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Union Fenosa Wind Australia Pty Ltd
19 October 2012

Decommissioning and Rehabilitation Plan

Paling Yards Wind Farm

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Prepared for

Union Fenosa Wind Australia Pty Ltd

Prepared by

AECOM Australia Pty Ltd
17 Warabrook Boulevarde, Warabrook NSW 2304, PO Box 73, Hunter Region MC NSW 2310, Australia
T +61 2 4911 4900 F +61 2 4911 4999 www.aecom.com
ABN 20 093 846 925

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1.0 Introduction

1.1 General project description

The Paling Yards Wind Farm (the project) is a wind energy facility proposed to be constructed by Union Fenosa Wind Australia (UFWA) at Paling Yards (the site) in New South Wales (NSW), approximately 60km south of Oberon and 60km north of Goulburn, and about 140km west of Sydney. The project is located within the Oberon Council Local Government Area.

The site on which the project is to be located covers an overall area of approximately 3,900 hectares, and is bisected by the Abercrombie Road which links the towns of Oberon and Goulburn. The site is situated in a bushland setting, being bordered by the Abercrombie River National Park to the west and in the proximity of the Kanangra Boyd National Park to the east. The Abercrombie River runs along the southern boundary of the site.

The project includes the construction and operation of up to 59 wind turbines and related facilities, with 15 turbines to be located on the eastern side of the Abercrombie Road and the remaining 44 turbines on the western side. Related facilities will include concrete pads, access tracks, a control room and facilities building, an electrical substation and overland connection to the 500kV transmission line, and an underground cable network linking the turbines to each other to the proposed substation. Grid connection from the substation will be achieved via the existing Mount Piper to Bannaby 500kV transmission line which is located to the north-east of the site.

1.2 Background to this document

AECOM Australia Pty Ltd (AECOM) has been engaged by UFWA Pty Ltd to prepare a Decommissioning and Rehabilitation Plan (DRP) for the project. Under the Department of Planning and Infrastructure's (DP&I) *Draft NSW Planning Guidelines: Wind Farms* (2011), it is a requirement that the Environmental Assessment for the project includes a DRP.

The purpose of this DRP is to identify the methodology that UFWA will use to mitigate potential impacts resulting from the cessation of operation of the facility at the end of the project's useful economic life. This plan provides an outline of the stakeholder and landowner consultation, expected operational life, dismantling, land rehabilitation, funding arrangements, timeframe, responsibility and review of the plan associated with the decommissioning of the Paling Yards Wind Farm.

2.0 Consultation

2.1 Consultation undertaken to date

2.1.1 Consultation with landowners

The site on which the project is to be located includes two separate land holdings. Given the project site's location and surroundings (i.e. the site is almost entirely surrounded by vegetation), there is a significant buffer to neighbouring non-participating land owners.

Both landowners were initially contacted and consulted about the project and issues of decommissioning and rehabilitation discussed at the early stages of the project.

A lease agreement was later presented to each landowner, which reflects that the decommissioning of the wind farm is the sole responsibility of UFWA. Provisions in the lease agreement relating to decommissioning and rehabilitation are summarised in Appendix A. The entered lease agreements provide UFWA with leases of the site for an initial term of 30 years, and grant UFWA with the opportunity to extend the lease for a further 30 years.

Prior to each lease being executed with the landowners, this DRP was discussed and agreed with all landowners. During these discussions, UFWA affirmed their commitment to this plan. Initial feedback from the landowners was generally positive with no objections to the project. A summary of the landowners' responses follows:

- One landowner was satisfied with the document and had no additional input; and
- One landowner expressed concern about the land being returned to its 'pre-project' condition following the decommissioning of the project, and stressed that disturbed ground should be repatriated with pasture. This landowner had no objection to the underground facilities (i.e. cable network) to remain in situ provided that they are at least one metre below the surface, and to access tracks and buildings to remain on the site provided that further consultation is undertaken closer to the time of decommissioning. Finally, the landowner wanted to ensure this DRP addresses the issue of wind turbine decommissioning during the active operational phase of the project. These issues have been considered and addresses in this DRP.

2.1.2 Other Consultation

In 2011, UFWA undertook two door-knock campaigns in the vicinity of the wind farm. The purpose and objective of these door-knocks were to introduce and present the local community with the proposed Paling Yards Wind Farm and listen and address any potential concern they may have about the project. Overall, no major issues or concerns from the community arose during this consultation process regarding the decommissioning and rehabilitation of the wind farm.

UFWA also consulted with the Oberon Council from the early stage of the project. Two meetings were held with Council (one in 2011 and one in 2012) to discuss both the project and the new NSW draft Planning Guidelines for Wind Farms (DP&I, 2011). No issues or concerns were raised by Council in relation to the Project.

2.2 Consultation prior to decommissioning works

UFWA will undertake further consultation with stakeholders prior to and during the decommissioning process. Stakeholders to be consulted will include (but not necessarily limited to) the Oberon Council and landowners. Other relevant stakeholders will be identified and consulted as required, including regulatory authorities, industry neighbours[1], local community neighbours and community groups.

The consultation process will be open and transparent, and its objectives will be to (as a minimum):

- Provide the timing of the proposed decommissioning works;
- Present the nature of the proposed decommissioning works, including the turbines dismantling procedure and the proposed land rehabilitation works and objectives;
- Obtain stakeholders comments on the decommissioning works and address any concerns (including providing timely and responsive feedback and conflict resolution); and

[1] Includes though not limited to contractors who may be engaged in the decommissioning process, other wind farm proponents operating in the Oberon Council area and energy distribution and supply agencies.

- Seek ideas to maximise the net benefit to the community during the decommissioning process.

The consultation activities to be undertaken may include:

- Meetings with the Oberon Council;
- One-on-one consultation and discussion with individual landowners; and
- Information session or ‘Open House’ forum to introduce the decommissioning activities to the local community; and
- A newsletter mail-out to all residents within 5km of the project site providing information on the decommissioning activities.

3.0 Operational Life of the Wind Farm

As noted above, the lease agreements held by UFWA are for a period of 30 years, with an option for an additional 30 years. The operational life of the Palings Yards Wind Farm is therefore expected to be of at least 30 years.

Megawatt-scale wind turbine generators available on the market today have a design life expectancy of 20 to 25 years depending on site conditions. The tubular steel towers supporting the generators are of simple design and with basic routine maintenance could serve many years beyond the life expectancy of the generators.

During the design life period or as the turbine generators approach the end of their expected life, the nacelle components and the blades of the turbines may be replaced or renewed, or the turbine may be repowered to utilise newer and more efficient technology available at that time. This will economically drive the replacement of the existing generators and thus prolong the economic life of the project until at least the end of the lease agreement period.

Any continuation of the project may take the form of one of the following:

- Extended operation of the original turbines;
- Turbine replacement with the similar model that has newer and more efficient technology; or
- Turbine replacement with a different model that would be subject to the requisite approvals being obtained at that time.

During the operational life of the wind farm, UFWA will keep independently verified annual records of each wind turbine electricity generation production. These records will be made available to the DP&I on request.

Once the wind farm reaches the end of its useful economic life, the project would be decommissioned.

4.0 Dismantling Process Description

Unless the relevant electricity network operator or landowner requests that certain wind farm infrastructure be retained on land, it will be removed and the land restored to its previous condition or better. The following sections summarise how each component of the wind farm infrastructure will be dismantled and decommissioned.

4.1 Dismantling

4.1.1 Turbines and concrete foundations

The wind turbines will be dismantled in the reverse of the erection sequence. A large crane will be brought to the site and assembled, along with support cranes and equipment. The turbines will be dismantled using standard best management practices. The work sequence for dismantling and decommissioning a particular tower site will most likely proceed as follow:

- Assemble and stage crane on pad at turbine;
- Install erosion and sediment controls as required;
- Disconnect electrical connections;
- Remove rotor and set on ground;
- Remove nacelle and set on ground;
- Remove turbine tower sections and stage on ground;
- Haul off turbine components;
- Remove concrete foundation (to 1m below ground surface);
- Backfill foundation area;
- Rehabilitate foundation area; and
- Maintain the site in context of sediment control and weed management.

After removal the wind turbines will be either scrapped or transported to another site for reuse. Any component that can neither be reused nor salvaged will be recycled or disposed of.

If the turbines are resold for reuse, the rotor, nacelle and tower sections will be dismantled and transported from the site in a manner similar as was used to deliver the turbines to the site.

If the turbines are not sold for reuse, they will be disassembled into smaller components and sold for scrap to a scrap metal recycling company. This procedure will take place either at a central lay down area or on the concrete foundation below the turbine. Critical lift plans will be developed specifically for each major turbine component. The hub, blades and nacelle will be broken down and stripped of high value components. Cabling internal to the towers will be removed and scrapped to recover the high value copper conductor materials. Tower sections would be cut into transportable sections for delivery to the scrap metal recycling company.

The concrete used for the turbines foundation pads will be sent to a concrete recycling facility.

4.1.2 Other ancillary facilities

Unless agreed otherwise with the landowners during the consultation process, all ancillary facilities related to the wind farm and located on the landowners' property would be removed. Sheds and any portable buildings will be transported off site for sale, recycling or disposal.

A demolition contractor will remove decommissioning debris to a licensed disposal facility permitted to operate under the current and applicable regulations at the time decommissioning occur.

4.1.3 Electrical infrastructure

The electrical on-site substation and all the overland power line poles and conductors connecting the wind farm to the national electricity grid will be removed. As far as possible, all materials and components (e.g. steel, conductors, switches, transformers, etc.) will be reused, sold as scrap, recycled, or re-purposed to the maximum amount economically practical. Any other components will be hauled to approved disposal facilities. Any ground disturbed as a result of these activities will be rehabilitated.

It is anticipated that the removal of underground cables would not be cost-effective and would significantly disturb the landscape and the farming activities by creating large trenches. In order to minimise the environmental and agricultural impacts, the underground cable network would therefore not be removed as part of the project decommissioning. Rather, all cables will be terminated at the end of the runs (including watercourse crossing conduits), the ends will be capped with appropriate insulation and buried to a depth of approximately one metre below the ground surface, and left in place. No known hazards exist from the presence of capped unused/inert underground cables. Any land disturbed by these activities would be rehabilitated.

4.1.4 Access roads

Consultation with the host landowners will be conducted to determine whether access tracks and access roads will be decommissioned. If landowners consider the tracks to be useful to their farming activities (or others), they will be left in place and will remain part of the on farm infrastructure. Otherwise, access tracks and access roads will be removed and the areas rehabilitated.

4.2 Transportation

All of the turbines will be dismantled on site and broken into smaller pieces to allow for easier transportation. If the pieces cannot be transported off site immediately, they will be stored on site on a lay down area until they can be removed. A central lay down area (of up to 2ha) may therefore be created, including topsoil removal, levelling and compacting. Any ground disturbed by the creation of the lay down area would later be rehabilitated.

Off-site transport of pieces and components would be undertaken in accordance with a Traffic and Transport Management Plan. This may be the Traffic and Transport Management Plan used for construction which will be reviewed and updated to reflect the decommissioning traffic movements. The location of scrap metal merchants and other recycling and disposal facilities to be used will be determined closer to the time of decommissioning. Current local options[2] identified in the vicinity of the project area who may be likely candidates are:

- Southern District Metal Recyclers – 57 Wayo Street, Goulburn.
- Goulburn Sand & Soil – 282 Carrick Road, Goulburn.
- Woodland Bioreactor – 619 Collector Road, Tarago.

4.3 Waste minimisation strategy

4.3.1 Waste management

All waste management will be undertaken in accordance with the NSW EPA's *Guideline Assessment, Classification and Management of Liquid and Non-Liquid Wastes* (1999), or any other relevant guidelines at the time of decommissioning.

As an overarching principle, the waste minimisation hierarchy of avoid/reduce/reuse/recycle/dispose will be applied wherever possible to all decommissioning wastes. Any waste that is unable to be reused, reprocessed or recycled will be disposed of at a facility approved to receive that type of waste.

4.4 Recovery of wind turbines

As previously mentioned (refer to Section 4.1), wind turbines will be either reused or recycled. If they are sold for reuse, the turbines will be dismantled and delivered off-site. If they are recycled, the following will apply. The objective of the recovery strategy will be to maximise the salvage potential of each turbine and extract value through recycling and reusing its components.

4.4.1 Metallic components

The tower, nacelle and hub components of the turbines primarily consist of metals including steel, aluminium and copper (Ancona and McVeigh, 2001). The turbines will be disassembled on site and all metal components will be transported and sold to a local scrap metal recycling facility.

[2] Decommissioning costs presented in Section 6.0 and Appendix B were based on materials being transported to Canberra for recycling or disposal. These facilities are provided by way of local options.

4.4.2 Turbine blades

Unlike the rest of the turbine, the blades are constructed from composite materials including glass fibre, carbon fibre, polyester and epoxy (Ancona and McVeigh, 2001). In order to be recovered, these materials require a more complex recycling process due to their inherent heterogeneous nature (Yang et al, 2011). The aim of the recycling process of composite materials is to separate the polymer (resin) and fibre composites. Once separated, the resins are usually used for energy production while the fibre recyclates can be reused or recycled. There currently exist five main methods for recycling composite materials, including mechanical, thermal, oxidation, chemical and cement kiln route processes. These processes are presented in Table 1.

Table 1 Composite Materials Recycling Processes (Source: Job 2010; Cherrington et al 2011)

Process	Description
Mechanical	Blades materials are crushed to reduce the size of the pieces to 50 micrometres in size (Pickering, 2006). This process 'pounds' the resins out of the fibres. A grading process is then used to separate the finer (resin) and coarser (fibre) materials.
Thermal – Pyrolysis	Blades materials are heated to 450°C to 700°C without oxygen, which converts the resins into gas while the fibres remain inert. The energy generated (gas) can be used in electricity production. Fibres can be later recovered and reused or recycled.
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. The polymer breaks down and vaporises, releasing the fibres which are carried out into the gas stream. The fibres are separated out and the resin products are fully oxidised in a combustion chamber, where the heat energy can be recovered.
Chemical – Solvolysis	Alcohols (propanol for carbon fibre, methanol for glass fibre) in a supercritical state are used to dissolve the resin from the fibre composites. The polymeric resin is decomposed into oils which free the fibres for collection. This process allows the chemicals in the resin to be reclaimed.
Cement kiln route	Composite materials are fed into a cement kiln. Approximately two-thirds of the material is transferred into raw materials for cement and one third, the organic part (resin) is burnt, generating energy.

The optimal solution for the recycling of the turbines blades will be determined and selected closer to the decommissioning time. It is noted that the technology in wind turbine manufacture as well as in recycling processes evolves quickly. UFWA is committed to staying well-informed of new research and to embracing new technologies as they become available. In this light, if technology advances at the time of decommissioning allow for more efficient and cost-effective resource recovery, they will be given preference.

5.0 Land Rehabilitation

5.1 Rehabilitation objectives

The general objective of the rehabilitation activities is to return the site to pre-construction conditions and contours, which is currently dominated by improved pastures for the purpose of sheep and beef cattle grazing. Specific rehabilitation outcomes will be developed in consultation with the landowners.

The environmental assessment for the project estimates that approximately 1.6ha of native vegetation will be removed for the project. UFWA is committed to re-instating this vegetation as part of the rehabilitation activities, while all other land disturbed will be stabilised and re-seeded with native grasses consistent with the existing surrounding rural/agricultural landscape.

5.2 Areas to be rehabilitated

Any land disturbed during the construction, operation or decommissioning of the wind farm will be rehabilitated, unless agreed with the landowners. It is expected that the following areas will be restored and rehabilitated:

- The foundation area of each wind turbine (each pad is approx. 20m x 20m);
- The on-site central lay down area (approx. 2ha);
- The electrical substation area;
- The holes left in the ground following the removal of overhead power-line poles;
- Wind farm control room facilities and facilities building areas; and
- Access roads and access track, as agreed with landowners.

5.3 Rehabilitation process description

All excavated areas will be filled with clean compatible sub-grade material compacted to a density similar to the surrounding area and contoured to match the surrounding landform. Topsoil would then be replaced and compacted to match the density and consistency of the immediate surrounding area.

Unexcavated areas compacted by equipment used in the decommissioning process will be tilled in a manner adequate to restore the topsoil and sub-grade material to the density consistent with the surrounding area.

Areas to be returned to pasture will be seeded with a seed mix agreed upon with the landowners in order to maintain consistency with the surrounding agricultural uses and to mitigate colonisation of these areas by weed species. Typical species mix will promote species diversity and include legumes species.

Areas to be returned to trees and shrubs will be seeded with a native species mix promoting species diversity and containing fast germinating species. Where possible, the seeds will be sourced locally. The vegetation to be re-established will be aligned to an endemic ecosystem or local plant communities.

In order to promote plant establishment, all revegetation areas will be treated with fertiliser at the time of sowing.

In all areas rehabilitation will include, as reasonably required, levelling, terracing, mulching and other necessary steps to prevent soil erosion, to ensure establishment of desirable vegetation, and to control weeds and vertebrate pests.

At the completion of decommissioning UFWA will provide a one off payment (amount to be determined) to the host landowner for the coordination of the monitoring and maintenance program across their lands. This approach to monitoring allows for the project site to experience seasonal changes and for determining if additional restoration is required, including the management and control of weed species.

6.0 Funding Arrangements

Financial assurance for the decommissioning costs will be fully established for the entire useful economic life of the project. The decommissioning funding plan for the project is summarised below.

6.1 Decommissioning costs

The net cost to decommission the Paling Yards Wind Farm is equal to the cost to perform the decommissioning tasks described in Section 4.0, less the resale value of the turbines (either for reuse or for scrap). Costs estimates have been produced as part of this DRP for the dismantling, rehabilitation and resale of the wind turbines. They are provided in Appendix B.

Estimates were based on recent industry examples and using available information from a variety of credible industry sources, and are considered to be the current dollar value (at the time of approval) of salvage value and removal costs.

Several assumptions have been made and foreseeable risks identified during the cost estimation process (refer to Appendix B). It is noted that the level of confidence in these estimates are only as good as the reliability of the information on which they are based. There does not currently exist any real example of such estimations previously produced in Australia; as such an inherent level of uncertainty surrounds these estimates.

6.1.1 Decommissioning costs with turbine salvage

The estimated value of the turbines was based solely on its value as scrap steel, which by far represents the greatest value of all metal components of the turbines. Based on the current values for recycled steel, the net cost to decommission the wind farm was estimated to be of $-2,593 per wind turbine (i.e. no net cost to decommissioning the wind farm) (refer to Appendix B).

However, because it did not separate the scrap value of all constituent materials, this estimated is considered very conservative considering approximately 20-30 tonnes of the total weight of a turbine is copper, which would yield a higher value than steel. The salvage price of other individual components such as blades, gearbox, transformer, switchgear (etc.), was also excluded.

At the time of writing this plan, it is expected that the turbine salvage option will provide a higher long-term viability, and as such will be used to provide the decommissioning funds for the wind farm.

6.1.2 Decommissioning costs with turbine resale

The resale value of wind turbine is estimated to be about $50,000 per turbine (when dismantled by the buyer). The remaining costs associated with decommissioning and rehabilitating the site (i.e. removal of substation and buildings, land reinstatement, logistics, etc.) are estimated to be in the order of $13,797 per wind turbine (refer to Appendix B). The net cost of decommissioning the wind farm when reselling the turbines would therefore be $13,797 - $50,000 = -$36,203 per wind turbine, which is lower than the decommissioning costs when salvaging the turbines ($-2,593).

However, this option is considered highly uncertain and dependant on market conditions at the time of decommissioning, which are difficult to predict. Consequently, it is expected that the turbine salvage option is more reliable and will be used to provide the decommissioning funds. At the time of decommissioning, the turbine resale option may be regarded as a potential opportunity if the market conditions are suitable.

6.2 Ensuring decommissioning funds

Current discussions with turbines suppliers and experience in the USA and Europe and the local markets indicate that it is likely that the project will have a full ten years warranty. During this period the risk of the project requiring decommissioning is considered extremely low and the cost would be covered by the turbine supplier.

Forecast annual revenue for the project indicates that the expected ‘break-even’ point for the capital investments would occur at year 10 of the project’s operational life. Should the decommissioning of the project occur prior to ten years, all decommissioning costs will be covered by the warranty. Beyond the 10-year warranty period and the 10 year ‘break-even’ period, decommissioning funds will be ensured through the resale (for reuse) of the wind turbines to other providers. No bond is therefore required at this time.

6.3 Review

As part of each review of the DRP (to be undertaken 5-yearly, refer to Section 9.0), the funding plan will be reviewed by an independent, credible and reputable service provider to ensure the funds raised from the salvage of the turbines are still sufficient to cover the costs of decommissioning. This review will re-assess the dismantling/decommissioning costs and/or adjust the original costs for inflation. If a shortfall is identified at that time, the proponent (UFWA) will then establish a dedicated internal fund to supplement this shortfall and which will be used to cover the net costs for decommissioning. This internal fund will be permanently accessible.

7.0 Timing

UFWA commits to undertaking all decommissioning and rehabilitation works outlined in this plan within the 18 months after the end of Paling Yards Wind Farm's operational life.

During the operational life of the project, it is possible that individual turbines will cease operating for extended periods of time if they are malfunctioning and need to be repaired. Depending on the market availability of specific wind turbine parts, which regularly have to be sourced overseas, some turbines may be inactive for periods longer than twelve month before they can be repaired. Any turbine that cannot be repaired and is deemed permanently unworkable (due to environmental, social, economic or other unforseen issues) will be decommissioned and dismantled, and the site rehabilitated within 18 months.

8.0 Responsibility

UFWA (or any future owner) will be fully responsible for the decommissioning of the project. This is supported by the provisions in the lease agreements which will be executed between UFWA and the landowners prior to the construction commencement (refer to Appendix A).

9.0 Review of this Plan

This DRP will be reviewed, and revised as required, every 5 years for the duration of the project. During each review, the effectiveness of the plan will be re-assessed against its objectives, and cost estimates and funding arrangements will also be independently reviewed.

Examples of why the plan may need to be revised include:

- A modification to the condition of the Approval;
- Deficiencies being identified;
- Changing environmental requirements;
- Change in legislation; and
- Improvements in knowledge or technology become available.

Any major changes to this plan will be undertaken in consultation with the appropriate regulatory authorities and stakeholders.

This DRP, as well as all subsequent reviews, will be made public and placed on UFWA website. UFWA will also provide a copy of the revised DRPs to the relevant consent authority at the time.

10.0 References

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Appendix A

Decommissioning Provisions within the Lease Agreements

The Lease Agreements with the landowners each contain the following provisions:

Clause 5.3 Lessee must observe Law and Rules:

The Lessee must comply with the law, any Authorisation and any notice from any authority that requires the Lessee to do or not do anything concerning the Premises, the Lessee's use of the Premises, or this lease (for example, laws relating to occupational health and safety and environmental matters)

Clause 10.4 Consequences of termination or expiry:

(a) If the Lessee serves a notice of termination under clause 10.1(a) as a consequence of a default arising under clause 9.1(a) or 9.1(b), the Lessee may, at the same time, serve notice on the Lessor electing to remove all or part of the Improvements from the Premises provided that the Lessee must repair any damage caused by that removal.

(b) If:

(1) the Lessee serves a notice of termination under clause 10.2 or under clause 10.1(a) as a consequence of a default arising under 9.1(c)

(2) the Lessor serves a termination notice under clause 10.1(a); or

(3) this lease expires through the effluxion of time,

then the Lessee must promptly remove all of the Improvements from the Premises and reinstate the Premises to the standard referred to in clause 10.5, and extinguish any easements on the Land.

(c) Without prejudice to any obligations under clause 10.4(a) or 10.4(b), once this lease has been terminated the Lessee is absolutely discharged from its future obligations under this lease, provided that, if the Lessee has an obligation under clause 10.4(b) to remove all Improvements from the Land and repair any damage caused by that removal, or the Lessee elects to remove Improvements from the Land under clause 10.4(a), then the Lessee must continue to pay Rent until the relevant Improvements have been removed and the Land has been repaired.

Clause 10.5 Handing back Premises:

In addition to any obligations the Lessee may have under clause 10.4, within 6 months of the end of this lease, the Lessee must give back the Premises to the Lessor in a condition consistent with the Lessee's obligations under this lease, to the reasonable satisfaction of the Lessor, except for fair wear and tear.

Crookwell Development Pty Ltd
Suite 403, 68 York St
Sydney NSW 2000
Ph: +61 2 8297 8700

Due to the large amount of infrastructure in one of the properties, the Lease Agreement of this landowner has the following additional clauses:

Clause 13.1 Decommissioning Security Establishment

(a) A bank guarantee, bond, deposit or similar from an Australian trading bank or insurance company approved by the Lessor (which consent will not be unreasonably withheld) (Decommissioning Security) be established at:-

(i) Five years prior to expiry of the initial 30 year Lease Term,

(iii) Five years prior to expiry of subsequent Lease Terms following renewal of the Lease, or

(iiii) In the event where the Lessee are in default of it's obligations pursuant to this Lease for non-payment of rent and the Lessors are entitled to terminate this Lease in accordance with clause 10 hereof.

(b) The Lessors and Lessee may agree that the establishment of the Decommissioning Security is not required if all monies payable pursuant to this Lease have on termination been paid by the Lessee to the Lessors in full and the Lessee have observed all of their obligations on their part provided herein.

Clause 13.2 Decommissioning Security removal

(a) The Decommissioning Security shall be released when:

(1) The Lessee renews the Lease for a further term accordance with clause 11, or

(2) In the case of a default event, when the default is remedied and this Lease continues to operate, or

(3) In the case of termination of expiry of this Lease, when the site is reinstated in accordance with clause 10.5 to the reasonable satisfaction of the Lessors.

Clause 13.3 Value of Decommission Security

The value of the Decommissioning Security shall be agreed between the Lessors and the Lessee at the time of its establishment and will take into account the cost of decommissioning less any returns from resale of equipment, components or scrap but if not agreed, will be $50,000 per turbine as increased by the increase of the Consumer Price Index (from the Commencing Date hereof to the date of delivery of the security by the Lessee)

Crookwell Development Pty Ltd
Suite 403, 68 York St
Sydney NSW 2000
Ph: +61 2 8297 8700

Appendix B

Decommissioning Cost Estimates

Wind Turbine De-commissioning Costs - Dismantling and Scrapping

TURBINE DISSASEMBLY					Notes
Turbines dismantled per week		3.5			
Number of Turbines		59			
Weekly labour rate		4800			Based on a $80 hourly rate
Steel in tower (t)		316			
Steel in nacelle & hub (t)		140			
Total steel per WTG		456			
Resource	**man.weeks**	**Weekly $**	**Total for Farm**	**$/WTG**	**Notes**
Main Crane		$70,000	$1,180,000	$20,000	
Tower Crane		$35,000	$590,000	$10,000	
Other gear eg Tailing/loading crane		$20,000	$337,143	$5,714	
Telehandler		$5,000	$84,286	$1,429	
Trucks		$5,000	$84,286	$1,429	
5 man crew main crane	5	$24,000	$404,571	$6,857	
5 man crew small cranes	5	$24,000	$404,571	$6,857	
4 man Internal de-commissioning crew	4	$19,200	$323,657	$5,486	
Management, Clean Up, Misc, - 4 men	4	$19,200	$323,657	$5,486	
Mob/De-Mob			$150,000	$2,542	
Site Amentities			$30,000	$508	Can make use of existing O&M facility so cost reduced
Total			**$3,912,171.43**	**$66,308**	

ON-SITE DEMOLITION OF COMPONENTS					
Resource	**man.weeks**	**Weekly $**	**Total for Farm**	**$/WTG**	**Notes**
Remove tower internals and cable	2.5	$12,000	$202,286	$3,429	
Dissasemble Nacelle	2	$9,600	$161,829	$2,743	
Chop up and squash tower sections	2.5	$12,000	$202,286	$3,429	
					Such as cutting and squashing equipment for towers and
Rent Demolition equipment		$10,000	$168,571	$2,857	blades
Rent small crane		$8,000	$134,857	$2,286	
Disconnect & remove kiosks (including freight)			$118,000	$2,000	
Disconnect 690V cable from cabinet & remove cable			$59,000	$1,000	
Total			**$1,046,829**	**$17,743**	

REMOVAL OF MAINTENANCE FACILITY & SUBSTATION	Total for Farm	$/WTG	Notes
Disconnect Services, remove buildings and tanks etc	**$100,000**	**$1,695**	

LAND REINSTATEMENT	Total for Farm	$/WTG	Notes
grading, re-seeding, etc	**$65,000**	**$1,101.69**	

LOGISTICS		Trips per WTG	$/trip	$/WTG	Notes
20t Truck Load		**33**	**$2,200**	**$72,160**	estimated 10 trucks for blades and misc per WTG on top of steel.

WIND TURBINE TRANSFORMER VALUE	$/WTG	Notes
690/33kV transformer residual value (on-site)	**-$2,000**	Very low becasue these units are not traded in Aus, only refurbished by utilities

GROSS DECOMMISIONING COSTS (before scrap)			Wind Farm	$/WTG	
			$9,263,440	**$157,007**	

SCRAP METAL VALUE		tower & hub weight (t	$ / tonne	$/WTG	Notes
		456	-$350	**-$159,600**	

NET DECOMMISIONING COSTS (including scrap)			Wind Farm	$/WTG	
			-$152,960	**-$2,593**	

Notes & Assumptions

Rotors are dismantled by the small crane prior to arrival of the base tower crew
For simplicity it is assumed that dismantling crews work at the rate of 3 WTGs per week
Towers are in 5 sections
Labour rates include vehicles, LAFHA, etc
Labour is assumed to be 10 hours per day at $70/h, 6 days per week
The site is 175 km from Canberra
Other assumptions are embedded in the above tables such as tower weight etc
Potential scrap value of cabling and other equipment not considered
The value of scrap metal has a very large impact and is very variable
The method of dismantling is assumed to be the reverse of installation, however other methods such as blasting may be significantly cheaper.
Decommissioning and removal of any transmission lines are not considered

Wind Turbine De-commissioning Costs - WTG Re-sale

Total Turbines 59

SALE OF TURBINES (BUYER TO DISMANTLE)	Total for Farm	$/WTG	Notes
Based on research of advertised used turbines	-$2,950,000	-$50,000	This broad estimate is to be treated with great caution, the value is extremely difficult to predict and may easily be zero as the costs of dismantling, logistics and installation could easily be $500k per turbine. The scrap value should be used as a preferred option with re-sale as a potential up side only.

REMOVAL OF MAINTENANCE FACILITY &	Total for Farm	$/WTG	Notes
Disconnect Services, remove buildings and tanks etc	$100,000	$1,695	

LAND REINSTATEMENT	Total for Farm	$/WTG	Notes
grading, re-seeding, etc	$65,000	$1,102	

LOGISTICS	Trips per WTG	$/trip	$/WTG	Notes
20t Truck Load	5	$2,200	$11,000	Less trips than dismantling as turbines are not scrapped, but instead are being removed by buyer. An estimated 5 trips remain for miscelaneous items or unwanted components

TOTAL DECOMMISIONING COSTS		Wind Farm	$/WTG	
		-$2,136,000	-$36,203	

Turbine Value Data Analysis:

Wind Turbine Re-Sale Value Data

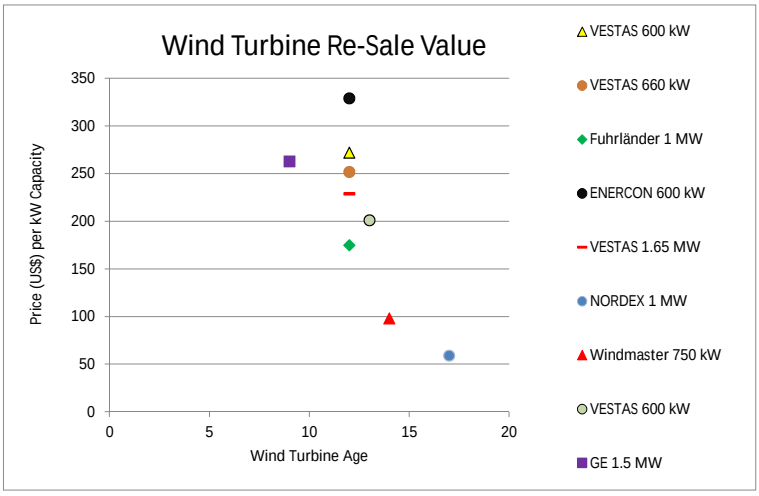
Manufacturer	Size (kW)	Age	Price (E) per kW	Price (US$) per kW
VESTAS 600 kW	600	12	242	272
VESTAS 660 kW	660	12	223	252
Fuhrländer 1 MW	1000	12	155	175
ENERCON 600 kW	600	12	292	329
VESTAS 1.65 MW	1650	12	203	229
NORDEX 1 MW	1000	17	52	59
Windmaster 750 kW	750	14	87	98
VESTAS 600 kW	600	13	178	201
GE 1.5 MW	1500	9	233	263

Average	**12.6**	**209**	
Linear Equatio	**12**	**226**	at 12 years - Re-sale is approximately US$226 per kW
	15	**132**	at 15 years - Re-sale is approximately US$132 per kW
	20	**-26**	at 20 years - Re-sale is approximately -US$26 per kW (negative)

Source:

http://www.repoweringsolutions.com/english/download_list_wind_turbine/list_wind_turbines.pdf

http://www.mywindpowersystem.com/2009/09/20/used-wind-turbines-for-sale-used-wind-generators-for-sale-vestas-enercon-suzlon-ge-energy-micon-nordex-tacke-siemens-windmax/



Notes

There are some points which lead us to the conclusion that the value of the turbines at 20 years of life will be significantly less than suggested in the above $/kW data:

1. The trade of used turbines in Australia will be more difficult that in Europe or the US where they are closer to markets likely to buy used units.
2. The Turbines at this wind farm will be older (20+ years) than the average of the above
3. At the time that these turbines are decommissioned, there will also be many others being decommissioned at the same time, flooding the market.
4. As turbines go past their design life, the costs of installing them on a new site including transport, balance of plant etc can reduce the value to below zero and they may become a liability only.