

Response by the Blue Mountains Renewable Energy Co-operative to the Blue Mountains City Council Draft Strategy on Waste Management - Towards Zero Waste 2022-2031

This ambitious draft is probably the most important document the Council has released in years. Congratulations! Adopting the nascent ideas around a Circular Economy and Planetary Health puts this document far outside the usual purview of waste management, and requires a multi-disciplinary, multi-organisations approach, probably not limited to the Blue Mountains alone. The language is all very positive and politically correct. However, it lacks teeth and foresight, and the identification of any new technologies that will contribute to zero waste. The Draft uses the right words but there is little evidence that new strategies will be pursued to achieve the targets.

We urgently need a Pyrolysis plant built - an old/“new” technology

BMRenew sees its request that a Pyrolysis plant to produce biochar is built as a matter of urgency to deal with the misuse of our wood resources as an opportunity for Council to demonstrate it is willing to engage with innovative solutions to our waste problem. Critical to any solution is the management of waste produced in the mountains within the mountains.

The planet faces many crises, caused by humans. A major, and existential, threat is global warming. Current and likely actions will fail to avert this crisis; carbon drawdown (sequestration) is essential. Carbon Capture and Storage is delusional; the best form of drawdown is pyrolysis (to biochar) – long-term efficacy, with a host of uses (benefits) such as carbon pricing credits.

The major use of biochar is as a soil amendment, particularly for low fertility or degraded soils, through enhancing the role of mycorrhizal fungi and water retention.

The draft waste strategy was silent on ‘green waste’ (actually, a wasted resource) being trucked to Blayney. Why? An expense could become a cost-benefit. Diesel pollution could be reduced; roads made safer, road damage reduced, road congestion and risk of accidents, worker wages and time wasted. What is the real cost of that transportation?

Mulch is a short-term material; biochar can last centuries or millennia.

There is potential for collaboration with neighbouring councils in regard to feedstock and processing. There are abundant other uses for biochar (one

paper lists 55); including pollution abatement, asphalt additive, industrial filler, and electricity generation from off-gas.

BMRenew is passionate about the idea of getting at least one Pyrolysis plant built in the next year or so, as publicity and community involvement could showcase what a small town can do, with the right encouragement. The idea that our huge supply of wood is merely turned into wood chips is so wasteful and discouraging.

One example BMRenew has suggested to Council is the idea of turning all waste wood into something useful with a price tag higher than mulch. Currently good reusable wood is turned into mulch which is not in keeping with the philosophy expressed in this Draft. Once the waste wood is sorted the wood that is not reusable could be converted into biochar using pyrolysis instead of the current practice of trucking it to Blaney to turn it into wood chips. This idea alone has the potential to generate income, sequester carbon, improve soil quality and create jobs within the mountains. It would also generate carbon credits.

What is Pyrolysis?

Pyrolysis is the thermal decomposition of organic matter in an oxygen-reduced and controlled environment. The process variously produces forms of charcoal, gas and liquid, depending on the nature of the feed material, the plant design and the process temperatures (typically between 400 & 1000°C). When applied to soil as an amendment, charcoal is termed 'biochar'. Pyrolysis is **not** burning (which produces mostly gas plus some ash) and it has nothing to do with RDF (refuse derived fuel). A significant part of the charcoal is recalcitrant (stable), unlike the labile (unstable) carbon associated with materials like mulch (which, as any gardener knows, soon decays to gas, including CO₂ and methane CH₄, [a shorter lived greenhouse gas but with a far higher GWP (global warming potential) than the CO₂ from burning the gas] – this in contrast to the recalcitrant carbon of biochar. In the recalcitrant biochar form, charcoal is stable for centuries or millennia.

So, the benefits include arguably the most promising form of carbon drawdown (increasingly seen as necessary to reverse the effects of global warming, plus earning carbon credits), reversing the scourge of the loss of soil carbon and hence improving poor or degraded soils (and the consequent improvement in crops), provision of an energy source on site, and reducing the long-distance destructive road transport of what is inappropriately termed 'green waste'. There are many dozens of other uses.

Feedstock

The feedstock could include chipped fallen trees, council green bin woody material, pine plantation thinnings, plantation branch stripping, untreated demolition timbers, agricultural crop residues, sewage solids and residues from anaerobic digestion of food processing waste streams. These materials would ordinarily rot, producing CO₂ and methane (CH₄ a shorter-lived greenhouse gas but with a far higher GWP (global warming potential) than the CO₂ from burning the gas), in contrast to the recalcitrant carbon of biochar. Biochar feedstock should **not** include native forests.

Possible approaches to getting a pyrolysis plant funded:

BMRenew has started to explore choices: a mainly commercial effort (which would defeat the Circular Economy aspiration) or a social enterprise. This will require much work and before we start that work, we need support from Council to accept the proposal in principle. Council would need to indicate they are interested in a thorough examination of the great potential of this nascent industry. A Council keen to implement this innovation should undertake the following actions:

- Liaise with neighbouring councils re pyrolysis/biochar
- Educate local residents about biochar and its many benefits
- Liaise with EPA NSW re any issues and how to resolve them
- Make representation to the state government
- Investigate carbon pricing credits for biochar
- Liaise with existing biochar commercial entities, like Earth Systems / Greenman Biochar
- Liaise with biochar industry body (ANZBIG) re progress on standards
- Conduct a cost benefit analysis showing how pyrolysis / biochar can produce an income stream and improve on current methods of dealing with wood waste.
- Obtain costing on facility costs
- Make enquiries about space requirements of a facility
- Examine relevant clean woody feedstocks in the local area
- Evaluate clean construction timber waste as part of biochar feedstock
- Liaise with Manningham Council, Vic, re its green waste disposal arrangement with Greenman Biochar.

- Liaise with Yarra Ranges Council, Vic, re its joint pyrolysis facility project with Greenman Biochar.
- Demonstrate that the information provided on pyrolysis has been read and evaluated
- Investigate grants available for pyrolysis / biochar.
- Liaise with local businesses to gauge interest and availability of finance.

Redesigning our Communities

A Pyrolysis plant is just the first step in adopting the approach outlined in the document “Redesigning our Communities” previously shared with Council (attached). This document deserves serious consideration for adoption by the Council and communities of the Blue Mountains. It outlines doable approaches to how we can transform the way we utilise resources and holistically approach challenges such as Wood, Water, Food, and Fire, and directly feeds into the ambitions of our Planetary Health approach. Here is an extract from the document, “The Big Idea:

WOOD: The Blue Mountains has an abundance of trees. In the city we have a successful arborist industry already felling all sorts of trees. Instead of simply wood-chipping our trees we can sort them into wood for appropriate uses, for building, carpentry, hearth, and garden use. This opens up local work not only for arborists, but small scale saw millers, tree farmers, builders, carpenters, cabinet makers, apprentices, and retail outlets selling all sorts of wood products. Together with the reuse of old wood we can have a thriving sustainable wood-based industry.

FOOD: With the felling of trees, we also need to plant trees, to replace the ones we took and to keep the towns cool. Instead of planting flammable natives in and around the city, we plant deciduous trees, such as fruit and nut trees. Deciduous trees are fire retardant, and some even give us food. With a diverse mix of food trees, we can create food forests, market gardens, community gardens, verge gardens, and backyard gardens; creating employment in tending, developing, integrating, and managing bioregional food security.

WATER: We could also create water harvesting systems. Not letting it run off the roads causing flash floods and silting up the waterways but capturing and storing it in the soil, then in small dams, swales, ponds and tanks. When soils hold water well (the sign of healthy soil) the land becomes more resilient to fire and the rivers less to flash flooding. Healthy soil grows healthy abundant food. From slow-release we recharge springs, creeks, and hanging swamps with clean water.

FIRE: Together with the Gundungurra and Darragh traditional owners we can manage the bushland surrounding the villages and towns using cultural burning techniques, keeping down fuel loads, maintaining biodiversity (managing noxious weeds and feral animals), and creating bush tucker and recreational zones for walking, running, mountain biking, bird watching, etc. These zones could incorporate a mosaic of meeting places for cultural practice and integrated or separate cultural learning for the wider community.”

COMMENTS ON OTHER ASPECTS OF COUNCIL DRAFT

The draft needs to address percentage improvements over current 2020/21 figures, and set ambitious year-by-year goals for targets. It incorporates the strategy of avoid, reuse and recycle under 5 key themes and certainly has as a key objective reducing the amount of waste that goes to landfill. However, while there are opportunities for new ideas and new work to be conducted it gives the impression that Council will continue using existing strategies while trying to manage the problem of waste. In fact, the language indicates that Council sees waste as a problem not an opportunity.

We would like to challenge this way of thinking and ask Council to consider coming at the waste issue from another perspective. Rather than aiming to reduce waste, how about aiming to turn it into a viable financial asset. The Draft mentions finding new markets to process our waste. It's new methods we need, methods that allow us to convert our waste into something useful and ideally saleable. Council's modus operandi is to work with contractors who will take the waste away i.e. remove the problem. Contracts are also used as excuses for why new thinking cannot be considered. It's time to change and if Council wants to be a leader in the circular economy, zero waste and planetary health then now is the time to change their way of thinking and develop new and innovative approaches to waste resource management.

There is mention of the community needing to reduce the amount of waste they put into their Red bins. If the waste was a resource Council might be happy to manage it within the local area and not truck it around and outside our LGA which is both wasteful and costly, and defeats the Proximity Principle.

The mention of the Proximity Principle is welcome, though this puts the onus on Council to massively build up their education and outreach to households so that little goes into the red bins and what goes into the Green and Yellow bins is appropriate. Council has tried, yet there is little result to show for these efforts. A major campaign is needed.

The Draft mentions that 30% of Red bin waste is organic waste. There is a requirement to introduce FOGO so we must have a viable solution for this

waste. But is this the best solution? Surely, we can do better and start to fulfill our ambition to be an Eco City, perhaps the first in Australia, with potential for EcoTourism beyond current hopes. Will FOGO ever include the separation of woody from vegetable matter if we are offering a much better approach?

Are microfactories a circular economy initiative we could explore?

Prof. Veena Sahajwalla, from the Centre for Sustainable Materials Research & Technology, University of NSW, has developed microfactories that have the ability to turn 90% of waste into a useful product and none of it goes to landfill. Council could investigate this approach more, though always with zero carbon in mind. The Blue Mountains are not suited to large-scale manufacturing but surely we can support small-scale social enterprise as a way of creating for-profit co-operatives and helping young people become entrepreneurs. This support could lead us towards a Circular Economy. See <https://www.smart.unsw.edu.au/> and <https://intheblack.cpaaustralia.com.au/people/veena-sahajwalla-revolutionising-recycling-science>

Some general comments on the Draft

In overall targets you say: Maintain community events and number of avoidance and reduction initiatives delivered; this should be about the number of community interactions not the number of events.

The Council needs to improve how they interact with the community. While we understand the challenge this presents, particularly now, there were serious flaws in how this Draft was introduced to the residents, as nobody we approached had heard about it. Council lost a major opportunity there, as it could have been introduced as a challenge to keep rates at their current level, instead of the inevitable increases residents must face, mainly due to increased climatic activity, if they are not prepared to do more at the household and community level. Even your last newsletter did not mention this Draft.

- Best practice waste management at new developments; what does this mean? item 4 Increase Income yet there is no matching Reduce Costs (this is surely pertinent to the costs borne by moving green waste to a remote LGA). Reduction in overall waste is not a good measure. It should be about reducing what goes to landfill.

Sort and recover is old school thinking so we need more courageous ideas here.

Other initiatives needing support from Council

A. Textiles – a major polluter and potential resource

Australia is the second-highest consumer of textiles per capita in the world after the United States of America where it is estimated by their Environmental Protection Agency that textiles make up 5.8 percent of Municipal Solid Waste.

The Australian Bureau of Statistics reported that in 2018-19, on average every Australian purchased/ received 27kg of new clothes and threw away 23kgs of textiles to landfill. This amounted to 575,000 tonnes to landfill of the total 800,000 tonnes of textiles discarded in Australia that year (more than actually purchased).

Translated to the Blue Mountains population of 80,000, it is likely that the Blaxland landfill is receiving around 1,840 tonnes of textiles in an average year.

Blue Mountains charity and vintage shops that help improve our performance on reducing textile waste, all report a large proportion of textile 'donations' that cannot be given or sold on and which therefore go to landfill at considerable cost to them.

At its March 2021 ordinary meeting, the Council noted the ABS statistics and resolved to investigate the successful trial by Bathurst Council with Textiles Recyclers Australia (30.3.2021, Confirmed Minutes, Minute 94). Under the TRA program, the discarded textiles are distributed to developing nations, cut up for rags and cleaning uses or broken down into fibres for re-creation into new fabrics.

It is our understanding that the Bathurst three-month trial resulted in that Council extending the TRA contract to an ongoing arrangement. We hear that Penrith Council is also using this service provided by TRA.

In August 2021, Blocktexx, a start-up company with its Australian developed Separation of Fibre Technology (SOFT) was launched in South East Queensland. The proprietary technology separates polyester and cotton materials such as clothes, sheets and towels in any condition back into their high-value raw materials of polyethylene terephthalate (PET) and Cellulose for reuse as new products. The recovered PET is polymerised to create virgin-quality PET plastic pellets and polyester fibre suitable for use in textiles, packaging and building products.

B. Recycling old X-rays

We are pleased to learn, through the BM Gazette's 6 April edition P7, that Council is supporting *recycling old X-rays*, so that their silver and plastic are repurposed. Again, it is a shame they have to be dumped in our recycling bins to be sorted (by hand?)

C. Commercial food waste

Has Council any plans to further support and bring to scale the innovation re *commercial food waste* spearheaded by Leura Garage? Could this process be expanded to all the other restaurants and hotels in the Leura area, again with Council support. With encouragement, Leura might become the first Eco Village in the Mountains.

D, Community Compost Hubs

While *the Community Compost Hub* concept is a great one, in theory, the challenge is for Council and community to get it more widely adopted and to scale, so the approach needs to be rethought.

E. Reuse shed in Katoomba

The *Reuse shed in Katoomba* is a welcome start, though it is facing some challenges. It probably needs to be treated as a separate entity, outside the actual facility rules and EPA levy charges, if it is to be successful. Having to weigh-in to visit the shed is off-putting. Strategies to communicate with residents need to be improved.

F. Recycled builders' waste

Why was the facility at Springwood, that *recycled builders' waste* into aggregate, closed?

G. Cloth nappies or at least compostable nappies

Could Council take some initiative around encouraging the adoption of *cloth nappies or at least compostable nappies* as part of their landfill reduction strategy?

ADDITIONAL COMMENTS ON DRAFT LAYOUT

Page 17 – colours in the figure are too similar to be able to interpret them. Why not use red, green and yellow for what comes from households as we all know what they mean. Then fewer blues and beiges that are almost the same.

Pages 17,19,23 25 etc are indented. Looks like the setup for odd pages is not consistent with even pages.

DWMC introduced on page 24 but not explained until page 44

Future trends page 25 should refer to Figure 11, not 9.

IN CLOSING

We appreciate the work that has been done so far and hope to continue our joint BMWI-LCL/BMRenew conversations with senior Council staff around a Pyrolysis Plant build. We appreciate the immense strain that repercussions around current climate events are putting on you. However this Draft, courageously adopted, could spearhead major initiatives in our much-loved Blue Mountains and make us a beacon of hope for climate resilience to other communities.

On behalf of Blue Mountains Renewable Energy Co-operative
Noni McDevitt, CEO and Directors at 18 April 2022

A couple of our sources

Towards a Waste Free Future. Australian Academy of Technology and Engineering
<https://www.atse.org.au/wastetech>

<https://intheblack.cpaustralia.com.au/people/veena-sahajwalla-revolutionising-recycling-science>

From that link you can go to the her centre <https://www.smart.unsw.edu.au/>