

**North East Forest Alliance Inc submission to:  
Restart of Redbank Power Station and Use of Biomass (Excluding  
Native Forestry Residues from Logging) as a Fuel – SSD-56284960  
Verdant Earth Technologies Limited**

Dailan Pugh, North East Forest Alliance Inc, April 2024

<https://www.planningportal.nsw.gov.au/major-projects/projects/restart-redbank-power-station>

NEFA objects to the proposal to restart the Redbank Power Station using native forest biomass as a fuel, because:

**ECOLOGICAL SUSTAINABILITY**

1. The forests of eastern NSW have been identified as part of one of the world's 35 biodiversity hotspots because of their exceptional species endemism and extensive habitat loss. Land clearing has rapidly escalated over the past decade, making NSW part of one of the world's 24 deforestation fronts. There is nothing ecologically sustainable about clearing tens of thousands of hectares of native vegetation inhabited by millions of native animals, and converting it into carbon dioxide to worsen climate heating.
2. Landclearing and associated habitat fragmentation is the single greatest threat to biodiversity in NSW. Most landclearing is unapproved and based solely on self assessment, where approval is obtained it is based on simplistic desk-top assessments, with no requirements for surveys to identify important habitat for threatened species or key habitat linkages, greatly accentuating the extinction risk. The risk is increased because many landowners often have poor understanding of requirements, and lack of interest in implementing them.
3. The proposal is not in the public interest. Landclearing and logging do not have a social licence, and do not require public consultation through a Development Application process, including consideration of impacts on neighbours and public roads, like other developments on private land.

**INCREASING LANDCLEARING**

4. The intent is to initially obtain at least 790,000 tones of feedstock each year from landclearing, primarily in western NSW, with 607,000 tonnes claimed to be obtained from approved clearing for Invasive Native Species (INS).
5. There is an intent to establish "satellite processing facilities" where drying, chipping and screening of woodchips will be undertaken. These are an integral part of the proposal, yet there is no indication as to the number, their locations, management of waste, volumes to be processed and stored, storage capacity etc.
6. In 2021 15,411 ha of woody vegetation was cleared for agriculture across NSW, with a significant proportion inexplicitly on Vulnerable and Sensitive lands, and over a third of woody vegetation clearing unexplained (75% of all land clearing). In 2019 the Auditor General released a damning report on management of native vegetation in NSW, claiming that clearing is not effectively regulated and managed, with poor oversight and enforcement. A 2023 LLS report identifies many problems as ongoing.
7. The majority of approved landclearing is undertaken under the guise of Invasive Native Species (INS), and this is intended to provide the principal fuel source of biomass to be burnt for electricity at Redbank (at least initially). INS are a suite of naturally occurring species, some of which may have increased in abundance due to past land management, that are considered to impede pasture growth. The EIS

seeks to mislead readers by pretending that “invasive” species primarily refers to “noxious weeds”. It has long been recognised by the Auditor General (2019) that the INS criteria are so vague, and regulation so poor, that large areas have been inappropriately approved for clearing, with the LLS (2023) identifying these problems as ongoing.

8. For its assessments of resources the EIS relies upon claims of millions of hectares approved for clearing as INS in expired Property Vegetation Plans and partnering with a company that was deregistered in 2018. These demonstrate the shoddy and superficial assessments of potential resources. There are constraints on the amount of vegetation that can be removed as INS, and the volumes that can be removed are patchy, necessitating trials to assess realisable volumes. It is astounding that there has been no on-ground assessment of the proportion of INS clearing approvals that would be economically viable to collect and transport, or the volumes that could be realistically obtained within viable haulage distances to Redbank. It is all pie-in-the-sky, with no valid appraisal.
9. The strategy appears to be to float some ridiculously inflated potential resource guesstimates, while not committing to any particular source, so that once approval is granted they can pick and chose from the full gambit of potential resources, and likely claim shortfalls to seek a variation to use forestry residues.
10. Never-the-less, around 145,000 hectares of native vegetation are approved for clearing every year under the often spurious claim of Invasive Native Species (INS), which includes non-woody and woody INS (only the later is potentially suitable for biomass). Despite the large area approved, in part due to financial constraints, the area actually cleared is 16,541 hectares, just 11% of that approved. The actual area annually cleared is only sufficient to provide a small fraction of the biomass sought by Verdant, necessitating a major increase (likely over 5 fold) in annual rates of clearing woody native vegetation if their project is approved.
11. There can be no doubt that creating a biomass market will incentivise and increase landclearing that would not otherwise occur.
12. The claimed intent is to obtain 595,000 tonnes of biomass a year from planted feedstock (likely mallee eucalypts and/or bana grass) by year 4, comprising 70% of feedstock. According to DPI, this would require the establishment of some 14,000 ha of plantations a year, with a goal of 56,000 ha by year 4. The proposal is to manage them on a 4 year rotation. There is no cost benefit analysis to assess the feasibility of this, and the claims of carbon benefits are not consistent with studies that have found that plantation establishment can result in carbon deficits for 5-10 years, or longer, due to loss of soil carbon. There is no assessment of the risk to planted feedstock from fires or contingencies for this. This is a dubious proposal and unlikely to be implemented, meaning that landclearing is likely to be primarily relied upon indefinitely.

## **CARBON ACCOUNTABILITY**

13. The proposal is predicated upon the pretense that burning 850,000 tones of wood on site to generate electricity will result in no CO<sub>2</sub> emissions what-so-ever, whereas it will result in the release of some 1.3 million tones of CO<sub>2</sub> each year. There will be additional emissions from debris and soils at the clearing sites, and from processing and transporting woodchips.
14. As trees age they sequester and store ever increasing volumes of CO<sub>2</sub>. Removal of native vegetation for biomass will release the carbon stored in the vegetation, release a significant proportion of soil carbon, and remove the ongoing carbon sequestration

potential of that vegetation if left alive. Landclearing is a permanent process as there is no regrowth to offset emissions.

15. There has been no Life Cycle Analysis of the vast quantities of carbon that will be released, which should be accounted for at the burning stage when it is converted into CO<sub>2</sub>, or if not then it should be accounted for at the clearing stage when the trees are cut down. With no process to reabsorb the emitted carbon it will stay in the atmosphere for decades or centuries.
16. The burning of biomass is compared to the alternative of burning coal, whereas it should be compared to low-emitting alternatives of wind and solar power.

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## 1. Ecological sustainability

The Fuel Supply and Characterisation Study - Restart of Redbank Power Station claims "*It is proposed that Redbank will be fueled with ecologically sustainable biomass*". There is nothing ecologically sustainable about clearing tens of thousands of hectares of native vegetation inhabited by millions of native animals, and converting it into carbon dioxide to worsen climate heating.

There is no environmental assessment of the lands intended for clearing in the EIS. The EIS (p87) only considers environmental impacts within the development site, stating "*no clearing of bushland or native vegetation is required for the Proposal.*" The Biodiversity Development Assessment Report similarly only considers the development site, claiming "*no biodiversity values or EPBC matters are likely to be affected by the Proposal*".

Claims such of these are outrageous given that thousands of hectares of native vegetation will be cleared every year to provide the biomass for burning.

North-east NSW has internationally significant conservation values that single it out as one of the world's strongholds of biodiversity. Its high diversity of threatened species, large number of endemic species, significant populations of species which have declined elsewhere in Australia and importance for migratory fauna, identify it as one of Australia's major refuge areas with the best ability to maintain Australia's declining biodiversity. The forests of eastern NSW have been identified as part of one of the world's 35 biodiversity hotspots because of their exceptional species endemism (at least 1,500 endemic plant species, i.e., 0.5% of all known species) and habitat loss (70% or more of an area's primary vegetation cleared) (Williams *et.al.* 2011).

NSW is a heavily cleared landscape. Almost 40% of native forests and bushland has been removed since European settlement, and only 9% of remaining vegetation is in close-to-natural condition. [WWF \(2021\)](#) identify eastern Australia (including north-east NSW as one

of the world's 24 deforestation fronts, and the only developed country on the list. Retaining and restoring forests and bushland is essential to stem the tide of wildlife extinctions and land degradation.

Clearing of native vegetation is the greatest threat to biodiversity. Regarding landclearing the [EPA's \(2021\)](#) NSW State of the Environment identifies:

- *Clearing of native vegetation, and the destruction of habitat that is associated with it, has been identified as the single greatest threat to biodiversity in NSW*
- *Land clearing is listed as a key threatening process under the Biodiversity Conservation Act 2016. The rate of permanent clearing of woody vegetation in NSW has been steadily increasing since 2015*
- *The average rate of permanent clearing over seven years from 2009 to 2015 was 13,028 hectares per year ... In 2019, 46,300 hectares of non-woody vegetation was cleared on Regulated Land, and 54,760 hectares in 2018*
- *The loss and alteration of habitat that has occurred from European settlement up to 2013 has directly reduced the **ecological condition** of habitat in New South Wales from its original level (100%) to 44% of that level. Since 2013 to present the ongoing, indirect effects of loss, alteration and fragmentation of habitat, have further reduced the average **ecological carrying capacity** of remaining habitats in New South Wales to 33%.*
- *Following the fires in 2020, overall ecological condition and ecological carrying capacity for NSW both decreased by 2%, to 42% and 31% respectively. Within the immediate fire ground, ecological condition decreased from 72% in 2013 to 44%, a 39% reduction, while ecological carrying capacity decreased from 62% to 38%, a 24% reduction.*

The EPA (2021) identify that clearing native vegetation has numerous environmental impacts, including:

- *irreversible destruction of habitat causing a loss of biological diversity, and may result in total extinction of species or loss of local species*
- *fragmentation of populations resulting in limited gene flow between small isolated populations, reduced potential to adapt to environmental change and loss or severe modification of the interactions between species*
- *riparian zone degradation, such as bank erosion leading to sedimentation that affects aquatic communities*
- *loss or disruption of ecological function*
- *increased greenhouse gas emissions from clearing, both from burning of cleared vegetation and from the loss of soil organic matter*
- *disturbed habitat which may permit the establishment and spread of exotic species which may displace native species*
- *loss of leaf litter, removing habitat for a wide variety of vertebrates and invertebrates.*

Further noting:

*Habitat fragmentation caused by land clearing continues to have long-term impacts on native vegetation well after the initial clearing occurs, including:*

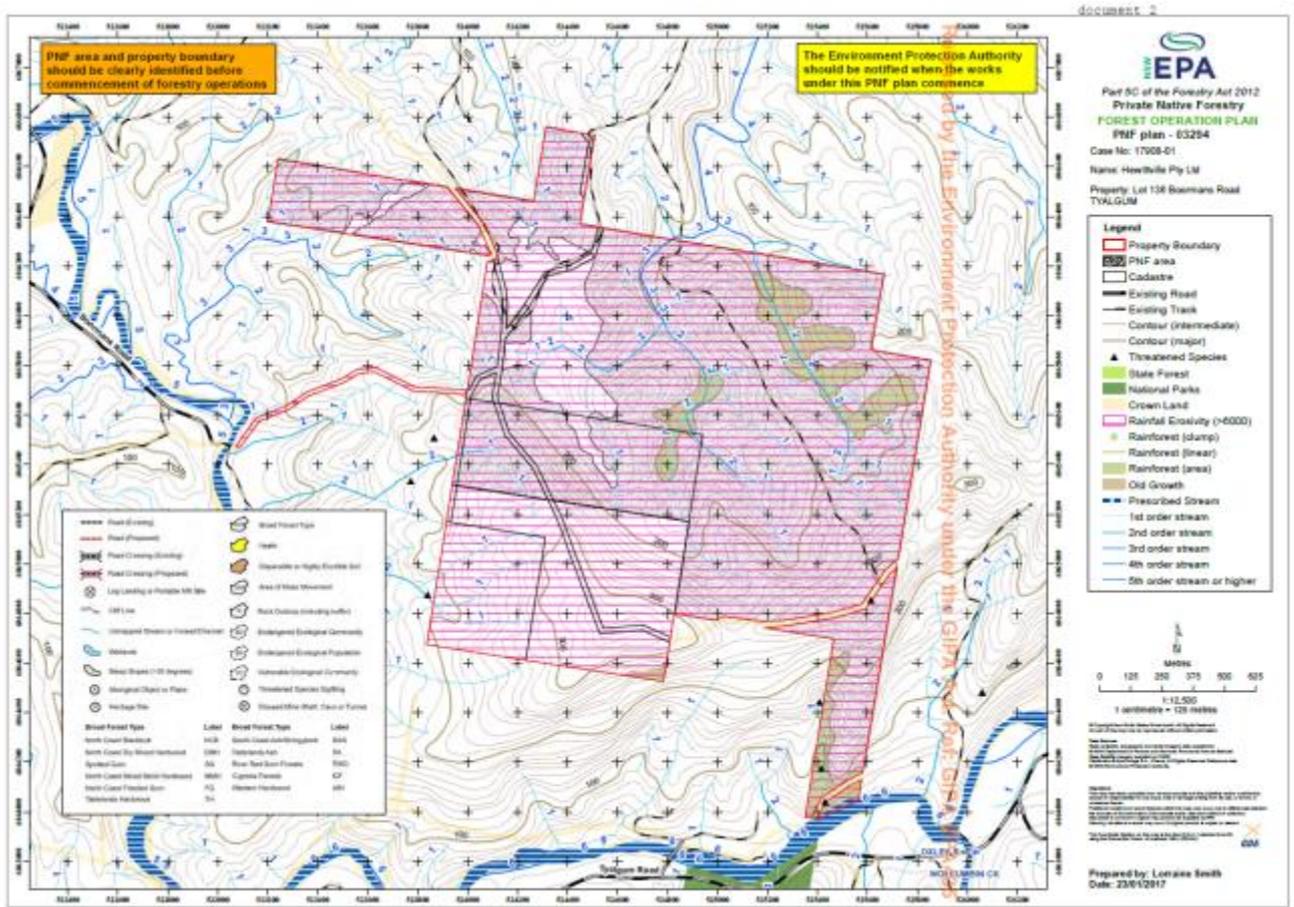
- *the dieback of vegetation and lack of regeneration*
- *invasion by weeds and feral animals*
- *loss of native species and variability.*

Grassy woodlands are the most vulnerable to increased clearing resulting from this proposal, EPA (2021) noting:

*Grassy woodlands have been historically cleared with less than 10% of some classes remaining. A recent resurgence in clearing and grazing pressure is significantly accelerating loss of remaining extent and condition. Fragmentation and loss of understorey is widespread and substantial.*

While most clearing is unauthorized, for authorization all that is required is a simplistic desk-top preparation of a Property Vegetation Plan (PVP) that fail to identify the presence of most areas and values requiring protection or special management. No surveys or site assessments are required. There are no requirements to consider adjacent lands or the regional context. It is clear that Government Agencies and many landowners still avoid taking necessary measures to avoid environmental harm. There are still no effective constraints in place to ensure Ecologically Sustainable Management on private lands.

The simplistic desk-top process is exemplified by the below example a **Forest Operation Plan** from Tyalgum. that only identifies mapped streams, oldgrowth and rainforest. It is next to useless as it provides no information on most of the values requiring protection.



Forest Operation Plan for Tyalgum (obtained under GI(PA) request). Note that the only identified features are mapped rainforest and stream orders. It is a token plan. It is revealing that while the key claims to identify Endangered Ecological Communities it fails to recognise that the rainforest is the Endangered Ecological Community Lowland Rainforest, which is likely to be more extensive than mapped. Also the key claims to identify proposed roads, proposed road crossings, log landings, broad forest types, Aboriginal objects or places, Heritage sites, areas of mass movement, dispersible or highly erodible soils, rock outcrops, threatened species records etc, though none are shown. It's not that they don't occur, but

rather that the EPA didn't bother to identify them, even those readily identifiable from existing information. It is a total failure of process that even proposed roads and creek crossings are not identified, which had significant consequences. Similarly Tweed Shire Council's Environmental Zones are not delineated, which also had significant consequences. It is no wonder that the EPA want to keep their inept shoddy plans secret.

The failure of the process to require any surveys is its greatest failure. Without any requirement to look before they log or clear, threatened species will not be found, and the prescriptions will not be applied. In their submission to LLS on Private Native Forestry (PNF), Ballina Shire Council (2020) observe:

*In respect to threatened entities, the code of practice is highly reliant on records submitted into NSW BioNet. This is not suitably reflective of the likely presence of threatened species in forested areas that are utilised for PNF or the impact of habitat loss on flora and fauna resulting from PNF operations.*

*The application process should require site specific threatened species surveys pertinent to contemporary data, literature and methodology. Ecological assessment should be required to have regard for landscape and cumulative impacts associated with PNF.*

...

*Many of the ecological prescriptions listed in Appendix A rely on a specific record within the forest operation to trigger exclusions, buffers or directives for harvesting. However, as previously noted in the above comments, there is no requirement to undertake surveys. It is unlikely that habitat, sightings and indications of occurrences for many (if not all threatened species) are being observed to subsequently trigger the appropriate prescriptions. For example, observation of koala scats is unlikely if no specific search is carried out.*

[NEFA has undertaken assessments](#) of two PNF operations at Whian Whian and Tyalgum (above). Both Property Vegetation Plans had areas of mapped rainforests that qualified as the Endangered Ecological Community Lowland Rainforest, though the EEC was not identified in the PVPs, even though the EEC extended outside the mapped rainforest. Both PVPs failed to identify any records of threatened species. At Whian Whian NEFA identified multiple records of 6 listed Vulnerable animals (Alberts Lyrebird, Marbled Frogmouth, Sooty Owl, Masked Owl, Koala and Pouched Frog), and 5 threatened plants (two listed Endangered species (*Endiandra muelleri* ssp. *Bracteata*) and Slender Marsdenia (*Marsdenia longiloba*) and three listed Vulnerable species Corokia (*Corokia whiteana*), Red Bopple Nut (*Hicksbeachia pinnatifolia*) and Arrow-head Vine (*Tinospora tinosporoides*)). At Tyalgum we identified numerous records of the then Vulnerable Koala, Marbled Frogmouth and Masked Owl, as well as the Vulnerable Durobby (*Syzygium moorei*) and Endangered Green-leaved rose walnut (*Endiandra muelleri* subsp. *bracteata*).

Even when token plans are prepared there is poor understanding of their requirements by landowners. From their survey of PNF contractors in north-east NSW Jamax Forest Solutions (DPI 2017) found "Even though 73% of PNF landowners already have a PNF PVP through the NSW EPA before they meet a harvesting contractor, 78% of landowners understand very little (0-20%) about the PNF requirements".

Jamax Forest Solutions (2017) report that "67% of PNF harvesting contractors believed that the majority to vast majority of landowners were only interested in maximising the income from their forest". "Whilst many PNF landowners are aware of PNF requirements, many still don't know or don't want to know", and "78% of landowners understand very little (0-20%) about the PNF requirements".

In relation to Endangered Ecological Communities (EEC's), Jamax Forest Solutions (2017) cite the following responses from logging contractors:

- *EPA not prepared to make a call and identify boundary in the field, leaving the decision to less qualified people (contractor/landowner). If you do get EPA out in the field, they have 3 different opinions/boundaries*
- *moving goalpost, previously an EEC would cut out if other species present, now can have a "sprinkle" of other species. Have to identify yourself but EPA won't commit to a decision on in/out, won't draw a line in the sand. But they will prosecute you if they think you got in a different location that where they would have put it.*
- *difficult to identify in the field and left solely with the landowner*
- *EEC goalposts keep changing - gone from limited number of species to anything is possible*
- *what's mapped isn't EEC in field;*

This is unlikely to change, resulting in many TECs not being adequately identified, and instead logged and cleared.

The Local Land Services (2023) [NSW Landholders Survey 2023](#) identified a similar lack of understanding with land clearing rules, finding:

- *Landholders feel capable to assess the native vegetation on their property (76%), and a large proportion felt they are the best person for making decisions (69%)*
- *Only three out of ten (29%) landholders reported that they had contacted Local Land Services (LLS) about managing native vegetation.*
- *Just over a third of landholders (38%) were aware of the Native Vegetation Regulatory Map, and Just over half of those aware of the Map (55%) had looked at it for information about native vegetation clearing on their property.*
- *Only three out of ten (27%) landholders claimed they had heard about the NSW Land Management (Native Vegetation) Code ('the Code').*
- *Of those who made an application to clear land under the Code, half (52%) reported they had undertaken 'part' of the approved works, and a fifth (21%) had undertaken 'all' of the approved works.*

It is clear that the logging of private native forests (including for biomass) has no social licence. The unpublished Forestry and Wood Products report "Community perceptions of Australia's forest, wood and paper industries: implications for social license to operate" surveyed 12,000 people from throughout Australia in 2016 and found.

- *Native forest logging was considered unacceptable by 65% of rural/regional and 70% of urban residents across Australia, and acceptable by 17% of rural and 10% of urban residents. Eleven per cent of rural/regional and 9% of urban residents found this neither acceptable or unacceptable, and 8% and 11% respectively were unsure whether it was acceptable.*
- *45% felt the forest industry had negative impacts on attractiveness of the local landscape and only 22% that it had positive impacts; agriculture and tourism were viewed as having more positive impacts, and mining somewhat more negative impacts*
- *53% felt the industry impacted negatively on local traffic (and 16% positively); similar proportions reported negative impacts on traffic from tourism and mining activities, and 30% from agriculture*

- 58% felt the industry had negative impacts on local road quality while 16% felt it had positive impacts; mining was also viewed as having negative impacts, while agriculture and tourism were viewed as having slightly more positive impacts.

The report concludes:

*Views were very strong about unacceptability of native forest harvesting, with most of those who indicated it was unacceptable choosing the response of 'very unacceptable' rather than moderately or slightly unacceptable.*

*The activity of harvesting timber from native forests has very low levels of social license in Australia, both in regions where this activity occurs and in those where it doesn't. Even amongst the groups who have the highest levels of acceptance of this activity (farmers), and in the regions with highest acceptance (mostly those in which there is higher economic dependence on native forest logging), more people find this activity unacceptable than acceptable.*

There is no social licence and with no Development Application requirements there is no public accountability for landclearing including consideration of impacts on neighbours and public roads. The agencies will not even commit to making the plans available to Councils. As identified in the Local Government NSW (2021) submission to LLS Amendment Bill “Councils need to know where PNF sites are being approved in relation to other planning overlays, and where and when active operations will occur in order to ensure impacts on the community are minimised”. They will be notified of a property after a plan has been approved, though apparently they will not be informed what part of that property has been approved, its scale, access routes (roads and bridges), when logging/clearing is going to start, whether it is in an environmental zone, etc.

## 2. Resources

Table 3.4. Projected feedstock quantities identifies that the total volume of dry feedstock will be 850,000 tonnes (wet), primarily woodchips and/or synthesized wood-pellets processed at unidentified facilities off-site. This is intended to initially be primarily sourced from 607,000 tonnes obtained from approved clearing for Invasive Native Species (INS), 182,000 tonnes from other approved land clearing activities and 61,000 tonnes from “Purpose grown fuel crops”. Over time purpose grown fuel crops and agricultural waste or residues are projected to become increasingly important.

The EIS (p89) states:

*However Verdant has determined that it will **not** seek to use the native bio-material sourced from native forestry operations to use as a feedstock fuel at the Facility even though it is exempted from the provisions of the General Regulation and could be used lawfully for electricity generation.*

*Note that some native forest biomaterial from, as previously noted, from approved land clearing activities such as major infrastructure developments for approved civil infrastructure, road clearing works, right of ways and related approved projects will be used as fuel (when the bio-material has no other higher order uses).*

*Note that Verdant intends to use specifically grown fuel crops (defined as ‘standard fuel’ under the Protection of the Environment Operations (Clean Air) Regulation 2022) for 70% of the fuel used at Redbank Power Station.*

It is often hard to make sense of reported land clearing data due the form of data presentation, and because most clearing is unexplained. The [2021 NSW Vegetation Clearing Report](#) Tab 1 identifies that in 2021 there was a total of 26, 735 ha of woody vegetation cleared across NSW, with 22,318 ha of this on Category 2 Regulated Land. Tab 2 identifies that 15,411 ha of woody vegetation was cleared for agriculture (with the balance for native forestry and infrastructure).

Rural regulated land is defined as rural land required to be categorised as 'Category 2 - regulated land' or 'Category 2 - vulnerable regulated land' or 'Category 2 - sensitive regulated land' under Part 5A of the Local Land Services Act 2013 (LLS Act). Vulnerable regulated land is where clearing of native vegetation “may” not be permitted and Sensitive regulated land is land where clearing is **not** permitted, yet in 2021 (Tab 3) 841 ha of woody vegetation was cleared on Vulnerable lands and 487ha on sensitive lands, with an additional 59ha classified as both. It is astounding that 1,387ha (5%) of woody vegetation was cleared on Sensitive and Vulnerable lands without explanation. Given that these lands were identified because of their high conservation values and vulnerability they represent a real threat to Verdant’s supply chains.

Tab 4 identifies the area of woody vegetation given as authorized under the LLS Act was 7,549 ha and under the NV Act was 5,183 ha. Of the total area of woody vegetation cleared on Category 2 lands a large percentage is unexplained, with 3,272 ha (15%) presumed to “*may be an allowable activity*” and 4,658 ha (21%) “*not associated with an authorisation*”. Such sources represent a real threat to Verdant’s supply chain.

The biggest problem is that by creating a market, the proposal will encourage widespread landclearing, both from approved and unapproved sources, including by providing a market to facilitate clearing of native vegetation that would not otherwise have been economic to clear. It is important to recognize that this is intended to be permanent clearing, with no regrowth to offset emissions.

The vague nature of the assessment of fuel sources, with no assessment of cost-effectiveness or economically available resources makes the assessment invalid. Transport costs will make obtaining timber from far away cost-prohibitive, ruling out many potential sources and incentivizing the use of other sources closer to Redbank. The dispersed nature of clearing residues, and the likely low yields from many INS operations, will make collection of some potential residues uneconomic. A need for higher energy fuels (more economical) will likely limit potential sources.

While the proposal makes no mention of using material derived from native forests other than by landclearing, it only rules out using trees and parts of trees resulting from a private native forestry plan or integrated forestry operations approval (i.e. logging residues). It leaves allowable sources to include bio-material obtained from plantations, exempt farm forestry, clearing in accordance with a land management (native vegetation) code, sawmill waste and wood processing waste.

A danger is that trees will just be fed through sawmills with minimal sawn timber recovery to generate large volumes of "waste" as fuel, and that project creep will occur whereby logging “residues” will later be added.

The public can have no faith in the management of native vegetation as most clearing is unapproved and the Government doesn’t even know how much of it is illegal. Even when it is illegal they actively avoid enforcement.

The 2019 Auditor General report '[Managing Native Vegetation](#)' was damning of management of native vegetation in NSW and the regulation of clearing:

*The clearing of native vegetation on rural land is not effectively regulated and managed because the processes in place to support the regulatory framework are weak. There is no evidence-based assurance that clearing of native vegetation is being carried out in accordance with approvals. Responses to incidents of unlawful clearing are slow, with few tangible outcomes. Enforcement action is rarely taken against landholders who unlawfully clear native vegetation.*

*There are processes in place for approving land clearing but there is limited follow-up to ensure approvals are complied with.*

*... There is limited follow-up or capacity to gauge whether landholders are complying with the conditions of approvals and effectively managing areas of their land that have been set aside for conservation (i.e. 'set asides').*

*... The rules around land clearing may not be responding adequately to environmental risks.*

*The Code, which contains conditions under which the thinning or clearing of native vegetation can be approved on regulated land, is intended to allow landholders to improve productivity while responding to environmental risks. That said, it may not be achieving this balance. For example, the Code allows some native species to be treated as 'invasive' when they may not be invading an area, provides little protection for groundcover and limited management requirements for set asides. There is also limited ability under the Code to reject applications for higher risk clearing proposals.*

*... There are significant delays in identifying unlawful clearing and few penalties imposed.*

*Unexplained land clearing can take over two years to identify and analyse, making it difficult to minimise environmental harm or gather evidence to prosecute unlawful clearing. Despite around 1,000 instances of unexplained clearing identified by OEH and over 500 reports to the environmental hotline each year, with around 300 investigations in progress at any one time, there are only two to three prosecutions, three to five remediation orders and around ten penalty notices issued each year for unlawful clearing. Further, OEH is yet to commence any prosecutions under the current legislation which commenced in August 2017.*

Some relevant key findings posing risks to the Redbank supply chain identified by the LLS internal 2023 "[Statutory Review of the native vegetation provisions \(Part 5A and Schedule 5A and Schedule 5B\) of the Local Land Services Act 2013](#)" include:

- *Critically Endangered Ecological Communities (CEECs) are protected but some key stakeholders suggest this could be stronger, including through improved identification and mapping.*
- *Extremes in weather and changes in climate are likely to become more severe in the future and climate change risk management and tools are not currently built into the Land Management Framework.*
- *The high level of unallocated clearing reduces public confidence in the Land Management Framework. While there have been efforts to allocate clearing activities, unallocated clearing on native grasslands / non-woody vegetation remains high (89% of all unallocated clearing in 2021).*

- *Allowable activities are not currently monitored and therefore may contribute to unallocated clearing.*
- *Stakeholder confidence in the Land Management Framework is being impacted by a lack of transparent and consistent monitoring, evaluation and reporting, including limited details on compliance and enforcement actions.*

The vast majority of landclearing is identified as “unallocated”, meaning the LLS has no idea whether it is lawful or not – “Unallocated clearing refers to clearing or disturbance in landcover detected from satellite imagery that does not need approval, has not been recorded or is unlawful”. Unlawful clearing poses a real threat to Redbank’s supply chains, as noted by LLS (2023):

*Prior to 2021, unallocated clearing was consistently reported in annual landcover change reporting as being around 75% of total vegetation loss. The 2021 annual landcover change report by the Department of Planning and Environment has been able to attribute some woody vegetation loss to a new category of ‘presumed Allowable Activity’. The category ‘presumed Allowable Activity’ is not exclusive to clearing under the LLS Act and can also include lawful native vegetation clearing under other legislative frameworks, such as the Rural Boundary Clearing Code<sup>42</sup>. This has resulted in the reduction of unallocated clearing in the 2021 report to 61% of all vegetation loss.*

There is an intent to establish “satellite processing facilities” where drying, chipping and screening of woodchips will be undertaken, yet there is no indication as to how many satellite processing facilities are intended or where they will be located, the volumes to be processed, management of fines and waste, storage capacity etc. It is repeatedly stated that “All preparation including drying, chipping and screening will be performed off site”, and identified that “Verdant will also seek to establish satellite processing facilities where feedstock can be stored and processed to specification, these facilities when required with require their own DA and EPL approvals.”

## **2.1. ‘Invasive’ native species**

The EIS identifies that the intent is to initially obtain 607,000 t (with 25% moisture) of woodchipped biomass (sieved to remove fines) from approvals for clearing “Invasive Native Species” (INS), primarily in western NSW.

Management, regulation and enforcement of land clearing is a mess. The majority of approved landclearing is undertaken under the guise of Invasive Native Species (INS), and this is intended to provide the principal fuel source to be burnt for electricity at Redbank (at least initially). It has long been recognised by the Auditor General (2019) that the criteria are so vague, and regulation so poor, that large areas have been inappropriately approved for clearing, with the LLS (2023) identifying these problems as ongoing.

Under the heading “Residues from land clearing of invasive species on agricultural land” the EIS (p138) seeks to mislead readers by pretending that “invasive” species primarily refers to “noxious weeds”, stating:

*Verdant Earth have been working with the Civil Industries and Local Landcare Services LLS NSW as well as landowners who have trees and shrubs that are classified as noxious weeds and may be cleared from land for agricultural uses. This includes native scrub vegetation that has reached unnatural densities and dominate an area on agricultural land. Current practice for weed control is the removal of trees,*

*which are then left to dry for a few weeks before being pushed into a pile and burnt in situ.*

*For the Proposal, they would be harvested in accordance with land management codes, then chipped on site and transported to the Facility.*

The Fuel Supply and Characterisation Study - Restart of Redbank Power Station identifies that there are millions of hectares approved for clearing in INS PVPs, that are yet to be cleared:

*The INS PVP provisions were included in the Native Vegetation Act 2003 to address concerns raised by pastoralists that the proposal to end broadscale clearing in NSW would impinge upon their pastoral operations and ability to manage invasive native species. Pastoralists in the west of NSW were given support to prepare INS PVPs and were encouraged by the state government to apply to clear significant areas of vegetation, even if they had no immediate intentions to act on the approvals (Hemming et al, 2021:21).*

*From the period between 2005 and 2017 when the Native Vegetation Act 2003 (NSW) was repealed 4.93 million hectares of invasive scrub was approved for clearing or other treatment under INS PVPs. Between 2005 and 30 June 2010, 257 INS PVPs were issued, with a combined treatment area of 2.09 million hectares. The Western LLS region accounted for the overwhelming majority of the INS PVPs (1.97 million hectares, or 94 per cent of the total).*

It needs to be accounted for that PVP approvals for INS are primarily for non-woody vegetation, and were granted for fifteen years, so any issued after 2009 will have already expired, with more expiring each year. So many of the legacy approvals relied upon are invalid or irrelevant. In 2021 6,596 ha were cleared under INS PVPs, far less than the hundreds of thousands of hectares Verdant would require.

It is also claimed that “Verdant have been working with Western LLS and a local business organisation Western Regeneration Pty Ltd, based in Cobar to enter into a supply agreement for up to 500,000 tonnes per annum of biomass from their approved INS clearing”. Though a google search identifies that ASIC sought to deregister Western Regeneration Pty Ltd in September 2018. The reliance upon a company apparently deregistered over 5 years ago exemplifies the lack of due diligence, the gross inaccuracy of the data relied upon and the lack of any credibility for the resource assessment.

The strategy appears to be to float some ridiculously inflated potential resource guesstimates, while not committing to any particular source, so that once approval is granted they can pick and chose from the full gambit of potential resources, and likely claim shortfalls to seek a variation to use forestry residues.

Never-the-less it is recognised that the LLS (2023) identifies that an annual average of 145,000 hectares is being approved for INS clearing, so there are still vast areas being approved for INS clearing. It is important to recognize that LLS (2023) identifies the area actually cleared is 16,541 hectares, just 11% of that approved, with reasons given as “due to known drivers of clearing rates such as commodity prices, climatic conditions, and the relative expense of undertaking vegetation management” (LLS 2023). It is not apparent how much of this is woody vegetation, though it is clear that establishing a market for woody INS clearing residues will provide an incentive for significantly increased clearing, and therefore significantly increasing environmental impacts.

The [2021 NSW Vegetation Clearing Report](#) (Tab 2) identifies that in 2021 15,411 ha of woody vegetation was cleared for agriculture, and in 2020 13,397ha. The areas of non-woody vegetation cleared for agriculture were 51,499 ha and 64,407 ha respectively. Only woody vegetation would be suitable for biomass, and only a portion of this would be classed as INS.

For 2021, Tab 5 identifies that under the LLS Act, 525 ha of INS was cleared under “Low impact clearing of invasive native species”, and 4,566 ha of native vegetation was cleared on “Moderate impact clearing of invasive native species”. Removal of INS requires notification of LLS at least 2 weeks prior to undertaking Low Impact Clearing, including on Vulnerable regulated land. Certification by LLS is required for Moderate Impact Clearing.

Tab 6 also identifies that under the NV Act 1,120 ha of native vegetation was approved for removal as INS by Ministerial Order and 6,596 ha under PVPs. This gives the total area cleared as INV as 12,807 ha. It is not clear how much native vegetation categorized as INS is woody vegetation suitable for biomass. In 2021 15,411 ha of woody vegetation was cleared for agriculture, representing just 23% of the vegetation cleared for agriculture. It is not clear what proportion of the woody native vegetation is categorized as INS

It is assumed that across NSW at most 10,000ha of woody vegetation suitable for biomass is currently cleared as INS per annum.

In summary:

- Significant areas of sensitive and vulnerable regulated land are being cleared without explanation.
- Of the area of woody vegetation cleared on Category 2 regulated lands over a third is unexplained
- In 2021 15,411 ha of woody vegetation (some of which is INS) was cleared for agriculture across NSW
- In 2021 4,732 (17%) of woody-native vegetation cleared was on Category 1 lands where no approval is required.
- INV can be lawfully cleared without approval (following notification to LLS) under “Low impact clearing of invasive native species”
- 89% of annual INS clearing approvals are not currently acted upon

The key question is what proportion of INS clearing operations will yield commercial quantities of timber that will be economical to chip, stockpile and transport to Redbank. The EIS claims that “*As a conservative estimate it could be assumed then that 41.6 (dry tonnes) of residues are potentially available per hectare of clearing.*” In Southeast Queensland bioregion Ngugi *et. al.* (2018) found total aboveground stand biomass ranged from 14.1 t·ha<sup>-1</sup> in dry woodlands dominated by ironbark species to 123.1 t·ha<sup>-1</sup> in open forests on alluvial plains (which have limited area extent).

For western forests potential yields would predominately be from low productivity forests. By definition they would be degraded woodlands with low tree cover. And theoretically clearing is primarily limited to INS. The rules for INS clearing require minimising soil disturbance, minimising clearing of non-invasive native species (less than 20%), limiting clearing to listed INS with a diameter at breast height over bark of less than 20 centimeters or 30 centimeters diameter at breast height over bark if a listed species, retaining at least 20 INS plants per hectare (at least 2 metres in height) and clearing no more than 90% of each 1,000 hectares of treatment area.

Given the constraints on clearing INS it is apparent that yields will be far less than the EIS claims. To obtain the identified annual 640,000 t (allowing for 25% moisture and 5% fines) of woodchipped biomass from the above estimated maximum of 10,000 hectares of woody native vegetation being cleared under INS would require a yield of 64 tonnes per hectare, which is clearly not available from most western ecosystems even with total removal of biomass. A more realistic average yield of at best 10 tonnes per hectare would require a 600-700% increase in annual clearing for INS, across the whole State. Volumes needed to be removed within economic transport distance of Redbank would be far higher. If the proposal is approved it would require a massive increase in the annual clearing rates, the quantum of which needs to be identified.

It is astounding that there has been no on-ground assessment of the proportion of INS clearing approvals that would be economically viable to collect and transport, or the volumes that could be realistically obtained within viable haulage distances to Redbank. It is all pie-in-the-sky, with no valid appraisal.

The EIS's assessment of timber volumes obtainable by landclearing for INS is grossly inflated, inadequate and misleading. Potential yields are grossly inflated. There is no clear identification of the where the woodchips/pellets will be sourced from, the volumes that would be economically accessible, increase in annual clearing that would be required to provide them, potential alternative uses for the timber, or the economics of transporting them vast distances. To assess the feasibility of the proposal there needs to be detailed assessment of potentially available resources before approval is given.

It is unacceptable to determine viable resources after the approval as it is evident they will need to be very different than claimed and require a significant increase in the rate of landclearing.

There is also no consideration of the impacts on threatened species or ecosystems, or fragmentation and species dispersal.

Specifically in relation to Invasive Native Species the 2019 Auditor General report '[Managing Native Vegetation](#)' identifies major problems with definitions of invasive species, leaving the system and classification of INS wide-open to abuse, stating:

*Over 200,000 hectares of native vegetation has been approved for thinning or clearing under certificates since the Code commenced in August 2017 to February 2019. Of this around 170,000 hectares authorises the thinning of Invasive Native Species (INS) and over 30,000 hectares covers thinning or clearing under other parts of the Code. ...*

*However, notification forms do not cover all the requirements of the Code and how they are meant to be implemented. This means requirements in some sections of the Code may be overlooked by landholders.*

*For example:*

*· The Part 2 Division 1 notification form for thinning INS does not specify clearing of non-invasive native species is permitted to only the minimum extent necessary (Clause 25(4) of the Code) and the plant retention requirements for clearing other than by burning (Clause 25(7)). ...*

***There is no test to determine if 'invasive native species' are invading a property***

*There are problems with the use of the term invasive native species (INS) and the lack of evidence of 'invasiveness'. One check for INS under the Code is excessive stem density, but this implies that any natural variation in stem density across the landscape that is above this 'standard' represents a poor environmental outcome. Another check is the proportion of INS relative to other species, but the species classed as INS under the Code are the predominant naturally occurring species in the areas from where they are being cleared.*

*There are no requirements under the Code for demonstrating that a species is behaving aggressively and invading an area for it to be treated as an INS. There is no test for increasing density, dominance, numbers or cover. Such an invasion should be straightforward to evidence with historical information, satellite images and photographs. It is therefore unclear whether the vegetation to be removed are 'invasive' or just stable and naturally occurring. INS approvals for thinning to date cover around five times the area of other thinning and clearing approvals under the Code.*

*There was more rigour in the assessment of invasiveness prior to the implementation of the Code. For example, the Clearing of the Invasive Native Species Ministerial Order (INS self-assessable code) required that, in addition to being declared as an invasive native species, the vegetation to be cleared need to be regenerating densely or invading plant communities. The guidelines stated that this will usually lead to, or may have already caused, a change in the structure and composition of the plant community. This could result in the vegetation being dominated by a particular species (or a few similar species) or the structure changing; for example, open grassy woodland may become a shrubby forest with little grass.*

*An additional eight native species have been added to the list of INS under the Code compared with the arrangements prior to the reforms.*

The Auditor General made a number of recommendations for improvements by December 2019, such as 'ensuring landholders are required to resubmit notifications that do not comply with the Code', and "establishing guidelines for ... treatment methods that result in nil and minimal ground disturbance, especially in relation to invasive native species and thinning other native vegetation". By June 2020, review the Code to address "the absence of the requirement to demonstrate that a species is invading a landscape prior to approving its clearing as an invasive native species".

The EIS identifies "Current treatment methods for INS include ... Ploughing, Chaining, Raking, Grubbing, Cultivation/cropping ...." It is apparent that the Auditor General's recommendation for "establishing guidelines for ... treatment methods that result in nil and minimal ground disturbance, especially in relation to invasive native species" has been ignored.

It is apparent that by 2023 little had been done to address the manifest deficiencies with approvals for landclearing, particularly with respect to Invasive Native Species.

The internal 2023 "[Statutory Review of the native vegetation provisions \(Part 5A and Schedule 5A and Schedule 5B\) of the Local Land Services Act 2013](#)" found that most approved clearing is for Invasive Native Species (INS), with a significant risk that many approvals have been given for vegetation that does not qualify as INS due to the lack of clear criteria and guidelines. It is apparent that extensive areas have been approved for clearing as INS, though only a small proportion has actually been cleared, in part due to

economic constraints. The proposal will create an economic incentive to activate many sleeper approvals.

In relation to INS, the LLS 2023 “Statutory Review” states:

*The majority of rural land authorised for clearing (over 90% of total) corresponds with two parts of the Code: managing Invasive Native Species (Part 2 - INS) (80% of authorisations), and Pasture Expansion ...*

*However, the use of these authorisations is low, with 15,306 hectares of the total area approved actually cleared up to December 2021 for Parts 3-6, and 16,541 hectares of authorisations cleared for the management of INS (Part 2).<sup>32</sup> This limited extent of activating these authorisations is most likely due to known drivers of clearing rates such as commodity prices, climatic conditions,<sup>33</sup> and the relative expense of undertaking vegetation management. ...*

*In addition, the average annual area of INS authorisations under the previous Native Vegetation Act 2003 was over 425,000 hectares compared to the annual average of less than 145,000 hectares under the current Land Management Framework. Given the high rates of authorisations under the Native Vegetation Act 2003 were also not fully activated it is highly likely that the same will apply to Invasive Native Species authorisations under Part 5A of the Act.*

*The Review identified that the main environmental risks posed by INS authorisations<sup>36</sup> comprise:*

- limited treatment area specificity in assessments under Part 2, Division 2 of the Code to ensure the treatment area is only targeting areas where species are acting invasively<sup>37</sup>*
- lack of an invasiveness test for a landholder to use as part of Part 2, Division 1 of the Code.<sup>38</sup>*

*These key areas of risk were also noted in previous reviews, and public submissions and key stakeholder consultation undertaken for this Review.*

*<sup>36</sup> Under Part 2 Division 1, landholders may remove Invasive Native Species listed for their LLS region provided they comply with basic criteria (retention of specific species over a certain size and a minimum stem density). This Division contains no requirement for the listed Invasive Native Species to be acting invasively within the treatment area, hence creating a risk that listed Invasive Native Species can be cleared but may not be acting invasively.*

*Under Part 2 Division 2, Invasive Native Species must be assessed by LLS to comprise at least 50% of the trees and shrubs in the treatment area; or, be invading a plant community where the species is not previously known to occur. Anecdotal evidence indicates potential misinterpretation of this test and a lack of specified treatment area which is leading to authorisations for large areas, particularly in Western LLS region.*

## 2.2. Energy Crops

The claimed intent is to obtain 490,000 tonnes of dry biomass a year from planted feedstock (likely mallee eucalypts and/or bana grass) by year 4, comprising 70% of feedstock. According to DPI, this would require the establishment of some 14,000 ha of plantations a year, with a goal of 56,000 ha by year 4. There is no cost benefit analysis to assess the feasibility of this, and the claims of carbon benefits are contrary to many studies. This is a dubious proposal.

The EIS (p119) notes:

*The production of feedstock from energy crops will involve the cultivation of purpose-grown biomass within managed plantations. These energy crops will be planted in annual rotations and will take approximately four years before they contain enough above ground biomass to be harvested. This will be done using coppicing to allow the harvest biomass to regrow during the following four years. Once harvested, the plant material will be air dried, chipped and screened before being transported to the power station for combustion.*

*Whilst several species are under investigation, the most likely crops to consist of quick-rotation coppicing are eucalypts and mallees. For the quick-rotation eucalypts and mallees, seedlings will be planted on an annual basis over four years, from which point harvest will begin, with four years of growth between each harvest. Bana grass may also be used. Bana grass cuttings are planted and allowed to grow for 1 year, after which the tops are harvested and the cuttings replanted to thicken the crop or for energy feedstock. After 3 to 4 years, the plants are coppiced on a regular rotation.*

Further to this it is stated

*Within 300km of the Redbank Power Station, the NSW Department of Primary Industries determined<sup>30</sup> that there is over 8 million hectares of potential suitable land for growing energy crops. Verdant Earth would require approximately 60,000 hectares of land to support 100% of the standard fuel load if it consisted entirely of short-rotation woody crops (490,000 tonnes). ...*

*Verdant's discussions with local mine sites have revealed the potential for establishment of an 8,000 ha crop of Bana Grass which would yield an average of 50 dry tonnes/ha (approximately 400,000 tonnes per annum) which provide over half of the total feedstock requirements for the power station.*

Ximenes (DPI 2023) 'Part 1: Potential carbon abatement of growing short-rotation woody crops' identifies the need to plant 20,000 ha of land each year for four years, totalling an area of 80,000 hectares if the goal is to provide the full biomass needs. His assessment that "There are significant carbon abatement benefits associated with a strategy that relies on short-rotation wood crops to supply the VE power station", appears to be an ill-informed fantasy.

Ximenes (DPI 2023) claims about rapid sequestration of carbon in plantations is not supported by the evidence. The establishment of plantations involves significant soil disturbance and consequently the loss of soil organic carbon. It can take one or more decades for soils to recover the lost carbon. This means that it can take 5-10 years before biomass in plantations result in a net increase in carbon storage, even when established on cleared land.

From their review of plantations in eastern Australia, Turner *et. al.* (2005) found that plantations may reduce soil carbon for the whole rotation (up to 30 years), with overall biomass growth often not off-setting establishment losses for 5-10 years

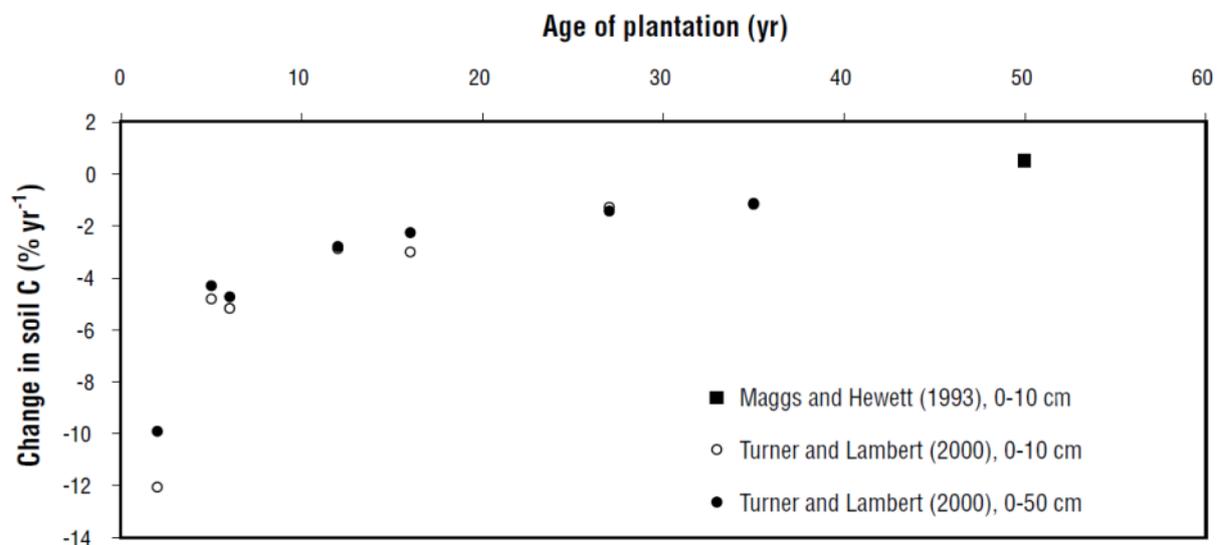
*... after establishment, there are reduced inputs of carbon into the soil from prior vegetation or rapidly growing weeds, together with accelerated decomposition of soil organic matter as a result of disturbance, and this leads to a net loss of soil organic carbon. In some systems this loss of soil organic carbon is not balanced by carbon biomass sequestration until 5–10 years after establishment and on some sites, a reduction in soil organic carbon may remain until the end of the rotation. ... There was a general pattern of reduced carbon in surface soil immediately after plantation establishment and with time this extended deeper into the soil profile. The actual quantities varied greatly depending on the soil type. The decline was primarily a result of losses of labile carbon and was greater when the previous land use had essentially been native vegetation or highly improved pastures as opposed to regrowth woodland, or native pasture, or degraded land. In the absence of further disturbance, soil organic carbon can accumulate to pre-establishment levels but many short rotation plantations are terminated prior to this being attained.*

From their review of Australian studies Polgase *et. al.* (2000) found

*For soil in the <10 cm or < 30 cm layers, there were significant effects of stand age on C change. Soil C generally decreased during the first 10 years (particularly the first five years) of afforestation followed by a slower rate of recovery and accumulation.*

For north-east NSW Polgase *et. al.* (2000) found

There is a decline in C in the surface 10 or 50 cm for about 15 years after plantation establishment and then a general levelling out. The initial decline in soil C was 10%-12% yr<sup>-1</sup> during the first two years after afforestation. Twenty-five years after afforestation, change in soil C was only -1.13 to -1.18 % yr<sup>-1</sup>.



**Figure 12.2.** from Polgase *et. al.* (2000) Change in soil C in 0-10 cm or 0-50 cm layer under 2- to 50-year-old forest on ex-pasture land in the subtropical climatic regions of Queensland and the north coast of New South Wales.

Polgase *et. al.* (2000) consider that the "losses in soil C" by Turner and Lambert (2000) "were by far the largest recorded in any of the studies reviewed" and thus should be "treated with caution", summarising them as:

*The paper by Turner and Lambert (2000) used a chronosequence approach to estimate change in soil C following afforestation. The calculated decrease (0-50 cm) during the first two years was about 3,900 g m<sup>-2</sup> (1,900 g m<sup>-2</sup> yr<sup>-1</sup>) for *P. radiata* plantations and 8,400 g m<sup>-2</sup> (4,200 g m<sup>-2</sup> yr<sup>-1</sup>) for the *E. grandis* chronosequence. Turner and Lambert (2000) further state that it may take 10-20 years before losses from soil C are offset by accumulation in biomass.*

From their comparison of 26 year old eucalypt reforestation with agricultural sites in Western Australia, Harper *et. al.* (2012) found that soil organic carbon up to 0.3 m depth ranged between 33 and 55 Mg ha<sup>-1</sup>, "with no statistically significant differences between tree species and adjacent farmland".

Fargione *et. al.* (2008) found that any strategy to reduce GHG emissions that causes land conversion from native ecosystems to cropland is likely to be counter-productive, and that even the conversion of abandoned pasture to biofuels created a lasting carbon debt.

*Our analyses suggest that biofuels, if produced on converted land, could, for long periods of time, be much greater net emitters of green-house gases than the fossil fuels that they typically displace. All but two—sugarcane ethanol and soybean biodiesel on Cerrado—would generate greater GHG emissions for at least half a century, with several forms of biofuel production from land conversion doing so for centuries. At least for current or developing biofuel technologies, any strategy to reduce GHG emissions that causes land conversion from native ecosystems to cropland is likely to be counter-productive.*

*We also evaluated the possibility that U.S. cropland that has been retired from annual crop production and planted with perennial grasses may have a short payback time when converted to corn ethanol production, because these systems have already lost a substantial portion of their carbon stores. However, after abandonment from cropping, perennial systems gradually recover their carbon stores. For U.S. central grassland on cropland that has been enrolled in the U.S. Conservation Reserve Program for 15 years, we found that converting it to corn ethanol production creates a biofuel carbon debt that would take ~ 48 years to repay.*

### **3. Carbon Accountability**

The claim is repeatedly made that "The Proposal provides near-net zero dispatchable electricity in support of achieving the goals of the Climate Change Act 2022 and the transition to renewables.", noting "the estimated GHG emissions from dry wood combustion were based on CH<sub>4</sub> and N<sub>2</sub>O only, and the emission factor for CO<sub>2</sub> was taken to be zero".

Loemker *et. al.* (2023) claim:

*Biomass for fuel may have an initial small, temporary effect on terrestrial carbon stock, counterbalanced by the immediate benefit from displacing coal. As the project develops to rely on purpose grown biomass it will create carbon sinks and long-term sources of net zero fuel eliminating any carbon deficit and leading to world leading negative CO<sub>2</sub> profile generation. The proposed development would thus support decarbonisation of the NSW grid and contribute to NSW's goal of Net Zero by 2050.*

*The proposed AQIA will include an assessment of the potential contribution from the proposed development to greenhouse gases however this is expected to result in a net positive benefit.*

*The proposed development is expected to result in environmental savings to climate change, fossil fuel depletion, photochemical oxidation, acidification eutrophication, particulate matter, water scarcity, and land use impacts. It has been estimated that the production of electricity from biomass at Redbank will save 1,069 kgCO<sub>2</sub>-eq for every MWh generated, a reduction of 96% from the a 'business-as-usual' approach. This equates to an annual saving of 1,106 ktCO<sub>2</sub>-eq.*

*The majority of this saving is due to the absorption of carbon through the growth of biomass which ultimately forms the fuel which enter the combustion process. The physical emissions of carbon dioxide from the power station can be no greater than and is negated by this earlier absorption resulting in net zero power. Natures energy solution.*

The Life Cycle Analysis (p141) undertaken compares coal to biomass, without accounting for the release of CO<sub>2</sub> that occurs when and where the biomass is harvested, the loss of biomass in processing into pellets/chips, fossil fuel use in harvesting and transporting, and the release of CO<sub>2</sub> when the biomass is burnt to generate electricity. Any valid LCA has to fully account for emissions at every stage in the process.

As trees age they sequester and store ever increasing volumes of CO<sub>2</sub>. Removal of native vegetation for biomass will release the carbon stored in the vegetation, release a significant proportion of soil carbon, and remove the ongoing carbon sequestration potential of that vegetation if left alive. Landclearing is a permanent process as there is no regrowth to offset emissions.

It is a fallacy for the EIS (p167) to discount emissions from wood to pretend the proposal is relatively benign with Scope 1 and 2 emissions of around 25,000 t CO<sub>2</sub>-e per annum, as the combustion of 850,000 tonnes of wood on site will result in some 1.3 million tonnes of CO<sub>2</sub> each year. Similarly it is invalid to claim "As the Proposal's Scope 1 emissions will not exceed 100,000 t CO<sub>2</sub>-e per year at any time over its operational life, there is no requirement for the offsetting approach to be verified by an independent expert reviewer".

The EIS (p142) states

*"In the biomass scenario, the climate change impacts are considerably lower, primarily due to low impacts associated with biomass combustion at the plant. The carbon dioxide emitted was previously absorbed as the biomass was grown, resulting in lower net emissions. Approximately 36% of the climate change burdens come from the transport of feedstock to the power station, with a similar portion (36%) linked to processing the biomass. These processing impacts are driven by the combustion of diesel for wood chipping. The majority of the remaining impacts (26%) are associated with the emissions that occur at the power station such as nitrous oxide and methane."*

The rationale behind these assumptions are not readily apparent, though the EIS (p144) explains:

*The majority of this saving is due to the absorption of carbon through the growth phase of feedstocks – the products of which ultimately forms the wastes which enter the combustion process. The physical emissions of carbon dioxide from the power station is negated by this earlier absorption.*

The EIS (p164) states

*Scope 1 emissions were calculated for fuel combustion (for electricity generation) using the biomass fuel, and for on-site diesel consumption associated with biomass handing and Proposal start-up. Scope 3 emissions were calculated for fuel combustion associated with biomass processing and transport to Redbank, as well as for on-site diesel use.*

The EIS then deletes the CO<sub>2</sub> emissions from burning biomass from its calculations, claiming:

*In accordance with conventions and reporting guidelines (e.g. IPCC 2006<sup>48</sup>, 2019<sup>49</sup>; DCCEEW 2023<sup>50</sup>), the emission factor for CO<sub>2</sub> from the combustion of biogenic carbon was taken to be zero. The actual direct CO<sub>2</sub> emission at the point of biomass combustion would not be zero. However, there is a simplifying assumption in the guidelines that the amount of CO<sub>2</sub> released during combustion is balanced by the CO<sub>2</sub> taken up by the biomass during its life. These emission and removal mechanisms for CO<sub>2</sub> are therefore accounted for in the land use, land use change and forestry (LULUCF) sector, through an understanding of changes in biomass stock. In this GHG assessment, if the direct CO<sub>2</sub> emissions from burning the biomass had been included in the calculations, then there would effectively been a double counting of emissions in carbon accounting.*

This is false accountancy, because

- the burning of wood for energy releases more Green House Gasses (GHGs) per unit of energy than burning coal given the lower energy density, higher moisture content and less hydrogen.
- harvesting of biomass results in significant emissions of GHGs on site, through waste material and soil disturbance
- removing vegetation removes its future carbon sequestration potential
- material that may have been left on site to slowly decompose following clearing will be removed and burnt as biomass
- the GHGs released by burning biomass obtained from landclearing is not re-sequestered by regrowth
- creating a market for clearing residues provides an incentive for landclearing that would not have otherwise occurred
- the emissions intensity, claimed to be only 65% of Broadwater which has similar feedstock (timber/crop), is understated.

This does not change the fact that the carbon has been removed from the terrestrial carbon pool and released to the atmosphere by combustion. While it may be debatable as to when the emissions should be accounted for – when the vegetation is cleared or when it is burnt - it still needs to be recognized and accounted for in this development.

The combustion of 850,000 tonnes of wood on site will result in some 1.3 million tonnes of CO<sub>2</sub> each year. Emissions will be increased from soils and residues left on site, material not considered suitable for fuel (i.e. fines), and fuel used in harvesting, processing (ie drying) and transport of biomass.

The evidence is that at 2020 emission rates Australia will have consumed all of its carbon budget to limit global warming to 1.5° C within 7-8 years, the millions of tons of CO<sub>2</sub> emitted by this project will burn through a large portion of our remaining carbon budget.

The only alternatives considered for generating electricity are coal, and to some extent gas, such as in Ximenes (DPI 2023) Part 1: Potential carbon abatement of growing short-rotation

woody crops. There is no reason why coal should be the comparison fuel as the coal-fired power station closed a decade ago and no one is proposing resurrecting it. Comparisons should be made with wind and solar power as they are the most cost-effective alternatives.

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