



Food & Beverage Sector Organic Waste Survey

Prepared by WasteNot Consulting

For:

- Enterprising Manukau
- Food & Beverage Sector Group
- Sustainable Management Fund

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Executive summary

Introduction

In January 2008, Enterprising Manukau, on behalf of the Food & Beverage Sector Group, applied to the Ministry for the Environment's Sustainable Management Fund for funding to undertake a project to research the generation of food waste by the Auckland region's food and beverage manufacturers and processors. The aim of the project was to qualify and quantify the types of organic wastes generated by the food and beverage sector, and identify available disposal methods that meet the objectives of the New Zealand Waste Strategy.

Funding was approved by the Sustainable Management Fund in April 2008, and in November 2008 Waste Not Consulting was contracted to provide consultancy services on the project.

The project was divided into three distinct milestones:

1. To complete surveys of food and beverage manufacturing and processing companies in the Auckland region, to gather quantitative data on organic wastes being produced and disposed of in the region.
2. To complete surveys of organic waste processors, in order to identify sustainable disposal options in (and around) the Auckland region.
3. To find solutions for linking the food waste producers and the food waste processors.

The results of the first two milestones are outlined in this report.

The Ministry for the Environment asked that the project also collect data on business sustainability practices. These data were collected through a series of questions included at the end of the food and beverage sector interviews.

Results of Food & Beverage Sector surveys

Between November 2008 and July 2009, a total of 65 food and beverage sector businesses were surveyed. Surveys were undertaken onsite at each business premise, by a Waste Not Consulting employee or contractor. While these 65 businesses only make up 6% of the region's food and beverage businesses, they represent 69% of the industry by revenue.

Of the 65 businesses surveyed, 69% responded that it was a medium to high priority for them to find a more sustainable method of organic waste disposal, and the most commonly listed reasons for this were the costs of current disposal methods and company policy. Current barriers to diverting organic waste from landfill included a lack of disposal options, and the resources required to implement food waste collections, while assistance linking up with solution providers and information on alternative disposal methods were listed as the most desired assistance.

A total of 3,999 tonnes of organic waste are being generated by these 65 businesses per month or approximately 48,000 tonnes annually. Of this organic waste, almost three-quarters is currently being used as stock feed, and only 6% is being regularly landfilled. The rest of the organic waste is being composted, rendered, or used as a soil amendment,

and a small quantity is being used as biofuel, pet food, or given to charities (e.g. Salvation Army).

The 6% of waste regularly landfilled is being generated by 33 businesses. However, 35% of the waste going to landfill is being generated by one business, while 21 businesses are generating only 7% of the total waste landfilled.

Results of organic waste processor surveys

A total of 22 companies were identified as current or potential organic waste processors and organic waste collectors. These companies were contacted and asked about their current or planned food waste processing activities. Those that are processing or are planning to process food waste were asked to participate in the survey.

Thirteen businesses that are, or are planning, to collect or process food waste agreed to be surveyed. Of these, ten are currently processing food waste from the Auckland region and a further two businesses are planning to start food waste processing. Depending on the processing technology used by these companies, the products produced may include composts or soil amendments, stock or animal feeds, energy, or rendered products.

Most of the processors surveyed are able and willing to accept larger quantities of food waste, with the exception of some of the smaller pig farmers and Butch Pet Foods. All but the smaller pig farmers are able and willing to collect from all parts of the Auckland region.

The economics of food waste processing varies from processor to processor, dependent on the type of food waste collected, the quantity of food waste collected, and the end markets for the food waste. As a result, some are able to pay their clients for large quantities of quality product, while others have to charge to cover the cost of freight and processing.

Business sustainability practices

A list of questions was supplied by the Ministry for the Environment to be included in the survey of food and beverage sector businesses. These questions were designed to provide the Ministry with a better understanding of the industry to assist in scoping opportunities, driver and barriers facing the industry.

According to the answers businesses gave to these questions, the most common sustainability practice currently adopted by food and beverage sector businesses are 'waste minimisation' (88% of businesses), 'compliance with regulation' (82% of businesses), and 'resource efficiency' (74% of businesses). The sustainability practices most widely intended to be implemented within the next 12 months were 'carbon reporting and management' (17% of businesses), and 'greening of products and packaging' (11% of businesses).

Businesses were also asked what resources they are currently measuring and managing, and what resources they plan to start measuring and managing within the next 12 months. Electricity is the most commonly managed resource, followed closely by water and then waste. Air emissions are currently the least commonly managed, but there is significant expected growth over the next year in the measurement and management of this resource.

The final question from the Ministry asked businesses to identify the main drivers for them to adopt sustainability practices. The most popular driver for businesses was

reducing costs, with this being a driver for 89% of the businesses. The second most popular driver was “to do the right thing” (68% of businesses). Fifty-eight percent of businesses identified compliance with regulation as a driver.

Discussion

The surveys undertaken as part of this project have assisted in demonstrating that the food and beverage sector in the Auckland region is currently well serviced by organic waste processors. Overall, businesses representing 69% of the Auckland region’s food and beverage sector by revenue were included in the survey, and 89-95% of the food waste generated by these businesses is being diverted from landfill (i.e. 6% is always landfilled and 6% is sometimes landfilled).

The surveys also identified that, while most businesses currently have an organic waste collection that meets the aims of the New Zealand Waste Strategy (“the diversion of commercial organic wastes from landfill to beneficial use”), 65% of businesses stated that they would find it useful to have assistance with linking to potential solution providers and being provided with information on alternative disposal methods.

Milestone 3

This project is divided into three milestones. The objectives of the third milestone are to: *“Inform food and beverage businesses of disposal services available, inform disposal services providers of food and beverage sector requirements, identify possible matches between businesses and suppliers”*.

While only 6% of the total tonnage of food waste produced by the surveyed food and beverage sector businesses is regularly going to landfill, it was identified during the project that the business sectors producing large quantities of food waste that do not currently have any food waste diversion options, are the producers of post-consumer food waste. These include hotels, restaurants, cafes, hospital, and prisons.

A decision was made by the Project Control Group to extend the surveys to include a sample of businesses and organisation in these sectors to gain an understanding of the approximate quantity of post-consumer food waste being produced; current disposal paths; and whether or not these businesses and organisations are interested and willing to separate this waste out for collection by a food waste processor.

The results of these surveys will be presented in a future report. Also to be presented in this report will be the outcomes of the objectives of milestone three. These outcomes will include the following:

- A forum to introduce food waste producers to food waste processors. The food waste processors will be invited to present their services to the food and beverage sector at the forum.
- A pilot post-consumer food waste collection and processing trial. This pilot will be put out to tender in order to determine which food waste processors are interested and best placed to provide post-consumer food waste collection and processing.
- The creation of website material on services provided by the food waste processors.

1. Introduction

1.1 Project background

Enterprising Manukau's role as an economic development agency is to be the key organisation to drive the development of a progressive and economically rich region in Counties Manukau.

Utilising their unique connectedness, skills and knowledge to facilitate an environment for sustainable economic and business growth, Enterprising Manukau focuses on high growth, export ready companies within the key industry sectors in the Manukau region.

Together with local and central government, Enterprising Manukau works to bring excellence in best practice, expertise and skills to businesses with the potential, commitment and aspiration to aim for high growth and grow or develop their export capabilities.

Enterprising Manukau are commercially neutral and are wholly focused on wealth creation in the community.

Enterprising Manukau has a team with a wide range of vocational and business experience. The dynamics of this team environment are incredibly progressive and continue to provide businesses and individuals with the tools required to facilitate economic growth and prosperity.

Enterprising Manukau has been working extensively with the food and beverage sector over a number of years encouraging and assisting businesses in the development of efficient, profitable and sustainable business practices.

The Food & Beverage Sector Organic Waste Project was instigated by Enterprising Manukau, on behalf of the Food & Beverage Sector Group (www.foodbowl.org.nz), with the aim of researching the generation of food waste by the Auckland region's food and beverage manufacturers and processors to determine current and potential organic waste disposal options.

The Food & Beverage Sector Group is a group of food and beverage companies, including related and supporting businesses that have formed a membership based sector group to provide greater opportunities for growth and development of the industry sector and the individual member companies.

They are supported by Enterprising Manukau, the local regional economic development agency and the local authority, Manukau City Council.

The Food and Beverage Sector Group is a mechanism to act as a focal point for members networking, collaboration and participation in projects of mutual benefit. This organic waste project grew out of an environmental concern from a number of manufacturers who were looking for alternatives to sending waste food product to landfill. Food & Beverage Sector manufacturers & processors generate a large quantity of organic waste of which some is disposed of in traditional landfills. The industry is keen to seek alternatives to meet the objectives of: The "NZ Waste Strategy", to be more environmentally acceptable and meet sustainable business practices.

In November 2008, Waste Not Consulting was engaged by Manukau Enterprise and Employment Trust (Enterprising Manukau) to provide consultancy services for a Food & Beverage Sector organic waste project.

1.2 Organic wastes in the food and beverage sector

According to research undertaken by Coriolis Research in 2009 for the Ministry of Economic Development, there are “1043 food enterprise units employing 17,140 people in the AFB region. ANZSIC [Australian and New Zealand Standard Industrial Classification] data indicate these companies generate \$7.9 billion of revenue. This represents 31% of NZ food companies, 21% of the food sector labour force, 25% of New Zealand’s food revenues and 52% of the “other” processed food employment.”¹

The project was based on the premise that the food and beverage sector manufacturers and processors currently generate large quantities of organic waste, much of which is disposed of to landfill. The project therefore aimed to qualify and quantify the types and quantities of organic wastes generated by the food and beverage sector, and identify the available disposal methods that meet the objectives of the New Zealand Waste Strategy.

1.3 NZ Waste Strategy 2002

The New Zealand Waste Strategy: *Towards zero waste and a sustainable New Zealand* was launched by the New Zealand government in 2002. The New Zealand Waste Strategy identifies a number of priority actions based on criteria of volume and harm, achievability, public concern, and cost-effectiveness. One of these priority actions is the diversion of organic waste from landfill. Organic waste diversion was identified as a priority as “organic waste accounts for approximately a third of all landfill waste, and generates methane and leachate within a landfill”².

Five targets were set for organic wastes within The NZ Waste Strategy. The fifth of these targets states: “By December 2010, the diversion of commercial organic wastes from landfill to beneficial use will have exceeded 95 percent.” A review of The NZ Waste Strategy was undertaken in 2006 by the Ministry for the Environment, and reported that there were only limited data available on the amount of commercial organic waste diverted from landfill, and that therefore it was not possible to undertake a “comprehensive assessment of commercial organic wastes diverted from landfill”³.

The review recommended that there be improvement to “the management of priority waste streams as set out in the New Zealand Waste Strategy; specifically:

Organics

2.4.1 Assist in the development and improvement of markets for reprocessed organic wastes, especially biosolids.

2.4.2 Improve organic waste diversion management, best practice implementation and promotion of emerging technologies.

2.4.3 Improve the monitoring of organic waste streams.”

¹ Coriolis Research (Morris, 2009), commissioned by Ministry of Economic Development, for Manukau Food Innovation Centre Project

² The New Zealand Waste Strategy, Ministry for the Environment, 2002

³ Targets in the New Zealand Waste Strategy, 2006 Review of Progress, Ministry for the Environment, 2006



1.4 Project development

In January 2008, Enterprising Manukau, on behalf of the Food & Beverage Sector Group, applied for funding for the project through the Minister for the Environment's Sustainable Management Fund, which is administered by the Ministry for the Environment. Funding was approved in April 2008 and a contract entered into.

The project and its funding from the Sustainable Management Fund were divided into three milestones, the first two of which are covered in this report. The objectives of the first milestone were to complete surveys of food and beverage companies in the Auckland region, to gather quantitative data on organic wastes being produced and disposed of in the region.

The objectives of the second milestone were to complete surveys of organic waste processors, in order to identify sustainable disposal options in (and around) the Auckland region.

The results of both of these surveys have been analysed and presented in this report.

The third and final milestone of this project is to find solutions for linking the food waste producers and the food waste processors. This milestone is described in more detail in Section 7.

2. Methodology

2.1 Project management structure

The project has been facilitated by Enterprising Manukau and a Project Control Group established to oversee the project. This Project Control Group (PCG) comprised representatives from the following organisations:

- Status Produce
- Inghams
- Foodstuffs
- Progressive
- Fonterra
- Nestle
- New Zealand Trade and Enterprise
- Ministry for the Environment
- New Zealand Trade and Enterprise
- Manukau City Council
- Auckland Plus
- Enterprising Manukau

Regular meetings with the PCG were undertaken throughout the project to report on the project's progress, plan future stages of the project and report on the projects finances.

2.2 Data recording and storage protocol

The food and beverage sector surveys were undertaken in person, and the survey answers were recorded onto a hard copy of the survey form. These answers were later transferred to an electronic spreadsheet which was given the name of the business interviewed. A copy of the survey form is available in Appendix B.

Surveys with organic waste processors were undertaken either in person or over the phone. Surveys completed in person were recorded on hard copies of the survey form and later transferred to an electronic spreadsheet. Telephone surveys were entered directly into the spreadsheet.

In order to ensure quality of data, all hard copies of the survey were checked against the results in the spreadsheet by another Waste Not Consulting staff member.

The electronic copy of the survey was then transferred to a master document and stored alongside the other survey results.

Each week Waste Not Consulting emailed the latest version of the master spreadsheet to Enterprising Manukau for safe storage. The master spreadsheet was renamed with the current date before it was sent.

All hard copies of the surveys were passed on to Enterprising Manukau at the end of the project.

2.3 Methodology used for Food & Beverage Sector surveys

Surveys with food and beverage sector businesses were undertaken by a Waste Not Consulting staff or a contractor to Waste Not, and were completed in person at the business workplace.

Businesses were selected by Enterprising Manukau from the Food & Beverage Sector Group. The Food & Beverage Sector Group is a “group of food and beverage companies, including related and supporting businesses that have formed a membership based sector group to provide greater opportunities for growth and development of the industry sector and the individual member companies.”⁴ The Food & Beverage Sector Group is supported by Enterprising Manukau and Manukau City Council, and includes members from across the Auckland region.

The Sector Group’s main contact person at each of these businesses was initially approached by email or telephone by Enterprising Manukau, to introduce them to the project and to ask for their participation. These contacts were then followed up by telephone by Waste Not Consulting to arrange a time for a site visit to conduct the survey.

Waste Not Consulting explained the nature of the survey and the likely information required to complete the survey. In some instances the main contact person organised for other key employees to attend the survey to supply required information.

Business surveys started in November 2008. Originally a trial group of ten businesses were interviewed, in order to determine the suitability of the survey questions. After completion of these surveys, and slight changes were made to the questions, the remainder of the surveys were completed.

A list of the businesses interviewed is presented in Appendix A.

2.4 Methodology used for organic waste processor surveys

A survey of organic waste processors was undertaken to determine the current availability of markets for organic waste materials.

An organic waste processor has been defined for this project as a business that accepts organic waste for the purpose of using it in a beneficial manner. This includes the processing of organic waste for use as a soil conditioner, through to the use of organic waste as feed stock or as a fuel. This definition is based on the widely-held view that the disposal of organic waste to landfill is detrimental to the environment (i.e. creation of methane gas and leachate) and to society (i.e. loss of a potentially valuable resource).

The organic waste processing sector is made up of companies that collect organic waste and transport it to processors; companies who do on-site processing of organic waste (which may include composting, vermi-composting, bio-digestion, feeding organic waste to pigs or stock); and companies who act as organic waste brokers, accepting various types of organic wastes and on-selling them to either directly or after some form of processing, to end users (such as farmers for stock feed).

Key players in all of these areas of the organic waste processing sector were contacted for this project. Several large players in the waste industry who are not currently involved in

⁴ From Food Bowl website <http://www.foodbowl.org.nz/>

the collection or processing of organic waste were also approached, in order to determine whether there are plans for future initiatives.

The list of organic waste processors and potential organic waste processors was compiled through various means, including:

- The compiling of a list of organic waste processors currently used as contractors by the Food & Beverage Sector businesses
- The issuing of a press release by Enterprising Manukau in April 2009 promoting the project and asking organic waste processors to contact Enterprising Manukau

The Project Steering Group and Waste Not Consulting then added to the list any organic waste processors and potential organic waste processors not identified through the above means.

Each of these businesses was approached and asked to participate in an organic waste processor survey. A copy of the survey is included in Appendix C. This survey was designed to be used with processors and collectors of organic waste.

While all companies involved in organic waste processing were approached, the survey aimed to identify the ones that are currently able to process food waste, as opposed to those that process only green waste.

Surveys were undertaken either in person or over the phone.

3. Results of F&B Sector survey

Between November 2008 and July 2009, a total of 65 Food and Beverage Sector businesses were surveyed. Surveys were undertaken onsite at each business premise, by a Waste Not Consulting employee or contractor. While these 65 businesses only make up 6% of the region's food and beverage businesses, they represent 69% of the industry by revenue and 90% of the Food & Beverage Sector Group by Group revenue.

3.1 Business information

At the beginning of each survey a range of information was gathered from each business including their contact details, the name and title of the interviewee, the location of their manufacturing plants or facilities, and the number of employees.

These questions provide an overview of the size of the businesses surveyed, their geographical spread, and the position of the interviewees in each business.

3.1.1 Business location

Most of the businesses were located in Manukau City and Auckland City, due to the high numbers of manufacturing businesses based in these areas.

Table 3.1 provides an outline of the geographical spread of these businesses.

Table 3.1 – Location of businesses surveyed

Location of businesses	Number of businesses surveyed	
Rodney District	1	2%
North Shore City	1	2%
Waitakere City	1	2%
Auckland City	16	25%
Manukau City	43	66%
Papakura District	3	5%
Franklin District	0	0%

3.1.2 Interviewees

A range of different types of employees were surveyed across the 65 businesses, though the majority of surveys were undertaken with senior staff, as demonstrated in Table 3.2. The "Other" category incorporates many different titles, including Environmental Managers, Chief Financial Officers, Manufacturing Managers, and Quality Managers. Twenty-four of the "Other" staff surveyed had the term "manager" in their title.

The employee chosen to participate was a function of who the Food & Beverage Sector contact person was at Enterprising Manukau, and who that contact person suggested be involved in the survey.

The breakdown of staff surveyed is outlined below in Table 3.2.

Table 3.2 – Food & Beverage Sector interviewees

Staff surveyed	
Director/Managing Director	22
CEO/General Manager	5
Operations Manager/Director	10
Other	28

Frequently the staff surveyed consulted other staff within the organisation to obtain the data required for the completion of the survey.

3.1.3 Business size

The number of employees working in each business was gathered at the time of the survey. Staff numbers varied from three to 1200 staff. The range of staff numbers is demonstrated in Figure 3.1 below.

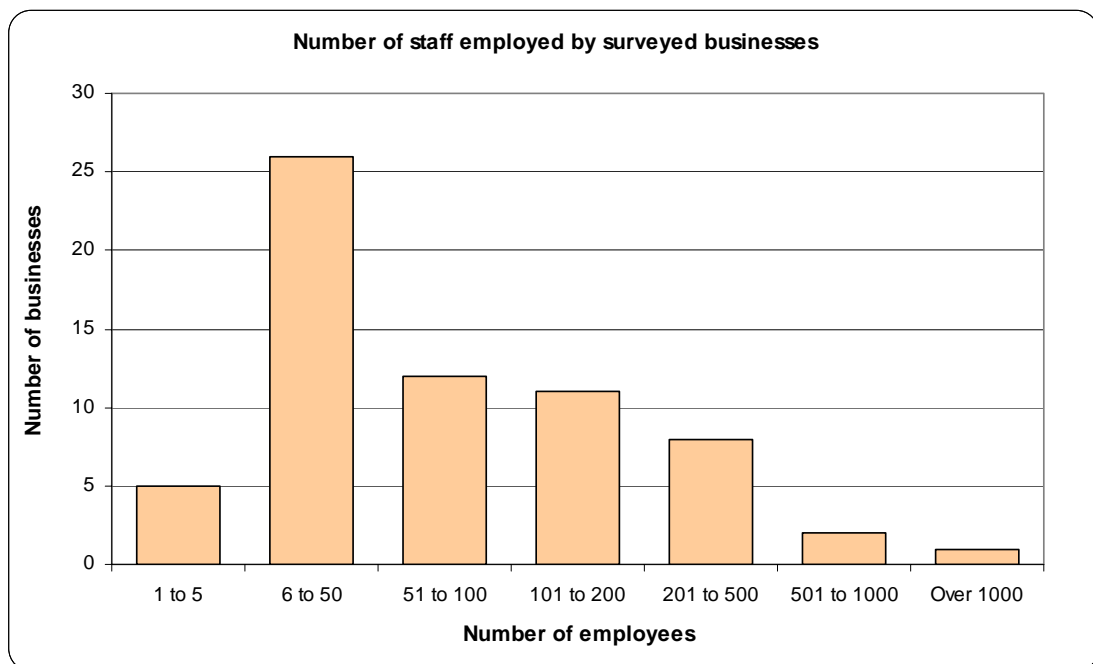


Figure 3.1 – Number of employees

According to information provided by Enterprising Manukau, the annual turn over of the businesses surveyed is close to \$5.4 billion per year. Business turnover is represented in Table 3.2 on the following page.

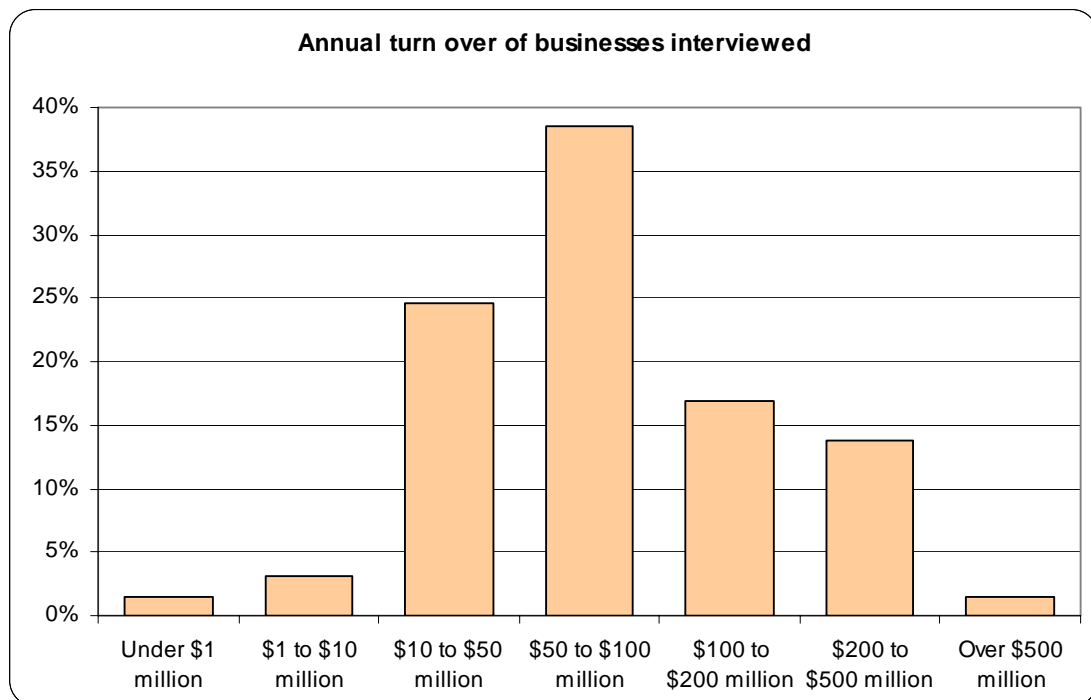


Figure 3.2 – Annual turnover

Almost half of the businesses surveyed have an annual turn over of \$50 to \$100 million dollars.

3.2 Organic waste issues

The second part of the survey gathered information on the priority that businesses give to diverting organic waste from landfill, and the possible barriers they may encounter in attempting to divert organic waste.

3.2.1 Importance of sustainable organic waste disposal

To the question “*How important is it for the company to find a more sustainable method of organic waste disposal?*”, 34% (22 businesses) responded that it was a high priority, 35% (23 businesses) a medium priority, and 25% (16 businesses) a low priority. The final 6% (4 businesses) did not rate it as a priority.

This question was interpreted differently by different businesses. Some businesses did not think that diverting organic waste from landfill was a priority, while others did not rate it as a priority as they were already diverting all of their waste from landfill.

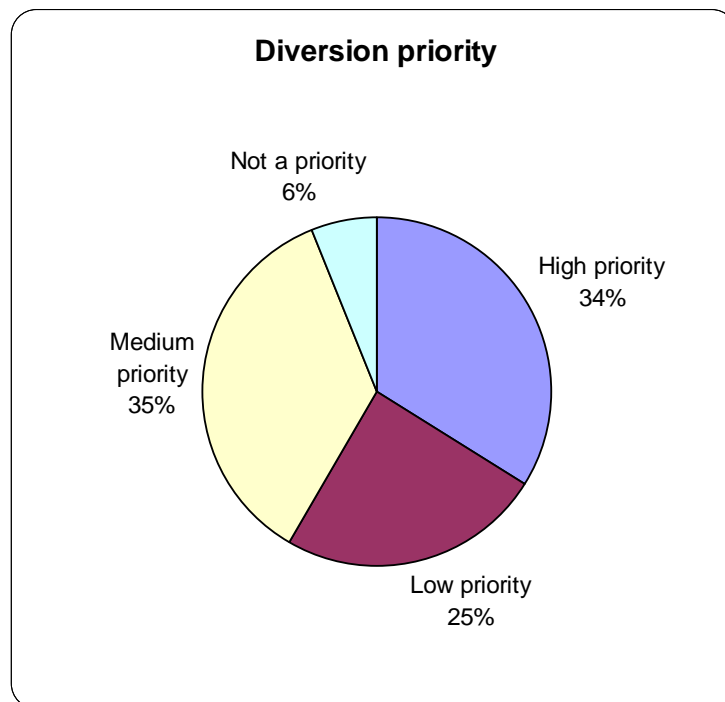


Figure 3.3 – Priority of organic waste diversion

Some of the comments provided by businesses to the above question include:

- Not a priority as already diverting organic waste from landfill
- Not a priority as not a high quantity of organic waste disposed of
- Medium priority - higher priority is to eliminate the waste in the first place
- Medium priority - also low priority as currently method OK for now
- Low priority - Only because current methods are considered sustainable. When a service no longer exists then becomes a high priority.

The 45 businesses that stated that diverting organic waste from landfill was a medium or high priority (69% of businesses surveyed) were asked which of the following reasons contributed to this priority rating. A number of businesses listed several reasons. The most common reason was the cost of current disposal methods. This was followed by company policy and difficulty with the handling and logistics of organic waste.

These results are presented in Figure 3.4 on the following page.

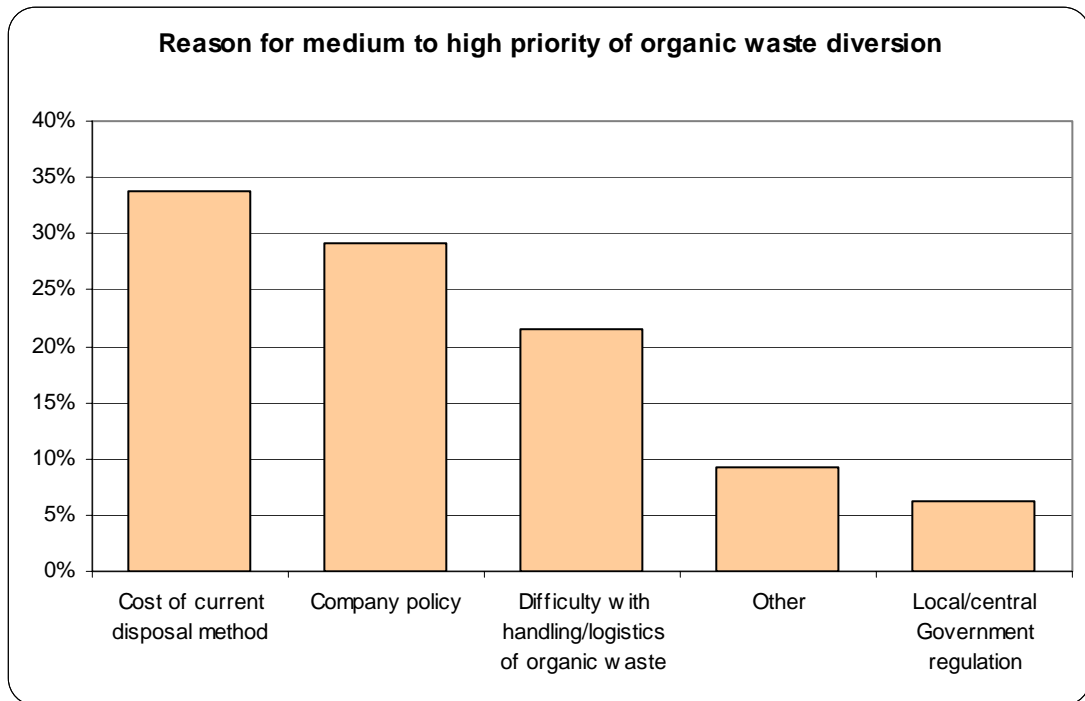


Figure 3.4 – Reasons for medium to high priority of organic waste diversion

When the 20 businesses who stated that diverting organic waste from landfill was a low priority (or not a priority) were asked why, almost half said that it was because current methods were considered sustainable. A further six stated that it was because of the low amount of organic waste produced, while four said that it was a low or no priority due to the cost of alternative disposal methods.

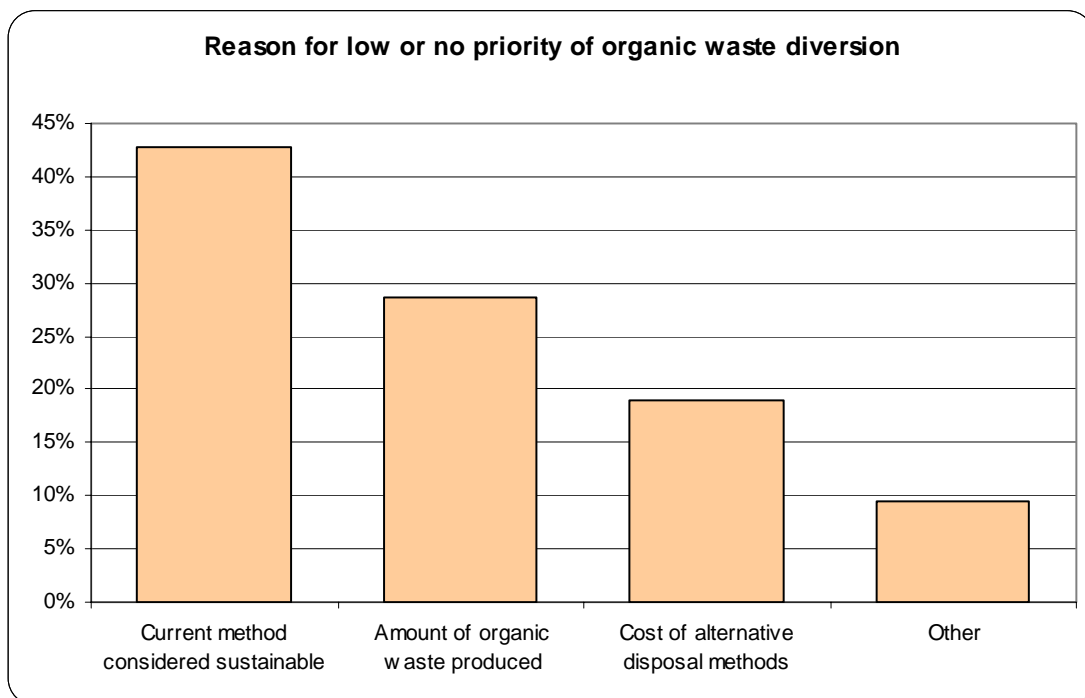


Figure 3.5 – Reasons for low or no priority of organic waste diversion

3.2.2 Barriers to diverting organic waste from landfill

Businesses were then asked what the barriers were to diverting organic waste from landfill. The survey included a list of five possible barriers, and an option for other unlisted barriers to be stated.

Some businesses selected more than one answer. The barriers selected are displayed in Figure 3.6 below. The ‘Other’ option was the most commonly selected answer (25 businesses). Of these businesses 13 stated that they were not currently sending any organic waste to landfill – either because they weren’t producing any, or they were already diverting it. Other businesses listed the following explanations:

- Packaging issue with regards to ensuring products are not on-sold
- Properties of the waste can limit its use by other service providers e.g. rendering
- Protection of animal health due to animal by-products contained in wastes
- Regulations of private label companies
- Rendering high salt and sugar wastes are an issue

The next most commonly listed barrier was a lack of disposal options (22 businesses). This was followed by the resources required to implement a separate food waste collection (14 businesses), and a lack of information on alternatives and low volumes of organic waste were both selected as barriers by ten businesses. Only 5 businesses listed the cost of alternative disposal methods as a barrier.

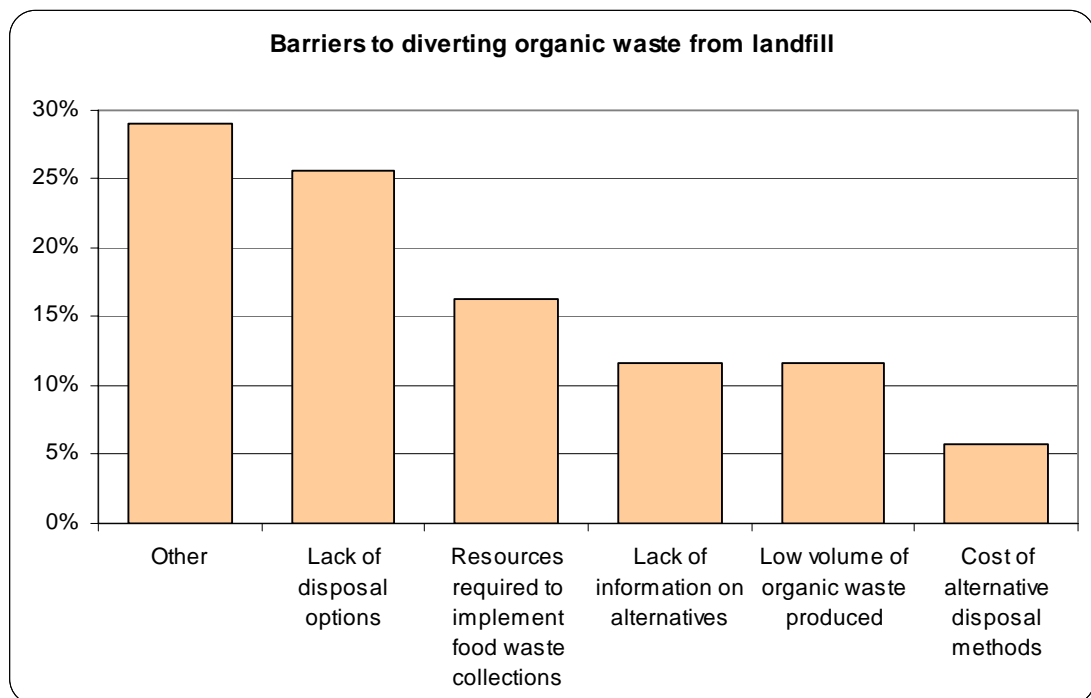


Figure 3.6 – Barriers to diverting organic waste from landfill

3.2.3 Assistance required to divert organic waste from landfill

As the main aim of the project was to ascertain how increased quantities of organic waste could be diverted from landfill, businesses were asked what would be most useful to help the company to divert organic waste from landfill. A list of four options was provided, along with a fifth ‘Other’ option. The results of this question are presented below in Figure 3.7.

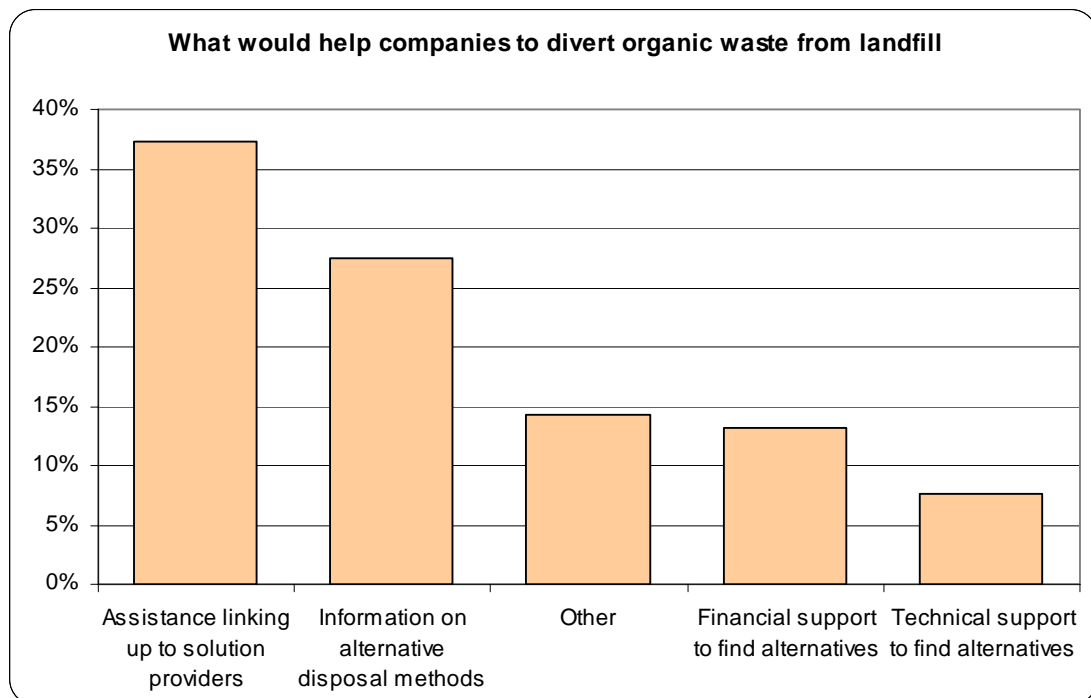


Figure 3.7 – What would help companies to divert organic waste from landfill?

From these answers it would appear that assistance with linking up with potential solution providers would be of most assistance to businesses (34 businesses). A further 25 businesses would like information on alternative disposal methods, while 12 would like financial support to find alternatives. Technical support to find alternatives was listed by 7 businesses. Most of the 13 businesses that selected the ‘Other’ option did not require assistance diverting organic waste from landfill.

3.2.4 NZ Waste Strategy and Waste Minimisation Act

Twelve of the businesses surveyed were aware of both the Waste Minimisation Act (2008) and the New Zealand Waste Strategy. A further 12 were aware of the Waste Minimisation Act and four knew about the New Zealand Waste Strategy.

Twenty two businesses had heard of neither and 13 were unsure.

It is expected that these findings could vary widely depending on whom within the business is surveyed.

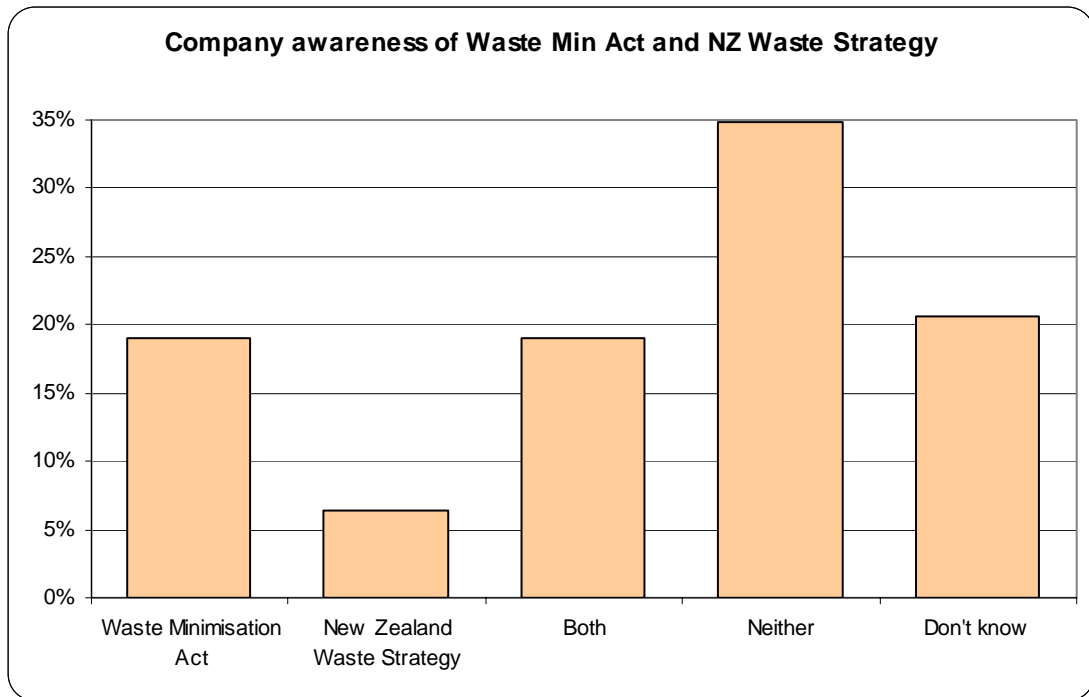


Figure 3.8 – Company awareness of Waste Min Act and NZ Waste Strategy

3.3 Organic waste data

Each business surveyed was asked a series of questions about their current organic waste streams. The aim of these questions was to determine the quantities of organic waste being generated by the Food & Beverage Sector, what types of organic waste are being generated, and where these organic wastes are being disposed of – what proportion is being sent to landfill, and what proportion is being diverted.

Overall, the 65 businesses surveyed reported generating 3,999 tonnes of organic waste per month. Taking annual production variations into account, approximately 48,000 tonnes of organic waste are generated annually.

Businesses were asked to identify different types of organic wastes (or waste streams) produced by their operations. Some businesses only had one identifiable organic waste stream while others had up to seven. On average, each business had 2.2 different organic waste streams.

The average waste stream weighed 29 tonnes per month, while the median waste stream weighed 3.3 tonnes.

Businesses were also asked to identify how each waste stream was disposed of. The results of this question are presented below in Figures 3.9 and Table 3.4 on the following page.

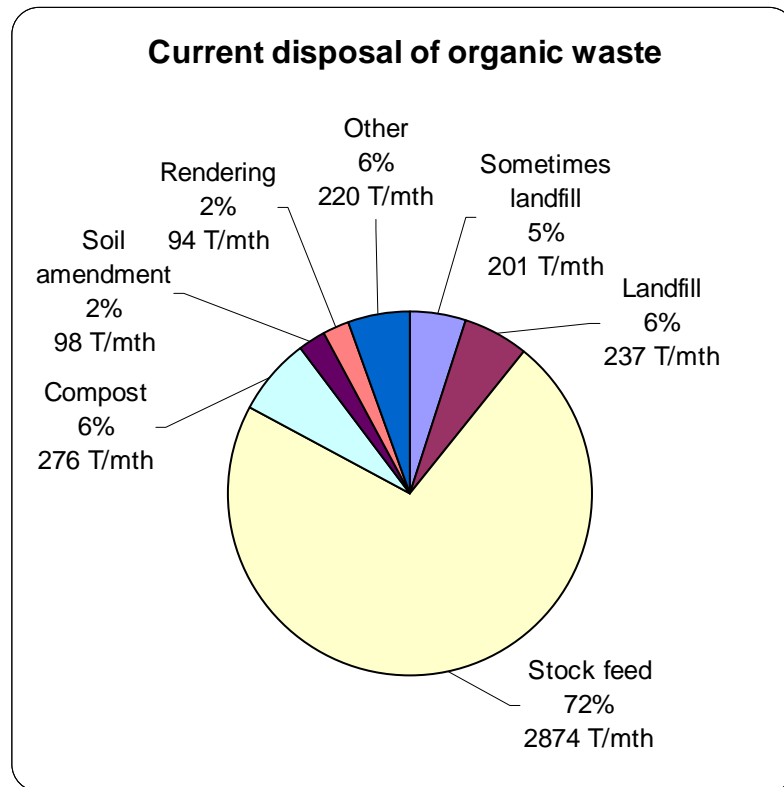


Figure 3.9 – Current disposal of organic waste

Almost three-quarters of all organic waste produced by the businesses surveyed is currently being used as stock feed. According to the businesses, this organic waste is used to feed a range of different types of animals, including cattle, pigs, ducks, and goats.

Table 3.4 – Disposal of organic waste

Disposal options	Tonnes per month	Proportion of tonnage (%)	Number of waste streams	Number of businesses
Stock feed	2874	72%	59	27
Compost	276	7%	8	2
Landfill	237	6%	59	33
Other	220	6%	8	7
Sometimes landfill	201	5%	5	4
Soil amendment	98	2%	3	3
Rendering	94	2%	5	5

The 'Other' disposal category includes organic waste used as biofuel, pet food, or given to charities (e.g. Salvation Army).

The number of waste streams making up the tonnage in each disposal category has been included to provide an idea of the size of each separate waste stream. The number of businesses sending waste to each disposal option is also listed.

The quantity information provided by the businesses was obtained by these staff through different means. In 50% of cases the monthly tonnages are based on the interviewee's best

judgement. In 21% of cases the tonnages are based on production records, 16% are based on internal measuring programmes, and 14% are based on waste invoices.

3.4 Analysis of landfilled waste

Only 6% of all of the organic waste produced by the food and beverage sector businesses surveyed is regularly being landfilled. This equates to about 237 tonnes per month. A further 5% (or 201 tonnes) is sometimes landfilled and sometimes disposed of via alternative means (usually to stock feed).

The most common reasons given by businesses for the landfilling of organic waste are that the waste requires safe (certified) disposal, the organic waste is packaged, it contains contaminants, or it cannot be kept separate from other non-organic waste.

Overall, 33 businesses are sending 59 different organic waste streams to landfill. However, some of these waste streams are very small and the majority of the tonnage to landfill is being disposed of by a small number of businesses as shown in Figure 3.10.

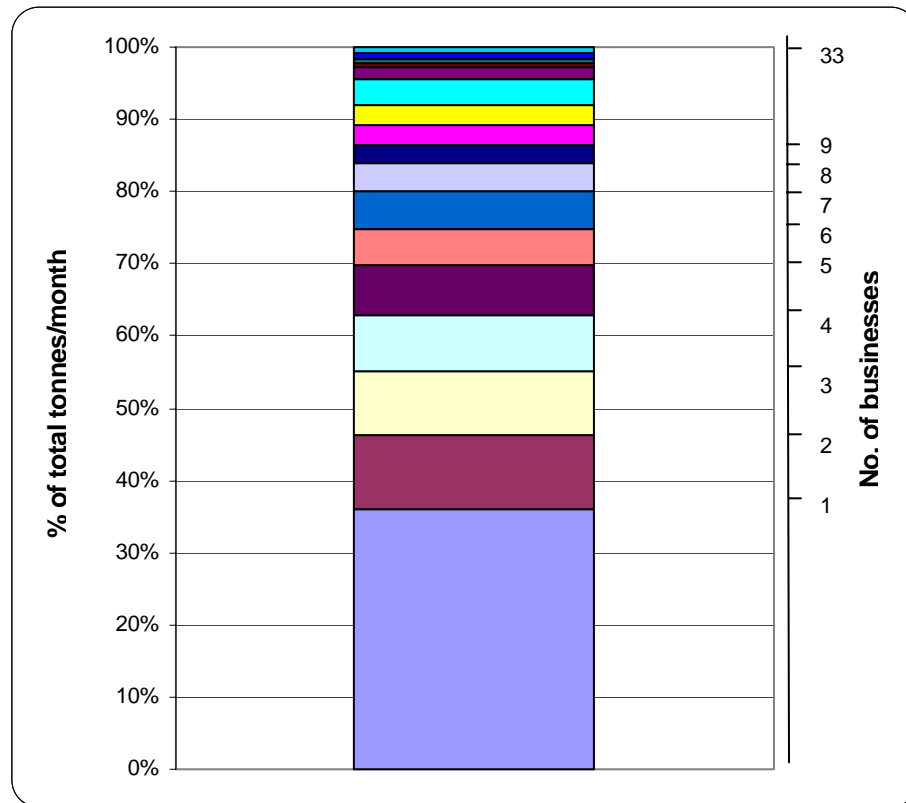


Figure 3.10 – Proportion of waste to landfill, by numbers of business contributing

Thirty-five percent of the waste going to landfill is being generated by one business, while 21 businesses (64% of businesses sending waste to landfill) are generating only 7% of the total waste landfilled. A further 5% of the organic waste (or 201 tonnes per month) is sometimes sent to landfill, and sometimes diverted to another disposal option. Almost all of this waste (97%) is generated by one business that usually has their organic waste collected for stock feed, but sometimes has to landfill the waste instead.

4. Results of organic waste processor surveys

The list of the companies identified as current or potential organic waste processors and organic waste collectors is provided in Table 4.1.

Each of the businesses were contacted and asked about their current or planned food waste processing activities. Those that are processing or are planning to process food waste were asked to participate in the survey.

Table 4.1 – List of organic waste processors and collectors

Waste and recycling contractors		Status of survey
Transpacific/Waste Management	Collector/Processor	No plans for food waste
Salters Cartage	Collection	No plans for food waste
JJ Richards	Collection	No plans for food waste
Enviowaste Services	Collection	Surveyed
Smart Environmental	Collection	Awaiting reply
Metrowaste	Collection	Awaiting reply
Paper Reclaim	Collection	Surveyed
Rubbish Direct	Collection	Awaiting reply
Sunshine Garden Bag Co	Collection	Awaiting reply
Green Fingers Garden Bags	Collection	No plans for food waste
Pig farmers		
Riordan & West	Collector/Processor	Surveyed
A range of small pig farmers	Collector/Processor	Surveyed
Stock feed suppliers		
EcoStock Supplies	Collector/Processor	Surveyed
Butch Pet Foods	Collector/Processor	Surveyed
Waikato ByProducts	Collector/Processor	Surveyed
Wallace Rendering	Collector/Processor	Surveyed
Composting operator		
Living Earth	Processor	Surveyed
W E Hale and Sons	Processor	No contact details
Envirofert	Processor	Surveyed
Bio Cosmo	Processor	Surveyed
Sustainable Waste Management	Collector/Processor	Surveyed
Fuel manufacturer		
New Zealand Ester Fuels	Collector/Processor	Surveyed
Tallow Products	Collector/Processor	Surveyed

The businesses that are, or are planning, to collect or process food waste and agreed to be surveyed, are listed in Table 4.2. These businesses currently collect and/or process 34% of the food waste identified in the survey of food and beverage sector surveys. A large proportion of the overall tonnage of food waste identified in the food and beverage sector surveys (45%) is collected by cartage companies for transport out of the region. In most

cases the food and beverage businesses were not able to supply the name of the final recipient, other than to state that the food waste was going to stock feed.

Table 4.2 – List of current and potential organic waste processors

Processors (and potentially also collectors)	Process	Do they accept food waste?
Envirofert	Vermi-composting	Yes
Bio Cosmo Technologies	In-vessel aerobic processing	Ready to start
Sustainable Waste Management	In-vessel composting	Yes
Envirowaste Services	Commercially sensitive	Undertaking trials
EcoStock Supplies	Stock feed	Yes
Riordan & West	Stock feed	Yes
Tallow Products	Stock feed	Yes
A range of small pig farmers	Stock feed	Yes
Butch Pet Foods	Processing for pet food	Yes
Waikato ByProducts	Rendering	Yes
Wallace Rendering	Rendering	Yes
New Zealand Ester Fuels	Bio-diesel generation	Yes
Living Earth	Composting	Generally not
Collectors (only)	Process	Do they accept food waste?
Paper Reclaim	To composting	Yes

Of the 13 companies interviewed (and several small pig farmers, from which the survey results have been amalgamated for reporting purposes), nine are currently processing food waste from the Auckland region. A further two businesses are planning to start food waste processing.

Paper Reclaim has recently started to collect food waste from businesses in South Auckland and transport the food waste to Envirofert for vermi-composting.

Each processor was asked to identify the types of food wastes that they accept. The type of food waste accepted by a processor is generally dependent on the technology used for processing. Table 4.3, on the following page, outlines the different types of organic wastes accepted by the different processing technology.

Table 4.3 – Types of organic wastes accepted

Processing technology	Types of organic wastes accepted
Vermi - composting	All food waste other than raw meat
In-vessel aerobic processing	Almost any food waste, but preferably high protein waste
In-vessel composting	Food waste, greenwaste, grease trap waste, fish waste, sewage sludge
Stock feed	Almost all pre-consumer food wastes, some processors accept food waste with meat contamination while others do not
Pet food	Export grade chicken, lamb, and beef
Rendering	Bones, fat, offal, fish waste
Bio-diesel generation	Only vegetable oils and fats

Most of the processors surveyed are able and willing to accept larger quantities of food waste, with the exception of some of the smaller pig farmers and Butch Pet Foods. All but the smaller pig farmers are able and willing to collect from all parts of the Auckland region.

The economics of food waste processing varies from processor to processor, dependent on the type of food waste collected, the quantity of food waste collected, and the end markets for the food waste. As a result, some are able to pay their clients for large quantities of quality product, while others have to charge to cover the cost of freight and processing.

5. Business sustainability practices

A list of questions was supplied by the Ministry for the Environment to be included in the survey of food and beverage sector businesses. These questions were designed to provide the Ministry with a better understanding of the industry to assist in scoping opportunities, driver and barriers facing the industry.

5.1 Sustainability practices

Businesses were provided with a list of 12 different sustainability practices and asked to specify which of these practices the business has already adopted, and which ones they plan to adopt within the next 12 months. The answers from these questions are presented in Figure 5.1 below.

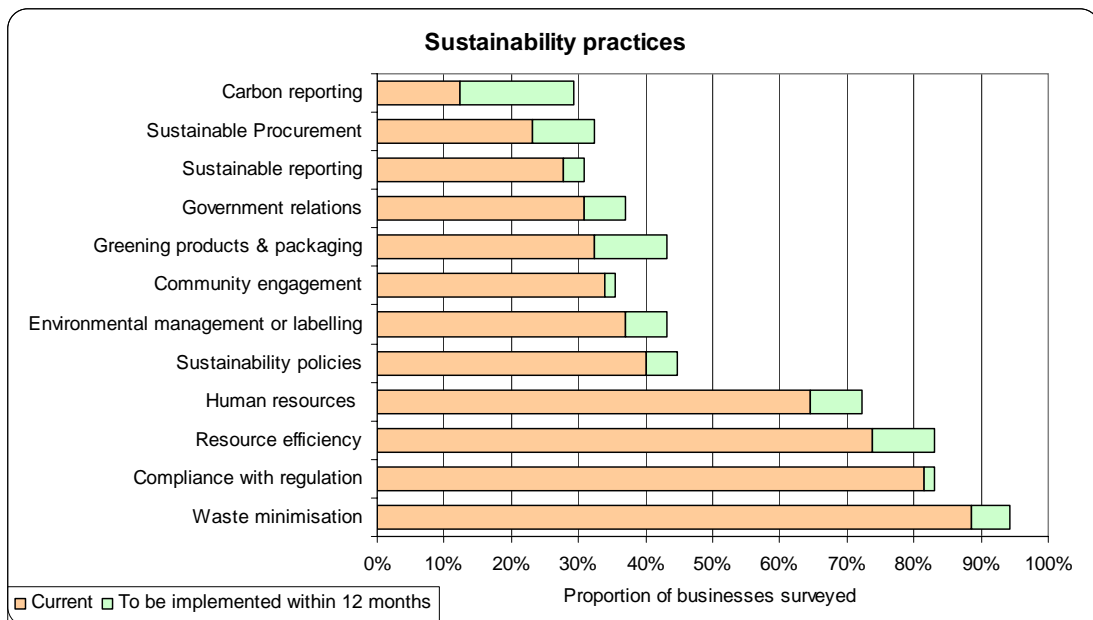


Figure 5.1 – Business sustainability practices, current and planned

Waste minimisation was the most common sustainability practice, with 88% of businesses currently undertaking this activity. The least common sustainability practice, carbon reporting, is also the practice with the most planned growth within the next 12 months.

Businesses were also asked what resources they are currently measuring and managing, and what resources they plan to start measuring and managing within the next 12 months. Figure 5.2 displays the results of these questions.

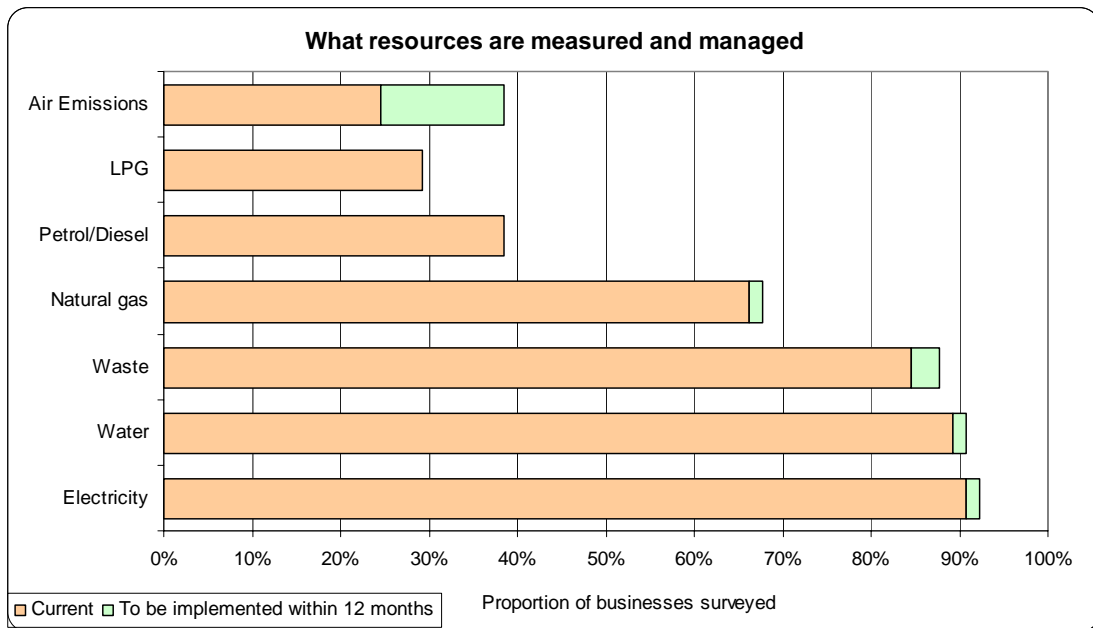


Figure 5.2 – Measurement and management of resources, current and planned

Electricity is the most commonly managed resource, followed closely by water and then waste. Air emissions are currently the least commonly managed, but there is significant expected growth over the next year in the measurement and management of this resource.

The final question from the Ministry asked businesses to identify the main drivers for them to adopt sustainability practices. Figure 5.3 shows that the most popular driver for businesses was reducing costs, with this being a driver for 89% of the businesses. The second most popular driver was “to do the right thing”. Fifty-eight percent of businesses identified compliance with regulation as a driver.

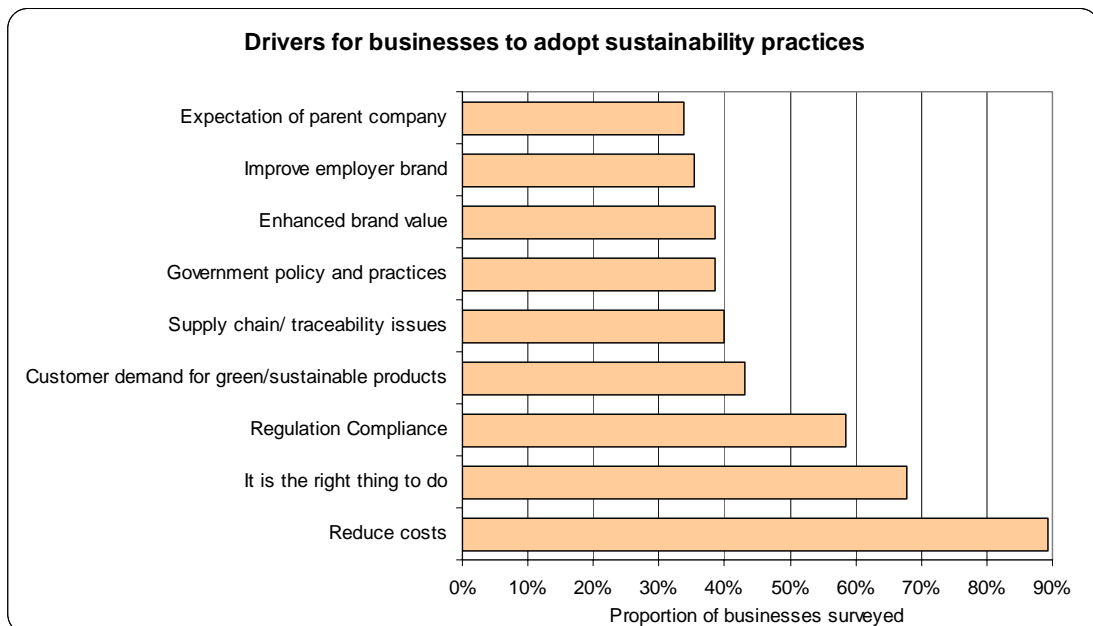


Figure 5.3 – Drivers for adopting sustainability practices

6. Discussion

The surveys undertaken as part of this project have assisted in demonstrating that the food and beverage sector in the Auckland region is currently well serviced by organic waste processors. Overall, businesses representing 69% of the Auckland region's food and beverage sector by revenue were included in the survey, and 89-95% of the food waste generated by these businesses is being diverted from landfill (6% is always landfilled and 5% is sometimes landfilled).

The surveys also identified that, while most businesses currently have an organic waste collection that meets the aims of the New Zealand Waste Strategy ("the diversion of commercial organic wastes from landfill to beneficial use"), 65% of businesses stated that they would find it useful to have assistance with linking to potential solution providers and being provided with information on alternative disposal methods.

Based on feedback provided by businesses, it would appear that, while they may have a suitable food waste processor at present, they have little information on alternative services or service providers, and therefore no back-up options should their current service provider fail to provide a suitable service.

On the other hand, there appeared to be unwillingness by some of the smaller service providers to provide information on their services or clients, due to concern that they could lose food waste streams that they currently rely on.

Organic waste collections in the region have generally developed in an ad-hoc manner, with organic waste processors approaching food and beverage sector businesses directly to offer them a service. While these services are generally either cost neutral (as compared to landfilling) or cost positive, the food and beverage sector businesses have often agreed to have their organic waste collected by the service provider that first approaches them. There has been little opportunity for food and beverage sector businesses to compare services or the suitability or sustainability of end use of their waste.

This project has not attempted to provide an analysis of the sustainability of any of the organic waste processes listed or determine whether they meet the Ministry for the Environment's target of diversion to 'beneficial use'. 'Beneficial use' is not defined in The New Zealand Waste Strategy.

While only 6% of the surveyed food and beverage sector businesses had heard of the New Zealand Waste Strategy, 88% of the businesses have adopted waste minimisation practices (and a further 9% plan to within the next year). It is expected that the driver for introducing waste minimisation initiatives is a reduction in costs, rather than government policy. This is demonstrated by the 89% of businesses that list 'Reduce costs' as the main driver for their sustainable business practices. The next highest driver (68%) is listed as "It is the right thing to do", which may reveal that there is a reasonably high awareness of sustainability issues amongst these businesses.

7. Milestone 3

This project is divided into three milestones. The outcomes of the first two milestones are presented in this report. The objectives of the third milestone are described in the project application as: *“Inform food and beverage businesses of disposal services available, inform disposal services providers of food and beverage sector requirements, identify possible matches between businesses and suppliers”*.

It was assumed before the project started that the survey of food and beverage sector businesses would uncover large quantities of food waste being disposed of to landfill. This however was not the case, with only 6% of the total tonnage of food waste produced by the businesses surveyed going regularly to landfill.

The project did determine, however, that the businesses producing large quantities of food waste that do not currently have any food waste diversion options, are the producers of post-consumer food waste. These include hotels, restaurants, cafes, hospital, and prisons.

A decision was made by the Project Control Group to extend the surveys to include a sample of businesses and organisation in these sectors to gain an understanding of the approximate quantity of post-consumer food waste being produced; this food waste’s current disposal paths; and whether or not these businesses and organisations are interested and willing to separate this waste out for collection by a food waste processor.

The results of these surveys will be presented in a future report. Also to be presented in this report will be the outcomes of the objectives of milestone three. These outcomes will include the following:

- A forum to introduce food waste producers to food waste processors. The food waste processors will be invited to present their services to the food and beverage sector at the forum.
- A pilot post-consumer food waste collection and processing trial. This pilot will be put out to tender in order to determine which food waste processors are interested and best placed to provide post-consumer food waste collection and processing.
- The creation of website material on services provided by the food waste processors.

Appendix A - F&B Sector Businesses Surveyed

Abe's Real Bagels Ltd	JJ Wafer Specialists
Anchor Milk (Fonterra Brands)	La Bonne Cuisine Ltd
B & H Foods Ltd	Lion Breweries
Bell Tea & Coffee Company	Magic Pandas Foods Ltd
Bevpac Ltd	Manukau Institute of Technology
Bluebird	Meadowlea (Goodman Fielder)
Cerebos Greggs	Mr Chips Ltd
Chaser Food Co Ltd	Nestle
Colonial Bacon & Ham Co	New Zealand Fresh Cuts
Cooks Food Group	NZ Bakels
Dad's Pies	NZ Innovative Foods
DB Breweries	NZ Sugar
Delmaine Fine Foods	Old Fashioned Foods Group
Diron Industries	Old Fashioned Smallgoods Ltd
Emerald Foods Group	Pacific Casings
Empire Confectionery	Pastryhouse (Fonterra)
Essentia Foods Ltd	Polaris Foods
Flavorjen Ltd	Prepared Produce
Foodwise Ltd	Purity Foods
Fresher Foods Ltd	Quality Bakers (Goodman Fielder)
General Mills	Sanitarium Health Food Company
George Western Foods Ltd	Status Produce
Golden Orient Foods	Steam Brewing Company
Griffins Foods Ltd, Wiri	Surti Indian Samosa
Griffins Foods Ltd, Papakura	Swiss Deli
Gshall and company ltd.	Tasti Products
Heller Tasty Ltd	Tegel
Horners Confectionery Ltd	The Grate Kiwi Cheese Company
Hot Plate Products	Tip Top (Fonterra)
Hubbards	Top Hat (Goodman Fielder)
Inghams Enterprises (NZ) Pty Ltd	Villa Maria
Irvines Goodman Fielder	Vital Foods
Jack Links	



Appendix B - Organic Waste Survey



Supported by:



AUCKLAND FOOD & BEVERAGE SECTOR ORGANIC WASTE SURVEY

Date: _____

Interviewer: _____

SECTION 1: COMPANY DATA

Company name: _____

Physical address Street: _____

Suburb: _____

Postal address: _____

Phone: _____

Fax: _____

Email: _____

Website: _____

Interviewee(s): _____

Job title(s): _____

Main products manufactured/handled or services offered:

Locations of manufacturing plants/facilities

Number of employees: _____

Definition of organic waste (for purposes of this interview):

Waste material which comes from animal or plant sources, including food and beverage preparation wastes, spoiled food and fruit, and food processing waste.

SECTION 2: ORGANIC WASTE ISSUES

2.1 How important is it for the company to find a more sustainable method of organic waste disposal?

- High priority
- Medium priority
- Low priority
- Not a priority

2.1a If it is a *medium* or *high* priority, what is the main reason?

- Cost of current disposal method
- Difficulty with handling/logistics of organic waste
- Company policy
- Local/central Government regulation
- Other: _____

2.1b If it is a *low* priority or *not a* priority, what is the main reason?

- Cost of alternative disposal methods
- Amount of organic waste produced
- Current method considered sustainable
- Other: _____

2.2 Is the company familiar with the New Zealand Waste Strategy and/or the Waste Minimisation Act and the potential impact on organic waste disposal?

- New Zealand Waste Strategy
- Waste Minimisation Act
- Neither
- Don't know
- Further comment: _____

2.2a If *yes* to either of the above, has this had an effect on how the company is dealing with, or plans to deal with, organic waste in the future?

- Yes
- No
- Don't know
- Further comment: _____

2.3 If the company has plans for dealing with organic waste in the future what are these?

2.4 What is the biggest barrier to diverting organic waste from landfill currently?

- Cost of alternative disposal methods
- Resources required to implement separate food waste collections in-house
- Low volume of organic waste produced
- Lack of information on alternatives
- Lack of disposal options
- Other: _____

2.5 Which of the following would be most useful to help the company divert organic waste from landfill?

- Information on alternative disposal methods
- Assistance linking up with potential solution providers
- Financial support to find alternatives
- Technical support to find alternatives
- Other: _____

SECTION 3: ORGANIC WASTE STREAMS

Definition of organic waste (for purposes of this interview):
Waste material which comes from animal or plant sources, including food and beverage preparation wastes, spoiled food and fruit, and food processing waste

3.1 List all organic waste streams currently being disposed of:

3.2 List any significant types of liquid wastes containing organic matter:

3.3 Additional comments

SECTION 4: ORGANIC WASTE DATA

[One form per waste type – total number for this interview _____]

4.1 Waste type (General description of organic waste produced e.g. poultry processing waste, vegetable waste etc)

4.2 Source of waste (What process or product is the waste generated by?)

4.3 Location(s) of production of waste (Site at which it is produced)

4.4 Composition and texture

- Physical composition (feathers, skin, leaves, liquid etc)

- Chemical composition (water, protein, carbohydrate, fibre, fat content, pH etc)

- Texture characteristics (slimy, sticky, granular, liquid, free-flow etc)

- Contaminants (sanitisers, disinfectants, antibiotics, heavy metals, inorganic material etc)

- Is there any packaging surrounding this waste?

- Further comments

4.5 Quantity

- Average quantity produced, in tonnes per month (or litres per month for liquids).

- If seasonal – how does the quantity vary over the year? (in tonnes (or litres) per month)

Approx quantity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

- Where has this quantity data been obtained from (i.e. from waste collection invoices, judgement made by interviewee, estimate based on size of collection bin etc)

- Likely increase or decrease in quantity produced over next 5 years

4.6 Waste separation

- Could this waste be kept separate from other wastes (for separate collection)? (Explain potential barriers)

4.7 Current disposal (or reuse) method

- Collection method/frequency
(e.g. skip bin/gantry bin/compactor/sewer/tank/other, size of bin and how often it is collected)
-

- Contractor used (optional)
-

- Final disposal destination (landfill/other disposal method)
-

- Or - if a waste by-product, how/where is it reused?
-

- Specific handling/transportation/storage requirements
-

- Is security of disposal an issue with this waste stream?
-

4.8 Current disposal costs – or payments (optional) (Specify per tonne/per collection/per week or month)

4.9 Attachments: (list any other information provided)

SECTION 5: MINISTRY FOR THE ENVIRONMENT - SUSTAINABILITY QUESTIONS

The Ministry for the Environment has worked successfully with several industries to identify sustainability opportunities and develop the tools needed to capitalise on them. A number of sustainability opportunities for the Food and Beverage industry have been identified and the following questions are designed to provide the Ministry a better understanding of the industry to assist in scoping the opportunities, drivers and barriers facing the industry.

The benefits achieved from sustainability were highlighted in a recent membership survey by the New Zealand Business Council for Sustainable Development, in which they answered the following question:

Thinking of the business case for sustainable development, please indicate which of the outcomes below have been of most value to your organisation over the past 12 months as a result of your sustainable development practices or initiatives?

A. Reduced costs		45%
B. Reduced risks		27%
C. Attracting and retaining staff		64%
D. Identifying new business opportunities		82%
E. Enhanced stakeholder relations		27%
F. Enhanced brand value		73%
G. Other (please specify)		9%

Thank you for your assistance in answering the following questions:

5.1 What sustainability practices has your organisation adopted

- Sustainability policies
- Resource efficiency (resources such as water, energy)
- Waste minimisation
- Environmental management and/or labelling
- Carbon reporting and management
- Sustainable Procurement
- Greening your products and packaging
- Human resource and work place practices
- Sustainable reporting
- Government relations
- Community engagement
- Compliance with regulation
- Other: _____
- None of the above

5.2 What sustainability practices does your organisation intend to implement in the next 12 months

- Sustainability policies
- Resource efficiency (resources such as water, energy)
- Waste minimisation
- Environmental management and/or labelling
- Carbon reporting and management
- Sustainable Procurement
- Greening your products and packaging
- Human resource and work place practices
- Sustainable reporting
- Government relations
- Community engagement
- Compliance with regulation
- Other: _____
- None of the above

5.3 What are the drivers for your business to adopt sustainable business practices

- Reduce costs
- Expectation of parent company
- Supply chain/ traceability issues
- Customer demand for green/sustainable products
- Improve employer brand
- Government policy and practices
- Enhanced brand value
- Regulation Compliance
- It is the right thing to do
- Other: _____

5.4 What resources do you currently measure and manage

- Water
- Electricity
- Petrol/Diesel
- Natural gas
- LPG
- Air Emissions (eg carbon)
- Waste
- None of the above

5.5 In the next 12 months do you intend to start measuring and managing any of the following

- Water
- Electricity
- Petrol/Diesel
- Natural gas
- LPG
- Air Emissions (eg carbon)
- Waste
- None of the above



Appendix C - Processor survey



Supported by:



AUCKLAND ORGANIC WASTE PROCESSOR SURVEY

Date: _____

Interviewer: _____

SECTION 1: COMPANY DATA

Company name: _____

Physical address Street: _____

Suburb: _____

Postal address: _____

Phone: _____

Fax: _____

Email: _____

Website: _____

Interviewee(s): _____

Job title(s): _____

SECTION 2: COMPANY BACKGROUND

2.1 How long has the business been operating?

2.2 Who is the business owned by?

SECTION 3: PROCESSES

3.1 Do you currently process, or put to beneficial use, organic waste?

- Yes
- No
- Further comment _____

3.1.1 If yes, for how long has this service been offered?

3.1.2 If no, do you plan to start processing organic waste in near future (within 3 years)?

- Yes
 - When? _____
- No – (end of survey)
- Further comment _____

3.2 What organic waste processing systems do you currently use?

- None
- Composting
- Anaerobic digestion (biodigestion)
- Vermicomposting
- Animal feedstock
- Piggery
- Thermal treatment
- Other: _____

3.3 What organic waste processing systems do you plan to use in future (within 3 years)?

- Same as current systems
- Composting
- Anaerobic digestion (biodigestion)
- Vermicomposting
- Animal feedstock
- Piggery
- Thermal treatment
- Other: _____

(If planning to start processing organic waste, fill in following sections based on projections. Cross out CURRENT/FUTURE as appropriate)

4.1 What types of organic waste streams do you accept?

4.2 Are there any specific requirements regarding:

- Physical composition (feathers, skin, leaves, liquid etc)

- Chemical composition (water, protein, carbohydrate, fibre, fat content, pH etc)

- Texture characteristics (slimy, sticky, granular, liquid, free-flow etc)

- Contaminants (sanitisers, disinfectants, antibiotics, heavy metals, inorganic material etc)

4.3 What types of organic waste streams do you not accept?

4.4 What types and levels of contamination do you accept?

4.5 Do you accept packaged goods?

- Yes
- No
- Further comment

4.5.1 If yes, what kinds of packaging can you accept?

4.5.2 Do you:

- Have de-packaging machines?
- De-package manually?
- Other:

SECTION 5: CAPACITY

5.1 What is the capacity of your processing system(s)? (e.g. tonnes per month/day)

5.2 Are you able to accept variable quantities?

Yes

No

Don't know

Further comment _____

5.3 What is the minimum quantity you would accept? (e.g. per day)

5.4 What is the maximum quantity you would accept? (e.g. per day)

5.5 Are you looking for new organic waste streams?

Yes

No

Don't know

Further comment _____

5.6 Do you have room to expand if a large organic waste stream becomes available?

Yes

No

Don't know

Further comment _____

SECTION 6: ORGANIC WASTE COLLECTION AND DELIVERY

6.1 Do you accept deliveries?

Yes

No

Don't know

Further comment _____

6.2 Do you provide an organic waste collection?

Yes

No, but plan to provide service in future (specify when) _____

No (Go to section 7)

Further comment _____

6.3 Is this collection service undertaken in-house or sub-contracted?

In-house

Subcontracted

Other _____

6.4 What collection frequency can you provide? (How often can you collect?)

Daily

Weekly

Monthly

On call

Other _____

6.5 What quantities can you collect at each collection?

6.6 What receptacles are required for collection?

6.7 What geographic areas will you collect from? (How many km from your site, or from which suburbs)

6.8 Other issues surrounding collection?

SECTION 7: COSTS

7.1 Do you charge or pay for organic waste?

- Charge
- Pay
- No charge or cost
- Other _____

7.2 How are charges/payments calculated? (Optional)

7.3 Do you charge separately for collection?

- Yes
- No
- Don't know
- Further comment _____

7.4 How are collection charges calculated? (Optional)

SECTION 8: END USE

8.1 List the product(s) you produce from organic wastes? (i.e. 'finished product(s)')

8.2 What quantities of finished product do you produce? (approximate tonnes/year)

8.3 Is the finished product(s) sold or given away?

8.4 What end use markets do you have for your finished product(s)?

8.5 How secure are the end use markets?

- Very secure
 - Secure
 - Not very secure
- Further comment _____

8.6 Are your finished products certified to any of these standards?

- NZ Standard 4454:2005
 - Working towards NZ Standard 4454:2005
- Biogro NZ Organic Standard
 - Working towards Biogro NZ Organic Standard
- Global Gap Standard
 - Working towards Global Gap Standard
- Other _____

SECTION 9: CONSENTS

9.1 Does your organic waste processing operation require any regional or TLA consents?

- Yes
 - No (Go to Section 10)
 - Don't know
- Further comment _____

9.2 If yes, what are these consents and are you compliant?

9.3 Do current consents restrict the quantity and/or types of organic wastes accepted at your site? (Explain)

SECTION 10: FUTURE

10.1 Can you expect to be able to provide a steady supply of service into the future?

- Yes
 - No
 - Don't know
- Further comment _____

10.2 Are you experiencing any immediate restrictions to growth, and if so, what are they?

- Finance
- Lack of organic waste
- Lack of markets for end product
- Planning permission
- Resource consents
- Other _____