

Director-General's Requirements

Section 75F of the *Environmental Planning and Assessment Act 1979*

Project	Construction and operation of a new wind farm and associated infrastructure. The project is proposed to comprise upwards of 100 wind turbines (MP 11_0039).
Site	Approximately 20km north of Yass and 20km south-east of Boorowa within the Yass Valley, Boorowa and Upper Lachlan Shire Local Government areas.
Proponent	Bango Wind Farm Pty Ltd
Date of Issue	31 March 2011
Date of Expiration	31 March 2013
General Requirements	<p>The Environmental Assessment (EA) must include:</p> <ul style="list-style-type: none"> • an executive summary; • a detailed description of the project (both the wind farm and associated infrastructure) including: <ul style="list-style-type: none"> → construction, operation and decommissioning details; → the location and dimensions of all project components including the wind turbines (including map coordinates in latitude/longitude and maximum AHD heights) and the proposed external cladding materials, wind monitoring/ or met masts, underground/ overhead cabling between turbines, electrical substation and transmission line linking the wind farm to the grid, temporary concrete batching plant(s), construction compounds, access roads/road upgrades (including internal access tracks) and obstacle lighting; → a timeline identifying the proposed construction and operation of the project components including staging, their envisaged lifespan and arrangements for decommissioning; → supporting maps/plans clearly identifying existing environmental features (e.g. watercourses, vegetation), infrastructure and landuse (including nearby residences and approved residential developments or subdivisions, if any) and the location/ siting of the project including associated infrastructure in the context of this existing environment; and → resourcing requirements (including, but not limited to, water supply and gravel). • consideration of any relevant statutory provisions including the consistency of the project with the objects of the <i>Environmental Planning and Assessment Act 1979</i> (i.e. Clause 5 of the Act) and any relevant development control plans; • an assessment of the key issues outlined below, during construction, operation and decommissioning (as relevant). The Environmental Assessment must assess the worst case as well as representative impact for all key issues and also consider cumulative impacts from surrounding approved or proposed wind farms or power plants (Rugby, Rye Park, Yass, Dalton power plant), as relevant; • demonstration that the wind farm will be capable of meeting relevant Building Code of Australia (BCA) standards and other relevant codes / manufacturers' specifications for the construction of wind farms; • a draft Statement of Commitments detailing measures for environmental mitigation, management and monitoring for the project; • a conclusion justifying the project taking into consideration the environmental, social and economic impacts of the project; the suitability of the site; and the public interest; and • certification by the author of the EA that the information contained in the Assessment is neither false nor misleading.
Key Assessment Requirements	<p>The EA must include assessment of the following key issues for both the wind farm and transmission line:</p> <ul style="list-style-type: none"> • Strategic Justification - the EA must: <ul style="list-style-type: none"> → include a strategic assessment of the need, scale, scope and location for the project in relation to predicted electricity demand, predicted transmission

	<p>constraints and the strategic direction of the region and the State in relation to electricity supply, demand and electricity generation technologies, and its role within the Commonwealth's Renewable Energy Target Scheme. The EA must clearly demonstrate that the existing transmission infrastructure has sufficient capacity to accommodate the project;</p> <ul style="list-style-type: none"> → include a clear demonstration of quantified and substantiated greenhouse gas benefits, taking into consideration sources of electricity that could realistically be replaced and the extent of their replacement, with reference to the Department of Environment, Climate Change and Water <i>NSW wind farm greenhouse gas savings tool</i> (http://www.environment.nsw.gov.au/climatechange/greenhousegassavingstool.htm); → include an analysis of the suitability of the project with respect to potential land use conflicts with existing and future surrounding land uses (including rural residential development, building entitlements and subdivision potential, land of significant scenic or visual value, land of high agricultural value, mineral resources (i.e. with particular reference to the exploration licences 6274, 6590, 6873, 7412 and 7427 that exist over the site), forestry, conservation areas and Crown land), taking into account local and strategic land use objectives and the potential for social and economic impacts on the local community. The analysis of site suitability shall consider any Environmentally Sensitive Area Mapping held by Boorowa Shire, Yass Valley Shire and the Upper Lachlan Shire Councils; and → describe the alternatives considered (location and/or design) for all project components, and provide justification for the preferred project demonstrating its benefits on a local and strategic scale and how it achieves stated objectives and any measures to offset residual impacts (for example community enhancement programmes). Options for sharing transmission infrastructure with nearby wind farms should be discussed. <ul style="list-style-type: none"> • Visual Impacts - the EA must: <ul style="list-style-type: none"> → provide a comprehensive assessment of the landscape character and values and any scenic or significant vistas of the area potentially affected by the project taking into account cumulative impacts from surrounding approved or operational wind farms in the locality, including an assessment of the significance of landscape values and character in a local and regional context. This should describe community and stakeholder values of the local and regional visual amenity and quality, and perceptions of the project based on surveys and consultation; → assess the impact of shadow "flicker", blade "glint" and night lighting from the wind farm; → identify the zone of visual influence of the wind farm including consideration to night lighting (no less than 10 kilometres) and assess the visual impact of all project components on this landscape; → include an assessment of any cumulative visual impacts from transmission line infrastructure; → include photomontages of the project taken from potentially affected residences (including approved but not yet developed dwellings or subdivisions with residential rights), settlements and significant public view points, and provide a clear description of proposed visual amenity mitigation and management measures for both the wind farm and the transmission line. The photomontages must include representative views of turbine night lighting if proposed; → provide an assessment of the feasibility, effectiveness and reliability of proposed mitigation measures and any residual impacts after these measures have been implemented; and → include consideration of alternative transmission line pole designs to minimise visual impact. • Noise Impacts - the EA must: <ul style="list-style-type: none"> → include a comprehensive noise assessment of all phases and components of
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the project taking into account cumulative impacts from surrounding approved or operational wind farms in the locality including: turbine operation, the operation of the electrical substation, corona and / or aeolian noise from the transmission line, construction noise (focusing on high noise-generating construction scenarios and works outside of standard construction hours), traffic noise during construction and operation, and vibration generating activities (including blasting) during construction and/ or operation. The assessment must identify noise/ vibration sensitive locations (including approved but not yet developed dwellings, baseline conditions based on monitoring results, the levels and character of noise (e.g. tonality, impulsiveness, low frequency etc) generated by noise sources, noise/ vibration criteria, modelling assumptions and worst case and representative noise/ vibration impacts;

- in relation to wind turbine operation, determine the noise impacts under operating meteorological conditions (i.e. wind speeds from cut in to rated power), including impacts under meteorological conditions that exacerbate impacts (including varying atmospheric stability classes and the van den Berg effect for wind turbines). The probability of such occurrences must be quantified;
- include monitoring to ensure that there is adequate wind speed/profile data and ambient background noise data that is representative for all sensitive receptors;
- provide justification for the nominated average background noise level used in the assessment process, considering any significant difference between daytime and night time background noise levels at background noise levels higher than 30 dB(A);
- identify any risks with respect to tonal, low frequency or infra-noise;
- clearly outline the noise mitigation, monitoring and management measures that would be applied to the project. This must include an assessment of the feasibility, effectiveness and reliability of proposed measures and any residual impacts after these measures have been incorporated;
- if any noise agreements with residents are proposed for areas where noise criteria cannot be met, provide sufficient information to enable a clear understanding of what has been agreed and what criteria have been used to frame any such agreements; and
- include a contingency strategy that provides for additional noise attenuation should higher noise levels than those predicted result following commissioning and/or noise agreements with landowners not eventuate.

The assessment must be undertaken consistent with the following guidelines:

- Wind Turbines - the South Australian Environment Protection Authority's *Wind Farms - Environmental Noise Guidelines* (2003);
- Substation – *NSW Industrial Noise Policy* (EPA, 2000);
- Site Establishment and Construction – *Interim Construction Noise Guidelines* (DECC, 2009);
- Traffic Noise – *Environmental Criteria for Road Traffic Noise* (NSW EPA, 1999); and
- Vibration – *Assessing Vibration: A Technical Guideline* (DECC, 2006).

- **Ecological Impacts** – the EA must include an ecological assessment considering terrestrial and aquatic ecosystems (as relevant), including groundwater dependent ecosystems, consistent with *Guidelines for Threatened Species Assessment* (DEC, 2005); The EA must:

- identify threatened species, populations and communities listed under both State and Commonwealth legislation that have the potential to occur on site. In particular, the following must be addressed: box woodland, table basalt forest and natural temperate grassland communities, and crimson spider orchid, silky swainson-pea, Yass daisy, hoary sunray, small woodland birds, superb, turquoise & swift parrots, barking owl & powerful owl, raptors, squirrel glider, koala, spotted tailed quoll, bats and golden sun moth;

- map existing vegetation by vegetation/ community type and include details on existing site conditions, including whether the vegetation comprises a highly modified or over-cleared landscape and the types and quality of habitat resources available. Vegetation mapping should consider any Environmentally Sensitive Area Mapping held by Boorowa Shire Council, Yass Valley Shire and the Upper Lachlan Shire Council;
 - provide details of the survey methodology employed including survey effort and representativeness for each species targeted and clear justification for species that were discounted from requiring field surveys or further assessment;
 - demonstrate a design philosophy of impact avoidance on ecological values, and in particular, ecological values of high significance;
 - provide a worst case estimate of vegetation to be cleared (in hectares), including quantifying impacts (in hectares) by vegetation type and threatened species habitat (as relevant);
 - assess the significance of impacts to native vegetation, listed threatened species, populations and communities and their habitats with consideration to local and region-based ecological implications, including edge effects, habitat connectivity and distribution of species. The assessment must consider impacts to in-stream and riparian ecology from works close to waterways and/ or waterway crossings. In addition, impact of the project on birds and bats from blade strikes, low air pressure zones at the blade tips (barotrauma), and alteration to movement patterns resulting from the turbines must be assessed, including demonstration of how the project has been sited to avoid and/ or minimise such impacts;
 - include details of how flora and fauna impacts would be managed during construction and operation including adaptive management, rehabilitation/ regeneration measures and maintenance protocols;
 - demonstrate how the project (with the incorporation of all proposed measures to avoid, mitigate and/ or offset impacts) achieves a biodiversity outcome consistent with “maintain or improve” principles. Sufficient details must be provided to demonstrate the availability of viable and achievable options to offset the impacts of the project and to secure these measures in perpetuity; and
 - address the risk of weed spread and identify mitigation measures.
- **Heritage Impacts** – the EA must include an assessment of impacts on Aboriginal and historic heritage. The EA must:
 - include sufficient information to demonstrate the likely impacts of the project on Aboriginal heritage values/items (archaeological and cultural) and outline proposed mitigation measures (including consideration of the effectiveness and reliability of the measures) in accordance with the Draft *Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (DEC, 2005). The assessment must be undertaken by suitably qualified heritage consultants and demonstrate effective consultation with Aboriginal communities in determining and assessing impacts, developing options and selecting options and mitigation measures (including the final proposed measures); and
 - provide sufficient information to demonstrate the likely impacts of the project on historic heritage values (including heritage vistas) and, where impacts to State or local historic heritage items are proposed, outline proposed mitigation and management measures (including consideration of the effectiveness and reliability of the measures) generally consistent with the guidelines in the NSW Heritage Manual. Where impacts to State or local historic heritage items are proposed, a statement of heritage significance must be included.
 - **Traffic and Transport** – the EA must assess the construction and operational traffic impacts of the project including:
 - details of traffic volumes (both light and heavy vehicles) and transport routes during construction and operation;
 - assess the potential traffic impacts of the project on road network function

	<p>(including intersection level of service) and safety;</p> <ul style="list-style-type: none"> → assess the capacity of the existing road network to accommodate the type and volume of traffic generated by the project (including over-dimensional traffic) during construction and operation, including full details of any required upgrades to roads, bridges, site access provisions (for safe access to the public road network) or other road features; → details of measures to mitigate and/or manage potential impacts, including construction traffic control, road dilapidation surveys and measures to control soil erosion and dust generated by traffic volumes; → details of access roads within the site including how these would connect to the existing public road network (i.e. site access) and ongoing operational maintenance requirements for on-site roads; and → consideration of relevant Council traffic/road policies. <ul style="list-style-type: none"> • Hazard/Risks– the EA must include an assessment of the potential impacts on aviation safety, including the need for aviation hazard lighting, considering nearby aerodromes and aircraft landing areas, defined air traffic routes, aircraft operating heights, approach/departure procedures, radar interference, communication systems, and navigation aids. Aerodromes within 30km of the turbines should be identified and impacts on obstacle limitation surfaces addressed. In addition, the EA must assess the impact of the turbines on the safe and efficient aerial application of agricultural fertilisers and pesticides in the vicinity of the turbines and transmission line. Possible effects on telecommunications systems must be identified. Potential hazards and risks associated with electric and magnetic fields and bushfires/use of bushfire prone land must also be assessed. • Water Supply, Water Quality and Hydrology – The EA must: <ul style="list-style-type: none"> → identify water demands, and determine whether an adequate and secure water supply is available for the project; → identify water sources (surface and groundwater), water disposal methods and water storage structures in the form of a water balance; → include the statutory (licensing) context of the water supply sources; → assess potential environmental impacts associated with the use of the identified water sources including impacts on groundwater and implications for existing licensed users/basic landholder rights; → assess the potential to intercept groundwater, including predicted dewatering volumes, zone of drawdown and associated impact, water quality and disposal methods; → where the project involves crossing or works close to waterways, identify likely impacts to the waterways, how the waterways are proposed to be crossed and be designed in accordance with the NSW Office of Water Guidelines for Controlled Activities (August 2010); → describe the measures to minimise hydrological, water quality, aquatic and riparian impacts; and → identify how works within steep gradient land or highly erosive soil types will be managed during construction and operation. • Waste – The EA must identify, quantify and classify the likely waste streams to be generated during construction and operation, and describe the measures to be implemented to manage, reuse, recycle and safely dispose of this waste. • General Environmental Risk Analysis – notwithstanding the above key assessment requirements, the EA must include an environmental risk analysis to identify potential environmental impacts associated with the project, proposed mitigation measures and potentially significant residual environmental impacts after the application of proposed mitigation measures. Where additional key environmental impacts are identified through this environmental risk analysis, an appropriately detailed impact assessment of the additional key environmental impact(s) must be included in the EA.
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Consultation Requirements	<p>The Proponent must undertake a consultation programme as part of the environmental assessment process, including consultation with, but not necessarily limited to, the following parties:</p> <ul style="list-style-type: none"> • Boorowa Shire Council; • Yass Valley Shire; • Upper Lachlan Shire Council; • Department of Environment, Climate Change and Water; • NSW Office of Water; • Industry and Investment NSW; • NSW Roads and Traffic Authority; • NSW Rural Fire Service; • Land and Property Management Authority; • Lachlan Catchment Management Authority; • Commonwealth Department of Defence; • Civil Aviation Safety Authority; • Airservices Australia; • Aerial Agricultural Society of Australia; • relevant service providers; • relevant minerals stakeholders (including exploration and mining title holders); and • the local community and landowners (including “associated” and “non-associated” properties). <p>The consultation process shall include measures for disseminating information to increase awareness of the project as well as methods for actively engaging stakeholders on issues that would be of interest/concern to them. The EA must:</p> <ul style="list-style-type: none"> → demonstrate effective consultation with stakeholders, and that the level of consultation with each stakeholder is commensurate with their degree of interest/concern or likely impact; → clearly describe the consultation process undertaken for each stakeholder/group including details of the dates of consultation and copies of any information disseminated as part of the consultation process (subject to confidentiality); and → describe the issues raised during consultation and how and where these have been addressed in the EA.
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Relevant Guidelines - For Reference

General

Wind Energy Facilities draft Environmental Impact Assessment Guidelines (Planning NSW, June 2002)

Draft EIS Guideline "Network Electricity Systems and Related Facilities" (Planning NSW, February, 2002)

Best Practice Guidelines for Implementation of Wind Energy Projects in Australia (Auswind, 2006)

Visual

Wind Farms and Landscape Values: National Assessment Framework (Australian Wind Energy Association and Australian Council of National Trust, June 2007).

Ecology

Cumulative Risk for Threatened and Migratory Species (Commonwealth Department of Environment and Heritage, March 2006).

Wind Farms and Birds: Interim Standards for Risk Assessment, (Auswind, July 2005).

Assessing the Impacts on Birds – Protocols and Data Set Standards (Australian Wind Energy Association).

Threatened Biodiversity Survey and Assessment – Guidelines for Developments and Activities (Working Document) (DEC, 2004).

Aviation Hazard

Advisory Circular 139-18(0) Obstacle Marking and Lighting of Wind Farms (Civil Aviation Safety Authority, July 2007). Note: this advisory is currently withdrawn however a replacement has to date not been issued.

Windfarm Policy (Aerial Agricultural Association of Australia, December 2009)

Powerlines Policy (Aerial Agricultural Association of Australia, December 2009)

Information Sheet – Airport Related Development (AirServices Australia)

Water Quality

National Water Quality Management Strategy: Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000).

The NSW State Groundwater Quality Protection Policy (DLWC, 1998).

The NSW State Groundwater Dependent Ecosystems Policy (DLWC, 2002).

NSW Office of Water Guidelines for Controlled Activities (August 2010):

- Watercourse Crossings;
- Instream Works;
- Laying Pipes and Cables in Watercourses;
- Outlet Structures; and
- Riparian Corridors.

Managing Urban Stormwater: Soils and Construction, Volume 1, 4th edition (Landcom, 2004).

Managing Urban Stormwater: Soils and Construction, Volume 2C Unsealed roads (DECC).