

Position Paper on Organics Waste, its Recovery and Re-Uses in Australia

Introduction

Organics Waste constitutes 22.5% of the core waste managed by the waste and resource recovery sectors across Australia. Of the core waste total of 63.8M tonnes generated annually, 14.4M tonnes is Organic Waste per the National Waste Report of 2022, second only to Construction and Demolition (C&D) waste of 25.2M tonnes.

Whilst C&D waste has a high resource recovery rate of 81% nationally the level of recovery of organic waste at 58% still has considerable uplift required to achieve the National Waste Policy Action Plan Target 3 of an 80% resource recovery rate for all waste streams, and Target 6 to halve the amount of Organic Waste to Landfill by 2030.

With 6.0M tonnes annually of organics waste being landfilled from Local Governments kerbside collection services to households (commonly known as Municipal Solid Waste or MSW) and from the Commercial and Industrial (C&I) services provided to businesses across Australia there is a considerable need to:

- A) Increase Organics collections services to the MSW and C&I sectors
- B) Increase Organics recovery processing infrastructure across Australia.
- C) Develop, promote and maintain sustainable markets for increased recovered organic volumes.
- D) Provide ongoing education to households and industry of the need for them to only discard approved organics inputs and the impacts of contamination where a Zero level of contaminates is the benchmark goal communicated to generators.

Executive Summary

NWRIC (Council) advocates that the waste management and resource recovery sectors including Council members has the capability to provide the collection and recovery processing services for the additional 3 million tonnes of organics needed to meet National Waste Policy Action Plan Targets. including a forecast additional 70 processing facilities.

For the sector to invest at the rate required to achieve the level of organics collection and recovery processing, there are a number of key issues to be overcome. The Council clearly identifies in this Paper the areas of need, for Governments to facilitate their resolution.

Fundamentally to achieve sustainable markets and products and a commitment to the Zero Contamination goal Council advocates that Governments of all levels along with C&I organic waste generators need to support this goal and invest additional resources in the organic market, product development and community education otherwise recovered and processed organic material will have little or no end value or use.

Council also emphasizes that diverting organics from landfill to recovery is one of the most effective and cost-efficient carbon abatement activities and Composting and Anaerobic Digestion (AD) offer significant circular economy benefits.

Scope

This Paper focuses on the areas of the Organic Waste sector which pose key challenges to achieving the investment required for the resource recovery and landfill diversion targets – namely contamination issues, the need for more recovery processing infrastructure (both aerobic composting and anaerobic digestion) and the development of sustainable markets and products.

Whilst identified as a key need, the collection of organic waste is not within the scope of this Paper as Council members who currently service more than 80% of Australian households and businesses with waste and recycling collection services are able to provide the growth services to increase food waste and garden organic waste collections. Collections is a well established and mainstream activity of NWRIC members and the wider waste management industry.

The two main organic waste types covered by this Paper are food and garden organics whilst it is recognised that timber, sawdust and biosolids are other organic waste types often input into organics processing facilities and used to manufacture organic materials.

The processing of organic waste is largely achieved in Australia through enclosed or open-air composting using aerobic or anaerobic degradation along with associated “bio-gas” energy generation processes. De-contamination sorting is often placed at the front end of composting facilities especially FOGO services from MSW to reduce / eliminate non- authorised material.

It is also recognised there is a well-established sector of the waste management industry that captures the methane in landfill gas formed when organic waste disposed in the landfills breaks down. Whilst a large component of this gas is sold for its energy value smaller uneconomic quantities are often flared at the generating landfill.

These activities play an important part in reducing Australia’s greenhouse gas emissions. Notably a tonne of composted garden organics can sequester approximately one tonne of CO₂e when used in land application purposes

Organic Waste generated from the agriculture, forestry, aquaculture sectors are not within Scope of this Paper as these sectors usually have established re-use processes on existing properties or in local regions. This waste is considered non-core organic waste. However, it is noted that these industry sectors play important roles as markets for applications such as fertiliser of the processed volumes and re-use of food, garden and bio-solids organics from MSW and C&I sources.

Key Information

The 14.4M tonnes of “Core “organic waste generated in Australia in 2020-21 comprised:

Type	Annual Volume 2020-21 (M tns)
Food Waste	4.7
Garden Waste	4.7
Timber	2.4
Biosolids	1.6
Other Organics	1.0

The MSW waste stream contributed 7.2M tonnes and the C&I stream 6.3M tonnes of the organics volumes above.

Recovery of Organics at 58% in the 2021-21 year was attributed to:

Processing Method	Annual Volume 2020-21 (M tns)
Composting / Mulching	5.5
Biosolids application to Land	1.2
Bio-fuels	0.1
Anaerobic Digestion (AD)	0.1
Landfill Gas conversion to Electricity	1.4

The level of AD processing is low compared to major European countries where this process producing bio-gas in enclosed processing facilities is a key processing solution. The rollout of AD in Australia is impacted by the planning timelines to obtain approvals and the lower cost of open-air windrow composting compared to the larger capital and operating costs of AD. NWRIC supports increased AD processing across Australia with its ability to accept and process large volumes of organics in an enclosed facility, on site generation of renewable energy in the form of bio-gas, produce a nutrient rich digestate offtake and provide a high level of emissions controls

In addition to the 14.4Mt of core organic waste generated in 2020/21 there exists 0.66 Mt of hazardous organic waste (grease trap, abattoir, tannery waste), 9.55Mt of primary production agriculture, forestry and aquaculture organic waste and 23.5Mt of primary production processing waste largely from the horticulture and broadacre agriculture cropping sectors. This is defined as non-core organic waste.

The above volume information was sourced from the National Waste Report 2022.

State / Territory Regulations

Some States and Territories are significantly more advanced in respect of the provision of Food Organic (FO) and Garden Organic (GO) (or collectively FOGO) collection and processing services to the MSW and C&I sectors and the policy and regulation that underpins such.

Some have gone to the extent of mandating the provision of FOGO services via Local Government to all households such as the ACT which is not practical in larger States and the Northern Territory where the focus is on providing FOGO services (or just GO services initially based on phased implementation timelines) to urban areas where large landfilled volumes exist. Council supports this approach as practical and commercial for the provision of collection services and especially for the provision and operation of organic processing facilities to best practice standards. A one size fits all organic waste solution cannot be adopted across Australian especially in regional and remote communities.

Council advocates that it is important that the Federal Government holds all States and Territory Governments accountable as signatories to the National Waste Policy Action Plan and its Targets to deliver policy and regulation to achieve the Targets especially achieving 80% resource recovery of all waste streams and halving organic waste to landfill – both by 2030.

The Federal Government leadership with strategy, policy and targets and funding via the Food Waste for Healthy Soils Fund (\$67M) and Recycling Modernisation Fund (RMF) of \$250M is encouraging however Council believes stronger impetus is needed from States and Local Government to increase resource recovery infrastructure and recycling services to achieve the delivery of National Waste Policy Targets 3 and 6 by 2030.

States and Territories are best placed to identify priority Zones, Local Governments and Industry with large landfill volumes and deploy policy and regulation along with RMF investments and from the Landfill Levies raised to increase organics services, markets and education. The conditions of contracts (especially the contract term) for processing of Local Authority and C&I generated FOGO also play a key part in determining the scale of processing infrastructure that the Organics Recycling Industry can implement. Short terms limit the scale of investment and increase viability risk.

It is important to note that Industry is making strong progress with the National Food Waste Strategy 2017 with its target of reducing food waste by half in 2030. This in effect would see food waste eliminated from retail and wholesale operations where the major supermarket retailers have organic recycling programs. Other targets of this Strategy are to halve food waste from industry production and manufacturing and from the hospitality sector and reducing by 30% in households by preventing food waste in the first instance. Increasing waste levies in states and territories is also a strong factor in driving change in industry sectors which have large organic volumes in their general waste and strong commitments to sustainability and the circularly economy.

Industry however would seek the ability across all States and Territories to have its food waste collected and processed with consistent definitions and regulations along with the availability of a larger range of organic processing infrastructure to accept the segregated organic waste. For businesses with multi - jurisdictional and broader regional state operations these are common concerns limiting their capacity to reduce food waste.

Key Issues

1) Defining Organics:

There is lack of defined standards for inclusions / exclusions in GO and FOGO services across Australia including types of food and garden waste that are able to be processed (or not) and levels of compounds such as per and polyfluoroalkyl substances (PFAS). This is a partial reason for the Contamination issue stated in 4 above. This can be addressed with Federal and State / Territory Government standardisation and regulation.

2) Infrastructure:

There is a current lack of infrastructure for processing the significant increases of organics likely to be generated across Australia. Three million extra tonnes per annum (pa) to be processed is a considerable number of 30k tonnes pa open air windrow or aerated static pile composting facilities or the higher standard / higher capital investment 40k tonnes pa enclosed AD plants. We forecast an additional 70 plants are required. Council's analysis is that all of the \$1Bn government and industry co-funding from the RMF would be utilised to establish organics processing facilities alone let alone the funding required to set up collection services for these extra volumes across Australia. It is thus imperative that State Governments deploy more funding from Landfill Levies to support the expansion of organic collection services and establishment of additional processing infrastructure.

3) Regulatory Approvals:

There exist considerable challenges for the organics industry to establish the required level of organics recovery processing infrastructure with the current planning approval processes and pathways. Greater support including accelerated approval pathways are needed to ensure the industry can gear up quickly to process the increasingly diverted organics material. In particular, approval pathways for AD are challenging across many jurisdictions including the high level of control requirements for processing and reporting of digestate.

4) Market Demand:

There is a lack of market demand to absorb the extra volume "manufactured" from an increasing level of organics collection services and processing facilities with the emphasis being on value-add products as organic fertilisers not low-level products in board acre land application. Markets are being impacted by high levels of contamination and low demand. The other factor here is the extra volumes are likely to be generated from capital city or large urban centres with large distances to significant agriculture, horticulture and viticulture operations from re-use necessitating considerable transport and its associated costs and greenhouse gas emissions. However reverse logistics models can make a significant offset to these transport requirements. There is a key role for governments to support end markets and ensure quality standards are appropriate

5) Procurement:

The procurement and buyback of organic waste (converted to processed organic products) by Local Government and State Governments is minimal and increased leadership is necessary from the Government sector of procuring Australian Standard and Certified Organic products for re-use in parks and gardens, rehabilitation, remediation and landscaping projects. Model contracts are also a recommended solution for standardising organics processing across Australia which would also aid procurement / buy back of end products.

6) PFAS Risk:

The re-use market for processed organic waste and their concern that the level in GO and more likely FOGO of toxicity from PFAS is above that considered safe for human health. Whilst Council recognises this risk the increased education across Australia as advocated above to organic waste generators (households and business) that unacceptable products (which may contain PFAS) must not be placed in organic bins will minimise this risk to low and acceptable levels.

This issue must be handled pragmatically by State Environmental regulators and Industry as the risk persists of unachievably low levels of PFAS contamination being set by Regulators discouraging infrastructure investment and compelling composted materials to be disposed to landfill.

PFAS studies as undertaken by the NSW EPA in 2020-21 stated that final products can be generated from organic processing facilities that poses a low risk to human health.

Council advocates that quality organics facilities operating to best practice, with Australian Standard certification of manufactured organic products and ongoing environmental monitoring regimes will mitigate PFAS risk concerns.

7) Contamination:

The level of contamination in GO services and especially in FOGO services with their wider ranging inclusions is on the whole unacceptable across Australia with only small pockets of excellence in some Local Government areas. Council advocates that “**Zero Contamination**” should be the highly communicated benchmark goal in education to households and business operators who generate organic waste and re-education and remedial actions needs to be taken with consistent non-compliant generators. This shares the risk allocation with Local Government (and its waste generators) and Business which is currently imbalanced passing the responsibility for wearing contamination costs to the organic waste processors.

8) Education:

An increased level of education and its funding is required to communicate effectively to organic waste generators (the households and businesses across Australia) the defined organics “**inclusions and exclusions**”, the major risks to organic product re-use from contamination and the “**Zero Contamination**” benchmark goal.

Markets

With the national target adding 3Mt of organic product (just from MSW and C&I volumes alone) into the re-use market by 2030 significant collaborative work will need to be undertaken between industry generators, processors, the agriculture, horticulture and viticulture sectors and governments of all levels to commit to absorb and re-use the “manufactured products”. Whether this is in composts, mulches, soil conditioners or blended products or inputs to new innovative products the major uplift in available volumes as inputs and processed volumes into various products as outputs will require major initial and ongoing resource allocation.

If this resource allocation is not sustained with procurement commitments from industry and government sectors, the addition, replacement and upgrade of organic processing facilities and plants from the waste management / resource recovery industry and continual market development support to industry for the re-use and expansion of organic products from government - the increase in recovered organic volumes will not be sustainable and low quality products will be generated and product loss / leakage to landfill will increase.

Council is very concerned that procurement of the “manufactured products” from the additional recovered organic volumes will not be adequately supported by the agriculture, horticulture and viticulture sectors and governments of all levels. Buy back from government is minimal at present in 2023 even with the vast number of parks and gardens managed by the government sector across Australia. Certification of the products to Australia Standards should overcome any procurement issues.

Each State and Territory along with Federal support will need to support the development and ongoing use of products and markets for high quality recycled organic materials for soil and crop improvement and conditioning, energy recovery and blended for bio-gas digestates for beneficial re-use. This must be undertaken with the support of industry associations from the agriculture, horticulture and viticulture sectors to promote the benefits of using the organic products as valuable sources for soil conditioning, crop yield improvement with nutrient rich organics, water retention and weed suppressant. Technical agronomic and horticultural support needs to be provided on an increasing scale with the extra volumes generated to ensure farmers and growers across Australia are assured of the benefits of the organic products to procure at increasing levels.

Australia’s farming, cropping, horticulture and viticulture markets are major economic drivers and the use of recovered organics for re-use as organic fertilisers is of significant benefit to these sectors. Incentives may be necessary to boost organic material procurement in these sectors especially to deliver the material from large organic facilities to end markets.

Education and the “Zero Contamination Benchmark Goal”

Education of waste generators (households and C&I businesses) to only place in the organics bins what is an approved organic waste material is critical to the success of organics recycling across Australia. Unfortunately, there is a lack of consistency of the definition of GO and especially FOGO services across the nation with Local Governments (even in the same state) having different rules as to what comprises Food Waste or is approved for placing in FOGO bins for example: seafood hard shells, bones, tree branches and stumps (sizing differentials), compostable or fibre-based packaging, tea bags and pizza boxes being many of the standard everyday organic items where differences apply as to inclusion or exclusion from organic services.

This often depends upon the contract inclusions set by a Council and its Organics processing contractor however it is preferable for consistent community education that all Local Governments define organics the same way.

There also needs to be clarity on the inclusion of compostable bags and containers where acceptance for processing may only be achievable with very small quantities or not at all.

Council advocates that this is where the Federal Government should take a national leadership role to encourage all States and Territories to define GO and FOGO inclusions in the same way – harmonising the definition of **inclusions and exclusions** to keep the inputs simple and clean. This standard definition across the country would also cover the levels of compounds such as PFAS. The States and Territories can also standardise this definition across their respective Local Governments that are a) mandated to introduce FOGO (in ACT, NSW, Vic and parts of WA) b) currently providing FOGO services or c) plan to provide FOGO services.

This common definition can also be applied to the business sector so that food producers, manufacturers plus the food retail and hospitality sectors can train their personnel to only place in organic bins these materials and exclude packaging material. Compostable packaging and cutlery is not suited to all composting / organic processing technologies and activities.

Once the definition is standardised statewide national education and communications programs can be implemented to households and the business sector highlighting the **inclusions and exclusions** for these organic waste generators along with FAQs on State Government and Local Government websites of the detailed information covering all organic products.

This education / communication messaging must also emphasize the risk of contamination to the production of quality organic material for use by our graziers, farmers, horticulturalists and vineyards across Australia.

Council advocates that **“Zero Contamination”** should be the highly communicated benchmark goal. Costs of operation of organic processing facilities increase significantly in the sorting and disposal of excluded items placed in organics bins as contamination rises. Contamination of any level places significant risk of the final product produced at processing facilities being downgraded to low value products or ending up as unacceptable for re-use and having to be landfilled. Currently the public and business do not understand this key facet of organics resource recovery and continue to place excluded items into organics bins. Although the level of contamination differs across Australia the key message and benchmark should be Zero Contamination.

Local Government and Business operators need to do more to educate, review and take remedial action on households and business operations with consistent contamination in recycling bins. A level of 10% plus contamination with waste as often seen in yellow bin recycling is completely unacceptable to organics recycling and will see organics services fail with increased waste disposed to landfill.

Summary

Council fully supports the growth of organic waste collections and processing across Australia.

This growth is essential to reduce our waste to landfill, our greenhouse gases and to provide a major and sustainable supply of nutrient rich organic products for use by primary producers and governments of all levels.

Council has significant concern that this growth is being impeded and hence putting achievement of National Waste Policy Action Plan Targets at risk by the key issues 1-8 raised in this Paper let alone the ongoing issue of obtaining development approvals to construct the new or expanded infrastructure necessary to undertake increased resource recovery. To process an extra 3Mtms of organic waste across Australia will require a significant and fast-tracked level of investment in new processing facilities with a forecast 70 additional plants required.

The Federal and State / Territory Governments must recognise the impact on industry development and essential service and critical waste management infrastructure to meet existing needs (magnified with population and industry growth) if onerous regulation and assessment timelines and conditions continue to constrain Organic Processing Plant proponents from:

- a) obtaining suitable sites and approvals / licences
- b) operating efficiently whilst meeting capital investment return criteria,
- c) attaining a sustainable level of contracted volumes, and
- d) being able to sell its manufactured products as substantial value adds to primary producers, landscapers and to the Local Government sector.

Council calls for the Federal Government in conjunction with State and Territory Governments to set national consistent definitions for organic waste inclusions and exclusions along with ongoing education and community information to organic waste generators. This will also aid the marketing of processed organic products to end users to consistently procure certified material.

Council advocates the **“Zero Contamination”** benchmark goal needs to be clearly communicated to households and businesses across Australia. They constitute our organic waste generators where communication has to be targeted by Governments of all levels so that there is a shared responsibility to provide clean inputs that will provide market confidence that processors will produce quality and sustainable organic products as re-use solutions. This can be achieved with standard model contracts as advocated by Council to reasonably share the responsibility for and costs of contamination between processors and generators.

Acknowledgments

1. Australian Government – National Food Waste Strategy and Roadmap, National Waste Policy Action Plan
2. ACT Waste Management Strategy 2011-2025.
3. Victorian Organics Resource Recovery Strategy – September 2015
4. NSW Government – Waste and Sustainable Materials Strategy 2041, Risk assessment of PFAS and PBDEs in FOGO and GO composts (2020-21), NSW EPA - What’s the Go with FOGO research report 2023.
5. Queensland Government Organics Strategy 2022-2032
6. South Australia Food Waste Strategy 2020-2025, Green Industries SA Organics Sector Analysis 2021
7. Tasmanian Organics Strategic Framework – February 2022
8. Government of Western Australia –Position statement on FOGO – May 2019.
9. National Waste Report 2022 prepared by Blue Environmental for the Dept of Climate Change, Energy, Environment and Water.