

Final Wilderness Area Submission

“The Gondwana Rainforests of Australia is a serial property comprising the major remaining areas of rainforest in southeast Queensland and northeast New South Wales. It represents outstanding examples of major stages of the Earth’s evolutionary history, ongoing geological and biological processes, and exceptional biological diversity. A wide range of plant and animal lineages and communities with ancient origins in Gondwana, many of which are restricted largely or entirely to the Gondwana Rainforests, survive in this collection of reserves. The Gondwana Rainforests also provides the principal habitat for many threatened species of plants and animals.”

This is a quote provided in the World Heritage Assessment provided by Vestas. It is a quote from the UNESCO World Heritage Convention (<https://whc.unesco.org/en/list/368/>)

Vestas also reference the World Heritage Central Eastern Rainforest Reserves of Australia (CERRA) Strategic Overview for Management. They do not, however provide the following important quotes from this document.

“In nominating CERRA for World Heritage listing, the Commonwealth Government, on behalf of the people of Australia, accepted an obligation to ensure the identification, protection, conservation, rehabilitation and presentation of the property and its transmission to future generations.”

“World Heritage status is the highest level of recognition that may be afforded to an area. It places an important responsibility for Australia to apply the highest possible standards of management practice.”

How could anyone consider constructing a large-scale industrial project directly alongside this conservation area.

The location of this large-scale industrial project directly adjacent to this World Heritage site should make the consideration of the impacts on Gondwana World Heritage Site as well as our Oxley Wild Rivers National Park a priority in the presentation of the EIS. However, Vestas have committed just 25 pages to this important topic. It is not even a dedicated study – it is a report based on the BDAR and LVIA.

Added to this, the report is poorly written with numerous errors and poor referencing that make it impossible to follow. There is a lack of knowledge and a lack of care in this assessment. If Vestas have this lack of regard for the Gondwana World Heritage Area in the presentation of this all-important EIS, how are they going to treat it for the next 30 years? It is inappropriate to have any large-scale industrial project so close to a wilderness area and based in the catchment area for the Macleay and Apsley Rivers which flow directly into this sensitive environment. It is astounding that Vestas have failed to recognise this or show an appropriate level of respect for the responsibility we have for this area.

There are many unavoidable impacts to the Gondwana Rainforests of Australia resulting from the construction of the Winterbourne Wind Project on its western boundary.

- Erosion and Sedimentation
- Water Pollution
- Air Pollution
- Noise Pollution

- Visual Amenity
- Bushfire Risk
- Biodiversity Impacts

Erosion and Sedimentation

Land categorisation is described in BDAR Appendix A.

Appendix B of the Land Category Assessment addresses the Native Vegetation Regulatory Map. The land category assessment carried out by NGH on behalf of vestas shows many areas classified as “*Category 2 (vulnerable regulated land)*”. These same areas in the NSW Government Transition Native Vegetation Regulatory (NVR) Map are categorised as “*steep or highly erodible land, protected riparian land or special category land (category 2-vulnerable regulated land)*” This change in wording from the NSW Government map to the figures included in the Vestas land category assessment is highly significant. This highly erosive steep land (vulnerable regulated land) on which Vestas is proposing to build the infrastructure for an industrial project, leads directly into streams, creeks and rivers that flow directly into the National Park and World Heritage Wilderness area. All of the run-off from the project area runs into creeks and rivers that lead directly into the World Heritage area. Activities such as road building, foundation development, building large set-down areas, then removing large volumes of gravel, construction of large industrial structures along with all the associated traffic are going to cause severe erosion in already vulnerable land. This erosion will also lead to sedimentation and contamination of the waterways that run directly into the Oxley Wild Rivers National Park. The location of this project in this steep, vulnerable country adjacent to a World Heritage Wilderness Area is inappropriate and reckless. Trees and vegetation have been strategically maintained on the ridges to stabilise the soil. These are the same ridgelines that have been selected by Vestas to place the wind turbines as they are the elevated areas. Removal of this strategic vegetation is going to have severe impacts leading to erosion and sedimentation of streams leading into the world heritage area.

This issue is referenced on Page 162 of Appendix G BDAR - Table 7-3 Potential indirect impacts to biodiversity during the construction and operational phases. The nature of the impact is “Earthworks and mobilisation of sediments”. The consequences for bioregional persistence are “• Erosion and sedimentation and/or pollution of soils, dams and downstream habitats • Potential loss of groundcover resulting in unstable ground surfaces and sedimentation of adjacent waterways and dams” This potential risk is not referenced in the World Heritage Impact Statement.

Water Pollution

Run-off from the project is going to cause significant impacts, leading to contamination and pollution of the waterways that lead into the National Park and Wilderness Area. All the run-off from the project area will flow through streams and creeks leading to the Apsley and Macleay Rivers which flow directly into the Oxley Wild Rivers National Park and the Gondwana World Heritage Wilderness area. The risk of water pollution, including sedimentation, chemical contamination, contamination with waste, and introduction of exotic plants, weeds and pathogens are significant during construction, operation and decommissioning of this industrial project.

Decommissioning poses extreme risks of local contamination. The most likely method of dismantling the turbines, as described in the EIS is “controlled fell”. What sort of pollution would the “controlled fell” of

129 turbines create in the local area? Even if the turbines are dismantled, components and parts will be broken down and separated on site. The blades will also be cut up and broken down on site. Is it really going to be possible to decommission this large-scale industrial project without polluting the local water ways and neighbouring pristine World Heritage Wilderness Area?

Give example of arsenic toxicity

Some of the risks of a Vestas wind farm are provided by Vestas in the document titled “Life Cycle Assessment of Electricity Production from an Onshore V112-3.45MW Wind Plant which can be referenced here https://www.vestas.com/content/dam/vestas-com/global/en/sustainability/reports-and-ratings/lcas/V1123%2045MW_Mk3a_ISO_LCA_Final_31072017.pdf.coredownload.inline.pdf

The following are quotes from this document and have the potential to occur during plant set-up and operation: (Note, they are not all related to water pollution but are included here for simplicity)

5.2.3 Acidification potential Acidification potential provides a measure of the decrease in the pH-value of rainwater and fog, which has the effect of ecosystem damage due to, for example, nutrients being washed out of soils and increased solubility of metals into soils. Acidification potential is generally a regional impact and is measured in mass of sulphur dioxide equivalents.

5.2.4 Eutrophication potential In general terms, eutrophication potential provides a measure of nutrient enrichment in aquatic or terrestrial environments, which leads to ecosystem damage to those locations from over-enrichment, and is measured in mass of phosphate equivalents.

5.2.5 Freshwater aquatic ecotoxicity potential Freshwater aquatic ecotoxicity potential, in general terms, refers to the impact on fresh water ecosystems, as a result of emissions of toxic substances to air, water and soil, and is measured in mass of dichlorobenzene equivalents.

5.2.7 Human toxicity potential Human toxicity potential, in general terms, refers to the impact on humans, as a result of emissions of toxic substances to air, water and soil, and is measured in mass of dichlorobenzene equivalents.

5.2.9 Photochemical oxidant creation potential Photochemical oxidant creation provides a potential indication of low level oxidant formation, also known as summer smog, which damages vegetation and in high concentrations is toxic to humans.

5.2.10 Terrestrial ecotoxicity potential Terrestrial ecotoxicity potential, in general terms, refers to the impact on terrestrial ecosystems, as a result of emissions of toxic substances to air, water and soil, and is measured in mass of dichlorobenzene equivalents.

Specific substance releases and elemental flows that occur local to the project site are not separated from those related to the manufacture of plant components in this document, so we are unable to see from this report the potential pollution from this source into the surrounding environment.

The risk of contamination from the above identified potential impacts for a project that is predicted to be operational for approximately 30 years is too high in a location adjacent to a world heritage area.

The risk of water pollution is also highlighted in “Evaluation of the water quality at Bogdalen watershed near Kvitfjell and Raudfjell wind farm area To cite this article: J Lu et al 2019 IOP Conf. Ser.: Earth Environ. Sci. 344 012022” published in IOP Conference Series: Earth and Environmental Science. This

study measured the level of metals, bacteria and pH of water near turbines and 1 km far from the turbines downstream from the wind farm. Results showed that there were high levels of Al and Mn at the turbine sites. The test point downstream from the windfarm had extreme levels of faecal contamination. "The results from this study indicate that a continuous monitoring of water quality is needed before, during and after the wind turbine construction." Vestas claim that there will be no water pollution

Air Pollution

a) Leading Edge Erosion

The following is quoted from "A practical study of the aerodynamic impact of wind turbine blade leading edge erosion" by N Gaudern, Vestas Technology UK Ltd. West Medina Mills, Stag Lane, Newport, Isle of Wight, PO32 5TS

"During operation wind turbine blades are exposed to a wide variety of atmospheric and environmental conditions; inspection reports for blades that have been operating for several years show varying degrees of leading edge erosion. The scale and form of erosion features develop over time, with the observed damage ranging from small pin holes to a substantial loss of leading edge paint. [1-4] The erosion of blade leading edges is considered to be normal wear and tear."

These images are from the same study.



Figure 1. Examples of LE erosion.

A powerpoint presentation by Vestas titled Project 8: Modelling of leading edge erosion patterns provides the following information.

"Leading edge erosion of wind turbine blades is a high priority topic for the wind industry. Degradation of the blade leading edge is caused by continual impacts from airborne particulates (primarily raindrops) during turbine operation. Even minor disturbances to the surface quality can result in premature boundary layer transition which results in lower aerodynamic performance. More severe degradation can result in a significant drop in performance"

An article titled “Leading Edge erosion and pollution from wind turbine blades” Asbjørn Solberg, Bård-Einar Rimereit and Jan Erik Weinbach estimates emissions of microplastics and possible toxic combines from wind turbines based on the report "Rain Erosion Maps for Wind Turbines Based on Geographical Locations: A Case Study in Ireland and Britain" University of Strathclyde, 2021. The authors of this article estimate that the estimated annual emission of microplastics of approximately 62kg per year per turbine. This is based on a turbine that is a significantly smaller than the ones being proposed by Vestas but the rainfall in the example is higher than the rainfall of the project area. However, the Winterbourne area is prone to cold temperatures, creating sleet, hail, snow and ice particles in the air, that would be arguably more erosive than raindrops.

If this figure is used (and it would have to be considered very conservative), the emissions of microplastics for the Winterbourne wind project would be 7378 kg per year or 147 tonnes of microplastics over 20 years.

The prevailing winds for the area for May to December are west to north west, so most of this pollution would end up in the air and waterways of the Oxley Wild Rivers National Park and Gondwana World Heritage Wilderness area. What impact is this going to have on the sensitive, fragile environment we have committed to preserving.

b) Dust Pollution – there will be significant dust pollution during construction and decommissioning of the wind project that will impact air and water quality in the wilderness area.

Noise Pollution

The effect of noise pollution is described in the following article

Noise pollution from wind turbines and its effects on wildlife: A cross-national analysis of current policies and planning regulations

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“Noise pollution influences the acoustic environment even far from anthropogenic centers, in remote areas that include critical habitats for endangered species [20]. Noise pollution negatively impacts wildlife by disrupting mechanisms that are crucial for their survival [5,21,22]. In particular, noise can: 1) cause physiological damage such as chronic, high levels of stress hormones [23], or actual hearing loss [24]; 2) be directly perceived by animals as a threat, causing them to increase costly anti-predatory behaviors at the expense of foraging, or flee the affected area altogether, leading to functional habitat loss [25]; 3) distract foragers, reducing their efficiency of finding and handling food (Dominoni et al., 2021); 4) hinder animal communication by reducing the distance at which a signal can be detected [26], limiting the ability of the signal to reach its intended recipient, and decreasing the amount of information that can be extracted from a signal, such as the sound of an approaching predator or potential prey [27,28]. These mechanisms are not mutually exclusive, and the role that each plays in determining the impact of noise pollution varies by species. Not all species react to noise in the same way, due to differing

sensitivities to noise, context, and life-history [1,5]. Overall, noise pollution alters animals' communities, reduces their overall survival and fitness, and contributes to the decline of global biodiversity [22]."

There have not been a lot of studies of the effect of wind turbines on wildlife so information is limited. However the following 2 examples of such studies demonstrate that wind turbine farms do affect the behaviour of wildlife.

"Lehnardt et al. (in review) recently teased apart the effects of WTN on songbirds experimentally, by broadcasting the sound of a wind turbine in the field and showing that this significantly reduced the number of birds present. Furthermore, the existing literature implies that WTN alters birds' vocal communication, with possible implications for reproductive success [30,41,42]."

(from the above analysis by IY.Teff-Seker^{ab} O.Berger-Tal^c Y.Lehnardt^c N.Teschner^b)

Do terrestrial animals avoid areas close to turbines in functioning wind farms in agricultural landscapes?
Rafał Łopucki,¹ Daniel Klich,² and Sylvia Gielarek³

"Our results show that wind farm operations affect terrestrial animals both in wind farm interiors (among the turbines), as well as within at least a 700-m buffer zone around each wind farm. "

While the studies may be lacking, the knowledge of the sensitivity of wildlife to noise and the evidence that the behaviour of wildlife (terrestrial and birdlife) is affected by the presence and noise of wind turbines surely indicates that the positioning of this large-scale wind project on the boundary of a world heritage wilderness area is totally inappropriate.

Visual Amenity

Page 11 of the World Heritage Assessment (need to check this.) It is unlikely that the presence of the turbines in these views would impact on the existing landscape character or immersive experience of hiking to these locations. This is a quote from the dceew CERRA Strategic Overview for Management – *"CERRA includes some of the most dramatic scenery in Australia, with landscapes dominated by striking vertical cliffs and precipitous waterfalls. With many vantage points on ridges and escarpments named 'Point Lookout' and the presumptuous 'Best of All Lookout', CERRA offers outstanding vistas: from uninterrupted views of forested wilderness covered by natural vegetation to the contrasts of steep forested slopes CERRA Strategic Overview page 18 surrounding cleared valleys. The mosaic of rainforest and eucalypt forest adds to the complexity of colour and texture in the scenery. The Great Escarpment is a high, abrupt wall densely clothed with tall forest or scree slopes. It is visually striking and the sheer vastness of its forested landscapes provides a splendid visual experience."*

Also from this document *"One of the goals of World Heritage management is to transmit areas so that future generations can experience and appreciate their uniqueness. This goal explicitly recognises an area's bequest values. The wild and rugged landscapes, diverse flora and fauna, and opportunities for solitude and quiet reflection are attributes that promote inspiration, serenity and rejuvenation of the human mind and spirit. Such feelings are valued by individuals and society, and lead to contributions in the fields of philosophy, painting, literature, music and photography. CERRA has inspired such contributions and these have promoted a sense of place for all Australians who then want such places*

protected. Existence values derive from the community's pleasure from simply knowing that places such as CERRA exist and are protected, even though they may never visit them."

Vestas have stated in their EIS that visitors will be able to view the turbines from high points within the World Heritage Area. These high points are going to be where the lookouts and views are. It is totally inappropriate to be able to see any industrial structures from these areas. How can the presence of turbines not impact on the existing landscape character as claimed by Vestas?

Bushfire Risk

Vestas claim in the Appendix T "It is considered unlikely that a fire would spread from the wind farm to adjacent properties" Wind turbines have been responsible for starting wild fires in the past. The high lightning strike rate along these ridges and the known devastation of fires in the national park make the risk too high.

Turbine B116 is the closest turbine to the National Park and appears to be on the boundary. This is abutting the "strategic fire advantage zone (SFAZ) within the national park (refer to New England Bush Fire Management Committee Bush Fire Risk Management Plan). Also adjacent to this strategic area is turbine B115 and the substation switchyard.

What are the precautions that have been taken by Vestas to reduce the risk of fire from turbines and the associated infrastructure. Will the additional fire detection systems and fire suppression systems options be used in the V162-6.2MW turbines on the Winterbourne project? Will the Vestas Condition Monitoring Solution options be compulsory?

Vestas have not addressed the issue of fighting fires that start in the World Heritage Area. The erection of 119 230m turbines on the ridgelines adjacent to the national park area are going to make the area a no-fly zone. This will preclude the use of planes and helicopters when fighting fires in this area, including the strategic fire zone within the national park. This aerial support is vital, not only in fighting fires, but in support of strategic back burning operations designed to reduce the risk of fire in the World Heritage Gondwana Rainforests. It will also mean helicopters will not be able to access water from dams on properties in the area.

Biodiversity Impacts

These impacts have been addressed in the biodiversity section. The area adjacent to the World Heritage Gondwana Rainforests has important biodiversity corridors extending from the Oxley Wild Rivers National Park into the project area. These areas of conservation are important areas of native vegetation that are also habitat for animals (many endangered) from the national park. These native animals include the koala, greater glider, glossy black cockatoo, brush-tailed rock wallaby, barking owl, squirrel glider and the wedge-tailed eagle. These habitat areas are particularly important following the Black Summer Bushfires where many animals from the World Heritage area were displaced. Destruction or damage to these important corridors is going to have impacts on the threatened ecological communities and the wildlife of the area communicating with the national park.

Bird and bat deaths from collision and barotrauma have not been adequately assessed and because of the location adjacent to the national park are going to be significant. Given the bird and bat risk

assessment provided by Vestas in the EIS was based on a 150m turbine (not the proposed 230m turbine), their risk assessment is not relevant. The impact on the Wedge-tailed eagle is going to be significant given the relatively high numbers of wedge-tailed eagles around the project area compared to other farms, and their tendency to soar on the thermals around the national park. The EIS has not provided a collision risk model.

Appendix T World Heritage Assessment

The World Heritage Assessment was referenced to investigate how Vestas proposed to mitigate the risks of constructing a large-scale wind project adjacent the declared wilderness area. This assessment is based on the BDAR and the LVIA. It is a document of just 25 pages and has been very poorly written and does not appear to have been proofread. In this 25 page document, there are at least 7 reference errors (eg. **Error! Reference source not found.**) How can people respond to the EIS if it is impossible to follow? How much care has been put into compiling this report? Is this the level of care we can expect from the project owner during construction, operation and decommissioning?

The following potential impacts are referred to in Table **Error! No text of specified style in document.-1** Overview of impacts on World Heritage. (apologies for the referencing – that is directly from the World Heritage Assessment)

Chemical pollution flowing into the World Heritage Area – No impact

How can Vestas be so confident there will not be no contamination of waterways and surrounding areas. There is the risk of accidents, human error or lack of adherence to guidelines.

Increased water runoff/ flooding/sediment flow into the World Heritage Area. Flood risk is said to be low. However, the risk is not from flood, but from high rainfall over denuded ridges and the associated run-off. Given that there will also be enormous volumes of gravel and water imported onto the site, this run-off has the potential to introduce weeds, foreign species and pathogens into the waterways entering the world heritage area.

The said maintenance of grass cover and the rehabilitation of the site also risk the introduction of weeds and pathogens.

The volume of water used for construction and dust mitigation has the potential to introduce water-borne pathogens that could affect vulnerable flora and fauna in the world heritage area.

Change to groundwater quality which might flow into the World Heritage Area It is said there will be no impact. It is impossible to say that there will be no contamination to groundwater and the result could be catastrophic for the world heritage area.

Weed species and pathogens spreading into the World Heritage Area. With all the traffic generated during the construction of the project, the movement of contractors, the importing of enormous volumes of gravel and water, it is possibly naïve to say the adoption of hygiene protocols will prevent the spread of weeds and pathogens into the World Heritage area. How is the developer going to enforce these protocols?

Bird and bat mortality due to collision with wind turbines and barotrauma. As described in the Biodiversity appendix, the turbines are going to be located in areas where bird and bat collisions are going to be more likely due to the steep topography of the location. Local birdwatchers enjoy watching the wedge-tail eagles soar up on the drafts created in the gullies. These raptors will be soaring directly into turbine blades on top of the ridgeline. The mitigation measures described on page 172 7.4 of the BDAR involve developing an adaptive Bird and Bat Management Plan. This BBMP which should be on display for everyone to view, appears to be a whole lot of words that are designed to hide the fact that there is no way to prevent the death of birds and bats as a result of collision with blades at this site with a large population of wedge-tailed eagles.

Page 10 of the World Heritage Assessment also references potential impacts to birds. From this page - "None the less, in the case of three bird species there is a moderate risk of collision and mortality because they do fly at the height of the wind turbine blades (section Error! Reference source not found.), however only one, Glossy Black-cockatoo is known to occupy the World Heritage Area. This will be appropriately managed during Project operation (section Error! Reference source not found.)." While this is hard to follow given the errors in the references, the three bird species that are referred to are the • Glossy Black-cockatoo • White-throated Needletail • Wedge-tailed Eagle. Is this assessment inferring that there are no wedge-tail eagles or White-throated Needletails in the world heritage area? This would be in direct contrast to findings reported in the BDAR where "The number of Wedge-tailed Eagles were considered high compared with other wind farms with similar settings." The White-throated needletail is considered to be of moderate risk as the species is considered almost certain to collide with operating turbines resulting a moderate loss of individuals at some stage in the wind farm operation (pp169 BDAR)

The mitigation measures described on page 192 of the BDAR 8.3.1 include removal of carcasses from beneath the turbines and "sector shut down", where turbines can be programmed to be operationally limited in the higher risk periods." Can these international companies that have shown no regard for our community be trusted to shut down sectors of their industrial project to protect the local wildlife? I don't think so.

Loss of habitat. In this table the loss of habitat of gliding animals and other wildlife is discussed with an emphasis on maintaining connectivity. To predict the effect on wildlife, the cumulative effect of all the activities generated by the project need to be considered. Are wildlife really going to remain in the vicinity of the project when you consider the extent of habitat destruction, industrial activity and construction, noise pollution, reduced local water quality, human presence, collision with project traffic, sediment and chemical pollution, infra-sound, alienation. Maintaining connectivity is only considering 1 of these factors.

Visual Amenity LVIA

The following comments refer to the table (unreferenced) "Summary Assessment of Potential Impact on Specific World Heritage Values" on pages 13-16 of the World Heritage Assessment.

From page 13 "Measures will be undertaken to maintain soil stability, particularly within the existing waterways, which will help avoid sediment flows during floods." What does this mean? How do you maintain soil stability within waterways? Is this indicating a total lack of understanding of the environment?

From page 14 “Potential impacts inside the World Heritage area arising from the project include: • bushfires; • chemical pollution; • increased water runoff/flooding/sediment flow; • change to groundwater quality; and • weeds and pathogens. It is unlikely that bushfire would spread from the project area, and there is the potential for a positive impact for firefighting from improved access and sources of water. As discussed above, the risks from flooding are very low. No impacts will arise from the other factors.” This is flippant and shows total disregard for the importance of the World Heritage area. How can Vestas claim that no impacts will arise from the other factors. It is hard to believe that with all the variables in play that there will be no pollution, sediment flow, increased water run-off or introduction of weeds or pathogens? This is a very big claim to make and is evidence of a company that is not concerned about the impacts this project is likely to have on the world heritage area.

Pages 15-16 “Species continue to be discovered in the property including the re-discovery of two mammal species previously thought to have been extinct: the Hastings River Mouse (*Pseudomys oralis*) and Parma Wallaby (*Macropus parma*).” We do not know all the species in the world heritage area and what their needs may be. We also do not know the impact of any changes to the environment and their flow-on effects. It is a highly valuable and sensitive area that needs to be protected.

One of the risks to this wilderness area is climate change. To this end, the shift to renewable energy is vital. However, the location of this industrial project adjacent to the World Heritage Area and the risks it poses is inappropriate and the project should not be allowed to be developed in this location where any pollution will directly impact the National Park and World Heritage area.

Our governments and our community have accepted the responsibility to protect this irreplaceable unique part of the world. Nobody has the right to endanger this World Heritage Area. Who will be accountable for the damage if there is irreversible damage to the UNESCO Wilderness area?