Our reference: EF13/5002: DOC16/548868
Contact: Michael Heinze (02) 6229 7002

Executive Director – Resource Assessments & Business Systems
Department of Planning and Environment
Planning Services
GPO Box 39
SYDNEY NSW 2001

Attention: Ms Diana Charteris

30 November 2016

Dear Sir/Madam,

Re: Bango Wind Farm – SSD 6686 – EPA Review of Environmental Impact Statement

I refer to your email, received by Environment Protection Authority ('EPA') on 27 September 2016 in relation to the public exhibition of the Environmental impact Statement (EIS) for the proposed Bango Wind Farm. The wind farm is proposed to have up to 118 wind turbine generators across the local government areas of Hilltops Council and Yass Valley Council ('the proposal'). I apologise for the delay in responding.

The EPA has reviewed the documentation provided in the EIS including the Environmental Noise Assessment (ENA) for the proposal. The EPA has identified a number of broader environmental issues that the Department of Planning and Environment (DP&E) may wish to consider in its overall assessment of the application which include the following:

- Noise impacts during construction and operation of the wind farm;
- Air and water impacts;
- Pesticides; and
- Waste and contamination.

The EPA has provided comments and recommendations for DP&E's consideration in the attachments to this letter. **Attachment A** provides our general comments on the EIS and suggested improvements and additions to the Statement of Commitments. The EPA advises it could issue an Environment Protection Licence for the proposed Bango Wind Farm, subject to the recommended noise limits provided in **Attachment B** to this letter and suggests these be formalised as conditions of any approval. **Attachment C** provides the EPAs recommendations in relation to noise impact management.

Large scale wind farms that have a capacity for generating more than 30 megawatts of electricity and/or approved as a major project will require an Environment Protection Licence under the *Protection of the Environment Operations Act 1997* for both the construction and operational phases. The proponent will need to make a separate application to EPA to obtain this licence if project approval is granted and prior to the commencement of construction activities.

We would appreciate a copy of any submissions received by DP&E (or a report summarising these submissions) in response to the exhibition of the Environmental Impact Statement.

I trust this information is of assistance. Should you have any queries or wish to discuss the EPA's response, please contact me or Michael Heinze of this office on 6229 7002.

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Yours sincerely,

JULIAN THOMPSON
Unit Head – South East Region
Environment Protection Authority

Attachment A

NSW EPA - Review and Comments

Proposed Bango Wind Farm – SSD 6686

November 2016

1. AIR QUALITY

Air quality in and around the project area is expected to be good because of the rural setting with no industrial facilities or point source emissions of air pollutants. The main expected air quality issue for the project is dust emissions. The ridge system on which the wind farm is proposed will be exposed to high wind energy.

The traffic generation for an expected 18-24 month construction period for the project is significant, and potential dust impacts along the transport route utilising unsealed roads and newly constructed access tracks has the potential to increase dust deposition at nearby receivers and is an environmental risk.

The EPA notes that an Air Quality Assessment has not been undertaken for the proposed project. Given the extent of unsealed access roads and tracks, and the potential for adverse weather conditions (e.g. high winds and low rainfall) during the construction period, the EPA advises that the proponent should ensure sufficient water is allocated for dust suppression during the construction phase.

The EPA recommends the proponent prepare an Air Quality and Management Plan (AQMP) to be incorporated into the Construction Environment Management Plan (CEMP) to manage dust impacts during the construction period, as per the Statement of Commitments (064 – 068).

The AQMP should (at a minimum):

- **Be prepared and implemented prior to the commencement of construction activities;**
- **Ensure that the proponent maintains a water cart onsite at all times for the purposes of dust suppression on all unsealed roads and exposed surfaces;**
- **Provide that all stockpiles be maintained in a manner that prevents the generation of dust.**

2. SOIL AND WATER – erosion and sediment controls

It is noted that the Statement of Commitments contained in the EIS includes a commitment to preparing a CEMP which will address the construction phase environmental impacts of the proposal. The EPA considers this an important component, and it should provide details of drainage works and associated infrastructure to divert 'clean water' around the construction site(s) and collect and treat 'dirty water' from the construction areas of the project.

Any proposed storages and settling/containment ponds should be designed with available capacity to prevent uncontrolled discharges to surface waters and be developed in accordance with the principles and management practices consistent with the 'Blue Book' – *Managing Urban Stormwater: Soils and Construction Vol.1* (Landcom 2004).

The EPA recommends the proponent prepare a Soil and Water Management Plan to be incorporated into the CEMP to manage soil and water impacts as per the Statement of Commitments (069 and 070).

3. WASTE AND CONTAMINATION

The EIS provides limited detail in relation to waste management and disposal in Chapter 18.4, but includes reference to a proposed sub-plan of the CEMP which will outline procedures to be followed. Chapter 18.6 also mentions that soil contamination, hazardous material and waste management will be addressed in the CEMP.

The EPA recommends the proponent develop a waste sub-plan in the Waste section of the Statement of Commitments (072 - 076) to address the above.

4. CONCRETE BATCHING

Chapter 3.8.5 (page 60 of the EIS) details the proposed operation of temporary concrete batching plants for the supply of concrete for footings. This chapter states that "*Appropriate Environmental* (sic) *Protection Authority (EPA) licenses will be obtained for the operation of rock crushing or concrete batching facilities should the estimated volume of material exceed 30,000 tonnes per annum (or 150 tonnes per day for rock crushing)*."

The proponent should note that an Environment Protection Licence is not required for concrete batching plants, though it is correct that "crushing, grinding or separating" of more than 150 tonnes of rock per day does require licensing. In any event, and as stated in the cover letter to this submission, large scale wind farms that have a capacity for generating more than 30 megawatts of electricity and/or approved as a major project will require a Licence from the EPA for both the construction and operational phases. The activity of "crushing, grinding or separating" should be listed on any application for a Licence made by the proponent, as it does not require a separate licence.

5. CHEMICALS AND PESTCIDES

Statement of Commitment 013 refers to the "control of perennial weed grasses within the disturbance zone for three to five years after construction". Chapter 3.8.9 also refers to "chemical clearing methods" to manage regrowth and existing vegetation during construction and operations. As the use of pesticides is therefore likely, the EPA suggests the addition of a Statement of Commitment to the effect:

- **All pesticide applications must be carried out in accordance with the requirements of the NSW *Pesticides Act 1999* and the *Pesticides Regulation* 2009.**

6. NOISE CONDITIONS

The sensitive receiver locations (residences) BAN0019, BAN0035, and BAN0102 require review as the EPA's analysis of aerial imagery and topographic maps on SIX Maps (accessed by EPA on 18 November 2016) indicates they are located between 45 metres and 90 metres from their marked locations in the EIS. In addition, receiver location BAN0097 appears to be a collection of farm sheds with no residence, based on aerial imagery and topographic maps on SIX Maps (accessed by EPA on 18 November 2016). This location should be reviewed as a potential sensitive receiver.

The EPA recommends that the proponent should review confirm the names of residences (properties) and grid references of all sensitive receivers, particularly those identified above.

For the purposes of the EPA's suggested noise limit conditions in **Attachment B**, wind speed is to be measured directly in accordance with a method nominated by the proponent and at a location nominated by the proponent, consistent with the method and location used to determine the background noise regression curves in the Noise Impact Assessment.

The EPA recommends that the proponent nominate the location and method for wind speed monitoring, prior to any operations commencing.

ATTACHMENT B

NSW EPA Recommended conditions for noise and blasting – Bango wind farm

Noise Limit Conditions

L6.1 For wind speeds from cut in to rated power of the wind turbine generators, wind turbine noise generated from the premises must not exceed the greater of:

a) 35 dBA or

b) the existing background noise level plus 5 dBA for each integer wind speed at 10 metres above ground level at the wind farm site

at the nearest non-involved residential receivers.

L6.2 For the purpose of determining compliance with condition L6.1, the locations and noise limits in the table below apply. The locations referred to in the table below are defined in condition L6.4.

Location	**$L_{eq(10minute)}$ NOISE LIMITS (dBA)**									
Integer wind speed (m/s) at 120 metres above ground level	**3 or less**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12 or more**
142	35	35	35	35	35	35	35	35	35	37
19, 97, 170, 176, 282	35	35	35	35	35	35	35	35	36	37
128	35	35	35	35	35	35	35	36	37	39
144	35	35	35	35	35	35	35	36	37	40
26, 165, 166	35	35	35	35	35	35	37	38	40	42
106, 152, 243	35	35	36	36	37	37	38	39	40	42
35, 48	35	35	37	38	39	40	41	41	42	43
43, 222	35	36	36	37	37	37	37	38	39	40
60, 62, 76, 179, 181, 187, 235, 260	36	36	36	37	37	37	37	38	38	39
138	36	36	36	37	37	38	39	40	41	42
34, 102	36	37	38	38	38	38	39	39	40	41
Any other residence not subject to a negotiated agreement	35	35	35	35	35	35	35	35	35	35

L6.3 The noise limits specified in conditions L6.1 and L6.2 do not apply to any sensitive receiver location (residence) where a noise agreement is in place between the licensee and the respective land owner(s) in respect to noise impacts and/or noise limits.

L6.4 For the purpose of condition L6.2, locations are defined in the table below. Grid references (eastings and northings) refer to the Map Grid of Australia 1994 (MGA94), zone 55.

Location	**Name**	**Easting (m)**	**Northing (m)**
19	Glenorie[a]	663726[a]	6182989[a]
26		667373	6168710
34	Dovers Flat	658197	6178590

Location	Name	Easting (m)	Northing (m)
35	Stonehaven[a]	674957[a]	6174740[a]
43	Ryandale	658490	6173393
48	Glenwood	674793	6177078
60	Montalta	668962	6166711
62		661390	6169789
76	Laverstock	663854	6169306
97	1595 Tangmangaroo Rd Rye Park	671321[b]	6178301[b]
102	Badenville[a]	660877[a]	6185232[a]
106	Rockview	674765	6172626
128	Whealgrace	676659	6168997
138	Ballandarra	674728	6164928
142		670364	6177556
144	Letona	668769	6167707
152	Eversleigh	674475	6171888
165		667447	6168827
166		667440	6168580
170	Back Creek	669036	6176903
176	Sunbury	665662	6180278
179	Ingleside	663462	6168501
181	Long Gully	661493	6168919
187	11 Charles Street, Kangiara	661093	6169533
222	Gilray	657693	6175627
235		663846	6169475
243		674789	6172958
260	Jora	661457	6169844
282		666714	6178407

a) These locations were between 45 metres and 90 metres from the nearest residence, based on aerial imagery and topographic maps on SIX Maps (18 November 2016).
b) This location appears to be a collection of farm sheds with no residence, based on aerial imagery and topographic maps on SIX Maps (18 November 2016).

L6.5 For the purpose of condition L6.1, noise must be determined in accordance with the methodology in the *Environmental Noise Guidelines: Wind Farms* (SA EPA 2009). The modification factors in Section 4 of those guidelines must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

L6.6 For the purpose of condition L6.5, the presence of excessive tonality (a special noise characteristic) must be determined in accordance with ISO 1996.2:2007 *Acoustics - Description, measurement and assessment of environmental noise - Determination of environmental noise levels*.

If tonality is found to be a repeated characteristic of the wind turbine noise, 5 dBA should be added to measured noise level from the wind farm. If tonality is only identified for certain wind directions and speeds, the penalty is only applicable under these conditions.

The tonal characteristic penalty applies only if the tone from the wind turbine is audible at the relevant receiver. Absence of tone in noise emissions measured at an intermediate location is sufficient proof that the tone at the receiver is not associated with the wind farm's operation.

The assessment for tonality should only be made for frequencies of concern from 25 Hz to 10 kHz and for sound pressure levels above the threshold of hearing (as defined in ISO 389.7:2005 *Acoustics - Reference zero for the calibration of audiometric equipment - Part 7: Reference threshold of hearing under free-field and diffuse-field listening conditions*.

The maximum penalty to be added to the measured noise level from the wind farm for any special noise characteristic individually or cumulatively is 5 dB(A).

L6.7 For the purposes of condition L6.1, wind speed is to be measured directly in accordance with a method nominated by the proponent and at a location nominated by the proponent, consistent with the method and location used to determine the background noise regression curves in the Noise Impact Assessment.

L6.8 To determine compliance:

a) with the $L_{eq(10\ minute)}$ noise limits in conditions L6.1 and L6.2, the noise measurement equipment must be located:
   - approximately on the property boundary, where any dwelling is situated 20 metres or less from the property boundary closest to the premises; or
   - within 20 metres of a dwelling façade, but not closer than 5m, where any dwelling on the property is situated more than 20 metres from the property boundary closest to the premises.

b) with the noise limits in conditions L6.1 and L6.2, the noise measurement equipment must be located:
   - at the most affected point at a location where there is no dwelling at the location; or
   - at the most affected point within an area at a location prescribed by condition L6.8(a).

L6.9 A non-compliance of condition L6.1 or L6.2 will still occur where noise generated from the premises in excess of the appropriate limit is measured:

- at a location other than an area prescribed by conditions L6.8(a) and L6.8(b); and/or
- at a point other than the most affected point at a location.

Blasting Conditions

L7.1 The airblast overpressure level from blasting operations at the premises must not exceed 120dB (Lin Peak) at any time at any noise sensitive locations. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

L7.2 The airblast overpressure level from blasting operations at the premises must not exceed 115dB (Lin Peak) at any noise sensitive locations for more than five per cent of the total number of blasts over each reporting period. Error margins associated with any monitoring equipment used

to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

L7.3 Ground vibration peak particle velocity from the blasting operations at the premises must not exceed 10mm/sec at any time at any noise sensitive locations. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

L7.4 Ground vibration peak particle velocity from the blasting operations at the premises must not exceed 5mm/sec at any noise sensitive locations for more than five per cent of the total number of blasts over each reporting period. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

L7.5 Blasting at the premises may only take place between 9:00am-5:00pm Monday to Friday. Blasting is not permitted on public holidays.

L7.6 Blasting outside of the hours specified in L7.5 can only take place with the written approval of the EPA.

L7.7 The airblast overpressure and ground vibration levels in conditions L7.1 to L7.4 do not apply at noise sensitive locations that are owned by the licensee or subject to a private agreement, relating to airblast overpressure and ground vibration levels, between the licensee and land owner.

Additions to Definition of Terms of the licence

- Noise - sound pressure levels' for the purposes of conditions L6.1 to L6.9.
- "Noise sensitive locations" includes buildings used as a residence, hospital, school, child care centre, places of public worship and nursing homes. A noise sensitive location includes the land within 30 metres of the building.

Attachment C

EPA Recommended Conditions of Approval

The EPA recommends that the Department of Planning and Environment include the following conditions on any project approval for the proposed Bango Wind Farm.

Pre-commissioning validation monitoring

If any wind turbine is operated before the project is commissioned, then the proponent must perform a type test on each one of those turbines within three months of it coming in to operation. The type test must be performed in accordance with IEC 61400-11.

Mode checking

Before using sector management or a noise management mode for any operational wind turbine, the proponent must provide a method by which the Department of Planning and Environment, EPA and community can easily verify that each wind turbine is operating in the correct mode at any time.

Revised Noise Impact Assessment

The Proponent must prepare a revised noise impact assessment, for the final chosen turbine model and layout, prior to commissioning the wind turbines. The revised assessment must demonstrate, through appropriate modelling and in accordance with the *Environmental Noise Guidelines: Wind Farms* (SA EPA 2009), that the final turbine model and layout can meet the limits in this approval.

Noise Management Plan

Prior to commissioning of the turbines, the Proponent must prepare and implement a Noise Management Plan to manage noise emissions from the operation of the project. The Plan must include, but not necessarily be limited to:

a) compliance monitoring within one year of commissioning, in accordance with the *Environmental Noise Guidelines: Wind Farms* (SA EPA 2009)
b) procedures to certify noise
c) identification and implementation of best practice management techniques for minimisation of noise emissions where reasonable and feasible
d) measures to be undertaken to rectify annoying characteristics resulting from the operation of the project such as infrasound, tonality or adverse mechanical noise from component failure
e) procedures and corrective actions to be undertaken if non-compliance is detected.

Recommended Construction Hours

Construction must only take place within the hours of 7:00am to 6:00pm Monday to Friday, 8:00am to 1:00pm Saturday. No construction may take place on Sundays or Public Holidays.

Exceptions to construction hours

The following activities may be carried out outside the recommended construction hours:

a) construction that causes $L_{Aeq(15minute)}$ noise levels that are:
    i. no more than 5dB above Rating Background Level at any residence in accordance with the *Interim Construction Noise Guideline* (DECC, 2009); and
    ii. no more than the Noise Management Levels specified in Table 3 of the *Interim Construction Noise Guideline* (DECC, 2009) at other sensitive land uses; or
b) for the delivery of materials required by the police or other authorities for safety reasons; or

c) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm; or
d) as approved through the process outlined in condition 4 of this approval.

Variation of construction hours

The hours of construction activities specified under condition 1 of this approval may be varied with the prior written approval of the Secretary. Any request to alter the hours of construction shall be:

a) considered on a case-by-case or activity-specific basis
b) accompanied by details of the nature and justification for activities to be conducted during the varied construction hours
c) accompanied by written evidence that appropriate consultation with potentially affected sensitive receivers and notification of relevant Council(s) (and other relevant agencies) has been and will be undertaken
d) all feasible and reasonable noise mitigation measures have been put in place
e) accompanied by a noise impact assessment consistent with the requirements of the *Interim Construction Noise Guideline* (DECCW, 2009).

Construction Noise Management Plan

The proponent must prepare and implement a detailed construction noise management plan, prior to commencement of construction activities, including but not necessarily limited to:

a) identification of each work area, site compound and access route (both private and public)
b) identification of the specific activities that will be carried out and associated noise sources at the premises and access routes
c) identification of all potentially affected sensitive receivers
d) the construction noise and vibration objectives identified in accordance with the *Interim Construction Noise Guideline* and *Assessing Vibration: A Technical Guideline*
e) assessment of potential noise and vibration from the proposed construction methods (including noise from construction traffic) against the objectives identified in (d)
f) where the objectives are predicted to be exceeded an analysis of feasible and reasonable noise mitigation measures that can be implemented to reduce construction noise impacts
g) description of management methods and procedures and specific noise mitigation treatments that will be implemented to control noise and vibration during construction, including the early erection of operational noise control barriers.