



The Director Resource Assessments, Development Assessment & Infrastructure,
Department of Housing & Infrastructure
LOCKED BAG 5022
PARRAMATTA NSW 2124

11 April 2024

Re: Application by Verdant Earth Technologies Limited to re-open the Redbank Power Station under regulations required for State Significant Developments (Ref SSD-56284960)

About Wilderness Australia

Wilderness Australia (formerly the Colong Foundation of Wilderness) is Australia's longest running wilderness conservation organisation. Its primary goal is to prevent the collapse of nature by building a network of wilderness areas and high integrity, resilient ecosystems across Australia.

The organisation lead the successful campaign in 2022 that removed native forest biomass as an eligible source of renewable energy from the Renewable Energy Act. As a result, native forest biomass is no longer able to earn Clean Energy Generation Certificates under the Act.

About the Author

Virginia Young sits on the Board of Wilderness Australia and is a Practice Fellow with Griffith University, focused on the nexus between climate change and biodiversity and in particular the policy changes needed and practice required to deliver synergistic climate and biodiversity outcomes.

Her voluntary roles include, Chair of Gondwanalink Ltd, Board member of the Great Eastern Ranges Connectivity Initiative and board member of the US based Partnership for Policy Integrity. She is a member of IUCN's World Commission on Protected Areas (Climate Specialist Group) and is the 'Nature and Climate' lead for IUCN's Climate Crisis Commission. Her CV and list of publications are attached.

Introduction

Given the current legislative & regulatory weaknesses governing tree clearing in NSW the impact on biodiversity and greenhouse gas GHG emissions from utilising native vegetation (forests) derived from tree clearing to generate power must be robustly assessed.

Tree clearing in NSW is a major source of GHG emissions ([State of the Environment Report 2021](#)).

The independent review of the NSW Biodiversity Conservation Act found that both clearing and logging are major drivers of habitat loss, fragmentation and damage. The NSW Government agrees that Legislative protection for native vegetation needs to be strengthened.

The Environment Minister of NSW is on the record as saying in response to the Reviews' findings that the government would "deliver on (its) election commitments to fix the biodiversity offsets scheme, strengthen environmental protection and stop runaway land clearing" ([Guardian 2023](#)).

State legislative change is not the only change to biodiversity protection in the offing. Changes to the federal Environment Protection and Biodiversity Conservation Act (EPBC) are also likely this year, with clearing and logging again identified as key national threats to biodiversity that must be addressed.

The last thing NSW needs is another major driver of clearing and habitat loss. By providing a market for trees cleared on farms, along roads and from new developments, the net cost of clearing and financial benefits from retaining trees will be reduced. Depending on the price paid for wood, this new market could create a significant incentive to cut down more trees and clear more forests.

Land clearing in NSW

Clearing of native vegetation, and the destruction of habitat associated with it is the single greatest threat to biodiversity in NSW. Clearing is generally irreversible because of the ongoing nature of land uses change. Over time, the effects of fragmentation and disturbance can lead to invasion by weeds and further degrade the condition and habitat values of remnant vegetation¹.

After the government weakened land clearing laws in 2016, deforestation rates tripled and clearing continues at unacceptable levels. The existing Native Vegetation Code is an inappropriate regulatory tool for managing impacts on biodiversity in rural areas. It permits a completely unsustainable amount of clearing without any robust environmental assessment or approval requirements².

The latest land clearing data shows that land clearing continues to devastate large swathes of vegetation every year. In NSW, an equivalent of 350 times the Sydney CBD is cleared annually, or 640 football fields per day³.

The annual *Statewide Land and Tree Study* (SLATS) data shows an average of 95,000 hectares of native vegetation was cleared across the state every year for the past four years⁴.

Over half of this is 'unallocated' or unexplained clearing that may or may not be legal - 3095 hectares of sensitive and vulnerable regulated land was cleared in 2021 alone⁵.

The current regulatory framework is clearly unfit for purpose - unable to rein in runaway land clearing and urgently in need of reform. The scope of allowable vegetation clearing activities

is too broad and open to misuse. A significant amount of land clearing can't be explained – it's difficult to ascertain whether land clearing is allowable under even the current ineffective regulations⁶."

The NSW Government must not ignore the need for regulatory change

The failure of the EIS to sufficiently identify areas and species to be cleared or reflect on the likely cumulative impacts of high rates of clearing over the life of the project, is a serious weakness.

Simply relying on being able to utilise "biomass with no higher order uses arising from invasive native species control on agricultural land" for which clearing certificates have been issued under current inadequate rules, means there has been no assessment of the short, medium or long term impacts of this new market for wood on biodiversity, connectivity and overall ecological integrity at a landscape scale.

This failing opens up significant risk for the viability of the project.

Protecting and restoring biodiversity is essential for improving the ecological integrity and resilience of all landscapes. Ecological integrity is essential to minimise risks from threats that are increasing with climate change – particularly from drought and fire (Rogers et al 2022).

Not only has the proponent chosen to ignore the ecological risks to wood supply, but it has also ignored the presumably imminent risk to supply from likely legislative and regulatory change.

The government cannot ignore either risk and must point out to the proponent that sources of wood that appear to be available now have a high probability of being unavailable in the near future.

The project is likely to adversely impact matters of National Environmental Significance

The high volume of wood anticipated from clearing in years 1-4 of the project (1,480,000 dry tonnes) should make it a matter of National Environmental Significance and require assessment under the EPBC for its impacts on federally listed species -particularly given that the focus areas currently available amount to 112,530 ha in the Central West Local Land Service area and 528,179.66 ha in the Western Local Land Service Region.

GHG Emissions

Emissions from deforestation in Australia are amongst the highest in the world and contribute a significant amount to State and National GHG emissions ([State of the Environment Report 2021](#)).

Yet the proponent has failed to account for GHG emissions from broad scale tree clearing that underpins the project. The Government must consider:

- Current gross emissions from approved broad scale tree clearing in the regions identified as sources of wood for the project
- Future GHG emissions from the volume of wood to be sourced from deforestation over the life of the project

- The opportunity cost of not retaining trees/forests in the source regions - i.e. what would emissions reduce by, and sequestration increase by, if instead of clearing ecological recovery was fostered?
- The impact on rates of clearing and related emissions, if the project reduces the net cost of clearing or provides a new source of income?

The attached scientific analysis of how Tasmania achieved net negative emissions in the GHG accounting period to 2018 is instructive. Ceasing logging in a significant area of Tasmania's native forest resulted in a very significant net positive outcome.

NSW should analyse the gross level of emissions attributable to tree clearing (deforestation) over the life of the project – especially the emissions from clearing to 2030.

Caution is required in relying on selective quoting by the proponent from IPCC AR6 WG (iii) to justify the proposed approach to the proponent's bioenergy emissions.

The same chapter notes that bioenergy can only be carbon neutral if bioenergy crops are planted on existing cleared land. Other relevant extracts from IPCC WGs (iii) & (ii) are attached. **Note the conclusion that protection offers the highest mitigation value of any action in the AFOLU sector!**

More importantly for government planning instruments, is the need to recognise the urgency of protecting and recovering biodiverse, resilient natural carbon reservoirs (stocks) to enhance the role of natural ecosystems in limiting warming to 1.5 degrees and minimising the risks of losing carbon to the atmosphere as risks of severe drought and catastrophic fire increase with climate change. Note that risks of severe fire are exacerbated by disturbance from logging and clearing (www.bushfirefacts.org).

The attached Technical Brief explains the importance of ecosystem integrity, its relationship to biodiversity and relevance to climate and biodiversity goals. This brief for COP 28 informed the recent decision by the UNFCCC on the need to integrate climate and biodiversity action – CMA5 para. 33 below:

"Further emphasizes the importance of conserving, protecting and restoring nature and ecosystems towards achieving the Paris Agreement temperature goal, including through enhanced efforts towards halting and reversing deforestation and forest degradation by 2030, and other terrestrial and marine ecosystems acting as sinks and reservoirs of greenhouse gases and by conserving biodiversity, while ensuring social and environmental safeguards, in line with the Kunming-Montreal Global Biodiversity Framework";

This decision is the first ever globally applicable decision on ending deforestation and forest degradation - it applies to Australia and every forested country.

The reference to reservoirs (stocks) as well as sinks is important because retaining carbon in ecosystem reservoirs is partly dependent on keeping warming to within an ecosystems natural tolerance which in turn is heavily influenced by the ecosystems' condition (i.e. its integrity which is in good measure dependent on retaining and/or recovering the natural patterns, structure and composition of biodiversity).

There is more carbon stored in ecosystem reservoirs than there is in known reserves of fossil fuels. Retaining and increasing long term carbon storage in ecosystems is dependent on doing two things simultaneously – rapidly phasing out fossil fuels and protecting and restoring ecological integrity, especially of carbon dense ecosystems like forests, savanna woodlands, mangroves, peatlands, etc. (for full list see the findings of the [2021 IPBES/IPCC Joint Workshop](#)).

The reference to the Kunming-Montreal Global Biodiversity Framework (K-M GBF) is particularly helpful. Another first in a UNFCCC decision, it supports the use of the K-M GBF to guide integrated/synergistic climate and biodiversity action. Goal A and targets 1, 2, 3 and 8 of the K-M GBF provide useful guidance for climate action in land, forests and other ecosystems. Note that target 2 commits Australia to restoring 30% of its ecosystems – in addition to its commitment to protect 30% of its ecosystems (target 3).

The attached GU publication “Burning Forest Biomass is not a source of clean energy and harmful to forest ecosystem integrity” (Mackey, Lindemayer & Keith 2022) explains in considerable detail why burning native forests is not an acceptable climate solution.

The Proponents Approach to GHG Accounting

The proponent relies on old guidance that assumes emissions from logging and clearing are accounted for in the land sector and can therefore be accounted as zero when burned at the stack. The scientific fallacies underpinning this approach (Booth et al. 2022; Mackey et al. 2022) are increasingly well documented with increasing concern amongst IPCC scientists about the highly misleading signals sent to the market. Signals that have created a massive new driver for logging and clearing and reduced many of Europe’s forests from a net sink to a net source of emissions.

While the proponent acknowledges that the actual direct CO₂ emission at the point of biomass combustion would not be zero (in fact depending on the moisture level emissions from the stack can be higher than from burning coal). The proponent has relied on “a simplifying assumption in the guidelines that the amount of CO₂ released during combustion is balanced by the CO₂ taken up by the biomass during its life?” a very confused statement that is no longer supported by the IPCC (AR6 WG (iii)) which fails completely when the source fuel is from deforestation!

The emissions that the project has accounted for do not appear to include those from the energy used to dry the wood.

Offsets will be “the main mechanism for addressing Scope 1 GHG emissions from the Proposal. Having ignored the substantial emissions from deforestation underpinning the project, the proponent has re-assured us that they will not purchase ACCU’s from ‘avoided deforestation’ projects.

The scientific problems with relying on offsets are outlined in Stakeholder Brief B.

Its also worth noting that the safeguard mechanism, which contrary to the proponents claims, the project should be subject to (given that actual emissions of CO₂e from the stack will be in the order of 700,000 t.p.a) should not allow such an obvious loophole. Wilderness Australia will take this up with the Federal Government.

What the Science says about emissions from burning wood

Native forest and vegetation biomass from land clearing could be expected to have a field-moisture content of 45%. At a moisture content of 45%, burning forest wood emits just over one tonne of CO₂ for every tonne of wood burned (approximately 1: 1.25). The emissions from burning wood with a moisture content of 25% can and must be analysed as it will constitute a significant and avoidable anthropogenic greenhouse gas emission.

This is critically important when empirical evidence reveals that burning wood can emit 50% more CO₂ per megawatt-hour than burning coal. The exact emissions rates depend on the chemistry of the fuels, but even more on the facility efficiency. Analysis by Booth et al. (2018) from the US reveals the heat input value for the biomass actually exceeds the value for coal - CO₂ emissions per megawatt-hour are 45% greater because it requires additional energy to boil off water from the wood, reducing the “useful” energy output.

Freshly logged wood and logs can have moisture levels up to about 55%. Wet wood may dry to 20 to 30% moisture if left to dry outdoors. The drying time for logs may be in the order of 10 – 15 days for summer conditions, to weeks or months in winter conditions.

The design of the proposed plant is based on 25% moisture content, however the plant will be able to handle higher levels of moisture but less efficiently and at a lower output. The Redbank facility claims they will use wood that is 25% moisture content. However, this seems extremely unlikely as the majority of the fuel is from recently cleared land where the moisture content can be above 50%.

Assuming the fuel was all dried down to 25% moisture content, the facility would have a throughput of more than 95 tonnes an hour, or the equivalent of about 4 tractor-trailer loads of dried wood chips per hour. How will the facilities providing this material dry it in a timely way? Air-drying will never be adequate. There is every reason to believe that the average fuel moisture content of wood burned at the facility will be considerably higher than 25% which increases emissions and reduces the capacity of the plant to generate power.

Biodiversity Imperatives

Clearing is generally irreversible due to subsequent uses of the land. It displaces the majority of native biota and leads to ongoing habitat degradation and deterioration in vegetation condition through the effects of fragmentation. Clearing is accepted to be the main driver of vegetation change and decline in NSW.

Clearing of native vegetation, with the associated destruction of habitat, has been identified as the process representing the greatest single threat to biodiversity in NSW. It has been listed as a key threatening process under both the Biodiversity Conservation Act 2016 and the Commonwealth Environment Protection and Biodiversity Conservation Act 1999. 58 species have 50% or more of their recorded range in the Central West of NSW, 29 are endangered and 45 are vulnerable to extinction. **Incentives must be created to end clearing not increase it!**

The Convention on Biological Diversity, to which Australia is a signatory, identified the urgency of reversing the extinction crisis through improving ecological integrity and connectivity across all regions when it adopted the Kunming-Montreal Global Biodiversity Framework in 2022. Again, the K-M GBF commits Australia to protecting 30% and restoring a further 30% of its ecosystems by 2030 as part of restoring overall ecological integrity and

connectivity across our landscapes. Major effort must now go into ecological protection and recovery.

Achieving the GOALs and 2030 targets of the K-M GBF will require a whole-of-government and multi-sector approach.

The attached publications on Connectivity Conservation highlight important gaps in government planning frameworks and instruments that will need to be addressed if Australia is to honor its obligations under the K-M GBF.

These publications highlight the importance of landscape planning to:

- Enhance the protection and recovery of native vegetation;
- Improve ecological resilience and the capacity of ecosystems to adapt to climate threats;
- Recover and retain natural carbon stocks; and
- Minimise the risk of tipping points and carbon loss to the atmosphere.

The proposal to reopen the Redbank power station runs absolutely counter to the direction required to restore the ecological health of the affected landscapes of NSW and facilitates ongoing and likely increased, GHG emissions into the atmosphere. It must be rejected.

Virginia Young
Board of Management
Australian Foundation for Wilderness (Wilderness Australia)

References and Attachments

Virginia Young – CV (attached)

Refs: 1 - 6: [Nature Conservation Council NSW website](#)

Booth, M.S 2018 'Not_carbon_neutral:_ Assessing the net emissions impact of residues burned for bioenergy, Environmental Letters

Booth, M.S , 2022 "Sustainable biomass: A paper tiger when it comes to reducing carbon emissions. Bulletin of the Atomic Scientists 78:139-147

Bradby K., Howling G., Debus B., Young V., Mackey B., Underwood J., Adams J. (2023) Connectivity Conservation: a strategy to accelerate effective action from the practitioner's perspective. Gondwana Link, the Great Eastern Ranges Initiative and the National Landcare Network Policy Discussion Paper 2/23. Climate Action Beacon, Griffith University. (attached)

Brendan Mackey, David B. Lindenmayer and Heather Keith (2022). Burning forest biomass for energy, not a source of clean energy and harmful to forest ecosystem integrity. Griffith Climate Action Beacon Policy Discussion Paper 2/22, pp.1-8. Brisbane, Australia: Griffith University. <https://doi.org/10.25904/1912/4547> (attached)

Mackey, B., W. Moomaw, D. Lindenmayer, and H. Keith. 2022. Net carbon accounting and reporting are a barrier to understanding the mitigation value of forest protection in developed countries. Environmental Research Letters 17:054028. (attached)

Mackey B., Bradby K., Gould L., Howling G., O'Connor J., Spencer-Smith T., Watson D.M. and Young V. (2023). Connectivity Conservation: forging the nexus between biodiversity protection and climate action in Australia. Policy Discussion Paper 1/23. Climate Action Beacon, Griffith University, Queensland. (attached)

Rogers Brendan M., Brendan Mackey, Tatiana A. Shestakova, Heather Keith, Virginia Young, Cyril F. Kormos, Dominick A. DellaSala, Jacqueline Dean, Richard Birdsey, Glenn Bush, Richard A. Houghton, William R. Moomaw. 2022. Using ecosystem integrity to maximize climate mitigation and minimize risk in international forest policy. Front. For. Glob. Change, Sec. Forest Management. <https://doi.org/10.3389/ffgc.2022.929281>

Virginia Young, Brendan Mackey, Risa Smith, Nigel Dudley, Madhu Rao. 2023. Connecting the dots: [Achieving synergistic action for global biodiversity and climate goals utilising the Kunming-Montreal Global Biodiversity Framework. Technical Brief | UNFCCC COP 28.](#)

Key extracts on IPCC WG III & II (attached)

Stakeholder Brief B: Understanding the true mitigation value of native forests (attached)