

6. IN-VESSEL COMPOST PLANT

Officer responsible Waste Manager	Author Mike Stockwell
Corporate Plan Output: Solid Waste	

The purpose of this report is to recommend that the Council provide \$5.8M (excluding GST) capital on the 2001/02 and 2002/03 budget years for the construction of a five lane startup agitated bay compost plant or similar alternative technology. Note that it is proposed that operating costs be financed by a combination of green waste charges and the waste minimisation levy.

THE NEED FOR AN IN-VESSEL COMPOST PLANT

Over the past two years there have been a series of reports to this committee outlining the need to take the next step and move from open air windrow composting to an enclosed in-vessel system. In summary this is because:

- An in-vessel system has the capability to compost putrescibles (food wastes from domestic and industrial sources) and other organic material (eg bio-solids abattoir waste etc) that cannot be processed by open air windrowing. These occupy considerable landfill space and generate much leachate and greenhouse gas (carbon dioxide and methane).
- Windrow composting sometimes generates dust and odour which is offensive to neighbours and passing public. In-vessel composting very significantly reduces these problems.
- In-vessel composting is more space effective and space is becoming tight at the current Metro Place site.
- In-vessel composting is more suitable to the blending together of a variety of input materials (eg bio-solids, putrescibles, green waste) and generating a higher quality product than windrowing.
- Environment Canterbury is becoming concerned about odour and dust problems associated with our windrow operation and consider conversion to in-vessel composting would be a very satisfactory solution.

FEASIBILITY REPORT

The August 2000 City Services Committee resolved as follows:

That the Waste Manager report back to this Committee through the Compost Subcommittee with the results of a feasibility study on the establishment of a small startup in-vessel compost plant later this year. This report will indicate future operational and capital budgeting requirements for such a plant.

The feasibility report has been written by Dave McLernon of Octa Associates in collaboration with the Waste Manager and staff. It has also been thoroughly scrutinised by the Compost Subcommittee (Councillors O'Rourke, Wright, Close, Howell and Mike Stockwell) - refer attachment for Feasibility Report.

To develop an indepth understanding of alternative compost technologies it is essential that Councillors read the attached report. This City Services report is very much a summary of the attachment.

CONCLUSION AND SUMMARY (DIRECT FROM ATTACHED FEASIBILITY REPORT)

The Octa report contains the following conclusion and summary (which is endorsed by the Compost Subcommittee):

The existing open air windrow compost plant at Metro Refuse Station has been extremely successful in producing compost from Christchurch's green waste. It is now processing approximately 34,000 tonnes of incoming green waste per year. However for the following reasons, the time has come to take the next step and move the composting process undercover.

This is because of:

(Refer to the section above for reasons which are not repeated here)

This report has overviewed various known available technologies such as containers, vertical composting units/silos, agitated bays, tunnels, worms and rotating trommels. It concludes that the best available and proven viable technology for handling the large quantity of waste produced by a city the size of Christchurch is an agitated bay system.

The report concludes that it would be prudent to build a 5-bay start up plant capable of handling around 25% to 30% of the Christchurch green waste stream together with some putrescibles and paper (initially approximately 10,000 tonnes green waste, 3,500 tonnes putrescibles and 1,000 tonnes paper). Some bio-solid composting can also be trialed. As experience in operation is gained, and the quantity of putrescibles from industry (or kerbside) increases, extra lanes can be added to the plant in modules of five until it reaches a size of 20 or 25 lanes. It should be noted that a significant advantage of a small startup plant approach is that should alternative technologies improve their viability over the medium term, then they could be implemented either in parallel or instead of adding on to the agitated bay startup plant.

The capital cost of a start up plant is estimated to be around \$5.8 million. Gross operating costs are estimated to increase from approximately \$53/tonne to \$103/tonne excluding any profit or loss from final blending, marketing and sales which, for reasons of caution and experience, has been assumed at this stage to be cost neutral. Net operating costs (i.e. gross costs less gate charge revenue) are estimated to increase from approximately \$22/tonne to \$77/tonne. For a start up input quantity of approximately 14,500 tonnes, the total annual increase in operating cost will be around \$895,000 p.a.. Note all figures are GST exclusive.

In spite of the fact that this Feasibility Report concludes that agitated bay compost technology is the most viable next step for Christchurch, it is considered that the Council should first confirm this conclusion by seeking alternative proposals from the marketplace before making a final decision. In addition, requests for proposals should seek alternative delivery possibilities such as design/build, design/build/operate/transfer and so on.

In this context, it is relevant to note that the Wellington City Council(20 bay) plant was a DBOT project which has proven highly successful. Even though it incorporates IPS technology from the USA, the cost of this element represented only 12% of the total capital cost (\$2.0M out of \$16.0M). It is considered that it would be highly prudent for Christchurch to adopt proven technology with a well established track record in reliability and efficiency.

SOURCE OF FUNDING

As outlined above, the change from open air windrow to in-vessel composting will require capital funding for plant construction together with increased operational costs for compost production (ie increased \$/tonne). It is anticipated that funding for capital depreciation, interest and loan repayment as well as increased ongoing operational costs can, if not completely, be almost cost neutral as far as demands on the rates are concerned. The Compost Subcommittee considers that funding for this project should most appropriately come from a combination of the waste minimisation fee (which is currently \$12/tonne in 2000/01 and rising to \$15/tonne in 2001/02, excluding \$2/tonne for the Business Development Fund), and from green waste charges which should be progressively increased to 60% of the refuse charge over three years (i.e. 2001/02, 2002/03, 2003/04). This funding proposal will be reported in detail to the November City Services Committee for approval.

Compost Subcommittee

- Recommendation:**
1. That the Waste Manager seek expressions of interest/proposals for a five lane agitated bay in-vessel compost plant or similar alternative technologies. (Note that at this stage a plant to process around 30% of the green waste is envisaged.)
 2. That capital funding of \$5.8 million (excluding GST) be included in the Annual Plan budgeting for 2001/02 and 2002/03 to enable the construction of a start-up five lane agitated bay in-vessel plant or equivalent.
 3. That increased operating costs equivalent to that of a five lane in-vessel agitated bay plant be included in the 2002/03 budget and beyond as indicated in the attached Octa Feasibility report.
 4. That all operating and capital costs be funded by a combination of the Waste Minimisation levy and green waste charges.
 5. That the green waste charges be progressively increased to 60% of the refuse charges over years 2001/02, 2002/03, 2003/04.
 6. That the Waste Manager seek to identify an extra \$50,000 for professional services for this project in the 2000/01 year from the Waste Management Unit operational budget at the 5 month financial reporting time.

Chairman's

- Recommendation:** That the above recommendation be adopted.