7. BIOSOLIDS ISSUES AND OPTIONS

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PURPOSE OF REPORT

1. This report summarises the examination of issues and options for the future management of biosolids that was conducted from April through June 2006.

EXECUTIVE SUMMARY

2. Biosolids produced by the Christchurch Wastewater Treatment Plant (CWTP) are currently used as cover material for the Burwood Landfill closure. As such there is a need to identify future uses for biosolids.

3. A consultant was engaged to examine the issues and the options for managing the biosolids from the CWTP. A number of technologies and approaches were examined. The report *Issues and Options for the Future Management of Biosolids* (Attachment 1) identified two approaches, based on a multi-criteria analysis: drying with land application or energy use and land application of dewatered biosolids. The latter option is viewed as sub-optimal given the land area required.

3. A seminar for Councillors was held on 18 July 2006 that summarised the results of the Issues and Options project. At the seminar Councillors concurred in general with the recommendations of the report but requested staff to:

   - Further examine the SlurryCarb technology, and
   - Consult with Ensis regarding biosolids management options.

4. Council staff found that while intriguing, the SlurryCarb process is unproven in commercial use, as no commercial-scale facility is currently operating (Attachment 2). Therefore the technology poses too great a risk to the Council given the time frame in which a biosolids management option must be implemented.

5. Council staff met with Ensis personnel on 7 August to follow up on biosolids management options for the future. There were no new technologies or management approaches that arose that had not already been examined in the *Issues and Options* report.

FINANCIAL AND LEGAL CONSIDERATIONS

6. Biosolids, if not otherwise beneficially reused, will have to be transported to Kate Valley for disposal. Not only does disposal pose a significant annual cost to the Council, such an approach would ensure that the Council would fail to meet the New Zealand Waste Strategy Target for the beneficial reuse of 95% of the CWTP's biosolids.

7. Indicative capital costings for the preferred biosolids management options were within a $20 million to $22 million range. $22 million is already included in the 2006-20016 Long Term Council Community Plan.

STAFF RECOMMENDATIONS

It is recommended that the Council:

(a) Receive the Issues and Option report.

(b) Endorse a staff recommendation that drying is the preferred management option.

(c) Approve a feasibility study for the drying option.

BACKGROUND ON ISSUES AND OPTIONS FOR BIOSOLIDS

8. Annually the Christchurch Wastewater Treatment Plant (CWTP) produces more than 25,000 tonnes of biosolids (as 20 per cent dry solids). This volume is expected to rise to 30,000 tonnes in 2008. By 2027 the volume is expected to be 36,000 tonnes per annum.

9. In February 2006, the Council considered the results of a public consultation on the future management of the biosolids produced at the CWTP. The Council requested staff to develop the issues and options for fulfilling the proposed directions indicated in the public consultations held in June through September 2005.

ISSUES AND OPTIONS PROJECT

10. In April 2006 a contractor was engaged to study the issues and options for the future management of biosolids. This project was intended to:

    - Identify options for managing biosolids;
    - Issues and costs associated with those options;
    - Take into account the preferences indicated in the public consultations held in 2005;
    - Provide a thorough analysis of technologies for managing biosolids that have been proven in the marketplace, with a particular focus on solutions that are in use in medium and large urban areas;
    - Develop a process or processes that offer the greatest flexibility, to enable the Council to adapt its biosolids management approach to regulations, markets and community perceptions; and
    - Factor into the cost analysis any credits and/or cost savings, such as credits from energy production, green house gas credits or avoided costs with alternatives to landfill.

11. This project was undertaken from April through June this year, and the report *Issues and Options for the Future Management of Biosolids* was produced (Attachment 1).

12. Various technologies and management options were considered as part of this project. Each was evaluated according to a multi-criteria analysis. The report concludes that two potential approaches offer the best solution.

13. In July, a Council seminar was held at which the results of the issues and options project were presented. Staff recommended the endorsement of a drying option, as this option

    - provides the greatest flexibility for managing biosolids
    - is in line with the approach preferred through the public consultation process
    - yields an easier to manage material
    - significantly reduces the volume of biosolids

14. Councillors deferred endorsing the drying option with detailed feasibility study to follow, pending further work in two areas:

    - further examination of SlurryCarb, one of the technologies evaluated in the Issues and Options report
    - consultation with Alan Leckie from Ensis , who had provided comments on biosolids during the Long Term Council Community Plan deliberations.

15. An investigation by staff of the SlurryCarb process confirmed the analysis of the technology in the *Issues and Options* report. The technology produces a dried product which can be used as a fuel. The SlurryCarb process is unproven on a commercial scale, as construction for the first commercial SlurryCarb plant will begin shortly in California. That plant will not be operational until 2008. There are proven technologies, already in use on a commercial scale such as the thermal drying facility in New Plymouth, that produce a dried product that can be used as a fuel. A report by staff on the SlurryCarb process is provided as Attachment 2. Staff advise that this technology poses a high risk, as it is unproven, and as such should be ruled out of further consideration.

16. As requested at the Council seminar meeting of 18 July, staff met with Per Nielson with Ensis and Lisa Langer of Forest Research on 7 August to follow up on comments raised by Mr Leckie concerning management of biosolids in the future. There were no technology or management solutions identified in that meeting that had not already been considered in the *Issues and Options* report.

CONCLUSIONS

17. Investigations by staff corroborate the findings of the *Issues and Options* report. Staff advise that of the two approaches recommended in the report, the drying option is preferable to applying dewatered cake to land because:

- drying produces product with greatest range of beneficial reuse as fuel and as soil amendment;
- it takes the preference of the public consultation for beneficial energy use into account;
- a dried product is much easer to handle, store and transport than dewatered cake; and
- the reduced volume of dried product as compared to dewatered cake means lower disposal cost as a last resort.

18. Further work on the drying option is needed. A detailed feasibility study should be undertaken which includes

- an analysis of consents needed for thermal drying and for potential fuels markets
- concept design of the preferred drying solution
- further development of potential markets for a dried product

Staff advise that this work should be initiated as soon as practicable, to enable a report back to Council in late 2006 or early 2007 on the preferred solution and contract delivery model.