Department of Planning, Industry and Environment
Nicole Brewer
Director
Energy Assessments
4 Parramatta Square, 12 Darcy Street, Parramatta NSW 2150

23 April 2021

Dear Ms Brewer,

Re: Uungula Wind Farm (SSD6687) Response to Request for Information 3 April 2021

Please find attached a memo responding to the Department of Planning, Industry and Environment's request for further information (RFI) dated 3 April 2021. Information is provided regarding the visual impacts of the Energy Storage Facility, Siding Spring Observatory and Ancillary Infrastructure.

The attached memo recommends the installation of some screen planting at the Energy Storage Facility and the ancillary infrastructure located in the north of the Project Site (i.e. those which are approximately 3km south east of the Primary Project Site Entry). The Project's Statement of Commitments included in Appendix H of the Amendment Report (CWPR November 2020) is augmented accordingly by the addition of the commitment stated here in Table .

Impact	Objective	Mitigation Measure	Responsibility	Stage*				Code
				PC	C	OM	RD	
Visual Amenity	Minimise Impact	The ESF and Ancillary Infrastructure in the north of the Project Site (i.e. those at the grid connection point and those which are approximately 3km south east of the Primary Project Site Entry) will have screening vegetation seeds and tubestock broadcast and planted (respectively) on the northern side(s).	Proponent	X	X			LV004

PC=Pre-Construction; C=Construction; OM=Operations and Maintenance; RD=Rehabilitation and Decommissioning

Please contact me with any further questions.

Yours sincerely,

Matthew Flower
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CWP Renewables Pty Ltd

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22nd April 2021

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Request for Information (RFI): Uungula Wind Farm

Dear Matthew,

This letter provides further clarification as requested in the Request for Information (RFI) dated 3rd April 2021 requesting additional information relating to the visual impact of the following:

- Energy Storage Facility (Section 1.0)
- Siding Springs Observatory (Section 2.0)
- Ancillary Infrastructure (Section 3.0)

1.0 Energy Storage Facility (ESF):

1.1 Overview of Energy Storage Facility (ESF)

Two possible locations of the Energy Storage Facility (ESF) have been identified for the Project, both of which are located adjoining the proposed substations sites. For the purpose of this assessment, the ESF locations have been referred to as ESF1 and ESF2 (see **Figure 1**).

In accordance with the EIS, one or more of these ESF locations may be utilised for optimal construction and operation of the Project. The ESF will be micro-sited post-Development Consent during the detailed design and construction phase programming.

The ESF will consist of buildings, shipping containers, or other infrastructure and will connect to the WTGs and Substations via underground and/or overhead cables. Security fencing, lighting and a 20 m asset protection zone (APZ) will be incorporated into the final design layout if battery-based storage technology is used.

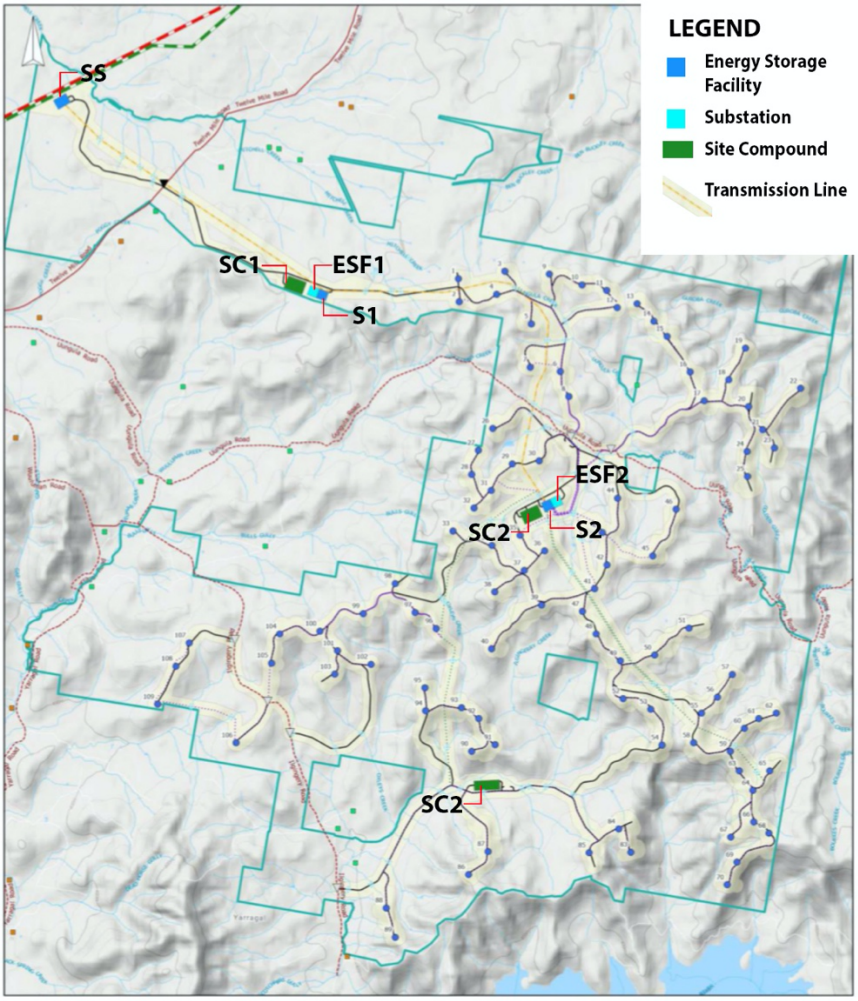

Figure 1: Ancillary Structures

1.2 Assessment of Visual Impacts relating to ESF

The locations for the ESFs have been selected to minimise visual impact. The following provides an assessment of the ESF locations from public roads and dwellings within 5000 m of the proposed ESF location.

1.2.1 Assessment of ESF1

There are four (4) non-involved dwellings within 5000 m of ESF1. ESF1 is located 2.80 km from the nearest non-involved dwelling (TMR031). The nearest publicly accessible viewing locations are Uungula Road and Twelve Mile Road which are 1.7 km and 2.8 kms from ESF1 (respectively).

Table 1 provides an overview of the potential impacts from non-involved dwellings within 5000 m of ESF1:

TABLE 1: Non-involved Dwellings within 5000 m of ESF1		
Dwelling ID	**Distance to ESF 1**	**Assessment Notes:**
TMR032	4.19 km	Topography to the west screens view to ESF1. ESF1 would not be visible from TMR032.
TMR030	3.03 km	Topography to the west screens view to ESF1. ESF1 would not be visible from TMR030.
TMR023	2.83 km	ESF1 may be visible on the ridge to the south of dwelling TMR023 and TMR031, however scattered intervening vegetation in the landscape is likely to minimise visibility resulting in a low visual impact.
TMR031	2.80 km	

The assessment identified topography between the receptor and ESF1 location is likely to screen views from two of the non-involved dwellings within 5000 m of ESF1 (TMR032 and TMR030). ESF1 will be also be screened by topography from Uungula Road.

Some distant views to ESF1 may be available from Twelve Mile Road, however due to the relatively small scale, the ESF1 would be a minor element in the landscape and the impact would be negligible to motorists.

ESF1 is likely to be visible in the distance from two dwellings to the north (TMR023 and TMR031). Due to the existing intervening vegetation and the distance to the ESF1, the visual impact is likely to be low. Screen planting is recommended along the northern boundary of the proposed ESF1 to completely screen views from dwellings to the north. The extent of screen planting required will be determined during the detailed design phase.

1.2.2 Assessment of ESF2

There are no non-involved dwellings within 5000 m of ESF2. The nearest publicly accessible viewing location is Uungula Road which is located approximately 880 m north of ESF2.

Views to ESF2 would be contained from Uungula Road by roadside vegetation. The potential visual impact is nil.

2.0 Siding Springs Observatory:

2.1 Dark Sky Planning Guideline Requirements

The *Dark Sky Planning Guideline: Protecting the observing conditions at Siding Spring* adopted by the NSW Department of Planning and Environment in June 2016, provide guidance and technical information on good lighting design for development within 200 kilometres of the Siding Spring Observatory. The intent of the guideline is to ensure that lighting used in development does not impact on the effectiveness of the Observatory at Siding Spring.

The Guideline informs development controls that apply to land within the local government areas of Coonamble, Dubbo, Gilgandra and Warrumbungle and the assessment of significant development within 200 kilometres of the Observatory. A proponent is to consider this guideline when preparing an environmental impact statement for State significant infrastructure.

Dubbo LEP *Section 5.14 Siding Spring Observatory- maintaining dark sky* states:

Development on land 18 kilometres or more from observatory *The consent authority must not (except with the concurrence of the Planning Secretary) grant development consent to development on land that is 18 kilometres or more from the Siding Spring Observatory if the consent authority considers that the development is likely to result in the emission of light of 1,000,000 lumens or more.*

2.2 Potential Light Sources

Potential light sources include aviation lighting on wind turbines (Section 2.2.1) and lighting associated with ancillary infrastructure (Section 2.2.2).

2.2.1 Aviation Lighting:

The distance between the light source and the telescopes at the Observatory is the most critical factor in determining the level of artificial skyglow. The Project is located in excess of 130 kilometres from the Observatory. The nearest turbine associated with the Project is 136.09 kilometres south of the Siding Spring Observatory. The furthest turbine is 146.42 kilometres.

The Project's night lighting on WTGs (if required) will not exceed 1,000,000 lumens. Consistent with the Statement of Commitments (HR013) in the Amendment Report a night lighting plan will be prepared in consultation with CASA and other relevant agencies prior to the commencement of construction. It will include the recommended locations of lights across the Project, type, intensity, light wavelength, and other operating conditions.

2.2.2 Ancillary Infrastructure:

In accordance with the EIS, the requirements for lighting on Ancillary Infrastructure is generally limited to lighting at the Switching Station, Substation, ESF and Operations and Maintenance Facility. The light sources are limited to low-level lighting for security, night time maintenance and emergency purposes. There will be no permanently illuminated lighting installed.

The nearest ancillary infrastructure is the grid connection point (Switching station / substation) which is located 133.26 kilometres south of the Siding Springs Observatory.

In accordance with the Dark Sky Guideline, the following principles will be incorporated into lighting design during the detailed design phase of the switching station, substation, O&M Facility and any other ancillary structures requiring lighting:

- Only use lighting for areas that require lighting ie. paths, building entry points.
- Reduce the duration of lighting: Switch off lighting when not required.
- Consider the use of sensors to activate lighting and timers to switch off lighting.
- Use the lowest intensity required for the job.
- Use energy efficient bulbs and warm colours.
- Direct light downwards to eliminate.
- Ensure lights are not directed at reflective surfaces.
- Use non-reflective dark coloured surfaces to reduce reflection of lighting.
- Keep lights close to the ground and / or directed downwards.
- Use light shield fittings to avoid light spill.

If the above design principles are incorporated into the night lighting for Ancillary Infrastructure, it is likely the visual impacts resulting from night lighting of Ancillary Structures would be negligible.

3.0 Ancillary Infrastructure

An assessment of Ancillary Infrastructure associated with the Project stated opportunities to provide mitigation measures to ancillary structures would reduce the potential visual impacts.

3.1 Transmission Lines:

The proposed overhead transmission lines are limited due to undulating topography and vegetation. Transmission lines are an existing element in the landscape and are consistent with existing land use in the area.

The proposed transmission line is approximately 1.08 kilometres from the nearest non-involved dwelling (TMR030). At this distance the transmission line is likely to be a small element in the overall visual landscape. Views to the transmission line will be screened or fragmented by a combination of topography and existing vegetation.

The transmission line crosses Twelve Mile Road and would not be a significant or contrasting element in the landscape and is consistent with existing infrastructure. It is our opinion that visual impact of the transmission lines will be negligible.

3.2 Switching Station

The proposed switching station is located approximately 2 kilometres north west of Twelve Mile Road. Existing scattered vegetation is likely to fragment views to the Switching Station from Twelve Mile Road and associated dwellings. It is our opinion that the visual impact of the switching station is low. The addition of screen planting is recommended to completely screen any potential visibility towards the switching station. The extent of screen planting required will be determined during the detailed design phase.

3.3 Site Compounds

Three Site Compounds are proposed for the Project (referred to as SC1, SC2 & SC3 – See **Figure 1**).

SC2 and SC3 are located on isolated land with limited opportunities to view. There will be no visual impact from non-involved dwellings or publicly accessible land resulting from these Site Compounds and therefore the visual impact is negligible.

SC1 is located within 5000 m of four non-involved dwellings (TMR032, TMR030, TMR023 and TMR031). Views to SC1 would be screened by topography from TMR032 and TMR030. Views to the SC1 may be visible from TMR023 (2.83 kms north of the SC1) and TMR031 (2.80 kms north of SC1). A combination of existing intervening vegetation and distance would fragment and diminish views. It is our opinion that the potential visual impact of SC1 is low. Screen planting is recommended to the north of SC1 to completely screen views from the dwellings resulting in a negligible visual impact. The extent of screen planting required will be determined during the detailed design phase.

3.4 Substations

A total of three substations are proposed for the Project (including one at the Switching Station- refer to Section 3.2).

SS2 is located in an area with limited opportunities to view. There will be no visual impact from non-involved dwellings or publicly accessible land resulting from SS2.

SS1 is likely to be screened by topography from receptors to the west (including TMR030 and TMR032) however may be visible from dwellings TMR023 and TMR031 the north. SS1 is approximately 2.83 km south of TMR023 and 2.80 km south of TMR031. Views from these dwellings would be limited due to a combination of distance and intervening vegetation, resulting in a low visual impact. Screen planting to the north of the is recommended completely screen views of SS1, resulting in a negligible visual impact. The extent of screen planting required will be determined during the detailed design phase.

Please do not hesitate to contact me if you have any further questions.

Ashley Robertson

Associate Landscape Architect
Moir Landscape Architecture