

# Developing an Emissions Reduction and Resilience Plan for Tasmania's waste sector

Submission for the Upper Plenty Action Group (UPAGI)

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## Consultation questions

1. How can we build on the work already underway to reduce emissions and build resilience in the waste sector? .....	2
1.1. The Need for Modernisation in Composting Practices. ....	2
1.2. Adverse Environmental and Human effects from outdoor windrow composting ....	2
1.3. River Health concerns for open composting sites along waterways.....	3
1.4. Health impacts from bioaerosols air emissions of open windrow facilities.....	4
1.5. Health impacts from land and water run off from open windrow compost sites.....	4
1.6. Increased risk of MND around open windrow composting sites along waterways ..	5
1.7. Regulatory Compliance and Enforcement. ....	5
1.8. Exclusion of Non-Compliant Operators .....	5
1.9. Community Engagement and Transparency .....	5
2. What future opportunities do you think will have the most impact? .....	6
2.1. Transition to Enclosed Composting Facilities .....	6
2.2. Innovative Technology Implementation .....	6
2.3. Review of Past Permit Approvals .....	6
2.4. Revoking Permits for Non-Compliant Operators .....	6
2.5. Community and Stakeholder Engagement .....	6
2.6. Fostering Public-Private Partnerships .....	6
2.7. Continuous Monitoring and Improvement.....	7
3. Are there any priorities or future opportunities missing from this draft Plan? .....	8
3.1. Comprehensive Transition Strategy for Enclosed Composting Facilities.....	8
3.2. Enhanced Regulatory Framework and Compliance Monitoring .....	8
3.3. Incentivisation and Support for Compliant Operators.....	8
3.4. Criteria for Revoking Permits of Non-Compliant Operators .....	8
3.5. Community Engagement and Education Initiatives .....	8
3.6. Research and Development in Waste Management Technologies.....	8

3.7. Sustainable and Long-Term Planning .....	8
3.8. Integration with Broader Environmental Goals .....	9
4. Are there other ways we can collaborate to reduce emissions and build resilience in the waste sector?.....	10

## 1. How can we build on the work already underway to reduce emissions and build resilience in the waste sector?

### 1.1. The Need for Modernisation in Composting Practices.

The current approach, relying on traditional composting methods, has proven to be environmentally unsustainable, as evidenced by the environmental impacts observed at the Plenty Compost site. This necessitates a shift towards enclosed composting facilities with advanced odour control measures. Such facilities are already underway. Open windrow composting for industrial organic waste needs to be phased out in the short term.

### 1.2. Adverse Environmental and Human effects from outdoor windrow composting

The adverse effects of the existing composting facility at Plenty highlight this need for enclosed composting facilities.

An industrial outdoor windrow composting facility located near residences and along the Plenty River was granted a permit by the Derwent Valley Council (DVC) in August 2009 to Microbial Activity. The site chosen was on Plenty Valley Rd, Glenfern. Under Microbial Activity (MA) the permit application was specifically for non-putrescible waste - “There will be no animal excrements or animal remains in the MA compost. These ingredients could otherwise lead to production of human pathogenic bacteria” (1 p. 14). The permit was for a maximum limit of 50,000 tonnes per year of Boyer sludge, grape marc, pine bark, and green waste (2).

The site operated under MA for around 4 years. The scope of the permit was substantially amended 13OCT2014 (3) with a:

- Change of ownership from MA to the land owners company Jenkins Hire.
- The information in the original application around a potential for pathogens to impact the health of humans if putrescible waste was composted was overridden.
  - Both human and animal excrements have been granted to be delivered to the site including macerated fish waste, fin fish farming sludge, biosolids (including human excrement).
- The maximum tonnage of waste to delivered to the site was removed from the permit.

The community were not consulted, nor had an option to make representation to object to this significant change of scope. The Environmental Protection Authority (EPA) Tasmania state as there were no recorded objections at the original permit, they did not need in order to change the scope of the permit (4). However, on the original EPA Tas permit it is noted there was representation (2 p. 30). The EPA retrospectively apologised to the individual who repeatedly contacted the EPA regarding the change of scope for overlooking the representation for 12 years, but did not address this concern (4 p. 1).

The EPA Victoria had draft guidelines<sup>1</sup> indicate the change in scope rendered the site not suitable. The finalised guidelines include documentation around designing, constructing and operating composting facilities (5). These EPA Vic guidelines indicate the approved change in scope (3) should have rendered the site to be classified as highest potential risk of harm to human health and the environment (5 p. 10). Furthermore, Victorian guidelines indicate high risk waste processing technology should only be enclosed with secondary odour control, and not be in open windrows. (5 p. 11).

In 2020, the EPA reported the site was responsible for sludge flowing off the site to the river (8; 7). This site slopes down the Derwent River, which is the main drinking water for Southern Tasmania. Authorities are aware locals drink the river water (6 p. 31). Given the EPA note that sludge runoff into the waterways resulted in fish deaths, it may be reasonable to assume those pumping water from these rivers for drinking and farming have a high potential risk of harm to human health (5; 6; 7).

### **1.3. River Health concerns for open composting sites along waterways.**

A Plenty River Action Plan 2009 was undertaken by Southern Water (now TasWater), Derwent Valley Council, Hydro Tasmania, Inland Fisheries, Greening Australia, and Salmon Ponds (6). The Plenty River Action plan states that the Plenty River has been identified as a priority river and is a tributary to the Derwent River, upstream from the Bryn Estyn water treatment plant (6 p. 5) - for which Southern Tasmania draws its water supply from. There is an acknowledgement that residents use river water for drinking (6 p. 31).

The Plenty River Action report also identifies that surface and ground water are connected, and that groundwater discharges to the Plenty River (6 p. 9). The report also outlines actions to protect the Plenty River and Derwent Rivers. Of these numerous actions, including reducing sewage entering the river (6 p. 32). Priority action plans require control of sediment run off, and to minimise the introduction of artificial inputs such as compost (6 pp. 49-52). Contributors to this report Southern Water (now TasWater), have been delivering Sewage Sludge to the site – despite co-authoring action plans to minimise sewage and compost to be placed on land near the Plenty River.

In 2020, the EPA deemed the site responsible for >100,000 fish-kill as leachate from the site entered into the Plenty River (7; 8). The site has received multiple infringement notifications from the EPA regarding the health and environmental breaches.

A notification for unsatisfactory measures used was 14APR2022 (9). Within the month of this breach being served, the EPA granted two further permits for the site to receive 30 tonnes per month of Tassal waste mussel shells from finfish farming nets (not coated in copper anti-fouling paint) (10); and 7,000 wet tonnes of TasWater sewage sludge with Zinc levels in excess of Contaminant Grade B (11).

Additionally, the risk to human health from exposure to harmful emissions from open composting processes cannot be overlooked.

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<sup>1</sup> available at the time of the first EPA Tas change in scope at the site (3)

#### **1.4. Health impacts from bioaerosols air emissions of open windrow facilities.**

Harrison reported air emissions include bioaerosols - which are made up of particles of microbial, plant or animal origin (12). This can include live or dead bacteria, fungi, viruses, allergens, bacterial endotoxins, antigens, toxins, and mycotoxins. These microorganisms have been shown to be frequently adsorbed onto dust particles. The literature review concluded there are associated respiratory and general health complaints of residents living/working near such facilities (12).

A five-year study reviewed the acute and chronic effects of long term exposure to compost air emissions (13). They concluded higher incidences and severity of both acute and chronic respiratory conditions, with corresponding decreases in lung-function testing. The study concluded a significant prevalence of mucosal membrane irritation in eyes and upper-airways of those exposed, and a significant increase in chronic bronchitis (RR = 1.41; 95% CI = 1.28-1.55). Furthermore two workers were diagnosed with allergic alveolitis.

#### **1.5. Health impacts from land and water run off from open windrow compost sites**

The current facility receives Sewage Sludge, and putrescible fin-fish farming waste. EPA notifications on the site indicated the sludge is not being appropriately pasteurised (9). The site moves waste from the compost pad and land spreads onto farmland on the property.

Reviewing the literature on land spreading Sewage Sludge reveals pathogens, heavy metals, and toxicants are found in the soil and water run-off. Sewage Sludge can pose significant risk to human health and environmental harm from the pathogen and the accumulated heavy metals (14). Murtaza concluded that eating crops from land spreading areas can result in ingestion of heavy metals at unsafe levels (14). At the current site, land spreading sites run livestock. Murtaza research indicates this poses a human health risk of heavy-metal if consuming meat from the site.

In 2020, the EPA reported the site was responsible for sludge flowing off the site to the river (8; 7). This site slopes down the Derwent River, which is the main drinking water for Southern Tasmania. Authorities are aware locals drink the river water (6 p. 31). Given the EPA note that sludge runoff into the waterways resulted in fish deaths, it may be reasonable to assume those pumping water from these rivers for drinking and farming have a high potential risk of harm to human health (5; 6; 7).

A recent study reviewed the enteric virus loads found in Sewage Sludge, including COVID-19 virus (15). Viruses adhere to solid particles and will end up in the Sewage Sludge (15). The study noted that the Sewage Sludge comes from thousands of people, hence has a high pathogen diversity potential, and reported adenoviruses found in all sludge types. They report enteric viruses are more heat-resistant than bacteria, and due to the low infectious doses there is a high potential for accidental ingestion of enteric viruses. They report exposure to viral particles associated with land spreading may pose health risks. They note ground and surface water contamination must be taken into consideration (15).

Lowman et. al. (6) conducted a qualitative analysis of individuals living near Sewage Sludge land spreading sites. Most respondents believed their health was negatively impacted. Interviews of participants highlighted poorer mental health, physical health, well-being, and

enjoyment (6). Furthermore, nearly all respondents had reported their concerns to regulatory bodies with little action.

Residents around the Plenty Compost have been making complaints to the EPA Tas regarding the site for over a decade.

#### **1.6. Increased risk of MND around open windrow composting sites along waterways**

Having a composting facility alongside a river leads to a point source of nutrients in the river system. This increases the risk of algal blooms. A neurotoxin from blue-green algae is  $\beta$ -Methylamino-L-alanine (BMAA) which has been shown to be linked to Motor Neuron Disease (MND; also known as amyotrophic lateral sclerosis – ALS). The neighbouring farmer of the composting facility at Plenty, who also lives alongside the river, has recently died of MND.

#### **1.7. Regulatory Compliance and Enforcement.**

Stricter enforcement of environmental regulations is imperative. This includes enhanced monitoring of composting facilities and stringent penalties for operators who fail to comply with EPA guidelines.

#### **1.8. Exclusion of Non-Compliant Operators**

Operators with a history of non-compliance and ongoing legal issues related to environmental harm should be excluded from future composting projects. A robust certification process should be established to assess and approve operators based on their compliance and environmental performance.

The updated waste plans need to transition away from open composting to enclosed systems.

#### **1.9. Community Engagement and Transparency**

Involving local communities in the planning and operation of new composting facilities is crucial. This should include transparent communication, public consultations, and regular environmental performance reports to address and mitigate community concerns.

Of note, there was community representation against the Plenty Compost facility which was overlooked. Furthermore, there has been years of community outrage around the Plenty Compost facility concerning practices at the site. A qualitative analysis of residents living alongside such waste facilities in the US where most respondents believed their health was negatively impacted. Interviews of participants highlighted poorer mental health, physical health, well-being, and enjoyment (6). Furthermore, nearly all respondents had reported their concerns to regulatory bodies with little action.

In conclusion, transitioning to enclosed composting facilities and implementing the above strategies will significantly reduce emissions, mitigate environmental risks, and enhance the resilience of Tasmania's waste sector.

## 2. What future opportunities do you think will have the most impact?

### **2.1. Transition to Enclosed Composting Facilities**

The most significant opportunity for transformative change lies in transitioning from open-air composting methods to enclosed composting facilities. Enclosed systems offer numerous advantages, including reduced emissions, better odour control, and minimised risk of environmental contamination. This transition aligns with best practices in waste management and reflects a commitment to environmental stewardship and public health.

### **2.2. Innovative Technology Implementation**

Enclosed facilities can integrate advanced technologies for more efficient composting processes. These technologies not only improve compost quality but also enable better monitoring and control of environmental impacts. The adoption of such innovations will position Tasmania as a leader in sustainable waste management.

### **2.3. Review of Past Permit Approvals**

A critical step forward is the thorough review of past permit approvals for composting sites. This review should focus on compliance with environmental regulations and the suitability of sites for their intended use. Permits for sites that are non-compliant or environmentally unsuitable should be subject to revocation or stringent modification.

### **2.4. Revoking Permits for Non-Compliant Operators**

Operators who repeatedly violate environmental regulations undermine efforts to reduce emissions and protect ecosystems. Revoking permits for such non-compliant operators is essential to uphold environmental standards and ensure that only responsible entities are involved in waste management. This action will send a clear message about the importance of compliance and the consequences of non-compliance.

### **Strengthening Regulatory Frameworks**

To support these changes, Tasmania needs to strengthen its regulatory frameworks. This includes updating guidelines to reflect current best practices, enhancing enforcement mechanisms, and ensuring that penalties for non-compliance are substantial enough to deter violations.

### **2.5. Community and Stakeholder Engagement**

Engaging communities and stakeholders in the transition process is vital. This engagement should focus on education about the benefits of enclosed composting facilities and addressing any concerns. Active participation from the community can foster a more inclusive and transparent approach to waste management.

### **2.6. Fostering Public-Private Partnerships**

Collaborations between the public sector, private companies, and research institutions can accelerate the adoption of enclosed composting facilities. These partnerships can provide the necessary investment, expertise, and innovation to drive the transition.

## **2.7. Continuous Monitoring and Improvement**

Implementing a system for continuous monitoring and improvement of composting facilities ensures that they remain compliant and efficient. This system should include regular environmental impact assessments and adaptability to new technologies and practices.

In conclusion, transitioning to enclosed composting facilities, coupled with a rigorous review and enforcement of compliance, represents the most impactful opportunity for Tasmania's waste sector. These measures will not only reduce emissions and environmental risks but also foster a more sustainable and responsible approach to waste management in the region.

### 3. Are there any priorities or future opportunities missing from this draft Plan?

#### **3.1. Comprehensive Transition Strategy for Enclosed Composting Facilities**

The draft Plan lacks a detailed strategy for transitioning to enclosed composting facilities. This transition is crucial for reducing emissions and environmental impacts associated with open composting. A comprehensive plan should outline timelines, funding mechanisms, technology adoption, and guidelines for the construction and operation of these facilities.

#### **3.2. Enhanced Regulatory Framework and Compliance Monitoring**

There may be a gap in the draft Plan concerning the strengthening of the regulatory framework and the establishment of robust compliance monitoring systems. Ensuring that composting facilities adhere to environmental standards is vital. This includes regular inspections, mandatory reporting of environmental metrics, and the imposition of penalties for non-compliance.

#### **3.3. Incentivisation and Support for Compliant Operators**

The Plan might need to emphasise incentives and support mechanisms for operators who comply with environmental regulations. This could include financial incentives, technical assistance, and public recognition. Such measures would encourage best practices and demonstrate the value placed on environmental responsibility.

#### **3.4. Criteria for Revoking Permits of Non-Compliant Operators**

An important aspect that might be missing is the clear criteria and process for revoking permits from non-compliant operators. The Plan should outline the conditions under which permits will be reviewed and possibly revoked, ensuring that only responsible entities participate in waste management.

#### **3.5. Community Engagement and Education Initiatives**

The draft Plan might not sufficiently address the need for community engagement and education. Effective communication and educational campaigns about the benefits of enclosed composting and the importance of environmental compliance can garner public support and ensure a smoother transition.

#### **3.6. Research and Development in Waste Management Technologies**

Opportunities for research and development in advanced waste management technologies could be underrepresented. Investing in research can lead to innovative solutions that further reduce emissions and improve the efficiency of composting processes.

#### **3.7. Sustainable and Long-Term Planning**

The Plan may not fully address the need for sustainable, long-term planning that anticipates future waste management challenges. This includes considering the growth in waste volumes, changes in waste composition, and evolving environmental standards.



### **3.8. Integration with Broader Environmental Goals**

Lastly, the draft Plan might lack integration with Tasmania's broader environmental and sustainability goals. Aligning waste management strategies with these goals ensures a cohesive approach to environmental protection and sustainability across sectors.

In summary, while the draft Plan for Tasmania's waste sector may cover several important aspects, incorporating a detailed strategy for transitioning to enclosed composting facilities, enhancing regulatory frameworks, incentivising compliance, and focusing on long-term sustainability are critical areas that need further emphasis. Addressing these gaps will ensure a more comprehensive and effective approach to waste management in Tasmania.

#### 4. Are there other ways we can collaborate to reduce emissions and build resilience in the waste sector?

Enhancing collaboration to transition away from open composting in Tasmania's waste sector involves forming robust public-private partnerships to facilitate the shift towards modern, enclosed composting facilities. These partnerships, crucial for leveraging private sector innovation and investment within a framework guided by public sector environmental policies, can significantly expedite the implementation of these advanced systems.

Additionally, engaging with academic and research institutions is key to accessing the latest in composting technology and environmental impact studies. Such collaborative efforts should also extend to community engagement, ensuring local residents are involved and informed, thereby fostering a collective approach to sustainable waste management. This holistic strategy, integrating public, private, academic, and community stakeholders, is essential for a successful transition from traditional open-air composting methods to more efficient, environmentally friendly, and sustainable enclosed composting practices in Tasmania.

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