



REVIEW OF "CHOICE COMPOSTING" PROPOSAL

PURPOSE

This report considers the viability of a proposal for the establishment of a composting operation on Spicer Landfill land. This paper reviews the proposal in terms of its economic, environmental and social costs, benefits and risks.

SIGNIFICANCE OF DECISION

The matters considered in this report do not trigger the Council's Significance Policy.

RECOMMENDATIONS

That the Wastewater Treatment Plant and Landfill Joint Committee recommend:

1. That Porirua City Council **declines** the proposal.
2. That Wellington City Council **agrees** that Porirua City Council decline the proposal.
3. That both Councils **note** that while the current proposal's benefits do not outweigh the costs and risks, there is an expectation that composting or digestion of food wastes for renewable energy is likely to be commercially viable in Porirua in the medium term (five to ten years) and may be a future business growth opportunity.

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1 EXECUTIVE SUMMARY

- 1.1 Take Care Business Services Ltd (Take Care) has proposed that the Council support the start-up of a commercial composting operation by providing land and funding.
- 1.2 Take Care has asked that the Council make available approximately one third of a hectare of land, located adjacent to the road leading to Spicer Landfill and to provide the basic infrastructure for a composting operation to be known as Choice Composting. The cost to the Council of the infrastructure establishment is expected to be in the range of \$100,000 to \$300,000.
- 1.3 In addition to land and funding, the Council is also being asked to assist Take Care to obtain resource consent for the composting operation.
- 1.4 In return Take Care are offering the Council a \$100 a year lease payment and a payment of \$10 per tonne of organic waste accepted at the composting operation. This would return an estimated \$11,100 per year to the Council. This equates to a payback period of between 9 and 27 years depending on the level of Council's initial contribution (\$100,000 to \$300,000).
- 1.5 It is currently not clear that the environmental benefits of diverting food waste from landfill outweigh the environmental costs of the proposed composting operation.
- 1.6 It is likely that there would be some social benefit arising from the training of at-risk youth in composting.
- 1.7 The cost to the Council in supporting the start-up of the composting operation is significant. In terms of waste minimisation, public funding may be more effectively spent in further encouraging back door composting by, for example, providing householders with subsidised compost bins.
- 1.8 Officers are concerned that the project has a number of critical risks which have not been adequately addressed. For example the signing up of a financial partner and a collection company, the effect of potential resource consent restrictions, the reliability of the composting process in New Zealand and that operating costs are probably underestimated.
- 1.9 While there is concern that the current proposal's benefits do not outweigh the costs and risks, there is an expectation that composting or digestion of food wastes for renewable energy is likely to be commercially viable in Porirua in the medium term (five to ten years) and may be discounted as a future business growth opportunity.

2 CONTRIBUTION TO PORIRUA CITY COUNCIL'S STRATEGIES

Relationship to Council's Strategic Focus Areas

Investing in infrastructure for the future	Protecting our landscapes and harbour	A vibrant city centre for residents, business and visitors	Active and connected communities
✓	✓		

- 2.1 The proposal broadly contributes to the above focus areas. It is also supportive of the Waste Minimisation and Kerbside Recycling objective, namely: "Council and community work together to minimise waste, recycle and recover resources" and of the Waste Transfer and Disposal objective, namely: "Waste to landfill is significantly reduced".

3 ASSOCIATED PORTFOLIOS

Relationship to Council's Portfolios of Responsibility

Sport, Leisure and Recreation	Community and Social Development	Infrastructure and Environment	Economy and Arts	Planning and Regulatory	Finance and Audit
✓	✓	✓	✓	✓	✓

Relationship to Project Portfolios

Emergency Management	Sister Cities	Village Planning	Harbour	City Centre	Community Empowerment
					✓

4 BACKGROUND

- 4.1 Take Care has applied for and received provisional approval for a grant of \$64,491 from the Ministry for the Environment's (MfE) Waste Minimisation Fund to:

“Create a behavioural shift to make organic waste recycling an everyday household practice by introducing food scraps and green waste recycling products and services to Porirua households and local businesses, and;

to prove that it is economically viable to turn organic waste into quality compost with minimal operational costs, odour and methane emissions”.

- 4.2 The submission to the MfE states that during the start-up phase of the composting operation, over 2012 and 2013, the aim is to recover 750 tonnes of organic waste through a residential and commercial collection service and process it into compost. In parallel, home composting operations will also be promoted. The promotion of home composting operations does not involve input from the Council, but in the financial business case put forward by Take Care does provide some income to support the proposed composting operation during its start-up phase.
- 4.3 Take Care propose to use a proprietary inoculant that is sprayed onto the organic waste to improve the composting efficiency and quality. The inoculant, made by Australian firm VRM, has been used in a number of trials in Australia, but never in New Zealand. One purpose of the inoculant is to actively break down the green waste so that mulching before composting (an expensive operation) is not necessary.
- 4.4 The Australian trials involved the use of compostable “Biobags”, made from corn starch, for the collection and containment of food scraps. The purpose of the Biobags is to actively dehydrate the food scraps so that they arrive at the composting site in an aerobic state and are less likely to produce odour or attract vermin.
- 4.5 Biobags containing the food scraps were deposited in large household wheelie bins along with greenwaste. The collection contractor collected the mixed organic waste and delivered it to the composting site.

- 4.6 An illustration from the Groundswell literature summarising the collection process is presented in Figure 1. It is clear from the available literature that collection and use of food scraps in composting can be effectively carried out but is subject to some provisos, as discussed below.



Figure 1 Illustration from the Groundswell literature

- 4.7 As an encouragement to householders to become involved in the organic waste collections Take Care plans to use the MfE funding to provide a free collection service over a six month period for up to 1000 households that would include a wheelie bin, a ventilated kitchen scrap holder and supply of Biobags. After the six month trial the householders would be required to pay for the collection service. The collection of the organic waste would be carried out by a commercial wheelie bin operator, yet to be appointed by Take Care.

Composting Operation

- 4.8 The labour to run the Choice Composting operation would be provided by AserT Tatou Development Trust (AserT), a not-for-profit organisation that provides education for students, particularly at-risk youth, to assimilate the skills associated with growing food in a sustainable way. Labour would be provided at no cost, but AserT would share in the profit on a 50:50 basis with Take Care.
- 4.9 Apart from the use of the inoculant, the proposed composting operation is similar to some composting operations carried out in New Zealand, the closest geographically being the Kai to Compost/Capital Compost operations carried out at Southern Landfill and Composting New Zealand's operations at Otaihangā. While most composting operations in

New Zealand are based upon a feedstock of green waste, some local authorities provide for collection of garden and food waste within the district or city that is then composted. These include Selwyn District, Timaru District, Christchurch City, MacKenzie District, South Taranaki District, Stratford District and Whakatane District.

- 4.10 The composting operation proposed by Take Care adjacent to the landfill road would involve on-site labour on a two day a week basis to remove non-compostable refuse from the incoming feedstock, spray with inoculant, water, turn and cover the compost and, after maturation, to screen the compost and bag it ready for domestic sale. In the short term Take Care are proposing to hire a loader to move and turn the compost and to hire a drum screener. On site shelter for storage of equipment would be provided by using used tyres or a shipping container. An electricity connection to the site is not required.
- 4.11 Take care propose to use coffee sacks for bagging the compost for domestic sale; and then sell the compost at Te Rito Gardens, operated by Asert in the Kenepuru Hospital Grounds, or at local farmers' markets. In addition it is proposed that bulk compost would be sold to horticultural concerns.
- 4.12 This paper reviews the proposed composting operation and the funding and involvement sought from the Council. Comment is made on the feasibility and likely success of the venture, and the risks to the Council if it is unsuccessful.

5 DISCUSSION AND OPTIONS CONSIDERED

Council Involvement and Associated Benefits, Costs and Risks

- 5.1 The site that Take Care propose to use is currently an operating quarry to source material for the upgrade being undertaken at the landfill, as shown in Figure 2 below. Whilst the current upgrade is close to completion, further quarrying will be required from time to time to provide clean fill for landfill operations and future capital works. There are concerns that this may not be compatible with an adjacent composting operation from a health and safety perspective, particularly if public access is required.
- 5.2 While road access to the site is in place, additional earthworks would be needed to provide a flat site. The site is provided with settlement ponds for treatment of stormwater (prior to discharge to the stream running through the Botanic Gardens) but there is no sewerage connection.



Figure 2 Aerial view of the quarry site where the composting operation is proposed

- 5.3 The initial establishment costs that Take Care is asking the Council to meet include:
1. Levelling an approximate 80m by 40m site with perimeter drainage
 2. Building a hard surface on the site to make it suitable for the composting operation
 3. Providing water supply to the site
 4. Providing drive-on access to the site
 5. A litter/security fence around the composting site may be required
 6. An impermeable layer below the composting area, lined drainage and a sewerage link would need to be provided if the conditions of the resource consent require the run-off from the composting site to be treated as leachate rather than stormwater.
- 5.4 The site establishment costs are estimated between \$100,000 and \$300,000 depending upon the requirements of the resource consent.

- 5.5 Advice from PCC's planners is that one or more resource consents would be required¹. Because of the potential for odour (discharge to air), or leachate (discharge to land), resource consent from the Regional Council may also be required. The cost of obtaining resource consents could be fairly modest (less than \$5,000) but could be a much greater figure if the application goes to a hearing. The cost of preparing material in support of resource consent applications is in addition to these costs.
- 5.6 Once quarried out, the site will provide the Council with a fairly flat site of about 1 hectare of industrial land, which has a current market value of about 1 million dollars. The Council would forego the benefits of possible sale or commercial leasing of the land while the composting operation continues. However, the proposed parking facilities and walking access to the ridge to the east of the site being promoted by the Council's Leisure and Asset Services group would be compatible with the proposed composting operation.
- 5.7 By year three, Take Care anticipates that 1,100 tonnes per annum of organic waste will be composted, an estimated 860 tonnes from residential collections and the remainder from commercial sources. Once the composting operation is fully operational Take Care would need to collect organic waste from around 30% of the 16,000 households that pay the kerbside recycling charge². In their business plan financials, Take Care assumes that each household will produce a greater amount of organic waste and that collection from 17% of Porirua households will provide the planned tonnage. Additional organic waste, particularly garden waste, may well be provided by householders if wheelie bins are used.
- 5.8 In terms of the proposal from Take Care the projected 1,100 tonnes would provide the Council with revenue of \$11,100 per annum. This equates to a payback period for the capital investment of between 9 and 27 years.
- 5.9 A potential benefit of Take Care's proposal is that the diversion of food waste from the landfill would marginally delay the capital outlay associated with further staged upgrade of Spicer landfill. However, the discounted net value of these delays is offset by the reduced gate revenue (related to the reduced refuse tonnage), which translates directly into reduced near term profit from the landfill operations.
- 5.10 If the venture were to fail financially there could be a significant public relations problem for the Council given the \$100,000 to \$300,000 investment. Council would also be left with

¹ An outline plan approval, where the proposal is considered under the existing designation, would not be appropriate. A resource consent seeking discretionary approval under the underlying zoning (in this case 'industrial') would be required. This is because the establishment of the composting operation is at the behest of a private company rather than the requiring authority of the designation (the Council). A limited notified consent is likely to be required where neighbouring land owners are asked whether they have any legitimate objections to the composting operation. There may be a requirement for the application to be considered by a Council hearings committee.

² The average weight of refuse per rubbish bag collected is about 7kg. Assuming that the average household that uses rubbish bags uses one bag a week and that organic waste makes up one half of the household waste stream (Household Sector Waste to Landfill in New Zealand. Report to the Ministry for the Environment, Waste Not Consulting, 2009), suggests that the amount of organic waste produced per household each year is about $7 \times 0.5 \times 52 = 180\text{kg}$. Once the composting operation is fully operational Take Care would need to collect organic waste from approximately $860 \times 1,000 / 180 = 4,800$ Porirua households, around 30% of the 16,000 households that pay the kerbside recycling charge.

clean up costs (including landfilling of compost feedstock if alternative ways of disposing of it cannot be found).

- 5.11 The proposed composting operation has some environmental benefits, for example less landfill sourced greenhouse gas emissions and leachate, and the return of nutrients and humus to the soil. However there are also environmental costs, for example the manufacture of the bins and biobags from oil and cornstarch; and the fuel and wear and tear of the collection, processing and distribution vehicles and machinery. It is not clear that the environmental benefits of diverting food waste from landfill outweigh the environmental costs of the proposed composting operation.
- 5.12 The proposal from Take Care aims to "provide a behavioural shift and community educational outcomes by engaging the entire Porirua region". This is laudable and activities that support the waste minimisation education and awareness programme being pursued by the Council are welcomed. However the establishment of a fourth composting operation in the Wellington region³ may not achieve much in this regard.
- 5.13 The proposed training of at-risk youth by Aserit as part of the provision of labour for the composting operation would likely provide some social benefit.

Feasibility of Take Care's Proposal

- 5.14 The commercial success of any new operation is dependent upon many factors and in the start-up phase this operation will require financial and in-kind support from a number of quarters to keep it afloat. Take Care is currently seeking a financial partner.
- 5.15 From the information provided by Take Care it is believed that there are some costs that have been underestimated, for example the cost of weighing the compost feedstock and the outgoing compost (a number of weighbridges exist in the area but charge of the order of \$10 for each weighing). The cost of on-going maintenance of the site is not included in their financial analysis, and this could be substantial based on experience with maintenance costs of the greenwaste area at the landfill.
- 5.16 Similarly, the cost of testing the compost for pathogens etc is underestimated. Information from Australia⁴ suggests that testing for pathogens, heavy metals or pesticide residues is a significant issue and is required for quality assurance on a regular ongoing basis, not just once a year as included in Take Care's financial model. The cost of regular testing will add significantly to the cost of the composting operation. The current guidelines for testing are provided by New Zealand standard NZS 4554 Compost, Soil Conditioners and Mulches which is based upon the equivalent Australian standard. Darren Hoskins, landfill manager at WCC's Southern landfill, who is a member of the NZS 4554 steering committee, comments that testing of each compost batch is recommended and that the Ministry of Health are currently investigating more stringent testing requirements for composts that include food waste.

³ Commercial composting operations already exist at Paraparaumu, Southern Landfill and at Seaview.

⁴ The Magic Pudding: understanding the outcomes of the impact and future of Groundswell 2007-2011, Barbara Pamphilon and Barbara Chevalier, Australian Institute for Sustainable Communities, University of Canberra, March 2011.

- 5.17 The use of hessian bags for retail sale of compost is also questioned as the compost may be wet and transportation of a wet bag of compost by purchasers may not be acceptable. Use of plastic bags and a bag sealing process would add to the cost of the operation.
- 5.18 Take Care are currently investigating the HSNO⁵ requirements associated with the importation of the VRM inoculant from Australia. The inoculant has been successfully used in the Groundswell project⁶ by a number of Australian local authorities but not yet in New Zealand, and so may be subject to restrictions.
- 5.19 The added cost of separate organic waste collection may be a disincentive for householders. Although the cost of disposal of the inorganic component of waste will be less (fewer rubbish bags used), there will be additional cost for the wheelie bins used for organic refuse collection. These will probably be charged on a collection basis, irrespective of the volume of rubbish in them. As a result, the take-up by Porirua households of the proposed organic waste collection may be much less than Take Care predicts.
- 5.20 To minimise odours and nuisance during the collection and delivery phase of the operation, use of Biobags and wheelie bins is essential. This would require the collection contractor that Take Care uses to strictly adhere to protocols. However, no collection contract requiring this strict adherence is in place.
- 5.21 Potential for odours that would attract flies and vermin at a composting site is exacerbated by introducing food waste into the feedstock, and care would need to be exercised to ensure the Biobags were not punctured and that the waste was speedily included in the composting operation and not just stockpiled. The Groundswell literature notes that if the composting operation is properly carried out "odour is greatly reduced and in most instances eliminated altogether".
- 5.22 Pictures from the Australian trials (see Figure 3 below) indicate that the proportion of food scraps to green waste is significantly less than would be collected from New Zealand households. The Waste Not Consulting survey (2009) puts the proportion of kitchen waste at 56% of New Zealand household organic waste. In the Bathurst trial in the Groundswell project, a feedstock of one part food type waste to 10 parts green waste was used. Additional green waste is available from the Spicer Landfill and could be made available to Take Care's composting operation for the cost of transportation, but would add to the throughput of the composting operation, which may then need additional land on which to operate.

⁵ HSNO - Hazardous Substances and New Organisms Act controls the importation of new substances and organisms

⁶ www.groundswellproject.blogspot.com



Figure 3 Photo from the Groundswell literature showing combined composting of food scraps in Biobags and green waste

Discussion of Alternatives and Future Opportunities

- 5.23 The composting operation would impact upon the Council if it does not comply with resource consent requirements (for example odour emissions or vermin). This could be the subject of complaints from the public and prosecution by the Regional Council.
- 5.24 There is no first hand experience with the VRM inoculant in New Zealand. A cautious approach would be for Take Care to carry out a small scale trial before asking the Council to establish a site for a large composting operation.
- 5.25 The small scale trial would also enable the optimum proportions of green waste to food waste to be established, which would have an impact (plus or minus) on the commercial viability of the full scale operation.
- 5.26 Although the trial would be operated and managed by Take Care, it would be appropriate for Council officers to be involved in the observation of the trial and the analysis of the trial results.
- 5.27 Discussions have been held with Take Care regarding use of a vacant site adjacent to Aser's Te Rito Gardens in the Kenepuru Hospital grounds. This site is closer to the source of the proposed labour to be used for the composting operation, is flat, has drive-on access and is closer to utility services such as water, sewerage and power (if needed). Take Care considers that the landfill quarry site is preferable because of the "promotional showcasing" of the composting operation to landfill customers. The use of alternative land would need to be taken up with the owners of this land rather than the Council.

- 5.28 The proposed involvement of at-risk youth in the composting operation would provide some social benefit. However, the cost to the Council in supporting the start-up of the composting operation is significant and in terms of waste minimisation could arguably be more effectively spent in further encouragement of back door composting by, for example, providing householders with subsidised compost bins.
- 5.29 Industrial food waste composting or digestion operations that do not smell and operate reliably are practical and cost in the order of \$150/tonne of waste to build and operate. This is not far in excess of current landfill prices in the region and on par or less than landfill prices elsewhere in the country. At least one commercial provider in the lower North Island is currently investigating such an operation. Hence composting or digestion of food wastes for renewable energy is likely to be commercially viable in Porirua in the medium term (5 to 10 years) and may be a future business growth opportunity. If simpler composting systems such as that proposed by Take Care can be proven, the timeframe for a commercially viable operation may be shorter.
- 5.30 The Council wishes to encourage business initiatives within Porirua in the areas of environmental sustainability and "green growth". Council's Economic Development Manager has indicated that he is interested in helping Choice Composting further develop its business case.

6 OPERATIONAL IMPLICATIONS

- 6.1 If the proposal were to be adopted there would be time related costs associated with officers assisting with the preparation of applications for resource consents (and possibly involvement at hearings) and with the briefing of consultants to design and project manage the infrastructure sought by Take Care for their proposed composting operation.
- 6.2 Depending upon the requirements of resource consents, costs of between \$100,000 and \$300,000 would be incurred in establishing the site for the composting operation.
- 6.3 By allocating use of the proposed industrial land to a composting operation the Council would forgo the option of selling or leasing the land at a commercial rate for the duration of the composting operation.
- 6.4 The composting operation should however be compatible with a possible car park and mountain bike track access under consideration.

7 FINANCIAL IMPLICATIONS

- 7.1 As there is no available budget for the proposal, if Council supports the proposal the surplus from the landfill operation would be reduced accordingly. Because of the quantum of cost involved, sign off would be required at Chief Executive or Council level.

8 STATUTORY REQUIREMENTS

- 8.1 There are no significant legal implications associated with this project / decision.

9 CONSULTATION

9.1 There has been no public consultation associated with this proposal.

10 CONCLUSION

10.1 The proposal seeks to involve the Council with the start-up of a commercial composting venture. There are concerns that the venture would be unsuccessful. The cost to Council is significant but the financial benefits to Council are minimal.

10.2 It is not clear if there is a net environmental benefit from the operation but there would be some social benefit through training of at-risk youth.

10.3 If unsuccessful there are significant public relations downsides for the Council.

10.4 It is recommended that the proposal as it stands be rejected.

10.5 However, Council wishes to encourage business initiatives within Porirua in the areas of environmental sustainability and "green growth". Food waste composting or digestion systems are likely to be economic in Porirua in the medium term, and it is recommended that Council remain open to considering the concept.

10.6 Council's Economic Development Manager has indicated that he is interested in helping Choice Composting further develop its business case.

11 ATTACHMENTS:

11.1 None