Submission to the Draft Metropolitan Waste and Resource Recovery Implementation Plan

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From:

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This submission focuses on the strategies with regard to food waste.

Composting – highest value organics processing

We support the priority actions for diverting food waste from landfill, and support MWRRG's south east and north west organics procurement.

It is commendable that the Draft plan takes a waste to value approach which sees waste as a resource (p8). In light of this, the planned procurement of facilities that can undertake large-scale composting of food waste makes good sense. The compost produced will contribute to meeting the goal of improving Victorian soil condition, mentioned on p43. However, taking a waste to value approach means that the values of alternative uses of wastes should be taken into account for small on-site organic processing infrastructure as well and that greater emphasis should be given to the highest value use of any particular waste stream. Hence, we support the priorities for food waste listed on p9, and making use of the opportunity for additional precinct based solutions in areas of high-density of food waste. Our concerns and comments relate to *Priority 5: Support and promote small on-site organic processing infrastructure.* This section does not recognise repurposing (inedible) food waste to its highest value. As outlined in this submission, the references to composting and dehydration are misleading.

The strategy seems to treat compost and dehydrate from food waste as equally valuable outputs. With regard to creating high value outputs food waste, compost from food waste is clearly a more valuable product than dehydrated food waste, particularly in the current Australian context of climate change, water scarcity and loss of topsoil. Compost is an important way of returning to the soil the nutrients that are lost when food is harvested (Lehmann and Crocker 2012). Applying compost to the soil when growing food, reduces or eliminates the need for chemical fertilizers, and reduces nitrous oxide from fertilizer runoff; nitrous oxide being a greenhouse gas 298 times more potent than carbon dioxide. Most agricultural soils in Australia have lost more than 90% of their soil carbon due to clearing and cultivation (Norris and Andrews 2010). Adding compost to the soil helps it to store

[1] This submission represents the personal views of the authors and not necessarily that of Swinburne University of Technology.

carbon, makes clay soils more friable and helps sandy soils retain water and nutrients. An application of compost makes plants more resistant to diseases, reducing or eliminating the need for pesticides and herbicides. Less water is needed and higher yields of crops are produced (Department of Primary Industries 2004). In addition, there is less erosion of topsoil and application of compost can decontaminate soil that contains heavy metals (Recycled Organics Unit 2003).

While the benefits of composting are well-established, more research needs to be conducted into the suitability of dehydrate as a soil amendment, before it can be safely applied to all growing situations. According to California's Department of Resources Recycling and Recovery, there are few existing studies on dehydrated food waste, and there are identified problems with its stability when rehydrated (see http://www.calrecycle.ca.gov/organics/food/Commercial/Dehydrators.htmexample)

Recommendation 1: That greater emphasis should be given to the highest value use of any particular waste stream, and in particular to the evidence that composting is the highest value use of (inedible) food waste.

Recommendation 2: That the strategy make explicit the link between composting food waste and meeting the stated goal of improving Victorian soil condition (p43).

Recommendation 3: That the strategy make explicit the link between composting food waste and reducing greenhouse emissions (through, for example, carbon storage and reduced fertilizer use).

The table on p39, *Table 6: Metropolitan on-site processing infrastructure*, provides a far from neutral description of four different food waste processing options. Why are the dehydrators the only technology specifically described as 'economical" and why is reference to using the output for growing food confined to the dehydrator? Melbourne Zoo actually package and sell their compost in nurseries. Worm juice and castings are well known for their nutritional benefits when used in growing food. The technology in the fourth 'site' which seems to actually be five sites, is presumably a Closed Loop 'in-vessel composter', although these operate at temperatures of around 65 degrees, not over 70 degrees and the output is not 'dried'. Although not mentioned in the table, this product is also used by restaurant owners in their vegetable gardens.

Recommendation 4: That Table 6: Metropolitan on-site processing infrastructure (p39) be revised to provide a neutral, factual description of the different food waste processing options and their outputs.

In the references to composting in the strategy, there appears to be a lack of recognition of the microbial transformation involved in composting food waste. This is a critical aspect of composting and key to many of the benefits of composting listed above. The definition of composting in the Glossary (page 101) fails to identify this key component, referring only to "biological processing", which could include the addition of enzymes, a completely different process from microbial transformation.

Recommendation 5: That the Glossary use the following definition contained in the Australian Standard AS4454-2012: 1.5.5 "Composting: "The process where organic materials are microbiologically transformed under controlled aerobic conditions to achieve pasteurization and a specified level of maturity."

Recommendation 6: That the reference to composting as "physical breakdown" (p 38) be changed to "microbial transformation".

The definition of composting in the Glossary is misleading, stating that composting "yields CO2". In fact, composting results in significant net CO2 sequestration (Rodale Institute 2014, Lal 2010).

Recommendation 7: That rather than state that composting "yields CO2", the strategy should acknowledge that composting results in significant net CO2 sequestration.

Other minor points

Although p 54, mentions odour as the most prevalent issue relevant to organics processing facilities, we would argue that better technologies and management have solved the odour issue (eg Veolia in-vessel composting facility at Bulla).

Recommendation 8: That reference be made that state of the art, well-managed composting facilities do not have an odour problem.

Table 9, p 45. It seems that Food recovery has been included in the table of residual waste by mistake.

References:

Department of Primary Industries. 2004. Compost for Vegetable Growers, Fact Sheet 2: Why Use Compost? In *http://www.sustainability.vic.gov.au*, edited by Department of Primary Industries.

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Lehmann, Steffen, and Robert Crocker, eds. 2012. *Designing for zero Waste: Consumption, technologies and the built environment*. Edited by Steffen Lehmann, *Earthscan Book Series on Sustainable Design*. Oxford: Earthscan.

Norris, D., and P Andrews. 2010. "Re-coupling the carbon and water cycles by Natural Sequence Farming." *International Journal of Water* 5 (4):386-395.

Recycled Organics Unit (2003). *Life Cycle Inventory and Life Cycle Assessment for Windrow Composting Systems.* Report prepared for NSW Department of Environment and Conservation (Sustainability Programs Division), Published by Recycled Organics Unit, The University of New South Wales, Sydney.

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Standards Australia. 2012. *Australian Standard AS 4454-2003: Composts, soil conditioners and mulches*. Standards Association of Australia, Homebush, NSW, Australia.

US Environmental Protection Agency. 2011. Reducing GHGs through Recycling and Composting US Environmental Protection Agency,.