 2

C3 East Access Road Option 3

STEEVES

SUBSTATION CROOKWELL 2

PIGMANS HILL

Approved Crookwell 2 Wind Farm (46 Turbines)

PEJAR

PEJAR DAM

WOODHOUSELEE ROAD

C3 East Access Road Option 1 (Preferred)

GREYWOOD SIDING ROAD

GREYWOOD SIDING ROAD

UPPER LACHLAN SHIRE

GOULBURN MULWAR

## LEGEND

- WIND FARM SITE
- PROPOSED ACCESS TRACK
- CROWN ROAD RESERVE
- ACCESS TRACK TO C2 SUBSTATION
- MAJOR ROAD
- EXISTING VEGETATION
- CABLING OR POWERLINE (NOT ADJACENT TO TRACKS)
- CABLING (EXISTING APPROVED C2)
- EXISTING TRANSMISSION LINE
- P24 PROPOSED TURBINES
- MONITORING MAST
- 84 DWELLINGS

A3
Scale 1:25000 @ A3

0 375 750 1875m

# INDICATIVE INFRASTRUCTURE PLAN - C3 EAST

FIGURE 2

CROOKWELL 3 WIND FARM

PROJ/DRG.NO. 0309-0447-30 DI-02 REV. 00 DRAWN J.D. APP'D. A.T. DATE 18.04.2013

Tract

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PEJAR RD

KWELL ROAD

RIVER

MONITORING MAST

SUBSTATION
CROOKWELL 2

PIGMANS HILL

Approved Crookwell 2
Wind Farm (46 Turbines)

MIDDLE

FIRST CREEK

C3 South Electricity
Easement Option 1

C3 South Electricity Easement
Option 2 (Road Reserve)

66kV

C3 South Access
Road Option 1

C3 South Electricity Easement
Option 3 (Council Reserve)

330kV Powerline

A26 A27 A32 A29 A28 A33 A30 A31

MONITORING MAST

PEJAR DAM

PEJAR

WOODHOUSELEE ROAD

GREYW

UPPER LACHLAN

WOLLONDILLY RIVER

ST STI
R

8 20 19 18 17 16 39 38 37 40 36 35 60 63 80 62 61 59 58 57 54 55 56 53 84

## LEGEND

- WIND FARM SITE
- PROPOSED ACCESS TRACK
- CROWN ROAD RESERVE
- ACCESS TRACK TO C2 SUBSTATION
- MAJOR ROAD
- EXISTING VEGETATION
- CABLING OR POWERLINE (NOT ADJACENT TO TRACKS)
- CABLING (EXISTING APPROVED C2)
- EXISTING TRANSMISSION LINES
- P24 PROPOSED TURBINES
- MONITORING MAST
- 84 DWELLINGS

A3
Scale 1:25000 @ A3

0 375 750 1875m

# INDICATIVE INFRASTRUCTURE PLAN - C3 SOUTH
## FIGURE 3

CROOKWELL 3 WIND FARM

PROJ./DRG.NO. 0309-0447-30 DI-03 REV. 00 DRAWN J.D. APP'D. A.T. DATE 18.04.2013

Tract

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The components of each of the turbine models under consideration are as follows;

- Reinforced concrete 'gravity foundations' up to 20m x 20m and between 2m to 3m in depth depending on the prevailing ground conditions. A rock anchor foundation is being investigated which would require much smaller concrete footing areas.
- A tubular steel tower approximately 4.5 metres in diameter at the base, tapering to a diameter of approximately 3.0 metres at the top, with a total tower height of 80 to 100 metres, weighing between 160 and 250 tonnes. Some of the larger towers are either concrete precast towers or hybrid towers with the concrete precast base and an upper steel section. The towers are painted in a non-reflective light grey/off white paint;
- A nacelle at the top of the tower housing the gearbox or a direct drive mechanism, and electrical generator, ensuring that the turbine is always facing into the wind and adjusting the angle of the blades to ensure maximum output of electricity and minimum noise.
- A rotor comprising a hub (attached to the nacelle) with three blades, and a shaft that connects to the generator via the gearbox or direct drive mechanism.
- 3 blades up to 51 metres long (excluding hub), made of lightweight materials.

A safety component incorporated in all models under consideration is a lightning protection system. All blades are manufactured with an anti-lightning protection system which minimises the damage to the turbines in the event of an atmospheric discharge (lightning). In the event of a lightning strike, power is diverted from the lightning to the nacelle which is grounded to the earth.

Other safety components of the turbines include;

- Sufficient standing and working space.
- Full containment of any leakage or spillage, by using dry-type transformers in the nacelle or using an oil-filled transformer in a kiosk adjacent to the tower with oil bunding built into the kiosk;
- Fibreglass weather protector;

The proposed turbines would result in efficient transfer of electricity as they have been chosen to match the local conditions in Crookwell. As the height above the ground increases the wind resource generally increases and as a result the turbines under consideration are significantly more efficient than previous smaller models. The turbines under consideration are suited to the wind resource at Crookwell, allowing maximum output capacity to be achieved at significantly lower wind speeds.

The turbines under consideration have a low 'cut-in' speed at nominal wind speeds (i.e. maximum output capacity is achieved at lower wind speeds). Generally, the wind turbines commence operation at a wind speed of approximately 3 to 4 metres per second, gradually increasing to the maximum output rate at 12 to 15 metres per second (depending on the turbine model). From this rate to approximately 20-25 metres per second (depending on the turbine model) the turbine operates at maximum capacity. In order to prevent damage to the turbine and various components, the turbines employ automatic shutdown at speeds above 20-25 metres per second (depending on the turbine model).

As turbines are becoming more technologically advanced they now incorporate other features which assist in monitoring performance with relevant standards. For example, turbines can employ a low noise mode or wind sector management to reduce the noise output and avoid reaching critical noise levels. These systems act to mitigate any isolated occasions where noise output exceeds the permitted threshold. It should be noted that the wind farm has been designed to prevent the risk of such impacts occurring in the first place, however this offers an additional ability to address impacts created by unusual weather patterns or other circumstances.

## 2.3. Turbine Layout

A revised indicative wind turbine layout has been prepared that shows 29 turbines. Please refer to *Figure 2 - Indicative Infrastructure Plan - C3 East* and *Figure 3 - Indicative Infrastructure Plan - C3 South*. The indicative layout was prepared by the proponent using wind modelling software and the consideration of the issues detailed below.

The indicative locations shown reflect the current understanding of the best location for the turbines given the current knowledge of wind characteristics and presence of vegetation.

The indicative wind turbine layout was based on a number of inputs; principally;

- The site boundary;
- Topographical data;
- The location of significant native vegetation and native fauna;
- Noise assessments at key receiver points;
- Dwelling locations;
- Wind speed data collected on and off site;

- Visual amenity impacts (including shadow flicker at the nearby dwellings); and,
- Distance to adjacent turbines.

A number of draft layouts were provided and reviewed by the consultant team. The feedback provided by the consultant team was incorporated into the current indicative layout plan so as to mitigate the impacts of the proposal. Further to the original EA design, the proposed infrastructure design has been further enhanced by considering the submissions to the public exhibition and incorporating various comments in particularly from the NSW Office of Environment and Heritage (OEH) in order to further reduce potential impact on the native vegetation.

On a hilly terrain such as the Crookwell 3 site, the wind speeds vary across the site depending on the elevation and the location of hills around the site. The predominant winds in the area are from the west and south-west and therefore wind turbine sites are designed to take maximum advantage of these flows.

The indicative turbine layout is based on the preferred turbines models shown in Table 2-1 - Comparison of Preferred Turbine Models and Sizes. If project approval is granted, this proposed layout will be refined at the detailed design stage and once the final turbine has been selected so as to achieve the best energy generation from the selected turbine model. It is estimated that this may result in individual turbines being moved approximately 25-100 metres from the currently nominated location on the site plan.

The determination of the final turbine locations during detailed design is required to address:

- the particular siting characteristics of the final turbine chosen;
- any additional site constraints discovered during detailed site investigations (e.g. a discovery of an unusual geotechnical issue);
- further wind speed analysis; and
- access issues determined during the detailed design phase.

Approval is sought on terms which allow the determination of the final turbine locations during detailed design subject to the following criteria:

- turbines would not be moved by more than 100m from their indicative locations;
- turbines would not be moved closer to the nearest neighbouring dwelling or any closer than 1.0km to any non-participating dwelling;
- turbines would be located so as to avoid any unnecessary impacts on flora and fauna or heritage items (including items of Aboriginal heritage).

## 2.4. Access Road Entrance Points

Major access to the region for wind farm components would be achieved by Crookwell Road from the Goulburn Highway (via Goulburn), and raw construction materials and individual turbine components would likely be delivered from Port Kembla.

As the turbine components would be considered Over Dimensional (OD) loads, the route from Port Kembla to the site is of particular importance, and is shown in Figure 16 of the Original EA. URS Australia Pty Ltd prepared a Traffic Impact Assessment in July 2010, which identifies the preferred route for OD Vehicles to site, for more details refer to Appendix 10 – Traffic Impact Assessment of the EA. This route is composed of three components: Port Kembla to Goulburn; Goulburn bypass; and Goulburn to the site. The preferred route was selected based on, road grade, road width, extent of works required for safe transportation of goods, costs, and appropriateness and directness of route.

The roads from Port Kembla to Goulburn are generally national highways or state roads and are able to accommodate OD vehicles, such as the Hume Highway and Mount Keira Road. The Goulburn Bypass is a designated OD route between the Hume Highway and Goulburn. From Goulburn to the site, OD vehicles would continue along Crookwell Road, which is a major arterial road, to the T-intersection of Crookwell and Woodhouselee Roads.

From the Crookwell/Woodhouselee T-intersection, vehicles would turn right and continue in a northerly direction for another 11 kilometres and turn right into the Crookwell 3 East site. Access to Crookwell 3 South from Goulbourn would be achieved by continuing through the Crookwell/Woodhouselee intersection, travelling north-west for another 7 kilometres and turning left into the site.

For personnel vehicles originating from the north, access to the Crookwell 3 East site would be achieved by continuing down Woodhouselee Road in a southerly direction and turning left at the t-intersection where the Crookwell 3 East site intersects Woodhouselee Road (approximately 4 kilometres south of Crookwell Road/Middle Arm Road intersection). To access Crookwell 3 South from the north, vehicles would continue along Crookwell Road in a south-easterly direction until it intersects with the site, and would turn right at this t-intersection (approximately 4 kilometres south of the Crookwell Road/Elmgrove Road intersection.

To allow some flexibility for access this EA presents three entry options to Crookwell 3 East and one option for Crookwell 3 South. These access options are detailed below:

**Crookwell 3 East Access Road Options**:

- Option 1 (preferred): Site access via Greywood Siding Road (Crown Road Reserve- not gazetted) and along existing corridor and then turn left and travel in a northerly direction through the unused rail corridor, and towards the southeast corner of the proposed site near turbine A25;
- Option 2 (alternative): Site access via Boltons Lane 'existing privately used road' (Crown Road Reserve- not gazetted). To use this option, there would be a realignment of the entrance, possibly through the wind farm site then onto Boltons Lane, this realignment would provide the required turning area for the OD vehicles, and also provide a setback to the dwellings in proximity of this intersection to reduce construction traffic noise; and
- Option 3 (alternative): Site access via new access road through Leeston and Hillview Park properties on the opposite side of the road to the Rocky Corner property.

**Crookwell 3 South Access Road Option:**

- Option 1 (preferred): Site access via Crookwell Road, approximately 400 to 500 metres north of where Crookwell Road crosses Wollondilly Creek; and

These options are shown on *Figure 2 - Indicative Infrastructure Plan - C3 East* and *Figure 3 - Indicative Infrastructure Plan - C3 South*.

The adjacent Crookwell 2 Wind Farm has been approved and is under construction. The road and intersection upgrades between Port Kembla and the subject area that would be constructed as part of the approved Crookwell 2 Wind Farm include:

- All intersections that require upgrading on the route from Port Kembla to Crookwell. The Crookwell Road/ Woodhouselee Road intersection upgrade has been completed as part of the Crookwell 2 wind farm construction works.
- Woodhouselee Road (between Crookwell Road and Crookwell 3 East site access).

For more detail on the access road options and transportation provisions refer to Chapter 16 – Transport of the Original EA.

## 2.5. Access Tracks

The project will include a network of access tracks that lead from the proposed access points (one for each site) from the public roads to the turbines. The access tracks would connect each turbine and allow the safe passage of vehicles to the base of the tower. These access tracks would only intersect with government roads at nominated access points, therefore reducing impacts on public roads, refer on

*Figure 2 - Indicative Infrastructure Plan - C3 East* and *Figure 3 - Indicative Infrastructure Plan - C3 South*.

Existing farm tracks would be utilised and upgraded where possible to reduce the need for additional soil disturbance and native vegetation removal. During the construction phase of the project, these would be widened to approximately 8 to 10m in width to support the extra load of trucks carrying equipment and cranes for the erection of the towers. This width would then be reduced during the operation phase of the project to approximately 6m. The tracks would continue to be used by the farmer to access the property and to attend to grazing livestock.

## 2.6. Substation, Control Rooms and Facilities Building

As the proposed Crookwell 3 Wind Farm would share most of the major infrastructure with the approved Crookwell 2 Wind Farm, a separate substation, control room and facilities building are not required and do not form part of this proposal.

The Crookwell 2 substation and control room is located within the south-eastern corner of the Crookwell 2 site in accordance with *Figure 1 - Indicative Infrastructure Plan.*

The proposed staging of works would allow the construction of the Crookwell 3 Wind Farm to immediately follow the completion of Crookwell 2 Wind Farm, with the potential for some overlap between the two projects.

## 2.7. Electrical Works

Electrical works are required to link the Crookwell 3 wind turbines and then link each circuit (consisting of between 6 to 12 turbines) to the Crookwell 2 Wind Farm substation.

The electrical works comprise;

- 33 kV electrical cables (comprised of conductive wire surrounded by protective coating) linking the turbines to each other and the substation, installed generally 1m deep underground, surrounded by soft sand with back fill. Cable markers would identify the path of the underground cabling to prevent accidental digging around the cable trenches. Overhead powerlines may be utilised to overcome access and terrain constraints in limited circumstances.
- Control and communication cables linking the turbines to the control room, installed generally underground and adjacent to the 33kV electrical cabling.

All cables would generally follow the same alignment as the access tracks, thereby limiting the development footprint of the project. However, there may be several locations where the cable would diverge from the access tracks to reduce electrical losses and to overcome ground constraints.

In order to achieve connection to the proposed substation in Crookwell 2 Wind Farm, connection is required across Woodhouselee Road from Crookwell 3 East. There are two options for connection across Woodhouselee Road, as outlined on *Figure 2 - Indicative Infrastructure Plan - C3 East*.

To achieve connection to the substation from Crookwell 3 South, three options are proposed. These include a combination of easements running through neighbouring properties and linking back to the Crookwell 2 Wind Farm, and one option which incorporates an overland connection along Crookwell Road. Please refer to *Figure 3 - Indicative Infrastructure Plan - C3 South*.

These connection options are outlined below in more detail in Table 2-2 - Wind Farm Interconnect Route Options shown below.

**Table 2-2 - Wind Farm Interconnect Route Options**

| Connection Option | Route Description |
|---|---|
| Crookwell 3 East Route Option 1 | Landowner property, through the property hosting Crookwell 2 access road easement from Woodhouselee Road, through the Crookwell 2 property (provisions for easements with landowners in place) |
| Crookwell 3 East Route Option 2 | Landowner property, through the property hosting Crookwell 2 access road easement from Woodhouselee road, through the Crookwell 2 property (provisions for easements with landowners in place). |
| Crookwell 3 South Route Option 1 | Through the Crookwell Road reserve and then adjacent to the eastern boundary of the Normaroo property, then into the Crookwell 2 site (provisions for easement with Crookwell 2 landowner in place) |
| Crookwell 3 South Route Option 2 | Through the Crookwell Road reserve and into the Crookwell 2 property (provisions for easement with Crookwell 2 landowner in place). |
| Crookwell 3 South Route Option 3 | Through the Council land on the east of Crookwell road, through multiple properties and then into Crookwell 2 site (provisions for easement with Crookwell 2 landowner in place) |

## 2.8. Vegetation Removal and Planting

### Vegetation Removal

Some vegetation removal is required to facilitate access and allow construction of the turbines. The clearing is minimal as the site is already largely cleared and has improved pastures. The proposal has been designed to avoid and minimise the need to remove native vegetation.

Approximately 2% of the total site area is required for the entire wind farm infrastructure during construction and approximately 1% is required during the operation phase of the project.

The key reason for vegetation removal is for the provision of crossovers, access tracks and potentially electricity easements. The access tracks have been designed to avoid and minimise impact on native vegetation; however, some vegetation removal is unavoidable. Vegetation removal would also be required for wind breaks in some areas to assist in efficient conversion of the wind resource. The wind breaks are predominantly planted or exotics and therefore do not constitute native vegetation. Where trees are removed the relevant land owner would be consulted and a suitable native species which does not affect the wind resource would be planted in place of the removed wind breaks.

The areas of identified remnant vegetation within the development area are shown in Figure No.1 - Vegetation Mapping of the ERM 2013 Report[1] in Appendix 2 of this report. Please refer to Appendix 2 for further details on the locations that would require native vegetation removal to facilitate the project.

### Vegetation Planting

Vegetation screen planting can be an effective tool in mitigating the visual impact of wind turbines or other infrastructure. It is employed in the vicinity of nearby residences and along roadsides to screen potential views of turbines. Screen planting is only effective where the planting can occur in close proximity to the viewing location (i.e. at a nearby dwelling).

Many of the dwellings in the locality are already surrounded by vegetation that performs, at least to some extent, a screening role. Planting would involve a variety

[1] ERM (2013a) *Crookwell 3 Wind Farm: Supplementary Ecology Report*. Environmental Resources Management Australia Pty Ltd. Reference: 0193328, 10 April 2013.

of dense native vegetation, including both trees and shrubs, to effectively screen views.

While the screening is proposed to be in close proximity to viewing locations, the exact area of screening would depend on detailed design and discussions between an affected land holder and the proponent following Development Consent for the project. The planting would be carried out at no cost to the landowner. In the event that roadside tree planting is required as a mitigation measure, the proponent will consult with the Upper Lachlan Shire Council (ULSC) and residents regarding any offsite screening measures. In particular, CDPL will consult with council for in relation to the placement and maintenance of the roadside tree planting (if any).

## 2.9. Wind Monitoring Equipment

Two wind monitoring masts have been previously installed on the site to confirm the wind resource and to provide wind speed and direction data.

The existing 60m monitoring masts are not permanent structures, and would be removed and reused elsewhere once the construction phase is complete. Up to three new permanent wind monitoring masts are proposed to be installed during construction of the wind farm. The purpose of these new permanent masts is to provide an independent validation of the wind regime for the wind turbines and to assist with assessing the overall wind farm performance, of which one is proposed to be installed in Crookwell 3 South and two are proposed to be installed in Crookwell 3 East in proximity to the proposed turbines. The masts consist of a tall, thin tubular or lattice structure and guy wires for support, and the masts are proposed to be approximately 80-100m in height, and generally at the turbine hub height level.

## 2.10. Obstacle Hazard Lighting

Obstacle lighting consists of two flashing red lights mounted on the turbine nacelle to highlight their presence to nearby aircraft.

The obstacle marking and lighting assessment was conducted in accordance with the recently withdrawn guideline document - Obstacle Marking and Lighting of Wind Farms (CASA Advisory Circular AC139-18(0)). Although the document has been withdrawn by CASA for review purposes, it has been used for the purposes of risk mitigation for the proposed wind farm, as recommended by CASA.

An assessment under these guidelines shows that night lighting of approximately 12 of the proposed turbines may be required.

The characteristics of the lights would be consistent with CASA guidelines, which state;

- Two flashing red medium intensity obstacle lights should be provided;
- Light fixtures to be mounted sufficiently above the surface of the nacelle so that the lights are not obscured by the rotor hub, and at a horizontal separation to ensure an unobstructed view of at least one of the lights by a pilot approaching from any direction.
- Both lights should flash simultaneously;
- Characteristics of the obstacle lights should be in accordance with MOS Pt 139;
- All obstacle lights on a wind farm are to be synchronised to flash simultaneously; and
- An appropriate monitoring, reporting and maintenance procedure is to be established to ensure outages are detected, reported and rectified.

For more information on aviation impacts, please refer to *Chapter 15 – Aviation* of the Original EA.

Visual impacts would be minimised by restricting the downward component of the light to either, or both, of the following:

- Such that no more than 5% of the nominal intensity is emitted at or below 5° below the horizontal,
- Such that no light is emitted at or below 10° below the horizontal.

For more information on visual impacts of the lighting, please refer to *Chapter 9 – Visual Impacts* of the original EA.

The need for obstacle lighting for structures of this height is currently under review. It is possible that before construction has commenced, the guidelines would have been revised such that obstacle lighting for structures of this height may no longer be required. The need for obstacle lighting would be reviewed at regular intervals by the proponent and, in the event that the CASA guidelines are revised such that night lighting is no longer required then night lighting would not be installed, or if already installed at the time, they could be turned off.

## 2.11. Temporary Construction Facilities

A temporary construction area would be required within both Crookwell 3 East and Crookwell 3 South. The temporary construction area would contain portable toilets,

vehicle parking, assorted construction equipment, a concrete batching plant (only in Crookwell 3 East) and vehicle wash down facilities.

A temporary hardstand area of approximately 50m x 50m would be required to enable the construction of each tower. The hardstand area would be constructed of compacted soil and gravel to provide a stable platform for construction equipment and the crane. The hardstand area is only required for the construction phase and would be decreased in size following construction to accommodate maintenance activities. The excess portion of the hardstand area would be reseeded to pasture.

Temporary concrete batching plants would be required for the construction stage of the project to supply concrete for the turbine foundations. Batching plants need to be central to the activity area and well removed from houses due to the occasional generation of noise and dust. In consideration of these matters, the concrete batching plants are proposed to be located near A17 in Crookwell 3 East. This location is well removed from habitable dwellings and central to the activity area which minimises travel distances to individual turbines. Refer to *Figure 2 - Indicative Infrastructure Plan - C3 East* for the batching plant location.

The area for the batching plants would be approximately 50m x 80m. This area would incorporate loading bays, hoppers, silos, hardstand areas, water tanks and stockpile areas for the storage of the aggregates, sands and other raw materials.

The concrete batching plant is likely to produce between 250m3 and 500m3 of concrete on an average day.

Where possible, raw materials for the concrete batching plant would be sourced on site, with all materials brought in from external sources being as clean as possible to minimise the potential of introducing weeds to the site. The water for the concrete would either be sought on site subject to a separate licence issued by the NSW Office of Water, or transported to the site via tanker trucks.

Once complete, the areas affected by temporary construction activities would be rehabilitated to their former agricultural state on completion of the construction stage. Detailed Construction Environmental Management Plan (CEMP) would be prepared prior to the grant of construction certificates for the project which would incorporate further detail to manage the impacts of construction activities including the temporary construction facilities.

## 2.12. Pre-Construction

If the project is approved, a number of further steps are required to prepare for construction that would take approximately one year. These include:

- Detailed design phase of the final wind farm layout, including determination of the final turbine locations in accordance with the principles set out in *Section 2.3 – Turbine Layout*;
- Finalisation of additional agreements with key agencies;
- Preparation of the Pre-Construction Compliance Report;
- Finalisation and approval of the CEMP;
- Obtaining a construction certificate (if required by the conditions of approval, if granted);
- Tendering for wind turbine components and other key infrastructure; and
- Tendering for the contracts for construction of the wind farm.

Following this initial period the full construction phase would commence. This phase would likely take up to 14 months subject to delays due to weather and unforeseen circumstances.

At the peak of construction, the project is likely to be employing 40 people, across the tasks detailed in Table 2-3 - Construction Activities shown below.

**Table 2-3 - Construction Activities**

| Activity | Works Involved |
|---|---|
| Site Establishment | Clearing of work areas, levelling and compaction, installation of portable buildings and installation / connection of utility services. Site Survey. |
| Internal Road Works | Removal of topsoil, levelling, sub-base compaction, gravel, drainage. |
| External Road Works | Upgrade existing roads where required. Provide new access roads to the site. |
| Foundations | Removal of topsoil, excavation, screed concrete, reinforcement steel bottom, installation of foundation ring, reinforcement steel top, concreting, concrete ring and conduits, backfilling. |
| Crane Pad Establishment | Removal of topsoil, base compaction, rock / gravel compaction. |
| Trenches and Cable Laying | Excavation; sand infill; lay cable; lay protective covering; back filling and compacting; installation of cable route markers. |
| Overhead Powerline | Installation of overhead powerline from the on-site substation to the off-site switching station adjacent to the Bannaby-Mt Piper 500kV transmission line. |

| Activity | Works Involved |
|---|---|
| Electrical Works | Control building switchboards, communications, and Supervisory Control And Data Acquisition (SCADA) systems. Installation of cabling, switchgear, turbine control panels. |
| Turbine Supply | Transport of towers, nacelles, hubs and blades to site. |
| Turbine Erection | Erection of towers, nacelle, blades, installation of cabling. |
| Substation Electrical Works | Connection of Crookwell 3 Wind Farm cables to Crookwell 2 Substation, potential installation for an additional HV transformer and switchgear to provide redundancy for the total combined output of the projects. |
| Wind Farm Commissioning | Pre-commissioning of turbines, SCADA, cables testing, optical fibre. Testing and commissioning of turbines, switchgear, SCADA. |
| Electricity Grid Connection Commissioning | Final commissioning by the transmission network service provider (Currently TransGrid) prior to connecting the generated electricity on the national electricity grid. |
| Construction Closure | Site Clean Up, revegetation, landscaping. |

The majority of the early work in the construction period is to prepare the site for the arrival of turbine infrastructure. This involves road upgrades, access track and hardstand area preparation.

Once this stage is complete, the turbine components can be transported and erected on site, usually at the rate of one or two per week. This involves transportation to the hardstand area at the base of each turbine and using cranes to lift turbine components to assembly the structure. In most circumstances the turbine blades are assembled into the hub at ground level and are then lifted up to the nacelle by crane as a complete ensemble. In other circumstances the turbine blades are individually lifted and assembled into the hub.

The turbines are anchored using large concrete gravity footings. In areas where granite rocks lie at or just below the surface, the footing is directed attached to the rock which would reduce the amount of concrete required. This may include the potential for rock blasting based on an assessment by the geotechnical engineer. Details of any rock blasting (if any), and associated management techniques, would be provided in the CEMP.

Temporary facilities within a construction area would include portable toilets, vehicle parking, assorted construction equipment, a concrete batching plant and vehicle wash-down facilities. All temporary facilities would be located so as to avoid

and minimise vegetation loss and the land would be reinstated to its former state at the conclusion of the construction stage.

While this section provides an overview of the construction process, the construction would be managed by a management plan, which would address matters such as;

- Erosion control and soil protection
- Water quality protection
- Vegetation protection
- Air quality and dust pollution prevention
- Safety
- Public road network access

Standard construction hours would apply to the project, as outlined below,

- Monday to Friday: 7:00am to 6:00pm
- Saturdays: 7:00am to 1:00pm
- Sundays: No construction

The following activities may be carried outside of these hours as required:

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

In the event that it is required to undertake other works outside the above construction hours, prior approval would be obtained from the relevant authority.

## 2.13. Operation

The operation phase of the project reflects the leasing arrangement with landowners. Landowners have agreed to grant the proponent a 30 year lease with the option to extend for another 30 years. Whilst no plan of subdivision will need to be registered as a result of these proposed leases, the project includes the grant of these leases and any deemed subdivision arising as a result.

During operation of the wind farm, all infrastructure associated with the wind farm would remain the property and responsibility of the proponent.

All access tracks used by the proponent would be maintained by proponent as part of the operation of the wind farm, but would remain available for host landowners' use.

The wind farm would be controlled by a computerised system. The system would link each turbine by communications (fibre-optic) cables typically laid in the same trench as the electrical cables. The computerised system would log all operating parameters and initiate the most efficient functionality of the turbines according to prevailing atmospheric conditions. The computerised system would also enable the controller to stop the turbine if required.

The system would ensure that rotational speed and the wind turbine angle operate automatically within the wind speed design envelope. Turbines would be disconnected from the grid at very low and very high wind speeds.

Maintenance of the turbines and associated infrastructure would be conducted throughout the operation phase. Maintenance includes a number of activities over different time periods. These are outlined in Table 2-4 - Typical Maintenance Schedule, shown below:

**Table 2-4 - Typical Maintenance Schedule**

| Interval | Task |
|---|---|
| Monthly | Inspection of turbine generator and electrical infrastructure. |
| 3-6 Monthly | Inspection of all machinery, greasing of bearings, checking of hydraulic oil. |
| As required | Periodic painting of tower structure;<br>Replacement of electronic and electrical components;<br>Access track maintenance including erosion control;<br>Substation maintenance inclusive of insulator cleaning, removal of debris and greasing of contacts. |

As with any infrastructure project there is potential for equipment breakdown or failure during the lifetime of the project. Whilst most repairs would be likely occur without impacts outside the wind farm site, should any of the raised components (within the nacelle or the blades themselves) need to be replaced, construction equipment such as cranes and other heavy machinery may be required to access the site temporarily. Such equipment may have a temporary impact on the road network but the temporary impact would be likely to be minimal.

As part of the operation phase, a number of monitoring protocols would be implemented. These would include a program to ensure compliance with all

approval conditions, including conditions relating to noise, flora and fauna and any other relevant potential impacts. This would also likely include a monitoring program on birds and bats in the vicinity of the site.

**Potential refurbishment**

Whilst the design life of a wind turbine is typically 20-25 years, it could potentially extend to a longer period subject to specific equipment / part replacement program that would allow it to operate efficiently and cost effectively. However the proposed wind farm has been designed to allow for the possible removal and replacement of turbines during the lifetime of the project. If a turbine needs to be replaced, this process would follow the construction stages outlined above and be consistent with any project approval granted for the project.

Where possible, the existing footings, access tracks and other infrastructure would be reused for any replacement turbine(s) during the operation phase.

## 2.14. Crown Land

Crown land in the form of unused / ungazetted road reserve is present within the site boundary of Crookwell 3 East and one of its access road options, and the at the main access road entrance to Crookwell 3 South.

The Proponent will seek and obtain the required access licence or easements from NSW LPI (Crown Lands) for the use of Greywood Siding Road, if this access road option is selected as the main access entrance.

In Crookwell 3 East, there are several encroachments over the Crown Land road reserve or air space due to the placement of turbines and access tracks. The Proponent will seek road closure and purchase application for all encroachments over the Crown Land road reserve and air space within the site. This would be done on behalf of the adjoining landowner that is also a host landowner in the wind farm project. In Instances where a road closure is not possible or practical, the Proponent will seek an easement over the subject areas, or seek approval for a licence under the Crown Lands Act 1989.

In Crookwell 3 South, the placement of the main access road into the site would be an encroachment over the Crown Lands held under Permissive Occupancy 1517 for grazing. The Proponent will seek a suitable easement from Crown Lands for placement of the internal access track in the subject area that is currently held under the Permissive Occupancy 1517 for grazing by one of the host landowners.

## 2.15. Minerals Titles

The Project area does overlap in parts with an existing mineral exploration licence. The proponent will continue to contact the holder of the mineral exploration licence to notify them about the placement of the Project infrastructure and the potential impact upon the potential minerals resources.

## 2.16. Staging

The estimated timeline of the construction, operation and decommissioning phases of a 30 year lifespan of the project is shown below in Table 2-5 - Construction Staging Timeline.

**Table 2-5 - Construction Staging Timeline**

| Stage | Activity | Timing |
|---|---|---|
| Construction | Site establishment | January 2015 |
| | External road works | 16 weeks* |
| | Internal road works | 20 weeks* |
| | Foundations | 30 weeks* |
| | Crane pad establishment | 32 weeks* |
| | Trenches and cable laying | 35 weeks* |
| | Overhead powerline | 36 weeks* |
| | Electrical works (at Crookwell 2 Substation) | 38 weeks* |
| | Turbine supply | 10 months* |
| | Turbine erection | 12 months* |
| | Wind farm commissioning | 13 months* |
| | Electricity grid connection commissioning | 13 months* |
| | Construction closure, site clean up | 14 months* |
| Operation | Inspection of turbine generator and electrical infrastructure | Monthly, as specified by the turbine manufacturer |
| | Inspection of all machinery, greasing of bearings, checking of hydraulic oil | 3-6 monthly as specified by the turbine manufacturer |
| | Periodic painting of tower structure | As required |
| | Replacement of electronic and electrical components | As required |
| | Access track maintenance including erosion control | As required |

| Stage | Activity | Timing |
|---|---|---|
| | Substation maintenance inclusive of insulator cleaning, removal of debris and greasing of contacts | As required |
| Decommissioning | Permanent cessation of electricity generation | At the end of either 30 or 60 years from commencement of operation** |
| | Electricity grid connection decommissioning | 3 months*** |
| | Removal of turbines | 9 months*** |
| | Removal of Electrical Works | 9 months*** |
| | Removal overhead powerline | 9 months*** |
| | Removal of foundations | 10 months*** |
| | Removal of miscellaneous electrical works | 11 months*** |
| | Removal of crane pads | 11 months*** |
| | Site rehabilitation | 13 months*** |
| | Decommissioning closure | 14 moths*** |

* denotes approximate completion timeline for the construction activity from the date of the site establishment activities.

** denotes approximate duration for the operation of the wind farm. The proponent has an agreement with the landholders for a minimum 30 years with an option of another 30 years.

*** denotes approximate completion timeline for the activities from the date of permanent cessation of electricity generation from the wind farm.

## 2.17. Decommissioning

CDPL has entered into agreements for lease of land with the landowners who own land within the site. These agreements provide CDPL with leases for a term of 30 years and grant the proponent the opportunity to extend the lease for a further term of 30 years.

Any continuation of the wind farm beyond the first 30 year period may take the form of one of:

- Extended operation of the original turbines;
- Turbine replacement with the similar model that would have newer and more efficient technology; or
- Turbine replacement with a different model that would be subject to the requisite approvals being obtained at that time.

Once the wind farm reaches the end of its useful economic life, the project would be decommissioned.

Decommissioning essentially involves the reverse process to construction. All materials would be removed from the site and recycled appropriately. Access tracks would remain where beneficial to the ongoing use of the land by the owner. Tracks considered surplus to the owners' requirements would be rehabilitated and re-vegetated by introducing soil, mulch and grass seeds of local provenance.

It is a requirement of the Draft NSW Wind Farm Planning Guidelines (December 2011) (draft Guidelines) that the EA for the project includes a Decommissioning and Rehabilitation Plan (DRP). AECOM Australia Pty Ltd as an independent consultant has prepared the DRP in accordance with the draft Guidelines.

The proponent is responsible and committed to the decommissioning of the wind farm infrastructure, and the landowner is not liable for this obligation (this is demonstrated in the land lease agreements with each of the wind farm participating landowners as shown in the DRP).

CDPL seeks to mitigate the potential impacts resulting from the cessation of operation of the facility. This DRP outlines the stakeholder and landowner consultation, expected operational life, dismantling, land rehabilitation, funding arrangements, timeframes and responsibility associated with the decommissioning of the proposed Crookwell 3 Wind Farm. The proponent has committed to implementing this plan.

In relation to consultation, the relevant landowners have been extensively consulted about the project and the issues of decommissioning and rehabilitation were discussed at the early stages of the project. In particular, the DRP was discussed and agreed with all landowners. Feedback from the landowners was generally positive with no objections to the project. A summary of the three landowners' responses follows:

- Two landowners were satisfied with the document and had no additional input; and
- One landowner was concerned about bare soil being left exposed during the decommissioning process. This issue has been addressed in the final DRP.

CDPL has also consulted with the Upper Lachlan Shire Council (ULSC) regarding the project in general and aspects of the construction, operation and decommissioning phases. CDPL will undertake further consultation with stakeholders prior to and during the decommissioning process.

# 3. Project Benefits

The project benefits are set out in *Section 6.5 – Project Benefits* in the original EA. It is now proposed to reduce to total turbine number to 29 WTGs and revise the list of preferred turbine models. As part of this revised proposed, this section of the report will show the updates to the environmental benefits outlined in *Table 7 – Greenhouse Gas Savings* of *Section 6.5.1 – Environmental benefits* in the original EA.

A key determinant in calculating the emission reductions of the Crookwell 3 Wind Farm is the type of energy that is displaced by the wind energy. In NSW wind energy displaces black coal fuelled energy, a co-efficient of 0.97 tonne per MWh of energy has been used to support the calculations below. This pool co-efficient is derived from GGAS (2010). Table 3-1 - Revised Greenhouse Gas Savings outlines the savings that would be made as an outcome of the proposal.

**Table 3-1 - Revised Greenhouse Gas Savings**

| | Minimum | Maximum | Source |
|---|---|---|---|
| Number of Turbines | 29 | 29 | CDPL |
| Turbine Capacity (MW) | 1.8 | 3.4 | Turbine Supplier |
| Total Wind Farm Capacity (MW) | 53 | 99 | Calculated |
| Energy Output (MWh) | 155,472 | 207,295 | Calculated |
| Capacity Factor (%) | 34% | 24% | Estimated |
| Greenhouse gas displaced (tonnes) | 140,858 | 201,698 | Based on NSW GGAS 2010 |
| Number of households supplied electricity | 22,430 | 32,117 | Based on AGO, 1999 |
| Population supplied electricity | 58,316 | 83,506 | Based on Vic Sustainable Energy Authority 2003 |
| Equivalent cars off the road | 32,530 | 46,581 | Based on Vic Sustainable Energy Authority 2003 |
| Equivalent number of trees planted | 210,236 | 301,044 | Based on Vic Sustainable Energy Authority 2003 |

As outlined in the table above, the greenhouse gas savings attributable to the proposed Crookwell 3 Wind Farm equates to the electricity use of a population up to 83,506 or 32,117 average households. This is approximately 1/4 of Canberra's population or more than double the population of Goulburn

# 4. Design Changes

From its initial preliminary design proposed to the NSW Department of Planning and Infrastructure (DoP&I), the project design has under gone several amendments to incorporate various provisions and considerations in order to reduce impact to the environment and the local community.

The feedback provided during the consultation process to date resulted in a number of significant changes being made to the project to address some of the major issues raised, refer to *Table 27 - Issues raised during consultation process and CDPL response* in *Section 23.5 - Key issues identified*, in the Original EA report. The changes made to the project since its inception include:

- removing turbines A7, A11 and A14 and their associated access tracks and crane hardstand platforms from the initial proposed layout to reduce the potential visual impact and shadow flicker exposure to the nearby dwellings;
- relocating turbines A6, A9, A10 and A15 and their associated tracks and crane hardstand platforms to increase buffer distances to houses to reduce the potential noise and visual impact to nearby dwellings;
- increased screening vegetation to reduce the potential visual impact to the nearby dwellings;
- realignment to several access tracks to avoid or minimise potential impact to native vegetation;
- changes to the access road entrances to avoid disturbance to nearby dwellings;
- changes to the proposed powerline and cabling connecting the project to the approved Crookwell 2 substation, to reduce potential visual impact and removal of native vegetation;

In *Section 23.5 - Key issues identified* of the original EA, Futureye Pty Ltd note in their report that: "*CDPL has taken a beyond compliance approach to consulting the community stakeholders for the Project. CDPL has developed a community consultation and engagement program aimed at providing the community with factual information about the project and gathering feedback from the community and stakeholders about their concerns and interests. These concerns and interests can subsequently be addressed in the approvals process and fed back into the project design where appropriate.*"

In consideration of the public exhibition submissions received from government agencies and the community, and also a Supplementary Ecological report by ERM (refer to Appendix 2), the project has been enhanced to further reduce impact to

the environment. The key design changes as a result of the public exhibition consultation process include:

- removing turbine A19 from the publically exhibited layout as a precautionary measure so as to reduce potential impact to the remnant area by avoiding further fragmentation;
- realignment of the access track and crane hardstand platform for turbine A18 to make use of the existing cleared and regrowth areas within the woodland patch to minimise clearing and avoid hollow bearing trees where possible;
- realignment of the access track and crane hardstand platform for turbine A12 to make use of the existing farm tracks and cleared areas within the woodland patch to minimise clearing and avoid hollow bearing trees where possible;
- relocating turbine A24 and its associated access track and crane hardstand platform to the adjacent paddock to the west of its current proposed location to avoid impact on derived native grasslands within a fenced area;
- realignment of the access track between TA13 and TA16 to avoid areas of Box-Gum Woodland;
- relocation of the access road entrance point into Crookwell 3 East off Greywood siding to avoid removing trees at the entrance;

The project design changes are shown in *Figure 4 - History Plan - C3 East* and *Figure 5 - History Plan - C3 South*.

In consideration of the additional comments received from government agencies during May to August 2013, further supplementary reports were prepared including the Addendum to Supplementary Ecology report by ERM (refer to Appendix 3), the Supplementary Cultural Heritage report by ERM (refer to Appendix 4), the LVIA Supplementary Report by GBD (refer to Appendix 9), the commitment letter to use the Goulburn Mulwaree Council's (GMC) preferred transport route through Goulburn (refer to Appendix 10), and the response from GMC for their preferred transport route through Goulburn (refer to Appendix 11). As a result of the additional supplementary assessments, the project has been further enhanced with provisions and commitments for additional mitigation measures to further reduce impact to the environment and to the community.

**Refer to *Section 4 Design Changes* of this *Preferred Project and Response to Submissions Report* for detail description of the project design changes.**

C3 East Access Road Option 2

PEJAR

330kV Powerline

C3 East Electricity Easement Option 1

C3 East Electricity Easement Option 2

C3 East Access Road Option 3

STEEVES

SUBSTATION CROOKWELL 2

PIGMANS HILL

Approved Crookwell 2 Wind Farm (46 Turbines)

PEJAR

PEJAR DAM

WOODHOUSELEE ROAD

PEJAR

C3 East Access Road Option 1 (Preferred)

GREYWOOD SIDING ROAD

GREYWOOD SIDING ROAD

UPPER LACHLAN SHIRE

GOULBURN MULWAR

LEGEND

- WIND FARM SITE
- ORIGINAL PROPOSED ACCESS TRACK
- ACCESS TRACK NO LONGER PROPOSED
- ACCESS TRACK RELOCATED
- CABLING OR POWERLINE (NOT ADJACENT TO TRACKS)
- CABLING (EXISTING APPROVED C2)
- EXISTING VEGETATION
- TEMPORARY BATCHING PLANT ORIGINAL
- TEMPORARY BATCHING PLANT RELOCATED
- P24 TURBINES ORIGINAL LAYOUT
- P6 TURBINES NO LONGER PROPOSED
- P13 TURBINES RELOCATED
- TRANSMISSION LINE
- CROWN ROAD RESERVE
- MAJOR ROADS

A3
Scale 1:25000 @ A3

0 375 750 1875m

# HISTORY PLAN - C3 EAST
## FIGURE 4

CROOKWELL 3 WIND FARM

PROJ./DRG.NO. 0309-0447-30 DI-04 REV. 00 DRAWN J.D. APP'D. A.T. DATE 18.04.2013

Tract

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PEJAR RD

MIDDLE

FIRST CREEK

KWELL ROAD

RIVER

66kV

C3 South Electricity Easement Option 1

C3 South Electricity Easement Option 2 (Road Reserve)

C3 South Access Road Option 1

C3 South Electricity Easement Option 3 (Council Reserve)

330kV Powerline

SUBSTATION CROOKWELL 2

PIGMANS HILL

Approved Crookwell 2 Wind Farm (46 Turbines)

PEJAR

PEJAR DAM

WOODHOUSELEE ROAD

A26

A27

A28

A29

A30

A31

A32

A33

C3 South Access Road Option 2

WOLLONDILLY RIVER

PEJAR

GREYW

UPPER LACHLAN

ST STU R

**Refer to *Section 4 Design Changes* of this *Preferred Project and Response to Submissions Report* for detail description of the project design changes.**

LEGEND

- WIND FARM SITE
- ORIGINAL PROPOSED ACCESS TRACK
- ACCESS TRACK NO LONGER PROPOSED
- ACCESS TRACK RELOCATED
- CABLING OR POWERLINE (NOT ADJACENT TO TRACKS)
- CABLING (EXISTING APPROVED C2)
- EXISTING VEGETATION
- TRANSMISSION LINES
- P24 TURBINES ORIGINAL LAYOUT
- P6 TURBINES NO LONGER PROPOSED
- P13 TURBINES RELOCATED
- CROWN ROAD RESERVE
- MAJOR ROADS

A3
Scale 1:25000 @ A3

0 375 750 1875m

HISTORY PLAN - C3 SOUTH
FIGURE 5

CROOKWELL 3 WIND FARM

PROJ./DRG.NO. 0309-0447-30 DI-05 REV. 00 DRAWN J.D. APP'D. A.T. DATE 18.04.2013

Tract

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# 5. Consideration of all the submissions

## 5.1. Public Exhibition Provisions

The proposed Crookwell 3 Wind Farm EA was on public exhibition from 1st November 2012 to 6th February 2013 at the following locations:

- NSW Department of Planning and Infrastructure – Information Centre, 23-33 Bridge Street, Sydney;
- Upper Lachlan Shire Council (Crookwell Office) – 44 Spring Street, Crookwell;
- Crookwell Library – Denison Street, Crookwell;
- Upper Lachlan Shire Council (Gunning Office) – 123 Yass Street, Gunning;
- Goulburn-Mulwaree Shire Council – Civic Centre, 184-194 Bourke Street, Goulburn;
- Nature Conservation Council – 2/5 Wilson Street, Newtown.

NSW Department of Planning and Infrastructure (DoP&I) directly advertised for the public exhibition period and notified the local community in vicinity of the project site.

In addition to DoP&I notification, CDPL also notified the local community about the public exhibition through the distribution of the information day newsletter during late November and early December 2012.

CDPL sent the information day newsletters via direct mail to the neighbouring landowners within 3km to 5km of the site boundary which were also included in the original door knock consultation. These landowners were also called directly to notify them of the public exhibition event. The larger community in the region, including the Crookwell township, were provided with newsletter via the Australia Post unaddressed mail service.

The information day session was held on 12th December 2012 which was conducted during the public exhibition. The purpose of the Information Day was to provide community members and other stakeholders with an opportunity to attend, learn more about the Project, and ask questions about the proposed Crookwell 3 wind farm development in order to make a more informed decision about the proposed project for their submissions. The team of consultants that prepared the EA reports were available to answer inquiries from all attendees at the Information Day.

## 5.2. Summary of Submissions

Department of Planning and Infrastructure (DoP&I) received 37 submissions on the publically exhibited EA, one of these submissions was a petition letter which included the volunteer fire fighters of the Upper Lachlan Shire signed by 169 community members, the signatory details of this submission were withheld by DoP&I.

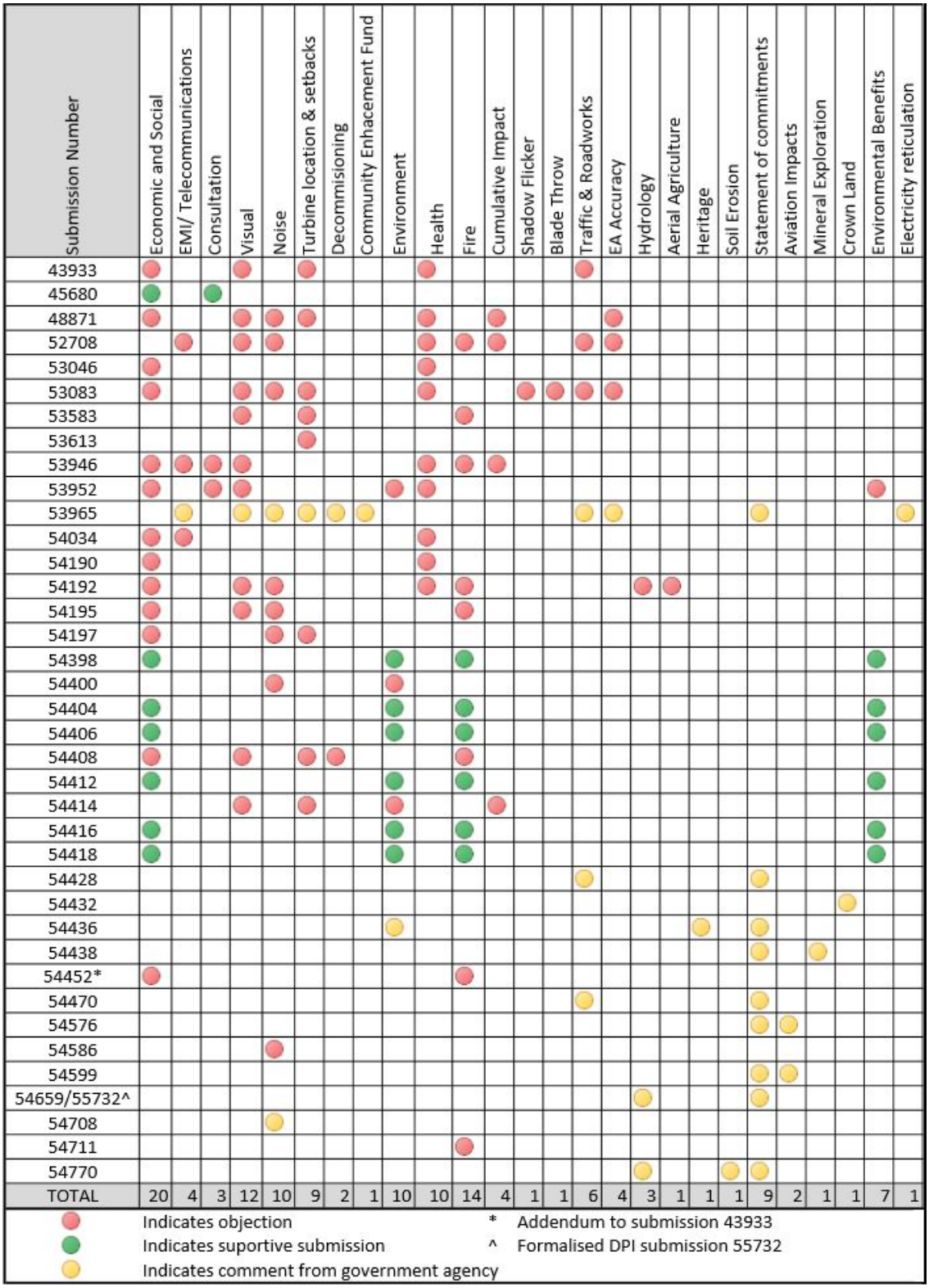
Each submission has a unique reference number in the form of (ID xxxxx), this ID has been used in the response to submissions section to provide a reference to the individual submissions.

The submissions form three categories:

- Comments from the government agencies (11 submissions);
- Objections from community members (19 submissions); and
- Support from community members (7 submissions).

The summary statistics table for the submissions and their related topic is shown in Table 5-1 - Crookwell 3 Wind Farm Submission Summary.

**Table 5-1 - Crookwell 3 Wind Farm Submission Summary**



| Submission Number | Economic and Social | EMI/ Telecommunications | Consultation | Visual | Noise | Turbine location & setbacks | Decommisioning | Community Enhacement Fund | Environment | Health | Fire | Cumulative Impact | Shadow Flicker | Blade Throw | Traffic & Roadworks | EA Accuracy | Hydrology | Aerial Agriculture | Heritage | Soil Erosion | Statement of commitments | Aviation Impacts | Mineral Exploration | Crown Land | Environmental Benefits | Electricity reticulation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43933 | ● | | | ● | | ● | | | | ● | | | | | ● | | | | | | | | | | | |
| 45680 | ● | | ● | | | | | | | | | | | | | | | | | | | | | | | |
| 48871 | ● | | | ● | ● | ● | | | | ● | | ● | | | | ● | | | | | | | | | | |
| 52708 | | ● | | ● | ● | | | | | ● | ● | ● | | | ● | ● | | | | | | | | | | |
| 53046 | ● | | | | | | | | | ● | | | | | | | | | | | | | | | | |
| 53083 | ● | | | ● | ● | ● | | | | ● | | | ● | ● | ● | ● | | | | | | | | | | |
| 53583 | | | | ● | | ● | | | | | ● | | | | | | | | | | | | | | | |
| 53613 | | | | | | ● | | | | | | | | | | | | | | | | | | | | |
| 53946 | ● | ● | ● | ● | | | | | | ● | ● | ● | | | | | | | | | | | | | | |
| 53952 | ● | | ● | ● | | | | | ● | ● | | | | | | | | | | | | | | | ● | |
| 53965 | | ● | | ● | ● | ● | ● | ● | | | | | | | ● | ● | | | | | ● | | | | | ● |
| 54034 | ● | ● | | | | | | | | ● | | | | | | | | | | | | | | | | |
| 54190 | ● | | | | | | | | | ● | | | | | | | | | | | | | | | | |
| 54192 | ● | | | ● | ● | | | | | ● | ● | | | | | | ● | ● | | | | | | | | |
| 54195 | ● | | | ● | ● | | | | | | ● | | | | | | | | | | | | | | | |
| 54197 | ● | | | | ● | ● | | | | | | | | | | | | | | | | | | | | |
| 54398 | ● | | | | | | | | ● | | ● | | | | | | | | | | | | | | ● | |
| 54400 | | | | | ● | | | | ● | | | | | | | | | | | | | | | | | |
| 54404 | ● | | | | | | | | ● | | ● | | | | | | | | | | | | | | ● | |
| 54406 | ● | | | | | | | | ● | | ● | | | | | | | | | | | | | | ● | |
| 54408 | ● | | | ● | | ● | ● | | | | ● | | | | | | | | | | | | | | | |
| 54412 | ● | | | | | | | | ● | | ● | | | | | | | | | | | | | | ● | |
| 54414 | | | | ● | | ● | | | ● | | | ● | | | | | | | | | | | | | | |
| 54416 | ● | | | | | | | | ● | | ● | | | | | | | | | | | | | | ● | |
| 54418 | ● | | | | | | | | ● | | ● | | | | | | | | | | | | | | ● | |
| 54428 | | | | | | | | | | | | | | | ● | | | | | | ● | | | | | |
| 54432 | | | | | | | | | | | | | | | | | | | | | | | | ● | | |
| 54436 | | | | | | | | | ● | | | | | | | | | | ● | | ● | | | | | |
| 54438 | | | | | | | | | | | | | | | | | | | | | ● | | ● | | | |
| 54452* | ● | | | | | | | | | | ● | | | | | | | | | | | | | | | |
| 54470 | | | | | | | | | | | | | | | ● | | | | | | ● | | | | | |
| 54576 | | | | | | | | | | | | | | | | | | | | | ● | ● | | | | |
| 54586 | | | | | ● | | | | | | | | | | | | | | | | | | | | | |
| 54599 | | | | | | | | | | | | | | | | | | | | | ● | ● | | | | |
| 54659/55732^ | | | | | | | | | | | | | | | | | ● | | | | ● | | | | | |
| 54708 | | | | | ● | | | | | | | | | | | | | | | | | | | | | |
| 54711 | | | | | | | | | | | ● | | | | | | | | | | | | | | | |
| 54770 | | | | | | | | | | | | | | | | | ● | | | ● | ● | | | | | |
| TOTAL | 20 | 4 | 3 | 12 | 10 | 9 | 2 | 1 | 10 | 10 | 14 | 4 | 1 | 1 | 6 | 4 | 3 | 1 | 1 | 1 | 9 | 2 | 1 | 1 | 7 | 1 |

● Indicates objection
● Indicates suportive submission
● Indicates comment from government agency

* Addendum to submission 43933
^ Formalised DPI submission 55732

## 5.3. Government Submissions, Comments on the Project

The government agency submissions covered a vast spectrum of topics, and provided a wide range of comments, including several shown in the following list:

- Support for the EA assessment and recommended provisions;
- Propose draft conditions of the permit;
- Request for additional information;
- Request for updates to the Statement of Commitment;
- Request for consultation when preparing the various management plans;

Government agency submissions are address in detail in section 6 of this report.

## 5.4. Community Submissions, Supporting / Opposing the Project

The community submissions for both supporting and opposing the project, covered a range of topics. The supporting submissions highlighting the project's environmental benefits, employment opportunities, efficient use of natural resources, and additional revenue and benefits for landowners and local community including a network of access tracks within the sites to provide for better access to the rural fire service for ground-based fire fighting in the area.

The opposing submissions included concerns over potential impacts from noise, impact to property values in particularly the smaller rural lifestyle blocks as opposed to the large grazing properties, disruptions to local traffic, restrictions to aerial agriculture activities in the neighbouring properties, restrictions to aerial fire fighting within the project site and immediately adjacent to it, inappropriate noise guidelines implemented by the State government, impact to landscape view, cumulative impact, not complying with the Council Development Control Plan 2km buffer criteria, impact to TV and radio reception, impact to wireless internet reception, impact to health due to noise in particularly infrasound, impact from shadow flicker, impact from blade throw, consideration for decommissioning provisions.

Community submissions area address in detail in section 7 of this report.

# 6. Response to Government Agency Submissions

The following Government agencies submitted comments to the Project:

- Upper Lachlan Shire Council (ULSC) – (ID 53965)
- Goulburn Mulwaree Council (GMC) - (ID 54428)
- NSW Department of Trade & Investment – Crown Lands – (ID 54432)
- NSW Office of Environment and Heritage (OEH) - (ID 54436)
- NSW Department of Trade & Investment – Resources & Energy - (ID 54438)
- Roads and Maritime Services (RMS) - (ID 54470)
- Department of Defence - (ID 54576)
- Airservices Australia - (ID 54599)
- NSW Department of Primary Industries (Fisheries NSW) - (ID 54659-1)
- NSW Department of Primary Industries – NSW Office of Water - (ID 54659-2)
- NSW Environmental Protection Agency (EPA) – (ID 54708)
- Sydney Catchment Authority (SCA) - (ID 54770)

In addition to the government agency submissions during the public exhibition period, further comments were received during May to August 2013 from DoP&I, ULSC, GMSC, OEH and EPA based on their review of the draft Preferred Project and Submissions Response Report dated 18th April 2013.

DoP&I also commissioned an Independent Expert Review (IER) of the Landscape & Visual Impact Assessment report, this work was completed by a consultancy called O'Hanlon Design Pty Ltd. DoP&I provided CDPL with the IER report on 30th August 2013.

The responses to each of the comments raised by these agencies is shown in detail in sections 6.1 to 6.13.

## 6.1. Response to Upper Lachlan Shire Council

The Upper Lachlan Shire Council (ULSC) provided a submission (ID 53965) [ref F12/91] dated 5th February 2013, with comments on visual impact, noise, turbine location, communication, roadworks, decommissioning, electricity reticulation, and community enhancement fund. ULSC provided further comments on 3rd June 2013 based on reviewing the draft Preferred Project and Response to Submissions Report dated 18th April 2013, and ULSC additional comments on 14th March 2014. The submission comments and CDPL responses are shown in Table 6-1 - Response to Upper Lachlan Shire Council.

**Table 6-1 - Response to Upper Lachlan Shire Council**

| Category | ULSC Submission Comments | CDPL Responses |
|---|---|---|
| Visual | The proposed roadside tree planting mitigation measures by the proponent can provide ongoing maintenance issues for Council. Agreements and commitments from affected landowners need also require careful consideration. It is unknown how the proponent proposes to mitigate this issue other than tree planting and painting the turbines.<br><br>"Council would like to again emphasize that planting within the road reserve is not supported by Council due to safety and maintenance concerns." | CDPL acknowledge the comment from ULSC regarding the proposed roadside tree planting as a mitigation measure and that ULSC doesn't support planting within the road reserve. CDPL will consult with the residents regarding any offsite screening measures on their properties.<br><br>It is important to note that the roadside tree planting is only one of several considerations for the mitigation measures. The key mitigation measures proposed are summarised in chapter 9 of the EA and are set out in greater detail in sections 16.1 and 16.2 of the Landscape and Visual Impact Assessment (LVIA) contained in Appendix 6 to the EA. These include:<br><br>• Consider options for use of colour to reduce visual contrast between turbine structures and background, e.g. use of off white rather than white, and use matt finish to avoid reflected sunlight. |

| Category | ULSC Submission Comments | CDPL Responses |
|---|---|---|
| | | • Avoid use of advertising, signs or logos mounted on turbine structures, except those required for safety purposes.<br>• If necessary, design and construct site control building and facilities building sympathetically with nature of locality.<br>• Consider options for planting screening vegetation in vicinity of nearby residences and along fencelines adjacent to road corridors to screen potential views of turbines. Such works to be considered in consultation with local residents and authorities.<br>• Undertake revegetation and off-set planting at areas around the site in consultation and agreement with landholders.<br>• Enforce safeguards to control and minimise fugitive dust emissions.<br>• Restrict the height of stockpiles to minimise visibility from outside the site.<br>• Minimise activities that may require night time lighting, and if necessary use low lux (intensity) lighting designed to be mounted with the light projecting inwards to the site to minimise glare at night.<br>• Minimise cut and fill for site tracks and revegetate disturbed soils as soon as possible after construction.<br>• Maximise revegetation of disturbed areas to ensure effective cover is achieved.<br>• A careful and considered transmission line route selection process to avoid sensitive |

| Category | ULSC Submission Comments | CDPL Responses |
|---|---|---|
| | | view locations and loss of existing vegetation where possible.<br>• There are also a number of recommendations in relation to turbine characteristics and materials used. These include recommendations of colour, limits to advertising, paint types and limits to night lighting.<br>Where appropriate, the recommendations made to mitigate the visual impact of the proposed wind farm during the design of the project have been employed, and would continue to be employed during the detailed design of the project.<br>Please refer to the LVIA for greater detail. |
| Noise | In the event that noise levels are expected or found to exceed the stated levels, Council would require the deletion of relevant turbines, and or written agreement from the affected landowner(s) of appropriate noise mitigation measures at no cost to landowner(s).<br>Council wishes the proponent to enter into a written agreement with the affected landowner(s) committing to the proposed noise impact mitigation strategy at no cost to the landowner prior to | The noise impact mitigation strategy developed for the project to address the cumulative noise impacts is outlined in detail in Section 11 of the Noise Impact Assessment contained in Appendix 7 to the EA. In summary, this strategy involves:<br>• Developing a mitigated noise operation layout.<br>• Entering into agreements, in accordance with Section 2.3 of the SA EPA Guideline, with selected neighbouring landowners.<br>• Applying acoustic treatment to noise impacted dwellings.<br>CDPL is in the process of seeking a noise agreement with several of the neighbouring dwellings / landowners. As stated in Section 11.2 of the Noise Impact Assessment contained in Appendix 7 to the EA, if negotiations for noise agreements are unsuccessful then the following adaptive management approach is proposed:<br>▪ Verify actual WTG noise levels through comprehensive noise monitoring. |

| Category | ULSC Submission Comments | CDPL Responses |
|---|---|---|
| | construction of the proposed wind farm. A commitment also needs to be made by the proponent as to a reasonable response time to alleged noise complaints and mitigation works. | ▪ Evaluate turning off WTGs during specific wind direction and speed that are identified as causing the exceedances and undue impact on the affected dwellings.<br>▪ Evaluate the acoustic design of the dwellings and provide acoustic upgrades (glazing, façade, masking noise etc.) to the affected dwellings.<br>▪ Upon landowner initiated acquisition request, proceed with negotiations and give consideration to acquire the affected dwelling.<br>▪ If the above options are unsuccessful, the WTG(s) will be taken offline for further investigation and if impact is not able to be resolved then remove the WTG(s) causing the unresolved exceedances from the layout.<br><br>Section 11.3 of the Noise Impact Assessment contained in Appendix 7 to the EA outlines the process that CDPL will follow (at the dwelling owner's request) in the event that dwellings have been found to exceed the relevant SA EPA Guideline criteria. In particular, CDPL will commit to undertaking a detailed acoustic assessment of the dwelling and designing and installing appropriate building acoustic treatments to reduce the impact of WTG noise.<br><br>The type of acoustic treatment required will depend upon the construction of dwelling and desired noise reduction, however, it could include;<br><br>▪ Provision for mechanical ventilation.<br>▪ Upgraded glazing and seals.<br>▪ Upgraded doors and seals.<br>▪ Provision for low level noise masking.<br><br>It is estimated that these measures could result in an improvement in the sound |

| Category | ULSC Submission Comments | CDPL Responses |
|---|---|---|
| | | transmission loss of a typical dwelling of between 5-10 dBA.<br><br>As stated in Section 11.5 of the Noise Impact Assessment contained in Appendix 7 to the EA, if undue WTG noise impacts are identified during operations due to temperature inversion, atmospheric stability or excessive level then an 'adaptive management' approach can be implemented to mitigate or remove the impact. This process could include:<br><br>▪ *Receiving and documenting noise impact complaint through 'hotline' or other means.*<br>▪ *Investigating the nature of the reported impact.*<br>▪ *Verifying actual WTG noise levels through comprehensive noise monitoring.*<br>▪ *Identifying exactly what conditions or times lead to undue impacts.*<br>▪ *Operating selected WTGs in a reduced 'noise optimised' mode during identified times and conditions (sector management).*<br>▪ *Evaluating the acoustic design of the dwellings and provide acoustic upgrades (glazing, façade, masking noise etc.) to the affected dwellings.*<br>▪ *Turning off WTGs that are identified as causing the undue impact during identified times and conditions and if the impact is not able to be resolved then removing the WTG(s) causing the unresolved exceedances from the layout.*<br><br>As stated in Section 14 of the Noise Impact Assessment contained in Appendix 7 of EA:<br><br>*"It should be noted that the noise modelling procedure relies on a number of conservative assumptions, the foremost being that noise propagates downwind from each source. This will overestimate the predicted noise level where receptors have WTGs located around them in more than a singular direction or quadrant as wind is* |

| Category | ULSC Submission Comments | CDPL Responses |
|---|---|---|
| | | *not able to blow in more than one directional quadrant simultaneously. This exact scenario describes the relative positioning the receptors identified as exceeding SA EPA Guideline levels have with respect to WTGs form Crookwell 2 and Crookwell 3. The degree to which this conservative assumption potentially over-estimates noise levels has been evaluated by predicting noise at compliance critical receptors using alternative algorithms and specific wind directions of easterly and westerly versus all downwind. The predicted degree of conservatism of the all downwind assumption is expected to be greater than the predicted exceedances.*<br><br>*During commissioning of the proposed Crookwell 3 Wind Farm the actual received WTG noise level will need to be verified and determined through extensive monitoring. In addition, an adaptive noise management plan will need to be developed and implemented whereby WTGs will be turned down to 'low noise' mode or alternatively turned off during conditions where actual exceedances are identified. The most effective approach to developing an adaptive noise management plan where multiple wind farms contribute to the cumulative noise impact is to assess received WTG noise levels through the collaborative and coordinated WTG "on-off" testing which removes much of the variability of non wind farm influences. Directional noise monitoring might also be a feasible means of monitoring noise from multiple projects and determining the most effective mitigation strategy."*<br><br>A Noise Management Plan will be prepared prior to the operation phase of the wind farm. The Noise Management Plan will provide details on the reasonable response time to alleged noise complaints and mitigation works. The Statement of Commitments has been updated to include this provision. |

| Category | ULSC Submission Comments | CDPL Responses |
|---|---|---|
| Turbine Location | Council's DCP requires minimum 2km setback from dwellings non-involved with the development, or written consent from existing dwellings within 2km of proposed turbines.<br><br>The proponent had provided a commitment to a 1km setback from all non-participating landowner dwellings, based upon the acknowledgement of the proponent to community concerns, it would not be considered unreasonable for the proponent to commit to entering into a voluntary neighbour agreements with all non-participating landowners with dwellings within 2km of a proposed wind turbine. Alternatively, where written consent from all existing landowner(s) with residences within 2km of proposed turbine is not obtained, Council considers that the turbines should be deleted. | As stated in Section 7.4.5 of the EA:<br><br>*"The proposed wind farm is a project to which Part 3A of the EP&A Act applies. There is no specific statutory provision requiring the Minister to consider the provisions of any development control plan (DCP) in determining an application for project approval under Part 3A. The Minister may, as part of the general discretion to consider matters in the public interest, choose to consider the provisions of a development control plan in determining an application for project approval under Part 3A."*<br><br>The comments contained in table 13 in section 7.4.5 of the EA address the 2km setback requirement contained in the Council's DCP as follows:<br><br>*"It is considered by the proponent that the numerical controls contained in the DCP are unreasonable and arbitrary. Few other Australian wind farms would comply and to ensure compliance with this distance would significantly reduce a project's yield. The limits are not based on any scientific understanding of buffer distances required by noise and other negative characteristics of the wind farm. Nor do they take into account topography, prevailing wind patterns, landscape type or the characteristics of the turbine itself, all of which vary and should be reflected in buffer distances.*<br><br>*A preferable approach is to use the results of the specialist assessments and established standards to determine the most appropriate buffer distance based on the specific project under consideration. The turbines proposed as part of the project have been positioned to minimise negative amenity impacts in consideration of the* |

| Category | ULSC Submission Comments | CDPL Responses |
|---|---|---|
| | | *specialist assessments."*<br><br>Further, section 7.4.5 of the EA also states that: ,<br><br>*"It is noted that neither the Crookwell 1 Wind Farm or the approved Crookwell 2 Wind Farm comply with some of the guidelines contained in both DCP 2008 and DCP 2010. It is also noted that:*<br><br>▪ *the buffer guidelines contained in both DCP 2008 and DCP 2010 go beyond those typically found reasonable by Australian planning courts, tribunals and panels; and*<br>▪ *few wind farms in Australia, either constructed or planned, would comply with these guidelines.*<br><br>*Similar provisions to the numerical controls contained in DCP 2008 and DCP 2010 were contained in the now repealed Upper Lachlan Shire Council Development Control Plan – Wind Power Generation 2005 (2005 DCP). These provisions were considered by the NSW Land and Environment Court in King & anor v Minister for Planning; Parkesbourne-Mummel Landscape Guardians Inc v Minister for Planning; Gullen Range Wind Farm Pty Limited v Minister for Planning [2010] NSWLEC 1102 (7 May 2010) (Gullen Range Decision). In the Gullen Range Decision Moore SC and Fakes C held at paragraph 661 that:*<br><br>*'We have rejected, for two reasons, giving any weight to the council's DCP and the numerical prescriptions in it. First, there is no statutory requirement for us to do so. Second, although it would be possible to have regard to the document as part of the broad public interest, the evidence given concerning the adoption of* |

| Category | ULSC Submission Comments | CDPL Responses |
|---|---|---|
| | | *the numerical limits was exposed as being inaccurate and without foundation. The numerical limits in the DCP could, therefore, only be considered to be arbitrary and certainly could not be considered as being satisfactorily derived in the fashions for either a DCP or a council policy discussed by McClellan CJ in Stockland Development v Manly'."*<br><br>CDPL acknowledges community concerns about issues of proximity to wind farms. To address this concern:<br><br>▪ CDPL is committed to a 1km minimum setback from all non-host landowner dwellings and non-participating dwellings.<br>▪ CDPL also proposes to offer to enter into voluntary neighbour agreements with all non-participating landowners with dwellings within 2km of a proposed wind turbine.<br><br>ULSC's comments about CDPL entering into a Voluntary Neighbour Agreement or the turbine is to be removed, concedes that the process is not voluntary, and hence outside the project's planning requirements. As mentioned above CDPL is committed to proposing a type of voluntary neighbour agreement to all non-participating landowners with dwellings within 2km of a proposed turbine, the process is completely voluntary for both CDPL and for the neighbouring landowners that that have a dwelling within 2km of a proposed turbine. |
| Tele-Commu-nication | In the event of a complaint regarding television, radio or wireless transmission during the construction and operation of the development, the applicant shall | CDPL will perform a pre- and post-construction surveys to determine signal strength and quality of the television signal received at dwellings identified as having the potential to experience television interference due to the proposed Crookwell 3 wind farm. |

| Category | ULSC Submission Comments | CDPL Responses |
|---|---|---|
| | investigate the quality of transmission at the receptor compared t the pre-commissioning situation and where any transmission problems can be reasonably attributed to the development, rectify the problem within two months of the receipt of the complaint. The applicant shall be responsible for all costs associated with the mitigation measures. | The mitigation measures proposed are:<br>• summarised in Section 17.4 of the EA Report;<br>• outlined in Section 5.13 of the "Assessment of Electromagnetic Interference Issues for the Crookwell 3 Wind Farm" contained in Appendix 11 to the EA; and<br>• have been included in the Statement of Commitments.<br>In summary, these mitigation measures are as follows:<br>• If TV interference is identified that is attributable to the wind farm, the amelioration options below will be implemented, on an as required basis, in order to rectify the problem:<br>▪ realigning the householder's TV antenna directly towards their existing transmitter;<br>▪ tuning householder's antenna into alternative sources of the same or suitable TV signal;<br>▪ the installation of more directional and/or higher gain antenna at the affected residence;<br>▪ relocating the antenna to a less affected position;<br>▪ the installation of a digital set top box (and UHF antenna if required);<br>▪ the installation of cable/satellite TV at the affected residences; and<br>▪ installation of a TV relay station. |

| Category | ULSC Submission Comments | CDPL Responses |
|---|---|---|
| | | • If interference to the existing wireless internet service is encountered that is attributable to the wind farm, following construction of the wind farm, CDPL will work with Cirrus Communications to resolve any interference problems caused by the wind farm. Possible amelioration methods may include:<br>▪ installation of improved or higher antenna at affected dwellings; or<br>▪ installation of a new base station or service dwellings in affected areas. |
| | Council feels that the proponent should provide a commitment to rectify identified telecommunication problems within two months of the receipt of the complaint. The proponent shall be responsible for all costs associated with the mitigation measures. | It is important to note that CDPL will only commit to the mitigation measures for the affected dwellings that have allowed the CDPL agents/contractors to undertake both the Pre and Post construction survey at their dwellings. This is to ensure that the baseline reception condition is known and documented as part of the process for comparison and implementation of effective mitigation measures. The time period to rectify the identified telecommunication problems is dependent on the nature of the problem and should be assessed as part of the process, it is not possible to commit to an arbitrary timeframe without knowing the circumstances for the telecommunication problem. |
| Roadworks | (a) Requires approval from NSW Roads and Maritime Services for the proposed Crookwell 3 South access. | (a) Noted. CDPL will seek and obtain approval from NSW Roads and Maritime Services (RMS) for the final design and construction of the access road to the Crookwell 3 South site. CDPL will provide design drawings as required by RMS. |

| Category | ULSC Submission Comments | CDPL Responses |
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| | (b) Requires approval from Upper Lachlan Shire Council (by way of permit issued under section 138 of the roads Act) prior to construction and use of Crookwell 3 East access. | (b) Noted. CDPL will seek and obtain approval from Upper Lachlan Shire Council for the final design and construction of the access road to the Crookwell 3 East site. |
| | (c) Upper Lachlan Shire Council favours the use of option 1 for Crookwell 3 East access (Greywood siding road), if another option is used Council will require significant upgrading of Woodhouselee Road. | (c) Noted. The Greywood Siding road access option is CDPL's preferred access option as it will would bypass a number of dwellings located along Woodhouselee road, and also reduce vehicle numbers along several kilometres of this road. However, the use of this access option is subject to a number of other considerations including environmental and terrain restrictions, crossing of the unused rail corridor, and the cost effectiveness of this option against upgrading of Woodhouselee Road in the vicinity of Woodhouselee Village.<br><br>CDPL notes that the approved Crookwell 2 wind farm has already been granted approval for the use of this section of the council's Woodhouselee road.<br><br>If one of the other two access options (along Woodhouselee Road) is selected as the final access instead of the preferred Greywood Siding Road option, any required upgrades for this extra section of Woodhouselee Road will be included in the roadworks, maintenance and inspection program that would form part of the Traffic Management Plan to be prepared in consultation with Upper Lachlan Shire Council. |

| Category | ULSC Submission Comments | CDPL Responses |
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| | (d) The proponent will be require to make arrangements with NSW LPI regarding the use of Greywood siding road as it is a NSW crown owned public road. | (d) Noted. CDPL will seek and obtain the required access licence or easements from NSW LPI (Crown Lands) for the use of Greywood Siding Road, alternatively CDPL will make a request to the Crown Lands to change the status of the crown road and transferring it to Council, subject to agreement with ULSC. |
| | (e) Council requires all road that the high voltage electrical connections cross to be under bored (not open trenched) with the cables to be encased in ducts to Council's approval. | (e) Noted. All high voltage electrical cabling that are proposed to be underground will be under bored (not open trenched) and encased in ducts when crossing gazetted public roads. CDPL will seek a section 138 approval from Council for installations of Cable beneath the gazetted roads. |
| | (f) Council road to the north of the proposed development are not capable of servicing the construction traffic requirements of the development without significant upgrading of the road. | (f) Noted. CDPL is not currently proposing to use the Woodhouselee Road north of the proposed development for the heavy vehicles or over-dimension vehicle traffic during the construction phase. CDPL anticipates that construction personnel (with passenger vehicles or utility vehicles) could travel through the northern part of Woodhouselee Road. |
| | (g) It is considered crucial that all key stakeholders identified within the Transport Management Plan (proposed to be contained within the CEMP) have given their approval of the document prior to submission to the DG. | (g) Noted. CDPL will identify all key stakeholders for the traffic and transportation requirements and include them in the consultation process to ensure all comments from stakeholders are documented and assist in preparation of the Traffic Management Plan. |

| Category | ULSC Submission Comments | CDPL Responses |
|---|---|---|
| Decomm-issioning | Provision for Decommissioning Bond. Council would like the proponent to commit to a condition of consent being imposed requiring the proponent to pay a decommissioning bond. | Refer to section 6.3 of Decommissioning & Rehabilitation Plan (DRP) in Appendix 4 of the EA. The DRP states:<br><br>*"Beyond the 10-year warranty period and the 10 year 'break-even' period, decommissioning funds will be ensured through the resale (for reuse) of the wind turbines to other providers. No bond is therefore required at this time."*<br><br>*"As part of the 5-yearly review of the DRP the funding plan will be reviewed by an independent, credible and reputable service provider to ensure the funds raised from the salvage of the turbines are still sufficient to cover the costs of decommissioning. This review will re-assess the dismantling/decommissioning costs and/or adjust the original costs for inflation. If a shortfall is identified at that time, the proponent will then establish a dedicated internal fund to supplement this shortfall and which will be used to cover the net costs for decommissioning. This internal fund will be put aside within the parent company (i.e. Union Fenosa Wind Australia) rather than the special purpose vehicle CDPL, and will be permanently accessible."*<br><br>CDPL proposes that the 5-yearly review of the DRP be used as the mechanism and be implemented as the alternative to a rehabilitation bond or decommissioning bond. |
| Electricity Reticulation | Council would require a condition that imposes a realistic time frame on the proponent as to obtaining approval for the wind farm connection through Crookwell 2. | CDPL has received an Offer to Connect from the Transmission Network Service Provider (TransGrid) for the connection of Crookwell 2 wind farm to the national electricity grid. It is proposed that the Crookwell 3 wind farm will connect directly into the Crookwell 2 wind farm's grid connection point, avoiding the need to construct separate substation infrastructure. |

| Category | ULSC Submission Comments | CDPL Responses |
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| | | This is made apparent in section 5.1 of the EA report which states:<br><br>*"Grid connection would be achieved from a connection to the 330kV electricity transmission line which runs through the site. The project would utilise and be connected to the single substation, control room and facilities that form part of the Crookwell 2 Wind Farm."*<br><br>CDPL submits that there is no need for a condition to be imposed requiring that a connection via Crookwell 2 be documented within a set timeframe. |
| Community Enhancem-ent Fund | The proponent shall enter into a planning agreement with Council in accordance with division 6 of part 4 of the Environmental Planning and Assessment Act and in accordance with clause 3.17 of the Upper Lachlan Development Control Plan 2010. | Under the *Environmental Planning and Assessment Act 1979 (NSW)* Voluntary Planning Agreement (**VPA**) are voluntary in nature.<br><br>CDPL has committed to entering into a VPA with the council for the community enhancement fund. CDPL has offered to contribute $1,666 per operating turbine per annum (adjusted annually to the CPI) to a community enhancement fund. This reflects the level of contribution imposed by the NSW Land and Environment Court in *Gullen Range Wind Farm Pty Limited v Minister for Planning [2010]* NSWLEC 1102 (7 May 2010).<br><br>CDPL also proposes to offer to enter into voluntary Neighbour Benefit Sharing Agreements with all non-participating landowners with dwellings within 2km of a proposed wind turbine locations. The combined value of the VPA and the Neighbour Benefit Sharing Agreements is anticipated to be equal to or greater than the $2,500 per turbine per annum that is requested by Council's DCP. |

| Category | ULSC Submission Comments | CDPL Responses |
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| | In Council meeting with the proponent on the 17 May 2013 where a verbal agreement regarding the funding of the Community Enhancement Fund was reached. | Following from the meeting with ULSC on 17th May 2013, CDPL provided ULSC with a proposal letter for the VPA on 3rd June 2013. ULSC responded to CDPL on 27th June 2013 with the in principal acceptance of the combined Crookwell 2 & Crookwell 3 wind farm (VPA):<br>"*Council at its meeting held on the 20 June 2013, resolved in accordance with Resolution No 190/13, that Council provide in principle support to the proposed Voluntary Planning Agreement for Crookwell 2 and proposed Crookwell 3 wind farms as outlined in Union Fenosa's Letter dated the 3 June 2013.*"<br>"*Council awaits the receipt of a redrafted Voluntary Planning Agreement for final approval.*"<br>On 10th February 2014, CDPL provided ULSC with a revised VPA incorporating all the provisions of the 3rd June 2013 proposal letter.<br>The ULSC responded to CDPL on 28th February 2014 by providing the revised VPA with some minor amendments. CDPL is generally satisfied with ULSC amendment and will commit to signing the VPA once the Crookwell 3 wind farm is approved. |

## 6.2. Response to Goulburn Mulwaree Council

The Goulburn Mulwaree Council (GMC) provided a submission (ID 54428) dated 28th Nov 2012, with comments on details of transport route through Goulburn to ensure suitability for oversized vehicles. On 5th August 2013 DoP&I requested further clarification on the exact details of the route through Goulburn. On 9th September 2013 CDPL contacted GMC and in consultation with the Manager for Engineering Services identified GMC's preferred transportation route which is currently used by the Gullen Range wind farm turbine delivery vehicles. CDPL inspected GMC's preferred route and then provided a commitment letter to GMC on 30th January 2014 (refer to Appendix 10). On 13th February 2014 GMC acknowledged the letter and were satisfied with the commitments subject to conditions in their letter (refer to Appendix 11). The submission comments and CDPL responses along with responses to their conditions in letter of 13th February 2014 are shown in Table 6-2 - Response to Goulburn Mulwaree Council.

**Table 6-2 - Response to Goulburn Mulwaree Council**

| Category | GMC Submission Comments | CDPL Responses |
|---|---|---|
| Traffic | It is noted that project falls wholly within Upper Lachlan shire Council although transportation route during construction does pass through the Goulbourn Mulwaree Council local government area. Goulburn Mulwaree Council recommends that further discussion and details of construction traffic be discussed with Council officers. | Noted. CDPL carried out further consultation with the Goulburn Mulwaree Council (GMC) Manager for Engineering Services and identified GMC's preferred transport route through Goulburn, and provided GMC with commitment letter on 30th January 2014 (refer to Appendix 10) to use the designated roads and intersections highlighted in that letter. GMC responded via an email on 13th February 2014 and stated:<br>"*Council is satisfied with the route proposed for the over-dimensional vehicles, however, conditions will be imposed for these vehicles as well as the other construction vehicles. These conditions will be formulated in due course.*"<br>In addition GMC also provided a letter on 13th Feb 2014 (refer to Appendix 11) that stated:<br>"With regard the over-dimensional vehicles, your proposed route of: Hume Street, Clinton |

| Category | GMC Submission Comments | CDPL Responses |
|---|---|---|
| | | Street, Deccan Street, Fitzroy Street and Crookwell Road, is considered the preferred route. It is noted that this route will apply to the already approved project of Crookwell 2, as well as the proposed Crookwell 3 project. This route will be approved by Council pending agreement to other transport conditions by Council."<br><br>CDPL will prepare the Construction Traffic Management Plan in consultation with GMC officers to ensure reasonable and practical mitigation measures are in place to reduce impact to the community. |
| | **GMC Comments on 13th Feb 2014** | |
| | The following points are flagged as matters that GMC wish to be included in the final Traffic Management Plan (TMP):<br><br>(1) The TCPs shall be approved by Council. | (1) Noted. CDPL will prepare the Traffic Control Plan (TCP) for the transport route through Goulburn in consultation with GMC officers. The TCP will then form part of the oerall Construction TMP. The SoC (new item 11.6) has been updated to include this commitment. |
| | (2) Council has in place a s94 Plan whereby heavy vehicles pay a levy of 4.43 c/t/km (2013/14) on local roads. This comprises a component for pavement damage (resulting in an earlier reconstruction) and | (2) CDPL acknowledged the Goulburn Mulwaree Council (GMC) concerns about the pavement damage as a result of large volume of heavy vehicles. It is important to note that it is anticipated that most of the workforce and earthworks material is sourced locally in the region, and in particularly in Goulburn. With the exception of the large turbine components that will be delivered by Over Dimensional (OD) vehicles, we would anticipate that all other heavy vehicles would already be on the GMC's s94 Plan, therefore we only anticipate a |

| Category | GMC Submission Comments | CDPL Responses |
|---|---|---|
| | surface defect. While surface defects will be remedied by your company, the pavement damage is not, therefore this component amount to 2.4365 c/t/km is payable. This shall apply to all construction vehicles, not only the over-dimensional vehicles. Please supply an estimate of expected loads. You will be required to provide a record of transported loads on a monthly basis. | maximum of 2.4365 c/t/km could be payable for only the OD vehicles using the local roads, and not all other heavy vehicles that would be utilising the GMC's local road network as part of their existing s94 Plan. In addition since a large percentage of the resources could potentially be sourced from the Goulburn area, it is impractical and unrealistic to administer how the local resources will travel from their Goulburn depot to Crookwell Road, especially if they are located on the other side of Goulburn furthest from the designated route through Goulburn.<br>CDPL will further consult and negotiate with GMC on these matters after the proposed project has been approved. |
| | (3) Surface and other visible defects shall be repaired to the appropriate AUSPEC standards and to the satisfaction of the Manager Works at the conclusion of the project. Further, regular (minimum weekly) inspections shall be undertaken and repairs made. Additionally, emergent issues shall be addressed within one day. | (3) Noted. Surface and other visible defects on the designated route will be repaired to the appropriate AUSPEC standards and to the satisfaction of the Manager Works at the conclusion of the project. Regular weekly inspections shall be undertaken and repairs made. Emergent issues with be addressed within one day of the official notice to CDPL by GMC. The SoC (new item 11.8) has been updated to include this commitment. |

| Category | GMC Submission Comments | CDPL Responses |
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| | (4) The route to be taken by all construction vehicles is to be defined and agreed to by Council. As much as possible, local roads shall be avoided. Note that the levy od point 2 above only applies to local roads. | (4) Noted. The construction vehicles will have a designated transport route as defined and agreed to by GMC. The SoC (new item 11.7) has been updated to include this commitment. |
| | (5) A code of practice for heavy vehicle drivers is to be implemented, including a speed limit of 80km/h on all local rural roads. | (5) Noted. CDPL will include code of practice for heavy vehicle drivers including an 80km/h speed limit in the provisions of the TCP. The speed limit will be on all local rural roads. The SoC (item 11.4) has been updated to include this commitment. |
| | (6) The intersections that were modified to accommodate Over Dimensional (OD) vehicles for the Gullen Range wind farm and now for Crookwell 2 and 3 wind farms shall be reinstated to their pre-existing condition. | (6) Noted. In accordance with CDPL letter of 30th January 2014 (refer to Appendix 10), CDPL will reinstate the intersections in Goulburn that were modified to accommodate OD vehicles transport route. The SoC (new item 11.7) has been updated to include this commitment. |

## 6.3. Response to NSW Trade & Investment (Crown Lands)

The NSW Trade & Investment - Crown Lands division provided a submission (ID 54432) [ref 12/07474] dated 3rd December 2012, with comments on the impact to the unused Crown Land within or on-route to the wind farm site boundary that would be encroached on by the wind farm and associated infrastructure. Crown Lands have provided measures to mitigate the impacts. The submission comments and CDPL responses are shown in Table 6-3 - Response to NSW Trade & Investment (Crown Lands).

**Table 6-3 - Response to NSW Trade & Investment (Crown Lands)**

| Category | Crown Lands Submission Comments | CDPL Responses |
|---|---|---|
| Crown Lands | (a) In Crookwell 3 South, an encroachment over the Crown Lands held under Permissive Occupancy 1517 for grazing. Crown Lands will require the track to be authorised via suitable easements with compensation and fees claimed in the normal manner. | (a) Noted. CDPL will seek a suitable easement from Crown Lands for the placement of the internal access track in the subject area that is currently held under the Permissive Occupancy 1517 for grazing by one of the host landowners. |
| | (b) In Crookwell 3 East Crown Lands has identified several encroachments over the Crown Land road reserve or air space. | (b) CDPL agrees that all encroachments over the Crown Land road reserve and air space should be subject of a road closure and purchase application. This would be done on behalf of the adjoining landowner that is also a host landowner in the wind farm project. In Instances where a road closure is not possible or practical, CDPL will seek an easement over the subject areas, or seek approval for a licence under the Crown Lands Act 1989. The proposed temporary concrete batching plant is now relocated further east within the same area to avoid crown road encroachment. Refer to *Figure 4 – History Plan C3 East* for design changes. |

## 6.4. Response to NSW Office of Environment and Heritage (OEH)

The NSW Office of Environment and Heritage (OEH) provided a submission (ID 54436) [DOC12/44804] dated 6th February 2013, with comments on Ecology and Indigenous and non-indigenous archaeological heritage. OEH requested additional information on the vegetation mapping and details on the surveys, and question the location of A12, A18, and A19. OEH considered the size of the proposed offset reasonable, however requested more information on the location and type of the offset. OEH requested additional data and clarification on the heritage field surveys and heritage consultation process.

In response to OEH submission during the Public Exhibition period, CDPL removed Turbine A19, and commissioned ERM to undertake further ecological assessment and prepare a Supplementary Ecology Report (SER) on 10th April 2013 (refer to Appendix 2). The results of SER were incorporated into the draft Preferred Project and Response to Submissions Report dated 18th April 2013, the submission comments and CDPL responses are shown in Table 6-4 - Response to NSW Office of Environmental and Heritage (A).

OEH provided additional comments on 10th May 2013 based on review of the draft report. ERM carried out further ecological surveys, this time during the winter season and prepared the Addendum to the SER (refer to Appendix 3). CDPL responses to the OEH 10th May 2013 letter (ecology comments) is shown in Table 6-5 - Response to NSW Office of Environmental and Heritage (B).

OEH also provided additional comments on the Indigenous and non-indigenous archaeological heritage field surveys and heritage consultation process. CDPL commissioned ERM to undertake and additional heritage assessment and prepare a Supplementary Aboriginal and Historical Cultural Heritage Assessment Report (SCHR) on 14th February 2014 (refer to Appendix 4). CDPL responses to the OEH 10th May 2013 letter (heritage comments) is shown in Table 6-6 - Response to NSW Office of Environmental and Heritage (C).

**Table 6-4 - Response to NSW Office of Environmental and Heritage (A)**

| Category | OEH Submission Comments | CDPL Responses |
|---|---|---|
| Environ-ment | (a) OEH considers that information for both flora and fauna surveys are not sufficiently comprehensive and are lacking in detail e.g. vegetation mapping is incomplete, time and locations of targeted fauna surveys are not presented. Therefore the nature and extent of the potential impacts on threatened species caused by the project is difficult to determine and the precautionary principle should be applied. | (a) The details of the original fauna survey and survey effort for the Targeted Threatened Species Assessment is referred to in Section 1.1 and tabulated in Appendix A of the Anderson Environmental Consultants Pty Ltd response dated 9th April 2013 attached in Appendix 1 to this Report (Anderson Environmental Response).<br><br>An additional Ecological field survey and assessment was undertaken by Environmental Resources Management Australia Pty Ltd (ERM) in March-April 2013. The report of that field survey and assessment, entitled "Crookwell 3 Wind Farm, Supplementary Ecology Report" (SER) dated 10th April 2013, is attached as Appendix 2 to this Report. The SER provides further details of on Habitat Assessment, Vegetation Mapping, Offsets, Discussions and Recommendations and includes a revised set of 7-part Tests for the recently identified species. |
| | (b) OEH does not support the location of turbines within remnant woodland or forest, particularly in large remnant patches in otherwise cleared and fragmented rural landscapes. Of primary concern to OEH is the location of turbines A12, A18 and A19 within | (b) CDPL has removed turbine A19 from the proposed layout as a precautionary measure so as to reduce potential impact to the remnant area by avoiding further fragmentation.<br><br>For detailed responses to the OEH submission and in particularly the comments in Attachment 1 of the OEH submission, refer to:<br>▪ SER contained in Appendix 2 to this Report for further details on:<br>  ▪ Hollow Bearing Trees (at Section 1.2); |

| Category | OEH Submission Comments | CDPL Responses |
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| | large remnants. Turbines A18 & A19, in particular, are proposed to be located in a vegetation type that has been 90% cleared, i.e., an over cleared vegetation type, the clearing of which would not be supported under either the Property Vegetation Plan (PVP) tool or BioBanking Assessment Methodology (BBAM). Medium sized remnants in heavily cleared rural landscapes, such as the area proposed for turbine A12, are likely to provide habitat for several threatened fauna species known occur in the region. It is the view of OEH that, given the inadequacies of the fauna survey, turbine A12 should also be removed from the design to minimise potential impacts on threatened species. | ▪ Bird and Bat Strike and Migratory Birds (at Section 1.3)<br>▪ Native Vegetation (at Section 1.4); and<br>▪ SER contained in Appendix 2 of this Report for further details on:<br>▪ Methodology (at Section 3)<br>▪ Results (at Section 4) including<br>▪ Weather Conditions (at Section 4.1)<br>▪ Vegetation Mapping (at Section 4.2)<br>▪ Threatened Flora (at Section 4.3)<br>▪ Threatened Fauna Habitat (at Section 4.4)<br>▪ Discussion and Recommendations (at Section 5)<br>▪ Vegetation (at Section 5.1) including<br>▪ Turbine A18 (at Section 5.1.1)<br>▪ Turbine A12 (at Section 5.1.2)<br>▪ Turbine A24 (at Section 5.1.3)<br>▪ Box-Gum Woodland (at Section 5.1.4)<br>▪ Fauna Habitat (at Section 5.2)<br>▪ Pejar Dam (at Section 5.3)<br>▪ Revised 7-Part Tests (at Section 5.4)<br>▪ Offsets (at Section 5.5)<br>▪ Recommendations (at Section 5.6) |

| Category | OEH Submission Comments | CDPL Responses |
|---|---|---|
| | | The recommendations of the SER are as follows:<br>▪ *adjust the Development Footprint around TA18 to make use of the existing cleared and regrowth areas within the woodland patch to avoid hollow bearing trees and minimise clearing;*<br>▪ *adjust the access track to TA18 to avoid removal of hollow bearing trees;*<br>▪ *adjust the Development Footprint around TA12 to make use of the existing farm tracks and cleared areas within the woodland patch to avoid hollow bearing trees and minimise clearing;*<br>▪ *move TA24 to the adjacent paddock to the west of its current proposed location;*<br>▪ *consider an alternative access road to the Wollondilly property if clearing or lopping of branches is unavoidable;*<br>▪ *adjust the location of the access track between TA13 and TA16 to avoid areas of Box-Gum Woodland;*<br>▪ *implement mitigation measures to reduce potential impacts associated with the First Creek crossing on identified Booroolong Frog habitat;*<br>▪ *undertake bird utilisation surveys around Pejar Dam to record how the water body is utilised through the seasons by sedentary and or any migratory waterbird species and address any potential impacts to these species;*<br>▪ *develop a tree felling protocol if hollow bearing trees are removed as part of the proposal to mitigate any potential harm to individual species that utilise those hollows,* |

| Category | OEH Submission Comments | CDPL Responses |
|---|---|---|
| | | *the protocol should detail a methodology that can be applied to all vegetation clearance and should include the following measures:*<br>▪ *delineation of vegetation to be cleared;*<br>▪ *pre-clearing inspection of vegetation;*<br>▪ *diurnal and nocturnal inspection of hollow bearing trees to be removed;*<br>▪ *implement a two stage approach to clearing works;*<br>▪ *non-hollow bearing trees will be cleared before habitat trees to allow fauna an opportunity to move from the hollow bearing trees and allow time to concentrate rescue efforts on the trees that are most likely to be inhabited;*<br>▪ *hollow bearing trees will be felled after a minimum 24 hour delay after clearing of non-habitat trees;*<br>▪ *an Ecologist will be on site for the felling of all hollow bearing trees;*<br>▪ *felled hollow bearing trees will be inspected as soon as possible by a qualified ecologist; and*<br>▪ *habitat components from felled trees such as hollow branches and trunks should be salvaged and placed in adjacent habitat.*<br>▪ *implement a construction management plan throughout the construction phase which should include but not limited to, Soil Sediment and Erosion Control Plan, Vegetation Management Plan and vegetation pre clearance protocols to mitigate any impacts on threatened fauna habitats and the Pejar Dam.* |

| Category | OEH Submission Comments | CDPL Responses |
|---|---|---|
| | (c) OEH considers that the size of the proposed offsets for the clearing of vegetation appear to be reasonable relative to the potential size of the development footprint. There is, however, a deficiency of information regarding the location of the offset, the vegetation types it contains, proposed management actions, and the legal instrument to secure the offset. | (c) As outlined above, CDPL has now removed turbine A19 from the proposed layout, hence significantly reducing the removal of the native vegetation in that remnant area.<br><br>CDPL is committed to provide an appropriate native vegetation offset.<br><br>Section 5.5 of the Supplementary Ecology Report contained in Appendix 2 to this Report outlines the proposed offsetting approach and states that:<br><br>*"To satisfy the offset requirements, an offset strategy will be prepared. It is proposed that offsets will be secured onsite within areas of Silvertop Ash Open Forest, Red Stringybark Open Forest and Box Gum Woodland. Areas of native grassland derived from these vegetation types will be offset into open forest / woodland areas comprising the original equivalent vegetation type.*<br><br>*It is proposed that the quantum of offset including the area, vegetation type and condition be defined and included in the consent so that the offset strategy reflects the requirements associated with the final approved Project. Subsequent to this, the location, management and securing mechanism will be included in the offset strategy to the satisfaction of OEH. The offset strategy will be prepared and its approval sought prior to commencement of works."*<br><br>CDPL will continue to consult with OEH in relation to the offsets to be provided for the project. |

| Category | OEH Submission Comments | CDPL Responses |
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| Heritage | (a) OEH considers the Indigenous Archaeological Heritage report is not sufficiently comprehensive, is lacking in detail, and therefore does not adequately consider the full nature and extent of impacts of the Project on Aboriginal cultural heritage values. Most notably, the report clearly states that not all impact areas were subject to inspection such as the majority of proposed access roads and overhead transmission lines were not. OEH is therefore concerned about the adequacy of the current assessment in terms of the number of changes that may occur during detailed design and the extent and significance of additional Aboriginal cultural heritage values that may be subsequently located. | (a) For further clarification on the details of the Cultural Heritage Impact Assessment, refer to Section 2.1 of the Anderson Environmental Response contained in Appendix 1 to this Report.<br><br>CDPL agrees and commits to preparing a comprehensive Cultural Heritage Management Plan that outlines the management strategies for the management of any potential unrecorded sites which are identified within the site during construction of the Project.<br><br>In accordance with the Draft NSW Wind Farm Planning Guidelines, the construction program control measures to be included in the Cultural Heritage Management Plan will include provisions:<br>▪ to temporarily halt works in the vicinity of the specific work area in the event that a previously unidentified Aboriginal object or historic relic is uncovered. In particular, all works likely to affect the object/relic will cease and the OEH officers and the registered Aboriginal stakeholder notified;<br>▪ to ensure that works will not recommence at the specific site until an appropriate strategy for managing the object/relic has been determined in consultation with OEH and the Aboriginal stakeholders; and<br>▪ to ensure that, where impacts to any further sites which are identified cannot be avoided, further investigation would be carried out in consultation with Pejar LALC and OEH. This may include sub-surface digs and analysis. |

| Category | OEH Submission Comments | CDPL Responses |
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| | (b) Following a detailed review of the Indigenous Archaeological Heritage report it appears that the Aboriginal consultation may not have been undertaken in accordance with the "Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation" (DEC, July 2005), although there is insufficient information supplied within the report to clarify this. | (b) For further clarification on the details of the Aboriginal consultation undertaken as part of the Cultural Heritage Impact Assessment, refer to Section 2.1 of Anderson Environmental Response contained in Appendix 1 to this Report.<br><br>In particular, the Anderson Environmental Response states that:<br><br>*"In relation to the Indigenous Archaeological Heritage Report and meeting the requirements of the "Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation" (DEC, July 2005), as part of the consultation process the project was advertised in the local newspapers (Goulburn Post and the Crookwell Gazette) for two consecutive weeks requesting expressions of interest in the proposal in accordance with the Guidelines. An invitation to participate in the consultation process was extended directly to the Pejar Local Aboriginal Land Council (Pejar LALC) as identified by the Aboriginal Land Council Boundaries in the Aboriginal Land Councils map produced by the NSW Department of Lands 2007. The site surveys were conducted with participation of two Aboriginal Field Officers from Pejar LALC. Consultation was an integral part of the process and the draft report was reviewed and commented on by Pejar LALC as the Registered Aboriginal Party (RAP) for the Project site area. (Refer to Appendix B for the copy of the letter from Pejar LALC dated 3rd November 2010). In this letter of review they state that they fully agree with the assessment and recommendations for the protection of Aboriginal Cultural Sites and the additional surveys required as outlined in the Heritage Report."* |

| Category | OEH Submission Comments | CDPL Responses |
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| | (c) OEH recommends that the Cultural Heritage Impact Assessment for the proposed Crookwell 3 Wind Farm be updated so as to adequately address the requirements of the Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (DEC, July 2005). | (c) This issue has been explained and clarified in point 4.2(a) and 4.2(b) above. The Anderson Environmental Response dated 9th April 2013 will be considered as the addendum to the 2010 Cultural Heritage Impact Assessment. |

**Table 6-5 - Response to NSW Office of Environmental and Heritage (B)**

| Category | OEH Comments on 10th May 2013 | CDPL Responses |
|---|---|---|
| Ecology<br><br>(Flora and Vegetation Survey) | OEH is satisfied that the requirements of the DGRs with regards to the mapping of vegetation and habitats within the development envelope have been via the completion of the Supplementary Ecology Report (SER) by ERM. Examination of the locations of all hollows in the A12 and A18 areas suggests that most hollows can be retained. The proximity of these hollows to proposed turbines, however remains of | Noted. Additional field surveys were undertaken by ERM over a period of six days, the first three days from 23-25 July 2013, and a further 3 days from 6-8 August 2013. Camera traps and songmeters were deployed from 23 July to 8 August 2013.<br><br>For survey and assessment of the Hollow Bearing Trees (HBTs) were undertaken in the vicinity of turbine A12 and A18, refer to Section 4.1 of Addendum to SER in Appendix 3. |

| Category | OEH Comments on 10th May 2013 | CDPL Responses |
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| | some concern as it increases the likelihood of birds and bats that utilise these hollows colliding with turbine rotor. | Operational wind farms pose a collision risk to birds and bats where rotor strike can cause injury and/or death, as well as alienation of habitat through avoidance of turbines. Fatalities and injuries are usually caused by a collision with the moving blade (blade strike), or with turbine infrastructure, such as guy lines and powerlines. Lighting on wind farm turbines may also increase the likelihood of blade strike to insectivorous bat species by attracting insects to within the rotor swept area (RSA) thus causing bats to forage within this area and interact with the rotors.<br><br>The main potential impacts on bird species from an operational wind farm area:<br><br>▪ direct mortality associated with rotor collisions and collisions with other associated infrastructure including towers, guy wires and transmission lines; and<br>▪ indirect impacts relating to habitat loss through the effects of the installation of wind farm facilities.<br><br>Alienation of habitat is a further consideration related to rotor strike, as it indicates a measure of 'avoidance' of turbines by birds and bats. The avoidance rate for birds in Australia is generally considered to be in the order of 95% to 99%. This avoidance effect essentially leads to a loss of habitat within the footprint of the proposed development.<br><br>The birds that are likely to utilise the HBTs in the vicinity of turbines A12 and A18 generally fly below canopy height or just above it. Canopy height in |

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| | | the Study Area is typically 10 -15m in height. As such, these species may fly within the RSA, however they are more likely to fly below the RSA, thereby significantly reducing the risk of a rotor strike on these species.<br><br>As the bat species recorded generally forage and fly below the canopy or just above it, there is the potential for impacts due to the proximity of the turbine to this area of habitat and therefore seven part tests were completed for the Eastern False Pipistrelle and Eastern Bentwing-bat (refer to Annex A of Appendix 3). The seven part test concluded that there would not be a significant impact to these species as a result of the proposed works given that the area of habitat to be removed is small and that the turbines are isolated.<br><br>The decompression hypothesis proposed that many bats are killed by barotrauma caused by rapid air-pressure reduction near moving turbine blades. Within the Study Area the Species most at risk of barotrauma are of microbats species: Eastern False Pipistrelle and Eastern Bentwing-bat, both of which were identified during the field surveys, as both of these species may forage above canopy height and as such may fly close enough to turbine blades to cause barotrauma.<br><br>Seven part tests were completed for both these species (refer to Annex A in Appendix 3), and concluded that there would not be a significant impact to these species as a result of the proposed works, due largely to the turbines being located on the edge of the woodland area and that the impacted |

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| | | vegetation is small and isolated.<br><br>For information on Little Eagle and use of the hollows refer to 'Ecology (Fauna Survey) (c)' shown below. |
| Ecology<br><br>(Footprint and Turbine Layout) | OEH acknowledges that the proponent has demonstrated the first principle of 'avoidance' by removing turbine A19 from the turbine layout and has proposed moving turbine A24 away from an area of intact native ground cover. OEH continues to have reservations about turbines A12 and A18, although the proposed realignment of access tracks and crane hardstand platform is preferable to the previous design.<br><br>"*The view of OEH is that …clearing and fragmentation of any remnant vegetation in the area should be avoided. Given the paucity of suitable woodland/forest habitat in this highly fragmented landscape OEH recommends that turbine A12 should also be removed from the design to avoid potential impacts on threatened species that are likely to utilise patches of remnant woodland. OEH considers Turbine* | Additional field surveys were undertaken by ERM over a period of six days, the first three days from 23-25 July 2013, and a further 3 days from 6-8 August 2013. Camera traps and songmeters were deployed from 23 July to 8 August 2013.<br><br>The aim of the additional assessment was to ascertain if the location of turbines A12 and A18 would pose a significant impact on the endangered species that utilise these two areas.<br><br><u>In vicinity of turbine A12:</u><br><br>The HBTs provide potential nesting habitat for small to medium sized parrots such as the Crimson Rosella. This species was observed using the area however, it was not observed using the hollows. As none of the hollows exceeded 15cm in diameter, there are no suitable hollows for large owls in this area.<br><br>Eight of the bat species recorded at the site roost in tree hollows, including the Eastern False Pipistrelle, which is a vulnerable species under the TSC Act. Despite the presence of HBTs in the woodland surrounding turbine |

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| | *A18 require less clearing for access, is near a site of disturbance (an existing gravel pit) and is thus of lesser concern as it will have a smaller development footprint.*" | A12, it is unlikely that the Eastern False Pipistrelle roosts in the area as there were few records and the species prefers moist habitats with trees taller than 20m.<br><br>The Eastern Bentwing-bat was recorded in the vicinity of turbine A12 and A18. It roosts in caves and forms discrete populations centred on a maternity cave. The nearest known maternity cave is 98km from the site.<br><br>The hollows may provide habitat for possums and gliders however, only one species (Common Brushtail Possum) was recorded during surveys.<br><br>"*The woodland area is small in size (approx 24ha) and disconnected from large areas of forest. Therefore, its habitat value is reduced with a corresponding low diversity of fauna observed in the field survey. The woodland surrounding A12 is unlikely to provide important habitat for threatened fauna. The proposed works would not result in the removal of any of the HBTs in the vicinity of turbine A12.*"<br><br>The bird and bat species recorded generally forage and fly below the canopy, however there is the potential for impacts due to proximity of the turbine to this area of habitat. Seven part test were completed for the Eastern False Pipistrelle and Eastern Bentwing-bat, the results concluded that there would not be a significant impact to these microbat species as a result of the proposed works, refer to Annex A of Appendix 3 for details of the seven part tests.<br><br>There are no significant impacts anticipated for other hollow dependent |

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| | | species, including threatened species, given the retention of HBTs.<br><br><u>In vicinity of turbine A18:</u><br><br>The woodland around turbine A18 is a large area of continuous forest and contains a large number of hollows. The majority would provide suitable habitat for gliders, possums and parrots. A Squirrel Glider (vulnerable under the TSC Act) was observed in the vicinity of Turbine A18. Some of the hollows may be suitable for smaller owls such as the Boobook Owl as they have suitable lipped entrances. The Powerful Owl (vulnerable under the TSC Act) was heard in the vicinity of turbine A18 and one hollow may have been suitable for large owls such as the Powerful Owl, however the entrance was obscured and this could not be confirmed. The HBTs in the vicinity of turbine A18 provide potential habitat for eight of the bat species recorded at the site including the Eastern False Pipistrelle.<br><br>Up to three HBTs will be removed from within the development footprint for turbine A18 (all characterised by mainly small hollows). While these HBTs provide potential habitat for native species that require hollow entrances of less than 5cm, the HBTs occur at the edge of a large tract of woodland (approx 168ha) in which numerous other HBTs occur, thereby providing suitable habitat for vulnerable and other species. To minimise impacts to individuals that may inhabit these hollow, a Tree Felling Protocol will be prepare, that includes a requirement to have an ecologist on site during the removal. |

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| | | Seven part tests were completed for the Eastern False Pipistrelle, Eastern Bentwing bat and Squirrel Glider are provided in Annex A of Appendix 3.<br><br>"*The seven part tests concluded that there would not be a significant impact to these species as a result of the proposed works. With appropriate mitigation measures, regarding the tree felling protocol, it is considered that the retention of turbine A18 will not pose significant constraints on the ecological resources in the vicinity*." |
| Ecology<br><br>(Fauna Survey) | OEH agrees with that future surveys referred to by ERM in the Supplementary Ecology Report are necessary, and should be incorporated into the Bird and Bat Adaptive Management Plan (BBAMP):<br><br>(a) ongoing survey of Pejar Dam to record how the water body is utilised through the seasons by sedentary and migratory waterbird species, and the potential impact of the wind farm.<br><br>OEH notes that in the SER, ERM states *"...the installation of turbines within this landscape has the potential to impact the movement patterns of migratory species and should be further addressed as part of an updated assessment of significance.*" OEH request this information prior to approval as it will | Noted. Additional field surveys were undertaken by two ecologists from ERM over six days, the first three days from 23-25 July 2013, and a further 3 days from 6-8 August 2013. Camera traps and songmeters were deployed from 23 July to 8 August 2013.<br><br>(a) ERM set out to address OEH comments about ongoing survey of Pejar Dam to record how the water body is utilised through the seasons by sedentary and migratory waterbird species, and the potential impact of the wind farm.<br><br>The surveys undertaken at Pejar Dam did not identify any threatened or migratory birds. For details of the survey results refer to Section 3.3.1 of Appendix 3.<br><br>Twenty-four waterbird species were observed during the surveys around Pejar Dam with a total count of 638 individuals. The majority of these are open water species, including diving species such as Coots, Ducks and |

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| | determine appropriate offsetting and potential mitigation required | Grebes. A list of bird species observed is provided in Table 3.5 of Appendix 3.<br><br>The shoreline of the dam was moderately to steeply shelving into deep water. This reduces the habitat availability for waders (Charadriformes family), of which none were observed. No threatened or migratory species were observed. |
| | (b) Further surveys for Regent Honeyeater and Swift Parrot should be carried out in winter as their survey period (March) was not optimal for detection. The result from these winter surveys will determine the potential further surveys and mitigation which may be required for these species. | (b) These winter surveys took place with the aim of targeting the Regent Honeyeater and Swift Parrot,<br><br>Winter flowering Eucalypts were not observed in the Study Area during the current field investigations and the analysis of key species present in the Study Area indicate that none of the Eucalypts present are winter flowering species. Therefore, the study area is not considered to provide winter foraging resources for either the Regent Honeyeater or the Swift Parrot.<br><br>The Regent Honeyeater and Swift Parrot were not observed at the site during the survey period. No other birds dependent on nectivory were observed including Lorikeets or aggregations of the other Honeyeater species. Two landowners were also consulted, who supported the notion that there were no profusely flowering Eucalypts during the winter months.<br><br>Therefore it is unlikely that the Regent Honeyeater or Swift Parrot would use the site. Seven part tests were completed for these species in the SER (refer to Appendix 2). The seven part tests were updated based on the |

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| | | further data and are provided in Annex A of Appendix 3.<br><br>The seven part tests concluded that there would not be a significant impact to the Regent Honeyeater or the Swift Parrot as a result of the proposed works, given that both species have not been recorded in the Study Area and their preferred habitat is not present. Therefore it is unlikely that the species occur in the Study Area and that the proposed action would have a significant impact on the species. |
| | (c) OEH notes that the NSW-listed Little Eagle is at a high risk of blade-strike due to its flight height and flight behaviour. This species nests in tall living trees within remnant patches of open eucalypt forest or woodland. Nest searches for this and other raptor species should be undertaken as part of the preconstruction surveys and appropriate buffers provided around nests. | (c) The two potential Little Eagle nests are shown on Figure 3.1 of Appendix 3, both nests are in the same tree, which is located approximately 310m form the nearest turbine A27. All other turbines are greater than 700m from the potential nests.<br><br>Nest searches for Little Eagle and other raptors were required as part of the pre-construction surveys. As such, the results of the searched are presented in Appendix 3 to inform the buffers required during the construction phase.<br><br>ERM considered that all turbines are at a sufficient distance from the potential nests such that specific buffer areas are not required during construction. The woodland area in which the nest tree occurs will not be impacted by the proposed works.<br><br>ERM recommends:<br><br>▪ to include the results of the HBT survey and the nocturnal surveys in the tree felling protocol so that the species that are known to occur in the |

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| | | area can be targeted during pre-clearance surveys.<br>▪ Designate the woodland within the Crookwell 3 South Site in which the potential Little Eagle nests occur as a no-go area; |
| | (d) The White-fronted Chat record appears to be on the road. OEH seeks clarification as to whether the bird was nesting in the road development corridor. If so an adequate buffer around the nest should be incorporated into the mitigation of impacts. | (d) The area where the White-fronted Chat was previously recorded was revisited to determine the value of the habitat for the species and to ascertain if other individuals were present.<br>The additional field surveys identified that the area where the White-fronted Chat was previously recorded is considered sub-optimal for the species. The area adjacent to the record had been recently tilled, presumably for improved grassland. There was also an area of grassland close to the record, which was heavily grazed and will not provide important habitat for the species, although the species may forage in the area.<br>This habitat is widespread through the area. The species typically prefers wetlands or damp areas, which do not occur in the vicinity of the previous sighting. No potential breeding habitat was found within close proximity to the record. Therefore it is likely that the individual recorded in the previous survey was passing through the area. |

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| | (e) To adequately assess any change in bird or bat populations pre construction information is required. OEH strongly recommends that Anabat detectors be attached to the three monitoring masts on site prior to construction to appropriately survey for bat fauna utilising the development site at rotor sweep corridor. Post construction, it is strongly recommended that Anabat detectors be attached to the turbine nacelles to continue monitoring for bat fauna in the rotor sweep zone. This data will be required for the BBAMP. | (e) There are currently two monitoring masts installed on the site, during construction up to three new masts at the nacelle hub height will replace the existing two masts. Therefore the Pre-Construction survey can only include Anabat detectors on two masts. Post Construction, CDPL preference is installation of Anabat detectors on the new masts not on the turbine nacelles. |
| Ecology<br><br>(BBAMP) | The Bird and Bat Adaptive Management Plan (BBAMP) is require to include, but are not limited to, the following points:<br>▪ Take account of bird and bat monitoring methods identified in the current edition of AusWEA best practice guidelines for implementation of Wind Energy Projects in Australia and Wind Farms and Birds: Interim Standards for Risk Assessment;<br>▪ Be prepared and implemented by a suitably qualified expert, and approved by the Director-General;<br>▪ Incorporated monitoring and a decision matrix that | Noted. CDPL will prepare a Bird and Bat Adaptive Management Plan (BBAMP) in consultation with OEH.<br><br>CDPL will follow ERM's recommendation the Addendum to SER (refer to Appendix 3) and incorporate the results of the ERM winter survey into ongoing monitoring programs and the BBAMP.<br><br>The Statement of Commitments (item 9.3) has been updated to show:<br>"*Prepare a Bird and Bat Adaptive Management Plan (BBAMP) in consultation with OEH that will use baseline survey data collected in accordance with Before – After – Control – Impact (BACI) experimental assessment guideline. The BBAMP will incorporate baseline population data over all seasons. The BBAMP will form part of F&FMP.*<br>*A Bird Monitoring and Bat Strike Monitoring pre-commissioning survey will* |

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| | clearly sets out how the proponent will respond the outcomes of monitoring;<br>▪ Identify potential mitigation measures and implementation strategies;<br>▪ Include annual reports for the first five years and bi-annual reports thereafter.<br><br>OEH requests to be involved in the preparation of this plan form the early stages of development to ensure the plan and monitoring adequately addresses all issues.<br><br>To assess the ongoing impacts of this development on Bird and Bat populations adequate baseline survey data is required collected in accordance with the Before – After – Control – Impact (BACI) experimental assessment guidelines. OEH has prepared requirements for these baseline surveys and detailed survey design should be discussed with OEH experts prior to the surveys being undertaken to ensure the baseline surveys meet with the requirements. The BBAMP must incorporate baseline population data over all seasons, including winter surveys for Swift Parrots. | *be undertaken at each turbine site. This will provide baseline data for the bird and bat strike monitoring study which will be undertaken during the first year or the operation of the wind farm.*" |

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| Ecology<br><br>(Offsetting) | Whilst OEH recognises that in Statement of Commitment (SoC) the proponent intends to secure an offset on the development site, OEH request for the proponent is to provide more information regarding the location of the offset, the vegetation types it contains, proposed management actions, and the legal instrument to secure the offset. The SoC should be amended to include the following: "*A biodiversity offset strategy shall be developed in consultation with and approved by OEH prior to commencement of works under approval.*" | Due to further refinement of the proposed infrastructure the areas of native vegetation to be removed quoted in the addendum report are different to those quoted in the Supplementary Ecology Report by ERM. The location of the access track in the vicinity of turbine A13 has been adjusted to avoid an area of Box Gum Woodland Endangered Ecological Community (EEC). Therefore, the total area of Box Gum Woodland to be removed is reduced and now is only 0.03 ha and the total area of native vegetation to be removed is now 8.81 ha, compared to previously recorded 0.64 ha of box gum woodland and 9.45 ha total.<br><br>The 8.81ha of Native vegetation to be removed is comprised of the following:<br><br>▪ 2.45ha of Silvertop Ash Open Forest (including 1.89ha of open forest and 0.56ha of derived native grassland);<br>▪ 6.33ha of Stringybark Open Forest (including 1.37ha of open forest and 4.96ha of derived native grassland); and<br>▪ 0.03ha of Box Gum Woodland (comprising of 0.03ha of derived native grassland).<br><br>CDPL is proposing that offsets will be secured in areas of Silvertop Ash Open Forest, Red Stringybark Open Forest and Box Gum Woodland within the study area (refer to Figure 4.1 of Appendix 3 of this report). A combined offset of 26.34 - 30 ha is proposed for the Silvertop Ash Open Forest and |

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| | | Red Stringybark Open Forest, providing an offset ratio of 3:1.<br><br>An offset area of 0.15ha is proposed for the Box Gum Woodland, which equates to an offset ratio of 5:1. Due to the small size of this proposed offset area, it is likely that the Box Gum Woodland offset area will be extended to provide an enhanced environmental outcome and a more sustainable offset.<br><br>It is proposed that the mechanism to secure the offset will be a conservation Property Vegetation Plan (PVP), to be entered into with the Hawkesbury Nepean Catchment Management Authority (HNCMA), once the project is approved. The proposed Silvertop Ash Open Forest and Red Stringybark Open Forest offset area will occur within an area which had a PVP that expired at the end of 2013.<br><br>Final details of the offset including the quantum of offset, location, management, and securing mechanism will be included in an offset strategy that reflects the requirement associated with the final approved project. The offset strategy will be prepared and its approval gains by OEH and DP&I prior to commencement of the works.<br><br>Statement of Commitment (item 9.11) has been updated to show:<br><br>"*Prepare a native vegetation offset strategy in consultation with OEH prior to construction. The proponent will seek to extend the management contract with the owner of the "Hillview Park" property beyond its current expiry in December 2013. It is proposed that the offset for the* |

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| | | *proposed clearing of approximately 8.81 ha of native vegetation for the whole project which includes the use of Greywood Siding Road as the access road servicing the Crookwell 3 East site, will be provided by two formal Property Vegetation Plan agreements (PVPs) to be entered into with Hawkesbury Nepean Catchment Management Authority (HNCMA) once the turbines and project are approved. It is proposed that these PVPs would cover a total of approximately 45 ha of the remnant vegetation located within the site being:*<br>▪ *15 ha in perpetuity; and*<br>▪ *an additional 30 ha for the life of the wind farm,*<br>*and that the proponent would provide sufficient funds each year for feral animal control and management of these two agreement areas.*" |

**Table 6-6 - Response to NSW Office of Environmental and Heritage (C)**

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| Heritage | OEH raised concern about the deficiencies in the indigenous archaeological heritage assessment and requires additional assessment that demonstrates the full nature and extent of impacts to Aboriginal cultural heritage of the land within the project area. | In response to concerns from OEH, CDPL commissioned ERM to undertake an additional cultural heritage assessment and prepare the 'Supplementary Aboriginal and Historical Cultural Heritage Assessment' report (SCHR) to address OEH's outstanding issues.<br><br>The SCHR has been conducted to conform with Director General Requirement's (DGR's) for the proposed Crookwell 3 project. The heritage assessment has been undertaken in accordance with the *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (Department of Environment and Conservation 2005). Aboriginal community consultation for the project has been undertaken in accordance with the *Interim Community Consultation Requirements for Applicants* (DECCW (now OEH) 2004). |
| Heritage (Objective) | | <u>Objective:</u><br><br>In accordance with the NSW NPWS guidelines for archaeological reporting (NSW NPWS 1997) and the NSW DECCW Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (NSW DEC 2005) the SCHR aims to document:<br><br>• the consultation process undertaken with Aboriginal communities for the project and their involvement in the project; and<br>• a description of the proposal and whether or not it has the potential to result in impacts to Aboriginal cultural heritage. |

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| | | A description of historic impacts to the study area;<br>• the archaeological methodology implemented during the study;<br>• the landscape and natural resources of the study area in order to establish background parameters;<br>• a review of archaeological and relevant literature and heritage listings on the NSW DECC AHIM S database;<br>• a synthesis of local and regional archaeology;<br>• a review of the study area's non-Indigenous history and the results of relevant heritage database searches;<br>• a predictive model for Aboriginal site types and location relevant to the study area;<br>• the cultural and archaeological sensitivity of landforms that may be subject impacts;<br>• the field survey results;<br>• the significance of any located Aboriginal objects and places;<br>• an assessment of the impact of the proposal on Aboriginal objects and places;<br>• a description of the outcomes and justification of the proposed alternatives; and<br>• a series of recommendations based on the results of the investigation. |
| Heritage (Legislative Context) | | <u>Legislative Context:</u><br>The NSW NPWS provide guidelines for Aboriginal heritage assessment, including those conducted under the EP&A Act 1979. Where Aboriginal heritage assessment is conducted under the Integrated Development Approval process, a more detailed set of NPWS guidelines applies.<br>The Crookwell 3 project is a transitional project under the former provisions of Part 3A of the EP&A Act, 1979. Despite the repeal of Part 3A in 2012 and the introduction of State Significant |

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| | | Development (SSD), the Government declared a number of existing Part 3A Projects, including Crookwell 3, to continue to be declared and considered as under the former provisions of Part 3A of the EP&A Act, 1979.<br><br>Under the former provisions of Part 3A of the EP&A Act, Section 75U takes effect meaning a permit under Section 90 of the NPW Act will not be required for this project. However, the DGR's for this project state that:<br><br>'*The EA must include an assessment of the potential impact of the project components on indigenous heritage values (archaeological and cultural). The EA must demonstrate effective consultation with indigenous stakeholders during the assessment and in developing mitigation options (including the final recommended measures) consistent with Guidelines for Aboriginal Cultural Impact Assessment and Community Consultation (DECCW 2005).*'<br><br>The SCHR has therefore been prepared in accordance with the requirements of the *Guidelines for Aboriginal Cultural Impact Assessment and Community Consultation* (2005). |
| Heritage (Aboriginal Community Consult-ation) | | <u>Aboriginal Community Consultation:</u><br><br>The NSW DECC (now OEH) requires proponents to undertake consultation with the Aboriginal community 'as an integral part of the impact assessment' process (NSW OEH 2004). When administering its approval functions under the NPW Act, the NSW OEH requires applicants to have consulted with the Aboriginal community about the Aboriginal cultural heritage values (cultural significance) of Aboriginal objects and places present in the area subject to development (NSW DEC (now OEH 2004). This consultation process was formalised with the introduction in late 2004 of the Interim Guidelines for Aboriginal Community Consultation – Requirements for Applicants (NSW DEC 2004). |

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| | | Fulfilment of the consultation requirements has been undertaken as follows:<br>▪ Notification and Registration of Interests: On behalf of the proponent, ERM has actively sought to identify stakeholder groups or people wishing to be consulted about the project and has invited them to register their interest as follows:<br>In the process of identifying stakeholder groups written notification about the project dated to 16 October 2013, was supplied to the following bodies:<br>▪ Pejar Local Aboriginal Land Council;<br>▪ Lachlan Catchment Management Authority;<br>▪ Upper Lachlan Shire Council;<br>▪ National Native Title Tribunal;<br>▪ Office of the Registrar, Aboriginal Land Rights Act (1983); and<br>▪ NSW OEH (Queanbeyan).<br>A local press advertisement requesting Aboriginal party participation was placed in the Crookwell Gazette on 9 October 2013. The response period for Aboriginal parties to register an interest in the project was open for two consecutive weeks. No responses were received from any interested Aboriginal parties. The advertisement is shown in Figure 3.1. of Appendix 4 of this report. |

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| Heritage (Backgro-und) | | <u>Background:</u><br>▪ The background information that identifies the environmental conditions for historic use of land in the surrounding area include: Bioregion, Climate, Geology and Soils, Topography and Landforms, Hydrology, Flora and Fauna, Land Disturbance. The details for these environmental conditions are shown in section 4 of Appendix 4.<br>▪ The archaeological background information for Ethno-history, Regional Archaeological Context, Local Archaeological Context, AHIMS database search, Summary of the aboriginal heritage desktop results, and Aboriginal Heritage Predictive Model are shown in section 5 of Appendix 4.<br>▪ The Historical background information including the Historical Overview, Historical Heritage Database Searches, and Historical Heritage Predictive Model are shown in section 6 of Appendix 4. |
| Heritage (Field Survey Methodo-logy and Results) | | <u>Field survey methodology and results:</u><br>The archaeological survey of the study area was undertaken from 2nd December to 6th of December 2013 to determine the presence of Aboriginal cultural heritage sites and values.<br>The study area was surveyed by Janene May (ERM Archaeologist), Alister Bowen (Senior Archaeologist) and Justin Boney of Pejar LALC. The archaeological survey aimed to assess the entire impact footprint of the development, especially targeting all soil exposures and zones with low vegetation such as areas of erosion and any tracks or paths.<br>Where Aboriginal cultural heritage sites were identified they were mapped and recorded by the survey team for content, GPS location, landscape features and digitally photographed. Notes were made of soil conditions, evidence of ground disturbance and possible spatial extent of sites. The |

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| | | description of survey coverage includes landform units, the total area surveyed within that landform unit and a quantification of the level of ground exposure and visibility. For this study effective coverage was calculated by multiplying the area surveyed by the percentage of visibility and exposure within the survey unit. The area of effective coverage was then expressed as a percentage of the whole survey unit.<br><br>The survey was conducted according to the survey methodology sent to interested Aboriginal groups on 19 November 2013. The field survey methodology was adopted to pursue the discovery of new archaeological sites, ensure the accurate recording such sites and provide sufficient information to provide an assessment of the study areas cultural significance.<br><br>As such, each of the different landforms identified in the study area was surveyed, which included gentle slopes, upper flats, crests and open depressions. Creek lines, mature trees, erosion scours and vehicle and animal access tracks were all inspected. In order to ensure the highest likelihood of finding Aboriginal sites, the field survey focussed on areas of highest ground visibility.<br><br>The fieldwork identified that a large portion of the study area was densely vegetated, resulting in low ground visibility across all landforms encountered. Nevertheless, several exposures were located in each of landforms encountered.<br><br>The survey entailed walking linear transects approximately 30m in width (for detailed breakdown of transects refer to Annex B of Appendix 4). These linear transects form the Survey Units for the study area. The survey of the study area included mostly vehicle tracks, animal paths patches of erosion, areas with little or no ground cover, and open paddocks within the study area. Paddocks were generally densely vegetated, however some areas had been recently ploughed which afforded some visibility. |

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| | | The survey areas took in a number of landforms which defined the survey transects inspected. Survey Units, Survey Coverage, and Landform Summary are described in Tables 7.2, 7.3, and 7.4 of Appendix 4 respectively.<br><br>"*Five previously recorded sites (as part of the Anderson 2010 field surveys) were located and re-inspected (sites Hillview Park 8, Hillview Park 7, Hillview Park 2, Hillview Park and Wollondilly). Several previously recorded sites could not be re-located (sites Hillview Park 6, Hillview Park 5, Hillview Park 4, Hillview Park 3 and Wollondilly 9) due predominantly to dense grass coverage and subsequent movement of sites due to ploughing, vehicle, erosional and agricultural activities.*"<br><br>"*Sixteen new Aboriginal sites were located during the field survey (the sites have been named Crookwell WF1 to Crookwell WF16), and three new areas of PAD were also identified (Crookwell WF PAD 1, 2 and 3). PAD areas were also identified in association with several of the previously recorded surface sites (Wollondilly 9, Wollondilly, Crookwell WF3, Crookwell WF4, Hillview Park 2, Hillview Park, Crookwell WF14 and Crookwell WF15). These sites comprise isolated stone artefact finds and stone artefact scatters and are described below.*"<br><br>The location of these sites is shown in Figures 7.4 and 7.5 of Appendix 4. For complete details of the field survey for identification of previously recorded sites and newly identified sites refer to section 7.2.5 of Appendix 4. |

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| Heritage (Historical Heritage) | | <u>Historical Heritage:</u><br>"*No historical heritage items or sites were found during the field survey, and there are no known non-Aboriginal heritage items located within the project's impact area. Several items have been previously identified in the wider region of the impact area, including the Leeston homestead and the Hillview Park Property homestead and its surrounding buildings (Anderson 2010). These items will not be affected by the proposed development.*" |
| Heritage (Significance Assessment) | | <u>Significance Assessment:</u><br>The heritage values significance assessment for the study area has been assessed in accordance with the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011) and encompasses the four values outlined in the Burra Charter (social, historical, scientific and aesthetic) (Australian ICOMOS 1999).<br>"*While Aboriginal sites and places may have educational, tourism, and other values to groups in society, their two principal values are their cultural/social significance to Aboriginal people and their scientific significance to archaeologists. It is thus possible to identify two main streams in the overall significance assessment process: the assessment of cultural/social significance to Aboriginal people and the assessment of scientific significance to archaeologists… (1997: PDF page 92).*"<br>The ERM SCHR focuses upon the scientific significance assessment of the sites recorded during the survey. The cultural significance assessment assessed in Section 8.1.4 of Appendix 4. The Aboriginal community has provided input into the survey and assessment and has been afforded the opportunity to comment on this report for a cultural and social significance assessment of the sites recorded. |

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| | | The primary guide to the management of heritage places is the Australia ICOMOS Burra Charter 1999. This assessment has sought to identify Aboriginal heritage objects and sites within the study area and obtain sufficient information to allow the scientific values of those objects and sites to be determined. NPWS (1997:93) have stated that 'while various criteria for archaeological significance assessment have been advanced over the years, most of them fall under the heading of archaeological research potential'. As such, seven key criteria may be used to examine the scientific value/significance of a site. These are:<br>▪ Rarity<br>▪ Representativeness<br>▪ Archaeological Landscapes<br>▪ Connectedness<br>▪ Integrity & Condition<br>▪ Complexity<br>▪ Archaeological Potential<br>The Aboriginal heritage sites identified during this assessment are assessed against these criteria and shown in Section 8.1.3 of Appendix 4.<br>"*All of the areas of archaeological interest occurring in the study area are common site types within the region. Stone artefact sites including open camp sites (or artefact scatters) and isolated finds are the most common regional sites types, and that is reflected in the results of the field survey undertaken for this project.*"<br>"*The majority of Aboriginal archaeological sites recorded are small surface assemblages that are low density and contain artefacts common to the area. The isolated stone artefact sites* |

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| | | *within the study area (Wollondilly 9, Hillview Park 3, 6, 7 and Crookwell WF1, 10, 11 and 13) may be considered as representative of the types of sites (along with stone artefact scatters), behaviours and patterning that are expected locally and regionally. The description of the isolated artefacts does not place them as an exceptionally high value example in terms of condition or content. They are therefore assessed as having a low archaeological significance.*"<br><br>"*The stone artefact scatters Wollondilly, Hillview Park 2, Hillview Park and Crookwell WF14 were found to be of a high density, demonstrating various stages of stone tool manufacturing and containing relatively rare stone artefact types (e.g. points) and are considered to have the potential to yield information about Aboriginal stone tool making industries across the region. These sites are therefore assessed as having a moderate archaeological significance.*"<br><br>"*Several crests and flat or gently sloping landforms, slightly elevated and adjacent to drainage lines within the study area would have been attractive camping locations. Such landscape zones (or PADs) within the study area were identified during the fieldwork stage for this project as areas of either moderate or high archaeological potential (refer to Figure 7.4 and Figure 7.5 of Appendix 4) and are considered to be archaeologically, scientifically and culturally significant. These areas have been identified as having moderate or high potential for containing intact archaeological deposits. Several of these archaeologically sensitive areas within the surrounding region to the study area have previously been found to be associated with stone artefact sites. The areas identified as PADs within the study area are also likely to contain stone artefacts. However, no significance assessment of the content of these PADs can be made until after sub-surface investigations have been conducted.*" |

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| | | "*Due mainly to their commonness within the regional landscape and the currently unknown contents of the areas deemed to have archaeological potential, the archaeologically sensitive areas within the study area have been assessed as having moderate archaeological/scientific significance.*"<br><br>The archaeological significance of each site discussed above is shown in Table 8.1 of Appendix 4.<br><br>"*The study area contains 26 recorded Aboriginal sites (10 recorded in 2010 by Anderson [all sites are either open campsites or isolated finds] and nineteen recorded during this current study). The sites recorded during this study have been assigned scientific significance in terms of rarity, representativeness, archaeological landscape, connectedness, integrity and condition, complexity, and archaeological sensitivity.*"<br><br>The significance rating of the identified stone artefact sites is higher or lower based on the presence of particular stone artefact types, formal tool types, diverse or unusual raw stone materials or the potential for stratified sub-surface deposits to exist.<br><br>"*All sites identified within the study area are common site types at a local and regional level. Stone artefact sites are the main site type represented in the region and those located within the study area have not demonstrated a significantly greater diversity or complexity in comparison to other known sites within the region. It is for this reason that four of the artefact scatters within the study area (Sites Wollondilly 9, Hillview Park 3, Hillview Park 4, Hillview Park 5, Hillview Park 6, Hillview Park 7, Crookwell WF1, Crookwell WF2, Crookwell WF4 – 13 and Crookwell WF16) have been assessed as having low archaeological significance. The remaining four sites (Wollondilly, Hillview Park, Hillview Park 2, Hillview Park 8, Crookwell WF3, Crookwell WF14, Crookwell WF15) have been given a moderate* |

| Category | OEH Submission Comments | CDPL Responses |
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| | | *archaeological significance rating based on the larger number of artefacts present and the sites potential to reveal in situ sub-surface deposits.*"<br><br>"*Portions of the study area are within close proximity to watercourses and located within flat terrain with shelter from the elements (areas of known Aboriginal occupation) and therefore have cultural significance to local Aboriginal groups (Crookwell WF PADs 1, 2 and 3). These areas incorporate prominent landscape types within the study area (i.e., flat terrain, and slightly sloping areas near a water source) similar to those where Aboriginal cultural heritage sites have already been recorded (refer to Section 5.3 of this report). Such areas are likely to contain as yet unrecorded Aboriginal sites. Until further archaeological examinations are conducted to assess the size and nature of any potential surface or sub-surface archaeological deposits, these areas represent a moderate level of archaeological significance.*"<br><br>Cultural/social significance concerns the values of a place, feature or site to a particular community groups, in this case the local Aboriginal communities. The primary guide to management of heritage places is the Australia ICOMOS Burra Charter 1999. The Burra Charter defines cultural significance as:<br><br>'*Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations.*'<br><br>'*Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects.*'<br><br>'*Places may have a range of values for different individuals or groups.*' |

| Category | OEH Submission Comments | CDPL Responses |
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| | | Aspects of cultural or social significance are relevant to sites, objects and landscapes that are important or have become important to local Aboriginal communities. This importance involves both traditional links with specific areas as well as an overall concern by Aboriginal people for sites generally and their continued protection. Aboriginal communities have provided input into the archaeological survey methodology and the archaeological and cultural significance assessment of the study area. They have also been provided the opportunity to comment on the cultural and social significance assessment of the study area.<br><br>Landscapes or locations within a landscape may hold special significance to Aboriginal communities as places where traditional lifestyles have occurred and where sacred or symbolic significance places exist. As such, Aboriginal cultural significance can only be determined by the Aboriginal community. Consultation with Aboriginal people (who can provide information about the local and regional significance of Aboriginal cultural heritage) is therefore required for any archaeological, social or cultural values assessment of Aboriginal heritage (especially where there is the potential for impact or harm to an Aboriginal heritage site or item).<br><br>The consultation guidelines used for this assessment (as identified above) set out a process for identifying and registering Aboriginal parties who wish to be consulted on the proposed development. These processes have been followed and consultation with the registered Aboriginal stakeholder groups has been maintained throughout the project.<br><br>During the fieldwork component of this study and in accordance with the relevant Aboriginal consultation guidelines, Aboriginal representative Justin Boney of Pejar LALC was queried about the cultural significance (to individuals and the community more broadly) of the study area generally, specific locations within the study area and the study areas identified sites. Justin Boney indicated |

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| | | that the study area holds a high level of cultural significance to Aboriginal people as it is situated within areas that were used for hunting, gathering and camping by past Aboriginal groups and therefore represent Aboriginal occupation of the region, a past way of life and a direct link to their ancestors. He also indicated that the wider landscape, particularly the flora, fauna and water courses associated with the study area are significant to them and other past and present Aboriginal people as they formed part of an economic resource environment.<br><br>"*The identification of archaeological and Aboriginal cultural heritage items associated with the study area was achieved during the heritage assessment through desktop research, field reconnaissance and consultation with Aboriginal stakeholders. In accordance with the DGRs for this project, all assessments have been developed in consultation with Aboriginal people who hold cultural knowledge or responsibility for the country in which the study area is part of.*" |
| Heritage (Potential Harm to Aboriginal Objects) | | <u>Potential harm to Aboriginal Objects:</u><br><br>The proposed works involve the following actions that have the potential to impact on Aboriginal heritage sites and values:<br><br>▪ the construction of roads and access tracks;<br>▪ the transportation and construction of 29 wind turbines and associated infrastructure (such as underground cabling); and<br>▪ the construction of a lay down area and a substation area.<br><br>"*Several stone artefact sites and PAD areas will be impacted upon through the works outlined above. Avoidance of these sites and PAD areas is considered the most appropriate heritage* |

| Category | OEH Submission Comments | CDPL Responses |
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| | | *outcome. Sites Crookwell WF 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 13, 14, 15, Wollondilly 9, Hillview Park 6, 7, 2 and Hillview Park and several areas of PAD (refer to Figures 7.4 and 7.5 of Appendix 4) will be impacted by the proposed works. The remaining sites are also in close proximity to the project developments and warrant mitigation measures to protect them during the wind farm construction phase. Impact reduction and mitigation measures for each site and PAD areas have been developed to ensure a sound heritage outcome for the study area.*"<br><br>These are outlined in Section 10 – Recommendation in Appendix 4. |
| Heritage (Recommendation) | | <u>Recommendations:</u><br><br>The management recommendation statements are made in light of:<br>▪ the results of background desktop investigation and archeological field inspection as outlined in this report;<br>▪ predictive modelling;<br>▪ a heritage significance assessment;<br>▪ legislative requirements as outlined in this report;<br>▪ results of the field survey;<br>▪ consultation with the relevant Aboriginal organisations; and<br>▪ the premise that elements of the proposed development of the study area may unavoidably impact on the study area's archaeology.<br><br>*"Several areas of Aboriginal cultural heritage exist that require measures to manage impacts to Aboriginal places:*<br>▪ *Previously recorded sites Wollondilly, Wollondilly 9, Hillview Park, Hillview Park 2, 3, 4,* |

| Category | OEH Submission Comments | CDPL Responses |
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| | | *5, 6, 7 and 8, and any associated PADs;*<br>▪ *Newly recorded sites Crookwell WF1 to 16 and any associated PADs; and*<br>▪ *Newly recorded PAD areas Crookwell WF1, 2 and 3*.<br>*The three PAD areas are proposed for test excavations if impact cannot be avoided."*<br>"*Artefactual material recovered through the test excavation procedure should be collected, interpreted, catalogued and then reburied within a portion of the study area (or nearby region) that is to be conserved and not impacted during the proposed or future development. Artefacts for reburial will be placed in a closed container and the reburial location recorded with all information forwarded to the OEH.*"<br>"*Before construction begins, each of the sites and PADs identified above should undergo protection mediation measurers (through the use of silt traps and hemp bunding to prevent the sites being impacted by increased erosion and soil run off generated by earth works) and their location should be clearly marked on all relevant construction plans. Aboriginal site disturbance through an increase in human visitation to the area should also be limited at the Aboriginal sites and PAD locations.*"<br>For complete details of the 'Management Recommendations for each Aboriginal heritage site identified' refer to Table 10.1 of Appendix 4.<br>"*Therefore, from knowledge obtained during the field survey and through consultation with the local Aboriginal community, the following recommendations have been developed:*<br>▪ *an Aboriginal Cultural Heritage Management Plan (ACHMP) should be prepared and implemented to manage sub-surface testing activities and the Aboriginal heritage values within the study area* |

| Category | OEH Submission Comments | CDPL Responses |
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| | | ▪ *where disturbance of Aboriginal heritage sites or areas of PADs cannot be avoided, these areas should be salvaged or archaeologically tested as outline in table 10.1 of Appendix 4.*<br>▪ *no archaeological constraints exist for areas that have been surveyed and identified as having no heritage sites or PADs shown in Figure 7.4 and Figure 7.5);*<br>▪ *no ground disturbing components in the location of Aboriginal heritage sites or areas of PAD should take place until the sub-surface archaeological investigations outlined in this report have been undertaken and reported on;"*<br>For complete risk of recommendations refer to Section 10 of Appendix 4.<br>ERM report also recommends a 'Cultural Awareness Training' and 'Chance Find Procedures'. The cultural awareness training should be implemented for personnel involved with ground breaking activities to ensure compliance with best practice principles, and the chance find procedures will ensure if any heritage objects and/or relics that are protected under the NSW legislation are uncovered during the construction, then the appropriate management plan exist to deal with the event. For complete details of these recommendations refer to section 10.1.2 and 10.1.3 of Appendix 4. |
| Heritage (Aboriginal Community Comments) | | <u>Aboriginal Community Comment and Recommendations:</u><br>"*During the archaeological field survey the recommendations outlined in this report were discussed and agreed upon with Justin Boney of Pejar LALC. Additional comments from other stakeholders have not yet been received.*" |

## 6.5. Response to NSW Trade & Investment (Resources & Energy)

The NSW Trade & Investment - Resources & Energy division provided a submission (ID 54438) [ref OUT13/2034] dated 30th January 2013, with comments on communication with the existence of the mineral exploration licence. The submission comments and CDPL responses are shown in Table 6-7 - Response to NSW Trade & Investment (Resource & Energy).

**Table 6-7 - Response to NSW Trade & Investment (Resource & Energy)**

| Category | R&E Submission Comments | CDPL Responses |
|---|---|---|
| Mineral Exploration | Proponent to continue attempts to liaise with an appropriate contact from the holder of the only mineral exploration licence which overlaps with the project area, with regards to turbine and related infrastructure placement and their potential to impact upon potential mineral resources. | Noted. CDPL will continue attempts to contact and liaise with the company that holds the mineral exploration licence that overlaps with part of the project area. |

## 6.6. Response to NSW Roads and Maritime Services (RMS)

The Roads and Maritime Services (RMS) provided a submission (ID 54470) [ref STH09/00658] dated 8th February 2013, with comments on requirements for entering into a Works Authorisation Deed with RMS prior to any construction on Crookwell Road, obtaining oversize and overmass permits, access provisions, and consultation with relevant road authority for preparation of the Traffic Management Plan. The submission comments and CDPL responses are shown in Table 6-8 - Response to NSW Roads and Maritime Services.

**Table 6-8 - Response to NSW Roads and Maritime Services**

| Category | RMS Submission Comments | CDPL Responses |
|---|---|---|
| Traffic | (a) Prior to the issuing of the construction certificate, the developer shall enter into a Works Authorisation Deed with the Roads & Maritime Services (RMS) for all works on Crookwell Road. | (a) Noted. CDPL will enter into a Works Authorisation Deed with the RMS for all works on Crookwell Road. |
| | (b) Prior to transporting any oversized or over mass loads, the applicant shall obtain the required oversized or over mass permits from RMS. | (b) Noted, CDPL will ensure that any permits required for any oversize and over mass loads are obtained from RMS. |
| | (c) Traffic Management Plan shall be developed in consultation with the relevant authorities. | (c) Noted. A Traffic Management Plan (TMP) and associated Traffic Control Plan (TCP) will be developed in consultation with RMS, the Upper Lachlan Shire Council and Goulburn Mulwaree Council. |
| | (d) Only one access point for the Crookwell 3 South will be permitted. | (d) Noted. CDPL will only require one access road from Crookwell Road into the Crookwell 3 South site. |

| Category | RMS Submission Comments | CDPL Responses |
|---|---|---|
| | | To gain access to Lot 3 DP588100 and Lot 8 DP252214, CDPL will seek and procure a 'Right of Way' Legally certified on the titles of the burdened lots prior to an occupation certificate is issued by way of a Section 88B instrument under the Conveyancing Act 1919. |
| | (e) Developer shall upgrade the junction of the access driveway and Crookwell Road to the required design standards. | (e) Noted. CDPL will upgrade with junction of the access driveway and Crookwell Road to a sealed Type Basic Left Turn Treatment (BAL) together with a sealed Basic Right Turn Treatment (BAR) in accordance with Austroads Guide to Road Design – Part 4a: Unsignalised and Signalised Intersections. The Access will be sealed a minimum distance of 10m back from edge of existing road seal. |
| | (f) All roadworks on classified roads shall be designed in accordance with Austroads Guide to Road Design. | (f) Noted. CDPL will prepare all roadwork designs for classified roads in accordance with 'Austroads Guide to Road Design – Part 4a: Unsignalised and Signalised Intersections and Austroads Guide to Road Design – Part 4: Intersections and Crossings General and RMS supplements'. |
| | (g) Developer shall apply for and obtain a Road Occupancy Licence from the RMS Traffic Operations Unit prior to commencing roadworks on a State Road. | (g) Noted. CDPL will apply and obtain a Road Occupancy Licence from the RMS prior to commencing roadworks on a State Road or any other works that impact a travel lane of a State Road or impact the operation of traffic signals on any road. |

## 6.7. Response to Department of Defence

The Department of Defence (DoD) provided a submission (ID 54576) [ELP/OUT/2013/AF12745464] dated 11th February 2013, with comments that they have assessed the proposal for potential impacts to operations in the area (including the safety or low flying militatry aircraft, effects to Defence communications, and surveillance radars). DoD advises that it has no concerns with this wind farm regarding the safety of military aircraft or potential interference to Defence communications or surveillance radars. DoD requests 'as constructed' details to be provided to RAAF AIS, and if significant changes occur in the siting of the turbines they have the opportunity to review and comment on the layout. The submission comments and CDPL responses are shown in Table 6-9 - Response to Department of Defence.

**Table 6-9 - Response to Department of Defence**

| Category | DoD Submission Comments | CDPL Responses |
|---|---|---|
| Aviation | (a) Department of Defence request that the proponent provide RAAF AIS with "as constructed" details of the wind farm. | (a) Noted. CDPL will provide RAAF Aeronautical Information Service (AIS) with the 'As Constructed' details of the wind farm. |
| | (b) If a significant change to the proposal siting occurs, Defence requests an opportunity to review to ensure there will not be any adverse impact on Defence operations. | (b) Noted. In the event that there is any significant change to the siting of the turbine towers, CDPL will provide Department of Defence and other relevant aviation authorities with information in this regard. |

## 6.8. Response to Airservices Australia

Airservices Australia provided a submission (ID 54599) dated 12th February 2013, with comments on the encroachment of turbines A19 and A25 on the Lowest Safe Altitude (LSALT) on air route W10 when the maximum hub height is utilised. The maximum allowable top elevation of turbines A19 and A25 without affecting LSALT-W10 is 1066.8m (3500ft) AHD. Airservices also stated, with respect to procedures promulgated by Airservices in accordance with ICAO PANS-OPS and Document 9905, at a maximum height of 1085m (3560ft) AHD, the wind farm will not affect any sector or circling altitude, nor any instrument approach or departure procedure at Goulburn aerodrome, and will not adversely impact the performance of Airservices Precision/Non-Precision Nav Aids, HF/VHF Comms, A-SMGCS, Radar, PRM, ADS-B, WAM or Satellite/Links. The submission comments and CDPL responses are shown in Table 6-10 - Response to Airservices Australia.

**Table 6-10 - Response to Airservices Australia**

| Category | Airservice Submission Comments | CDPL Responses |
|---|---|---|
| Aviation | With respect to procedures promulgated by Airservices in accordance with ICAO PANS-OPS and Document 9905, at heights of 1082m (3550ft) AHD and 1085m (3560ft) AHD, turbines 19 and 25 will affect the Lowest Safe Altitude (LSALT) on air route W10.<br><br>The maximum allowable top elevation of turbines 19 and 25 without affecting LSALT-W10 is 1066.8m (3500ft) AHD.<br><br>It may be possible to amend LSALT on air route W10 from 4500ft to 4600ft subject to Airservices policy on this matter. | CDPL has now deleted turbine A19 from the layout due to other consideration.<br><br>Turbine A25 with the preferred 80m tower height (instead of the proposed 100m tower height) will not encroach the Lowest Safe Altitude (LSALT) on air route W10 of 1,066.8m (3,500ft) AHD. If the maximum proposed turbine envelope size for turbine A25 is used, then CDPL will request Airservices Australia to amend the LSALT on air route W10. |

## 6.9. Response to NSW DPI (Fisheries NSW)

The NSW Department of Primary Industries (DPI) - Fisheries NSW, provided a submission (ID 54659-1) dated 13th February 2013, this was formalised in a letter submission (ID 55732-1) [ref OUT13/3677] dated 4th March 2013, with comments on their policy that all development should aim to achieve no net impacts on receiving waterways, and project approval to include requirement to be undertaken in accordance with the relevant guidelines and practices to ensure creek crossings don't block fish passage, and appropriate erosion and sediment control measures are implemented. The submission comments and CDPL responses are shown in Table 6-11 - Response to NSW DPI (Fisheries NSW).

**Table 6-11 - Response to NSW DPI (Fisheries NSW)**

| Category | Fisheries Submission Comments | CDPL Responses |
|---|---|---|
| Hydrology | (a) Fisheries NSW is responsible for ensuring that fish stocks are conserved and that there is 'no net loss' of key fish habitats upon which they depend. To achieve this, Fisheries NSW ensures that development comply with the requirements of the Fisheries Management Act 1994 (namely the aquatic habitat protection and threatened species conservation provisions in Parts 7 and 7A of the Act respectively) and the associated Policy and Guidelines for Aquatic Habitat Management and Fish Conservation (1999). It is Fisheries NSW policy that all developments should aim to achieve no net loss impacts on receiving waterways. | (a) Noted. |

| Category | Fisheries Submission Comments | CDPL Responses |
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| | (b) Fisheries NSW notes that parts of Steeves Creek, First Creek and Pejar River and their tributaries are located within the proposed development area, which drain to the Wollondilly River and have the potential to be impacted by the proposed development. Fisheries NSW concurs with the proposed safeguards and mitigation measures to minimise environment impact, in particular those related to hydrology detailed in Chapter 21 of the EA. All the proposed safeguards and mitigation actions listed in the EA and Appendices should be included in any project approval, and listed in the Construction and Operation Environmental Management Plans and fully implemented by the proponent and its contractors. | (b) Noted. CDPL will include the proposed safeguards and mitigation actions listed in the Environmental Assessment and Appendices in the Construction Environmental Management Plan (CEMP) and the Operational Environmental Management Plan (OEMP). |
| | (c) Fisheries NSW recommends that any project approval require that installation of electrical cabling crossings of waterways on-site to be done by trenching or underboring in a manner which does not block fish passage. | (c) Noted. CDPL will design and install electrical cabling crossings of waterways by way of trenching or underboring in a manner that does not block fish passage. |
| | (d) Fisheries NSW also recommends that any project approval require that the design and construction of any new or upgraded access track crossings of Steeves Creek, First Creek, Pejar River and Wollondilly River be | (d) Noted. CDPL will design and construct any new or upgraded access track crossings of the Steeves Creek, First Creek, Pejar River and Wollondilly River in accordance with the Fisheries NSW '*Policy and Guidelines for Fish Friendly Waterways Crossing (2004)*', and '*Why Do* |

| Category | Fisheries Submission Comments | CDPL Responses |
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| | undertaken in accordance with the Fisheries NSW '*Policy and Guidelines for Fish Friendly Waterways Crossing (2004)*', and '*Why Do Fish Cross the Road? Fish Passage Requirements for Waterway Crossings (2004)*'. | *Fish Cross the Road? Fish Passage Requirements for Waterway Crossings (2004)*'. |
| | (e) Fisheries NSW also recommends that any project approval require that the design, construction and operation of new or upgraded unsealed access tracks to be undertaken in accordance with the Office of Environment & Heritage Erosion and Sediment control on unsealed roads: A field guide for erosion and sediment control maintenance practices (2012). | (e) Noted. CDPL will design, construct and operate and of the new or upgraded unsealed access tracks to be undertaken in accordance with the NSW Office of Environment and Heritage 'Erosion and sediment control on unsealed roads: A field guide for erosion and sediment control maintenance practices (2012)'. |

## 6.10. Response to NSW DPI (NSW Office of Water)

The NSW Department of Primary Industries (DPI) - NSW Office of Water, provided a submission (ID 54659-2) dated 13th February 2013, this was formalised in a letter submission (ID 55732-2) [ref OUT13/3677] dated 4th March 2013, with comments supporting CDPL's Statement of Commitments, confirming the temporary water licence transfer, and their recommended conditions of consent. The submission comments and CDPL responses are shown in Table 6-12 - Response to NSW DPI (NSW Office of Water).

**Table 6-12 - Response to NSW DPI (NSW Office of Water)**

| Category | Office of Water Submission Comments | CDPL Responses |
|---|---|---|
| Hydrology | (a) The NSW Office of Water supports the proponent's statement of Commitment to design watercourse crossings in accordance with the "Guidelines for Controlled Activities on Waterfront Land" and in consultation with the NSW Office of Water. This will aid in mitigating impacts to channel stability and hydrologic functioning, and ensure appropriate rehabilitation measures are applied. The proponent is advised that guidelines have been updated since preparation of the environmental assessment and the current publication date is 2012. | (a) Noted. CDPL will update the statement of commitments to include the revised 2012 'Guidelines for Controlled Activities on Waterfront Land', and design the Watercourse crossings in accordance with this updated guideline. |

| Category | Office of Water Submission Comments | CDPL Responses |
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| | (b) The Environmental Assessment indicates water will be required for concrete batching and dust suppression with a total water demand of 21.55ML. This is to be sourced from existing farm dams via the temporary transfer of a licenced entitlement of 33ML. The NSW Office of Water can confirm that this arrangement has been completed. | (b) Noted. A term transfer of the water licence was negotiated with the host landowner of Hillview Park property for 33ML and was registered on the 1st May 2012. |
| | (c) The proponent advised the Office of Water that the proposal in Section 21.3 of the EA to utilize groundwater is currently not being considered. The preferred back up water supply option is to tanker water from the Town water Supply of Goulburn. The Office of Water requests this alternative proposal be confirmed and an agreement established with Goulburn-Mulwaree Council prior to commencement of activities. | (c) Noted. CDPL will establish an agreement with the Goulburn – Mulwaree Council for a backup supply option if the alternative supply is required. This option would be required if the surface water supply is exhausted or unsuitable for construction purposes. |
| | (d) The proponent shall prepare a Construction Environmental Management Plan and Operational Water Management Plan. | (d) Noted. CDPL will prepare a detailed Construction Environmental Management Plan (CEMP) and an Operational Water Management Plan (OWMP) in consultation with the NSW Office of Water prior to commencement of construction. |

| Category | Office of Water Submission Comments | CDPL Responses |
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| | (e) The design of waterway crossings for access roads and cable installations, and any associated instream works is to be included within the Construction Environmental Management Plan. | (e) Noted. CDPL will prepare the design of waterway crossings for access roads and cable installations, and any associated instream works in accordance with NSW Office of Water '*Guidelines for Controlled Activities on Waterfront Land (2012)*' and include the designs in the Construction Environmental Management Plan (CEMP). |
| | (f) If rock anchoring is selected for wind tower foundations, a groundwater assessment is to be undertaken and endorsed prior to Construction. The assessment is to assess the risk of impact on exiting licensed groundwater users and groundwater dependent ecosystems and provide suitable mitigation measures. Any necessary licensing requirements under the Water Management Act 2000 are also to be obtained. | (f) Noted. If rock anchoring design is used for the wind tower foundations, a groundwater assessment will be undertaken in consultation with the NSW Office of Water prior to the commencement of construction. |

## 6.11. Response to NSW Environmental Protection Authority (EPA)

The NSW Environmental Protection Authority (EPA) provided a submission (ID 54708) [ref DOC12/45118;FIL11/7183] dated 13th February 2013, with comments and also draft conditions of consent .on construction and operational noise, Air Quality, Soil and Water. EPA requested additional details to enable them to suggest licence noise limits for specific sensitive receivers located near the proposed wind farm.

EPA provided additional comments on 30th May 2013 based on their review of draft Preferred Project and Response to Submissions Report dated 18th April 2013, stating that they believe the report adequately addresses the issues raised in their submission through public exhibition. EPA is now able to licence the proposal subject to the noise limits contained in Attachment A of their letter (refer to Appendix 6). The submission comments and CDPL responses are shown in Table 6-13 - Response to NSW Environmental Protection Authority.

**Table 6-13 - Response to NSW Environmental Protection Authority**

| Category | EPA Submission Comments | CDPL Responses |
|---|---|---|
| Noise | (a) The EPA notes that the noise impact assessment states that the final Wind Turbine Generator (WTG) make and model are to yet be determined. We note that it is usual for conditions of any approval to require noise impacts to be confirmed by remodelling once the actual WTG(s) to be constructed have been confirmed, and an on-ground compliance assessment once the as constructed WTG(s) commence operation. The EPA would support the imposition of these requirements for this proposal. | (a) Noted, CDPL will prepare a Pre-Construction noise impact assessment which includes remodelling of the final turbine model and layout.<br>Agreed, CDPL will prepare (prior to commissioning) an Operation Noise Management Plan to include provisions for an on-ground compliance assessment. |

| Category | EPA Submission Comments | CDPL Responses |
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| | (b) The EPA requests the following additional information from the proponent (e.g.: through a submission to DP&I via the Response to Submissions Report) that includes:<br>▪ Predicted noise levels received by sensitive receivers from the Crookwell 3 wind farm alone for each integer hub-height wind speed for each turbine modelled in the NIA; and<br>▪ The allowable noise levels received by sensitive receivers from the Crookwell 3 wind farm alone for each integer hub-height wind speed in order for the Crookwell 1, 2 and 3 wind farms to meet the criteria in the Environmental Noise Guidelines: Wind Farms (SA EPA 2003); | (b) CDPL acknowledges the EPA request for additional information, and has prepared the following:<br>▪ Predicted noise levels received by sensitive receivers from the Crookwell 3 wind farm alone for each integer hub-height wind speed for each turbine modelled in the NIA; is provided in Attachment A of the response letter by SLR Consulting Australia Pty Ltd dated 4th April 2013 (Supplementary Noise Information) attached as Appendix 5 to this report; and<br>▪ The allowable noise levels received by sensitive receivers from the Crookwell 3 wind farm alone for each integer hub-height wind speed in order for the Crookwell 1, 2 and 3 wind farms to meet the criteria in the Environmental Noise Guidelines: Wind Farms (SA EPA 2003), is provided in Attachment B of the Supplementary Noise Information attached as Appendix 5 to this Report.<br>The Supplementary Noise Information also states:<br>▪ *"If a revised [noise impact assessment (**NIA**)] is completed for Crookwell 3, it should be understood that the license limits should be updated to be equal with the revised predicted level, provided that it complies to the SA EPA criteria, rather than the level predicted for any layout presented in the original NIA. The EPA should confirm that this approach is acceptable to them."* |

| Category | EPA Submission Comments | CDPL Responses |
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| | | ▪ "…the license limits derived from the data contained in Attachment A and Attachment B will only apply to project uninvolved receptors, ie those that have not signed a noise agreement with the proponent. For the project involved receptors, the noise agreement or WHO based limits take precedent." |
| | (c) No receiver is expected to experience construction noise above LAeq(15minute) 75 dB. Construction noise of more than LAeq(15minute) 40 dB is expected to be experienced by some receivers over a proposed construction period of up to 15 months and the EPA believes this level of impact warrants the limiting of construction to standard hours and requiring the proponent to develop and implement a Construction Noise Management Plan. | (c) Noted. CDPL will prepare and implement a Construction Noise Management Plan and limit the construction to standard hours except where:<br>▪ construction works that generate noise that is:<br>(i) no more that than 5 dB(A) above rating background level at any residence in accordance with the Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009); and<br>(ii) no more than the noise management levels specified in Table 3 of the Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009) at other sensitive receivers; or<br>▪ for the delivery of materials required outside those hours by the NSW Police Force or other authorities for safety reasons; or<br>▪ where it is required in an emergency to avoid the loss of life, |

| Category | EPA Submission Comments | CDPL Responses |
|---|---|---|
| | | property and/or to prevent environmental harm; or<br>▪ works as approved through the out-of-hours work protocol outlined in the Construction Noise Management Plan. |
| | (d) The greatest construction noise impacts are likely to be from blasting and it has been recommended that a commitment consistent with the Australian and New Zealand Environment Council (ANZEC) Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration (1990) is put in place in the Statement of Commitments to ensure any impacts are reasonable. | (d) Noted, CDPL will update the Statement of Commitments to include a commitment to ensure that during any blasting event the airblast overpressure must not exceed 115dB (Linear Peak) and ground vibration peak particle velocity must not exceed 5 millimetres per second (peak particle velocity) when measured at the nearest residential premise. |
| | (e) The assessment and mitigation of impacts on air quality are considered to be adequate. The main issue is dust amenity. The proponent has committed to undertaking measures to minimise any potential air quality impacts on local amenity during the construction phase. | (e) Noted. CDPL will develop and implement control measures to minimise any potential air quality impacts on local amenity during the construction phase as listed in the Statement of Commitments. |
| | (f) It is noted that the Statement of Commitments contained in the EA includes a commitment to preparing a Construction Environment Management Plan (CEMP) which will address the construction impacts of the | (f) Noted. CDPL will update the Statement of Commitments to provide more uniformity to the sub-components of the Construction Environmental Management Plan. CDPL will consolidate the named |

| Category | EPA Submission Comments | CDPL Responses |
|---|---|---|
| | proposal. The EPA considers this an important component of the proposal, but it is noted that within the Statement of Commitment, there are ambiguities and variations in the titling and composition of various subcomponents of the CEMP.<br><br>The EPA suggests that, for the sake of clarity in any approval, such plans should be uniformly titled and their content identified. | sub-plans into two distinct sub-plans:<br><br>▪ Sediment and Erosion Control Plan<br><br>▪ Water Management Plan |
| | (g) The EPA recommends that DoP&I seeks amendment to the draft Statement of Commitments as identified in Attachment B. | (g) Noted. CDPL will update the Statement of Commitments to include the commitments listed in 'Attachment B' of the EPA Submission to the Crookwell 3 Wind Farm Environmental Assessment. The commitments are:<br><br>▪ The proponent must prepare and implement a detailed Construction Noise Management Plan, prior to commencement of construction activities.<br><br>▪ The proponent shall ensure that during any blasting event the airblast overpressure must not exceed 115dB (Linear Peak) and ground vibration peak particle velocity must not exceed 5 millimetres per second (peak particle velocity) when measured at the nearest residential premise. |

| Category | EPA Submission Comments | CDPL Responses |
|---|---|---|
| | (h) The EPA also recommends that conditions relating to noise and blasting limits (as detailed at Attachment C) be incorporated as part of any development consent that is issued for the proposal. | (h) Noted. |
| | (i) The EPA anticipates that legislation of the draft Protection of the Environment Operations Amendment (Wind Farms) Regulation 2012 which proposes to amend Schedule 1 of the Protection of the Environment Operations Act 1997 to require the operators of applicable large-scale wind farms to hold an Environment Protection Licence (EPL) for both the construction and operational phases.<br><br>With this in mind, the EPA has proposed licence limits (Attachment D) for any future EPL for the proposed Crookwell 3 Wind Farm will be the subject of these new licensing requirements. | (i) Noted. |

## 6.12. Response to Sydney Catchment Authority

The Sydney Catchment Authority (SCA) provided a submission (ID 54770) [ref D2013/5514] dated 14th February 2013, with comments on 'The Protection of existing erosion control works on the land' and 'Protection of water quality from proposed new works', and also requested to be included as a stakeholder for preparation of the CEMP, OEMP, and Rehabilitation Plan.

CDPL acknowledges and agrees with SCA's comments. The Statement of Commitment has been updated to include SCA as a stakeholder for consultation in preparation of CEMP, OEMP and rehabilitation Plan. The submission comments and CDPL responses are shown in Table 6-14 - Response to Sydney Catchment Authority.

**Table 6-14 - Response to Sydney Catchment Authority**

| Category | SCA Submission Comments | CDPL Responses |
|---|---|---|
| Erosion Control | There are existing erosion control works located on the site, including contour banks, dams and revegetation areas. Measures to protect these erosion control works will need to be proposed and implemented. | Noted. CDPL will put measures in place to protect the existing erosion control works located within the site, and implement them as part of the 'Soil Erosion and Sediment Control Plan'. |
| Water Quality | (a) Protection of water quality from proposed new works. Specific and appropriate erosion and sediment control measures must be applied consistent with the relevant guidelines. | (a) Noted. CDPL will put in place specific and appropriate erosion and sediment control measures as part of the 'Soil Erosion and Sediment Control Plan' that are consistent with the Blue Book 'Managing Urban Stormwater: Soils and Construction Volume 1 4th ed. (Landcom, 2004)', 'Managing Urban Stormwater: Soils and Construction Volume 2A Installation of Services', and 'Managing Urban Stormwater: Soils and Construction Volume 2C Unsealed Roads (DECC, 2007)'. |

| Category | SCA Submission Comments | CDPL Responses |
|---|---|---|
| | (b) The SCA considers the proposal is likely to achieve a neutral or beneficial effect on water quality provided the key water quality measures are addressed in the CEMP, OEMP and Rehabilitation Plan, and implemented. SCA to be consulted in preparation of these management plans. | (b) Noted. CDPL acknowledges the Sydney Catchment Authority as a major stakeholder, and will consult with them for the preparation of Construction Environmental Management Plan (CEMP), the Operation Environmental Management Plan (OEMP), and the Site Rehabilitation Plan. |

## 6.13. Response to DoP&I's LVIA Independent Expert Review

On 30th August 2013 DoP&I provided CDPL with an Independent Expert Review (IER) report they had commissioned for the Crookwell 3 wind farm Land Scape & Visual Impact Assessment (LVIA). The IER report was undertaken by O'Hanlon Design Pty Ltd.

CDPL engaged Green Bean Design (GBD) the author of the LVIA report to review and respond to the IER report. GBD prepared the response in the form of a LVIA Supplementary Report (LVIA-SR) dated 22nd January 2014 and provided responses to each of the acceptability and recommendations of IER report by O'Hanlon Design. A summary of the IER report recommendation (as shown in Section 5.1 of IER report) and LVIA-SR responses are shown in Table 6-15 - Response to DoP&I's LVIA Independent Expert Review, for complete details of the LVIA-SR refer to Appendix 9.

**Table 6-15 - Response to DoP&I's LVIA Independent Expert Review**

| Category | O'Hanlon LVIA IER comments | Green Bean Design LVIA-SR responses |
|---|---|---|
| Community Consultation | Prior to any amendment of the LVIA the proponent identify the community and stakeholder values of the local and regional visual amenity and quality, and perceptions of the project, based on surveys and consultation. | The Proponent has complied with the DGR's and provided a comprehensive assessment of the landscape character and values and scenic or significant vistas of the area potentially affected by the project. This assessment has described community and stakeholder values of the local and regional visual amenity, and perceptions of the project based on surveys and consultation.<br><br>GBD note the Crookwell 3 LVIA DGR's require the Proponent to describe community and stakeholder values of the local and regional and regional visual amenity and quality and not to identify them as directed in the IER. The Crookwell 3 LVIA has described community and stakeholder values of the local and regional visual amenity through surveys and consultation. Surveys reviewed for the Crookwell 3 LVIA included: |

| Category | O'Hanlon LVIA IER comments | Green Bean Design LVIA-SR responses |
|---|---|---|
| | | Community Attitudes to Wind Farms in New South Wales, September 2010, AMR Interactive <http://www.environment.nsw.gov.au/climatechange/reprecinctresources.htm><br><br>Gullen Range Wind Farm Report on Community Perceptions toward Wind Farms in the Southern Tablelands, New South Wales, October 2007, Gullen Range Wind Farm Pty Ltd <https://majorprojects.affinitylive.com/public/f4a606455eaba6e1d36b3bfce560cbf1/Environmental%20Assessment_attachment%201_2.3_perceptions%20survey.pdf><br><br>Community Engagement Research for the Collector Wind Farm, November 2010, Ratch Australia Pty Ltd <https://majorprojects.affinitylive.com/public/0a482914933e03f2be40f391d8bc8ed0/Appendix%20D %20-%20Community%20Attitudes%20Survey.pdf><br><br>The Gullen Range Community Perception Study, conducted between July and August 2007, canvassed the opinion of 300 people across an extensive area of the Southern Tablelands. This area included the sites and surrounding areas of the proposed Crookwell 3 wind farm.<br><br>In addition the LVIA-SR has reviewed the Community Engagement Research for the Collector Wind Farm (recommended for approval by the DoP&I and subsequently approved by the Planning Assessment Commission in December 2013) conducted in November 2010. The Collector wind farm survey canvassed the opinion of 400 people residing within a 50 km radius of the Collector Wind Farm. This survey area captures the study area of Crookwell 3 wind farm.<br><br>The LVIA-SR does not intend to re-list the detailed and individual findings set out in each of the surveys; however, GBD note that there is a similarity between wider community |

| Category | O'Hanlon LVIA IER comments | Green Bean Design LVIA-SR responses |
|---|---|---|
| | | attitudes which indicate support for wind farm development within the Southern Tablelands at 70% to 80% of individuals surveyed. The level of support drops to around 60% to 65% for multiple wind farm developments or wind farm developments within 1 to 2 km distance from residential dwellings.<br><br>Consultations were carried out for the Crookwell 3 wind farm to gain an understanding of project perceptions, as well as reviews of regional surveys carried out for wind farm developments within the Crookwell 3 region, and state survey carried out across the New South Wales Renewable Energy Precincts.<br><br>▪ Door knocking within the Crookwell 3 wind farm 3 to 5km viewshed;<br>▪ Leaflet drops and local media presentations;<br>▪ Dedicated project web site including feedback provisions;<br>▪ Individual stakeholder meetings; and<br>▪ Community Information Day.<br><br>The Proponent carried out a door knock exercise within the Crookwell 3 wind farm 5 km viewshed which involved visiting around one hundred and ten non-involved residential dwellings. The door knock consultation conducted a general survey which canvassed opinions on a range of issues associated with the Crookwell 3 wind farm development, including a determination of concern for potential landscape and visual impact.<br><br>GBD attended an information day session held on the 12th December 2012 during the public exhibition period. The open day provided an opportunity to engage in direct discussions with local residents as well as property owners and residents in the broader regional landscape. |

| Category | O'Hanlon LVIA IER comments | Green Bean Design LVIA-SR responses |
|---|---|---|
| | | GBD prepared photomontage from seventeen residential (and proposed residential dwelling locations) within 2 km of the Crookwell 3 wind turbines. Visitation for preparation of photographic base images included discussions with property owners with regard to existing visual amenity and perceptions of the project.<br><br>GBD note that the IER has stated that "*based on the documents I have reviewed, particularly the SSR with its community study, resultant scenic assessment and guidelines, it is my opinion that Crookwell 3 as a standalone element is likely to be considered an acceptable impact*". In order for this statement to be accurate, and as a non-cumulative impact, the Crookwell 3 community consultation has complied with the requirements of the DGR's. |
| Assessment of LVIA | The LVIA be amended with a justified methodology, to incorporate: | |
| | ▪ An assessment of the effect of proposed turbine height on dominance and required setbacks in the study area landscape. | ▪ Ongoing development and planning for the Crookwell 3 wind farm, subsequent to the preparation of the Crookwell 3 LVIA, has determined that the Crookwell 3 wind turbines will be less than 157m in height (to tip of blade) and more are likely to be around 130m in height (to tip of blade), which is similar to the height of wind turbines within the approved Crookwell 2 wind farm development.<br>▪ The dominance of the proposed Crookwell 3 wind turbines will be no greater than the approved Crookwell 2 or Gullen Range wind turbines.<br>▪ GBD are not aware of any required mandatory setbacks in the study area landscape. GBD are cognisant of an advisory 2 km setback outlined in the Upper Lachlan Shire Council DCP and the Draft NSW Planning Guidelines – Wind Farms (December 2011). |

| Category | O'Hanlon LVIA IER comments | Green Bean Design LVIA-SR responses |
|---|---|---|
| | ▪ A review of the viewer and scenic quality sensitivity parameters incorporating a justification of the selected viewer characteristics and user numbers on roads and at public locations. | ▪ GBD have reviewed the viewer and scenic quality sensitivity parameters outlined in the Crookwell 3 LVIA and it is our opinion that these represent a professionally prepared methodology that is consistent with many similar methodologies based on professional opinion and assessment. Our opinion concurs with that of the IER.<br>▪ GBD note the IER concurrence with the 'Scenic Spectrum Review' that a total of 75 vehicles per day is a reasonable assessment and criteria by which to determine a high level of impact for motorists travelling along local roads. Given that there are 1,750 vehicles per day travelling along the Crookwell Goulburn Road (URS Traffic Assessment, September 2012), the IER has established that it requires around 4.3% of total vehicle trips per day along the Crookwell Goulburn Road to result in a high level of visual impact for motorists. This appears to be an unreasonably low number of vehicle movements to establish a high impact, and if this is to be accepted, the IER should also state how many vehicles per day will constitute a moderate and low level of visual impact.<br>▪ It is GBD's professional opinion that the criteria adopted for the Crookwell 3 LVIA are both appropriate and relevant to the determination of potential landscape and visual impacts associated with the proposed development.<br>▪ GBD note that the IER has stated that "*based on the documents I have reviewed, particularly the SSR with its community study, resultant scenic assessment and guidelines, it is my opinion that Crookwell 3 as a standalone element is likely to be considered an acceptable impact*". In order for this statement to be accurate, and as a non-cumulative impact, GBD consider that the assessment of landscape and visual impacts has complied with the requirements of the DGR's. |

| Category | O'Hanlon LVIA IER comments | Green Bean Design LVIA-SR responses |
|---|---|---|
| | ▪ An assessment of impacts on St. Stephens Church, the Pejar Creek underbridge and Pejar Dam recreation area. | ▪ An assessment of the potential impact of the Crookwell 3 wind farm on people at the St Stephen's Church and Pejar Dam recreation area was determined in the Crookwell 3 LVIA.<br>▪ St. Stephens Church (identified as view location R39 in the LVIA) was determined to be a low impact receptor location. The closest Crookwell 3 South wind turbine was determined to be around 2.3 km from the Church and the closest Crookwell 3 East wind turbine at around 5.1 km from the Church. Views toward the Crookwell 3 wind turbines would be restricted to those in the South portion of the wind farm development, with those in the East screened by rising and undulating landform extending north east of the Church location. The Crookwell 3 wind farm will not have a significant impact upon visitors to the Church or the Church's heritage values. Our review and assessment of the potential impact of the Crookwell 3 wind farm on St Stephen's Church concurs with the determination of impact set out in the Crookwell 3 LVIA.<br>▪ The Pejar Dam recreation area (identified as view location R15 Pejar Dam picnic area in the LVIA) was determined to be a low impact receptor location. The closest Crookwell 3 South wind turbine was determined to be around 1.4 km from the picnic area. Views toward the Crookwell 3 South wind turbines will be partially screened by landform, vegetation and the dam wall to the west/north west of the picnic area. Views toward the Crookwell 3 East wind turbines will be screened by rising and undulating landform to the north east and east of the picnic area. Our review and assessment of the potential impact of the Crookwell 3 wind farm on St Stephen's Church concurs with the determination of impact set out in the Crookwell 3 LVIA. |

| Category | O'Hanlon LVIA IER comments | Green Bean Design LVIA-SR responses |
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| | | ▪ The Pejar Creek under bridge is located on the abandoned Crookwell Goulburn railway line spanning Pejar Creek to the east of the Pejar Creek road bridge on Woodhouselee Road.<br>▪ The following information has been provided by Dr Jennifer Lambert Tracey (personal communication Dr J.L Tracey 29 October 2013), Heritage Advisor to the Upper Lachlan Shire Council. "*The Pejar Dam under bridge was an example of technology transfer from the USA, and one of five surviving timber deck trusses of the post Whitton era constructed during the period of Public Works Department railway construction branch. John Whitton was constrained by an 1861 government decree to use more local hardwood for bridges rather than imported iron bridges. After his retirement his successor, Henry Deane, worked under the budget constraints of an economic depression and pioneer line policy, so huge amounts of hardwood continued to be used for transom-top openings and for timber trusses. For the latter the American 'Howe Truss' was adapted from Percy Allan`s road bridge trusses*".<br>▪ The Pejar Dam underbridge is partially screened by tree cover alongside Pejar Creek and is not regarded as a significant visible element in the wind farm viewshed. The closest Crookwell 3 East wind turbine is located around 1.4 km to the north east of the under bridge. Wind turbines within the Crookwell 3 South wind turbine cluster will not be visible from the vicinity of the Pejar Dam underbridge. The Crookwell 3 wind farm will not have a significant impact upon the heritage values of the Pejar Dam underbridge. |

| Category | O'Hanlon LVIA IER comments | Green Bean Design LVIA-SR responses |
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| | ▪ The outcomes of community consultation and amended visual parameters on the original LVIA assessments and produce a revised LVIA for consideration. | ▪ The Proponent has complied with the DGR's and undertaken community consultation prior to, and during, the public exhibition of the Crookwell 3 wind farm Environmental Assessment. The results from community consultation and surveys were incorporated into the Crookwell 3 LVIA. |
| Cumulative Impact | The cumulative impact assessment in the LVIA is to be amended to: | |
| | ▪ Provide a justified methodology and assessment of the cumulative impacts of Crookwell 3 combined with Crookwell 1, 2 and Gullen Range including both approved and proposed elements. | ▪ The baseline for the cumulative impact assessment has adopted the landscape character assessment from the Crookwell 3 LVIA which the IER recognises as a justified methodology based on a widely used system. As well as adopting the Crookwell 3 LVIA landscape character assessment; this LVIA-SR has also considered the determination of landscape character assessment from the approved Crookwell 2 and Gullen Range landscape and visual impact assessments.<br>▪ The cumulative assessment has included the scoping of wind proposals in accordance with the DGR's which state the 'Environmental Assessment must assess the worst case as well as representative impact for all key issues considering cumulative impacts, as applicable, from the surrounding Crookwell 1 Wind Farm (existing), other approved wind farms in the viewshed of the project, and the Crookwell 2 Wind Farm (approved) including associated key ancillary components.' The Gullen Range Wind Farm (approved and under construction) is the only other wind farm development (proposed, approved or operating) with turbines within the Crookwell 3 wind farm viewshed. |

| Category | O'Hanlon LVIA IER comments | Green Bean Design LVIA-SR responses |
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| | | ▪ The relative location and general details of the Crookwell 1, Crookwell 2 and Gullen Range wind farm projects are shown in Tables 3 and 4 of LVIA-SR (information also include in Crookwell 3 LVIA).<br>▪ The LVIA-SR has provided additional information with regard to potential landscape and visual cumulative effects and has not adopted the IER recommendation to adopt the methodology set out in the National Assessment Framework. Whilst these guidelines present a general overview of cumulative assessment there are more contemporary and detailed guidelines available such as the 'Guidelines for Landscape and Visual Assessment (Landscape Institute and Institute of Environmental Management and Assessment 2013)'.<br>▪ The methodology for the assessment and determination of potential cumulative landscape and visual effects has been based on the Guidelines for Landscape and Visual Assessment (2013). The methodology includes:<br>▪ identification and scoping of wind projects;<br>▪ cumulative study area and visual receptors;<br>▪ identifying types of cumulative effect;<br>▪ baseline assessment;<br>▪ identification of landscape effects and assessment of significance;<br>▪ identification of visual effects and assessment of significance; and<br>▪ illustrative maps and photomontages. |

| Category | O'Hanlon LVIA IER comments | Green Bean Design LVIA-SR responses |
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| | ▪ Clearly identify any likely changes to the landscape character of the region resulting from the combination of the regional projects and identify the regional community perceptions of the resultant cumulative impacts based on surveys and consultation, and | ▪ The assessment and determination of potential landscape and visual cumulative effects has considered and addressed different types of cumulative landscape and visual effects that may arise. Types of cumulative effect are identified and discussed in Table 5 and Table 6 of LVIA-SR.<br>▪ A review and comparison of submissions received during public exhibition for the approved Crookwell 2 wind and proposed Crookwell 3 wind farm projects (shown in Table 2 of LVIA-SR) indicates:<br>▪ the total number of submission in response to the Crookwell 3 EIS public exhibition decreased by eleven when compared to approved Crookwell 2 submissions;<br>▪ the total number of submissions received from private households, individuals and companies in response to the Crookwell 3 EIS public exhibition decreased by twenty one when compared to the approved Crookwell 2 submissions;<br>▪ the number of submissions received from Government Agencies in response to the Crookwell 3 EIS public exhibition increased by ten when compared to approved Crookwell 2 submissions; and<br>▪ the number of Crookwell 3 submissions compared to Crookwell 2 submissions citing visual as a primary of significant issue decreased by twenty seven.<br>▪ The public exhibition of the Crookwell 3 wind farm EIS resulted in a lower number of submissions than Crookwell 2 wind farm, and a 55% decrease in submissions from private households, individuals or companies. Submissions for the Crookwell 3 wind farm also indicate a 31% decrease in the number of submissions citing visual as a primary or significant objection compared to Crookwell 2 wind farm. |

| Category | O'Hanlon LVIA IER comments | Green Bean Design LVIA-SR responses |
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| | ▪ Include assessments of the cumulative impact of the regional projects on public viewing locations, heritage items and individual residences, particularly residences within 2 km of any proposed Crookwell 3 wind turbine. | ▪ The cumulative study area has been defined by reference to the Crookwell 3 DGR's which identifies 'the assessment of worst case as well as representative impact for all key issues considering cumulative impacts from the surrounding operational Crookwell 1 wind farm, other approved wind farms in the viewshed of the project, and the approved Crookwell 2'.<br>▪ The assessment and determination of potential visual cumulative impacts has identified visual receptors from the desktop and field work as detailed in the Crookwell 3 LVIA. These include residential receptors within the Crookwell 3 wind farm viewshed and specifically those located within 2 km of the Crookwell 3 wind turbines and views from vehicles travelling along the Crookwell Goulburn Road and Woodhouselee Road<br>▪ An assessment of cumulative impacts, and particularly cumulative impacts on non-involved residential dwellings within 2 km of the Crookwell 3 wind farm turbines has been provided in the LVIA-SR. |
| Mitigation Measures | ▪ The proponent to provide a clear commitment of any planting proposed to be provided to screen the development from public locations with a description of the location and an assessment of feasibility, effectiveness and likely reliability of the proposed screening. | ▪ The Proponent will consult with the Upper Lachlan Shire Council if specifically requested to undertake screen planting on public land administered by Council.<br>▪ The location and assessment of feasibility, effectiveness and likely reliability cannot be determined until such time that the final location and extent of planting has been agreed by the Proponent and Council. It would be unusual and unrealistic to expect this level of detail to be provided prior to consent being given. |

| Category | O'Hanlon LVIA IER comments | Green Bean Design LVIA-SR responses |
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| Night Lighting | The proponent to provide an assessment of the likely impact of effectiveness of proposed mitigation measures for night lighting identified in the Response to Submission. | ▪ Ongoing development and planning for the Crookwell 3 wind farm, subsequent to the preparation and exhibition of the Crookwell 3 LVIA, has determined that the Crookwell 3 wind turbines will be less than 150 m in height (to tip of blade). As such, and in accordance with current CASA guidelines, the Crookwell 3 wind turbines will not require obstacle lighting.<br>▪ The Proponent does not intend to undertake any additional lighting assessment over and above that already provided in the Crookwell 3 LVIA and Environmental Assessment. |

# 7. Response to Community Submissions

The responses to the community submissions have been packaged into categories to avoid unnecessary duplication of responses. The submission categories include: Visual, Turbine Locations and Setback, Shadow Flicker, Environmental Benefits, Cumulative Impact, Traffic and Roadworks, Health, Blade Throw, Fire, Consultation, EA Accuracy, Noise, Aerial agriculture, Hydrology, EMI / Telecommunication, Ecology / Environment, and Decommissioning. The responses are shown in detail in sections 7.1 to 7.18 respectively.

## 7.1. Visual

The responses to the community submissions about visual concerns are shown in Table 7-1 - Response to Community Submissions (Visual).

**Table 7-1 - Response to Community Submissions (Visual)**

| **VISUAL** | |
|---|---|
| **Submissions included (ID 43933, ID 48871, ID 52708, ID 53083, ID 53583, ID 53946, ID 53952, ID 54192, ID 54195, ID 54408, ID 54414)**<br>**[Please note that not every submission raised every issue, however for the benefit of completeness we are packaging all related submissions]** | |
| **Community Issues raised:** | **CDPL Responses:** |
| Concerns raised about impact to visual amenities, and loss of scenic enjoyment. | The visual impacts of the proposed wind farm were addressed in section 9 of the EA and in Appendix 6 –Landscape and Visual Impact Assessment (LVIA) of the EA.<br>The criteria used to determine the visual impact of the proposed Crookwell 3 Wind farm is explained in section 8 of Appendix 6 of the EA as outlined below:<br>"*The potential significance of visual impact resulting from the construction and operation of the Crookwell 3 wind farm would result primarily from the combination* |

| VISUAL | |
|---|---|
| | *of the following factors:*<br>▪ *The visibility or extent to which the proposed wind farm structures would be visible from surrounding areas;*<br>▪ *The degree of visual contrast between the wind farm structures and the capability of the surrounding landscape to visually accommodate the wind farm;*<br>▪ *The category and type of situation from which people may view the wind farm (categories include residents or motorists);*<br>▪ *The distance between the view location and the wind farm;*<br>▪ *The potential number of people with a view toward the proposed wind farm from any one location;*<br>▪ *The duration of time people may view the wind farm from any static or dynamic view location; and*<br>▪ *The visual sensitivity of view locations surrounding the wind farm*"<br>Further, section 8.5 of the LVIA of the EA states:<br>"*This LVIA identified a total of 131 potential residential view locations within the 5km Crookwell 3 viewshed; however, seven of these view locations were determined to be non residential structures including meeting halls, rural fire stations and agricultural structures. An additional 87 residential view locations were identified within the 5km to 10km Crookwell 3 viewshed and were grouped into areas.*"<br>*"This LVIA acknowledges that the Crookwell 3 wind farm will have the potential to be visible to people engaged in predominantly farming or recreational activities from both public and private land, where views toward wind turbines may occur from surrounding and non-associated rural areas. Ultimately the level of visual impact* |

| VISUAL | |
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| | *would depend on the type of activities engaged in as well as the location of the activities together with the degree of screening provided by local landform or vegetation within individual properties.*<br><br>*Whilst views toward the turbines would occur from a wide area of surrounding rural and agricultural land, this LVIA has determined that the sensitivity of visual impacts is less for those employed or carrying out work in rural areas compared to potential views from residential dwellings.*<br><br>*It should be noted that the term 'visual impact' does not necessarily imply or represent an individual's negative response toward the visibility of wind turbines, and that perceptions of wind farms amongst individuals within any community can be positive, negative or neutral."* |
| Concern raised that the NSW senate enquiry has recommended caution on erecting turbines closer than 1km to residences. There should not be any towers located near residences under that distance. | CDPL acknowledges community concerns about issues of proximity to wind farms. CDPL is committed to a 1km minimum buffer from all non-host landowner dwellings, perceived by the company as good practice, and seeking neighbours agreement with all non-host landowner with dwellings within 2km of a proposed wind turbine.<br><br>CDPL also acknowledges that there was a typographical error on Figure 59 of the LVIA where it is stated that the closest proposed turbine is 830m from the property. The correct distance, 1km, is noted on Table 16 of the same report. |
| Concern raised that the total number of wind turbines to be very excessive for the size of the land being requested. | As explained in section 4.2 of the EA, In designing the wind farm CDPL had regard to the following site specific factors:<br><br>▪ Site Details;<br>▪ Wind Resource;<br>▪ Land Use; |

| VISUAL | |
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| | ▪ Dwellings;<br>▪ Topography and Soils;<br>▪ Hydrology;<br>▪ Transport and Infrastructure;<br>▪ Vegetation; and,<br>▪ Landscape and Visual Features.<br><br>"*The design of the wind farm followed an iterative process whereby specialist inputs and consultation influenced the design at various stages. An initial wind farm layout was produced which was the subject of preliminary consultant studies. The results from these preliminary studies and the community consultation undertaken informed changes to the proposed layout of the wind farm. These changes included omitting turbines, increasing buffer distances to houses, increasing screening vegetation, and changes to the access tracks and access points.*<br><br>*Modern wind farms are also very different to older projects by having greater distance between turbines and therefore having fewer turbines per site through the use of taller turbine models. This has been reflected in the evolution of the proposed Crookwell 3 Wind Farm, where earlier proposals included more turbines.*<br><br>The overall development footprint is approximately 2% of the whole project site. |
| Concerns raised that photomontages may not accurate representation of the final constructed wind farm. | The complete details of the Photomontage requirements and it preparation process is described in section 11.1 of the Landscape & Visual Impact Assessment in Appendix 6 of the EA, as follow:<br><br>"*The photomontages have been prepared with regard to the guidelines set out in the Scottish Natural Heritage (2006) Visual representation of windfarms: good practice guidance and British Landscape Institute Advice Note 01/11 (March 2011)* |

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| | *Photography and photomontage in landscape and visual impact assessment."*<br><br>*"Each photomontage was generated through the following steps:*<br><br>▪ *A digital terrain model (DTM) of the Crookwell 3 wind farm site was created from a terrain model of the surrounding area using digital contours;*<br><br>▪ *The site DTM was loaded in the Garrad Hassan 'WindFarmer' software package;*<br><br>▪ *The layout of the wind farm and 3 dimensional representation of the wind turbine was configured in GH WindFarmer;*<br><br>▪ *The location of each viewpoint (photo location) was configured in WindFarmer – the sun position for each viewpoint was configured by using the time and date of the photographs from that viewpoint;*<br><br>▪ *The view from each photomontage location was then assessed in WindFarmer. This process requires accurate mapping of the terrain as modelled, with that as seen in the photographs. The photographs, taken from each photomontage location were loaded into WindFarmer and the visible turbines superimposed on the photographs;*<br><br>▪ *The photomontage were adjusted using Photoshop CS3 to compensate for fogging due to haze or distance, as well as screening by vegetation or obstacles; and*<br><br>▪ *The final image was converted to JPG format and imported and annotated as the final figure.;*"<br><br>*"The horizontal and vertical field of view within the majority of the photomontages exceeds the parameters of normal human vision. However, in reality the eyes, head* |

| VISUAL | |
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| | *and body can all move and under normal conditions a person would sample a broad area of landscape within a panorama view.*<br><br>*Rather than restricting the extent of each photomontage to a single photographic image or cropped image representing the static human field of view, a broader field of view has been presented to more fully illustrate the extent of the wind turbines.*<br><br>*Whilst a photomontage can provide an image that illustrates a very accurate representation of a wind turbine in relation to its proposed location and*<br><br>*acknowledges that large scale objects in the landscape can appear smaller in photomontage than in real life and is partly due to the fact that a flat image does not allow the viewer to perceive any information relating to depth or distance.*<br><br>*The British Landscape Institute states that 'it is also important to recognise that two-dimensional photographic images and photomontages alone cannot capture or reflect the complexity underlying the visual experience and should therefore be considered an approximate of the three-dimensional visual experiences that an observer would receive in the field'. scale relative to the surrounding landscape, this LVIA."* |

## 7.2. Turbine Locations and Setback

The responses to the community submissions about turbine locations and setback concerns are shown in Table 7-2 - Response to Community Submissions (Turbine Locations and Setback).

**Table 7-2 - Response to Community Submissions (Turbine Locations and Setback)**

| **TURBINE LOCATION AND SETBACKS** | |
|---|---|
| **Submissions included (ID 43933, ID 48871, ID 53083, ID 53583, ID 53613, ID 54197, ID 54408, ID 54414)**<br>**[Please note that not every submission raised every issue, however for the benefit of completeness we are packaging all related submissions]** | |
| **Community Issues raised:** | **CDPL Responses:** |
| Concerns raised about the setback distances, in particularly to smaller lots (lifestyle blocks). Not complying with the 2km setback requirement in Upper Lachlan Shire Council's (ULSC) wind farm DCP, and subsequently restrictions imposed by USLC for future buildings proposed closer than 2km from any wind turbine. | As stated in Section 7.4.5 of the EA:<br>*"The proposed wind farm is a project to which Part 3A of the EP&A Act applies. There is no specific statutory provision requiring the Minister to consider the provisions of any development control plan (DCP) in determining an application for project approval under Part 3A. The Minister may, as part of the general discretion to consider matters in the public interest, choose to consider the provisions of a development control plan in determining an application for project approval under Part 3A."*<br>The comments contained in table 13 in section 7.4.5 of the EA address the 2km setback requirement contained in the Council's DCP as follows:<br>*"It is considered by the proponent that the numerical controls contained in the DCP are unreasonable and arbitrary. Few other Australian wind farms would comply and to ensure compliance with this distance would significantly reduce a project's yield. The limits are not based on any scientific understanding of buffer distances required* |

*by noise and other negative characteristics of the wind farm. Nor do they take into account topography, prevailing wind patterns, landscape type or the characteristics of the turbine itself, all of which vary and should be reflected in buffer distances.*

*A preferable approach is to use the results of the specialist assessments and established standards to determine the most appropriate buffer distance based on the specific project under consideration. The turbines proposed as part of the project have been positioned to minimise negative amenity impacts in consideration of the specialist assessments."*

Further, section 7.4.5 of the EA also states that: ,

*"It is noted that neither the Crookwell 1 Wind Farm or the approved Crookwell 2 Wind Farm comply with some of the guidelines contained in both DCP 2008 and DCP 2010. It is also noted that:*

- *the buffer guidelines contained in both DCP 2008 and DCP 2010 go beyond those typically found reasonable by Australian planning courts, tribunals and panels; and*
- *few wind farms in Australia, either constructed or planned, would comply with these guidelines.*

*Similar provisions to the numerical controls contained in DCP 2008 and DCP 2010 were contained in the now repealed Upper Lachlan Shire Council Development Control Plan – Wind Power Generation 2005 (2005 DCP). These provisions were considered by the NSW Land and Environment Court in King & anor v Minister for Planning; Parkesbourne-Mummel Landscape Guardians Inc v Minister for Planning; Gullen Range Wind Farm Pty Limited v Minister for Planning [2010] NSWLEC 1102 (7 May 2010) (Gullen Range Decision). In the Gullen Range Decision Moore SC and Fakes C held at paragraph 661 that:*

*'We have rejected, for two reasons, giving any weight to the council's DCP and*

| TURBINE LOCATION AND SETBACKS | |
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| | *the numerical prescriptions in it. First, there is no statutory requirement for us to do so. Second, although it would be possible to have regard to the document as part of the broad public interest, the evidence given concerning the adoption of the numerical limits was exposed as being inaccurate and without foundation. The numerical limits in the DCP could, therefore, only be considered to be arbitrary and certainly could not be considered as being satisfactorily derived in the fashions for either a DCP or a council policy discussed by McClellan CJ in Stockland Development v Manly'."*<br><br>CDPL acknowledges community concerns about issues of proximity to wind farms. To address this concern:<br>▪ CDPL is committed to a 1km minimum setback from all non-host landowner dwellings and non-participating dwellings.<br>▪ CDPL also proposes to offer to enter into voluntary neighbour agreements with all non-participating landowners with dwellings within 2km of a proposed wind turbine. |
| Concern raised about disregard for the 2km setback recommended in the NSW draft guidelines. | Whilst the *Draft NSW Wind Farm Planning Guidelines (December 2011)* (draft Guidelines) have not yet been finalised and no supplementary DGRs have been issued requiring the Crookwell 3 EA to apply the draft Guidelines, the EA addresses the matters for consideration and relevant assessment issues relevant to the Crookwell 3 Wind Farm project.<br><br>As per the letter dated 18 April 2012 from Department of Planning and Infrastructure (DoP&I), included in Appendix 1 of the EA, the implementation of the interim policy by proponents will vary according to the stage the application is at in the assessment and approval process, with the Crookwell 3 Wind Farm being in "Applications for which DGRs have been issued but are yet to be exhibited" at the time of the letter. Therefore, the following considerations apply: |

| TURBINE LOCATION AND SETBACKS | |
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| | *The guidelines will apply to the maximum extent possible to all wind farm applications for which the DGRs have been issued, but an environmental assessment has not yet been exhibited.*<br>• *Proponents are encouraged to adopt relevant provisions of the guideline relating to the construction and operation of wind farms in their environmental assessment, in particular relating to noise assessment, visual assessment, aviation safety, bushfire hazards, construction, decommissioning, monitoring and compliance programs. Please refer to the attached Checklist.*<br>• *Proponents should consult with all neighbours with dwellings within 2km of proposed wind turbines to identity any issues and potential approaches to mitigate any adverse impacts. Proponents should, where possible, seek the written agreement from neighbours with a dwelling within 2km of a proposed wind turbine.*<br>• *It is strongly recommended that proponents, if not done so already, immediately establish a Community Consultation Committee to provide for ongoing communication with the local community. Appendix C of the guidelines provides guidance on the establishment, membership and operation of the committee. The Department will assist proponents with the appointment of an independent committee chair and in the selection of members.*<br>The checklist and brief comments on how each item has been addressed, and which section of this EA to refer to, are provided in Appendix 1 of the EA.<br>CDPL acknowledges community concerns about issues of proximity of dwellings to wind farms. CDPL is committed to a 1km minimum buffer from all non-host landowner dwellings, perceived by the company as good practice, and seeking neighbours agreement with all non- |

| TURBINE LOCATION AND SETBACKS | |
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| | host landowner with dwellings within 2km of a proposed wind turbine.<br><br>CDPL has established the Community Consultative Committee (CCC) for the proposed project and has undertaken two meetings, the first in December 2012, the second in February 2013, the next session is currently proposed for May 2013. The nominations for the CCC members were advertised in the local newspapers for several consecutive weeks and newsletters have been provided to Upper Lachlan Council for display at their offices. The criteria used for selecting the CCC members has been in accordance with the draft Guidelines.<br><br>For the complete details of the stakeholder consultation process refer to Section 23 – Consultation and Appendix 5 – Socio-Economic Impact Assessment of the EA.<br><br>As part of the consultation process, all of the non-participating landowners with a dwelling within 2km of a proposed turbine were contacted. An initial step was made to meet with all the relevant neighbours to introduce them to the new draft guidelines, address their concerns, and propose a neighbour agreement.<br><br>Refer to Section 23.4.8 - Consultation with neighbours within 2km of the EA for more details.<br><br>▪ CDPL identified 18 non-host landowners with a potential residence within 2km of a proposed wind turbine. Of the 18 locations identified, 15 were confirmed to be existing residences, one (1) had approval for construction of a dwelling, one (1) was an unused church and another one (1) was a shed.<br><br>▪ CDPL representatives met face to face with some of these neighbours and the neighbours agreement was raised in these meetings.<br><br>▪ In relation to the neighbour agreement, raised only during the face to face meetings on 8 and 9 May 2012, all 7 landowners consulted were interested in reviewing and potentially |

| TURBINE LOCATION AND SETBACKS | |
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| | considering an agreement. The other non-host landowners where either not interested in meeting with CDPL, not available at the time, or contact over the phone or during the site visit was not possible (see details below).<br>▪ Four of the landowners confirmed during the telephone conversation that they were generally supportive of the wind farm, and they would potentially be interested in considering an agreement; however they were not available to meet or did not see the need to meet with our representatives.<br>▪ Seven of the landowners were met with face to face, and were directly notified about the neighbour agreement and were interested in reviewing and potentially considering an agreement.<br>▪ Three of the landowners were not supportive and were not interested in meeting or discussing the project or agreement further. The minimum turbine distance to each of these dwellings are 1.9km, 1.93km, and 1.99km.<br>▪ One landowner could not be contacted at all; however a letter with contact details was left at the property in the event they would like to contact CDPL and participate in the consultation process.<br>▪ CDPL has also commenced the preparation of the compensation methodology for the neighbour agreements, as well as continuing the consultation process as part of our consultation strategy. |

## 7.3. Shadow Flicker

The responses to the community submissions about shadow flicker concerns are shown in Table 7-3 - Response to Community Submissions (Shadow Flicker).

**Table 7-3 - Response to Community Submissions (Shadow Flicker)**

| **SHADOW FLICKER** | |
|---|---|
| **Submissions Included (ID 53083)** | |
| **Community Issues raised:** | **CDPL Responses:** |
| Concern raised about Shadow Flicker impact. | The Shadow Flicker impacts of the proposed wind farm were addressed in section 13 of the EA and details shown section 12.1 of Appendix 6 –Landscape and Visual Impact Assessment of the EA.<br><br>The assessment report concluded that the Leeston residence (host landowner) has been determined as the only residence surrounding Crookwell 3 sites that may be subject to levels of shadow flicker in excess of 30 hours. None of the surrounding residential view locations for both sites were determined to have the potential to exceed the maximum theoretical duration of shadow flicker of greater than 30 hours per year for the Crookwell 3 South site.<br><br>It is important to note that the Leeston residence is located amongst mature tree plantings which screen the majority of views from the residence toward the Crookwell 3 East wind turbines. As there are likely to be limited views toward wind turbines from the residence, it is anticipated that Leeston will not experience the level of shadow flicker predicted in the assessment. |

## 7.4. Environmental Benefits

The responses to the community submissions about environmental benefits are shown in Table 7-4 - Response to Community Submissions (Environmental Benefits).

**Table 7-4 - Response to Community Submissions (Environmental Benefits)**

| **ENVIRONMENTAL BENEFITS** | |
|---|---|
| **Submissions Included (ID 53952, ID 54398, ID 54404, ID 54406, ID 54412, ID 54416, ID 54418)**<br>**[Please note that not every submission raised every issue, however for the benefit of completeness we are packaging all related submissions]** | |
| **Community Issues raised:** | **CDPL Responses:** |
| Acknowledgement that the proposal will contribute to the reduction of Greenhouse Emissions. | As stated in section 6.2.2 of the EA:<br>"*As energy demands continue to rise and non-renewable energy supplies are depleted, new sources of energy are increasingly required. The adoption of renewable energy is acknowledged as a primary method to address energy security, reduce greenhouse gas emissions, and cater for future energy needs.*<br>*One of the greatest benefits of renewable energy is its potential to provide clean sources of electricity. Renewable energy sources produce less greenhouse gas emissions than fossil fuel or non-renewable energy sources. Additionally, renewable energy produces little or no waste products such as chemical pollutants, and therefore has a smaller direct impact on the surrounding environment.*"<br>Further in section 6.2.3 of the EA, it states:<br>"*There are many benefits of wind energy technology. Firstly, and most obviously, is its* |

| ENVIRONMENTAL BENEFITS | |
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| | *ability to produce clean and renewable energy. Unlike conventional energy sources, wind energy can produce electricity locally, thus reducing transference distances and loss of energy in the process (Diesendorf 2007b). Wind energy also does not involve any harmful side-effects which may result from other energy sources such as the risk of gas explosions, nuclear meltdowns or the production of radioactive by-products requiring future storage for thousands of years (Diesendorf 2007b).*<br><br>*Wind energy is currently the most commercially viable and proven renewable technology, and since the 1970s has been viewed as a key part of a new generation energy mix. Wind energy can play a key role in reducing greenhouse gas emissions, providing energy security, decreasing transmission losses, and reducing water consumption.*" |
| Concern raised that there is no empirical evidence to prove that this development will supply 33,225 households - a population of 86,385 and will reduce CO2 emissions equivalent to the removal of 48,188 cars from the road. | It is important to consider the contributions of the wind generation projects in South Australia. In the Australia Energy market Operator (AEMO) report '2011 South Australian Supply And Demand Outlook' (AEMO 2011) it states:<br><br>"The capacity of wind generation in South Australia continues to grow. Wind energy has now reached 20% of energy production. There is 1,150 MW of installed wind generation capacity."<br><br>"*Figure 6 shows South Australia's approximate annual carbon dioxide equivalent (CO2-e) emissions from generation. The trend shows a decline in emissions over the last few years predominantly due to increased wind generation.*" |

| ENVIRONMENTAL BENEFITS | |
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| | Further, in Table 3 of the AEMO report 2012 'South Australian Electricity Report' (AEMO 2012) is shows that wind generation has a nameplate rating of 1,203 MW: which is 24% of the total generation capacity in the state, and the energy generated in 2011-12 by wind generation projects is 3,349 GWh which equates to 26% of the total energy produced and consumed for the state.<br><br>The Crookwell 3 wind farm project will contribute to the renewable energy effort in NSW to produce similar results in this state. The updated greenhouse gas abatement figures as a result of the design changes are shown in Table 6 of this report. |
| Concern raised that the existing Crookwell 1 turbines are operating at approx. 11% of their stated capacity and frequently stand idle, becalmed due to lack of wind. | As CDPL is not the proponent of 'Crookwell 1' Wind Farm no comment can be made on the operating profits or the efficiency of this wind farm. The financial performance of a particular neighboring development is not a valid planning concern.<br><br>The proposed newer turbines do however provide for increased efficiency and therefore increased greenhouse gas abatement. |

## 7.5. Economic and Social Benefits

The responses to the community submissions about economic and social benefits are shown in Table 7-5 - Response to Community Submissions (Economic and Social Benefits).

**Table 7-5 - Response to Community Submissions (Economic and Social Benefits)**

| **ECONOMIC AND SOCIAL BENEFITS** | |
|---|---|
| **Submissions included (ID 43933, ID 45680, ID 48871, ID 53046, ID 53083, ID 53946, ID 53952, ID 54034, ID 54190, ID 54192, ID 54195, ID 54197, ID 54398, ID 54404, ID 54406, ID 54408, ID 54412, ID 54416, ID 54418, ID 54452)**<br>**[Please note that not every submission raised every issue, however for the benefit of completeness we are packaging all related submissions]** | |
| **Community Issues raised:** | **CDPL Responses:** |
| Concerns raised about impact to property Values in particularly the smaller properties. | Property values are influenced by a range of factors, including planning controls, supply and demand, and broader economic conditions. The issue of Impact on property values is discussed in section 8.2.3 of the Socio-Economic Impact Assessment in Appendix 5 of the EA. It refers to:<br>"*The main findings of the 2009 Preliminary Assessment of the Impact of Wind Farms on Surrounding Land Values in Australia provided for the NSW Valuer General was that wind farms do not appear to have negatively affected property values in most cases. The study results also suggest a property's underlying land use may affect its sensitivity to price impacts. Of the properties studied, no reductions in sale price were evident for rural properties or residential properties located in nearby townships with views of the wind farm.*" |

| ECONOMIC AND SOCIAL BENEFITS | |
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| | It also highlights that:<br><br>*"International reports and surveys show that proximity to wind farms has not had a material effect on property values".*<br><br>Despite this, it has been suggested that the proposed wind farm development has created some uncertainty in the property market with potential purchasers waiting until the exact nature of the wind farm development is known.<br><br>It is also suggested that smaller properties (lifestyle block) as apposed to larger grazing properties may experience more uncertainty in the property market. |
| Acknowledgement that the proponent is considering neighborhood agreements with non-host properties located between 1km and 2km from a wind turbine. | As stated in the statement of commitments in the EA, CDPL is committed to the Community Enhancement Program with the aim of directly benefiting the community.<br><br>CDPL is also seeking neighbours agreements with all non-host landowner with dwelling within 2km of a proposed wind turbine. |
| Concerns raised about reduced land rates and subsequent property devaluation as a result of being located near a wind farm development, reference to the South Gippsland Shire in Victoria. | It is important to consider the context in which this rates reduction eventuated. This is an isolated case and relevant only to the circumstances for that wind farm project.<br><br>As stated in the Weekly Times Now (20 February 2013) http://www.weeklytimesnow.com.au/article/2013/02/20/560737_national-news.html<br><br>"*the South Gippsland Shire chide executive Mr Tim Tamlin has mentioned that the Bald Hills ratepayer had his rates reduced by about 30% because his block was next to the proposed wind farm's concrete batching plant and there would be disruption during construction."*<br><br>Mr Tamlin stated:<br><br>"*I don't believe it is a precedent because valuation reviews are done on their own merits*". |

| ECONOMIC AND SOCIAL BENEFITS | |
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| | It is worth mentioning that the rates is highly likely to return to its original amount if not higher once the temporary concrete batching plant has been removed from site.<br><br>In regards to the proposed Crookwell 3 wind farm, originally there were two temporary batching plants proposed, one for each site, however due to potential impacts from noise and dust, the Crookwell 3 South site won't be hosting the temporary concrete batching plant, and the only temporary concrete batching plant proposed as part of this Preferred Project Report is located in Crookwell 3 East, and its situated well inside the site and with a significant distance to all dwellings. |
| Acknowledgement of employment opportunities for local residents, and additional constant income for host landowners, which in turn gives further income to local economy. | The economic benefits of the proposed project were addressed in section 6.5.2 of the EA. The Clean Energy Council of Australia (CEC) released a publication, *Wind Farm Investment, Employment and Carbon Abatement in Australia*, in June 2012. The study provides a snapshot of wind farm investment, jobs and carbon abatement in Australia and each of the states. The key findings of the study are as follows:<br><br>▪ "*Total local capital investment in Australian wind farms is $4.25 billion (of a total $7 billion) and potential further local investment in proposed wind farms is $17.8 billion (of a total $29.6 billion).*<br><br>▪ *Construction of a 50 MW wind farm would provide a gross value added of some $50 million to a state and contribute between 0.012% and 0.21% to gross state product (GSP) depending on the size of the state economy.*<br><br>▪ *Based on four indicative regions, construction of a 50 MW wind farm could contribute 0.1% to 2.6% to regional gross regional product, depending on the size of the regional economy.*<br><br>▪ *Construction of a wind farm could lead to potential local personal expenditure of $25,000 per person per annum on accommodation, food and other services in the region.* |

| ECONOMIC AND SOCIAL BENEFITS | |
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| | ▪ *A typical 50 megawatt (MW) wind farm:*<br>  ▪ *Has an estimated average construction workforce of 48 people with each worker spending $25,000 per year in the local area. This equates to some $1.2 million per year flowing into hotels, shops, restaurants, and other local service providers.*<br>  ▪ *Employs around five staff for operations and maintenance, equating to an ongoing local annual influx of $125,000.*<br>  ▪ *Creates 795 one-year, full-time equivalent construction jobs per 50MW wind farm in Australia, including 504 jobs in the State and 160 in the region.*<br>  ▪ *Creates 44 one-year, full-time equivalent operation jobs per 50MW wind farm in Australia, including 19 jobs in the State and 12 in the region.*<br>▪ *The national average of emissions abatement achieved by wind farms across Australia is 246,200 tons per annum which is equivalent to 57,300 cars removed from the road.*"<br><br>In consideration of the above estimates for a 50MW wind farm project, the proposed project is estimated to be between 53 and 99 MW depending on the capacity of the final selected turbine model, and it is estimated to provide the following economic benefits:<br><br>"*Provision of flow on economic benefits in terms of employment and commercial opportunities from the economic investment.*<br>  ▪ *Up-skilling of the local workforce within a growing energy market.*<br>  ▪ *Creation of up to 40 full time jobs during the construction phase.*<br>  ▪ *Creation of 6 full time jobs during the operational phase of the wind farm.* |

| ECONOMIC AND SOCIAL BENEFITS | |
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| | ▪ *Creation of up to 10 additional contractors on the site once every 10 to 15 years as part of scheduled major site overhauls.*<br>▪ *Use of a significant portion of locally sourced materials and employment.*"<br>Section 6.5.3. of the EA highlights the social benefits of the proposed project:<br>▪ *"beneficial social outcomes through supporting national and international efforts to reduce the potential impacts of global warming and climate change;*<br>▪ *greater employment opportunities and up-skilling of the local workforce;*<br>▪ *establishment of a collaborative approach to implementing local business assistance programs;*<br>▪ *the development a formal approach to community investment programs and partnerships which provide sustainable benefits to the community of Crookwell and surrounding districts; and*<br>▪ *direct social benefits arising from the annual contribution to Upper Lachlan's Community Enhancement Fund.*<br>▪ *beneficial social outcomes arising from landowner payments flowing through the local economy."*<br>The study concluded that:<br>"*The development of wind farms contribute significantly to investment, employment and emissions abatement at regional, state and national levels.*" |

| ECONOMIC AND SOCIAL BENEFITS | |
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| Acknowledgement that the construction of infrastructure, i.e., roads will benefit local communities. | The proposed projects will be upgrading and repairing road where required for the use and operation of the wind farm infrastructure. Crookwell 2 wind farm recently completed the public road upgrades required by its development consent. This road upgrade included the major intersection of the Crookwell Road and Woodhouselee Road. Further upgrades for Crookwell 2 project is the sealing of the section of Woodhouselee road north of the projects.<br><br>The current proposal may require to upgrade part of the Woodhouselee road near the Woodhouselee village if the preferred access road option (Greywood Siding Road) is not utilised. |
| Acknowledgement that wind farms bring social and economic benefits to individual landholders, communities and the State. | CDPL understands that social and economic benefits are important to any community. The benefits that a large infrastructure project such as Crookwell 3 wind farm will bring to the community are listed in section 8 of the EA, and details are shown in the Socio-Economic Impact Assessment in Appendix 5 of the EA. |
| Concern railed that If project is approved, there should be a shared benefit scheme that considers the position of significantly affected residents. | CDPL acknowledges that there should be a shared benefit for the immediate neighbouring landowners and the local community.<br><br>CDPL is proposing to seek neighbour agreements with any or all of the neighbouring properties within 2km of the proposed turbines, and also noise agreements with several of the neighbouring properties that have a theoretical noise impact based on the conservative noise impact assessment. |
| Concerns raised about the study in Spain and Scotland that reached a conclusion that wind turbine development does not create jobs, it destroys jobs. | The reference to the Study of the "*Effects on employment of public aid to renewable energy sources*" (March 2009) is not relevant in the Australian context, and it is also a narrow focused analysis without taking into account any other social and economic considerations. In particularly, it considered the amount of subsidies to support the renewable sector, however it doesn't consider that Spain imports most of its fuel (coal and gas) for its conventional power stations, therefore the high cost of these fuels in Europe is what is deriving these economies to turn to renewable energy faster than other parts of the world. |

| ECONOMIC AND SOCIAL BENEFITS | |
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| | Hence the subsidies may not be more than the cost of just running the conventional power stations in the long-term. The housing construction industry had also consumed a large portion of the labour force, not just the renewable sector, and most importantly the global financial crisis can't be attributed to the renewable energy subsidies of small countries like Spain and Scotland. |
| Concerns raised about large subsidies in place to justify wind farm projects, and causing increase in electricity prices, as they are costly and inefficient.<br>. | The Project Justification is address in section 6 of the EA.<br>Section 6.3.2 describes the Australian context:<br>"*The Renewable Energy Target (RET) scheme outlines the Australian Government's commitment to reducing greenhouse gas emissions and expanding the use of renewable sources from 2020 and beyond. On 20 August 2009, the Renewable Energy (Electricity) Amendment Bill 2009 was passed in the Commonwealth Parliament, which expanded the MRET (Mandatory Renewable Energy Target) scheme into a single national scheme, called the RET. This scheme places a legal liability on wholesale purchasers of electricity to proportionately contribute towards the generation of renewable energy (Sustainability Victoria, 2010). The RET scheme includes a target requiring 45,000 GWh of electricity to be produced by renewable energy sources by 2020. In June 2010, the Government passed an enhanced RET scheme, which created new categories for renewable energy to encourage commercial scale energy development."*<br>*"The RET places an obligation on electricity retailers and large users of electricity to purchase 20 per cent of their electricity from renewable energy sources by 2020 (Minister for Climate Change, Energy Efficiency and Water, June 2010)."*<br>*"On 1 January 2011 the RET split into two separate schemes, and the 'Large-scale Renewable Energy Target' (LRET) and the 'Small-scale Renewable Energy Scheme' (SRES) became effective. The LRET encourages large scale energy generation to be produced using technologies such as hydro, biomass, solar, tidal and wind power. The* |

| ECONOMIC AND SOCIAL BENEFITS | |
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| | *LRET will drive investment in renewable energy projects like wind farms, commercial solar and geothermal, which will deliver the majority of the 2020 target. The annual targets for the LRET increase each year up to 41,000 GWh by 2020 (DCCEE, 2010).*<br><br>*To achieve this target, Australia will require significant investment in renewable generation. As wind power is currently one of the most economic and mature renewable energy technologies available, it is likely to contribute a large share of this target."*<br><br>Section 6.3.3 of the EA explains the key reasons in the NSW context:<br><br>"*The key reasons for the emergence of the wind energy industry in NSW include:*<br>▪ *the status of wind energy technology as 'market ready';*<br>▪ *its role in reducing greenhouse gas emissions;*<br>▪ *the potential for considerable investment and economic activity driven by the Commonwealth Renewable Energy Target (RET);*<br>▪ *the significant wind resources available in NSW; and,*<br>▪ *the price competitiveness of electricity generated by wind energy*."<br><br>It is important to consider that the largest portion of the cost attributed to electricity prices is Network Charges. According to the 'Fact Sheet Electricity Prices' prepared by the Commonwealth department of Resources, Energy and Tourism, the network charges is known to be the biggest factor driving up the cost of electricity. In contrast the increase in wind farm generation on the national electricity market actually drives the market price down due to the merit order. |

| ECONOMIC AND SOCIAL BENEFITS | |
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| Concern raised that there will not be an investment of approx. $90million to $100 million in the local economy as stated in the EA. | The total capital investment from a project such as Crookwell 3 wind farm was estimated to be approximately $90 - 110 million, as stated in section 8 of the EA and supported by Socio-Economic Impact Assessment in Appendix 5 of the EA.<br><br>The report states that:<br><br>"*The level of capital investment into the local, regional, state and national economies is dependent upon the contracting arrangements agreed for the sourcing of materials and services. Although it cannot be accurately calculated, it is anticipated that there would be a level of direct economic benefit for Crookwell and the Upper Lachlan Shire as a result of the development of Crookwell 3 as well as broader economic benefits for the State and National economy.*"<br><br>The report highlights the fact that:<br><br>*"Previous wind farm construction in the area has involved a significant portion of locally sourced materials and employment due to large distances to other larger population centres"*.<br><br>In addition, over the life of the project, the financial contribution proposed to be made to the Community Enhancement Fund administered by Upper Lachlan Shire Council as a result of the Crookwell 3 Wind Farm would be significant and would assist the Shire in funding local services and infrastructure. |

| ECONOMIC AND SOCIAL BENEFITS | |
|---|---|
| Concerns raised that construction of huge wind turbines and associated infrastructure will be deter tourists who wish to escape their ever increasing industrial lifestyle and visit the Upper Lachlan Shire to enjoy its rural ambiance of historical villages and spectacular scenery. | The potential impact on tourism associated with a wind farm development is addressed in section 8.2.2 of the Socio-Economic Impact Assessment in Appendix 5 of the EA.<br><br>The report states that:<br><br>"*Currently in Australia, a large numbers of visitors tour wind farms every year in Australia, "including 50,000 visitors per year to Codrington wind farm in Victoria, 30,000 visitors in three months to the Windy Hill wind farm in the Atherton Tablelands, and 400-500 people to an open day at the existing Crookwell wind farm"* (Passey 2003 cited in Appendix 5 of the EA).<br><br>The report also states:<br><br>"*As one of the larger wind farms in NSW, it is anticipated that additional visitors would be attracted to the Crookwell area with associated indirect benefits to the local economy. It is important to note that Crookwell 1 is already advertised by both Upper Lachlan Tourism and NSW Tourism websites as one of the 'top tourist activities' in Crookwell.*" |

## 7.6. Cumulative Impact

The responses to the community submissions about cumulative impact concerns are shown in Table 7-6 - Response to Community Submissions (Cumulative Impact).

**Table 7-6 - Response to Community Submissions (Cumulative Impact)**

| **CUMULATIVE IMPACT** | |
|---|---|
| **Submissions included (ID 48871, ID 52708, ID 53946, ID 54414)**<br>**[Please note that not every submission raised every issue, however for the benefit of completeness we are packaging all related submissions]** | |
| **Community Issues raised:** | **CDPL Responses:** |
| Concerns raised that there will be excessive cumulative impact in this region | Section 22 of the EA addresses the cumulative impacts of the proposed project.<br>In section 22.4 of the EA it states:<br>"*It is acknowledged that a cumulative landscape and visual impact may result from a wind farm being constructed in conjunction with other nearby wind farm developments.*<br>*The landscape and visual impact assessment (LVIA) prepared by Green Bean Design determined that there would be some intervisibility between Crookwell 3 Wind Farm, and other wind farm turbines within the 10km viewshed. The LVIA notes that;*<br>▪ *'Direct' cumulative visual impacts may occur where two or more winds farms have been constructed within the same locality, and may be viewed from the same view location simultaneously.* |

| CUMULATIVE IMPACT | |
|---|---|
| | ▪ *'Indirect' cumulative visual impacts may occur where two or more wind farms have been constructed within the same locality, and may be viewed from the same view location but not within the same field of view (i.e. the viewer has to turn their head in order to view both wind farms).*<br>▪ *'Sequential' cumulative visual impacts may arise as a result of multiple wind farms being observed at different locations during the course of a journey (e.g. from a vehicle travelling along a highway or from a network of local roads), which may form an impression of greater magnitude within the construct of short term memory.*"<br>"*The report found that there are opportunities for 'direct' and 'indirect' views from residential dwellings and 'sequential' views from some surrounding road corridors between Crookwell 3 and other wind farms. No townships would be able to see multiple wind farms, but receivers to the north and the south west of the Crookwell Wind Farm cluster may see elements of all three wind farms when developed (Crookwell 1, 2 and 3). There is also a cumulative visual impact when driving between Goulburn and Crookwell and Goulburn and Taralga.*<br>*However, the LVIA concluded that "there is unlikely to be a significant increase in visual impact arising from cumulative impacts". Collectively, the Crookwell Wind Farm cluster represents the average size of a modern wind farm, however across a number of sites*."<br>The LVIA concluded that:<br>▪ "*Overall, the Crookwell 3 Wind Farm is not considered to significantly* |

| CUMULATIVE IMPACT | |
|---|---|
| | *increase the magnitude of visual impact for the majority of residential view locations within the Crookwell 3 wind farm 10km viewshed.*<br>▪ *The potential for the occurrence of 'direct' and 'indirect' cumulative visual impact is mitigated to a degree by the screening or partial filtering of views toward approved and existing wind farms.*<br>▪ *Sequential views from local roads would be mitigated to some extent by undulating landform and tree cover alongside road corridors*." |

## 7.7. Traffic and Roadworks

The responses to the community submissions about traffic and roadworks are shown in Table 7-7 - Response to Community Submissions (Traffic and Roadworks).

**Table 7-7 - Response to Community Submissions (Traffic and Roadworks)**

| **TRAFFIC AND ROADWORKS** | |
|---|---|
| **Submissions included (ID 43933, ID 52708, ID 53083)**<br>**[Please note that not every submission raised every issue, however for the benefit of completeness we are packaging all related submissions]** | |
| **Community Issues raised:** | **CDPL Responses:** |
| Concerns raised about traffic impact during construction phase. | The traffic and transportation related impacts arising from the proposed wind farm were addressed in Section 16 of the EA and details shown in Appendix 10 – Traffic Impact Assessment (TIA) of the EA.<br>The TIA identifies and considers the traffic impact of the project both during the construction and operational phases, along with the cumulative impacts of the adjacent approved Crookwell 2 Wind Farm. It also identifies the likely measures required to improve conditions of the access routes to the site.<br>The outcome of this study for the proposed project determined that the impact of the proposal during the construction and operational phases to the existing road network is negligible. In summary:<br>▪ *There is no significant impact to the existing road network.*<br>▪ *Therefore there is no significant cumulative impact when incorporating the construction phase of the Crookwell 2 development with the proposed vehicle activities of the construction phase of the Crookwell 3 development.* |

| TRAFFIC AND ROADWORKS | |
|---|---|
| | ▪ *The impact produced by operational traffic associated with the wind farm will be insignificant.*<br>▪ *Road network improvements are not required to be undertaken given the low vehicle volumes estimated to be generated from the Crookwell 3 Wind Farm development.*<br>▪ *The swept path of Over-Dimensional (OD) vehicles may require intersection or road upgrades and this would be determined during the more detailed Transport Management Plan.*<br>▪ *The preferred site access to Crookwell 3 East is to be located along the Greywood Siding road reserve based on existing conditions, minimal vegetation removal and sight distances.*<br>*The selection of the site access to Crookwell 3 South is more restricted with a preferred site access located approximately 400 to 500 metres north of where Crookwell Road crosses the Wollondilly Creek due to location of an escarpment and poor sight lines where the site abuts Crookwell Road.* |
| Concern raised about Woodhouselee road being a local road and is not up to standard for large industrial vehicles to use. | CDPL acknowledges that sections of the Woodhouselee road may be degraded and deemed not up to standard for use by high volume of heavy construction, in particularly the section of Woodhouselee road north of the project that is currently not proposed to be used by heavy construction vehicles. Also there is a section of road near the Woodhouselee village that would need an upgrade if the preferred access road for Crookwell 3 East (via Greywood Siding Road) is not utilised. |

## 7.8. Health

The responses to the community submissions about health concerns are shown in Table 7-8 - Response to Community Submissions (Health).

**Table 7-8 - Response to Community Submissions (Health)**

| **HEALTH** | |
|---|---|
| **Submissions included (ID 43933, ID 48871, ID 52708, ID 53046, ID 53083, ID 53946, ID 53952, ID 54034, ID 54190, ID 54192)**<br>**[Please note that not every submission raised every issue, however for the benefit of completeness we are packaging all related submissions]** | |
| **Community Issues raised:** | **CDPL Responses:** |
| Concerns raised about health risks due to audible and inaudible (infrasound) noise from the wind turbines, in particularly lack of sleep due to low level vibrations (infrasound). | The health impacts of the wind farm were addressed in section 11 of the EA.<br>Section 11.4 of the EA states:<br>"*Following a review of the current literature and scientific data, the National Health and Medical Research Council, Australia's preeminent medical research body, found as recently as 2010 that "there is currently no published scientific evidence to positively link wind turbines with adverse health effects" (NHMRC 2010). Based on current evidence, modern wind farms do not pose a threat to human health and safety as long as current planning guidelines are followed (NHMRC 2010).*<br>*The scientific findings from measured levels of sound and infrasound demonstrate that impacts upon residences within close proximity of a wind turbine are negligible and that a buffer of 2km between sensitive receptors and a wind turbine is not justified in terms of potential health impacts.*<br>*As a result of this evidence, the EA concluded that the proposed Crookwell 3 Wind Farm is not considered to have any likely adverse health impacts on the local* |

| HEALTH | |
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| | *community and neighbouring residents. Moreover, CDPL is committed to undertaking an appropriate level of community consultation at all stages of the project, in order to appropriately inform and involve the public in the development of the project, and respond to any gaps in knowledge or misinformation regarding wind farms and the proposed development."*<br><br>Further, section 11.5 of the EA outlines the mitigation measures as shown below:<br><br>▪ *"Provide accessible information on wind farm impacts including the benefits, and project details, process and updates.*<br>▪ *Install warning signs to alert the public against unauthorised site entry.*<br>▪ *Restrict access to the wind turbines and associated infrastructure to reduce personal injury and public hazards, including locked access to towers and electrical equipment, warning signs with postings of 24-hour emergency numbers, and fenced storage yards for equipment and spare parts.*<br>▪ *The wind generator blades, tower and nacelle are to be treated/painted with a non-reflective white or off white colour to reduce glare and minimise blade glint.*<br>▪ *Noise levels should comply with the applicable noise guidelines, unless an agreement is in place with the effected landowner(s), and in any case not more than the 45dB(A) noise limit (for indoors) recommended by the World Health Organisation (WHO) publication Guidelines for Community Noise.*<br>▪ *Shadow flicker at any dwelling should not exceed 30 hours per year unless an agreement is in place with the effected landowner(s).*<br>▪ *Wind turbines to be equipped with sensors that can react to any imbalance in the rotor blades and shut down the turbine if necessary.* |

| HEALTH | |
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| | ▪ *Regularly maintain and service all wind turbines."*<br><br>The SLR consulting response letter shown in Appendix 8 of this report, states:<br><br>"'The National Health and Medical Research Council's (NHMRC) current Public Statement details that despite anecdotal reports of a wide range of effects "*there is no published scientific evidence to support adverse effects of wind turbines on health*".'<br><br>Numerous acoustic studies of infrasound levels near operating wind farms have been completed both internationally and in Australia.<br><br>▪ The Measurement of Low frequency Noise at Three UK Wind Farms by Hayes McKenzie Partnership Ltd for the UK Department of Trade and Industry (DTI) in 2006.<br><br>▪ Infrasound Measurements from Wind Farms and Other Sources by Sonus Pty Ltd for Pacific Hydro in November 2010.<br><br>▪ Infrasound levels near windfarms and in other environments, by Resonate Acoustics and the SA EPA in January 2013'<br><br>A common finding from the studies was that the measured infrasound noise levels were significantly below the recognised threshold of perception for acoustic energy within this frequency range. Furthermore, infrasound noise levels in the vicinity of wind farms were at similar levels or in many cases lower than that in many other common acoustic environments such as rural, coastal, and urban areas."<br><br>The most recent of these studies concluded that:<br><br>"*The level of infrasound at houses near the wind turbines assessed is no greater than that experienced in other urban and rural environments, and that the contribution of wind turbines to the measured infrasound levels is insignificant in comparison with* |

| HEALTH | |
|---|---|
| | *the background level of infrasound in the environment.*"<br><br>Furthermore,<br><br>"*The most significant difference between the urban and rural locations was that human activity and traffic appeared to be the primary source of infrasound in urban locations, while localised wind conditions appeared to be the primary source of infrasound in rural locations.*"<br><br>"Dr Geoff Leventhall an internationally recognised expert in the field of low frequency noise and infrasound, has published a number of papers specific to wind farm noise, and concludes:<br><br>▪ Infrasound from wind turbines is below the audible threshold and of no consequence.<br>▪ Infrasound and inaudible noise from wind turbines are not a health problem.<br>▪ Low frequency noise is normally not a problem, except under conditions of unusually turbulent inflow air.<br>▪ Effects of wind turbine noise on health are mediated through annoyance from audible noise, particularly if aerodynamic fluctuations occur (swish).<br>▪ Attitude to a noise source is a large factor in annoyance from the source.<br><br>Recent studies have shown that symptoms from complainants living near wind farms may be spread by the *nocebo effect* and are often well linked to pre-existing negative opinions about wind farms and that health problems arising are "communicated diseases". "*Labelling*" of an illness is one of the key features associated with spread of mass psychogenic illness, along with community and media interest."<br><br>For more details refer to *Appendix 8 – SLR Consulting to Response to Submission 54400* of this report. |

| HEALTH | |
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| Concerns raised about health problems due to exposure to EMF from wind farm. | The potential impact on human health associated with the construction and operational phase of a wind farm development is considered in section 11 of the EA. The assessment concluded that:<br><br>"*…the proposed Crookwell 3 Wind Farm is not considered to have any likely adverse health impacts on the local community and neighbouring residents.*"<br><br>Furthermore, the electromagnetic fields produced by the wind farm also do not pose a threat to public health, as "the closeness of the electrical cables between wind turbine generators to each other, and shielding with metal armour effectively eliminate any EMF" (AusWEA cited in NHRMC 2010). |

## 7.9. Blade Throw

The responses to the community submissions about blade throw concerns are shown in Table 7-9 - Response to Community Submissions (Blade Throw).

**Table 7-9 - Response to Community Submissions (Blade Throw)**

| **BLADE THROW** | |
|---|---|
| Submissions included (**ID 53083)** | |
| **Community Issues raised:** | **CDPL Responses:** |
| Concern raised about risk from blade throw. | The risk from blade throw of the proposed wind farm was addressed in section 12 – blade throw of the EA. The outline of the assessment in shown below:<br>*"The occurrence of blade throw can be defined as two types of infrastructure failure:*<br>▪ *The whole blade detaching from the rotor and falling away from the turbine; or*<br>▪ *Part of the blade breaking off and falling away from the turbine;*<br>*Occurrences of these two scenarios could be caused by the factors below:*<br>▪ *Design or manufacturing defect;*<br>▪ *Poor maintenance regime;*<br>▪ *Excessive winds during a storm;*<br>▪ *Exceeding maximum design loads;* |

| BLADE THROW | |
|---|---|
| | ▪ *Rotor over-speed; or*<br>▪ *Lightning or fire.*<br><br>*Technological improvements and mandatory safety standards in turbine design, manufacturing, and installation as well as more frequent maintenance have made the occurrence of blade throw 'extremely rare' (NYSERDA 2005). Modern wind turbines are designed to international engineering standards which include ratings for weather events and hurricane-strength winds (AWEA 2012)."*<br><br>*"The risk of human injury or fatality by a wind turbine blade or debris at any range from a wind turbine is extremely low compared to other commonly accepted risks in the society. The proponent seeks to enhance the amenity and safety of the local area by utilising turbines models that meet the aforementioned standards in order to ensure that the wind farm operates safely in proximity to people and buildings.*<br><br>*The data from the preferred turbine manufacturer for this project shows that the probability of an individual being impacted by debris from a wind turbine in any given year at a distance of 1.1 x tip height, assuming 24 hour occupancy (i.e. a residence), is 1 in over 1 million (Vestas Wind Systems 2012). The probability of this occurrence decreases exponentially as the distance from the turbine increases (Vestas Wind Systems 2012).*<br><br>*Turbine setback distances of 1.1 x tip height is well within the setback distances required to achieve compliance for the quantitative predictions such as noise and shadow flicker. Therefore CDPL has ensured that through the design of the proposed turbine layout there are no dwellings within 1.1 x tip height of any wind turbine.* |

| BLADE THROW | |
|---|---|
| | *The probability of blade throw occurring to modern turbines by reputable turbine manufacturers are extremely low as manufacturers have improved their designs to incorporate over speed protection and built-in redundancies, fire detection, more effective maintenance regime, protection against lightning, and more consistent manufacturing processes. Turbines automatically shut down at certain wind speeds and terminate operation if significant vibrations or rotor blade stress is sensed by the monitoring system. In the rare occurrences where blades have failed, the failure typically results in components falling straight to the ground."*<br><br>*"The Victorian Oaklands Hill Wind Farm Panel found that while there have been instances of structural failure in turbine blades and structures, a tower or blade collapse is extremely rare, given technological advances and 'the small amount of time that any person would spend at an unlucky spot within the range of potential debris from a rare structural failure, the risk of human impact would be miniscule' (DPCD 2008)."*<br><br>Section 12.3 of the EA describes the mitigation measures used to prevent and minimise risk of blade throw, as shown below:<br><br>*"The preferred turbine suppliers have tens of thousands of turbines installed across many countries across six continents, and have several decades of experience in the wind industry. These suppliers are the leaders in design, manufacturing and provision of service for wind turbines, and are committed to providing customers with a safe and high quality product.* |

| BLADE THROW | |
|---|---|
| | *Each turbine model considered for this project would be certified against the relevant standards including:*<br>▪ *IEC 61400-23 [Wind turbine generator systems, Full-scale structural testing of rotor blades]; and*<br>▪ *IEC 62305-1 / 3 / 4 [Protection Against Lightning].*<br>*Lighting protection systems are incorporated into the blade designed to reduce the risk of damage from lightning strikes to the blades. The safety systems are designed to initiate a shutdown of the turbine upon detection of failure.*<br>*The operational and maintenance contracts of the turbines provide incentives to maximise the output of the wind farm. The maximum output is achieved through rigorous maintenance regime to ensure the turbines are operating at full efficiency, and this includes mitigating and repairing any degradation to the blades to keep generation at optimum levels.*<br>*Additionally, the use of fencing and signage will discourage unauthorised access to the wind turbines, which would further reduce the risk of blade throw incidences."* |

## 7.10. Fire

The responses to the community submissions about fire concerns are shown in Table 7-10 - Response to Community Submissions (Fire).

**Table 7-10 - Response to Community Submissions (Fire)**

| **FIRE** | |
|---|---|
| Submissions included (**ID 52708, ID 53583, ID 53946, ID 54192, ID 54195, ID 54398, ID 54404, ID 54406, ID 54408, ID 54412, ID 54416, ID 54418, ID 54452, ID 54711)**<br>**[Please note that not every submission raised every issue, however for the benefit of completeness we are packaging all related submissions]** | |
| **Community Issues raised:** | **CDPL Responses:** |
| Concerns raised about bushfire risk due to restrictions on aerial fighting support as it is not an option should there be an outbreak of fire where wind farms are proposed, and only ground based activities would be utilised. This scenario is totally unacceptable to the volunteers' safety, and comprises every aspect of the obligation of the volunteer fire fighter as well as the local residents without the support of lifesaving aerial facilities. | Section 15.3 of the EA explained that:<br>"*…while the proposed wind farm may restrict aerial fire-fighting in the vicinity, the ground-based measures for fighting bush fires present a valid alternative.*"<br>The vast network of access tracks proposed by the project provide a reliable access through out the project site to be able to use ground-based fire fighting measures to reach areas previously restricted due to topography of the land.<br>Section 18.2 of the EA explains the degree of risk:<br>"*Applications for approval under Part 3A are assessed against Planning for Bush Fire Protection 2006, to ensure that the required measures have been incorporated into the proposal. The ability for the proposed development to comply with Planning for Bush Fire Protection is the objective of this assessment (NSW Rural Fire Service 2007).*"<br>*"The key strategies ('Bush Fire Protection Measures') of the Planning for Bush Fire* |

| FIRE | |
|---|---|
| | *Protection guidelines are:*<br>▪ *Control the types of development permissible in bush fire prone areas;*<br>▪ *Minimise the impact of radiant heat and direct flame contact by separating the development from the bush fire hazard;*<br>▪ *Reduce the rate of heat output (intensity) of a bush fire close to a development through control of fuel levels;*<br>▪ *Minimise the vulnerability of buildings to ignition from radiation and ember attack;*<br>▪ *Enable relatively safe access for the public and facilitate fire-fighting operations;*<br>▪ *Provide adequate water supplies for bush fire suppression operations;*<br>▪ *Implement community education programs, focusing on property preparedness, including emergency planning and property maintenance requirements; and*<br>▪ *Facilitate the maintenance of APZs [Asset Protection Zones], fire trails, access for fire-fighting and on-site equipment for fire suppression."*<br>The mitigation measures proposed in section 18.3 of the EA (also shown in the below) seek to implement these strategies where relevant.<br>An additional fire risk is the possible lack of relevant experience of the local RFS volunteers, who may have no previous experience in fighting fires on or near wind farms. A 'wildfire prevention and emergency response plan' would be prepared in consultation with RFS, the NSW Fire Brigade and the State Planning Department, and would address safety, communication, site access and response protocols in the event of a fire in at the proposed wind farm. |

| FIRE | |
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| Acknowledgment that the construction of infrastructure, i.e., roads will enable ground based rural fire service better access. | Section 15.3 of the EA explained that:<br>"*…while the proposed wind farm may restrict aerial fire-fighting in the vicinity, the ground-based measures for fighting bush fires present a valid alternative.*"<br>The vast network of access tracks proposed by the project provide a reliable access through out the project site to be able to use ground-based fire fighting measures to reach areas previously restricted due to topography of the land. |
| Concerns raised about the extreme fire threat to the local community from building this major project. | The fire risk associated with the construction and operation of the wind farm has been addressed in section 18 of the EA.<br>Section 18.3 of the EA outlines the mitigation measures proposed to be implemented as part of the Crookwell 3 Wind Farm project proposal:<br>▪ "*Consultation with the NSW Rural Fire Service in regard to the adequacy of bushfire prevention measures to be implemented on site during construction, operation and decommissioning.*<br>▪ *Preparation of a bush fire prevention and emergency response plan in consultation with the RFS, the NSW Fire Brigade and the State planning department and the Council.*<br>▪ *Development of workplace health and safety protocols to minimise the risk of fire for workers during construction and during maintenance in the control room and amenities.*<br>▪ *On-site vegetation management during construction and operation to minimise potential sources of fuel.*<br>▪ *Re-organisation of construction activities during periods of high fire danger, including ceasing use of explosives, and management of hot work activities such as welding or cutting.* |

| FIRE | |
|---|---|
| | ▪ *Use of materials and equipment during operation that minimise the likelihood of fire. Maintenance of vehicles to minimise sparking from exhaust systems.*<br>▪ *Automatic shutdown of any overheating turbine mechanism.*<br>▪ *Shut down of turbines during a bush fire in the area.*<br>▪ *Lightning protection on each turbine.*<br>▪ *Adequate road access for heavy fire-fighting equipment.*<br>▪ *Under-grounding of electrical and communication cables where practicable.*<br>▪ *Access to adequate provision of water supply.*<br>▪ *Vegetation management during a designated Fire Danger Period.*<br>▪ *Careful storage and handling of flammable materials and ignition sources brought onto the site, as per manufacturer's instructions.*<br>▪ *Storage of appropriate fire fighting equipment onsite during the construction phase, and ensure that a minimum of one person on site is trained in its use.*<br>▪ *Periodical inspection of overhead transmission easements to monitor any regrowth of encroaching vegetation.*<br>▪ *Vehicle turn-around facilities to be provided at every turbine tower site.*<br>▪ *5-metres wide internal access tracks to be provided that are driveable and permanently clear of vegetation.*<br>▪ *Direct internal access road alignments and direct paths between turbines, and the shortest possible route for the electrical conductors.*<br>▪ *Provision of wind turbine access tracks that continue onto adjacent paddocks and are not dead-ended.* |

| FIRE | |
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| | ▪ *Implementing a wide fuel break in accordance with RFS, Council and State Government recommendations*."<br><br>Section 7.4.4 of the EA states:<br><br>"*The potential risk of fire caused by wind farms is considered lower in comparison to normal power generation sites, as power transmission is located within the turbine towers and distributed underground to the transformers (CFA 2007). Due to modern manufacturing, the risk of fire at wind farms is 'very low' (CFA 2007, AusWind 2007).*"<br><br>"*As part of the environmental management plan, a bushfire risk management plan would be developed based on the guidelines 'Planning for Bushfire Protection' (RFS, 2001). Further, the proponent commits to consult with the RFS during periods of high fire danger, and generally to ensure the RFS are familiar with the development.*" |

## 7.11. Consultation

The responses to the community submissions about the consultation are shown in Table 7-11 - Response to Community Submissions (Consultation).

**Table 7-11 - Response to Community Submissions (Consultation)**

| **CONSULTATION** | |
|---|---|
| **Submissions included (ID 45680, ID 53946, ID 53952)**<br>**[Please note that not every submission raised every issue, however for the benefit of completeness we are packaging all related submissions]** | |
| **Community Issues raised:** | **CDPL Responses:** |
| Community consultation is an essential consideration for wind farm proponents. | CDPL understands that community consultation is an important part of any infrastructure project, and has put in place a comprehensive Stakeholder Consultation Strategy framework for this project and has implemented this framework for its environmental assessment process, and will continue to implement its consultation process throughout the construction and operation phase if the project has been granted development consent. |
| Concerns raised about complying with Supplementary Director-General's Requirements regarding consultation. | CDPL understands the need to effectively communicate with residents and all relevant stakeholders through a program of community consultation.<br>CDPL has developed a community consultation and engagement program aimed at providing the community and stakeholders with factual information about the project and gathering feedback about their concerns and interests, which can subsequently be addressed in the approvals process and influence the project design where appropriate. The consultation activities commenced many years ago at the beginning of the project and are proposed to continue throughout the various phases of the project, including after construction. |

| CONSULTATION | |
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| | The consultation program to date has included:<br>▪ identification of stakeholder groups;<br>▪ newsletters widely distributed in the region;<br>▪ a door-knock consultation and survey;<br>▪ consultation with the local community;<br>▪ a second independent round of consultation with concerned community members;<br>▪ consultation with particular focus on any neighbours that have houses within 2km of a wind turbine proposed as part of the project;<br>▪ consultation with Upper Lachlan Shire Council;<br>▪ hosting of a widely advertised Information Day for residents and other stakeholders during the public exhibition period;<br>▪ consultation with State Government agencies, specially the NSW Department of Planning and Infrastructure, Office of Environment and Heritage (OEH) [previously NSW Department of Environment, Climate Change and Water (DECCW)], NSW Department of Transport and Infrastructure (DTI), NSW Department of Industry and Investment, Department of Defence, and other Government bodies; and<br>▪ 2 meetings of the established Community Consultative Committee (CCC).<br>Further more detailed information regarding the Community Consultation can be found on Section 23 of the EA. |

| CONSULTATION | |
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| Concern raised that the local survey quoted in the EA, conducted in 2008, is out of date. If a similar survey were held today the results would be drastically different. This is evidenced by a 2012 survey of community attitudes to wind turbine development conducted in the nearby area of Collector which showed overwhelming opposition to wind turbine development. | The Collector Community Survey (September 2012) that was prepared for Friends of Collector by Stollz Now Research, appears to be focused for particular audience and the result could be potentially biased as it could be attracting community members that are aware and potentially sympathetic towards the Friends of Collector. Other members of the community that don't want to be associated with the anti-wind farm agenda of the Friends of Collector may preferred not to participate in the survey, therefore skewing the results towards the predetermined bias.<br><br>It is also important to note that the survey was conducted within 10km of the proposed Collector wind farm site which is a significantly longer distance to the proposed Crookwell 3 wind farm project and not relevant in this case. Nonetheless, a survey of a small sample of community doesn't replace the results of the 2008 survey that covered a much larger region. For such surveys it is important to have a large sample size to be able to justify such statements made by the submitter.<br><br>Such surveys as the 2010 survey by the NSW Office of Environment and Heritage 'Community attitudes to wind farms and renewable energy in NSW' covered more than 2,000 residents and 300 businesses in regional areas, and is more representative of the attitude of the regional communities towards renewables. |
| Concern raised that the NSW Landscape Guardians and the Crookwell District Landscape Guardians were not approached by the developer and consequently their input was not sought. | As stated in section 9.4.2 Second Round of Consultation with Highly-concerned Stakeholders of the Socio-Economic Report in Appendix 5 of the EA, as part of the overall consultation process, CDPL authorised a second round of consultation by an independent consultant Futureye Pty Ltd.<br><br>This process involved interviews with a select group 6 highly concerned community |

| CONSULTATION | |
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| | representatives to further understand the issues which underpins their concerns. Futureye Pty Ltd representatives conducted interviews with these community representatives by phone between June 14 and 18, 2010 and in-person on July 8, 2010.<br><br>Mr Price-Jones as the senior representative from the NSW Landscape Guardians and the Crookwell District Landscape Guardians was one of the 6 highly concerned community representatives consulted as part of this process. |
| Concern raised that the Spokesperson of the Crookwell District Landscape Guardians Inc. (and a local resident) was not selected for the Crookwell 3 wind farm Community Consultative Committee as a community member / stakeholder. | In accordance with the Appendix C of the Draft NSW Planning Guidelines Wind Farms (December 2011):<br><br>*<u>Membership of the Committee,</u>*<br><br>*The membership of the committee should comprise:*<br><br>▪ *an independent chairperson*<br>▪ *five to seven representatives of the local community and other stakeholders, including at least two representatives of any landowners that own houses within 2 km of a proposed wind turbine*<br>▪ *one representative of the local council*<br>▪ *two or three representatives of the proponent, including the person with direct responsibility for environmental management at the wind farm.*<br><br>*<u>Community Representatives:</u>*<br><br>*In selecting the community representatives, preference will be given to candidates who can represent the concerns of a variety of interest groups. Selection criteria are:*<br><br>▪ *willingness to contribute constructively*<br>▪ *experience and ability to provide feedback to the community and stakeholder groups* |

| CONSULTATION | |
|---|---|
| | ▪ *current residence in the local area and / or awareness of local and other relevant issues.*<br><br>CDPL has using the selection criteria specified above to determine the most suitable community representatives, other applicants were consider more suitable for the committee.<br><br>It is important to note that the submitter has participated in the committee as an observer and has already been given opportunity to voice his comments during the committee session in February 2013. |

## 7.12. EA Accuracy

The responses to the community submissions about the accuracy of the EA are shown in Table 7-12 - Response to Community Submissions (EA accuracy).

**Table 7-12 - Response to Community Submissions (EA accuracy)**

| **EA ACCURACY** | |
|---|---|
| **Submissions included (ID 48871, ID 52708, ID 53083)**<br>**[Please note that not every submission raised every issue, however for the benefit of completeness we are packaging all related submissions]** | |
| **Community Issues raised:** | **CDPL Responses:** |
| Concern raised about the lack of specifity in many areas ("up to" number of turbines, capacity of turbines, height of turbines, etc.). | In section 5.2 of the EA it states that:<br>"*The turbine manufacturing industry is dynamic, with new and updated models regularly released. Existing models are often made redundant only a few years after their release. The industry is rapidly growing and benefits from constant innovation and advancement in the efficiency of the turbines."*<br>*"The major phase of a wind farm's cost is the initial construction, and turbine selection is a critical determinant of this cost. A turbines cost depends on a number of factors including the current economic climate (i.e. whether other wind farms also require supply in the upcoming period) based on competition between suppliers. In order to maintain competition between suppliers of turbines, and that the most up to date turbines can be used, it is important that a project has flexibility to select from a number of different turbine models from alternative suppliers."* |

| EA ACCURACY | |
|---|---|
| | To provide this flexibility, the project needs to consider various turbine models and sizes, nonetheless the overall impact has been assessed for the largest turbine envelope size to illustrate the largest potential impact. If a small turbine size is selected for construction, then the impact is likely to be much less. |
| Concerns raised about inaccurate diagrammatic representations and notations on the EA figures. | CDPL acknowledges that there has been minor typographical and drafting errors in a few of the vast list of plans in the EA. Some of these errors have been corrected via an addendum to the EA that was publically exhibited at the same time, other minor corrections have been made to the plans that are of low significance to the overall assessment of the project. It is important to highlight that the graphical representation of some of the site plan features (i.e. house sizes) are not to scale to allow for a better identification of the item. |

## 7.13. Noise

The responses to the community submissions about noise are shown in Table 7-13 - Response to Community Submissions (Noise).

**Table 7-13 - Response to Community Submissions (Noise)**

| **NOISE** | |
|---|---|
| **Submissions included (ID 48871, ID 52708, ID 53083, ID 54192, ID 54195, ID 54197, ID 54400, ID 54586)**<br>**[Please note that not every submission raised every issue, however for the benefit of completeness we are packaging all related submissions]** | |
| **Community Issues Raised:** | **CDPL Responses:** |
| General concerns raised about impact from noise, and about noise monitoring.<br><br>Also concerns raised about the allowable noise of 35dBA+5% background noise not be achievable on any tower within 1.25km of our residence as depicted in the draft NSW guidelines. | It is important to make the distinction between a noise limit (based on measured background noise levels) and a predicted noise level (based on computer model predictions).<br><br>Noise monitoring was conducted from 30 June to 16 July 2010 at eleven nearby locations to determine baseline conditions and establish indicative criteria for surrounding residential receivers. For detail on the measurement locations, methodology and results refer to section 7 of NIA in Appendix 7 of the EA.<br><br>The noise impact of the proposed wind farm were addressed in section 10 of the EA and supported by a Noise Impact Assessment (NIA) in Appendix 7 of the EA.<br><br>The results of the assessment found that:<br><br>"*all non-host properties are predicted to be within the nominated World Health Organisation (WHO) Guideline noise limits*".<br><br>The noise impact for the receivers that are predicted to experience noise levels exceeding the 'Background + 5 dBA' intrusive criteria is expected to be minimised by the mitigation measures proposed in the report. |

| NOISE | |
|---|---|
| | Generally at the reference wind speed of 8 m/s @10 m AGL. All turbine currently considered for the Crookwell 3 wind farm are predicted to comply at this wind speed, however, some marginal exceedances are predicted at lower wind speeds at some locations, refer to NIA in Appendix 7 of the EA for further details.<br><br>The Crookwell 3 wind farm turbines can be operated in mitigated 'low noise' operation mode and sector managed modes, with these configuration capabilities the turbines can comply with the limit for all wind speeds. This assessment is presented graphically in Appendix B5 of the NIA in Appendix 7 of the EA.<br><br>It should be noted that the noise predictions allow for downwind noise propagation enhancement from all turbines at once. This is likely to be an overly conservative prediction for residences located to the nearest turbines from Crookwell 2 wind farm.<br><br>For more detail refer to Appendix 7 – SLR Consulting to Response to Submission 53083 of this report.<br><br>*'The noise modelling procedure undertaken as part of the noise impact assessment relies on a number of conservative assumptions, the foremost being that noise propagates downwind from each source. This will overestimate the predicted noise level where receptors have WTGs located around them in more than a singular direction or quadrant as wind is not able to blow in more than one directional quadrant simultaneously. This exact scenario describes the relative positioning the receptors identified as exceeding SA EPA Guideline levels have with respect to WTGs from Crookwell 2 and Crookwell 3. The degree to which this conservative assumption potentially over-estimates noise levels has been evaluated by predicting noise at compliance critical receptors using alternative algorithms and specific wind directions of easterly and westerly versus all downwind. The predicted degree of conservatism of the all downwind assumption is expected to be greater than the predicted exceedances.'* |

| NOISE | |
|---|---|
| | For this reason, SLR Consulting concluded that: "*During commissioning of the proposed Crookwell 3 Wind Farm the actual received WTG noise level will need to be verified and determined through extensive monitoring.*" |
| Concern raised about temperature inversions in the area. | '*The phenomenon of enhanced noise propagation from temperature inversion is well known to acousticians, and our noise model uses the algorithms of the international standard ISO 9613 which assumes either a mild temperature inversion or favourably propagating wind.'*<br><br>*'The accuracy of the various noise prediction standards, has been recently examined in a correlation study2. It was found that ISO 9613 using a 'hard ground' assumption was the generally most conservative calculation standard for wind farm noise propagation predictions and correlated very well for 'worst case' propagation and terrain and therefore is preferred over other prediction standards.'*<br><br>'*There is no requirement under SA EPA assessment methodology to determine the number of days that temperature inversions occur, however, we note that a the most common form of temperature inversion typically requires clear night sky (i.e. no clouds) in order to form as cloud cover provides insulation which prevents rapid radiative cooling of the earth that leads to colder ground level temperatures.'*<br><br>'*Examples of particular sources being audible during temperature inversions at various distances such as the distant traffic or the lawnmower mentioned in the letter are not necessarily indicative for highly elevated noise sources such as wind turbines. Most radiative temperature inversions prevail only in the lower part of the atmosphere, where the negative temperature lapse rate is highest ie where the greatest cooling occurs close to ground level. Highly elevated noise sources that are above the temperature inversion layer or in a region that has a more uniform temperature profile will not experience the same degree of propagation enhancement as noise sources located at ground level. It should also be noted that* |

| NOISE | |
|---|---|
| | *ground based noise sources are often shielded by topography and when the effect of shielding is negated by temperature inversions their subjective change in noise level is more pronounced. Elevated wind turbines are not likely to be shielded by topography and hence unlikely to experience the same level of subjective change in noise level due to a temperature inversion.'*<br><br>*'It should be noted that NIA do not evaluate the likelihood of audibility of a noise source, rather the noise limits have been determined in accordance with the SA EPA Guideline and represent an objective cut-off beyond which there may be an unreasonable impact on acoustic amenity. In reality any noise assessment standard sets a noise limit which is a balance between maintaining a reasonable level of amenity and allowing development to occur.'*<br><br>For more details refer to Appendix 7 – SLR Consulting to Response to Submission 53083 of this report. |
| Concern raised about the character of noise produced by wind turbines. | *"The dominant source of noise produced by modern wind turbines is aerodynamic and broadband in spectrum. Gearbox, generator and other mechanical sources are generally inaudible within a short distance of the base of the tower. The SA EPA Guideline has developed the 35 dBA or background + 5 dBA criteria with the fundamental characteristics of wind farms taken into account, including aerodynamic noise from passing blades, swish etc. Where excessive levels of a special audible characteristic (e.g. tonality, modulation, low frequency etc.) are identified from a wind farm then the noise level shall be penalised by a further 5 dBA to account for the more subjectively annoying character."*<br><br>Refer to Appendix 7 – SLR Consulting to Response to Submission 53083 of this report for more details. |

| NOISE | |
|---|---|
| Concern raised about the ven den berg effect. | The NIA for the project has addressed this concern by correlating all baseline noise data and completing all wind farm noise predictions to a hub height wind speed rather than 10 metres. High wind shear and temperature inversions, resulting from atmospheric stability have been addressed in the Section 10.3 and Section 10.4 of the NIA in Appendix 7 of the EA.<br><br>*"The van den Berg paper 'The sounds of high winds' presents some measurements and findings of the Rhede Wind Farm on the German-Dutch border. The study showed that during certain night time conditions very stable atmospheric conditions prevailed and higher than expected noise levels from the wind farm were produced. This was due to the higher wind shear experienced under such conditions and that the common practice of relating all measurements to a wind speed derived at 10 metres AGL meant hub height wind speeds were under-estimated for these conditions e.g. the turbine was operating in higher wind speeds than what had been assumed for any given 10 metre wind speed and therefore producing greater noise than what had been predicted using the 10 metre wind speed."*<br><br>For more details refer to *Appendix 7 – SLR Consulting to Response to Submission 53083* of this report. |
| Concern raised about validity and use of outdated methodology for measuring noise and infrasound, and assessments in accordance with the applicable guidelines. | The methodology and criteria used in the NIA are supported by the South Australian Environmental Protection Authority *Environment Noise Guidelines for Wind Farms (February 2003)* (SA EPA Guideline), World Health Organization *Guidelines for Community Noise* (WHO Guideline), construction noise guidelines (DECCW Interim Construction Noise Guideline 2009) and blasting impact guidelines (ANZECC guideline *Technical basis for guidelines to minimise annoyance due to blasting overpressure and ground vibration*).<br><br>As requested by the Director General on 18 April 2012, further assessment work has been undertaken to address the additional requirements of the proposed *Draft NSW Wind Farm Planning Guidelines* – Appendix B*: NSW wind farm noise guidelines* issued by DoP&I in December 2011 (draft NSW Guidelines). This involves consideration of separate daytime and |

| NOISE | |
|---|---|
| | night-time periods and alternative methods of evaluation for 'Special Audible Character', discussed in Section 10.4 of the EA, and in Section 12 of NIA in Appendix 7 of the EA.<br><br>It is important to state that both of the 'SA EPA Guidelines (2003)' and the 'draft NSW Guidelines (2011)', have already been through a consultation and public exhibition process previously and are not a subject to the current assessment process. |
| Concern raised about how the potential noise exceedance at the 4 neighbouring properties 'houses 8, 20, 66 & 67', will be dealt with by the proponent seeking a noise agreement, what contingencies in place if noise agreement is not reached with the properties. | As stated in the NIA in Appendix 7 of the EA, CDPL is proposing to negotiate and enter into an agreement with the landowners of House 8, 20, 66, 67, and 117. Please note the House 117 is an approved DA for a dwelling, however currently no dwelling exist on this property. CDPL seeks to secure an agreement with the above mentioned properties with an agreed noise threshold.<br><br>If negotiations for agreements are unsuccessful then the following adaptive management approach is proposed:<br><br>▪ Verify actual WTG noise levels through comprehensive noise monitoring.<br>▪ Evaluate turning off WTGs during specific wind direction and speed that are identified as causing the exceedances and undue impact on the affected dwellings.<br>▪ Evaluate the acoustic design of the dwellings and provide acoustic upgrades (glazing, façade, masking noise etc.) to the affected dwellings.<br>▪ Upon landowner initiated acquisition request, proceed with negotiations and give consideration to acquire the affected dwelling.<br>▪ If the above options are unsuccessful, the WTG(s) will be taken offline for further investigation and if impact is not able to be resolved then remove the WTG(s) causing the unresolved exceedances from the layout. |

| NOISE | |
|---|---|
| Concerns raised about the health effects of infrasound/low frequency noise emanating from modern wind turbines. | The SLR consulting response letter shown in Appendix 8 of this report, states:<br><br>"'The National Health and Medical Research Council's (NHMRC) current Public Statement details that despite anecdotal reports of a wide range of effects "*there is no published scientific evidence to support adverse effects of wind turbines on health*".'<br><br>*"Numerous acoustic studies of infrasound levels near operating wind farms have been completed both internationally and in Australia.*<br><br>▪ *The Measurement of Low frequency Noise at Three UK Wind Farms by Hayes McKenzie Partnership Ltd for the UK Department of Trade and Industry (DTI) in 2006.*<br><br>▪ *Infrasound Measurements from Wind Farms and Other Sources by Sonus Pty Ltd for Pacific Hydro in November 2010.*<br><br>▪ *Infrasound levels near wind farms and in other environments, by Resonate Acoustics and the SA EPA in January 2013'*<br><br>*A common finding from the studies was that the measured infrasound noise levels were significantly below the recognised threshold of perception for acoustic energy within this frequency range. Furthermore, infrasound noise levels in the vicinity of wind farms were at similar levels or in many cases lower than that in many other common acoustic environments such as rural, coastal, and urban areas."*<br><br>The most recent of these studies concluded that:<br><br>"*The level of infrasound at houses near the wind turbines assessed is no greater than that experienced in other urban and rural environments, and that the contribution of wind turbines to the measured infrasound levels is insignificant in comparison with the background level of infrasound in the environment.*" |

| NOISE | |
|---|---|
| | Furthermore,<br><br>"*The most significant difference between the urban and rural locations was that human activity and traffic appeared to be the primary source of infrasound in urban locations, while localised wind conditions appeared to be the primary source of infrasound in rural locations.*"<br><br>"Dr Geoff Leventhall an internationally recognised expert in the field of low frequency noise and infrasound, has published a number of papers specific to wind farm noise, and concludes:<br><br>▪ Infrasound from wind turbines is below the audible threshold and of no consequence.<br><br>▪ Infrasound and inaudible noise from wind turbines are not a health problem.<br><br>▪ Low frequency noise is normally not a problem, except under conditions of unusually turbulent inflow air.<br><br>▪ Effects of wind turbine noise on health are mediated through annoyance from audible noise, particularly if aerodynamic fluctuations occur (swish).<br><br>▪ Attitude to a noise source is a large factor in annoyance from the source.<br><br>Recent studies have shown that symptoms from complainants living near wind farms may be spread by the *nocebo effect* and are often well linked to pre-existing negative opinions about wind farms and that health problems arising are "communicated diseases". "*Labelling*" of an illness is one of the key features associated with spread of mass psychogenic illness, along with community and media interest."<br><br>For more details refer to *Appendix 8 – SLR Consulting to Response to Submission 54400* of this report. |

## 7.14. Aerial Agriculture

The responses to the community submissions about aerial agriculture are shown in Table 7-14 - Response to Community Submissions (Aerial Agriculture).

**Table 7-14 - Response to Community Submissions (Aerial Agriculture)**

| **AERIAL AGRICULTURE** | |
|---|---|
| **Submissions Included (ID 54192)** | |
| **Community Issues Raised:** | **CDPL Responses:** |
| Concern raised about restrictions to aerial agriculture activities. | CDPL acknowledges that there may be instances where an existing aerial agriculture activity may be restricted, and as stated in section 15.4 of the EA:<br>*"…in the event the immediate neighbouring landowner(s) would require aerial agriculture spraying of their land adjacent to the wind farm and there is an increase in cost associated with the proximity to turbines, the proponent will cover the reasonable cost increase for the aerial agriculture activity. The landowner seeking compensation for the cost increase must demonstrate and justify this increase with previous records."* |

## 7.15. Hydrology

The responses to the community submissions about hydrology are shown in Table 7-15 - Response to Community Submissions (Hydrology).

**Table 7-15 - Response to Community Submissions (Hydrology)**

| **HYDROLOGY** | |
|---|---|
| **Submission Included (ID 54192)** | |
| **Community Issues raised:** | **CDPL Responses:** |
| Concern raised about the potential adverse effects to the underground water table due to upwards of 1000 tonnes of cement under each tower. | In section 4.1.3 of the Geotechnical Assessment in Appendix 13 of the EA, it states:<br>*"No groundwater or evidence of surface springs were noted at the time of the fieldwork."*<br>*"For most of the site the permanent groundwater is likely to be at least several metres below ground surface."*<br>As the turbine footings will generally be found at depths shallower than 3m, the concrete from which the footings will be constructed is not expected to intersect the groundwater table. Further, the actual area of land to be covered by the footings is very small in the context of the size of the project area. As such, the concrete footings are considered unlikely to have any effect on the regional groundwater table. |

## 7.16. EMI / Telecommunication

The responses to the community submissions about EMI and Telecommunication are shown in Table 7-16 - Response to Community Submissions (EMI / Telecommunication).

**Table 7-16 - Response to Community Submissions (EMI / Telecommunication)**

| **EMI / TELECOMMUNICATIONS** | |
|---|---|
| **Submissions included (ID 52708, ID 53946, ID 54034)**<br>**[Please note that not every submission raised every issue, however for the benefit of completeness we are packaging all related submissions]** | |
| **Community Issues raised:** | **CDPL Responses:** |
| Concerns raised about impact to TV reception. | The issue of television interference is discussed in detail in sections 3.12 and 3.14 of 'EMI analysis report' in Appendix 11 of the EA. It is important to note that only analogue television has the greatest potential to experience interference from the wind turbines. Interference from the turbines should be readily identified and can be rectified through a number of measures as identified in section 3.14.3 of EMI analysis report.<br>If TV interference is identified that is attributable to the wind farm, the amelioration options below should be followed in order to rectify the problem:<br>▪ realigning the householder's TV antenna directly towards their existing transmitter;<br>▪ tuning householder's antenna into alternative sources of the same or suitable TV signal;<br>▪ the installation of more directional and/or higher gain antenna at the affected residence;<br>▪ relocating the antenna to a less affected position; |

| EMI / TELECOMMUNICATIONS | |
|---|---|
| | ▪ the installation of a digital set top box (and UHF antenna if required);<br>▪ the installation of cable/satellite TV at the affected residences; and<br>▪ installation of a TV relay station.<br>The above mitigation measures are stated in section 17.4 – Telecommunication Mitigation in the EA, and also in section 5.13 – Television Broadcasting in the "Assessment of Electromagnetic Interference Issues for the Crookwell 3 Wind Farm" report as Appendix 11 of the EA. The above mitigation measures are also included in the Statement of Commitments. |
| Concerns raised about impact to radio, reception. | The impact on radio reception is discussed on section 3.13 of the EMI analysis report. An analysis of the vicinity found 4 radio towers within approximately 50km of the Crookwell 3 Wind Farm. The report found that it is unlikely that the proposed wind farm would have an impact on AM radio; however FM signals may be susceptible to interference from objects such as wind turbines, resulting in 'hissing and distortion' of the signal. This can be mitigated by the installation of a high quality antenna. Furthermore, the proposed wind farm would not have an impact upon signal quality once digital radio is introduced into regional areas. |
| Concerns raised about impact to mobile phone reception. | The impact on mobile phone reception is discussed on section 3.9 of EMI analysis report. Mobile phone networks operate at frequencies of either between 800 and 900 MHz, or between 1800 and 2100 MHz. At such frequencies, signals are likely to be affected by physical obstructions such as buildings and wind turbines. However, those networks are designed to operate in such conditions and in most cases, if there is sufficient mobile network coverage and signal strength, the presence of wind turbines is unlikely to cause any interference. |

| EMI / TELECOMMUNICATIONS | |
|---|---|
| | In rural areas, the mobile network coverage may be more susceptible to physical obstructions due to the large distance between the phone towers and the mobile phone user. In that case, wind turbines could cause some interference to the signal. In cases of marginal network coverage, simple mitigation procedures such as moving a short distance to a new location until the signal strength improves or installing an external antenna are expected to help to improve the signal quality. |
| Concerns raised about impact to wireless internet reception. | The impact on Wireless internet is discussed on section 3.11 of EMI analysis report.<br>If interference to the existing wireless internet service is encountered that is attributable to the wind farm, following construction of the wind farm, CDPL will work with Cirrus Communications to resolve any interference problems caused by the wind farm. Possible amelioration methods may include:<br>▪ Installation of improved or higher antenna at affected dwellings; or<br>▪ Installation of a new base station or service dwellings in affected areas.<br>The above mitigation measures are stated in section 17.4 – Telecommunication Mitigation in the EA, and also in section 5.10 – Wireless Internet in the "Assessment of Electromagnetic Interference Issues for the Crookwell 3 Wind Farm" report as Appendix 11 of the EA. The above mitigation measures are also included in the Statement of Commitments. |

## 7.17. Ecology / Environment

The responses to the community submissions about ecology and environment are shown in Table 7-17 - Response to Community Submissions (Ecology / Environment).

**Table 7-17 - Response to Community Submissions (Ecology / Environment)**

| **ECOLOGY / ENVIRONMENT** | |
|---|---|
| **Submission Include (ID 53952, ID 54398, ID 54400, ID 54404, ID 54406, ID 54412, ID 54414, ID 54416, ID 54418)**<br>**[Please note that not every submission raised every issue, however for the benefit of completeness we are packaging all related submissions]** | |
| **Community Issues raised:** | **CDPL Responses:** |
| Concerns raised about potential impact to the flora and fauna in the region. The proposed site is generally poor in biodiversity, however studying the site in virtual isolation is invalid as it is bordered by rich habitat, like Pejar Dam and other water bodies in the region. Adverse impact on birdlife, especially parrots. | The recent Supplementary Ecology Report (SER) in Appendix 2 of this report states:<br>"*The Box-Gum Woodland derived native grassland that occurs at TA26 will be removed to accommodate the turbine and its associated infrastructure. The impacts associated with this have been assessed in a seven part test, which concluded that there would not be a significant impact to the ecological community due to its degraded nature in this area and the avoidance of more intact occurrences. All other areas of Box-Gum Woodland can be avoided."*<br>*"The habitat assessments carried out over the Study Area identified areas of woodland habitat that support or are likely to support a number of threatened species. A total of five threatened species were identified during the field surveys, three of which are woodland bird species, one is a raptor and the other a generalist bird species that can persist in a range of habitats. The woodland habitats would provide potential habitat for at least another four threatened species listed as* |

| ECOLOGY / ENVIRONMENT | |
|---|---|
| | *Vulnerable under the TSC Act."*<br><br>*"No migratory waterbird species listed in either the TSC Act or the EPBC Act have been recorded at the Pejar Dam. The Pejar Dam is not recognised as an important migratory bird habitat. A number of waterbird species have been recorded within the Upper Lachlan LGA. Taking the precautionary approach, it would be feasible that Pejar Dam would provide suitable habitat for migratory species and is a potential stopover point.*<br><br>*"The Pejar Dam is known locally to provide amenity in the form of fishing and bird watching. Potential impacts that this development could have on the Pejar Dam would generally relate directly to the construction phase and would include runoff from land disturbance, and sediment being transported in to the dam."*<br><br>*"It is unlikely that the ecological values of the Pejar Dam would be impacted by the proposal due to the distance the construction activities are likely to be from the dam (approximately 5 km within the catchment) and that all works taking place on crossings near to the dam would be outside of the catchment on the western side of the dam wall flowing away from the water body and are actually lower than dam surface level."*<br><br>The 7-Part Test results concluded that:<br><br>"*The proposal is unlikely to have a significant impact on any of the species or the ecologically endangered community and therefore, further assessment under the NSW TSC Act is not required."*<br><br>For further details of the SER including the details of the 7-Part Test and the recommended mitigation measures refer to Appendix 2 of this report. |

| ECOLOGY / ENVIRONMENT | |
|---|---|
| Acknowledgement of efficient use of natural resources. | Section 6.2.2 of the EA, explains the role of renewable energy:<br><br>*"As the negative impacts of climate change and global warming are becoming increasingly apparent, society is looking at the role of innovation and technology to address these concerns. A key example is renewable energy. Renewable energy harnesses the replaceable natural energies of the Earth and can be defined as 'energy that is drawn from sources that cannot be depleted or can be replaced' (House of Representatives Standing Committee on Industry and Resources, 2007).*<br><br>*As energy demands continue to rise and non-renewable energy supplies are depleted, new sources of energy are increasingly required. The adoption of renewable energy is acknowledged as a primary method to address energy security, reduce greenhouse gas emissions, and cater for future energy needs."*<br><br>*"One of the greatest benefits of renewable energy is its potential to provide clean sources of electricity. Renewable energy sources produce less greenhouse gas emissions than fossil fuel or non-renewable energy sources. Additionally, renewable energy produces little or no waste products such as chemical pollutants, and therefore has a smaller direct impact on the surrounding environment. Renewable energy technologies have been sought and developed 'not only to increase the diversity of energy supplies but to potentially displace fossil fuels and consequently reduce greenhouse gas emissions generated by electricity production' (IEA 2009 in NSW Legislative Council 2009)."* |

## 7.18. Decommissioning

The responses to the community submissions about decommissioning are shown in Table 7-18 - Response to Community Submissions (Decommissioning).

**Table 7-18 - Response to Community Submissions (Decommissioning)**

| **DECOMMISSIONING** | |
|---|---|
| **Submission Include (ID 54408)** | |
| **Community Issues raised:** | **CDPL Responses:** |
| Concern raised about the process for decommissioning of the infrastructure once the project has finished its operation phase. | The details of the Decommissioning and Rehabilitation process has been discussed in section 5.14 – Decommissioning of the EA, and further details are incorporated into the complete Decommissioning and Rehabilitation Plan (DRP) in Appendix 4 – Decommissioning and Rehabilitation Plan (June 2012) of the EA.<br><br>It is also a requirement of the Draft NSW Wind Farm Planning Guidelines (December 2011) that the EA for the project includes a DRP. This DRP has been prepared for the project by AECOM Australia Pty Ltd.<br><br>Outline of the DRP process is shown below:<br><br>"CDPL has agreements with the host landowners to enter into leases of the site for a term of 30 years, with an option to extend the lease for a further 30 year term."<br><br>"Any continuation of the wind farm beyond the first 30 year period may take the form of one of: |

| DECOMMISSIONING | |
|---|---|
| | ▪ Extended operation of the original turbines;<br>▪ Turbine replacement with the similar model that has newer and more efficient technology; or<br>▪ Turbine replacement with a different model that would be subject to the requisite approvals being obtained at that time."<br><br>"Once the wind farm reaches the end of its useful economic life, the project would be decommissioned. Decommissioning essentially involves the reverse process to construction. All materials would be removed from the site and recycled appropriately. Access tracks would remain where beneficial to the ongoing use of the land by the owner. Tracks considered surplus to the owners' requirements would be rehabilitated and revegetated by introducing soil, mulch and grass seeds of local provenance."<br><br>"The proponent is responsible and committed to the decommissioning of the wind farm infrastructure, and the host landowners are not liable for this obligation (this is demonstrated in the land lease agreements with each of the wind farm participating landowners as shown in the DRP)."<br><br>"CDPL seeks to mitigate the potential impacts resulting from the cessation of operation of the facility. This DRP outlines the stakeholder and landowner consultation, expected operational life, dismantling, land rehabilitation, funding arrangements, timeframes and responsibility associated with the decommissioning of the proposed Crookwell 3 Wind Farm. The proponent has committed to implementing this plan."<br><br>In relation to consultation, the host landowners have been extensively consulted about the project and the issues of decommissioning and rehabilitation were discussed at the early |

| DECOMMISSIONING | |
|---|---|
| | stages of the project. In particular, the draft DRP was discussed and agreed with all landowners. Feedback from the landowners was generally positive with no objections to the project. An additional consideration from one of the host landowners was to reduce opportunity for weed growth by avoiding leaving soil in a bare and exposed state during the decommissioning. This issue has been addressed in the final DRP.<br><br>CDPL has also consulted with the ULSC regarding the project in general and aspects of the construction, operation and decommissioning phases. CDPL will undertake further consultation with stakeholders prior to and during the decommissioning process.<br><br>As a provision in the DRP to ensure there will be enough funds to cover the cost of the decommissioning of the project, there will be a review of the DRP every 5-years, during each review the effectiveness of the plan will be re-assessed against its objectives, and cost estimates and funding arrangements will also be independently reviewed. Any major amendments to the DRP will be undertaken in consultation with the appropriate regulatory authorities and stakeholders. |

# 8. Revised Statement of Commitments

The revised Statement of Commitment (SoC) has been prepared to accommodate additional mitigation tasks recommended by consultants working on the project, and to also incorporate the comments provided by government agencies as part of the public exhibition submission process.

The SoC in Table 8-1 - Revised Statement of Commitment, outlines a comprehensive list of mitigation and control measures to avoid or minimise potential environmental impacts from the project through the project life cycle. Each of the mitigation tasks are proposed for one or more specific phase(s) of the project, the phases are classified and designated as:

- Detail Design and Pre-Construction phase (P)
- Construction and Site Restoration phase (C),
- Operation and Monitoring phase (O), and
- Decommissioning and Site Rehabilitation phase (D)

**Table 8-1 - Revised Statement of Commitment**

| SoC No. | Issue / Impact Description | Commitment / Mitigation Task | Responsibility | Project Phase |
|---|---|---|---|---|
| **1.0** | **General** | | | |
| 1.1 | Minimising harm to the environment | Ensure that micrositing or any minor changes to the project do not create any material increase in overall environmental impact. In the event of any significant changes to the proposed wind turbine layout, an updated noise assessment and visual impact assessment will be submitted prior to construction. | CDPL | P |
| 1.2 | Compliance with Statutory Requirements | Ensure that Crookwell 3 wind farm activities are compliant with all relevant environmental requirements, and ensure all necessary licences and permits are obtained and kept up to date as required through the different phases of the development. | CDPL | P / C / O / D |

| SoC No. | Issue / Impact Description | Commitment / Mitigation Task | Responsibility | Project Phase |
|---|---|---|---|---|
| **2.0** | **Pre-construction compliance** | | | |
| 2.1 | Pre-Construction Compliance Report | Submit a Pre-Construction Compliance Report for each stage of the project to the Director-General at least two weeks prior to the commencement of construction of that stage (or such later time agreed to by the Director-General). The Pre-Construction Compliance Report will include details of the compliance with all Pre-Construction conditions of approval that are relevant for the specific stage(s) of the project. | CDPL | P |
| 2.2 | Construction Environmental Management Plan | Prepare a **Construction Environmental Management Plan** (CEMP) for each stage of the project, in consultation with SCA, and submit it as a draft for approval to the Director-General at least two weeks prior to the commencement of construction of that stage (or such later time agreed to by the Director-General). The CEMP will address the construction impacts of the relevant stage of the project including the specific matters set out below. The proponent will implement the CEMP for each stage of the project, as approved by the Director-General. | CDPL | P |
| **3.0** | **Pre-operational compliance** | | | |
| 3.1 | Operation Environmental Management Plan | Prepare and implement an **Operation Environmental Management Plan** (OEMP) in consultation with SCA, and submit it as a draft for approval to the Director-General at least one month prior to the commencement of operation (or such later time agreed to by the Director-General). The OEMP will address the operational impacts of the project including the specific matters set out below. The proponent will implement the OEMP as approved by the Director-General. | CDPL | C |

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| **4.0** | **Economic and Social** | | | |
| 4.1 | Effect on local economy | Full time jobs and contractors for the construction and future decommissioning will be sourced locally where economical and if the skills and available labour exist within the community. | Contractor | C / O / D |
| 4.2 | Community Consultation | Develop and maintain a community consultation and engagement program aimed at:<br>▪ Providing the community with factual information about the project; and<br>▪ Gathering feedback from the community and stakeholders about their concerns and interest, which can be subsequently addressed in the approvals process.<br>A dedicated email address, website and free call 1800 number will be available and responded to for the life of the project. | CDPL | P / C / O / D |
| 4.3 | Community Enhancement Fund | Contribute an annual monetary contribution of amount of $1,666 (adjusted annually to changes in the CPI) per operating turbine forming part of the Crookwell 3 Wind Farm. These annual contributions will be paid into the Upper Lachlan Shire Council's Community Enhancement Fund which will fund local projects within a radius of 20-30km of the Crookwell 3 Wind Farm.<br>CDPL proposes that the local projects which will eligible for funding from the Community Enhancement Fund will be projects aimed at:<br>▪ Enhancing any aspect of the local environment including, but not limited to, ameliorating any impacts from the Crookwell 3 Wind Farm; or<br>▪ Providing any community service or facility.<br>In addition, CDPL also proposes to offer to enter into voluntary Neighbour Benefit Sharing Agreements with all non-participating landowners with dwellings within 2km of a | CDPL | O |

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| | | proposed wind turbine locations. The combined value of the VPA and the Neighbour Benefit Sharing Agreements is anticipated to be equal to or greater than the $2,500 per turbine per annum. | | |
| **5.0** | **Visual** | | | |
| 5.1 | Visual impact to nearby properties | Undertake screening planting in locations agreed between the proponent and local landowners within 3km of the proposed turbines, where the planting is seen as effective and is desired by the landowner to limit the view to the proposed wind turbines. It will involve a variety of dense native vegetation, including both trees and shrubs, and will be carried out at no cost to the landowner. | CDPL | C / O |
| 5.2 | Visual impact to nearby properties | The wind generator blades, tower and nacelle will be treated/painted with a non-reflective white or off white colour and matt finish to reduce glare and minimise blade glint. | CDPL / Contractor | C |
| 5.3 | Visual impact to nearby properties | No advertising, signs or logos will be mounted on turbine structures, except those required for safety purposes. | CDPL | C |
| 5.4 | Visual impact to nearby properties | The height of earth stockpiles will be restricted to minimise visibility from outside the site. | Contractor | C |
| 5.5 | Visual impact to nearby properties | Activities that require night time lighting will be minimised, and low lux (intensity) lighting designed with the light projecting inwards will be used where necessary to minimise glare at night. | CDPL / Contractor | C / O / D |

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| 5.6 | Visual impact to nearby properties | Should obstacle lighting be required, the lighting will comply with CASA standards to minimise unnecessary light spill. The downward component of light will be restricted to either, or both, of the following:<br>▪ Such that no more than 5% of the nominal intensity is emitted at or below 5° below the horizontal; and<br>▪ Such that no light is emitted at or below 10° below the horizontal. | CDPL | O |
| 5.7 | Cumulative visual impact to nearby properties | Should obstacle lighting be required, the flashing of obstacle lights of wind farms within close proximity will be synchronised to each other (wherever possible) to minimise visual impact. | CDPL | O |
| **6.0** | **Noise** | | | |
| 6.1 | Construction Noise | Prepare and implement a detailed **Construction Noise Management Plan**, prior to commencement of construction activities. | CDPL | P |
| 6.2 | Construction noise | Undertake construction activities associated with the project that would generate audible noise at any non-involved residence during the standard construction hours as outlined below,<br>▪ Monday to Friday: 7:00am to 6:00pm<br>▪ Saturdays: 7:00am to 1:00pm<br>▪ Sundays: No construction<br>In the event that it is required to undertake other audible works outside the above construction hours, prior approval will be obtained from the relevant authority. | CDPL | C / D |

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| | | The CEMP will contain mechanisms to prevent any unreasonable impact of construction noise on sensitive receivers. | | |
| 6.3 | Blasting | Ensure that any blasting complies with the ANZECC guideline. Ensure that during any blasting event the airblast overpressure must not exceed 115dB (Linear Peak) and ground vibration peak particle velocity must not exceed 5 millimeters per second (peak particle velocity) when measured at the nearest residential premise. | CDPL / Contractor | C / D |
| 6.4 | Operational Noise | Undertake routine noise monitoring, assessment and reporting at compliance critical locations. | CDPL | O |
| 6.5 | Operational Noise | During commissioning the actual received turbine noise level will be verified and determined through extensive monitoring. | CDPL | O |
| 6.6 | Operational Noise | Ensure that operational noise levels will comply with the South Australia EPA Environmental Noise Guidelines principal acceptability criteria that the wind farm LA90 (10 min) noise should not exceed the greater of an amenity limit of 35 dBA or the pre-existing background noise by more than 5 dBA at each integer wind speed from cut in to rated power at any non-host property or residential receiver where noise agreements (in accordance with Section 2.3 of the SA EPA Guidelines) have not been entered into with the property owner. | CDPL | O |
| 6.7 | Operational Noise | Ensure that the operational noise levels comply with the World Health Organization (WHO) Guidelines for Community Noise of 45 dBA or the pre-existing background noise by more than 5 dBA (whichever is the higher) for any host property or residential receiver where noise agreements (in accordance with Section 2.3 of the SA EPA Guidelines) have been entered into with the property owner. | CDPL | O |

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| 6.8 | Operational Noise | When the turbine model is known, a Noise Management Plan will be prepared and implemented as part of the OEMP to ensure that if the selected turbine does not comply under the predictive noise modelling, mitigation will be undertaken so that SA EPA Guideline standards are met. The Noise Management Plan will include provisions for reasonable response time to alleged noise complaints and mitigation works. | CDPL | P |
| 6.9 | Operational Noise | In circumstances where undue turbine noise impacts are identified during operations then an 'adaptive management' approach will be implemented to achieve compliance with the applicable noise limits. This will include:<br>▪ Identifying exactly what conditions or times lead to undue impacts.<br>▪ Operating selected turbines in a reduced 'noise optimised' mode during identified times and conditions (sector management).<br>▪ Providing acoustic upgrades (glazing, façade, masking noise etc.) to affected dwellings.<br>▪ Turning off turbines that are identified as causing the undue impact during identified times and conditions. | CDPL | O |
| 6.10 | Cumulative Impacts | A collaborative noise impact mitigation strategy will be employed in order to address the cumulative noise impacts arising from the Crookwell 1, Crookwell 2 and Crookwell 3 Wind Farms which includes:<br>▪ developing a mitigated noise operation layout;<br>▪ applying acoustic treatment to impacted dwellings.<br>▪ entering into noise agreements, in accordance with Section 2.3 of the SA EPA Guidelines, with selected neighbouring landowners; and | CDPL | O |

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| | | If negotiations for agreements are unsuccessful then the following adaptive management approach is proposed:<br>▪ Verify actual WTG noise levels through comprehensive noise monitoring.<br>▪ Evaluate turning off WTGs during specific wind direction and speed that are identified as causing the exceedances and undue impact on the affected dwellings.<br>▪ Evaluate the acoustic design of the dwellings and provide acoustic upgrades (glazing, façade, masking noise etc.) to the affected dwellings.<br>▪ Upon landowner initiated acquisition request, proceed with negotiations and give consideration to acquire the affected dwelling.<br>▪ If the above options are unsuccessful, the WTG(s) will be taken offline for further investigation and if impact is not able to be resolved then remove the WTG(s) causing the unresolved exceedances from the layout. | | |
| 6.11 | Cumulative Impacts | Where properties are found to exceed the relevant SA EPA Guideline criteria the proponent will commit to, at the dwelling owner's request, undertaking a detailed acoustic assessment of the dwelling and designing and installing appropriate building acoustic treatments to reduce the impact of turbine noise.<br>The type of acoustic treatment required will depend upon the construction of dwelling and desired noise reduction, however, treatment may include;<br>▪ Provision for mechanical ventilation.<br>▪ Upgraded glazing and seals.<br>▪ Upgraded doors and seals.<br>▪ Provision for low level noise masking. | CDPL | O |

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| **7.0** | **Air Quality** | | | |
| 7.1 | impact to local amenities | Minimise potential air quality impacts on local amenities during the construction phase by implementing control measures as part of the **Air Quality Management Plan** (AQMP) in the CEMP, which includes the use of water spraying for dust suppression. | CDPL / Contractor | C |
| **8.0** | **Health & Safety** | | | |
| 8.1 | Health and safety of persons | Provide accessible information to the public on wind farm impacts including the benefits, and project details, process and updates. | CDPL | P / C / O / D |
| 8.2 | Health and safety of persons | Warning signs will be installed to alert the public to the risk of unauthorised site entry. | CDPL / Contractor | C |
| 8.3 | Health and safety of persons | Access to the wind turbines and associated infrastructure will be restricted to reduce personal injury and public hazards, including:<br>▪ Locked access to towers and electrical equipment.<br>▪ Warning signs with postings of 24-hour emergency numbers.<br>▪ Fenced storage yards for equipment and spare parts. | CDPL / Contractor | C / O |
| 8.4 | Health and safety of persons | Wind turbines will be equipped with sensors that can react to any imbalance in the rotor blades and shut down the turbine if necessary. | CDPL / Contractor | C / O |
| 8.5 | Health and safety of persons | Cable markers will identify the path of the underground cabling to prevent accidental digging around the cable trenches. | CDPL / Contractor | C |

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| 8.6 | Health and safety of persons | The turbines and associated infrastructure will be regularly maintained as part of the operation of the wind farm. | CDPL | O |
| 8.7 | Health and safety of persons | The turbine model considered will have rotor over-speed protection and built-in redundancies, and be certified against the relevant standards including:<br>▪ IEC 61400-23 [Wind turbine generator systems, Full-scale structural testing of rotor blades];<br>▪ IEC 62305-1 / 3 / 4 [Protection Against Lightning];<br>The turbine supplier will have incentives in their contract to provide the highest availability and efficiency, therefore enforcing a stricter and more effective maintenance regime. | CDPL / Contractor | D / C / O |
| **9.0** | **Flora and Fauna** | | | |
| 9.1 | Impact to Environment | Prepare and implement a **Flora and Fauna Management Plan** (F&FMP) to minimise the potential impacts during the construction of the Project, and outline the roles and responsibilities of those involved in the implementation of the control measures. | CDPL | P |
| 9.2 | Increase in spread of weeds | A **Weed Management Plan** will be prepared as part of the CEMP that will contain mechanisms to prevent the spread of weeds and animals. Mechanisms may include:<br>▪ Machinery wash downs<br>▪ Staff training<br>▪ Soil and fill screening<br>▪ Other commonly used techniques<br>▪ Coordinated management regimes managed by the wind farm developer. | CDPL | P |

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| 9.3 | Impact to birds and bats | Prepare a Bird and Bat Adaptive Management Plan (BBAMP) in consultation with OEH that will use baseline survey data collected in accordance with Before – After – Control – Impact (BACI) experimental assessment guideline. The BBAMP will incorporate baseline population data over all seasons. The BBAMP will form part of F&FMP.<br>A Bird Monitoring and Bat Strike Monitoring pre-commissioning survey will be undertaken at each turbine site. This will provide baseline data for the bird and bat strike monitoring study which will be undertaken during the first year or the operation of the wind farm. | CDPL | C / O |
| 9.4 | Impact to biodiversity | Where trees are removed the relevant land owner will be consulted and a suitable native species which does not affect the wind resource will be planted in place of the removed vegetation. | CDPL | C |
| 9.5 | Impact to biodiversity | Bat Monitoring and Habitat Tree Inspections<br>▪ Once the roads are pegged by surveyors potential habitat trees (that require removal) will be identified by an ecological survey.<br>▪ These trees will be stage watched at dusk using infra-red spotlights and Anabat detectors to determine usage by any threatened microchiropteran bats.<br>▪ As part of the tree felling protocol, accessible tree hollows that require removal will be inspected for fauna by infrared telescopic camera prior to removal to ensure that no species are present in the hollow and harmed during removal. | CDPL | P |

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| 9.6 | Impact to hollow bearing trees | Minimise impact to hollow bearing trees where possible and practical, by realigning proposed infrastructure to reduce the removal of hollow bearing tree, and if unavoidable, develop a tree felling protocol to mitigate any potential harm to individual species that utilised those hollows. The tree felling protocol should detail a methodology that can be applied to all vegetation clearance and should include the following measures:<br>▪ delineation of vegetation to be cleared;<br>▪ pre-clearing inspection of vegetation;<br>▪ diurnal and nocturnal inspection of hollow bearing trees to be removed;<br>▪ implement a two stage approach to clearing works;<br>▪ non-hollow bearing trees will be cleared before habitat trees to allow fauna an opportunity to move from the hollow bearing trees and allow time to concentrate rescue efforts on the trees that are most likely to be inhabited;<br>▪ hollow bearing trees will be felled after a minimum 24 hour delay after clearing of non-habitat trees;<br>▪ an Ecologist will be on site for the felling of all hollow bearing trees;<br>▪ felled hollow bearing trees will be inspected as soon as possible by a qualified ecologist; and<br>▪ habitat components from felled trees such as hollow branches and trunks should be salvaged and placed in adjacent habitat. | CDPL | P / C |
| 9.7 | Impact to vegetation and habitat | A **Vegetation/Ecological Restoration Plan** will be developed as part of the CEMP and will address the post-construction works to be undertaken to rehabilitate the areas that are disturbed as part of the construction works once construction is finalised. | CDPL | P |

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| 9.8 | Impact to riparian vegetation | A **Riparian Vegetation Management Plan** will be will be developed as part of the CEMP and will address the issues associated with the proposed creek crossings where any native vegetation is proposed to be disturbed. | CDPL | P |
| 9.9 | Impact to Box-Gum Woodland | Avoid impact to Box-Gum Woodland area in Crookwell 3 East, by adjust the alignment of the access track between turbines A13 and A16. | CDPL | P |
| 9.10 | Impact to Booroolong Frog habitat | Prepare and implement mitigation measures in the **Flora and Fauna Management Plan** to reduce potential impacts associated with the First Creek crossing on identified Booroolong Frog habitat. | CDPL / Contractor | P / C |
| 9.11 | Impact to native vegetation | Prepare a native vegetation offset strategy in consultation with OEH prior to construction. The proponent will seek to extend the management contract with the owner of the "Hillview Park" property beyond its current expiry in December 2013. It is proposed that the offset for the proposed clearing of approximately 8.81 ha of native vegetation for the whole project which includes the use of Greywood Siding Road as the access road servicing the Crookwell 3 East site, will be provided by two formal Property Vegetation Plan agreements (PVPs) to be entered into with Hawkesbury Nepean Catchment Management Authority (HNCMA) once the turbines and project are approved. It is proposed that these PVPs would cover a total of approximately 45 ha of the remnant vegetation located within the site being:<br>▪ 15 ha in perpetuity; and<br>▪ an additional 30 ha for the life of the wind farm,<br>and that the proponent would provide sufficient funds each year for feral animal control and management of these two agreement areas. | CDPL | P |

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| 9.12 | Impacts from temporary facilities | All temporary and construction facilities will be located so as to avoid vegetation loss and the land will be rehabilitated to its former state at the conclusion of the construction stage. | CDPL | P / C |
| 9.13 | Impacts from temporary facilities | Raw materials for the concrete batching plant will be sourced from external suppliers, and the material would be as clean as possible to minimise the potential of introducing weeds to the site. | Contractor | C |
| 9.14 | Impacts from temporary facilities | The water for the concrete will either be sought on site subject to a separate licence issued by the NSW Office of Water, or transported to the site via tanker trucks. | CDPL / Contractor | C |
| **10.0** | **Aviation** | | | |
| 10.1 | Creation of hazard | Once the turbine locations are finalized, the proponent will notify the RAAF Aeronautical Information Service (AIS) of the location and height details of the turbines. | CDPL | P |
| 10.2 | Creation of hazard | An assessment will be undertaken in consultation with applicable stakeholders prior to construction as to whether marking or lighting will be required to enhance the level of safety. | CDPL | P |
| 10.3 | Creation of hazard | If required, medium intensity obstacle lighting will be installed:<br>▪ To identify the perimeter of the wind farm;<br>▪ At longitudinal intervals not exceeding 900m; | CDPL | P / C |

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| | | ▪ So that they are synchronised to flash simultaneously (both within the wind farm and with other wind farms in the vicinity); and<br>▪ So that any wind turbines of significantly higher elevation are also identified.<br>The obstacle lights will have the characteristics specified in MOS 139, Chapter 9. | | |
| 10.4 | Creation of hazard | A monitoring, reporting and maintenance program will be established in accordance with the requirements set out in MOS 139, Chapter 9 to ensure the ongoing availability of obstacle lights. | CDPL | P / C / O |
| 10.5 | Creation of hazard | The proposed obstacle lighting layout will meet the CASA objectives of:<br>▪ Defining the "general definition and extent of the objects" for each cluster or linear array;<br>▪ Lighted turbines to be spaced "at longitudinal intervals not exceeding 900 m" for each cluster or linear array ; and<br>Lighting the most prominent (highest for the terrain) turbine in each cluster or linear array. | CDPL | P |
| 10.6 | Creation of hazard | The need for obstacle lighting will be reviewed at regular intervals by the proponent. | CDPL | O |
| 10.7 | Creation of hazard | In the event the immediate neighbouring landowner(s) would require aerial agriculture spraying of their land adjacent to the wind farm and there is an increase in cost associated with the proximity to turbines, the proponent will cover the reasonable cost increase for the aerial agriculture activity. The landowner seeking compensation for the cost increase must demonstrate and justify this increase by reference to previous records. | CDPL | O |

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| **11.0** | **Transport** | | | |
| 11.1 | Safety and asset protection | A detailed **Transport / Traffic Management Plan** will be developed as part of the CEMP to include the finalised transport details and include management and mitigation measures for the project. This will be prepared before the construction phase of each stage of the project and will form the foundations for all traffic related activities. | CDPL | P |
| 11.2 | Safety and asset protection | A road profile assessment (road dilapidation report) will be carried out prior to movement of heavy and oversize vehicles for the construction phase and any deterioration in pavement quality as a result of the project's road usage will be fixed. | CDPL | P |
| 11.3 | Safety and asset protection | Regular road inspections will be conducted and compared against the existing conditions (and which representatives are to be present). | CDPL / Contractor | C / D |
| 11.4 | Safety and asset protection | Include code of practice for heavy vehicle drivers including an 80km/h speed limit in the provisions of the Traffic Control Plan (TCP). The speed limit will be on all local rural roads and surrounding the wind farm sites. The TCP will then form part of the overall Construction TMP. | CDPL / Contractor | C / D |
| 11.5 | Traffic flow and capacity | Access tracks will only intersect with government roads at nominated access points. | CDPL | P |
| 11.6 | Safety and asset protection | Prepare the Traffic Control Plan (TCP) for the transport route through Goulburn in consultation with Goulburn Mulwaree Council officers. The TCP will then form part of the overall Construction TMP. | | |

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| 11.7 | Safety and asset protection | The construction vehicles will have a designated transport route through Goulburn as defined and agreed to by Goulburn Mulwaree Council. The intersections in Goulburn that were modified to accommodate OD vehicles transport route will be reinstated to their pre-existing condition. | | |
| 11.8 | Safety and asset protection | Surface and other visible defects on the designated route through Goulburn will be repaired to the appropriate AUSPEC standards and to the satisfaction of the Goulburn Mulwaree Council Manager Works at the conclusion of the project. Regular weekly inspections shall be undertaken and repairs made. Emergent issues with be addressed within one day of the official notice to CDPL by Goulburn Mulwaree Council. | | |
| **12.0** | **Tele-communications** | | | |
| 12.1 | Television signal strength reduced | Where necessary to address any impacts on resident's television reception as a result of the project, the proponent will undertake one or more of the following measures as agreed with the resident at the proponent's cost:<br>▪ Realigning the householder's TV antenna directly towards their existing transmitter.<br>▪ Tuning householder's antenna into alternative sources of the same or suitable TV signal.<br>▪ The installation of more directional and/or higher gain antenna at the affected residence.<br>▪ Relocating the antenna to a less affected position.<br>▪ The installation of a digital set top box (and UHF antenna if required). | CDPL | O |

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| | | ▪ The installation of cable/satellite TV at the affected residences.<br>▪ Installation of a TV relay station. | | |
| 12.2 | Interference with wireless internet | The proponent will work with Cirrus Communications to resolve any interference problems cause d by the wind farm. Possible amelioration methods may include:<br>▪ installation of improved or higher antenna at affected dwellings; or<br>▪ installation of a new base station to service dwellings in affected areas. | CDPL | C / O |
| 12.3 | Interference with television broadcasting | Pre- and post-construction surveys will be conducted to determine the signal strength and quality of the television signal received at dwellings identified as having the potential to experience television interference. | CDPL | P / O |
| **13.0** | **Fire** | | | |
| 13.1 | Increased risk of fire ignition or spread | As part of the OEMP, a Bushfire Risk Management Plan will be developed based on the guidelines 'Planning for Bushfire Protection' (RFS, 2001). | CDPL | P |
| 13.2 | Increased risk of fire ignition or spread | The proponent will consult with the RFS during periods of high fire danger, and generally to ensure the RFS are familiar with the development. | CDPL | P / C / O |
| 13.3 | Increased risk of fire ignition or spread | The proponent will consult with the RFS in regard to the adequacy of bushfire prevention measures to be implemented on site during construction, operation and decommissioning. | CDPL | P |

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| 13.4 | Increased risk of fire ignition or spread | Workplace health and safety protocols will be developed to minimise the risk of fire for workers during construction and during maintenance in the control room and amenities. | CDPL | P |
| 13.5 | Increased risk of fire ignition or spread | On-site vegetation management will occur during construction and operation to minimise potential sources of fuel. | CDPL | C / O |
| 13.6 | Increased risk of fire ignition or spread | Construction activities will be re-organised during periods of high fire danger, including ceasing use of explosives, and management of hot work activities such as welding or cutting. | CDPL | C / D |
| 13.7 | Increased risk of fire ignition or spread | Turbines will be shut down during a bush fire in the area. | CDPL | O |
| 13.8 | Increased risk of fire ignition or spread | Lightning protection will be fitted on each turbine blade. | CDPL | P / C |
| 13.9 | Increased risk of fire ignition or spread | Electrical and communication cables will be under-ground where practicable. | CDPL | P / C |
| 13.10 | Increased risk of fire ignition or spread | Careful storage and handling of flammable materials and ignition sources brought onto the site will be exercised, as per manufacturer's instructions. | CDPL | C |

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| 13.11 | Increased risk of fire ignition or spread | Inspection of overhead transmission easements to monitor any regrowth of encroaching vegetation will occur periodically. | CDPL | O |
| 13.12 | Fire fighting systems | Vehicle turn-around facilities will be provided at every turbine tower site. | CDPL | P / C |
| 13.13 | Fire fighting systems | 5 metre wide internal access tracks will be provided that are driveable and permanently clear of vegetation. | CDPL | P / C |
| **14.0** | **Shadow Flicker** | | | |
| 14.1 | Impacts on persons / dwellings | Screening structures or planting of trees to block shadows cast by the turbines will be installed where needed. | CDPL | O |
| 14.2 | Impacts on persons / dwellings | Turbine control strategies which shut down turbines as necessary will be used. | CDPL | O |
| **15.0** | **Heritage** | | | |
| 15.1 | Impact on heritage items | A Aboriginal Cultural Heritage Management Plan (ACHMP) will be prepared in collaboration with the Pejar Local Aboriginal Land Council and other registered aboriginal parties. Include ERM SCHR recommendations in the ACHMP. | CDPL | P |

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| 15.2 | Impact on heritage items | Once the proposed access track extents and other disturbance areas are pegged on the ground additional targeted surveys of these areas will be undertaken. | CDPL | P |
| 15.3 | Impact on heritage items | Micro-siting of turbine A17 will occur during detailed design stage to mitigate impacts on Site 2. | CDPL | P |
| **16.0** | **Land Resources and Geotechnical** | | | |
| 16.1 | Soil loss and stability of landform | The **Sediment and Erosion Control Plan (S&ECP)**, will be prepared as part of the CEMP and will detail the measures and techniques to preserve soil resources. | CDPL | P |
| 16.2 | Soil loss and stability of landform | Further geotechnical investigations at the turbine sites to depths of about 20m will be undertaken to allow footing designs. | CDPL | P |
| 16.3 | Soil loss and stability of landform | Further geotechnical investigations will be undertaken to provide information for the design of footings, access roads and other infrastructure. | CDPL | P |
| 16.4 | Soil loss and stability of landform | Clearing of natural vegetation and surface water runoff in the construction areas will be minimised to reduce the likelihood of erosion along drainage channels on the site. | CDPL | C |

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| 16.5 | Soil loss and stability of landform | Details of any rock blasting, and associated management techniques, will be provided in the CEMP. | CDPL | P |
| 16.6 | Soil loss and stability of landform | Part of the hardstand area will be removed following construction and reseeded with improved pasture. | CDPL | O |
| 16.7 | Soil loss and stability of landform | Cut and fill for site tracks will be minimised and disturbed soils will be revegetated as soon as possible after construction. | CDPL / Contractor | P / C |
| **17.0** | **Hydrology** | | | |
| 17.1 | Deterioration of water quality | A **Water Management Plan** will be developed for the site as part of the CEMP and the OEMP. These will control risks to water quality associated with construction and operation and detail the range of techniques used to prevent land and water degradation. | CDPL | P |
| 17.2 | Deterioration of water quality | A **Hydrocarbon & Hazardous Substances Management Plan** will be developed as a sub-plan of the CEMP to protect the quality of surface water and groundwater. | CDPL | P |
| 17.3 | Deterioration of water quality | The CEMP prepared for the project will detail a range of best practice techniques designed at avoiding negative impacts on water quality by minimising runoff and avoiding sedimentation. This will include techniques to restrict flow speeds, incorporate sediment controls devices, and maximising natural drainage. | CDPL | P |

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| 17.4 | Deterioration of water quality | Sediment and erosion will be managed as part of a S&ECP, to be prepared as part of the CEMP. This plan will detail the necessary management controls and techniques during construction and operation of the wind farm, including:<br>▪ Revegetating disturbed soils.<br>▪ Sediment traps to prevent sediment entering waterways. | CDPL | P |
| 17.5 | Deterioration of water quality | Infrastructure will be bundled with silt fencing/hay bales or similar to reduce runoff from these areas and ensure that oil and other chemicals could not escape. | CDPL / Contractor | C |
| 17.6 | Deterioration of water quality | Discharge into creeks, rivers or drainage lines will be minimised through the control measures in the CEMP. | CDPL / Contractor | C |
| 17.7 | Deterioration of water quality | Vehicles on site will be restricted to established tracks to concentrate any discharge from vehicles and minimise run off into water bodies. | Contractor | C |
| 17.8 | Deterioration of water quality | Maintenance or re-fuelling of machinery will be carried out on hard-stand areas. | Contractor | C |
| 17.9 | Deterioration of water quality | Concrete batching plants will be designed to capture all concrete wash. | CDPL / Contractor | P / C |
| 17.10 | Deterioration of water quality | Dust suppression as part of the AQMP, will be carried out as required through either watering or chemical means (environmentally friendly polymer based additives to the water). | Contractor | C |

| SoC No. | Issue / Impact Description | Commitment / Mitigation Task | Responsibility | Project Phase |
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| 17.11 | Deterioration of water quality | A **Sediment and Erosion Control Plan** will be developed as a sub-plan of the CEMP. The control plans implemented during the construction phase along the access tracks will be monitored and maintained. | CDPL / Contractor | P / C |
| 17.12 | Deterioration of water quality | Watercourse crossings will be designed appropriately and in consultation with hydrological engineers and in accordance with the NSW Office of Water Guidelines for Controlled Activities (July 2012) to minimise impacts on the existing banks, water flow, animal passage and on the movement of flows and ensure that they do not impact on water quality. | CDPL | P |
| 17.13 | Deterioration of water quality | The design of the water course crossings will consider the flow pattern of the drainage lines and ensure that sufficient allowance is made for unaffected flows for most rain events. This will be managed through the S&ECP forming part of the CEMP. | CDPL | P |
| 17.14 | Deterioration of water quality | The watercourse crossings for access tracks and cabling will adhere to the NSW Office of Water Controlled Activities, Guidelines for Watercourse Crossings (July 2012), and Guidelines for laying pipes and cables in watercourses (July 2012). | CDPL / Contractor | P / C |
| 17.15 | Deterioration of water quality | The roads and access tracks will be completed within the construction phase and will be maintained to avoid any erosion. | CDPL / Contractor | C / O |
| 17.16 | Deterioration of water quality | Safeguards in the AQMP will be enforced to control and minimise fugitive dust emissions. | CDPL / Contractor | C |

| SoC No. | Issue / Impact Description | Commitment / Mitigation Task | Responsibility | Project Phase |
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| 17.17 | Water extraction | Water will be reused where possible to reduce water consumption (as detailed in the Water Management Plan to be included in the CEMP and OEMP). | Contractor | C |
| 17.18 | Water extraction | Water would be primarily sourced from the "Hillview Park" Property surface water allocations as per the term transfer provisions approved by the NSW Office of Water. | CDPL / Contractor | C |
| 17.19 | Water Crossings | The major potential impacts to the watercourses at the proposed crossing locations and the proposed mitigation measures are outlines as follow:<br>▪ The potential deterioration of surface water quality at the crossings would be mitigated by developing and implementing a Sediment and Erosion Control Plan as a sub-plan of the CEMP to include the following considerations:<br>▪ Site Access Stabilisation<br>▪ Soil / Earthworks Handling (Stock piling)<br>▪ Site Drainage<br>▪ Sediment Control Measures<br>▪ Monitoring Program (auditing)<br>▪ The potential deterioration of the watercourse or drainage line crossings during the construction and operation phases would be mitigated through designing the watercourse crossings (including major drainage lines) in consultation with a qualified engineer and in accordance with the NSW Office of Water Guidelines for Controlled Activities (July 2012) to minimise impacts on the existing banks, water flow, animal passage and on the movement of flows and ensure that they do not impact on water quality.<br>▪ The potential deterioration of the watercourse or drainage lines adjacent | CDPL / Contractor | P / C |

| SoC No. | Issue / Impact Description | Commitment / Mitigation Task | Responsibility | Project Phase |
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| | | or in proximity of the crossings due to construction vehicle activities would be mitigated by restricting the activity area to the established or designated tracks and watercourse / drainage line crossing locations.<br>▪ The potential deterioration of the water flow through the watercourse / drainage line due to construction of the crossing for the access track would be mitigated by designing the crossings in accordance with the NSW Office of Water 'Guidelines for Watercourse Crossings' (July 2012) for Controlled Activities.<br>▪ The potential deterioration of the water flow through the watercourse / drainage line due to construction of the crossing for the cabling would be mitigated by designing the crossings in accordance with the NSW Office of Water 'Guidelines for laying pipes and cables in watercourses' (July 2012) for Controlled Activities.<br>▪ The potential deterioration of the riparian corridors through the watercourse / drainage line due to construction of the crossing for the access track and/or cabling would be mitigated by designing the crossings in accordance with the NSW Office of Water 'Guidelines for riparian corridors' (July 2012) for Controlled Activities.<br><br>The requirement for restoration and rehabilitation of the land adjacent to the crossing due to earthworks related to the construction of the crossing would be mitigated by developing and implementing a Vegetation Management Plan in accordance with the NSW Office of Water 'Guidelines for Vegetation Management Plan' (July 2012) for Controlled Activities. | | |

| SoC No. | Issue / Impact Description | Commitment / Mitigation Task | Responsibility | Project Phase |
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| **18.0** | **Resource Impacts** | | | |
| 18.1 | Waste Generation | Portable toilets will be provided in the temporary construction area. | Contractor | C |
| 18.2 | Building Materials | The existing 60m monitoring masts will be removed and reused elsewhere once the construction phase is complete. | CDPL | O |
| 18.3 | Building Materials | Where possible, the existing footings, access tracks and other infrastructure would be reused for any replacement turbine(s) during the operation phase. | CDPL / Contractor | O |
| **19.0** | **Decommissioning and Rehabilitation** | | | |
| 19.1 | Wind Farm not dismantled after permanent cessation of wind turbine operation | The proponent is responsible for the decommissioning of the wind farm infrastructure, and the landowner is not liable for this obligation (this is demonstrated in the land lease agreements with each of the wind farm participating landowners as shown in the Decommissioning and Rehabilitation Plan (DRP). | CDPL | D |
| 19.2 | Not enough funds allocated to decommission the wind farm | The DRP will be reviewed and revised as required every 5 years for the duration of the project. During each review, the effectiveness of the plan will be re-assessed against its objectives, and cost estimates and funding arrangements will also be reviewed by an independent consultant. | CDPL / Independent Consultant | O |

| SoC No. | Issue / Impact Description | Commitment / Mitigation Task | Responsibility | Project Phase |
|---|---|---|---|---|
| 19.3 | Wind Farm not dismantled after permanent cessation of wind turbine operation | The proponent commits to undertaking all decommissioning and rehabilitation works outlined in the DRP within the 18 months after the end of the wind farm's operational life (including any replacement of the turbines as contemplated by commitment 19.5 below). | CDPL | D |
| 19.4 | Wind Farm not dismantled after permanent cessation of wind turbine operation | During the operational life of the project, any turbine that cannot be repaired and is deemed permanently unworkable (due to environmental, social, economic or other unforeseen issues) will be decommissioned and dismantled, and its location rehabilitated within 18 months. | CDPL | O |
| 19.5 | Deterioration of landscape from decommissioning | At the completion of the wind farm's operating life, the turbines will either be replaced or the land will be rehabilitated to its previous or better condition. | CDPL | D |
| 19.6 | Deterioration of landscape from decommissioning | Access tracks considered surplus to the farmers' requirements will be rehabilitated and revegetated by introducing soil, mulch and grass seeds or local provenance. | CDPL | D |
| 19.7 | Decommissioned infrastructure not be wasted | During decommissioning, all materials will be removed from the site and recycled appropriately. | CDPL / Contractor | D |

# 9. Conclusions

This Preferred Project and Submissions Response Report has detailed the revised project proposal to include the various design changes and will reduce the overall impact of the proposal to develop the Crookwell 3 Wind Farm project with up to 29 wind turbines.

The project site is split into two separate parcels to the east and south of the approved Crookwell 2 Wind Farm. This Preferred Project report has found that the proposed wind farm would have a range of negative and positive impacts on the site and region, and that, with appropriate conditions and additional mitigations measures detailed in the statement of commitment, the negative impacts can be minimised.

In relation to the positive impacts, the EA found that if approved the wind farm would:

- generate 40 full time positions during construction, and 6 full time ongoing positions during the operation;
- invest $105 million in the economy;
- generate up to 207,295 MWh of clean, renewable energy, enough to power up to 32,117 average households;
- displace 201,698 tonnes of greenhouse gases or the equivalent of taking 46,581 cars off the road; and
- contribute up to $56,000 per year to the Upper Lachlan Shire Council's Community Enhancement Fund, to be spent on local projects benefiting the local community. In addition, the project will contribute up to $46,600 per year to non-participating landowners with dwellings within 2km of proposed wind turbine locations as part of the project's proposed voluntary Neighbour Benefit Sharing Agreements. In the event any of the non-participating landowners prefer not to enter into the voluntary Neighbour Benefit Sharing Agreement, the surplus funds will be added to the Upper Lachlan Shire Council's Community Enhancement Fund.

Most notably, the proposed wind farm would make a small but important contribution to reducing the dangerous impacts of anthropogenic climate change, such as droughts, floods, extreme weather events and sea level rise.

In relation to the negative impacts, the EA found that the wind farm has the potential to have a low to moderate impact on landscape values, have a limited

impact on local communications facilities, increase noise for some residents, and result in the clearing of non-significant vegetation.

These risks can be minimised by the extensive range mitigation measures that would be incorporated into the management plans that would be prepared before construction, and ongoing monitoring on the compliance of the wind farm when constructed to established standards. These revised and enhanced commitments are detailed in Section 8 – Statement of Commitments.

The EA also found that the proposed Crookwell 3 Wind Farm is compatible with the existing land uses of the area and complies with relevant planning and environmental controls applicable to the site.

This Preferred Project Report concludes that the proposed Crookwell 3 Wind Farm project will offer a number of significant benefits and can be constructed with minimal impact to the existing environment by preparing and implementing the mitigation measures detailed in the Statement of Commitments.

If the Crookwell 3 wind farm project is approved, it will share and utilise part of the grid connection infrastructure that has already been approved as part of the Crookwell 2 wind farm project, and significantly enhance the commercial viability of both projects.

# 10. References


AEMO (2011). South Australian Supply and Demand Outlook. Australian Energy Market Operator, Page vii, xii.

AEMO (2012). South Australian Electricity Report. Australian Energy Market Operator, Table 3, Page 16.

Anderson, J. (2012 Revised). *Ecological Assessment for Crookwell 3 Wind farm*. Anderson Environmental Consultants Pty Ltd.

Anderson, J. (2013). *Responses to Comments/Objections – Ecological Assessment Crookwell 3 Windfarm*. Anderson Environmental Consultants Pty Ltd. 9 April 2013.

AusWEA's. *Fact Sheet 8 – Wind Farms and Bird and Bat Impacts*. http://www.synergywind.com/documents/8BirdBatImpact.pdf

Baerwald E.F., D'Amours G.H., Klug B.J., Barclay R.MR, (2008). *Barotrauma is a significant cause of bat fatalities at wind turbines*. Current Biology Volume 18, Issue 16, Pages R695-R696.

Chapman, S., St George, A., Waller, K. (2013) *Spatio-temporal differences in the history of health and noise complaints about Australian wind farms: evidence for the psychogenic, "communicated disease" hypothesis*. Sydney School of Public Health, University of Sydney, March 27 2013.

Department of Resources, Energy and Tourism (2012). *Fact Sheet Electricity Prices*. Commonwealth Department of Resources, Energy and Tourism, August 2012.

Diesendorf, M. (2007b). *Greenhouse Solutions with Sustainable Energy*. University of New South Wales, Sydney.

ERM (2013a). *Crookwell 3 Wind Farm: Supplementary Ecology Report*. Environmental Resources Management Australia Pty Ltd. Reference: 0193328, 10 April 2013.

ERM (2013b). *Crookwell 3 Wind Farm, Ecology Adequacy of Response to Submissions*. Environmental Resources Management Australia Pty Ltd. Reference: 0193328R03V01, 22 October 2013.

ERM (2013c). *Crookwell 3 Wind Farm: Supplementary Aboriginal and Historical Cultural Heritage Assessment*. Environmental Resources Management Australia Pty Ltd. Reference: 0193328, 13 February 2014.

Homewood, A. (2014). *Crookwell 3 Wind Farm Landscape and Visual Impact Supplementary Report*. Green Bean Design. Reference: 10-133 Rev-B, 22 January 2014.

Leventhall, G. (2003). A Review of Published Research on Low Frequency Noise and its Effects. DEFRA, May 2003.

O'Hanlon (2013). *Independent Expert Review, Proposed Crookwell 3 Wind Farm Development*. O'Hanlon Design Pty Ltd. Reference: 918-Z-02, August 2013.

Reutersward, G. (2013). *Crookwell 3 Wind Farm EPA Review Comments*. SLR Consulting Australia Pty Ltd. Reference: 40-1952 EPA Review Comments, 4 April 2013.

Reutersward, G. (2013). *Crookwell 3 Wind Farm Response to Flynt*. SLR Consulting Australia Pty Ltd. Reference: 40-1952 SLR Response to Flynt 20130412.docx, 15 April 2013.

Reutersward, G. (2013). *Crookwell 3 Wind Farm Response to Papadopoulos*. SLR Consulting Australia Pty Ltd. Reference: 40-1952 SLR Response to Papodopoulos 20130416.docx, 17 April 2013.

Resonate Acoustics (2013). *Infrasound levels near windfarms and in other environments*. Report for SA EPA, January 2013.

Wadeson, N., Terrill, A., Wardle, R. (2012). *Crookwell 3 Wind Farm Environmental Assessment, Updated to reflect the Draft NSW Wind Farm Planning Guidelines*. Tract Consultants Pty Ltd. Reference: PR03-12, October 2012.

## APPENDIX 1 – AEC Response to OEH Submission

## APPENDIX 2 – ERM Supplementary Ecology Report

## APPENDIX 3 – ERM Addendum to Supplementary Ecology Report

# APPENDIX 4 – ERM Supplementary Cultural Heritage Report

## APPENDIX 5 – SLR Consulting Response to EPA Submission

## APPENDIX 6 – EPA Response to Noise Limits

## APPENDIX 7 – SLR Consulting Response to Submission 53083

## APPENDIX 8 – SLR Consulting Response to Submission 54400

## APPENDIX 9 – GBD LVIA Supplementary Report

## APPENDIX 10 – Letter to Goulburn Mulwaree Council

## APPENDIX 11 – Response from Goulburn Mulwaree Council