UNION FENOSA WIND AUSTRALIA

Crookwell 3 Wind Farm

Environmental Assessment

Updated to reflect the Draft NSW Wind Farm Planning Guidelines

July 2012

Prepared by:

Tract Consultants Pty Ltd on behalf of

Crookwell Development Pty Ltd

In conjunction with:

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Author's certification

Nevan Wadeson, Adam Terrill and Rebecca Wardle of Tract Consultants are the primary authors of this document, with a variety of other authors contributing specialist input. The primary authors have relied on this specialist input. The information contained in this document is neither false nor misleading.

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Abbreviations

ABS	Australian Bureau of Statistics
AC	Advisory Circular
ACMA	Australian Communications and Media Authority
BOM	Bureau of Meteorology
CAP	Catchment Action Plan
CASA	Civil Aviation Safety Authority
CDPL	Crookwell Development Pty Ltd
CEMP	Construction Environmental Management Plan
CFA	Country Fire Authority
Council	Upper Lachlan Shire Council
CSR	Corporate Social Responsibility
DCP	Development Control Plan
DECCW	NSW Department of Environment, Climate Change and Water
DoPI	NSW Department of Planning and Infrastructure
EA	Environmental Assessment
EARs	Environmental Assessment Requirements
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	Environment Protection Authority
EPHC	Environment Protection and Heritage Council
EPL	Environment Protection Licence
GWEC	Global Wind Energy Council
LEP	Local Environmental Plan
LRET	Large-scale Renewable Energy Target
MRET	Mandatory Renewable Energy Target
NHMRC	National Health and Medical Research Council
NPW Act	National Parks and Wildlife Act 1974
NRET	NSW Renewable Energy Target
OD	Over Dimensional
OEH	NSW Office of Environment & Heritage (Formerly DECCW)
POE Act	Protection of the Environment Operations Act 1997
RAAF AIS	Royal Australian Air Force - Aeronautical Information Service
REP	Regional Environmental Plan
RET	Renewable Energy Target
RFS	NSW Rural Fire Service
RTA	Road Traffic Authority
SEPP	State Environmental Planning Police
SRET	Small-scale Renewable Energy Scheme

TSC Act	Threatened Species Conservation Act 1995
UFWA	Union Fenosa Wind Australia Pty Ltd
WHO	World Health Organisation
WMA	Water Management Act 2000
WMO	World Meteorological Organisation
WTG	Wind Turbine Generator
WWEA	World Wind Energy Association
ZVI	Zone of Visual Influence

UNION FENOSA WIND AUSTRALIA

Crookwell 3 Wind Farm

Chapter 1

EXECUTIVE SUMMARY

1 Executive Summary

Crookwell Development Pty Ltd (CDPL) (the 'proponent') and its successors and assigns, is seeking project approval for the construction and operation of a wind energy facility known as the Crookwell 3 Wind Farm (the 'project').

The project involves the construction, operation and maintenance of up to 30 wind turbines, together with the ancillary infrastructure.

The Crookwell 3 Wind Farm is a major project aimed at providing renewable energy for households, business and industry. Renewable energy, such as wind generated electricity, meets the Federal, State and Local Government objectives of reducing greenhouse emissions and the dangerous impacts of climate change.

The site has an area of 1,500 ha and is situated approximately 17km south east of the township of Crookwell, in the southern tablelands of NSW. The project is to be located on two separate land parcels known as Crookwell 3 East, with an area of 1,100 ha, and Crookwell 3 South, with an area of 400 ha. These two land parcels are hereafter referred to as the 'Site'.

The project is a Part 3A Major Project under the Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act). The project is also a Critical Infrastructure Project under Part 3A of the EP&A Act as it is a renewable energy project with a peak generating capacity of more than 30 megawatts (MW). As environmental assessment requirements (EARs)for the project were issued under Part 3A prior to its repeal on 1 October 2011, the project is a transitional Part 3A project under Clause 2(1)(c) of Schedule 6A of the Act. Accordingly, the project will continue to be assessed and determined under Part 3A notwithstanding its repeal.

A Preliminary Environmental Assessment was lodged by Tract Consultants on behalf of the proponent with the NSW Department of Planning and Infrastructure (DoPI) (formerly the Department of Planning) on 12 February 2010 and a Planning Focus meeting was held on the 17 March 2010. Subsequently, an Environmental Assessment (EA) was prepared and lodged to the DoPI on 7 March 2011 to address the EARs issued by the Director General of Planning and Infrastructure for the project under Part 3A of the EP&A Act which were provided by DoPI on 7 April 2010. A revised EA was prepared and lodged on 2 December 2011 to address the supplementary EARs which were provided by DoPI on 16 August 2011.

Subsequently, the NSW Government released the *Draft NSW Wind Farm Planning Guidelines* for exhibition on 23 December 2011. DoPI wrote to all proponents of wind farms in NSW on 18 April 2012 regarding the draft guidelines and enclosed a checklist highlighting the key provisions of the guidelines which should be adopted for all applications yet to be exhibited. DoPI requested that all wind farm proponents advise the Director-General of DoPI of the measures they propose to take to implement the draft guidelines. Whilst the draft guidelines are yet to be finalised and further supplementary EARs have not been issued requiring consideration of the draft guidelines in this EA, this EA considers the draft guidelines and demonstrates that the Crookwell 3 Wind Farm is generally in accordance with the draft guidelines. A check list table for the new draft guideline provisions are provided in Appendix A.

The project comprises a number of elements, including:

- up to 30 individual wind turbines standing up to 152 metres at top of blade tip with a capacity of up to 3.4MW each (some of the turbines may be fitted with obstacle lighting as required);
- up to 30 individual kiosks for the housing of 33kV Transformers and 33kV Switchgears and associated control systems to be located in the vicinity of the wind turbine towers (in some turbine models the kiosk's equipment is integrated within the tower or nacelle);
- internal unsealed tracks for turbine access;
- upgrades to local road infrastructure as necessary to provide access to the site;

– an underground electrical and communication cable network linking turbines to each other within the site boundary and then utilising either an underground or overhead connection between the site boundaries and the Crookwell 2 site boundary to reach the substation approved as part of the Crookwell 2 Wind Farm;

– up to three wind monitoring masts fitted with various instruments such as anemometers, wind vanes, temperature gauges and potentially other electrical equipment;

– up to two temporary concrete batching plants during the construction phase only, to supply concrete for the foundations of the turbines and other associated structures;

– the removal of vegetation as required to enable access to, and the construction of, the project;

– vegetation replanting to provide screening; and

– all ancillary and incidental uses and activities.

Grid connection for the Project would be achieved via a connection to the existing 330kV transmission line which bypasses the site. The project would utilise and be connected to the single substation, control room and other facilities which have been approved as part of the Crookwell 2 Wind Farm.

The proposed wind farm would bring environmental, social and economic benefits to the Crookwell locality, the wider region, and the State of NSW.

Environmentally, the wind farm would displace between 145,715 and 208,654 tonnes of greenhouse gases and assist in attempts to reduce the impacts of climate change. It would provide up to 214,444 MWh of renewable energy per year and power up to 33,225 households per year. This is approximately 1/4 of Canberra's population or more than double the population of Goulburn.

Economically, the wind farm would invest $90 - $110 million into the economy and create 40 full time jobs in construction and 6 jobs during operation. In addition, up to 10 additional contractors could be working on the site once every 10 to 15 years as part of scheduled major site overhauls.

Socially, the wind farm would fund community enhancement projects. CDPL is in the process of negotiating a voluntary planning agreement with the Council which provides for an annual contribution to the Upper Lachlan Shire Council's Community Enhancement Fund. The proposed voluntary planning agreement will require CDPL to make an annual monetary contribution to the local community of $1,666 (adjusted annually to changes in the CPI) per operating turbine, as part of Upper Lachlan's Community Enhancement Fund. This equates to an annual contribution of up to $49,980 to community projects which will directly benefit the local area.

CDPL understands the need to effectively communicate with residents and all relevant stakeholders through a program of community consultation. CDPL has developed a community consultation and engagement program aimed at providing the community and stakeholders with factual information about the project and gathering feedback about their concerns and interests, which can subsequently be addressed in the approvals process and influence the project design where appropriate. The consultation to date has revealed a diversity of views on the project in the vicinity of the wind farm. Of note is the survey conducted during the 2008 local government elections, where Upper Lachlan Shire residents were asked about their general support for the development and construction of wind farm turbines in the area. The results of the poll showed that 70.04% were 'for' and 29.96% 'against' the proposition of further wind farms in the Municipality, with every polling booth registering a 'for' vote majority including those in the area of then approved Crookwell 2 Wind Farm.

More recently, the CSIRO prepared a report titled '*Exploring Community Acceptance to Rural Wind Farms in Australia: a snapshot* (2012) which found that '*there is strong community support for the development of wind farms'*.

The proposed wind farm would make a small but important contribution to reducing the dangerous impacts of anthropogenic climate change, such as droughts, floods, extreme weather events and sea level rise.

In relation to the potential negative impacts arising from the project, the EA found that the wind farm has the potential to have a low to moderate impact on landscape values, have a limited impact on local communications facilities, increase noise for some residents, and result in the clearing of non-significant vegetation.

The NSW Government has recognised the wind energy potential of the region by placing Crookwell within one of six designated renewable energy precincts, called the NSW/ACT Border Region. Associated with this designation is the presence of a number wind farms in the region, with three wind farms approved or existing within a 20km radius of the site.

The cumulative impact of the project was assessed in relation to the surrounding wind projects. This cumulative assessment found that there is unlikely to be a significant increase in visual impact.

The noise impact assessment found exceedances at some residential receivers, and noted that the conservative assumptions would potentially overestimate noise levels as the noise standards may not reflect the circumstances of the project. It made important recommendations such as the verification of noise levels at commissioning and extensive monitoring throughout the project, in order for standards to be met.

In relation to cumulative noise impacts, noise monitoring was conducted at eleven nearby locations to determine baseline conditions and establish indicative criteria for surrounding residential receivers. Predictions for cumulative WTG noise levels were completed for two alternative possibilities:

- the existing Crookwell 1 Wind Farm and the proposed Crookwell 3 Wind Farm; and
- the existing Crookwell 1 Wind Farm, approved Crookwell 2 Wind Farm and proposed Crookwell 3 Wind Farm.

Noise predictions were made for receptors within a 6 km radius of the indicative location of each wind turbine proposed for the Crookwell 3 Wind Farm. Noise generated by the turbine indicative layout of the four selected turbine models was predicted and assessed against the relevant criteria prescribed by the SA EPA Guideline and the WHO Guideline goals where appropriate.

For the cumulative noise from the existing Crookwell 1 Wind Farm and the proposed Crookwell 3 Wind Farm, exceedances of the SA EPA Guideline limit were predicted for the four investigated turbines, resulting in at least two exceedances of the SA EPA Guideline limit. A mitigated operation scenario was considered where one turbine is turned off and a select few WTG's are operated in a 'low noise' mode for a limited range of wind speeds. In this scenario, the predicted reduction in noise levels resulted in no exceedances of the SA EPA Guideline limit.

For the cumulative noise from the existing Crookwell 1 Wind Farm, the approved Crookwell 2 Wind Farm and proposed Crookwell 3 Wind Farm, exceedances of the SA EPA Guideline limit were predicted for the four investigated turbines, resulting in at least seven exceedances of the SA EPA Guideline limit. CDPL proposes to negotiate noise agreements with House 8, House 20, House 66 and House 67 as well with as the host properties.

A mitigated operation scenario was considered where a select few turbines from both the approved Crookwell 2 Wind Farm and the proposed Crookwell 3 Wind Farm are operated in a 'low noise' mode. The resulting reduction in cumulative noise levels at potentially affected receptors reduced the total number of cumulative noise exceedances to one (House 70 exceedance of 0.3 dBA at 8.2 m/s) which would be considered only marginal.

The results of the noise impact assessment found that "all non-host properties are predicted to be within the nominated World Health Organisation (WHO) Guideline noise limits". The noise impact for the receivers that are predicted to experience noise levels exceeding the 'Background + 5 dBA' intrusive criteria is expected to be minimised by the mitigation measures proposed, which are summarised in Chapter 10.5.

The impacts of the project would be minimised by the extensive range of management plans that would be prepared before construction and ongoing monitoring of the compliance of the wind farm post-construction with the established standards. These commitments are detailed in this report in **Chapter 24**.

This EA also considers the compatibility of the proposed Crookwell 3 Wind Farm with the existing land uses of the area and the extent to which it complies with relevant planning and environmental instruments applicable to the site.

UNION FENOSA WIND AUSTRALIA

Crookwell 3 Wind Farm

Chapter 2

INTRODUCTION

2 Introduction

2.1 Introduction

Crookwell Development Pty Ltd (CDPL) (the 'proponent') and its successors and assigns, is seeking project approval for the construction and operation of a wind energy facility known as the Crookwell 3 Wind Farm (the 'project'). The Crookwell 3 Wind Farm is a major project aimed at providing renewable energy for households, business and industry. Renewable energy, such was wind generated electricity, meets the Federal, State and Local Government objectives of reducing greenhouse emissions and the dangerous impacts of climate change.

The site has an area of 1,500 ha and is situated approximately 17km south east of the township of Crookwell, in the southern tablelands of NSW. The project is to be located on two separate land parcels known as Crookwell 3 East, with an area of 1,100 Hectares, and Crookwell 3 South, with an area of 400 Hectares. These two land parcels are hereafter referred to as the 'Site'.

A Preliminary Environmental Assessment was lodged by Tract Consultants on behalf of the proponent with the NSW Department of Planning and Infrastructure (DoPI) (formerly the Department of Planning) on 12 February 2010 and a Planning Focus meeting held on the 17 March 2010. An Environmental Assessment (EA) was prepared and lodged on 7 March 2011 to address the environmental assessment requirements (the 'EARs') issued by the Director General of Planning and Infrastructure for the project under Part 3A of the EP&A Act which were provided by DoPI on 7 April 2010. A revised EA was prepared and lodged on 2 December 2011 to also address the Supplementary Director-General Requirements (now referred to as EARs) which were provided on 16 August 2011.

This update to the EA has been prepared in response to the *Draft NSW Wind Farm Planning Guidelines* which were released for public exhibition on 23 December 2011. The letter dated 18 April 2012 from DoPI, as well as the check list for applications yet to be exhibited can be found at **Appendix 1** of this report. Brief comments on how each item on the check list has been addressed, and which chapter of this report to refer to, are provided in the appendix.

2.2 Project History

The project was initiated in its current form in 2009. This followed on from the approval of a modification to the approved Crookwell 2 Wind Farm in July 2009. Crookwell 2 provides much essential infrastructure that can support both it and the proposed Crookwell 3 project, and there are synergies to be gained from co-locating the Wind Farms.

Due to the close proximity of the proposed Crookwell 3 to the approved Crookwell 2 Wind Farm, the projects can share infrastructure, bringing significant benefits including increasing its commercial viability. This approach also reduces the potential amenity impacts arising from separate substations, control buildings and switchyards that are usually separately required for a wind farm.

Development Consent for the Crookwell 2 Wind Farm was granted initially in June 2005, and modified in July 2009. The modified approval allowed larger and more efficient wind turbines, altering the dimensions of the 46 turbines from a height of 107 metres (to the top of the blade tip) to a height of 128 metres. The Crookwell 2 Wind Farm is currently under construction and is expected to be completed in 2013. Annually, the Crookwell 2 Wind Farm is expected to produce 242 GWh of electricity, enough to power approximately 45,000 average households.

The available wind data shows that the NSW Southern Tablelands region has a good wind resource. Available data from Crookwell 2 Wind Farm wind monitoring and the two wind monitoring masts erected on the Crookwell 3 site confirms that there is sufficient wind resource available in the area for the project to achieve an acceptable capacity factor and power the turbines for a sufficient portion of the year.

The proponent engaged specialist consultants to investigate and assess the site and the project. The ongoing assessments carried out by these special consultants have been used in the planning and design of the wind farm and in informing this EA. The consultants' work has been guided by the EARs.

One key element of the investigations undertaken in relation to the proposal is the face to face consultation (doorknock), carried out with surrounding land owners, which took place between 28 and 30 April 2010. The results of the door knock, combined with a second round of consultation with key stakeholders, and additional consultant studies, resulted in changes being made to the project to address some of the major issues raised. Changes to the project since its inception have included:

– removing 3 turbines from the initial proposed layout;
– relocating turbines to increase buffer distances to houses;
– increased screening vegetation; and
– changes to the access tracks and access points.

2.3 The Proponent

Crookwell Development Pty Ltd (CDPL) is the proponent for the Crookwell 3 Wind Farm project. CDPL is a fully owned subsidiary of Union Fenosa Wind Australia Pty Ltd (UFWA) a subsidiary of a Spanish Utility called Gas Natural Fenosa.

The Gas Natural Fenosa group is one of the leading multinational companies in the gas and electricity sector, the company operates in 25 countries and employs around 20,000 staff with 15.4 GW of installed power and nearly 20 million customers.

UFWA remains a separate entity and has eight wind farm projects (in development, approved and early construction stages) across NSW and Victoria. This portfolio represents a potential investment of approximately $2.0 billion in renewable wind energy generation. Once complete, the portfolio would increase Australia's present wind generation capacity by over 1,000 MW. In addition, it will result in the creation of several hundred jobs in the construction and operational phases.

Refer to **Figure 1 – Union Fenosa International Projects** and **Figure 2 – UFWA Projects**.

Following the acquisition of the electricity company Unión Fenosa, the third largest in the Spanish market, Gas Natural Fenosa has achieved its objective of integrating the gas and electricity businesses in a single company with extensive experience in the energy sector, capable of competing efficiently in markets subject to a process of increasing integration, globalisation and levels of competition.

It is the largest integrated gas and electricity company in Spain and Latin America, leading the natural gas sales market in the Iberian Peninsula, and it is the biggest distributor of natural gas in Latin America. With a fleet of 11 LNG tankers, it is a company of reference for LNG/NG in the Atlantic and Mediterranean basins.

Gas Natural Fenosa has a strong commitment to social and environmental issues throughout all aspects of its business. Gas Natural Fenosa's goal is to achieve sustainable growth in electricity and gas production, transport, distribution and marketing activities that focus on protecting the environment and quality of life. Gas Natural Fenosa's efforts in this regard have been rewarded in recent years with a number of prizes and the achievement of significant milestones. They received numerous awards and public acknowledgements in 2011 that highlight the company's actions in the fields of social responsibility, sustainability and environmental protection, in addition to its strict financial control.

For yet another year, Gas Natural Fenosa's sustainability strategy earned it a place on the Dow Jones Sustainability Index and DJSI Europe. Likewise, for the tenth year running, it was included in the FTSE4Good sustainability indices following a new half yearly assessment of this tool geared towards socially responsible investors.

Gas Natural Fenosa international Portfolio

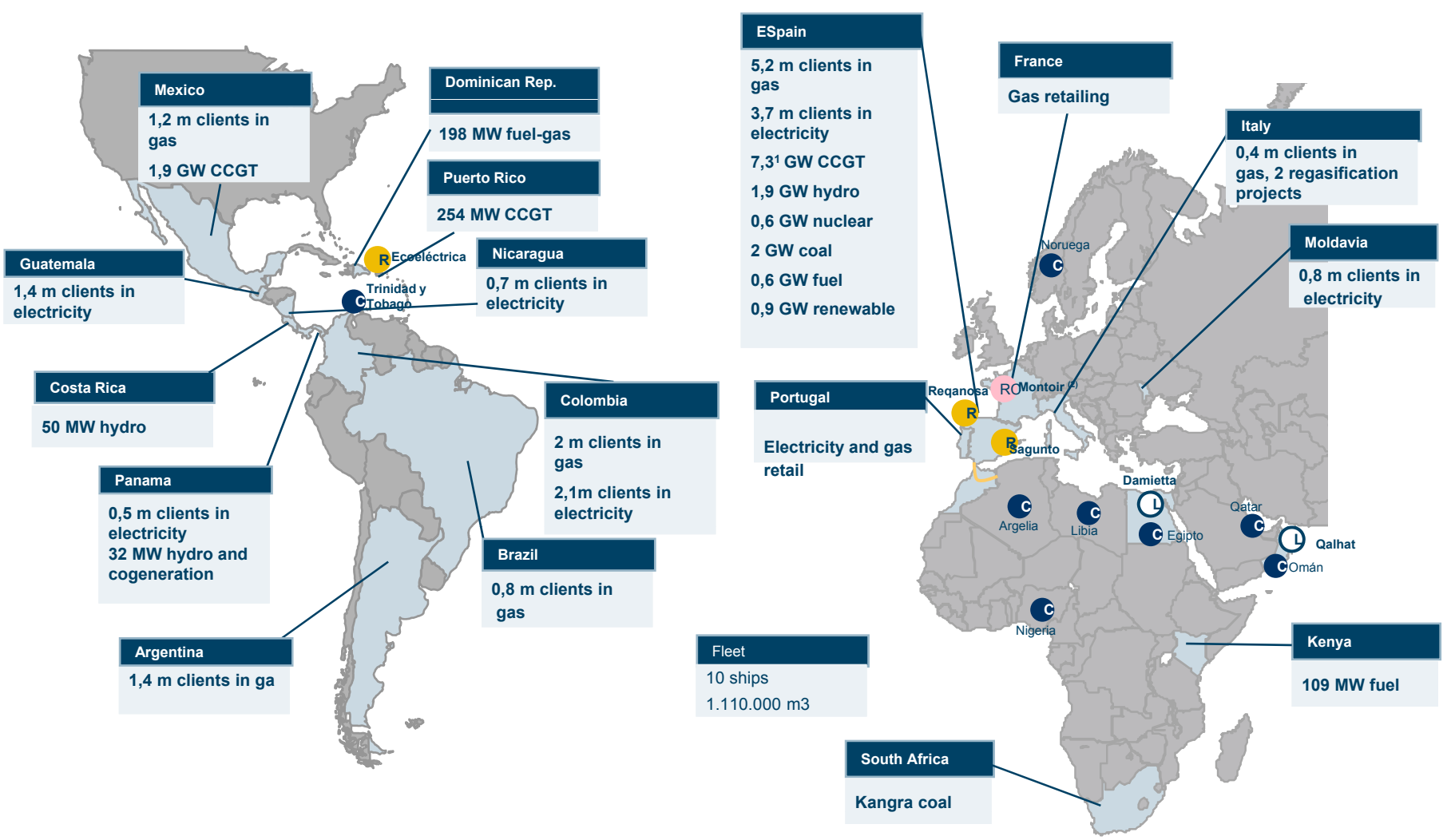

FIGURE 1 Union Fenosa International Projects

Source: UFWA

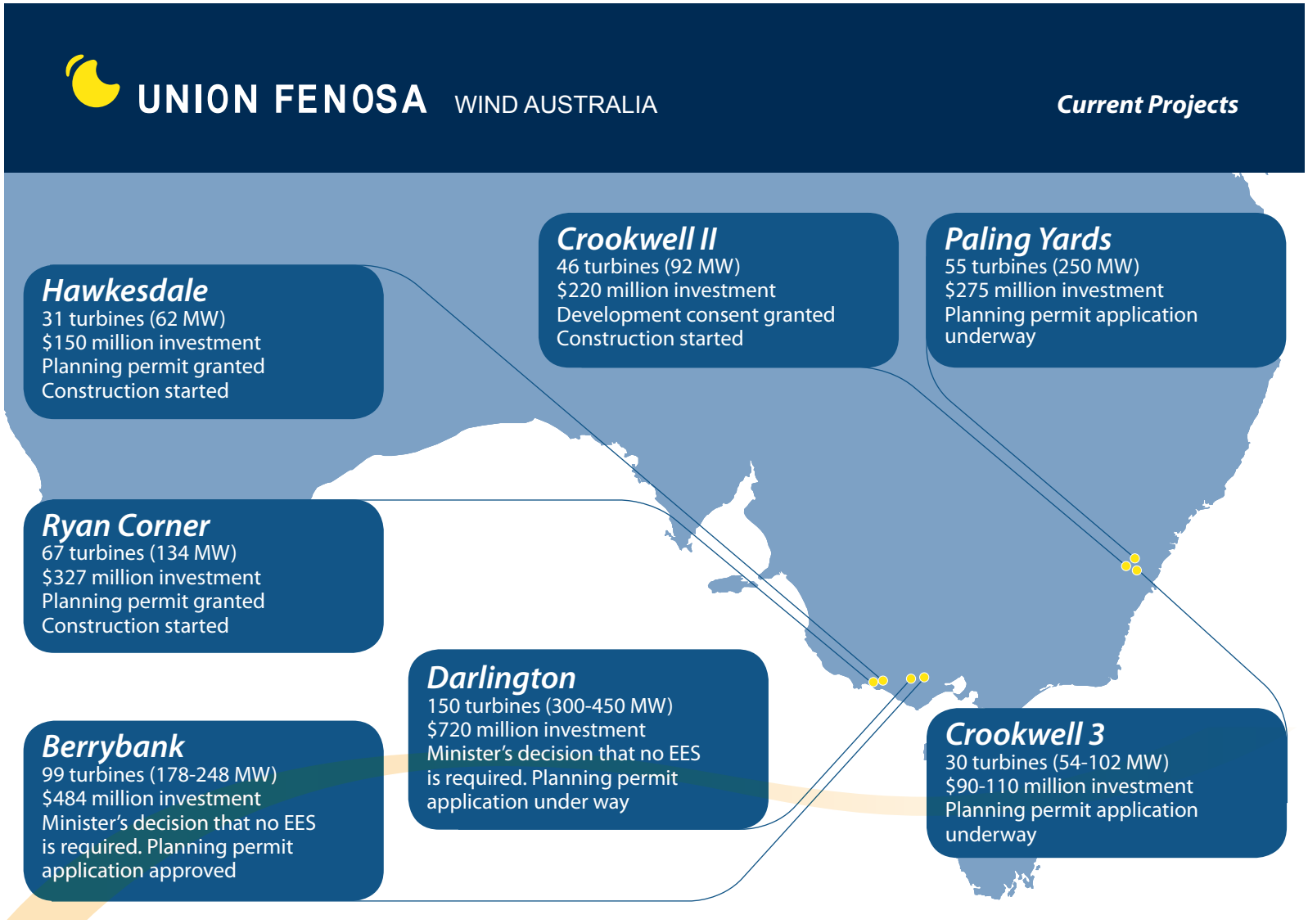

FIGURE 2 UFWA Projects

Source: UFWA

Gas Natural Fenosa is committed to the community in which it operates, where it generates value through its condition as an energy company and through community investment. Gas Natural Fenosa received the 2011 Platts Global Energy Award in New York for the most outstanding community development programme for its Cuartel V gasification project located in Buenos Aires, Argentina. The award winning initiative works to improve access to public services for the neediest groups and to contribute in this way to reducing poverty in local communities where the company operates.

The company has a Corporate Social Responsibility (CSR) policy that is implemented rigorously across all of its projects in all countries. The fundamental aim of this CSR is to share the benefits with the communities in which they operate to ensure that Gas Natural Fenosa forms an important component within the community. In previous projects, this has translated to direct investment in local projects to assist communities, such as sponsoring organic farmer markets (Columbia), bringing technology and computers to schools (Guatemala), and running educational programs for the unemployed (Spain).

CDPL is committed to the community investment program for its approved Crookwell 2 wind farm project that is in its early construction phase.

2.4 Structure of the report

This document is an Environmental Assessment (EA) presented on behalf of Crookwell Development Pty Ltd. It has been prepared by Tract Consultants with the assistance of specialist consultants. The aims of an EA are to;

- Describe and detail the subject site and context, the wind farm proposal and design response, and other wind farms in the vicinity of the site;
- Provide a strategic justification which details the site selection process, renewable energy benefits, wind power in the international, Australian and regional context, and the community and environmental benefits of the project.
- Provide an assessment of the project against all relevant Federal, State and Local policies and guidelines;
- Assess the likely economic, social, environmental and cumulative impacts of the project;
- Describe and provides recommendations on stakeholder and community consultation; and
- Identifies, assesses and outlines management or mitigation options for any environmental impacts arising out of the proposal.

This EA draws on the expert knowledge and investigations of a wide range of specialist assessments that are summarised within this EA, with the full reports attached as appendices. The project team comprises:

- Tract Consultants Pty Ltd – Environmental Planning and Approvals
- Anderson Environmental Consultants Pty Ltd – Flora and Fauna
- Aviation Projects Pty Ltd – Aviation Safety and Obstacle Night Lighting
- Garrad Hassan Pacific Pty Ltd – Electromagnetic Interference and Shadow Flicker
- Coffey Geotechnics Pty Ltd – Geotechnical
- Anderson Environmental Consultants Pty Ltd – Indigenous and Non-Indigenous Archaeological Heritage
- Futureye Pty Ltd – Socio-Economic
- Green Bean Design Pty Ltd – Landscape and Visual
- SLR Consulting Australia Pty Ltd – Noise
- URS Australia Pty Ltd – Traffic

- AECOM Australia Pty Ltd – Decommissioning

This EA is structured as follows;

- **The Site and Context** provides discussions of the major elements of the site and surrounds including;
  - Site Locality
  - Site Details
  - Wind Resource
  - Alternative sites
  - Land Use
  - Demographic Profile
  - Dwellings
  - Topography and Soils
  - Hydrology
  - Transport and Infrastructure
  - Vegetation
  - Landscape and Visual Features
  - Climate
- The **Design Response** details how aspects of the proposal relate to the site analysis.
- The **Proposal** describes of the proposed use, buildings and works, connections to the grid and native vegetation removal.
- The **Project Justification** provides justification for the site selection, outlines community benefits, discusses alternatives and demonstrates greenhouse gas savings.
- The **Planning Instruments** assessment provides an overview and assessment of the planning and environmental regulations and guidelines as relevant to the proposal.
- A **Specialist Assessment** of the following impact areas as they relate to the proposal, including;
  - Economic and Social Impacts
  - Visual amenity
  - Noise
  - Flora and Fauna
  - Aviation
  - Transport
  - Telecommunications
  - Shadow Flicker
  - Heritage
  - Geotechnical
- An outline of the **Consultation** strategies with the community and stakeholders of the project (to date and future).

- A **Statement of Commitments** for CDPL to carry out, subject to project approval, in order to manage any project impacts.
- A **Conclusion** which summarises and concludes this EA.

In particular, this EA has been guided by the criteria set out in the EARs, as well as the *Draft NSW Wind Farm Planning Guidelines*.

The EARs outline the matters which this EA must address to enable an assessment of the proposal under Part 3A of the EP&A Act. The EARs are set out in **Table 1** below together with cross references to the corresponding sections of this report that addresses each of the issues raised.

Refer to **Appendix 2** for a copy of the EARs provided by DoPI.

Table 1 – Environmental Assessment Requirements

General Requirements	Relevant Report Chapter	Relevant Figures
The Environmental Assessment (EA) must include: • An **executive summary**;	1	
• A **detailed description** of the project including: → construction, operation and decommissioning details; → the location and dimensions of all project components including the wind turbines (including map coordinates and AHD heights), electrical sub stations, underground cabling between turbines and underground connection linking Crookwell 3 East and South to Crookwell 2 wind farm substation, on site control room and equipment storage, temporary concrete batching plant(s), construction compounds and access roads; → 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 this existing environment; and resourcing requirements (including, but not limited to, water supply and gravel).	5 3 & 4	11-16 3-8
• Consideration of any **relevant statutory provisions** including the consistency of the project with the objects of the *Environmental Planning and Assessment Act 1979*;	7	
• 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 considering cumulative impacts, as applicable, from the surrounding Crookwell 1 Wind Farm (existing), other approved wind farms in the viewshed of the project, and the Crookwell 2 Wind Farm (approved), including associated key ancillary components;	8-22	31-56 Cumulative Impacts 57
• A draft **Statement of Commitments** detailing measures for environmental mitigation, management and monitoring for the project;	24	
• 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.	25	
Key Assessment Requirements	**Relevant Report Chapter**	**Relevant Figures**
• **Strategic Justification** - the EA must:	6	17-25

General Requirements	Relevant Report Chapter	Relevant Figures
→ 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; → 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; → 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, land of significant scenic or visual value, land of high agricultural value, mineral reserves 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 programs) 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. 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 (no less than 10 kilometres) and assess the visual impact of all project components on this landscape; → 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; → provide an assessment of the feasibility, → effectiveness and reliability of proposed mitigation measures and any residual impacts after these measures have been implemented.	9 Shadow Flicker & Blade Glint 13	31-38 Shadow Flicker & Blade Glint 45 & 46
• 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,	10	39-42

General Requirements	Relevant Report Chapter	Relevant Figures
construction, and traffic noise. The assessment must identify noise 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 etc) generated by noise sources, noise criteria, modelling assumptions and worst case and representative noise 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; → include an assessment of vibration impacts associated with the project; → 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); → 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).		

General Requirements	Relevant Report Chapter	Relevant Figures
• Flora and Fauna - the EA must: → include an assessment of all project components on flora and fauna and their habitat consistent with the *Draft Guidelines for Threatened Species Assessment* (DEC, 2005), including details on the existing site conditions and quantity and likelihood of disturbance; → The EA must specifically consider impacts to 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, 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; → 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.	14	47-49
• Indigenous Heritage – the EA must include an assessment of 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) consistent with *Guidelines for Aboriginal Cultural Impact Assessment and Community Consultation* (DEC, July 2005).	19	
• 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, bridges and intersections, including any proposed road upgrades and repairs; → 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.	16	13 & 14
• Hazard/Risks – the EA must include an assessment of the potential impacts on aviation safety considering nearby aerodromes and aircraft landing areas, defined air traffic routes, aircraft operating heights, radar interference, communication	Aviation 15 Geo-	Aviation 50 & 51 Geo-

General Requirements	Relevant Report Chapter	Relevant Figures
systems, and navigation aids. 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. The management of any land contamination must also be addressed. Potential hazards and risks associated with electric and magnetic fields and bushfires must be assessed. The EA must also detail measures to contain any hazardous substances to prevent the contamination of pasture and dams.	technical 20 Fire 18	technical 55 & 56
• Water Supply and Waterways – The EA must determine whether an adequate and secure water supply is available for the life of the project including the statutory (licensing) 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. The EA must also assess the potential for water pollution impacts, including the risks to the environment and human health.	21	
• 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.	8-22	31-57
• Consultation (As Part of the Supplementary EARs): ➢ 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; ➢ the Environmental Assessment must clearly document and provide details and evidence of the consultation process and who was consulted with; ➢ all issues raised during the consultation process must be clearly identified and tabulated in the Environmental Assessment; and ➢ 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.	23	