Director-General's Requirements

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

Project	Construction and operation of a wind farm with between 25 and 40 turbines and a generating capacity of between 60 and 110 Megawatts. Associated infrastructure includes access tracks, local road infrastructure upgrades, electrical connections between the turbines (both underground cable and aboveground power lines), up to three temporary and three permanent meteorological masts, gravel pit, a temporary concrete batching plant, an operations and maintenance facility, temporary lay-down areas and a construction site office. Grid connection would be either through a possible new switchyard to the existing 132 kV transmission line between the Wellington substation and Beryl, or directly into the existing Wellington substation.
Site	Approximately 2 kilometres north-east of the rural settlement of Bodangora, 15 kilometres north-east of Wellington and 40 kilometres south-east of Dubbo in the Wellington local government area. The project area is approximately 20 kilometres across (west to east) and 10 kilometres in length (north to south).
Proponent	Infigen Energy Development Pty Ltd
Date of Issue	12 November 2010
Date of Expiration	12 November 2012
General Requirements	The Environmental Assessment (EA) must include: • an **executive summary**; • a **detailed description** of the project for both the wind farm and transmission line including: → construction, operation and decommissioning details; → the location and dimensions of all project components including the wind turbines (including map coordinates and AHD heights), underground and above ground cabling between turbines, electrical substation and transmission line linking the wind farm to the grid (including easement width and height), on-site control room and equipment storage, temporary concrete batching plant(s), construction compounds, access roads/road upgrades (including access tracks), any obstacle lighting, relation to Crown roads, and any subdivision proposals; → a timeline identifying the proposed construction and operation of the project components, their envisaged lifespan and arrangements for decommissioning and staging; → supporting maps/plans clearly identifying existing environmental features (e.g. watercourses, vegetation), infrastructure and land use (including nearby residences and approved residential developments or subdivisions) and the location/siting of the project (including associated infrastructure) in the context of the 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 *Environmental Planning and Assessment Act 1979* and any relevant development control plans. Consideration should be given to the Central West Catchment Action Plan; • 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; • 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. The EA should present, with respect to each relevant transmission line impact, a considered overview of potential impacts along the length of the line, to identify areas of potentially significant impact for further, more detailed assessment. In addition to detailed assessment of areas of potentially significant impact, other areas along the length of the line should be assessed in a more general manner, with a particular focus on the development of frameworks for the mitigation, management and monitoring of more minor and generic environmental issues.
Key Assessment Requirements	The EA must include assessment of the following key issues for both the wind farm and transmission line: • **Strategic Justification** - the EA must: → include a strategic assessment of the need, scale, scope and location for the project in relation to predicted electricity demand, predicted transmission 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; → 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. Reference should be made to *Estimating Greenhouse Gas Emissions Abatement from Wind Farms in NSW*, McLennan Magasanik Associates, July 2010, Report to the Department of Environment, Climate Change and Water (DECCW) and the associated *NSW Wind Farm Greenhouse Gas Savings Tool* developed by DECCW; → 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 entitlement and subdivision potential, land of significant scenic or visual value, land of high agricultural value, other water users, mineral reserves, forestry and conservation areas) taking into account local and strategic land use objectives; and → describe the alternatives considered (location and/or design) for all project components, and provide justification for the preferred project demonstrating its benefits including community benefits (for example community enhancement programmes) on a local and strategic scale and how it achieves stated objectives. • **Visual Impacts** - the EA must: → provide a comprehensive assessment of the landscape character and values and any scenic or significant vistas of the area potentially affected by the project, including both the wind farm and the transmission line. 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 (no less than 10 kilometres) and assess the visual impact of all project components on this landscape; → include an assessment of the visual impacts associated with the transmission line, including impacts on local and regional views. Alternative pole designs should be presented and assessed and the potential for undergrounding in sensitive locations should also be assessed; → 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;

→ provide an assessment of the feasibility, effectiveness and reliability of proposed mitigation measures and any residual impacts after these measures have been implemented.

- **Noise Impacts** – the EA must:
  - → include a comprehensive noise assessment of all phases and components of the project including, but not limited to, turbine operation, the operation of the electrical substation, corona and/or aeolian noise from the transmission line, construction noise (focusing on high noise-generating activities and any works proposed 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 (eg. tonality, impulsiveness 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;
  - → identify any risks with respect to low frequency or infra-noise;
  - → 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;
  - → 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; 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);
  - → Vibration – *Assessing Vibration: A Technical Guideline* (DECC, 2006); and
  - → Blasting – *Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration* (ANZECC 1990).

- **Flora and Fauna** – the EA must:
  - → include an assessment of all project components on flora and fauna (both terrestrial and aquatic, as relevant) and their habitat consistent with the *Draft*

Guidelines for Threatened Species Assessment (DEC 2005), including details on the existing site conditions and likelihood of disturbance (including quantifying the worst case extent of impact on the basis of vegetation type and total native vegetation disturbed (hectares of clearing));

→ The EA must specifically consider impacts on threatened species and communities listed under both State and Commonwealth legislation that have been recorded on the site and surrounding land, impacts to riparian and/or instream habitat in the case of disturbance of waterways, and to biodiversity corridors. In addition, impact of the project on birds and bats from blade strikes, low air pressure zones at the blade tips (barotrauma, including the potential nature/extent of impacts, significance of such impacts on threatened species and mitigation measures), and alteration to movement patterns/flight paths resulting from the turbines must be assessed, including demonstration of how the project has been sited to avoid and/ or minimise such impacts. The EA must also consider flight paths, roosting and nesting sites for aerial species. If any of the bat and bird species likely to be impacted by the wind turbines are also listed species under State and Commonwealth legislation, then the significance assessment for each of these species must consider impacts from the wind turbines as well as impacts from habitat loss;

→ details of how flora and fauna impacts would be managed during construction and operation including adaptive management and maintenance protocols (including the mitigation and/or management of weeds); and

→ measures to avoid, mitigate or offset impacts consistent with "improve or maintain" principles. Sufficient details must be provided to demonstrate the availability of viable and achievable options to offset the impacts of the project (including in relation to water quality, salinity, soils and biodiversity).

- **Aboriginal Heritage** – the EA must include an assessment in accordance with *Draft Guidelines for Aboriginal Cultural Impact Assessment and Community Consultation* (DEC, July 2005) that identifies all items of Aboriginal cultural heritage at the site, 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).

- **Non-Aboriginal Heritage** – the EA must provide sufficient information to demonstrate the likely impacts of the proposal on non-indigenous heritage values (including heritage vistas) consistent with the guidelines in the NSW Heritage Manual. Where impacts to State or local non-indigenous heritage items are proposed, a statement of heritage significance must be included and measures identified to mitigate and manage impacts.

- **Traffic and Transport** – the EA must assess the construction and operational traffic impacts of the project including:
  → details of the nature of traffic generated, transport routes, traffic volumes and potential impacts on local and regional roads (including impacts on the structural integrity of the road network), bridges and intersections, including any proposed road upgrades and repairs and taking account of relevant Council road policies;
  → details of measures to mitigate and/or manage the potential impacts, including measures to control soil erosion and dust generated by traffic volumes;
  → details of site access roads including how these would connect to the existing road network and any operational maintenance or handover requirements.

- **Hazard/Risks** – the EA must include an assessment of the potential impacts on aviation safety, taking into account cumulative impacts from surrounding approved or proposed wind farms in the locality, including the need for aviation hazard lighting considering nearby aerodromes and aircraft landing areas, defined air traffic routes, aircraft operating heights, radar interference, communication systems, and navigation aids. Aerodromes within 30 km of the turbines should be identified and impacts on obstacle limitation surfaces addressed, with particular reference to Wellington Airport. 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 (EMFs) (with reference to Australian Radiation Protection and Nuclear Safety Agency standards) and bushfires must be assessed. The EA should demonstrate, particularly in relation to grid connection transmission lines, the application of the Principles of Prudent Avoidance in relation to EMFs. The EA must also detail measures to contain any hazardous substances to prevent the contamination of pastures and dams. • **Water Supply, Water Quality and Waterways** – the EA must identify water demands and determine whether an adequate and secure water supply is available for the life of the project including the statutory (licensing)/water sharing plan context of the water supply sources, and assess potential environmental impacts associated with the identified sources, including impacts on groundwater. Where the project would cross significant waterways, the EA must identify likely impacts to the waterways and measures to minimise impacts on hydrological, water quality, aquatic and riparian impacts. Details of the design of waterway crossings where such crossings are to be located in third order or higher streams are to be provided. The EA must also address soil erosion issues, the potential for clearing to create a salinity risk and the potential for accidental spills to affect water quality. • **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.
Consultation Requirements	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: • Wellington 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; • Central West CMA; • TransGrid; • Country Energy; • Commonwealth Department of Defence; • Civil Aviation Safety Authority; • Airservices Australia; • Aerial Agricultural Society of Australia; • relevant minerals stakeholders (including exploration and mining title holders); and • the local community and landowners. 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: → 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.

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).

Threatened Species Assessment Guidelines (DECC 2007)

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)

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).

Department of Water and Energy's Guidelines for Controlled Activities (February 2008):

- → 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 2A, Installation of Services & 2C Unsealed roads (DECC).