Bodangora Wind Farm

ENVIRONMENTAL ASSESSMENT

May 2012

By Bodangora Wind Farm Pty Ltd

VOLUME 2 ATTACHMENTS

infigen

MASTERPLAN
TOWN + COUNTRY PLANNERS

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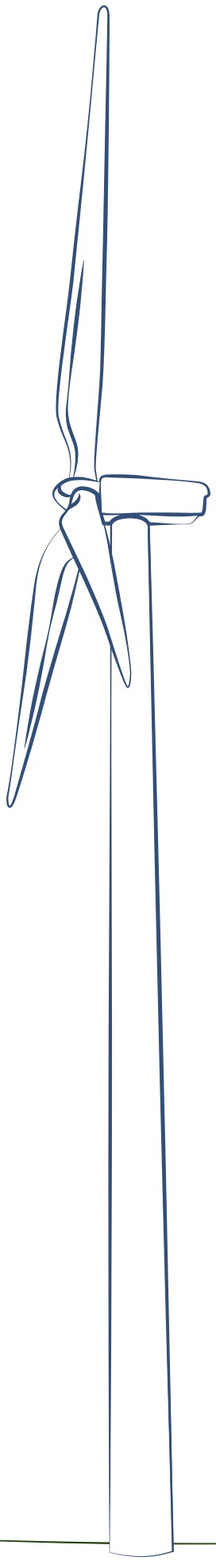

Attachment A

Director-General's Requirements

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NSW GOVERNMENT | Planning

Contact: Anna Timbrell
Phone: (02) 9228 6345
Fax: (02) 9228 6455
Email: Anna.Timbrell@planning.nsw.gov.au

Our ref.: 10/17452

Mr Frank Boland
Development Manager
Infigen Energy Development Pty Ltd
Level 22
56 Pitt Street
SYDNEY NSW 2000

Dear Mr Boland

Subject: Director-General's Requirements for Bodangora Wind Farm (MP 10_0157)

The Department has received your application for the above project.

I have attached a copy of the Director-General's Requirements (DGRs) for the preparation of an Environmental Assessment for the project. These requirements have been prepared in consultation with relevant government authorities. I have also attached a copy of the government authorities' comments for your information.

The DGRs have been prepared based on the information you have provided to date. Please note that under section 75F(3) of the *Environmental Planning and Assessment Act 1979*, the Director-General may alter these requirements at any time. If you do not submit an Environmental Assessment for the project within two years, the DGRs will expire.

Prior to exhibiting the Environmental Assessment that you submit for the project, the Department will review the document to determine if it adequately addresses the DGRs. The Department may consult with other relevant government authorities in making this decision. Please contact the Department prior to lodging the Environmental Assessment to discuss the number of electronic and hard copies that will be required to assist this review.

If the Director-General considers that the Environmental Assessment does not adequately address the DGRs, the Director-General may require you to revise the Environmental Assessment. Once the Director-General is satisfied that the DGRs have been adequately addressed, the Environmental Assessment will be made publicly available for at least 30 days.

If your project is likely to have a significant impact on matters of National Environmental Significance, it will require an approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This approval would be in addition to any approvals required under NSW legislation and it is your responsibility to contact the Department of Sustainability, Environment, Water, Population and Communities to determine if an approval under the EPBC Act is required for your project (http://www.environment.gov.au or 6274 1111).

Your contact officer for this proposal, Anna Timbrell, can be contacted on (02) 9228 6345 or via email at Anna.Timbrell@planning.nsw.gov.au. Please mark all correspondence regarding the proposal to the attention of the contact officer.

Yours sincerely,

12/11/10

Daniel Keary
Director
Infrastructure Projects

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).

NSW GOVERNMENT | Planning & Infrastructure

Office of the Director General

Contact: Anna Timbrell
Phone: (02 9228-6345
Fax: (02) 9228 6355
Email: anna.timbrell@planning.nsw.gov.au

Our ref.: MP10_0157

Mr David Griffin
Infigen Energy Ltd
Level 22, 56 Pitt Street
Sydney NSW 2000

Dear Mr Griffin

Subject: Supplementary Director-General's Requirements for Bodangora Wind Farm MP10_0157

I refer to the Director-General's requirements which were issued for the above project on 12 November 2010.

These requirements specify that the community must be consulted during the preparation of the Environmental Assessment and relevant issues must be addressed in the document.

It is clear from submissions being received by the Department that many members of the community are not satisfied with the level and nature of consultation being undertaken by proponents during the preparation of wind farm environmental assessment documents.

I wish to emphasise the importance of effective and genuine community consultation and the need for proposals to proactively respond to the community's concerns.

Accordingly, under section 75F(3) of the *Environmental Planning and Assessment Act*, I am issuing supplementary requirements which must be addressed in the preparation of your Environmental Assessment. These requirements are:

1. a comprehensive, detailed and genuine community consultation and engagement process must be undertaken. This process must ensure that the community is both informed of the proposal and is actively engaged in issues of concern to them, and is given ample opportunity to provide its views on the proposal. Sufficient information must be provided to the community so that it has a good understanding of what is being proposed and of the impacts. There should be a particular focus on those non wind farm associated community members who live in proximity to the site;

2. the Environmental Assessment must clearly document and provide details and evidence of the consultation process and who was consulted with;

3. all issues raised during the consultation process must be clearly identified and tabulated in the Environmental Assessment; and

4. the Environmental Assessment must state how the identified issues have been addressed, and how they have informed the proposal as presented in the

Environmental Assessment. In particular, the Environmental Assessment must state how the community's issues have been responded to.

I wish to emphasise that the Department will review compliance with these, and other, requirements during its adequacy review of the Environmental Assessment. If it does not adequately respond to these requirements it will not be accepted as adequate for public exhibition.

Your contact officer for this proposal, Anna Timbrell, can be contacted on (02) 9228-6345 or via email at anna.timbrell@planning.nsw.gov.au. Please mark all correspondence regarding the proposal to the attention of the contact officer.

Yours sincerely,

SHaddad

Sam Haddad
Director-General

16/8/2011

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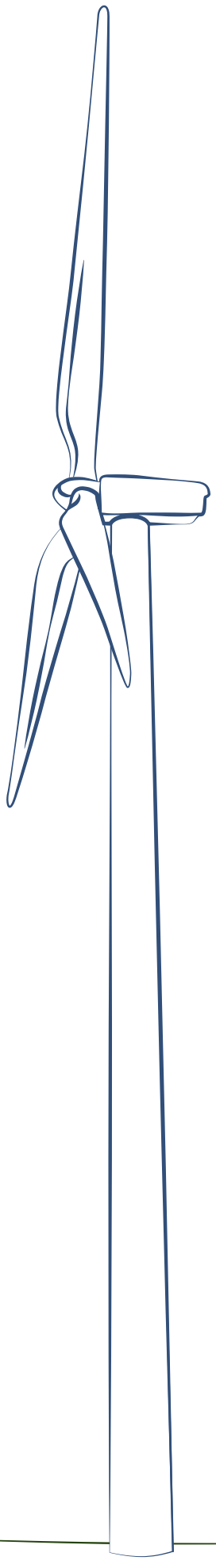

Attachment B

Draft NSW Wind Farm Planning Guidelines

CORRESPONDENCE

FROM DIRECTOR-GENERAL

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NSW GOVERNMENT | Planning & Infrastructure

Office of the Director General

Mr David Griffin
Infigen Energy
Level 22
56 Pitt Street
SYDNEY NSW 2000

12/05643

Dear Mr Griffin

Draft NSW Wind Farm Planning Guidelines

I am writing to you about the implementation of the *Draft NSW Wind Farm Planning Guidelines* ('the guidelines'), which were publicly exhibited from 23 December 2011 to 14 March 2012. The guidelines provide a regulatory framework to guide investment in wind farms across NSW while minimising potential impacts on local communities. A copy of the draft guidelines is available at www.planning.nsw.gov.au.

It is intended that the guidelines will be finalised by mid 2012. The guidelines are relevant for all proponents and owners of wind farms, and I ask you to consider the attached Policy Statement in preparing assessment documentation or in managing your existing operations.

I am also asking proponents of wind farm projects and owners of wind farms to advise me of the measures they propose to take to implement the draft guidelines.

Until the finalisation of the draft guidelines, it is important to ensure that the potential environmental impacts of wind farms are comprehensively considered as part of the assessment process and the construction and operation of approved projects. Please refer to the attached Policy Statement which identifies the interim arrangements for State Significant Development and transitional Part 3A wind farms. The arrangements vary depending on the stage of an application in the assessment and determination process.

I have also attached a checklist highlighting key provisions of the guidelines which should be adopted for new applications and those yet to be exhibited.

The Department will support and advise you further on how to adopt and implement the guidelines. In this regard, I have arranged for Neville Osborne, Manager Infrastructure Projects, to assist you. Mr Osborne may be contacted on (02) 9228 6337.

Yours sincerely

SHaddad

Sam Haddad
Director-General
18/4/2012.

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Telephone: (02) 9228 6111 Facsimile: (02) 9228 6191 Website planning.nsw.gov.au

POLICY STATEMENT

INTERIM WIND FARM PLANNING POLICY FOR STATE SIGNIFICANT AND TRANSITIONAL PART 3A WIND FARM PROJECTS

Background

The *Draft NSW Wind Farm Planning Guidelines* ('the guidelines') were publicly exhibited from 23 December 2011 to 14 March 2012. The guidelines provide a policy and regulatory framework to guide investment in wind farms in NSW while minimising potential impacts on local communities. The guidelines will be finalised after consideration of all submissions received during the exhibition period. In the interim, there are current, pending and approved State Significant Development (SSD) and transitional Part 3A wind farm applications.

Purpose of this Policy Statement

Until the finalisation of the guidelines, it is important to ensure that the potential environmental impacts of wind farms are comprehensively considered as part of the assessment process and the construction and operation of approved projects. This policy statement identifies the interim arrangements for consideration of the draft guidelines in relation to SSD and transitional Part 3A wind farms applications.

Interim policy arrangements

The following arrangements apply to all SSD and transitional Part 3A wind farms applications that have been or will be lodged with the Department before the finalisation of the guidelines.

Relevant provisions of the guidelines will be considered by the Department in determining the adequacy of an environmental assessment for exhibition. The Department will also consider relevant provisions of the draft guidelines in developing conditions of consent where applications are recommended for approval.

The implementation of the interim policy by proponents will vary according to the stage the application(s) is at in the assessment and approval process, as follows:

1. New applications for which DGRs have not yet been issued

The guidelines will be comprehensively applied to all new wind farm applications where Director General's Requirements (DGRs) have not been issued.

- The DGR's require the implementation of the relevant provisions in the draft guideline in the environmental assessment including the noise assessment, visual assessment, aviation safety, bushfire hazards, construction and decommissioning, monitoring and compliance programs and community consultation provisions. Please refer to attached Checklist.
- Proponents will be required to consult with all neighbours with dwellings within 2km of proposed wind turbines to identify any issues and potential approaches to mitigate any adverse impacts. Proponents should also seek the written agreement from neighbours with a dwelling within 2km of a proposed wind turbine.
- A community consultation committee will be required to be formed by the proponent and the committee will be consulted during the assessment process. 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.

2. *Applications for which DGRs have been issued but are yet to be exhibited*

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.

- 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.
- Proponents should consult with all neighbours with dwellings within 2km of proposed wind turbines to identify 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.
- 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.

3. *Applications that have been exhibited but not yet determined*

Proponents are encouraged to adopt relevant provisions of the guidelines in the assessment, operation and construction of projects.

- It is recommended that proponents consider relevant provisions of the guidelines when responding to issues raised in submissions particularly in relation to noise, decommissioning and compliance provisions.
- 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.
- The Department will consider relevant provisions of the guidelines in developing conditions of consent where applications are recommended for approval.

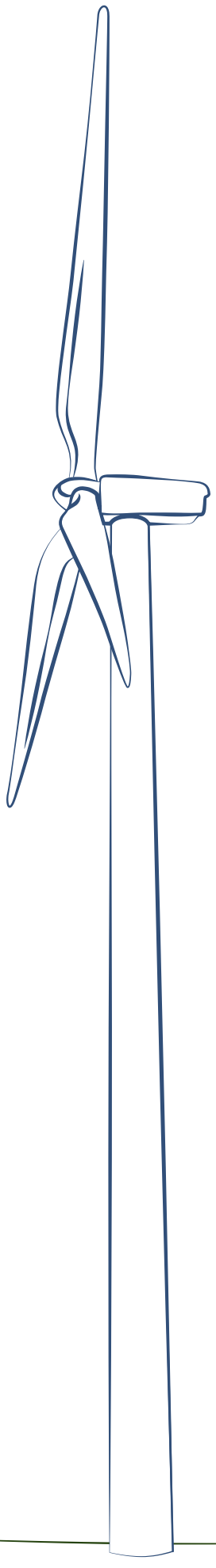
4. *Applications that have been approved*

Proponents are encouraged to adopt relevant provisions of the guidelines in the operation and construction of projects.

- It is recommended that proponents consider relevant provisions of the draft guidelines in relation to noise management, decommissioning, monitoring and performance compliance in the construction and operation of the project.
- 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 draft 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.

CHECK LIST
Key aspects of the 'Draft NSW Planning Guidelines Wind Farms'
relevant to applications yet to be exhibited

Issue	Potential Issues for considerations
Consultation	• Form a Community Consultation Committee. • Document the consultation process undertaken, including stakeholders consulted. Identify and tabulate issues raised by stakeholders during consultation. Describe how issues raised have been addressed. • Consult with all neighbours with dwellings within 2km of a proposed wind turbine. Identify the neighbours' issues and potential approaches to mitigate any adverse impacts. • Consider seeking agreement with neighbours with dwellings within 2km of a proposed wind turbine.
Landscape and visual amenity	• Provide photomontages from all non-host dwellings within 2km of a proposed wind turbine. • Identify the zone of visual influence of the wind farm (no less than 10km). and likely impacts on community and stakeholder values. Consider cumulative impacts on landscape and views. • Outline mitigation measures to avoid or manage impacts.
Noise	• Undertake assessment based on separate daytime (7am to 10pm) and night-time periods (10pm to 7am). • Predict noise levels at all dwellings within 2km of a proposed turbine. • Consider special audible characteristics, including tonality, amplitude modulation, and low frequency noise (apply penalties where relevant). • Outline measures to avoid, minimise, manage and monitor impacts.
Health	• Consider and document health issues, focusing on neighbours with dwellings within 2km of proposed wind turbines.
Ecological issues	• Consider potential impacts on birds and bats, particularly migratory species and outline the proposed monitoring and mitigation strategy
Aviation safety	• Outline current agricultural aerial uses on neighbouring properties. • Consider the potential for the proposed wind farm to impact on aviation safety associated with agricultural aerial uses consistent with the draft guidelines.
Bushfire hazard	• Consider bush fire issues consistent with the draft guidelines, including the risks that a wind farm will cause bush fire and any potential impacts on the aerial fighting of bush fires.
Blade throw	• Assess blade throw risks consistent with the draft guidelines. • Outline measures to avoid, minimise, manage and monitor impacts.
Economic issues	• Consider whether the wind farm use is consistent with relevant local or regional land use planning strategies. • Consider potential to impact upon mining/petroleum leases and exploration licences. • Consider any potential impacts upon property values consistent with the draft guidelines, including properties within 2km..
Decommissioning	• Include a Decommissioning and Rehabilitation Plan in the EA, including proposed funding arrangements. • Confirm that the proponent not the landowner is responsible for decommissioning.
Monitoring and compliance program	• Outline program to monitor environment performance to ensure compliance including mechanisms for reporting outcomes and procedures to rectifying non-compliance – including any provisions for independent reviews.
Council planning controls	• Outline whether the proposal is consistent with any relevant provisions of the relevant council's Development Control Plan and list any variations.



Attachment C

Draft NSW Wind Farm Planning Guidelines - Assessment of Key Provisions

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Issue	Potential Issue for consideration	Status	Comments
Council planning controls	• Outline whether the proposal is consistent with any relevant provisions of the relevant council's Development Control Plan and justify any variation from the provisions.	✓	Refer to ch.7.3-7.4 of the EA
Consultation	• Form a Community Consultation Committee.	✓	Infigen advertised and sought nominations from the Bodangora community to be a representative on the committee. The nominations so far are: - Frank Barker, Mid Macquarie Landcare group - Lyn Jarvis, neighbour - Bob Sewell, local publican - Simon Barton, landowner - Peter James, neighbour - Frank Boland, proponent - Grant Christopherson, Regional Co-coordinator Central West Renewable Energy Precincts. Once the DG is in a position to agree on the committee and appoint a chair, we will host the first official meeting. Despite this we will continue with our ongoing community consultation and look to meet with the group in early June.
	• Document the consultation process undertaken, including stakeholders consulted. Identify and tabulate issues raised by stakeholders during consultation. Describe how issues raised have been addressed.	✓	Refer to ch.6 of the EA for a full summary of consultation that has been undertaken.
	• Consult with all neighbours with dwellings within 2km of a proposed wind turbine - Identify the neighbour issues and potential approaches to mitigate any adverse issues.	✓	No WTG's within 2km of a non wind farmer residence. All neighbours have been and continue to be consulted with, please also see Ch.6.
	• Consider seeking agreement with neighbours which have a dwelling within 2km of a proposed wind turbine.	N/A	No WTG's within 2km of a non wind farmer residence.
Landscape and visual amenity	• Provide photomontages from all non-host dwellings within 2km of a proposed wind turbine.	N/A	No WTG's within 2km of a non wind farmer residence.

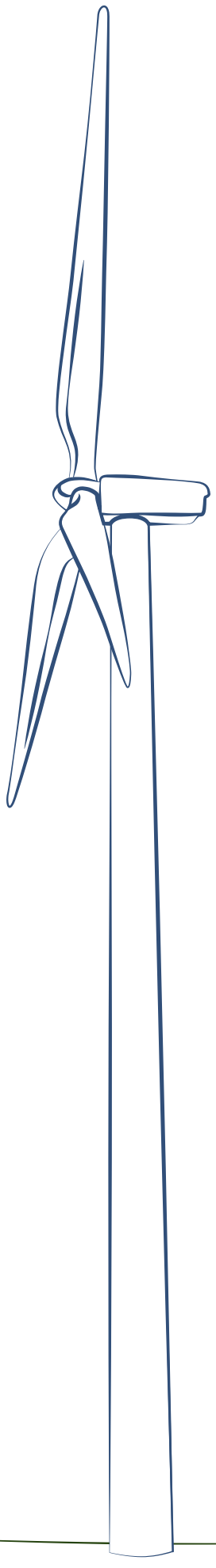
Issue	Potential Issue for consideration	Status	Comments
	• Identify the zone of visual influence of the wind farm (no less than 10km) and likely impacts on community and stakeholder values.	✓	Refer to ch.8.3 of the EA. The ZVI is assessed in detail for both residences, roads, and other key vantage points within 15km of the site.
	• Consider cumulative impacts on the landscape and views.	✓	Refer to ch.8.3-8.4 of the EA. Cumulative Impacts of the region are also covered in Ch.17.
	• Outline mitigation measures to avoid or manage impacts.	✓	Refer to ch.8.5 of the EA.
Noise	• Undertake assessment based on separate daytime (7am to 10pm) and night-time periods (10pm to 7am).		The full noise assessment was undertaken based on the DGR's provided and compliance was easily met at all receivers.
	• Predict noise levels at all dwellings within 2km of a proposed turbine.	N/A	No WTG's within 2km of a non-wind farmer residence.
	• Consider special audible characteristics; including tonality, amplitude modulation, and low frequency noise (apply penalties where relevant).	✓	Consideration had been made to all of those audible characteristics 11.2.2. A revised section has been included within the Sonus Noise report showing the predicted low frequency noise levels (Pg.18). The Bodangora Wind Farm is well under the levels referred to in the draft guidelines.
	• Outline measures to avoid, minimise, manage and monitor impacts.	✓	Refer to ch.11.4 of the EA.

Issue	Potential Issue for consideration	Status	Comments
Health	• Consider health issues consistent with the draft guidelines, focusing on neighbours' of dwellings within 2km of proposed wind turbines and documenting this in the EA.	N/A	From what we have read in the media and heard at the senate inquiry, the alleged wind turbine related health issues range from; diabetes, heart palpitations, behavior swings, depression and headaches. As the largest owner of operating wind farms in Australia and one of the largest in the USA, we have never had any formal complaints relating to health. Infigen shares the same position as the NSW Department of Health, that there is no health evidence to support a mandatory 2km set back. We can confirm that there are no neighbouring dwellings within 2km of a wind turbine. All associated dwellings within 2km have signed a lease agreement with Bodangora Wind Farm Pty Ltd; no landowners were forced to sign the agreement and did so with full knowledge of any alleged health risks. Infigen also notes that the National Health and Medical Research Council have recently issued a statement on this matter. It has stated "there are no direct pathological effects from wind farms and that any potential impact on humans can be minimised by following existing planning guidelines". The Department made a statement on health in the Capital II Wind Farm determination. Consistent with this statement the proposed Bodangora Wind Farm is also compliant with the South Australian EPA Guideline 'Environmental Noise Guidelines: Wind Farms' (February 2003) and the other relevant DGR's. Accordingly, it is considered that the proposed wind farm would not give rise to any adverse human health impacts.
Aviation safety	• Outline current agricultural aerial uses on neighbouring properties.	✓	There is a combination of land based and aerial agriculture currently deployed in the region. As covered in chapter 15.1, no aerial agricultural activities on neighbouring properties will be limited by the presence of the wind turbines. For the wind farm landowners, they are aware of the implications and will adjust their application methods.

Issue	Potential Issue for consideration	Status	Comments
	• Consider the potential for the proposed wind farm to impact on aviation safety associated with agricultural aerial uses consistent with the draft guidelines.	✓	Refer to ch.15.1
Bushfire hazard	• Consider bush fire issues consistent with the draft guidelines, including the risks that a wind farm will cause bush fire and any potential for the wind farm to impact on the aerial fighting of bush fires.	✓	Please refer to ch.15.4. for a summary of the bush fire risks for the Bodangora project and the proposed mitigation and management of those; The main issue the RFS wanted to confirm from RFS design guidelines *Planning for Bushfire Protection 2005* and *Standards for Asset Protection* is that 'at the commencement of building works and in perpetuity the property around the wind turbines to a distance of 20 meters shall be maintained as an inner protection area (IPA). Infigen can confirm that this will be complied with.
Blade throw	• Assess blade throw risks consistent with the draft guidelines.	New	Blade throw and all other wind turbine failures are covered in ch.15.2 of the EA. In addition to this and consistent with the new draft wind farm guidelines, Infigen can confirm that IEC 61400-23 will be added to the relevant safety and building standards. Based on our global fleet of turbines and industry experience, the probability of blade throw would be around 1:3000 and the risk of this affecting anyone is significantly lower. All our sites have very stringent and thorough maintenance for all turbine components including blades.
	• Outline measures to avoid, minimise, manage and monitor impacts.	✓	Refer to ch.15.2 of the EA and statement above.
Mineral resources	• Consider potential to impact upon mining/petroleum leases and exploration licenses. If relevant, consult with the Minerals and Petroleum Division of the NSW Department of Trade and Investment, Regional Infrastructure and Services.	✓	Refer to ch.4.3 of the EA. Copies of all consultation communication was included.

Issue	Potential Issue for consideration	Status	Comments
Property values	• Consider whether the wind farm use is consistent with local or regional land use planning strategies.	✓	Chapter 7.3 in EA covers this in detail.
	• Consider any potential impacts upon property values consistent with the draft guidelines, including properties within 2km.	✓	As per the NSW Valuer Generals report on wind farm impacts on land value, there is no evidence in Australia that wind turbines have adverse impacts on property values. As stated in ch.16.2, the drought proof revenue for the properties hosting turbines is very favourable. Given there are no residences within 2km of a wind turbine, it is unlikely that the wind farm will have any impact on the agricultural value of neighbouring property values. The additional temporary and permanent wind farm employees living in close proximity of the site should put positive pressure on property values in the region.
Decommissioning	• Include a Decommissioning and Rehabilitation Plan in the EA, including proposed funding arrangements.	✓	Bodangora Wind Farm Pty Ltd commits to restoring the land to its previous condition as per the decommissioning clause in the lease agreement and in Ch.3.9 of the EA. Infigen will also monitor repowering opportunities and is also very confident that the salvage value of the turbines will outweigh the decommissioning costs. Included in appendix D is a copy of the proposed decommissioning and rehabilitation plan.
	• Confirm that the proponent not the landowner is responsible for decommissioning.	✓	This is confirmed. Please see relevant extract from our registered long term lease agreement (Appendix D). Every landowner in the Bodangora Wind Farm has this clause in their lease. This is a legally binding obligation that will be tied to the land regardless if the parties of the lease ever change.
Ecological Issues	• Consider potential impacts on birds and bats, particularly migratory species and outline the proposed monitoring and mitigation strategy.	✓	Refer to ch.9.3 - 9.4 of the EA.

Issue	Potential Issue for consideration	Status	Comments
Monitoring and compliance program	• Outline program to monitor and environment performance to ensure compliance including mechanisms for reporting outcomes and procedures to rectifying non-compliance – including any provisions for independent reviews.	✓	As with all of our NSW wind farms we will perform compliance testing during construction and also once operational. We also have individual management and mitigation plans for each chapter of the project which addresses all of the individual issues. Infigen will work with all stakeholders during compliance reviews and if by chance there is non-compliance, measures will be taken to rectify the problem.



Attachment D

Decommissioning and Rehabilitation Plan

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BODANGORA WIND FARM DECOMMISSIONING PLAN

Introduction

Bodangora Wind Farm Pty Ltd commits to restoring the land to its previous condition as per the decommissioning clause in the lease agreement (below) and in Ch.3.9 of the EA. Infigen will also monitor repowering opportunities and is of the opinion that the salvage value of the turbines will outweigh the decommissioning costs. As Infigen has already actively commenced our own research into the recycling potential of the turbines, we propose the following plan for decommissioning and rehabilitation that includes our existing programs.

Consultation

Prior to each lease being executed with the landowner, the decommissioning plan was discussed and agreed. On all occasions the landowner shared the same opinion as Infigen that the salvage potential would outweigh the decommissioning costs. Below is a copy of the decommissioning clause from the Bodangora Wind Farm lease agreement that all landowners have executed.

Fig.1. Copy of the decommissioning clause from Bodangora Wind Farm lease agreement:

4.14 Removal of Wind Farm Plant and Equipment

(a) Within one hundred and eighty (180) days of the termination of this Lease, all Plant and Equipment whatsoever sited above the surface of the Leased Property and all Plant and Equipment sited on the surface of the Leased Property shall be removed by the Lessee. Plant and Equipment sited below the surface of the Leased Property shall be removed to a minimum depth of four hundred (400) millimetres.

(b) Concrete foundations shall be expressly excluded from the requirement of **clause 4.14(a),** but only upon the condition that a smoothed, even covering of soil is placed to a minimum depth of four hundred (400) millimetres over such concrete foundations.

(c) Roads, fences and gates shall be expressly excluded from the requirement of **clause 4.14(a).**

Operational life of the wind farm

It is expected that the wind farm will be in operation for between 20-25 years, unless it is repowered prior. As stated earlier, Infigen believes it is probable that the Bodangora site will be repowered before the end of the first 25 years. If Infigen intends to repower the site, a new Development Application will be lodged and approval sought.

Dismantling

Unless the local electricity network operator or landowner requests and Infigen agrees, that certain wind farm infrastructure be retained on land, it will be removed and restored to its previous condition.

Below is a summary of each component of wind farm infrastructure and how we propose to decommission and dismantle it:

- Removal of turbines and concrete foundation. Similar to the erection of the wind turbines, a crane will arrive on site and dismantle all components. They will be taken down very carefully to maximise resale value. Unless required somewhere else, the steel towers will be trucked to the scrap metal recycling plant. The location of this plant will be determined closer to the time of decommissioning (several current local options identified later).

  The remainder of the turbine will be dismantled into smaller components to allow for more efficient recycling. This procedure will take place either at a central lay down area or on the pad mount next to the turbine. The priority will be to reuse as many of the components as possible and recycle the remainder. This should maximise the salvage value.

  The concrete foundation will be retained in the ground and covered with an appropriate top soil before reseeding.

- Removal of viewing facilities, maintenance shed and other facilities. The first option for decommissioning these facilities will be to assess whether they could be of any benefit in-situ to the landowner or the local community. Alternatively, sheds and portable buildings will be transported away for sale. In the case of repowering, these facilities are likely to continue in use.

- Electrical Infrastructure. This type of infrastructure typically has a longer design life than a wind turbine. Prior to any decommissioning, a thorough consultation will occur with the local network service provider (NSP). It is likely that most of this infrastructure will remain beyond the decommissioning of the wind farm. For any items that the NSP does not wish to own, they will be removed and sold or recycled as scrap metal if they cannot be used elsewhere.

- Access roads. These roads have been designed with the farmer to ensure that they are of benefit to their farm as well as providing access to the turbines. On most occasions the Bodangora Wind farm access tracks will upgrade existing farm tracks. It is envisaged that they will remain part of the on farm infrastructure.

Transportation

All of the turbines will be dismantled on site and broken into smaller pieces to allow for easier transportation. They will be stored on the site lay down area and then trucked to the nearest scrap metal recycler. Blades will be separated into their component parts for recycling. The traffic and transport management plan used for construction will be updated to reflect the decommissioning traffic movements. The two scrap metal merchants we have indentified in Dubbo who would be likely candidates are:

1. Matthews Metal Management
   34 Mountbatten Drive
   Dubbo

2. Orana Wool Scrap Metal
   21 Old Gilgandra Road
   Dubbo

Waste minimisation strategy

Wind turbines primarily consist of steel, aluminium, copper, glass fibre, polyester, carbon fibre and epoxy. All resource recovery strategies will comply with the relevant guidelines at the time, which at the moment are the EPA Guidelines Assessment, Classification and Management of Liquid and Non-liquid Wastes.

Infigen is currently undertaking an extensive research project into how to maximise the salvage potential from its portfolio of wind turbines. The heart of this strategy is the ability to extract value through recycling and reusing turbine components. Through the onsite dismantling process this value will be easy to achieve. All of the metal components will be recycled as scrap metal at various resource recovery centres located near the site.

Blade recycling – unlike the remainder of the wind turbine that is composed of metals, the blades require a more complex recycling process to recover the underlining materials. In Table 1 below, the four main processes for recovering the materials are discussed. During the lead up to decommissioning Infigen will determine the optimal solution.

Table. 1. Composite recycling methods. Information sourced from (Producer Responsibility: Defining the incentive for recycling wind turbine blades in Europe, R Carrington et al. 2011)

Process	Description
Mechanical	The composite is broken down by shredding, crushing, milling or other similar processes. The resulting material can be separated into resin and fibrous products.
Pyrolysis	The composite is heated to 450°C to 700°C in the absence of oxygen; the polymeric resin is converted into a gas or vapour while the fibres remain inert and are later recovered.
Oxidation in Fluidised bed	The fluidised bed process is the most well-known implementation. It consists of combusting the polymeric matrix in a hot and oxygen-rich air flow of 450°C to 550°C.
Chemical	The polymeric resin is decomposed into oils which free the fibres for collection.

Rehabilitation of the land

Any land that is disturbed during decommissioning will be rehabilitated to the specifications agreed with the landowner. The funds for this task will be provided from either the cash flows from decommissioning or from the established trust fund.

Funding Arrangements

Current discussions with turbine suppliers and experience in the USA and Australian markets, indicate that it is likely that the project will have a full ten year warranty. During this period the risk of the project requiring decommissioning is extremely low and the cost would likely be borne by the turbine supplier. Therefore Infigen's proposed funding plan starts at the end of the warranty period on the 10th year anniversary (or earlier if shorter warranty

period). Upon reaching this anniversary, Infigen will undertake a quantitative survey on the cost to decommission the Bodangora Wind Farm. As outlined in Figure 2 below, this will be a decision point about whether a trust fund will be required. Infigen's opinion is that this will be unlikely. This being due to the salvage potential and scrap value of the materials being higher the than cost to dismantle and decommission. However assuming there is still a shortfall, Infigen will create a trust fund that will be used to cover the costs for decommissioning. The formula for calculating the annual contribution for the trust fund will be 10% of the estimated shortfall amount between the end of the warranty period and the decommissioning year, with a regular five year review.

Timing

As per Fig.1, the proponent commits to undertaking the decommissioning and rehabilitation works within 18 months of the wind farm reaching the end of its life.

Consultation

As with all elements and stages of the wind farm, Infigen will undertake further community consultation to seek ideas to maximise the net benefit to the community during the decommissioning process.

Responsibility

Infigen can confirm that the wind farm proponent will be responsible for decommissioning.

Fig.2. Outline of Decommissioning and Rehabilitation Plan:

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