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**Submission Singleton Council DA modification - DA183/1993**  
**PROPOSAL: S4.56 Modification to allow use of biomass as a fuel source**

We submit new reasons why this proposal should be rejected while reiterating and elaborating on previous arguments. **Note:** Redbank Power Station is referred to throughout our submission as **RPS (Redbank Power Station)**.

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**Section A:**  
**Summary: Grounds for Rejection of Proposal**

**First: This is not a modification of an existing DA but an entirely new operation which will have far reaching, indeed state-wide impact.**

**Air Quality**

Analysis of ambient air quality in the vicinity of the proposal, and the known dispersion propensity of certain (increased) emissions, *which the proponent confirms will eventuate from RPS*, demonstrates that RPS will impact the health of metropolitan populations beyond the Hunter, i.e. including Sydney, and potentially along the entire east coast. In terms of air quality impact alone the proposal must be assessed as state significant development.

**Appendix 1 A: Transference of impact from large scale emission point sources** explains diagrammatically and in text, the nature and scale of the health impact of specific pollutants from wood combustion, power stations and on-road diesel vehicle exhaust emissions, all of which combine in this proposal.

Included in the Appendix is an extract of from a transcript of evidence provided to the *NSW Legislative Assembly Committee on Environment and Planning enquiry into the Sustainability of Energy Supply and Resources in NSW*. An expert witness describes how emissions from energy generation in the Hunter already transfer pollution across the state. Air born emissions travel. Dr Tait, Core Group, Ecology and Environment Special Interest Group, Public Health Association of Australia: (committee hearing transcript 26<sup>th</sup> August, 2020:

*“The EFA Report on the health burdens of fine particle pollution from electricity generation in NSW, that Ben Awald did at the end of 2018, actually shows that **a lot of the air pollution in Sydney comes from the Hunter Valley power stations**. We are not just talking about adverse health consequences for people in the Hunter Valley from Hunter Valley power stations; **we are actually talking about people down the whole east coast.**”*

#### **Exacerbation of Covid 19 transmission**

Another reason why it's critical RPS is appraised as state significant development is because PM<sub>2.5</sub> emissions travelling from the Hunter to the Sydney metropolitan region and elsewhere, heighten risk of Covid 19 air-borne transmission. **Appendix 1 B: Propensity of biomass combustion to facilitate transmission of Covid 19 molecules on PM<sub>2.5</sub>**

**This RPS proposal is not a modification of an existing DA but a substantially different development as it involves alteration to *physical features and components*.<sup>1</sup>**

The volume (tonnage) of fuel delivered, stored and burned will be higher than when lignite (coal wash tailings) are the feedstock. The **RPS Biomass Handling Plant Concept** Study lists moisture content of average woodchips burned as 25% which would provide a net calorific value (NCV) of 13.42 GJ/tonne. However, for lignite, it's higher, 14 GJ/tonne.<sup>2</sup>

Obviously therefore less lignite than woodchips is needed for the same energy output (which the proposal states won't change). Fresh woodchips have a moisture content between 30 and 40%. There is significant difference between 25% (as claimed) and 40% moisture. At 40% moisture many more tonnes of fuel will need to be burnt, if as stated, electricity output won't be reduced.

Stack velocity rate will increase from 10g/s with coal to 21g/s with biomass, which apparently signifies a 30% increase in combustion power, i.e. around 30% more fuel being burned. It's doubtful boilers could cope with so much more fuel without modifications (which according to the planning documents won't be done). The only alternative would be to lower the generating capacity, which would again represent, material change, i.e. a new proposal would be required, not a modification.

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<sup>1</sup> Justice Bignold in *Moto Projects v North Sydney Council* (1999) in relation to 106 LGERA 298

<sup>2</sup> <https://www.sciencedirect.com/topics/engineering/net-calorific-value>

## **Further destruction of NSW forest ecosystem integrity due to feedstock demand and supply; consequent impact on carbon cycles, exacerbation of global warming and increasing the propensity for fire in heavily logged forests**

Both the native and plantation forests well beyond the Hunter will be further degraded and lost to higher uses by the need to source the quantity of feedstock RPS requires.

*“97% of scientists internationally agree wood biomass combustion presents dangers that extend beyond immediate and long term impacts on human and environmental health to disruption of ecological processes (by the need to source vastly unsustainable quantities of biomass which inevitably drives logging and deforestation, regardless of at what stage or by what criteria that biomass is described as ‘residue’).”<sup>3</sup> A Canadian government diagram compares forest bioenergy energy efficiency to both coal and oil as feedstocks for energy taking into account impacts of feedstock source. **Appendix 2 C Biomass Energy exacerbates CC during production and consumption***

Ongoing logging promoted by a market for forest biomass for combustion, makes forests vulnerable. Rather than decrease risk of bushfire, intensive logging for biomass energy promotes forest desiccation and flammability. See **Appendix 5 Logging and Bushfire Danger**.

## **Second: Fundamental premises are flawed; the proposal relies on outdated policy and legislation for which change is recommended at international, national and state (NSW) levels.**

Forest bioenergy is rejected by climate scientists as a means of lowering emissions. The following is an extract from Science Informing Policy Briefing Note 1/21<sup>4</sup> on the need to reform carbon accounting settings for forest bioenergy. This is the scientific context within which this development should be appraised. The source document<sup>5</sup> for the briefing note is in **Appendix 4: Progress in reform of Biomass Carbon Accounting**.

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<sup>3</sup> AFCA: Submission Singleton Council DA modification - DA183/1993.2

<sup>4</sup> Current carbon accounting is not fit for- Purpose for Nbs. Reforming Carbon Accounting to support Nature-based Solutions, Science informing policy briefing note 1/21

<sup>5</sup> *Evaluating nature-based solutions for climate mitigation and conservation requires comprehensive carbon accounting*

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The briefing note describes how current carbon accounting is not fit-for purpose for Nature Based Solutions, now the IPCC preferred pathway for CO<sub>2</sub> draw-down.

*The inadequacies of current carbon accounting are seen in the perverse outcomes that have occurred as a result of activities that cause degradation, such as:*

- *converting carbon-dense forests and peatlands into fast-growing plantations,*
- *preventing forests from reaching maturity because of the false accounting preference for young, fast-growing forests,*
- *harvesting forests for wood products and bioenergy that results in loss of carbon stocks where replacement of these stocks will only occur decades into the future, thus creating a carbon debt,*
- *erroneously considering carbon stocks in reservoirs of different longevities and risk of loss as fungible.*<sup>6</sup>

**The RPS proposal is inconsistent with emerging policy and regulatory frameworks at state, national and international levels re:**

### **Air Quality Standards**

RPS omits reference to the changing opinion re GHG emissions from forest bioenergy now occurring at international, national and NSW state level, and to changes enacted after reviews of international and national guidelines for ambient atmospheric pollutant thresholds. These include (2021) WHO standards and the 2021 revision of Australia's National Environment Protection Measure (NEPM) for specific relevant emissions.

Utilising biomass combustion RPS will emit large volumes of pollutants directly and indirectly toxic to environmental and human health. These include high levels of CO<sub>2</sub> and other GHGs as well as pollutants with a direct causal association with cardiovascular and respiratory disease (leading to stroke, lung cancer and chronic obstructive pulmonary disease (COPD) as well as other documented conditions. We have already referred to PM<sub>2.5</sub> and the fact that RPS (by the admission of its own AQIA) will further burden PM<sub>2.5</sub> ambient levels in the Hunter which now already exceed WHO and other standards.

### **Forest Bioenergy Carbon Emissions and Cycles**

#### **NSW recommendations for legislative change re forest bioenergy as carbon neutral**

Findings of the (2021) report of the NSW Legislative Assembly Committee on Environment and Planning now refute claims on the carbon neutrality of the forest bioenergy carbon cycle as set out in the RPS proposal.

The committee enquired into Sustainability of Energy Supply and Resources in NSW. After consideration of *current* peer reviewed science, economic analysis and expert opinion in August 2020, the committee confirmed that to burn wood (including native forest biomass)

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<sup>6</sup> Current carbon accounting is not fit for- Purpose for Nbs. Reforming Carbon Accounting to support Nature-based Solutions, Science informing policy briefing note 1/21

as a fossil fuel substitute is not carbon neutral, not renewable, damaging to climate and of immediate severe threat not only to the region in which it occurs, but at a state level.

In our former submission we argued that proposed conversion of Redbank Power Station (RPS) is predicated on not only inaccurate information regarding the carbon neutrality of wood combustion, but on out-dated policy settings. The findings of the aforementioned enquiry confirm those arguments.

*Sustainability of Energy Supply and Resources in NSW: Summary of findings and recommendations, (p 15-17)*

Finding 5 \_\_\_\_\_ 16

**Forest biomass is not a renewable, sustainable source of energy.**

Recommendation 2 \_\_\_\_\_ 16

**That the NSW Government amends the definition of native forest biomaterial under the Protection of the Environment Operations (General) Regulation 2009 to prevent the burning of wood from native forests to generate energy.**

Recommendation 3 \_\_\_\_\_ 16

**That the NSW Government works with other jurisdictions to exclude native forest biomass from being classed as renewable energy and ensure it is not eligible for renewable energy credits.<sup>7</sup>**

**International trends re policy reversal regarding forest biomass renewable energy**

**The European Union**

As of 2017 member states can no longer grant subsidies to electricity-only installations burning forest biomass unless there are very specific provisions. The European Commission's proposal for biomass 'reform' will take subsidies away from electricity-only biomass plants burning forest biomass starting 2026.

**The European Academies Science Advisory Council** now finds forest biomass for power *"not effective in mitigating climate change and may even increase the risk of dangerous climate change."*<sup>8</sup>

A review based on Europe's Academies of Science states that classification of woody biomass as 'renewable energy' needs to be reversed because the net effect of its use is

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<sup>7</sup> NSW Legislative Assembly Committee on Environment and Planning inquiry into the Sustainability of Energy Supply and Resources in NSW: Rationale for decisions that gas and forest biomass aren't sustainable, zero emissions energy source Appendix 4: Progress in reform of Biomass Carbon Accounting

<sup>8</sup> <https://easac.eu/media-room/press-releases/details/easac-welcomes-that-the-jrc-report-strengthens-the-case-for-shorter-payback-periods-on-woody-biomass/>

having the opposite effect that expected of renewable energy, by increasing atmospheric levels of carbon dioxide for substantial periods of time. It finds that *“current policies are failing to recognize that removing forest carbon stocks for bioenergy leads to an initial increase in emissions. Moreover, the periods during which atmospheric CO<sub>2</sub> levels are raised before forest regrowth can reabsorb the excess emissions are incompatible with the urgency of reducing emissions to comply with the objectives enshrined in the Paris Agreement.”*

*“Woody biomass contains less energy than coal (biomass pellets 9.6–12.2 GJ/m<sup>3</sup>; coal 18.4–23.8 GJ/m<sup>3</sup>; IEABioenergy, 2017), so that CO<sub>2</sub> emissions for the same energy output are higher (110 kg CO<sub>2</sub>/GJ for solid biomass, 94.6–96 kg CO<sub>2</sub>/GJ for coals in IPCC, 2006).*

*Combined with the energy needs to gather from diffuse sources and intermediate treatment (drying and pelleting), replacing fossil fuels in electricity generation results in significant increases in emissions of CO<sub>2</sub> per kWh.*

*The net effect of switching to FDB biomass is thus usually to increase emissions and thus increase atmospheric levels of CO<sub>2</sub>’<sup>9</sup>*

International calls for reform of the EU Renewable Energy Directive are loud and clear with 500 scientists signing an open letter to world leaders:

*“As numerous studies have shown...burning of wood will increase warming for decades to centuries. That is true even when the wood replaces coal, oil or natural gas.”*

#### **National Policy Change re forest bioenergy as carbon neutral:**

##### **The United Kingdom:**

The UK announced revision of policy in 2018 that sets a new and substantially lower limit on life-cycle CO<sub>2</sub> emissions that will affect the ability of forest biomass based energy and fuel facilities to attract subsidy.<sup>10</sup>

**Slovakia:** On 6th December 2018, the Slovak Parliament adopted an amendment to the law regulating support for renewable energy sources (n. 309/2009) which means de facto end of subsidies for wood biomass used for energy production in Slovakia. The amendment changes the definition of renewable energy sources so from 1st January 2019 only biomass from dedicated energy crops and waste from wood processing industry can be subsidized.

**Source documents: Appendix 4: Progress in Reform of Biomass Carbon Accounting**

Advocates of forest biomass energy (or fuel) rely on the outdated policy settings because they currently provide for subsidisation of the enterprise under the guise that forest bioenergy is ‘renewable’.

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<sup>9</sup> ***Serious mismatches continue between science and policy in forest bioenergy***

Michael Norton Andras Baldi Vicas Buda Bruno Carli Pavel Cudlin Mike B. Jones Atte Korhola Rajmund Michalski Francisco Novo Július Oszlányi ... See all authors

First published: 22 August 2019 <https://doi.org/10.1111/gcbb.12643>Citations: 6

<sup>10</sup> <https://www.pfpi.net/new-uk-biomass-policy-removes-subsidies-for-high-carbon-wood-pellets>

Clearly, not only in NSW but in other jurisdictions which have allowed the entrenchment of false biomass carbon accounting, the argument that wood biomass is a carbon neutral fossil fuel substitute is being challenged. Based on scientific advice and evidence of impact, countries are becoming hesitant regarding subsidising forest bioenergy, or B.E.C.C.S, (as the strategy is commonly referred to) as a legitimate pathway to emission reduction.

This includes the recent warning issued by co-author of the most recent IPCC report, that there is 'no carbon budget left' left for Paris target; in other words absolutely no more emissions of CO<sub>2</sub> (regardless of how they are 'theoretically' accounted for), should be released to atmosphere.

### **We need biosphere stewardship that protects carbon sinks and builds resilience**

"It is therefore concerning that the IPCC now concludes that Earth's temperature is slightly more sensitive to rising CO<sub>2</sub> concentrations than previously thought —meaning our remaining carbon budget to achieve the Paris target may have effectively shrunk. If we were able to more accurately simulate feedbacks in the global carbon cycle, such as tipping points in forest ecosystems and abrupt permafrost thaw, **the estimated remaining budget could disappear altogether**. Hence, safeguarding the biosphere from further degradation or collapse is an existential challenge for humanity."<sup>11</sup>

In 2009 Australian scientists warned against any further damage to the biosphere from land-clearing or logging: *"Native vegetation is a major carbon sink. Forest and woodland destruction is the fastest-growing contributor to Australia's carbon emissions, as it transfers the carbon that was stored in the vegetation to the atmosphere. Hence, Australia's increasing forest and woodland destruction threatens its ability to meet its commitments under four major international treaties: the Convention on Biological Diversity, the World Heritage Convention, the Convention to Combat Desertification, and the Framework Convention on Climate Change."*<sup>12</sup>

Verdant's RPS proposal involves immediate emission of high volumes of CO<sub>2</sub> to atmosphere simultaneous with reliance on ongoing logging of native and plantation forests, contravening repeated warnings on how best to address climate emergency.

## **Section B: Critique Air Quality Impact Assessment**

### **Air Quality Impacts**

Approval of this proposal would be to invite into the Hunter Region almost as severe a threat as possible in terms of increase to chronic illness and death from air pollution.

### **Recent NSW government report that warns about emissions from wood power stations**

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<sup>11</sup> Rockstrom et al, PNAS September 21, 2021 118 (38) e2115218118; <https://doi.org/10.1073/pnas.2115218118>, <https://www.pnas.org/content/118/38/e2115218118?etoc=>

<sup>12</sup> <http://scboceania.org/landclearing/>

Arguing from reports of a 2020 study funded by the NSW Environment Protection Authority and the NSW Ministry of Health, we explain below why a wood combustion power station represents possibly the most polluting scenario that could be devised for increasing the likelihood of death and illness from air pollution in the pursuit of a so-called 'renewable energy from biomass' fossil fuel transition.

### **3 worst PM<sub>2.5</sub> point sources: Wood combustion, power stations, on-road diesel exhaust**

These findings were the culmination of a comprehensive project<sup>13</sup> that examined air quality danger from 8 point sources dispersing particulate matter 2.5 (PM<sub>2.5</sub>). The results were that in NSW PM<sub>2.5</sub> is worse from 1) wood combustion 2) power stations, followed up by 3) on-road diesel vehicles exhaust. The ranked point sources in order of volume and dispersal propensity were overlaid with impact on population and are listed in the column below in order of greatest to least threat.

**On-road diesel vehicle exhaust (the third worst source) forms the core form transport strategy of RPS's proposed new supply chain.** The *Transport Assessment* for RPS prepared by ASON Group admits that the transport of forest biomass to the proposed site will consist of 70 B-double trucks per day, for 6 days a week, for 12 hours a day, in addition to up to 80 car vehicle trips and 2 trucks each of limestone and start up fuel. This all represents dangerous *additional* emissions and dispersion of particulates throughout the region; currently the (non-operational) power station engenders no vehicular traffic.

- wood heaters
- power stations
- on-road diesel vehicle exhaust
- on-road petrol vehicle exhaust
- on-road non-exhaust
- ships
- industrial plant and machinery
- air craft both flight and on ground operations

To approve Redbank Power Station would be to combine three of the worst possible point sources for PM<sub>2.5</sub> pollution and operate them together, concentrating emissions with cumulative impact.

This is illustrated clearly in the figure overleaf, derived from Fig. 1 of the report of the project funded by NSW Department of Health and the NSW Department of Planning. One can see the area between Wollongong and Newcastle and encompassing Sydney with various overlays. Data regarding PM<sub>2.5</sub> point sources and dispersal is overlaid with population. The spatial distribution of source-specific PM<sub>2.5</sub> demonstrates the significance of wood combustion and power stations in generating PM<sub>2.5</sub>.

***Dark blue indicates lower (<0.01 concentration), pale green to yellow higher (1.0 >1.0)***

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<sup>13</sup> The mortality effect of PM<sub>2.5</sub> sources in the Greater Metropolitan Region of Sydney, Australia

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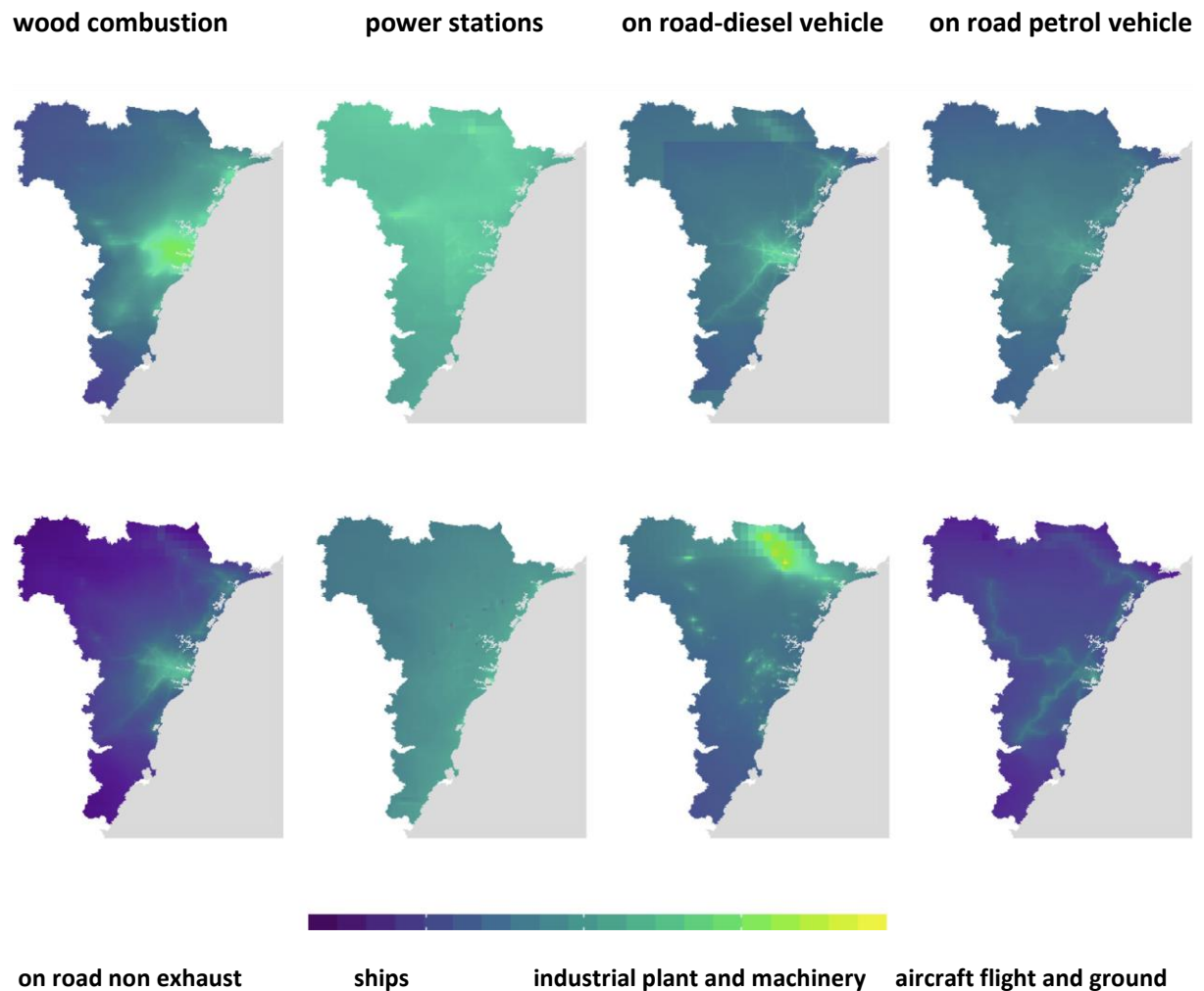
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Adaptation of Table 2 of the study is potential of PM 2.5 concentration, according to source, ranked for severity.

Primary PM<sub>2.5</sub> emissions from individual sources in 2008 and the modelled population-weighted annual average PM<sub>2.5</sub> (primary and secondary) in 2010/11, using the CCAM-B particle modeling framework.

Source	PM <sub>2.5</sub> emission <sup>a</sup>		PM <sub>2.5</sub> concentration <sup>b</sup>	
	Tonnes	%	µg/m <sup>3</sup>	%
Wood heaters	7,400	19.0	0.49	24.0
Power stations	3,400	8.8	0.22	10.5
On-road mobile sources	2,100	5.3	0.35	16.9
Exhaust from petrol vehicle	180	0.5	0.08	4.1
Exhaust from diesel vehicles	1,100	2.9	0.16	7.6
Non-exhaust emissions	770	2.0	0.11	5.3

Off-road mobile sources	2,900	7.5	0.22	10.4
Industrial vehicles and equipment	2,000	5.2	0.06	3.0
Ships	850	2.2	0.12	5.7
Aircraft (flight and ground)	64	0.2	0.03	1.7
Other anthropogenic sources	16,000	41.0	1.28	38.1

*a Emissions of primary PM<sub>2.5</sub> in 2008 (NSW EPA, 2012).*

*b Population-weighted annual average concentration*

### **The danger of particulate matter from wood combustion**

PM<sub>2.5</sub> is one of the most dangerous outputs of wood combustion, because of its size. Too small to be filtered by nose hair and the throat but too large to be filtered by Brownian motion, it can move deep into the respiratory system and lungs and is small enough to penetrate the bloodstream. The particles transport noxious micro-molecules deep into the lungs and pulmonary system, many cancerous e.g. SO<sub>2</sub>. Those not necessarily cancerous can promote severe respiratory illness and heart disease, amongst other conditions, resulting in severe and/or chronic illness and death. The 2020 NSW government funded project found:

***PM<sub>2.5</sub> from wood combustion and power stations the most prevalent, mobile and dangerous to human health.***<sup>14</sup>

Regarding mortality, the study states unequivocally (at section 4) that: *Wood heaters and power stations were responsible for the greatest burden, causing 0.3% and 0.1% of all mortality (1,400 and 620 YLL) respectively.*

*Also: This paper quantifies the burden of mortality attributable to PM<sub>2.5</sub> from specific emission sources. It shows that wood heaters, on-road vehicles and power stations are collectively responsible for more than 50% of PM<sub>2.5</sub>-related mortality.*

For this reason alone, the proposed modification to Redbank Power Station should not be allowed to proceed.

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<sup>14</sup> “Our primary analysis shows that around 1.2% of all mortality in the Sydney GMR (equivalent to 5,900 YLL) is attributable to long-term exposure to anthropogenic PM<sub>2.5</sub>. Wood heaters and power stations were responsible for the greatest burden, causing 0.3% and 0.1% of all mortality (1,400 and 620 YLL) respectively.”

## **Reliance on theoretical (predictive modelling) rather than real world experience (evidence)**

The Air Quality Impact Assessment (AQIA) prepared for Verdant by admits emissions from stack to be:

- PM<sub>10</sub> and PM<sub>2.5</sub> (from soot and fly ash)
- oxides of Nitrogen (NO<sub>x</sub>)<sup>2</sup> including nitrogen dioxide, arising from nitrogen in the fuel and reactions of atmospheric nitrogen
- sulphur dioxide (SO<sub>2</sub>) arising from the sulphur in the fuel (high for fuel but relatively minor for biomass)
- carbon monoxide (CO) formed as an intermediate of the combustion process
- volatile organic compounds (VOs) from incomplete combustion or unreacted fuel compounds; and
- trace elements, emitted as PM and arising from the metal content of the fuel

We refute many of the findings made in relation to these pollutants, i.e. that they will not or only infrequently exceed acceptable ambient levels, on the basis that a plethora of national and international studies contradict the information provided in Verdant's AQIA.

For example, re:

- PM<sub>10</sub> and PM<sub>2.5</sub> (from soot and fly ash), the AQIA is relying on predictions derived from what is claimed to be acceptable standards. The AQIA doesn't refer to real world (known) PM<sub>10</sub> and PM<sub>2.5</sub> concentrations arising from the burning of wood in a furnace to produce power.

Australia isn't measuring emissions from 100% wood combustion power stations because it doesn't have any. Elsewhere in the world such facilities do exist and where they operate the findings are that the emissions are dangerous and unacceptable:

The 2017 report from the Air Quality Expert Group to the Department for Environment, Food and Rural Affairs; Scottish Government; Welsh Government; and Department of the Environment in Northern Ireland, reporting results from a range of biomass combustion facilities, noted that industrial scale biomass facilities had the most comprehensive data collection and reporting methodology. However, the expert group found, in relation to the question: *Will the impact of future levels of biomass burning, with proposed policy measures in place, lead to a significant change in ambient concentrations of major pollutants and further in population weighted mean exposure?* that:

**'Biomass burning activity data used in the NAEI suggests that there are increasing emissions of PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>x</sub>, BaP and dioxins from this source category at a range of scales of combustion.'**

Evidence from the U.S. suggests that as coal is replaced by biomass to generate electricity, it is also replaced by biomass as a major source of air pollution that impacts public health. Peer reviewed science published in May 2021 states that, *"The increasing role of gas and*

*biomass and wood emissions in the health burden of PM<sub>2.5</sub> exposure indicates that swapping one air pollution-emitting fuel source for another is not a pathway to a healthy energy system.”* Jonathan J Buonocore et al 2021 Environ. Res. Lett. 16 054030, [https://www.eenews.net/assets/2021/05/05/document\\_gw\\_01.pdf](https://www.eenews.net/assets/2021/05/05/document_gw_01.pdf)

Diminishing, rather than improving air quality is inevitable if RPS is allowed to proceed based on prediction rather than known consequence. Prediction is just that; acting on lessons from facilities for which there are already results from monitoring data is a more prudent path. Countries that experiment with large scale of burning wood for power now regret it.

#### **Covid 19 molecule aggregation on PM<sub>2.5</sub> from biomass combustion (black soot) emissions**

In our first submission regarding RPS we warned the project was fraught with risk and liable to invite litigation. Links between PM<sub>2.5</sub> from the black soot component of biomass combustion had already been made by a World Bank report and these findings were submitted to the NSW parliamentary enquiry into NSW energy supply in August 2020.

#### **Omission of life cycle analysis into effects on health from the bioenergy/fuel industries:**

Another expert witness who presented to the NSW Environment and Planning enquiry into the sustainability of energy supply and resources was Dr Christine Cowie, representing the Centre for Air Pollution, Energy and Health Research (CAR), a National Health and Medical Research Council-funded centre for research excellence in air pollution and health. This organisation consists of 30 scientists working collaboratively in the fields of epidemiology, toxicologists and atmospheric scientists, in collaboration also with CSIRO.

Dr Cowie reported findings of CAR research into 7,000 scientific abstracts that showed lack of analysis of energy impact in terms of health. She expressed particular concerns about the lack of research and analysis taking place in energy transition technology explaining that there were few epidemiological observational studies being conducted. There was a lack of lifecycle analyses with very little consideration of little of public health impact in some emerging fields. She raised the issue of biofuels remarking that although there has been significant investment in the last 5 years, there is a widespread assumption they are less hazardous with very little research actually conducted.

#### **Lack of objectivity of RPS proposal**

The consultant utilised for preparation of the AQIA for Redbank, Ronan Kellaghan, has a long history in the employ of the mining industry. The mining industry has a vested interest in white-washing emission impact.

The biomass combustion industry has a vested interest in white (or green) -washing emission impact. The AQIA omits reference to now known links between PM<sub>2.5</sub> and Covid transmission published internationally in air quality research. Since the World Bank warning in 2020 more studies demonstrate propensity of biomass combustion emissions to hasten and extend Covid 19 transmission where 'black soot' is prevalent.

**The AQIA does not address the latest World Health Organisation guidelines which now recommend lower levels (far lower than NSW's permitted levels) for NO<sub>2</sub> and small particulates to protect human health.**

We think that to establish a facility, the ensuing emissions of which can only promote Covid 19 transmission, would be an extremely risky undertaking, for everyone. **Appendix 1 b Propensity of biomass combustion to facilitate transmission of Covid 19 molecules**

## **Section C: Carbon Cycles**

### **Critique of claims re carbon neutrality of biomass (wood) combustion**

Around the world respected scientific authorities in association now warn there is absolutely no scope for the release of further GHG concentrates to atmosphere because the current level of > 1.2 degrees above pre-industrial global concentrations of CO<sub>2</sub> is already too high. As explained in our general introduction, there is no carbon budget left.

Claims made in the AQIA and the Supply Chain and Material Handling chapters of the amended RPS proposal lack understanding of how to assess carbon stocks and fluxes and their impact on global CO<sub>2</sub> levels. The proponent is either not *au fait* with or ignoring the highest levels of climate change policy making, which now agree to urgent need to review policy settings re forests biomass.

The carbon neutrality of forest biomass (and wood combustion generally) for power generation is disputed scientifically at international, regional, national and levels, and is now rejected by a NSW a parliamentary committee, recommending legislative change. This is the context within which RPS needs to be assessed.

We re-state the NSW *Sustainability of energy supply and resources in NSW report*, which recommends legislative change on the basis that forest bioenergy is highly emissive.

*Sustainability of energy supply and resources in NSW, Findings and recommendations, (pp. 15-17)*

**Finding 5** \_\_\_\_\_ **16**

**Forest biomass is not a renewable, sustainable source of energy.**

**Recommendation 2** \_\_\_\_\_ **16**

**That the NSW Government amends the definition of native forest biomaterial under the Protection of the Environment Operations (General) Regulation 2009 to prevent the burning of wood from native forests to generate energy.**

**Recommendation 3** \_\_\_\_\_ **16**

**That the NSW Government works with other jurisdictions to exclude native forest biomass from being classed as renewable energy and ensure it is not eligible for renewable energy credits.**

Below is further explanation of how all aspects of forest bioenergy contribute to the raising, not lowering of emissions of carbon to atmosphere:

- forest biomass combustion is, in itself, highly emissive of carbon at the smokestack
- life cycle arguments based on the simple assertion the re-growing trees will absorb carbon emitted are simplistic and ignore critical timeframes for atmospheric draw

down of carbon there is an opportunity cost of not leaving the trees in the ground to mature where they can sequester and store exponentially more atmospheric carbon; logging releases huge stocks of carbon to atmosphere; potential carbon storage and sequestration is lost

- supply chains for forest bioenergy are in themselves highly emissive (from logging to secure biomass product to transport from forests to combustion destinations)

We address proponent assertions re forest biomass emissions and life cycle analysis of feedstock as they appear in the AQIA and the Supply Chain and Material Handling chapters on RPS, below. Note: RPS proposal claims are in bold and italic.

## From the AQIA:

### Statement 1 at 8.2

***Under a BAU scenario forest residues would remain in place and would either decompose or be burnt on site.***

This statement implies that:

- *it is residues from harvesting operations (i.e. branches, leaves, tree crowns and so on) that will be collected and transported for combustion*
- *there is a problem with forest residue decaying on site*

The proponent relies heavily on information provided by the NSW DPI<sup>15</sup> but that information has changed since the beginning of this decade.

In 2017 NSW DPI corrected former claims by Forests Corporation NSW (and itself) that it would be leaves, branches and stumps left on the forest floor that would provide biomass feedstock. The 2017 NSW DPI *Residues Report* admits experience has shown collection and transport from actual forest compartments of harvest debris neither feasible nor economic. It has become explicit that the proposed 'residue' available for biomass is whole pulp logs. The report clarifies that forest biomass for combustion is destined to be immature native forest trees referred to in the industry as pulp logs; young trees are being re- defined as residue.

**The million tonnes of forest residue on which RPS will rely, is thus, immature trees.**

The following critique of Residue Report (on which the RPS proponent relies) exhibits the wavering nature of DPI's definition of residues.

"Within the same document, the NSW DPI Residues Report, DPI researchers advise their studies focused on quantities of forest biomass available from **whole trees** (due to the inefficiencies of transporting actual logging residue), yet they counter criticism of using forestry residues for energy generation by arguing that:

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<sup>15</sup> North Coast Residues: A project undertaken as part of the 2023 North Coast Forestry Project, Published by the NSW Department of Primary Industries, November 2017. Authors: Fabiano Ximenes, Rebecca Coburn, Michael McLean, John Samuel, Nick Cameron, Brad Law, Caragh Threllfall, Kate Wright and Shane Macintosh

‘The greenhouse gas balance carried out here clearly shows that, from a climate perspective, using biomass that would have otherwise been left in the forest to burn and/or decay for bioenergy generation results in positive outcomes, especially if biomass is used to produce electricity displacing the use of coal. p.3.

Later, (on p.6), **forest residues again become whole logs**: 1.2 Forest harvest residues: 1.2.1 Native forests – Public:

‘For native forests, residue estimations were conservative, as we only considered logs that met the specifications for pulpwood as available for extraction (typically 10 cm small end diameter overbark, and a minimum of 2.5 m in length – no species restrictions – and the crown was typically left in the forest).

This was partly due to the fact that the local industry already has experience harvesting and transporting pulpwood from the forest.’

The consultant preparing the AQIA for RPS appears to have little or no understanding of the history of changing definition of residue by marketing arm of the NSW DPI in relation to forest biomass.

Under a BAU scenario the forest biomass might not be harvested at all because there is little market for immature pulp logs other than the bioenergy industry. Further, the residues the consultant refers to (i.e. branches, leaves, tree crowns and so on) decay very slowly **in nature** when left on site as opposed to immediately releasing emissions when burnt.

#### **Statement 2 at 9.2**

**A life-cycle assessment of GHG emissions associated with the use of biomass for energy found that when avoided emissions due to the displacement of fossil fuels are taken into account, net GHG emissions associated with the use of biomass for electricity generation results in approximately 70% less GHG emission than the BAU scenario (DPI, 2017).**

This is an industry assertion by a marketing arm of Forests Corporation NSW looking for a market for immature native forest trees because it has already cut almost all the high value saw logs.

*“No accurate carbon accounting has taken place in relation to the use of native forest biomass as an energy source. Beyond the **non-avoided emissions of biomass combustions** which exceed those of coal at the smoke stack, are the emissions from felling and transporting, and emissions in processing ‘biomass’ to a form suitable for furnace, or for conversion to a form suitable for transport to inter-region or interstate furnaces, or for export to overseas furnaces.”*<sup>16</sup>

The so-called life cycle analysis that finds forest biomass combustion emissions are negated by regrowing trees has been comprehensively discredited by scientists nationally and internationally. **Appendix 2 A The Science of Why Forest Biomass Combustion Exacerbates Climate Crisis** provides recent, and decades of previous science challenging this industry promoted falsity.

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<sup>16</sup> Submission to the RET Review 2014, Australian Forests and Climate Alliance.

### Statement 3 at 9.2

***For a sustainably managed harvest system, the CO<sub>2</sub> released from the combustion of biomass waste will be re-absorbed by growing trees. As reported in the National Greenhouse Account Factors (NGAF) workbook (DISER 2020) , under the IPCC Guidelines for National GHG Inventories (IPCC 2016) , the emission factor for CO<sub>2</sub> released from combustion of biogenic carbon fuels is zero, with emissions and removal of CO<sub>2</sub>, based on changes to carbon stocks, estimated and reported under land-use change categories. Therefore the approach taken in the WM AQGHGIA is consistent with national and international GHG reporting guidelines.***

Data reported under the UNFCCC for net emissions and removals related to human activities are insufficient for the understanding of the carbon dynamics of ecosystems. We refer to the international push for reform of current carbon accounting for biogenic carbon fuels. Policy makers and scientists are increasingly of the consensus that the very real and intense CO<sub>2</sub> emissions from wood combustion at the smokestack not be counted as zero in the energy sector - where they actually occur. It is well documented that the hit and miss reporting of these emissions in the land-use change category is utterly inadequate. Assessors should familiarise themselves with this hotly debated policy 'loophole' which is likely to be closed in the near future.

It is notable that the proposal refers to IPCC 2016 publications, superseded by more recent opinions. See **Appendix 4 progress in reform of biomass carbon accounting** for recommended changes to international carbon accounting policy which will have immediate effects on national policy. The NSW Parliamentary Report *Sustainability of energy supply and resources in NSW, Findings and recommendations* already suggests legislative change to assumptions in the RPS proposal.

## From Supply Chain and Material Handling

### 3.5.4 Carbon Balance

**Forestry Corporation recognises the important role forests play in the carbon cycle. Carbon dioxide (CO<sub>2</sub>) is absorbed by growing trees through photosynthesis. This carbon is stored in the tree for the life of the wood, even after it has been harvested and processed into a wood product.**

When a forest is logged approximately 60% of the forest carbon is lost in carbon emissions to the atmosphere [SE forest figure - Roxburgh et al 2006]. The emissions are immediate; the carbon stock loss is immediate. However reabsorption is slow. For example if 80 year old trees are logged it will take at least 80 years for replacement trees to reabsorb the CO<sub>2</sub>. It can take much longer, up to 200 years for full recovery of the forests ecological functions, e.g. capacity to support the full range of wildlife, and plants and soil micro-organisms - if indeed full recovery is possible.

So some carbon is stored in the wood product, but much less than in the living trees had they not been logged.



Given the extreme urgency of reducing atmospheric carbon emissions to maintain climate stability, and the doubts about whether the transition of the energy economy out of fossil fuels can be accomplished quickly enough, the focus now needs to encompass emergency measures in natural biological systems as well, for which forests are a major component.

Forest protection and restoration rather than just planting new trees is now an urgent need. To consider new large scale uses of native forest wood in energy production and other biofuels is dangerous as well as foolish.

### **3.5.5 Contribution to Carbon Cycles**

**In the sustainable management of forests for wood and other products, the Forestry Corporation will maintain the carbon cycle and contribute to Australia's net emission reduction program by:**

We will discuss the specifics of this section but first a general comment: Forestry Corporation's management of forests is not sustainable, despite its repeated claims. Indeed, the Director of the EPA regulatory division for Regional Forest Agreement native forest logging in 2018 accepted that the clear felling operations of Forests Corporation NSW contravened the NSW IFOA regulations for native forest logging.

The management of NSW forests is now even more unsustainable after the most recent bushfires and the prospect of more and worse to come. There are many indicators that it is not sustainable: many animals and plants further along the road to extinction; heightened concerns about ecological collapse including in the native forests of south-eastern Australia; wood yields a fraction of what they were before the RFA regime was put in place; damage to volume and quality of water from forest catchments; increasing logging costs and government subsidies despite increasing mechanisation; constraints/damage caused to other forest dependent industries; growing community opposition to the logging and loss of social licence. All this as logging's contribution to worsening climate change, including through fiercer and more frequent bushfires, is increasingly understood, prompting calls for major change in forest practices. If the Redbank proposal is allowed to proceed, wood fired energy generation and wood-based biofuel production can only compound the adverse impacts of native forest logging and community opposition to this outdated and dangerous industry.

Recent research [Keith, Mackey, Young et al] shows that protecting and building forest carbon stocks will make the best contribution to addressing climate change. The United Nations Statistical Committee, which establishes the carbon accounting basis for accounting for consideration of climate change policies, in March 2021 determined that "Nature-based solutions (NbS) can address climate change, biodiversity loss, human well-being and their interactions in an integrated way. A major barrier to achieving this is the lack of comprehensiveness in current carbon accounting which has focused on flows rather than stocks of carbon and led to perverse outcomes."

- **enabling captured carbon to be stored long term in harvested wood products**

Most wood products (woodchips, pallets, paper) have a very short life and contribute to further emissions as they decay in rubbish tips. Only a very small percentage of sawlogs are turned into longer lasting products like furniture or floorboards. And sawlogs are only a very small percentage of the total log cut.

For the Redbank power plant that is proposed, all of the woodchips would be burnt for electricity, thus all carbon would be converted into carbon dioxide emissions as soon as they were burnt. There would also be a lot of very nasty fine particulates that are a serious health hazard. There is now solid research demonstrating that per unit of energy wood is more emissive than coal when burnt for electricity.

- **providing for further net atmospheric carbon capture in the growth of vegetation following wood harvest**

When native forests are logged carbon losses and thus carbon dioxide emissions are large and immediate; and it takes from decades to two centuries for the carbon to be recaptured in new growth. but we need to make very large reductions in CO2 emissions from both fossil fuel use and natural resources use, immediately and until 2050 if net zero 2050 is to be reached, and then on-going reductions beyond 2050. It is essential to consider what is happening in changes to carbon stocks, and not just consider carbon flows.

- **reducing the potential for large intense wildfires, which generate greenhouse gases**

Industrialised logging is contributing to climate change and is causing more intense and more frequent wildfires because dense uniform height regrowth changes fire behaviour. The worst fires are in dense, young regrowth forests, such as Forestry Corporation have developed for decades in eastern NSW. The 2019-20 bushfires in SE NSW burnt more rapidly, and more fiercely, and over much larger areas than ever before. Numerous studies; Lindenmayer, Keith, Mackey, Zylstra and others. See also the Scientists' statement on the deleterious impacts of land clearing in Australia 2021(which is what the Redbank proposal depends on for supplies).

- **maintaining or improving the productive capacity of the native and plantation forest estate, as the level of carbon sequestration is proportional to the vigour of the trees**

It's difficult to critique this as it seems illogical. If the level of carbon sequestration is proportional to vigour of trees, shouldn't they therefore be left standing, i.e. alive?

There is a good case for the Forestry Corporation improving the productive capacity of its plantations, and moving out of native forest logging entirely. It also makes economic sense to do so. The transition to use of plantations for most domestic and export needs is already 80% to 90% complete. It could be completed with little social disruption and modest cost. Other countries (e.g. New Zealand) and now Western Australia have done so, and with better economic and social outcomes.

Native forest logging is contentious, heavily dependent on government subsidies, requires vastly larger areas of land than plantations, and lacks majority community support. It's not sustainable environmentally or economically. It is contributing to both the climate crisis and the extinction crisis. It is one of the nine planetary boundaries that scientists are warning could become a tipping point for unmanageable climate instability. There are adverse impacts on native species, human health and other forest dependent industries. With the prospect of even worse climate events (floods and soil losses as well as bushfires) it is lunacy to encourage new demands on native forest wood.

It's dangerous and inappropriate to put up the Redbank proposal that can only lead to further pressures on native forests; without ongoing logging of native forests the 1 million tonnes a year won't be available. The 400 k radius involves removal of critical remaining biota from severely bushfire damaged forests of SE NSW.

- **seeking opportunities for harvesting waste and residues to be used as bio-fuels**

Under RFA arrangements forestry operations are legally required to have sawlogging as their prime purpose, but this is the stuff of myth-making and obfuscation. In the definitions pulplogs can be treated as wastes or residues. It is not uncommon for 90% or more of near clear-felled State Forests to be logged for pulplogs and firewood. Whole compartments have been logged only for pulplogs.

Vast swathes of forest that are being treated as waste or residues are in fact valuable habitat for wildlife that in turn help to keep trees and ecosystems healthy. They contribute to climate stability. They are essential to rain cycles, and they provide many economic and social values for human beings and industries other than the forestry industry. Yet this is what the proposal depends on: logging trees for energy production.

## **Section D: Critique of QA.QC Supply Chain and Material Handling**

Claims relevant to the carbon cycle of forest bioenergy which appear in **QA.QC of the Supply Chain and Material Handling** are covered already in **Section C: Carbon Cycles** and we provide them again at the end of this section.

**More on Carbon Cycle:** Instead of repeating those responses here we summarise the nub of the issue which is that not only is forest bioenergy inefficient and productive of more CO<sub>2</sub> at the smokestack than coal, it also generates – due to **supply chain and necessary material handling processes** – large CO<sub>2</sub> emissions per each kWh generated. Such are the findings of the review of studies of the European Academy of Science into the net impact of using forest derived biomass (FDB): From “Serious mismatches continue between science and policy in forest bioenergy”

*Woody biomass contains less energy than coal (biomass pellets 9.6–12.2 GJ/m<sup>3</sup>; coal 18.4–23.8 GJ/m<sup>3</sup>; IEABioenergy, 2017), so that CO<sub>2</sub> emissions for the same energy output are higher (110 kg CO<sub>2</sub>/GJ for solid biomass, 94.6–96 kg CO<sub>2</sub>/GJ for coals in IPCC, 2006).*

***Combined with the energy needs to gather from diffuse sources and intermediate treatment (drying and pelleting), replacing fossil fuels in electricity generation results in significant increases in emissions of CO<sub>2</sub> per kWh.***

***The net effect of switching to FDB biomass is thus usually to increase emissions and thus increase atmospheric levels of CO<sub>2</sub>***<sup>17</sup>

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<sup>17</sup> “Serious mismatches continue between science and policy in forest bioenergy”

## Compliance Issues for Supply Chain and Material Handling

The executive summary mentions *"identified sources of eligible feedstocks" that comply with the NSW EPA's Eligible Waste Fuel Guidelines and clauses 96 to 98 of the Protection of the Environment Operations (General) Regulation 2009 (in relation to the use of native forestry biomass for electricity generation)"*

## 2 Sources of Feedstock

### 2.1 Suppliers of eligible waste fuels – forestry and sawmilling residues

Here it's stated that 70% of the feedstock will derive from NSW Forestry operations. That's a great problem, but not only because it will drive up GHG emissions and have deleterious effect on environment and human health. It poses a regulatory problem in that the major supplier needed by RPS (FCNSW) is renowned for flouting regulatory requirements in both harvesting methods (re sustainability of supply) and in other practices pertaining to feedstock supply and delivery. Documented evidence exists over several decades for:

- consistent breaches FCNSW in relation to the Coastal IFOA under which it is meant to regulate itself
- destruction of forest landscapes to such a degree that not only multiple species but entire forests ecosystems are being brought to the brink of ecological collapse by unsustainable industrial logging
- government auditor warnings that forests are being cut faster than they can grow back
- inappropriate payments to corporations FCNSW supplies in the form of taxpayer funded compensation to multinationals for *non-supply of wood that doesn't exist*

### Examples of judicial decisions and commentary regarding FCNSW:

2011, NSW Land and Environment Court, 8 June 2011, Department of Environment, Climate Change and Water v Forestry Commission of NSW

*Justice R A Pepper, 'In my view, the number of convictions suggests either a pattern of continuing disobedience in respect of environmental laws generally or, at the very least, a cavalier attitude to compliance with such laws.'*

In 2013 FCNSW was again fined for damaging the environment. Justice Rachel found "systematic failures" of forest management including deploying untrained staff and keeping sloppy work records. Reasons included " *systemic corporate procedural and operational failures and inadequate training and supervision of employees*" and a history of convictions for bad forestry practices. "In these circumstances, it could not be said that Forestry NSW has no prior record of criminality so as to justify taking this factor into account in mitigation," she said. "The evidence of past convictions for environmental offences does not demonstrate that Forestry NSW has been a good corporate citizen with respect to environmental statutory compliance."

There was also illegal burning in May and June 2011 investigated by the NSW Environment Protection Authority. <http://www.smh.com.au/environment/nsw-forestry-corporation-fined-for-damaging-environment-20130724-2qj5w.html>

### 3 Feedstock Criteria QA/QC

As the planned QA/QC procedure for ensuring compliance with regulation re processing, supply and receipt of suitable feedstock will be hampered by the haphazard conduct, monitoring and reporting standards its main supplier, RPS can't control this aspect of its operations.

The NSW government doesn't operate an independent monitoring programme to ensure compliance of claimed origins of wood biomass feedstock with legal requirements for eligibility to receive subsidy from forest biomass energy generation.

There is no 'independent' audit mechanism in place to ensure biomass harvest has met relevant statutory regulations including the *NSW EPA Eligible Waste Fuel Guidelines*.

The combination of systemic non-compliance of FCNSW in multiple aspects of its operations and the lack of an independent monitoring authority makes it almost impossible for RPS to ensure it can comply with regulations. It's at the mercy of assurances of a disreputable supplier.

The most important aspects in relation to the eligibility of the planned supply will be out of its own hands. For 'forest biomass' residue the nature of the trees being removed in a particular forest compartment is of paramount importance, as is how they are harvested, (i.e. the assumption of sustainable harvesting in accordance with regulatory requirements).

If there is irregularity in the harvest operation in relation to its sustainability and/or the definition of the biomass product as it is obtained at source within the forest compartment, this irregularity will transfer through to the consumer.

Already the EPA has found wide-scale practices of FCNSW illegal, including its silviculture practice 'Single Tree Selection' whereby the corporation has been clear-felling vast swathes of native forest NSW. This practice involves selecting the one tree to keep within a large area, not as one would assume, the selected tree to harvest.

The primary feedstock (of forest biomass) can only be provided by, FCNSW. (per Section 2.1) **Appendix 6 A: Risk: Systemic non-compliance of FCNSW** contains documents, interview transcripts, film and links to media investigations into what is at times illegal directives issued to employees by FCNSW management.

The *Protection of the Environment Operations (General) Regulation 2009* (the Regulation) also requires the occupier of any premises on which bio-material is burnt in any electricity generating work to keep certain records. Some of these are:

- The type of bio-material;
- The location where the bio-material was harvested or sourced from;

Below is a summary of some of the documented non-compliance of RPS intended primary supplier.

Historic ongoing systemic 'rorting' (both at the source i.e. within forest compartments undergoing harvest, and at various points along forest biomass supply chains), means that RPS's proposed QC/QA for compliance with regulations governing the use of forest biomass cannot be guaranteed.

This is the case in particular with the proposed auditable chain of custody at **Supply and Handling Section 3.5.7**.

The systematic historical rorting has been reported by employees of Forests Corporation NSW (the major feedstock provider) and documented in writing and on film. Reports of abuse by not only contractors employed by Forests Corporation NSW but by regional managers have been made and forwarded on to relevant authorities. With no outcome because there is a lack of political will to 'take on the logging industry'.

We refer you to **Appendix 6 Risk** where transcripts of interviews with loggers and truck drivers who have particular insight into lack of compliance in multiple aspects of FCNSW operations. As FCNSW is a major proposed supplier for RPS, it is unlikely RPS's QC/QA can be guaranteed. In particular this will be the case with:

- the type of bio-material (because of reported anomalies in mapping, deliberate re-alignment of maps to indicate plantation derivation of forest biomass when it is actually from a native forest compartment)
- the location where the bio-material was harvested or sourced from; because FCNSW has a 'track record' of re-directing forest biomass from location to location without accounting for this accurately in its records.

There can be no reliable chain of custody from forest biomass source (i.e. the forest compartment) to the supplier, hence no means of determining the eligibility of the forest biomass feedstock.

### 3.5.4 Carbon Balance

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The management of NSW forests is now even more unsustainable after the most recent bushfires and the prospect of more and worse to come. There are many indicators that it is not sustainable: many animals and plants further along the road to extinction; heightened concerns about ecological collapse including in the native forests of south-eastern Australia; wood yields a fraction of what they were before the RFA regime was put in place; damage to volume and quality of water from forest catchments; increasing logging costs and government subsidies despite increasing mechanisation; constraints/damage caused to other forest dependent industries; growing community opposition to the logging and loss of social licence. All this as logging's contribution to worsening climate change, including through fiercer and more frequent bushfires, is increasingly understood, prompting calls for major change in forest practices. If the Redbank proposal is allowed to proceed, wood fired energy generation and wood-based biofuel production can only compound the adverse impacts of native forest logging and community opposition to this outdated and dangerous industry.

Recent research [Keith, Mackey, Young et al] shows that protecting and building forest carbon stocks will make the best contribution to addressing climate change. The United Nations Statistical Committee, which establishes the carbon accounting basis for accounting for consideration of climate change policies, in March 2021 determined that

## Section E: The Biomass Handling Plant Concept Study

Aspects of this demonstrate that the RPS proposal is not a modification of an existing DA but a substantially different development as it involves alteration to *physical features and components*.<sup>18</sup>

The volume (tonnage) of fuel delivered, stored and burned will be higher than when lignite (coal wash tailings) are the feedstock. The **RPS Biomass Handling Plant Concept Study** lists moisture content of average woodchips burned as 25% which would provide a net calorific value (NCV) of 13.42 GJ/tonne. However, for lignite, it's higher, 14 GJ/tonne.

(<https://www.sciencedirect.com/topics/engineering/net-calorific-value>)

Obviously therefore less lignite than woodchips is needed for the same energy output (which the proposal states won't change).

Fresh woodchips have a moisture content between 30 and 40%. There is significant difference between 25% (as claimed) and 40% moisture. At 40% moisture many more tonnes of fuel will need to be burnt, if as stated, electricity output won't be reduced.

Stack velocity rate will increase from 10g/s with coal to 21g/s with biomass, which apparently signifies a 30% increase in combustion power, i.e. around 30% more fuel being burned. It's doubtful boilers could cope with so much more fuel without modifications (which according to the planning documents won't be done). The only alternative would be to lower the generating capacity, which would again represent, material change, i.e. a new proposal would be required, not a modification.

## Section F: Comments on Transport Assessment by Ason Group

The transport assessment concerns traffic movements and how local and regional roles will tolerate the massive increase in vehicular traffic. A concern that is not addressed is that of the **8 worst PM 2.5 point sources on-road diesel vehicle traffic is the third worst**. This is the finding of a report itself the culmination of a comprehensive project funded by the Dept Health and the Dept of Planning.<sup>19</sup>

Examining air quality danger from 8 point sources which disperse particulate matter 2.5 (PM 2.5) they found that in NSW PM<sub>2.5</sub> was worse from wood combustion and power stations, followed up by **on-road diesel vehicles**.

Point sources were ranked in order of volume and dispersal propensity with impact on population from each source listed in order of greatest to least in the column below.

**Notably, on-road diesel vehicle exhaust (the third worst source) forms the core form transport strategy of RPS's proposed new supply chain.** See the extract from the *Transport*

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<sup>18</sup> Justice Bignold in *Moto Projects v North Sydney Council* (1999) in relation to 106 LGERA 298

<sup>19</sup> **The mortality effect of PM2.5 sources in the Greater Metropolitan Region of Sydney, Australia**

Richard A. Broome<sup>a,c,\*</sup>, Jennifer Powell<sup>b</sup>, Martin E. Cope<sup>b</sup>, Geoffrey G. Morgand

<sup>a</sup> Health Protection NSW, NSW Ministry of Health, Australia

<sup>b</sup> CSIRO Oceans and Atmosphere, Aspendale, Australia

<sup>c</sup> School of Public Health, University of Sydney, Australia

<sup>d</sup> University Centre for Rural Health - North Coast, School of Public Health, University of Sydney, Australia



*Assessment* below. The ASON Group admits that the transport of forest biomass to the proposed site will consist of 70 B-double trucks per day, for 6 days a week, for 12 hours a day, in addition to up to 80 car vehicle trips and 2 trucks each of limestone and start up fuel. This all represents dangerous *additional* emissions and dispersion of particulates throughout the region; currently the (non-operational) power station engenders no vehicular traffic.

Air quality will worsen as a result of increased road vehicle movement both due to particulate matter but also due to emissions deriving from Sulphur and Nitrogen, both of which are prevalent from biomass combustion, (as they are from internal engine combustion, i.e. diesel engines)

Changes to Federal regulation of ambient air quality in 2021 followed a lengthy review of the National Environment Protection Measure for Ambient Air Quality in relation to Sulphur and Nitrogen oxides; so the impact of vehicular movement on which this proposal is dependent should be assessed along with emissions from the biomass combustion. In addition to Air Quality Impact Assessment should take the NEPM review into account. It is not clear that it has done so as there is no mention of it in the AQIA.

The extra transport emissions will further exacerbate catastrophe climate change. The impact of transport globally on emissions is conservatively estimated to be at least 20%.

#### 4.1 The Proposal

Proposed haulage of biomass to/from the Redbank Power Station. The biomass would be hauled by road (primarily using B-Double) across the day (12 hour shift); it is anticipated that up to 140 truck trips (70 return trips) would be required for this haulage task.

In addition, the broader Power Station would recommence operations in line with existing approvals; from a traffic and transport perspective, this includes:

- The employment of; – up to 30 operational and maintenance staff per day shift and – 5 staff per night shift;
- Primary shifts for staff being between 6:00am – 6:00pm.

#### 4.3.2 Truck Trip Generation

The truck generation rates have been calculated from the following assumptions;

- The facility has been designed to have capacity of 850,000 tonnes (T) of biomass per annum,
- Deliveries of biomass shall be undertaken by b-doubles with a conservative capacity of 40T.
- 40T per load based on 850,000T per year equates to 21,250 loads required per year,
- Deliveries to arrive 6 days per week and equates to approximately 70 loads per day (70 trucks deliveries per day would result in 140 truck movements per day, as 1 truck would create 1 inbound movement & 1 outbound movement, equalling 2 movements.
- • Based on 12 hour delivery window, the resulting trip generation is 12 truck movements per hour.

## Section G: Risk: Environmental, Economic, Legal and Reputational

We reiterate the warning of our original submission regarding risk and add further information due to a rapid increase in research findings, recent policy changes and increasing instances of litigation in relation to forest biomass combustion which are taking place all over the world.

We again stress that the RPS proposal attracts but does not even attempt to address amelioration of unacceptable levels of risk.

We ask that assessors take into account a primary risk: the **danger we face from centuries of combustion based power generation**. The exponential growth of human population has relied on combustion based power for centuries with devastating impact on the planet, so the voluminous body of knowledge relating to this impact is not surprising. The risk of continuing along this path is obvious and catastrophic.

The already voluminous body of knowledge on the extreme danger posed by substituting fossil fuels with what is (inevitably forest derived) wood biomass has expanded greatly even since our initial submission of June 2021. A proposal with such far reaching impact requires peer reviewed science, not industry rhetoric re job projections or empty claims of proponents with vested interests, made possible only by outdated policy settings. Appendices 1,2,3,4 and 5 provide the peer reviewed science.

We ask assessors to note that over 150 organisations nationally, and hundreds of Australian scientists are signatories to the National Position Statement Against Forest Bioenergy and other position statements calling for an outright ban on forest derived biomass energy<sup>20</sup> or fuel. **Appendix 6: Folder, Collapse of Social Licence**

Assessors will be mindful of the potential for severe reputational damage and/or legal challenge arising from approval of a development that will lead to irreversible and horrendous environmental and health outcomes - from annual combustion of over a million tonnes of **(wet)**<sup>21</sup> plantation and native forest biomass, under the guise of 'green energy'.

There are now health and safety concerns re wood dust from wood biomass facilities, confirmed by the fact that the UK's Health and Safety Executive has started criminal proceedings against Drax, possibly the world's largest and most powerful wood biomass power generator. <https://www.theguardian.com/business/2021/sep/02/drax-faces-prosecution-over-health-risk-dust-biomass-pellets-allegations-employee-safety-power-plant>.

**Reputational Risk:** will certainly ensue by association. The primary supplier of the forest biomass required by RPS is Forests Corporation NSW which has been described by a NSW judge as, effectively, a serial offender.

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<sup>20</sup> Appendix 6 C Collapse of Social Licence for both Forest Biomass Burning and Native Forest Logging

<sup>21</sup> The 897 600 tonnes of dry weight forest referred to in the project proposal is equivalent to 1,301,000 tonnes of harvested trees, i.e. wet biomass)

*Justice R A Pepper, 'In my view, the number of convictions suggests either a pattern of continuing disobedience in respect of environmental laws generally or, at the very least, a cavalier attitude to compliance with such laws.'*

*NSW Land and Environment Court, 8 June 2011, Department of Environment, Climate Change and Water v Forestry Commission of NSW.* **Appendix 6: Risk from major feedstock provider**

In addition, anyone involved in approval or operation of RPS will risk reputation owing to the complete collapse of approval for ongoing native forest logging on which the proposal relies. **Appendix 6 C Collapse of Social Licence for both Forest Biomass Burning and Native Forest Logging**

**Economic Risk:** This is highly likely given that the primary feedstock provider, FCNSW has several times been sued for 'lack of supply'. **Appendix 6: Risk from major feedstock provider**