CERES PROJECT
Clean Energy from Yorke Peninsula

**CERES PROJECT RESPONSES TO ISSUES RAISED BY DAC POST THE ADROSSAN PUBLIC HEARING OF 14TH OCTOBER 2013**

Below are the key responses prepared by the CERES project to questions raised by the Development Assessment Commission after the Public Hearing conducted at Adrossan on the 14th October 2013.

# 1 Siting of Turbines

## 1.1 Aerial Spraying

Primary production and wind farms can happily co-exist, as anticipated in the Primary Production Zone provisions of the DC Yorke Peninsula Development Plan (see Objective 2, Objective 5 and the Desired Character statement of the Primary Production Zone). This ease of co-existence is supported both from a planning perspective and a factual operational perspective. The total footprint of the wind farm on cropping land is a total of 141 hectares, or less than 1% of the total 14,600 hectares of land hosting the wind farm.

(Refer Appendix 1B – list of references confirming the co-existence and minimal impact on traditional farming activities).

As explained above, the need to allow continued aerial spraying on primary production land, both within and outside the wind farm, has been a key element of the design of the proposed development (refer Background section). The significant commitment to underground electricity transmission is a key demonstration of that design.

The binding agreement with Aerotech Australasia (which provides that Aerotech will contact Ceres prior to aerial spraying and Ceres will have adjacent turbines stopped and turned during the spraying), “avoids” impact on any aerial spraying activities on adjoining properties. (Refer Appendix 1C – Aerial Spraying Q and As). Importantly, the operating procedures under that agreement do not require any change to adjoining landowners’ practice. The relationship between those adjoining landowners and Aerotech continues unchanged. When the landowners wish to book an aerial application, they can contact and engage with Aerotech as currently and Aerotech will provide the spraying service as currently. There will be no required interaction between the landowners and the wind farm operator, or additional steps that must be taken by the landowners. The operating procedures will be given effect through the interaction between Aerotech and the wind farm operator. As described in the actual document, the purpose of the “Transition & Interface Agreement” is to facilitate the continual ability of neighbouring landowners to the CERES Project to carry-on fixed wing agricultural spraying without change to service, quality and cost.

Suggestions by opponents of the project that the Aerotech agreement is unworkable are misleading for the following reasons:

- Aerotech are the experts in providing the aerial spraying services and after making its own assessments including consideration of its OH&S and insurance requirements, Aerotech entered into the agreement and considers it workable and capable of “avoiding” any impact on aerial spraying by adjoining landowners.
- Modern turbines (including the REpower turbines proposed for the CERES Project) are capable of being turned off, realigned in parallel to flight paths and locked in place in a period of less than 15 minutes and hence the wind farm operator can respond quickly to requests by the aerial spraying service provider.

- References to the USA experience in Illinois made by the Heartland Farmers Association (HFA) in its submission of 24 October are not relevant to the CERES Project because they relate to much older turbine technology. For example, the now ten year old Starfish Hill wind farm turbines would be incapable of meeting the needs of the Aerotech agreement.
- The Aerotech agreement provides for novation and assignment to ensure continuity of service and we have proposed to DAC the inclusion of a condition to the development approval that requires the same operating agreement be offered to any other provider of fixed wing aerial agricultural spraying services. (Refer Appendix 1E– SRD extract on Aerial Spraying )
- Ambidji our aerial consultants has discussed the nature of the agreement between the wind farm operator and Aerotech (to shut down turbines in the vicinity of the external application zone) with a number of agricultural pilots based in western Victoria and southern NSW. The informal feedback to date is that this arrangement is a welcome step forward and will provide lower risk and increased application efficiencies for the aerial agricultural operators undertaking applications adjacent to wind farms.

The DAC has queried what would happen if the Aerotech agreement becomes no longer operable (e.g. Aerotech ceases services and no new aerial spraying provider wants to enter into such an agreement). Given the expert views of Aerotech this is considered a highly unlikely occurrence.

Notwithstanding our view, even if such an unlikely occurrence were to eventuate, it is important to note that the Ambidji report confirms that the layout of the wind farm impacts, based on a worst case scenario, the ability to use fixed wing aircraft to spray on only 3% of adjoining land, and does not affect use of helicopters to spray on any adjacent land. Consequently, the design "minimises" impact on any aerial spraying activities which may occur on adjoining properties. The planning provision states that developments should "avoid or minimize" impacts and the major contributor to minimizing any impact from this development is the commitment to no overhead power lines. In addition, we are also making arrangements for the long term availability of a helicopter spraying service for landowners within the wind farm area, which could also provide services to adjacent landowners. The helicopter service provider (County Helicopters) currently provides spraying services to landowners within and adjacent to wind farms interstate, and has made a submission to DAC regarding the availability of services.

On that basis, we submit that the proposed development "avoids" aerial spraying impacts on adjoining properties.

In order to provide additional context for the DAC, we have examined the consequences of relocating some of the proposed turbines further away from the boundaries with adjoining properties. We note the following:

- The proposed turbine layout is such that all the turbines are set back at least 60 metres from the boundaries of host properties, ensuring there is no overhang of the 57 metre blades.
- The relocation of the turbines up to 100 metres from the adjoining landowner boundaries (i.e. up to 40 metres further away from the boundary) would result in a layout that;
    - Marginally increases the direct impact on cropping land within the wind farm by 1.8 hectares; and
    - Increases the clearance for fixed winged aircraft used for aerial spraying by a further 40 metres – or around at least two additional wingspans

In summary we consider that the wind farm as designed to be optimal in terms of balancing all environmental, planning and stakeholder matters and that turbines being relocated to be greater than 100 metres from the external boundary of the wind farm represents a suboptimal outcome in both planning compliance and economics.

***The proposed wind farm "avoids" impact on any aerial spraying activities on adjoining properties or, at worst, "minimises" impact on any aerial spraying activities on adjoining properties. Either way, the wind farm as designed (based on the existing layout) satisfies the planning requirements in an optimal manner.***

***Notwithstanding, our clear view that the wind farm proposal, inclusive of the Aerotech agreement, "avoids" impact on adjoining landowner aerial spraying activities, in order to ameliorate adjoining landowners, we are willing to accept as a condition of the project development approval that states;***

***"Turbine positions are to be micro-sited such that no turbine tower position is located closer than 100 metres from neighbouring landowner title boundaries"***

## 1.2 Blade Throw

The probability of 'blade throw' from a turbine is extremely small. We recognise the importance of structural integrity in the design and fabrication of project components and we have already made a commitment that turbines proposed for the Project must use blades that have been subjected to fatigue testing and comply with IEC61400-23, or an equivalent standard such as 2-dimensional blade testing as audited by a third party.

Incidents of blade throw are most often linked with blade failure resulting from lightning strike. Damage, fatigue and fire resulting from lightning strike have historically been associated with events of blade failure which have resulted in blade throw.

These very rare events however are primarily associated with older generations of turbines. New technology turbines, such as the REpower turbines proposed to be used, are equipped with lightning receptors in the blade tips which are designed to attract lightning and channel any strikes through the turbine and tower to discharge safely to earth.

A number of statements have been made by representors in relation to blade throw as a potential safety risk and in particular in relation to proximity to public roads. Accordingly, it is important to note:

- The likelihood of blade throw from modern turbines using the latest technology is almost negligible. A recent research report published by Heath and Safety Executive (UK) assessing wind turbine risks has estimated blade throw fatality likelihood to be around one in a hundred million and five times less likely than being struck by lightning. (Refer Appendix 1 F and DAC Consolidated Response Document – Section 19)
- There have been no known instances of injury to persons from blade throw from any operating wind farm over the past twenty years.

Further detailed information is provided in Section 19 of the DAC Hearing Consolidated Response Document. That section deals with blade throw, shadow flicker and refers to both the original DA and SRD and addresses in detail the new assertions made in respect of such issues and reconfirms the incidence of blade throw is extremely low, even with older technology turbines.

***Accordingly, there is an extremely low probability that blade throw will occur during the life of the wind farm and even if this did occur the risk of a public safety incident is almost negligible given the sparsely populated area that characterizes the wind farm site.***

***Impacts to the viability of the wind farm (as discussed above) would significantly outweigh any benefits from relocation of the turbines and as such relocation would be a disproportionate response to any perceived risk. It is our submission that the current wind farm layout provides persons on adjoining public and private land with reasonable protection from harm as a result of turbine failure or blade throw.***

### 1.3 Turbulence

Sections 1.12 and 16.9 of the DAC Hearing Consolidated Response Document address the matters of turbulence and bio-security and conclude they do not justify any movement of turbine locations included in the proposed layout.

The notion that the wind turbines will generate turbulence that will affect spraying activities on adjacent land is fundamentally incorrect for the following reasons:

- The wind turbines do not create downstream turbulence at ground level
- The tips of the wind turbine blades are 36 metres above the ground at their lowest point and hence have no interaction with ground based spraying within or outside the wind farm
- When aerial spraying is being undertaken on adjacent land the Aerotech agreement will apply (such that nearby turbines will be still).

The reference made by a representor to Biosecurity SA best practice in this context is irrelevant. The Biosecurity SA requirements relate to record keeping and training in herbicide application.

In summary the newly-raised concern about impacts of turbulence on ground-based spraying and the reference to Biosecurity SA requirements for record keeping and training are not justified. The operation of the wind turbines will not affect ground-based spraying either within or adjacent to the wind farm.

### 1.4 Turbine siting Conclusions

The proposed turbine design and layout is the optimal outcome that meets various and competing planning and environmental constraints and there is no significant rationale to adjust the turbine siting because:

1. The existing layout in combination with operational procedures reflected in the Aerotech agreement “avoids” impact on adjacent land aerial spraying activities
2. Even without the Aerotech agreement the existing layout “minimizes” the impact on adjacent land aerial spraying activities
3. By demonstrating 1 and 2 the layout complies with planning requirements.
4. The likelihood of blade throw is almost negligible and does not constitute sufficient rationale for modifying the turbine layout.
5. The concerns raised in respect of turbulence and Biosecurity compliance are not justified.
6. Notwithstanding the above, in order to ameliorate adjoining landowners, we are willing to accept a condition of approval that states “Turbine positions are to be micro-sited such that no turbine tower position is located closer than 100 metres from neighbouring landowner title boundaries”

## 2 Fire Management

Despite the assertions of a number of representors at the DAC Hearing, it is not correct that the existence of the wind farm will prevent aerial water bombing being used to fight fires on the Yorke Peninsula.

The correct position is as follows:

***“The Country Fire Service (CFS) has consistently stated that wind farms do not pose any special risks compared with other large structures (e.g. transmission lines, communication towers etc…) when it comes to battling fires and if required, aerial water bombing may be***

***undertaken subject to availability of aircraft, local conditions and proximity of aerial obstructions. "***

This position has also been reconfirmed in the Fire Risk Assessment conducted by Parsons Brinckerhoff (included in the original development application) which outlines a set of recommendations (which have been adopted) to ensure a low fire risk profile.

Those recommendations cover:

safety in design, firebreaks, maintenance and inspections, awareness/training/consultation and emergency response (not limited to the CFS). On this last point the CERES project will have suitable equipment, processes and trained personnel (at least 50 persons) during both construction and for the 25 year life of the wind farm.

The CERES SRD includes as an appendix of the CFS fact sheet – Understanding Aerial Firefighting which states, inter alia, ***"The popular perception amongst much of the community is that aircraft alone can put out bushfires. This is not true. CFS firefighters and fire appliances for the vast majority of instances are the primary and only method of controlling bushfires"***.

It is important to note that modern turbines provide a safe way to direct lightning to ground (through the blades) that reduces the incidence of lightning strikes to vegetation. Consequently, construction of the wind farm is likely to reduce the incidence of fires caused by lightning in the vicinity of the wind farm.

Further, construction of the wind farm will result in increased and better fire fighting access by way of new and improve access and service roads, increased and regularly maintained fire breaks, and additional trained personnel in the area who will be capable of responding to a fire.

The fire risk associated with wind farms is considered minimal provided the wind farm is properly constructed and managed. The Proponent will develop an Operational Management Plan for the wind farm that manages the potential risk of fire, including appropriate fire breaks, monitoring of turbine temperature, employee training and inductions, emergency response procedures and maintenance activities developed to minimise risks.

It is also important to note that it is critical for the wind farm operator to protect the wind farm infrastructure from fire. Ensuring that the wind farm and the vicinity of the wind farm are protected from fire has been a fundamental principle in the wind farm design.

Once fully developed, the wind farm will provide fire fighting resources in the form of:

- Four 70,000 litres water tanks at the operations compound located near the 4 cable junction sheds with quick coupling connections suitable for CFS access
- access tracks to all turbine locations which will be maintained for use by fire fighting vehicles
- dedicated fire fighting equipment and radio communications on all maintenance vehicles servicing the wind farm
- up to 50 wind farm maintenance staff trained in fire fighting techniques

DAC has requested a fire management plan that addresses dealing/managing fire within and adjacent to the wind farm. This is provided as Appendix 2.

***We have provided a comprehensive plan for risk fire management and as originally foreshadowed in our DA a detailed Emergency Management Plan will be developed in consultation with CFS. We believe this sufficiently addresses the planning requirements.***

***Separate to the fire management plan, as a demonstration of good corporate citizenship, we have committed to a $50,000 per annum fire fighting fund. It is proposed that the fund will***

***provide access to monies in the form of grants to both the local Yorke Peninsula CFS and the farming community to purchase fire-fighting equipment. The fund will be available for the 25 year life of the wind farm project.***

# 3 Decommissioning and Rehabilitation

DAC has queried how the decommissioning and rehabilitation of the wind farm site can be guaranteed to be undertaken.

The issue of decommissioning and rehabilitation is discussed in the CERES Development Application and Submissions Response Document. Refer Appendix 3 for summary of the position.

The wind farm owner is responsible for decommissioning and rehabilitation of the wind farm site. Decommissioning and rehabilitation requirements are embodied in a binding legal agreement between the wind farm owner and each host landowner as detailed in Appendix 3.

Contractual requirements of this nature are industry best practice and ensure the safe and expeditious removal of equipment and the reinstatement of land to its original use.

In the unlikely event that the wind farm owner defaults on the agreement, the ownership of the equipment vests in the landowner(s), thus allowing the landowner(s) to control the process of the equipment removal.

Appendix 3 outlines the residual scrap value of the wind farm towers, nacelles and blades and the cost of removal and transport and shows that there is a significant net profit to be derived from the equipment removal process. This is estimated at $685,000 for every 10 turbines or around $13.3 million for the whole wind farm. It is therefore in the wind farm owner's interests to undertake the decommissioning and rehabilitation itself. If the wind farm owner is not able to do so, the landowner(s) are entitled to undertake the works and retain the profits.

Consequently, it is not considered necessary or reasonable to establish further guarantee mechanisms such as a fund holding monies in escrow.

In relation to the HVDC convertor station and underground cables, as indicated in Appendix 3, the de-commissioning of the equipment is dependent on the long term role that the equipment may play in the SA transmission network. The 40 year plus life of the equipment means that it will have large residual value hence will be attractive to retain for inclusion in the SA transmission network. If the HVDC asset is decommissioned then the cables would remain undersea and underground but de-energised, as is normal practice. The convertor stations would be removed or partly modified for an alternate use in consultation with the relevant system operator (such as ElectraNet).

***The above demonstrates that there is an excellent contingency strategy available to landowners to ensure proper decommissioning and rehabilitation occurs even in the unlikely event of default by the wind farm owner.***

# 4 Construction timeframe

The matter of construction timeframe has been misunderstood. The actual construction timeframe is estimated at two and half years (refer SRD page3 – section 1.2.2.1). This has not changed from the original submission.

The reference to longer periods relates to default statutory deadlines for lapse of approval and is seeking, from the date of development approval being granted for;

- 18 months for substantial commencement; and;
- 5 years for substantial completion.

It has always been, and continues to be our intention to have a continuous construction period that is conducted over a period of two and half years.

The approval for the periods for substantial commencement and substantial completion being sought are to allow sufficient flexibility needed for such a large project which may be impacted with matters outside our control (e.g. availability and delivery of equipment).

***The approval periods being sought are considered reasonable for a large infrastructure project.***

# 5 Health impacts relating to noise

The matters raised with noise and health issues (including newly raised issues) are addressed in detail in Section 17 of the DAC Hearing Consolidated Response Document.

The suggestion that there is a connection between low frequency noise and/or infrasound from wind farms and health impacts has been raised only in recent years with such assertions appearing in 2009 and associated with opposition to the Waubra wind farm.

We addressed this issue in the original Development Application and the SRD. The position is as follows:

Low frequency noise is generally defined as noise content in the frequency range between 20 and 200 Hz and is often described as a 'rumble'. Research undertaken by the SA EPA in response to the issue of wind farms and low frequency noise measured low frequency noise (LFN) data from two operating South Australian wind farms and compared it with LFN measurements from four rural and seven urban locations. This research also took measurements of LFN at wind farm locations both at times when turbines were operating and when they were shut down. This EPA study concluded that:

"Overall, this study demonstrates that low frequency noise levels near wind farms are no greater than levels in urban areas or at comparable rural residences away from wind farms. Organised shutdowns of the wind farms also found that the contribution of the Bluff Wind Farm to low frequency noise levels at Location 8 was negligible, while there may have been a relatively small contribution of low frequency noise levels from the Clements Gap Wind Farm at frequencies of 100 Hz and above."

The EPA is currently conducting further studies at the Waterloo wind farm in SA's mid-north. The study is expected to be concluded in later this year and will add to the body of knowledge on the matter of infrasound and potential health impacts. It is our expectation that the results will reconfirm the above position.

Importantly, the recent approval of the NSW 120 MW Bodangora Wind Farm project by the NSW Planning Assessment Commission included clear advice from NSW Health that is consistent with the National Health and Medical Research Council – that there is no published scientific evidence to link noise from wind turbines with adverse health effects...

Presentations were made to DAC making various assertions in relation to noise and health impacts. Section 17 of the DAC Hearing Consolidated Response Document outlines our review and critique of those presentations, in particular the presentation relating to the accuracy of noise predictions at the Waterloo wind farm.

Section 17 deals with eighteen issues raised in the presentation by Colin Hansen. The content of the specific comments made is not repeated here. However, the overarching comment regarding the issues raised is that the 2009 SA EPA Wind Farms Environmental Noise Guidelines (the 2009 EPA Guidelines) are the applicable noise guidelines for all wind farm developments in South Australia and the CERES Project has been developed on that basis with expert advice from

Marshall Day Consultants. The 2009 EPA Guidelines were developed by the EPA to take into account the particular characteristics of wind farm noise and the rural communities that are often located in proximity to wind farms, and incorporate recommendations by the World Health Organisation in respect of avoiding sleep disturbance. In our view there is no supporting rationale for the CERES Project to be required to comply, in respect of noise matters, with anything other than the 2009 EPA Guidelines.

As indicated earlier, we expect the outcome of the EPA studies at Waterloo to confirm our views.

***In summary, as we have previously detailed in our numerous documents (listed in the introduction to this submission), the project has been designed to meet SA EPA guidelines (which is the relevant environmental compliance criteria in South Australia ) and there is no scientific evidence linking wind farms to adverse health effects.***

# 6 Summary and Conclusions

The proposed wind farm "avoids" impact on any aerial spraying activities on adjoining properties or, at worst, "minimises" impact on any aerial spraying activities on adjoining properties. Either way, the wind farm as designed (based on the existing layout) satisfies the planning requirements in an optimal manner. Notwithstanding this, in order to ameliorate adjoining landowners, we are willing to accept a condition of approval that states "Turbine positions are to be micro-sited such that no turbine tower position is located closer than 100 metres from adjoining landowner title boundaries".

1. Issues raised regarding blade throw, turbulence and bio-security do not justify (or are not relevant to) the proposed wind farm as designed which has an optimal layout from a planning perspective.
2. A comprehensive plan for risk fire management has been provide (refer Appendix 2) and as originally foreshadowed in our DA, a detailed Emergency Management Plan will be developed in consultation with CFS. We believe this sufficiently addresses the planning requirements.
3. There is an excellent contingency strategy available to landowners to ensure proper decommissioning and rehabilitation occurs even in the unlikely event of default by the wind farm owner.
4. The approval periods being sought are considered reasonable for a large infrastructure project. The construction period is still aiming to be as originally planned at two and half years.
5. The project has been designed to meet SA EPA guidelines (which is the relevant environmental compliance criteria in South Australia) and there is no scientific evidence linking wind farms to adverse health effects.

In addition to our responses above to the questions raised by DAC, reference should be made to the accompanying Consolidate Response Document and to the specific response prepared by URPS to the recent submission made by the DCYP, which is attached at the back of this document.

The CERES wind farm project is a $1.3 billion project of state significance and will provide major benefits to the local and state economies.

The wind farm has been designed to produce an optimal outcome for all key stakeholders through three key elements;

- No overhead power lines – avoiding over 100 kms of high voltage lines and 180 lattice tower structures and avoiding over 35 kms of low voltage power lines to link the four zones of the wind farm
- Self imposed 1300 metre setbacks from non-involved residences; and

- Best practice agreement with Aerotech to “avoid” any impact on aerial spraying activities for adjoining land owners

The wind farm has been designed to be the best in Australia and incorporates a $150,000 per annum community fund and a $50,000 fire risk management fund.

Throughout all aspects of the wind farm the principle of “prudent avoidance” has been implemented resulting in all environmental and planning requirements being satisfied.

An independent review by URPS of the proposed wind farm (Refer SRD) has concluded that the project warrants development approval.

***We are of the view that the project has met or bettered every environmental and planning requirement and that the project warrants approval by the Minister.***

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**APPENDIX 1A – EXTRACT FROM DISTRICT COUNCIL OF YORKE PENINSULA DEVELOPMENT PLAN**

Wind Farms and Ancillary Development

The visual impacts of wind farms and ancillary development (such as substations, maintenance sheds, access roads and wind monitoring masts) should be managed through:

a) Wind turbine generators being:
    i. Setback at least 1000 metres from non-associated (non-stakeholders) dwellings and tourist accommodation
    ii. Setback at least 2000 metres from defined and zoned township, settlement or urban areas (including deferred urban areas)
    iii. Regularly spaced
    iv. Uniform in colour, size and shape and blade rotation direction
    v. Mounted on tubular towers (as opposed to lattice towers)
b) Provision of vegetated buffers around substations, maintenance sheds and other ancillary structures.

Wind Farms and ancillary development should avoid or minimise the following impacts on nearby property owners / occupiers, road users and wildlife:

a) Shadowing, flickering, reflection or glint
b) Excessive noise
c) Interference with television and radio signals and geographic positioning systems
d) Interference with low altitude aircraft movements associated with agriculture
e) Modification of vegetation, soils and habitats
f) Striking of birds and bats.

Wind turbine generators should be setback from dwellings, tourist accommodation and frequently visited public places (such as viewing platforms) a distance that will ensure that failure does not present an unacceptable risk to safety.

Wind farms and ancillary development such as substations, maintenance sheds, access roads and connecting power-lines (including to the National Electricity Grid) are envisaged within the zone and constitute a component of the zone's desired character. These facilities will need to be located in areas where they can take advantage of the natural resource upon which they rely and, as a consequence, components (particularly turbines) may need to be:

- located in visually prominent locations such as ridgelines;
- visible from scenic routes and valuable scenic and environmental areas; and
- located closer to roads than envisaged by generic setback policy.

This, coupled with the large scale of these facilities (in terms of both height and spread of components), renders it difficult to mitigate the visual impacts of wind farms to the degree expected to other types of development. Subject to implementation of management techniques set out by general / council wide policy regarding renewable energy facilities, these visual impacts are to be accepted in pursuit of benefits derived from increased generation of renewable energy.

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Clean Energy from Yorke Peninsula

## APPENDIX 1B – LIST OF REFERENCES IN SUPPORT OF CO-EXISTENCE OF WIND FARMS AND TRADITIONAL FARMING

1. Fact Sheet – Wind Farming and compatibility with Traditional Farming – Jan 2013
2. Development Application Jan 2013 – sections – Appendices
    a. C – turbine layout
    b. D – noise assessment
    c. V – aerial spraying report
    d. W – open day and fact sheets
3. SRD – sections – 2.6.4 Agriculture; 2.5.4 Aviation Imapcts

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## APPENDIX 1C – AERIAL SPRAYING Q AND A'S

Background information

Yorke Peninsula Wind Farm Project Pty Ltd (YPWFP) the owner of the CERES project, has signed an Agreement with Aerotech Australasia Pty Ltd (the sole provider of aerial spraying services on the Yorke Peninsula) that ensures that the wind farm will have no impact on the ability for adjacent landowners to continue to receive fixed wing agricultural spraying services without change to service, quality and cost.

Wind farms generally do not operate in low wind conditions, which is when aerial spraying is undertaken to avoid spray drift. However as further safeguards, the Agreement provides that when aerial spraying is undertaken on land adjacent to the Ceres wind farm, wind turbines near the boundaries of the relevant adjacent non-involved landowner properties will be turned off with the blades aligned to be parallel to the flight path of the fixed wing aircraft.

The Agreement specifically provides for:

- Clearance between turbine blades and the boundary of the land being sprayed of at least 60 metres, and typically more including roadways between properties
- At Aerotech's election, wind turbines within 500 metres of the boundaries of the land being sprayed to be turned off to eliminate any risk of turbulence.

Here we answer the most common questions about what the Agreement means for adjacent and nearby landowners:

**1. Will my aerial spraying service prices increase as a result of the CERES wind farm being built, or as a result of the agreement with Aerotech?**

No. There will be no increase in your aerial spraying prices as a result of the CERES wind farm being built, nor as result of the agreement with Aerotech.

**2. Will my aerial spraying services change in terms of timing, delivery or quality?**

No. There will be no change to your aerial spraying services in terms of timing delivery and quality arising from the CERES wind farm being built, nor from the agreement with Aerotech.

**3. Is the Aerotech agreement binding? And if so for how long?**

The Aerotech agreement is legally binding and will apply for the lifetime of the wind farm which is planned to be 25 years.

**4. What happens if Aerotech on-sells its business?**

Aerotech may sell or assign its agreement rights and obligations to another party that is deemed suitable to provide the aerial spraying services. This is designed to ensure continuity of service and meeting the agreement's objectives of no change to service, quality and cost.

**5. What happens if YPWFP sells the CERES project?**

The rights and obligations of the Aerotech agreement will transfer to the new owner ensuring no change for adjacent landowners.

**6. Why is the agreement with Aerotech and not with the adjacent landowners?**

CERES PROJECT
Clean Energy from Yorke Peninsula

The agreement is with Aerotech as its staff are the aviation experts with the expertise to undertake the risk assessment and determine the safe operating protocols required to undertake and maintain the aerial spraying services adjacent to the wind farm.

**7. What happens if other aerial spraying contractors/service providers wish to provide an alternative service? And what does this mean for adjacent/nearby landowners?**

Currently Aerotech is the sole provider of services on the Yorke Peninsula. Should other aerial spraying contractors enter the market to provide an alternative service, we will offer the same terms as in the Aerotech agreement.

**8. What, if any, impact will the Ceres wind farm have on ground spraying?**

The wind farm will have no impact on ground spraying.

**9. What consultation has been undertaken in relation to aerial spraying by the CERES project with key stakeholders (including landowners - involved and adjacent/nearby)?**

The matter was first raised in sessions held in Community Open Days in October 2011 and then again in December 2011.

Preliminary consultation with adjacent and nearby landowners occurred with a formal request for submissions in January 2012. This was followed by providing the Ambidji Report (on aerial agricultural impact from fixed winged aircraft) to those parties in January 2013. That report and an update of that report were made public as part of the Development Assessment Commission's consultation process.

Since January 2013 submissions made to DAC have been reviewed and have been incorporated into the solution embodied in the agreement with Aerotech signed in late July 2013. A letter informing landowners of no change to their current practices was then sent.

**10. What is the planning policy principle in relation to impacts on aerial agricultural services (aerial spraying) and how does the CERES project comply?**

The planning policy principle that applies to aerial agricultural services provides that wind farm developments should "…….avoid or minimize interference with low altitude aircraft movements associated with agriculture".

The CERES project more than satisfies that principle through the combination of a fundamental design that employs 600 metres spacing between turbines, no overhead lines and an operational agreement with Aerotech that turns nearby turbines off and re-aligns them parallel to the flight path of fixed winged aircraft.

This ensures that the development of the wind farm results in no change to the aerial spraying practices of adjacent landowners.

**11. How can I be confident the above agreement will be honoured by current and future owners of the wind farm and current and future aerial spraying contractors?**

YPWFP has proposed to the Development Assessment Commission that the wind farm operational constraints covered in the Aerotech agreement be encapsulated as a condition of approval for the CERES Project. This ensures ongoing certainty for adjacent landowners.

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## APPENDIX 1D – HFA QUOTATIONS OF AMBIDJI STATEMENT AND DEVELOPMENT PLAN

Ambidji Report

In explaining the nature of the wind turbine as an obstacle, the Ambidji Report provides as follows:

"Given the low wind speeds required for spraying and spreading and given the height of the turbine towers remain an obstacle whether the turbine blades are operating or not, turning the turbine blades off is not seen as an effective mitigation that will reduce the assessed efficiency losses" (refer page 66 of Ambidji report)

HFA selectively quoted the Ambidji report leaving out the last seven words that provide the actual context for the statement. The reference to turning blades off relates to whether or not the 3% impact assessed by Ambidgi would be reduced further.

The Aerotech agreement however does not just turn off the blades but re-aligns the blades such that a further 57 metres of clearance is achieved between the turbine and the fixed winged aircraft.

Development Plan Provisions Regarding Aerial Spraying Impacts

The HFA misquote the applicable planning provision in their original submission to DAC. The HFA submission incorrectly states that the planning requirement in relation to aerial spraying is to "avoid" impact. This is incorrect, the requirement is to "avoid or minimize". Refer Appendix 1.

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## APPENDIX 1E – SRD EXTRACT – AERIAL SPRAYING SUMMARY AND COMMITMENTS

In July 2013 the Proponent entered into a legally binding agreement with Aerotech Australasia to facilitate the continued provision of aerial agricultural services by Aerotech to adjacent properties without change to service, cost or quality.

The agreement prescribes an agreed set of communication and operation protocols between Aerotech and the Proponent, whereby turbines near the boundaries of adjacent non-involved landowner properties would be turned off and blades would remain stationary during aerial spraying. In addition, the turbine structure would be moved to ensure the turbine blades were aligned to be parallel to the flight path of the fixed wing aircraft. This would provide a clearance of at least 60 m and to further reduce risks, the wind turbines within 500 m of boundaries of non-involved landowner properties would also be turned off to eliminate any risk of turbulence.

The terms of the agreement provide a workable solution to any spraying and wind farm interface issues, given that that when aerial spraying is appropriate to undertake, wind speeds are typically low in order to avoid spray drift. At the same time, when the wind speed is low, the wind farm is generally not operating so there is no loss of generating capacity if the communication and operation protocols are used to facilitate aerial spraying.

The Agreement in place between the Proponent and Aerotech Australasia (which will bind future owners and operators of the wind farm and Aerotech's aerial spraying business), together with the proposed mitigation measures implemented during wind farm design and identified in the aerial spraying report, demonstrate that the Proponent has made all efforts to avoid or minimise impacts on farming production as a result of the construction and operation of the Project. Whilst the initial aerial assessment indicated a 3 per cent reduction of aerial spraying capacity based on worst case scenario, the agreement will ensure that existing services continue unchanged.

This demonstrates that the Project is compatible with the existing farming practices and will have a negligible impact on the productive capacity of the farming activities in the zone within and adjacent to the wind farm.

***In addition, to ensure that equivalent fixed wing aerial spraying services can continue to be provided to adjacent land owners for the life of the wind farm, the proponent undertakes that in the event that an aerial spraying service provider other than Aerotech proposes to undertake aerial spraying services on land adjacent to the wind farm, the Proponent will offer to enter into an interface agreement with that provider that provides, at a minimum, or as agreed with the provider, for the same communications and operation protocols as the Aerotech agreement, so that, where required during aerial spraying:***

- ***turbines near the boundaries of relevant adjacent non-involved landowner properties will be turned off, and blades will remain stationary and aligned to be parallel to the flight path; and***
- ***turbines within 500 m of boundaries of relevant non-involved landowner properties will be turned off where there is risk of turbulence from the turbines impacting on the spraying operations.***

***The Proponent agrees to this commitment being encapsulated as a condition of approval.***

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## APPENDIX 1 F – BLADE THROW

Extract from HSE Publication 2013

Estimated annual risk of fatality due to impact from a blade/fragment of a large 2.3 MW wind turbine compared with other societal risks

| Source of Fatality | Annual Risk | Assumptions |
|---|---|---|
| Wind turbine - Direct impact by blade/fragment | 10-9 | At 2x hub height from wind turbine |
| Wind turbine – Indirect impact by blade/fragment | 10-8 | At 2x hub height from wind turbine |
| Cancer | 2.58 x10-3 | Averaged over population. England & Wales |
| Lightning | 5.35 x10-8 | 1999 England & Wales 1995-1999 |
| Mining Industry | 1.09 x10-4 | GB 1996-2001 |
| Construction Industry | 5.88 x10-5 | GB 1996-2001 |
| Agriculture | 5.81 x10-5 | GB 1996-2001 |
| Service Industry | 3.00 x10-6 | GB 1996-2001 |
| Fairground Rides | 4.79 x10-9 | Assumes 4x rides per annum. UK 1996-2000 |
| Road Accidents (all forms) | 5.95 x10-5 | UK 1999 |
| Rail Travel Accidents (per passenger journeys) | 2.32 x10-8 | Fatality per passenger journeys GB 1996-1997 |
| Rail Travel Accidents (annual risk - commuter) Aircraft Accident (per passenger journeys) | 1.05 x10-5<br>8.00 x10-9 | Annual risk of fatality: 2 daily journeys, 45 weeks per year Fatality per passenger journeys UK 1991-2000 |
| Aircraft Accident (annual risk – holidaymaker) | 1.60 x10-8 | Annual risk of fatality: 2 flights per annum |

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## APPENDIX 2 – FIRE MANAGEMENT PLAN

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# Fire Risk Management Plan

# Ceres Project, Yorke Peninsula SA

**Document Revisions**

| Rev | Issued/ Date | Checked/ Date | Approved/ Date | Description of change |
|---|---|---|---|---|
| A | MB<br>19/7/2011 | | | Initial Release |

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# BUSHFIRE RISK MANAGEMENT PLAN

## Objectives

The objective of this Bushfire Risk Management Sub Plan is to manage potential bushfire risk associated with operation of the Ceres Project.

Specifically, this plan is aimed to support the safe operation of the wind farm through:

- Recording of all potential project-specific bushfire hazards and risks associated with the operation of the wind farm;
- Consideration of local Bushfire Prone Areas Information that identifies all locations within or adjacent to the wind farm project site, transmission line, and the wind farm substation (Bushfire Hazard Analysis, Regional Development Australia - Yorke and Mid North, Appendix A);
- Implementation of recommendations provided by SA Country Fire Service (CFS) Development Assessment Unit (Bushfire Protection) in the assessment of the project, (CFS - Bushfire Prevention and Protection Management Recommendations, Appendix B);
- Establishment of specific management strategies required for the prevention or mitigation of these issues;
- Provision of consistent and uniform approach to bushfire risk management that will assist the Proponent to meet required standards and legislation;
- Incorporation of relevant requirements of CFS for managing bushfire risk based on consultation with CFS representatives;
- Establishment of a framework for continued consultation with CFS and other emergency services.

## Performance Criteria

The performance criteria for this Bushfire Risk Management Sub Plan is focused on preventing fires and being prepared in the event that a bushfire is either ignited or passes through the project site:

- manage all works that have the potential to cause ignition of fire using the permit to work system - hot works permit;
- ensure adequate fire fighting equipment is located sufficiently around the site, in vehicles, offices, and wherever the Job Safety Analysis (JSA) for a task requires;
- procedures and programs maintained with Country Fire Service (CFS) including periodic workshops and drills.

## Bushfire Hazards, Risks, and Mitigation Measures

| Hazard | Risk | Mitigation Measures |
|---|---|---|
| Work in vegetated areas. | • Ignition of trees, bushes, &/or grasses and escalation of situation into a mobile bushfire. | • Slashing of vegetation at work areas preceding construction activities where required. |
| Use of tools that may create sparks (eg. cutting and welding). | | • Hot Works Permits not to be issued on Total Fire Ban Days, on days when the Fire Danger Rating is Very High or Above, or on days with high wind present.<br>• Fire blankets, shields, extinguishers, and any other fire prevention devices identified in the JSA for the task must be present.<br>• Appropriate fire extinguishers located around substation, in all vehicles, and in all wind towers. |
| Use of explosives. | | • Use of explosives is not permitted during periods of high fire risk. |

| | | |
|---|---|---|
| Electrical short circuit, malfunction, or explosion. | | • All electrical tools to be tested and tagged monthly.<br><br>• Required servicing on all electrical equipment to be carried out as per product manuals and standard procedures.<br><br>• Appropriate fire extinguishers located around substation, in all vehicles, and in all wind towers. |
| Cigarette smoking and disposal of butts. | | • Smoking permitted only on laydown areas where appropriate disposal units are provided.<br><br>• Appropriate fire extinguishers located around substation, in all vehicles, and in all wind towers. |
| Catalytic converters on petrol driven vehicles. | | • Only diesel operated vehicles to be used on un-constructed roads and at all other times where possible.<br><br>• Appropriate fire extinguishers located in all vehicles.<br><br>• Avoid parking in long grass. |
| Inadequate storage of combustible or flammable substances. | | • All Hazardous Substances and Dangerous Goods must be kept in secure storage facilities according to the regulations and designation of the MSDS requirements.<br><br>• Appropriate fire extinguishers located around substation, in all vehicles, and in all wind towers. |
| Inadequate knowledge of bushfire contingency plan in an emergency situation | Preventable loss of lives, injury, damage or destruction of property, and damage or destruction of the environment | • Liaison with emergency services, site familiarisation tours, and workshops including carrying out contingency plan.<br><br>• Clearly display site plan with relevant contact details and mitigation information. |
| Emergency services having inadequate knowledge of site thus hindering most efficient response to an emergency situation | Preventable loss of lives, injury, damage or destruction of property, and damage or destruction of the environment | • Liaison with emergency services, site familiarisation tours, and workshops including carrying out contingency plan. |
| Site personnel having no knowledge of bushfires in vicinity of project site | Preventable loss of lives, injury, damage or destruction of property, and damage or destruction of the environment | • Liaison with emergency services, including regular checks of the Rural Fire Service website (www.cfs.sa.gov.au) during the Fire Season[1] |
| Site personnel having no knowledge of declared Total Fire Ban Days | Preventable loss of lives, injury, damage or destruction of property, and damage or destruction of the environment | • Liaison with emergency services, including regular checks of the Rural Fire Service website (www.cfs.sa.gov.au) during the Fire Season<br>• Hot Works Permits not to be issued on Total Fire Ban Days, on days when the Fire Danger Rating is Very High or Above, or on days with high wind present. |

## Bushfire Contingency Plan

There are three scenarios that could cause an emergency situation affecting all people on the wind farm site:

- a Total Fire Ban is announced by the authorities;
- a bushfire is known to be nearby/approaching the wind farm site;
- a bushfire originates within the wind farm site or is travelling through the site.

[1] http://www.cfs.sa.gov.au/site/fire_restrictions/fire_danger_season_dates.jsp

This bushfire contingency plan outlines the actions to be taken in these scenarios in order to effectively manage the situation and reduce the risk to all people on the wind farm site.

## Emergency Management Team

### Senior Management

This plan identifies the members of senior management who must be notified in the event of an emergency of the sort contemplated in this plan and sets forth the roles that senior management play in crisis management.

Minimally, the Proponent's Senior Project Manager, Health Safety Environment and Community HSEC Manager, Site Project Manager, and Construction Manager, form the senior management team.

### Site Management Team Members

Essential to the effective management of any emergency situation is the active involvement of service team members. The service team provides information to senior management who, in turn, provide direction, support and resources as required to augment the Site Team's effort. The roles of the various service team members are described below:

- Site Manager: Responsible for the overall control of the emergency situation at the site, and will designate key service team members to implement the procedures set forth in this manual and receives from the team members all relevant information relating to the emergency. The Site Manager is responsible for communicating all required information to senior management, and the Site Manager is also the spokesperson at the site level.
- Delegated Person: This position provides clerical support to the emergency management team members, including screening telephone calls, maintaining a log of all related incoming and outgoing calls and radio communications received at the site compound office and refers all requests for information to the Project Manager. This position is also responsible for physical control of the site including obtaining emergency services as necessary, communicating the circumstances of the emergency to Senior Management, and securing the emergency scene.

### All other site staff

All other site staff will be made aware of a nearby/approaching bushfire and will be required either to muster at the emergency meeting points and evacuate, or maintain communication with site management and follow directions.

## Facilities

Any emergency situation on site during the construction phase will be controlled from the construction site office located at the compound within the project site unless the emergency dictates that the office and compound area is evacuated or is an impracticable location. At all times the following equipment must be available at the construction site office and/or in the Proponent's vehicles to assist in the management of any emergency;

- Emergency Response Plan;
- Notebook;
- Telephone Conversation Log;
- Camera;
- Video Camera;
- Mobile Phone.

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## Actions Required

### Total Fire Ban Days

On days of TOTAL FIRE BAN, when the risk of bush fires is at its highest, the Site Manager or delegate is to regularly listen to radio broadcasts, weather forecasts, and regularly check the Country Fire Service website (www.cfs.sa.gov.au), especially during the Fire Season. Lightning strikes are common in the area and are the most likely cause of bush fires although it is possible that careless behaviour could potentially cause a bush fire. If a bush fire threatens, the Site Manager, taking into consideration prevalent wind direction and fire front, shall decide on whether the site should be evacuated and if so where personnel are to evacuate the site safely. Advice should also be sought from the CFS.

If a bush fire is caused by site personnel then every effort should be made to extinguish the fire before it gets out of control. The CFS is to be notified immediately and the Site Manager is to take control of the immediate area and maintain radio contact with any employees at risk from the fire. The Site Manager or delegated person is to immediately notify all landowners of the fire and assist with stock movement as required.

### Nearby Bushfires

The Site Manager or a delegated person is to regularly listen to radio broadcasts and weather forecasts and maintain contact with the CFS. If a bush fire threatens, the Site Manager, taking into consideration prevalent wind direction and fire front, shall decide on whether the site should be evacuated and if so where personnel are to evacuate the site safely. Advice should also be sought from the CFS.

## Bushfire present on site

### Managing the situation

- Report emergency on 000 and obtain appropriate emergency services as required by the nature of the fire;
- Determine if the site must be evacuated. Inform subcontractors, engineer, owner, nearby landowners and site management as appropriate;
- Coordinate evacuation efforts. Conduct physical accountability (head count) of all workers including subcontractors to ensure all personnel are accounted for;
- Coordinate site access for emergency response personnel. Inform the RFS of the nature of the fire and of any known hazards which they may encounter during fire suppression efforts such as;
    - compressed fuel gas tanks,
    - roadworks, or
    - toxic materials present on site.
- Inform the CFS of the personnel accountability survey. If individuals are unaccounted for, give the last known location of the individuals to fire rescue personnel;
- Secure fire area. Close off job site if necessary until all investigative actions are completed;
- Report the details of event and damage assessment to the Project/Service Manager;
- Arrange for monitoring of accident site or damaged equipment until a remedial action plan is developed. Employ security guard services where appropriate;

### Recovery

- Monitor/log all requests for information regarding the incident;
- Refer all inquiries for information to the Project Manager;
- After remedial action plan is developed and approved by senior management, assure requirements are completed expeditiously;
- The Site Manager or delegated person shall;
    - Advise the Project Manager of details of the event,
    - Keep time sequenced diary/commentary of all events as they unfold,
    - Advise the owner and senior management of affected subcontractors or suppliers of fire,
    - Coordinate with CFS who will direct the investigation to determine:
        - cause of fire;

- remedial actions necessary for clean-up; and
- preventive measures necessary to forestall reoccurrence.

- Provide periodic status reports to senior management;
- Submit statement of facts to Project documenting the emergency;
- Refer all media contact to client press secretary or Project Manager.

***If the fire is caused by site activities no further similar work activities are to be undertaken until this investigation is complete and accepted by senior management.***

**Liaison with Emergency Services**

During the construction phase of the Ceres Project, Emergency Services including local police, police rescue, ambulance, and local Country Fire Service divisions are to be invited to the site and meet with site personnel and take part in site familiarisation tours.

Site maps, site contact details, plus turbine and site access GPS coordinates will be passed on to the Emergency Service providers referred to above.

Continued liaison with emergency services throughout the Construction, Commissioning, and Operation Phases will ensure the Emergency Response Plan and Management Sub Plans such as this one are in alignment with the requirements of the emergency services.

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## APPENDIX 3 - DE-COMMISSIONING AND REHABILITATION

The Project has an expected life of 25 years. Once the life of the wind farm is completed then the towers, nacelles and blades will be removed at the wind farm owner's cost. The turbine foundation will remain in-situ and will be covered by a layer of compacted topsoil. Underground cables comprising the Project's internal electrical reticulation system will de-energised and also remain in situ.

The Project HVDC transmission cable has an expected life of at least 40 years and potentially as long as 50 years. The decommissioning of the HVDC asset (convertor stations and cables) will be driven by the long term role the asset plays in the greater SA transmission system. If the HVDC asset is decommissioned then the cables would remain undersea and underground but de-energised, as is typical practice. The convertor stations could be removed or partly modified for an alternate use in consultation with the relevant operator of the SA transmission system (such as ElectraNet).

The agreements between the Proponent and involved landowners whose holdings comprise the project area include a specific decommissioning clause, which provides that:

- On the surrender, cancellation or termination of the Lease in respect of the whole or any part of the land subject to the Lease, the Lessee (the wind farm owner) will remove from the lease area all its equipment (except for any permanent roadways and other improvements constructed by the Lessee, which shall be removed by the Lessee only if required by the landowner or required by law), repairing all damage caused, restoring the surface of the land (including remediating the soil to a depth of not less than 0.6 metres) to a suitable condition for pastoral or other agricultural use (having regard to its condition and use prior to the equipment having been installed) and leaving the lease area electrically safe and otherwise in a safe condition free from hazardous structures and material (if any) introduced on to the lease area by the Lessee.
- If the Lessee fails to carry out any of its decommissioning obligations then the landowner is entitled to carry out the works at the cost and expense of the Lessee.
- Ownership of equipment not removed from the relevant lease area within six (6) months of the end of the lease will vest in the landowner.

**Net Cost of Decommissioning**

Decommissioning costing has been prepared to account for all activities required to remove all above ground components of the RE3.2XM series turbine, and includes:

- Deactivation of Turbines
- Any required "make safe" costs
- Removal of all liquids and other turbine consumables
- Disassembly of blades, nacelle and tower and all above ground materials
- Loading for removal from site
- Haulage from site- non permitted Loads
- Haulage from site- permitted Loads
- Re-processing of turbine blades
- Crane costs

Based on a group of 10 turbines being removed the total cost is estimated at $2.8 million

The second component looks at recoverable costs of the steel in the towers. The RE3.2XM turbine has a 5 section tower using a total of around 232 tonnes of steel. Based on a recycling value of $1.50/kg (http://www.scrapmetal-prices.com.au) this equates to approximately $3.5M worth of steel for the 10 towers.