

15. ORGANICS PROCESSING PLANT

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The purpose of this report is to update the Committee on the status of the in-vessel compost plant tender process

BACKGROUND

Organic waste is the component of the landfill waste stream of the greatest environmental concern as it is a major contributor to the generation of landfill leachate, and the cause of "landfill gas" (mainly methane) production.

Since 1994 diversion of (organic) green waste from the waste stream to the Compost Plant has been the Council's most effective waste minimisation initiative. However, the resource consent for the Bromley Plant permits composting of garden organic waste only. Thus putrescibles (e.g. kitchen scraps, restaurant waste and food processing by-product) with no alternative disposal path available, continue to go to the landfill.

Our waste surveys indicate that putrescibles amount to about 25,000t of the City's current waste stream. Such materials can be readily composted, but because of their potentially odorous nature, the process must be carried out inside a building or some other enclosed composting container – commonly called "in-vessel composting".

Against this background in 1999, investigations commenced into the concept of extending the capability of the Council's outdoor composting plant at Bromley by construction of an in-vessel compost plant.

These investigations led to the issue of a "Request for Tenders" for an organics processing plant in July 2001. The concept embodied in these documents was of a "start-up" plant capable of handling 15,000t of material (being a mixture of 4,000t of putrescibles and 11,000t of green waste). At that point it was envisaged that the plant would be developed in two further stages to a plant of 55,000 tonnes capacity capable of composting both the garden green waste and putrescibles. A perceived bonus of this approach was that odour and dust issues associated with the current plant would be entirely resolved. The documents were deliberately non-specific on the type of plant required as there are numerous technologies available, and the idea was to obtain tenders from as many of these different technologies as possible so they could be properly compared one to another.

TENDERS RECEIVED

Three different types of processing plant were included in the tenders:

- (a) Anaerobic composting inside a horizontally mounted drum containing rotating tynes to aerate and move the material. (1 tender).
- (b) Aerobic composting inside large chambers (static pile composting). Material is loaded into the chambers by front end loader. They are then closed and air is blown through the material. (2 tenders).
- (c) Anaerobic digestion: Material is pulped with water, and pumped into a digester (similar to those at the Council's Wastewater Treatment Plant). Following digestion, during which methane is produced and which can be burnt to produce electricity, the material is mixed with shredded green waste and further composted in a box type chamber as per (b) above. This tender also included worm composting as part of the mix of "technologies".

All of the above technologies require further maturing of the product in windrows placed outside the plant.

TENDER CONSIDERATIONS

Tenderers presented their information to the Compost Subcommittee in late 2001. The key outcome from this initial tender evaluation was that the concept of eventually processing all of the green waste through an in-vessel plant was financially flawed. The cost to do this, compared to the cost of the current open-air windrowing operation was prohibitive.

The Compost Subcommittee therefore decided to shift the approach to focus on the "start-up" plant (and any subsequent expansions) being primarily used for the processing of putrescibles. Garden waste would then only be added as necessary to provide an appropriate Carbon/Nitrogen ratio. The Vermiculture option was also rejected at this time, as the Subcommittee decided, "it could not support the cost of \$40 per tonne for this to be transported to Geraldine".

Considerable further information was sought from the tenderers to accommodate this substantial change in concept. Further work was also done on the environmental performance of the different options under consideration.

FINAL OUTCOME OF WASTE INITIATIVES SUBCOMMITTEE TENDER CONSIDERATIONS

A final report was presented to the above Subcommittee (Previously The Compost Subcommittee) on 8 March 2002. Tenders had been narrowed to a consideration of two. The anaerobic digestion (Tender A, minus vermiculture) and one of the two static pile aerobic composting units (Tender B). Summary points from this report are:

- Total cost (including capital and operational) for both Tenders (A) and (B) was approximately \$88 per tonne of total material composted.
- Total cost per tonne (including capital and operational) if the putrescible tonnage only is considered. Favoured Tender (A) at approx \$150/t compared to Tender (B) at approximately \$165/t.
- There was a perceived risk of Tender (A) operational costs turning out to be higher than tendered costs.
- Tender (A)'s system could cope with higher levels of contamination in the incoming waste material. This was seen as a considerable advantage in retaining flexibility about future waste streams that could be successfully composted.
- Environmentally the most significant effect is gained by keeping organic material out of the landfill. Both the tenders would achieve this, but there is no clear further environmental gain from choosing either Tender (A) or (B).

Having examined the above report the Waste Initiatives Subcommittee felt that with no clear cost or environmental advantage between the tenders, it would be best to delay this project by a year in order to further investigate these and other possible organics processing technologies. Accordingly the Subcommittee resolved:

1. That all tenderers be advised that their tenders had not been accepted, but that the Council wished to continue investigating the existing proposals, including other options.
2. That staff be instructed to make the appropriate adjustments to budgets to allow for the project to be delayed by one year.

SUMMARY

The Council in 1999 commenced investigating the feasibility of an in-vessel compost plant to increase the range of material that it could compost at its composting plant. Investigations led to a call for tenders for such a plant in 2001. However the Waste Initiatives Subcommittee, after lengthy consideration resolved to not accept any of the tenders but will continue investigating both existing proposals and other options for processing putrescibles. A significant point to note is that the investigation to date has established that it is much more economic to continue composting green waste by open-air windrowing, and to use any new in-vessel plant to compost only the putrescible component of the organics waste stream, with the possible inclusion eventually of biosolids.

Recommendation: That the information be received.

Chairman's

Recommendation: That the Committee endorse the recommendations of the Waste Initiatives Subcommittee to the Annual Plan Subcommittee as described in the report.