WASTE FACILITIES SURVEY - METHODOLOGY AND SUMMARY OF RESULTS

- 3.0
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1. Introduction

The Ministry for the Environment put out a request for proposals for 'A National Survey of Solid Waste Disposal Sites, Organic Waste Processing Facilities and Used Tyre Management Practices' in December 2007. The objective of the project was to collect 'key data pertaining solid waste disposal sites and organic waste processing facilities … and the management of end of life tyres'.

The reason for conducting the survey was to generate an up to date and accurate picture of number, location and particulars of non municipal solid waste disposal sites and organic waste processing facilities in New Zealand. Municipal waste disposal sites have been excluded as these are already well documented. MfE also wishes to understand how regional and district councils are managing end of life tyres, their numbers and what assistance they would like to divert them from landfill.

The Ministry for the Environment is responsible for providing advice to the government of the day on a variety of environmental and sustainability issues including waste management policy. For waste management issues, the NZ Waste Strategy (2002) and the Waste Minimisation Bill are currently the key documents. The NZ Waste Strategy acknowledged the lack of good data on many aspects of waste management in New Zealand and the Ministry has been working with local authorities and other stakeholders on improving this situation.

While much progress has been made, as reflected in a range of Ministry documents, information on non municipal waste landfills (including cleanfills) and organic waste processing facilities is still inadequate for monitoring or policy making purposes. There is also limited up to date information on approaches to the management of end of life tyres. This project is intended to rectify this situation and provide the basis for regular monitoring of these important components of the waste management system in the future.

There are good reasons why there is limited information on non municipal solid waste disposal sites. In contrast with municipal landfills the majority of the landfill sites covered by this survey are commercially operated and deal exclusively with commercial waste or domestic materials collected by commercial waste collection companies. The status of these sites with respect to RMA requirements is often unclear, particularly where they are focussed on inert wastes. In some cases they are considered a permitted activity under the relevant Regional Plan i.e. require no formal consent from the regional authority. In other cases while resource consents have been granted, conditions make waste acceptance criteria difficult to interpret.

Many commercial organic waste processing sites rely on territorial authorities to provide a 'base load' of green waste i.e. the bulk of their business is in providing services for local authority solid waste management. There are also commercial operations that primarily focus on organic waste materials from commercial sources. This second group of operations may have limited contact with local authorities in their area Again the RMA requirements vary around New Zealand and where operations are causing no adverse environmental effects they may not require formal consent from regional authorities. Information on the quantity of organic materials processed and/or materials sold may also be considered commercially sensitive.

This document summarises the results of the survey work including:

- The Resource Management Act controls for cleanfills, other non municipal waste disposal sites and organic waste processing sites around New Zealand;
- An estimate of the number of non municipal waste disposal sites;
- An estimate of the quantity of material disposed of at non municipal waste disposal sites;
- An estimate of the number of organic waste processing operations;
- An estimate of the quantity of organic waste handled by the sites identified; and
- Some brief comment on end of life tyre management around New Zealand.

2. Survey Methodology

2.1 Introduction

There is a lot of publically available information on waste disposal and the waste management framework. A key part of this project has been to collate information available in Regional and District Plans, Waste Management Plans and other local authority documents. This has been followed by checking and expanding on the information collected by talking to local authority staff and operators of landfills and organic waste processing sites.

Staff at local authorities (regional councils, unitary authorities and territorial authorities) are most likely to have a good understanding of both disposal sites and organic waste processing facilities operating in their area. Following the desktop research, local authority staff were contacted to assist in identifying disposal sites, organic waste processing operations and to discuss end of life tyre management. Key people may include those with responsibilities for:

- Solid waste management planning (policy)
- Solid waste operations (contract management)
- Issuing consents under Regional or District Plans (planners)
- Undertaking RMA enforcement including for consented (Regional or District Plans) and permitted activities
- Trade waste controls.

The survey involved the following phases, ultimately run concurrently once the initial stages of the information collection phase (Phase 1) was completed. The phases (described in the following sub-sections) were:

Phase 1

- Researching council waste management plans and resource management rules;
- Adding information based on previous waste infrastructure work undertaken for Environment Bay of Plenty and Environment Waikato;
- Contacting regional councils and unitary authorities; and
- Contacting territorial authorities.

Phase 2

- Contacting site operators by telephone.

Phase 3

- In region validation; and
- Identifying additional site operators.

2.2 Phase 1

Phase 1 of the survey involved reviewing regional plans, district plans and waste management plans. The plans generally provided information regarding definitions, planning rules and assessment criteria regarding different types of solid waste, disposal sites and organic waste processing facilities. This information was augmented with SKM's knowledge of the waste infrastructure in New Zealand.

The information collected was used to populate a questionnaire developed in collaboration with the Ministry. The Questionnaires for regional councils, territorial authorities and Site Operators are included as Appendix A.

The information collected through the desktop review was then supplemented through discussion with council staff. Undertaking research before sending the questionnaire to the local authority staff was intended to reduce the burden on the survey respondent leaving more time to focus on the particulars of each site.

Regional councils were contacted first as it was anticipated that the details of consented sites contained in consents databases would identify the bulk of the sites of interest. The details of permitted cleanfills were sought through requesting that the questionnaire be forwarded to a compliance officer or others with knowledge of the waste infrastructure in the area. Territorial Authorities (TAs) were contacted as the regional results came back. The particulars of known sites were included in the questionnaire for TAs to confirm and supplement with the details from land use and earthworks consents.

Phase 1 returned results from all of the regional councils, but only approximately half of the TAs. This was due to the limited time and resources to respond at many of the TA's.

2.3 Phase 2

Phase 2 of the survey was started alongside Phase 1 to make efficient use of time. Facility operators were contacted to gather information largely related to the types and quantities of material being accepted. Quantity information was predominately provided in m^3 as most sites do not have a weighbridge. Annual quantities at some sites were estimated based on void space filled since commencement of disposal or the quantity was based on number of truck movements. The volume contained in an average truck was assumed to be 6 m^3.

Tonnages were derived in these cases by multiplying the volume in m^3 by the following conversion factors derived from USEPA, 1997. These are:

- Greenwaste - 0.15 t/m^3
- Food scraps, solid and liquid fats - 0.389 t/m^3
- Wood chips/bark - 0.2167 t/m^3
- Compacted grass (e.g. paunch grass) – 0.1907 t/m^3 .

The Sustainability Victoria 'Waste Wise Events Waste Volume to Weight Conversion Table' conversion factor of 1.4 t/m^3 was used to estimate tonnages for soil / rubble.

The composting operations were all sent the questionnaire as they generally did not have access to the required information while on the phone. The majority of the information on landfills was gathered over the phone and operators were asked to give estimates of types and quantities of material. Most landfill operators did not request that the questionnaire be sent to them. In any case it was anticipated that the response would have been poor from site operators if we relied solely on the questionnaire.

While there was a better response from landfills operators overall, where detailed information was provided by composting operators it was of better quality. This reflects the differences in type of operation. The solid waste landfills covered in this survey, particularly the smaller sites, are informal with income focused on truck movements. Operators of these sites were able to quickly provide an indication of quantity (often based on vehicle movements) and types of materials accepted. In contrast, a composting operation needs to understand inputs, processing steps and to control product quality in order to be successful. Detailed information is generally collected, but in some cases was considered too commercially sensitive to make available for the survey.

Non responding TA's were re-contacted during Phase 2.

Phase 2 was relatively successful however gaps remained where operators could not be contacted and many TA's did not respond in the time provided.

2.4 Phase 3

Phase 3 of the survey was an in-region validation exercise involving face to face meetings with site operators and solid waste managers at territorial authorities. Some regional council officers were also contacted where there were uncertainties as to the location, number and contact details of facility operators. We spent over 4 weeks in total visiting (13 of 16) regions[1]. This phase covered

[1] Gisborne, Waikato and Bay of Plenty Regions were not visited due to a high level of confidence in the data collected through the desk top review and telephone conversations.

all major urban areas and was predominantly focused on landfills as we had confidence in the composting data. Earthworks and demolition contractors were also contacted in major towns. They were asked if they operated sites and where they were dumping material. This resulted in the identification of some additional sites. Data from these sites was obtained through face to face discussions with the operators and site users.

Phase 3 was effective in removing information gaps and gaining confidence in the data collected through desktop research and telephone discussions. The councils are not always privy to how a site is operating or if it is operating at all once resource consent has been issued – this is particularly the case where limited monitoring takes place.

Although some operators have not been able to provide quantities of material we are confident that we have located the vast majority of landfill sites over 5,000 m^3 and most composting operations. Of the 71 composting operations identified through local authorities, 68 were contacted. Detailed information was collected (through local authority records or discussion with the operators) on 56 of the sites. Forty-one of the compost operators provided a response to the survey questionnaire.

2.5 General Comments

It is worth noting that the Auckland region proved to be particularly difficult in gaining quantity information from landfills, with operators generally unwilling to discuss their sites in detail. Despite this, through using the current cleanfill/managed fill database at the Auckland Regional Council and our phone calls/in region validation we have been able to locate the majority of relevant disposal sites.

Of the total 71 composting operations that were identified three composting operations have not responded in any way. While detailed responses were only received from 41 operations, data provided by the local authorities means there is adequate data for 56 of the sites identified i.e. there is limited data for a further twelve. In some cases this has been due to difficulties in getting a response to the detailed questionnaire and in others because the site operators were unwilling to provide detailed data.

A number of landfill operators could not be contacted or they did not want to provide information. The focus of both the desktop research and subsequent in region validation has been identifying consented and other sites accepting significant quantities of material. The site visit programme means there is a high level of confidence that the major sites (i.e. those accepting large quantities of material and/or those accepting non cleanfill materials) have been identified. The limited data that has been collected on the remaining sites (where operators had limited information or were difficult to contact) indicates these were generally accepting small quantities of cleanfill.

In general the survey design was appropriate for the data we were collecting. The main issues with a survey is of this kind is the follow up phone calls necessary to chase up non-respondents. This time accounts for approximately 10-15% of the total time for this survey. In some cases the survey questionnaire was left untouched by local authority respondents for over a month. In these cases we arranged for a snapshot of their consents database to be provided from which relevant consents were identified and details transferred to the data collection system. This approach should be adopted earlier in the survey in future, for example if there is no response after two weeks.

A successful part of the survey was the desktop research conducted prior to contacting the councils. We were able to accurately gather planning information, large amounts of information on current composting systems from various reports, some details of known landfills, and small amounts of information about used tyre management. The councils seemed to appreciate these efforts realising that this lessened the burden on their resources.

Given the short timeframe for collecting a large amount of information it also proved essential to run Phases 1 and 2 concurrently. So while we waited for some regional councils to respond we contacted territorial authorities and then site operators where we had regional information.

The in-region validation exercise provided valuable additional information not obtained through desktop research or telephone conversations with local authorities or site operators. Meetings with site operators, C&D and earthworks contractors revealed how sites were operating and assisted in identifying unconsented/permitted sites. In general these contractors are aware of other activity in their area and the location of disposal sites/composting operations. By talking with contractors we were able to refine and add to the data collected. Undertaking this detective work combined with face to face meetings returned results with surprising ease.

It was found that pitching the survey as a national stocktake of waste undertaken, rather than a compliance focussed survey, addressed initial concerns from many site operators. A typical validation exercise for an area where little information was known (e.g. Manawatu/Wanganui and Otago) involved calling contractors and setting up meetings where appropriate. Otherwise visiting the industrial area of town where contractor's offices are located is an efficient use of time even if meetings have not been pre-arranged. Information gleaned from these meetings could then be followed up with site visits, either to the landfill/composting facility or otherwise to the site operators office in town.

For future surveys Phases 1 and 2 should be run in largely in parallel and Phase 3 run as early as possible and before all of the responses from local authorities are received. With sites opening and closing every few years it would be wise to run the survey again in five years time.

2.6 Future Survey Design

Should this survey be repeated, the following methodology is recommended:

Desktop Research

- A review of Regional Plan, District Plan, Waste Management Plans and other local authority documents to update the information collected in this survey on local authority policy and rules relating to waste disposal sites, organic waste processing facilities and end of life tyre management policy and initiatives.

Telephone Survey and In-region Validation

- Contacting local authorities to clarify and/or add to the results of the desktop research regarding policy and rules;
- Contacting local authorities to update listing of consented disposal sites, organic waste processing facilities and end of life tyre processing facilities;
- Contacting operators of disposal sites, organic waste processing sites and end of life tyre processing facilities; and
- A programme of site visits and in-region data collection where the data is considered unreliable or responses from operators and/or local authorities is incomplete.

Comments:

- It would be more efficient to consider all waste disposal sites (MSW Landfills, cleanfill, non-MSW landfills) in the survey i.e. combine this survey with an update to the 2006/07 Landfill Census;
- The site visit programme should start several weeks after the initial contact with local authorities and site operators i.e. it should not be delayed until responses have been received.

2.7 Potential Further Data Analysis

The scope for this project has not allowed for detailed analysis of the data collected and this is reflected in the remainder of this summary report. Areas that warrant further analysis and/or exploration include:

- Spatial analysis – location and scale of sites around New Zealand;
- Linking the data on disposal sites with Landfill Census data i.e. providing a full picture of disposal sites around New Zealand;
- Looking at alternative drivers of waste generation as a method for extrapolating data to regions where detailed quantity data is not available – building activity, regional GDP, …;
- Comparing landfill and cleanfill rules across New Zealand;
- Analysis of scale and number of non-MSW landfills correlated with waste management policy and infrastructure (including price structures).

Taranaki and Canterbury Regions were two areas with high quality data on non municipal landfills. In Taranaki this is a result of the Taranaki Regional Council taking a proactive stance in identifying, consenting and monitoring disposal sites. In Canterbury this is largely as a result of the Christchurch City Council putting in place a by-law requiring disposal sites to be licensed (under the Local Government Act). These scenarios may have relevance to other parts of New Zealand.

3. National Summary of Landfills and Organic Waste Processing Sites

3.1 Regulation of Solid Waste Disposal Sites

All regional authorities require resource consents for solid waste disposal (excluding cleanfill meeting the MfE definition). All councils except Hawkes Bay, Otago, West Coast and Horizons monitor actively consented disposal sites (including cleanfills where they are consented). Most regions require consent for sites accepting cleanfill over certain thresholds or in certain localities.

There is large variation in the way that disposal sites are regulated around New Zealand. Definitions of different types of landfill also vary – a cleanfill may refer to a site accepting only natural, inert fill or to a site consented to accept a range of materials including construction and demolition waste. In general resource consents issued over 10 years ago have fewer consent conditions and varying definitions of cleanfill. Regional councils are generally now using the Ministry's cleanfill definition for permitted activities and in many cases have specified percentage limits of organic material to be accepted where appropriate.

All regional councils and Unitary Authorities have definitions for cleanfill material or cleanfill landfills. Territorial authorities generally use their regional council's definition. Cleanfill disposal is permitted below quantity thresholds in many regions. Generally any cleanfill disposal less than 1000 m^3 does not require a resource consent.

Exceptions to the above are the Manawatu-Wanganui and Otago regions. In the operative Manawatu-Wanganui Regional plan cleanfill disposal is not explicitly planned for therefore all cleanfilling is permitted under their general activity rule. The proposed Horizons One Plan has defined cleanfill and set permitted activity criteria. In Otago cleanfill disposal is not covered in the regional plan and is essentially permitted in any quantity. It was therefore more difficult to locate cleanfill landfills in these two regions as they are not documented by local authorities.

The vast majority of landfills in NZ are either cleanfills as defined by the regional councils or MSW landfills. Regions have also consented and defined other types of landfill to accept waste that has potential to produce leachate and is therefore unsuitable for uncontrolled disposal. Auckland contains six 'Managed Fill Sites' accepting low level contaminated waste. In Gisborne there are two 'Restricted Waste Disposal Facilities' where asbestos and low level contaminated soils are disposed of. Wellington and the Waikato have created specific consents for two construction and demolition landfills. The Waikato has also consented monofills for disposal of one only one type of waste. These include sites associated with the Kinleith Mill and Huntly Power Station and are beyond the remit of this survey. The Bay of Plenty region has several landfills consented to accept a range of non municipal wastes.

3.2 Solid Waste Disposal Sites

3.2.1 Number of Solid Waste Disposal Sites

The numbers and types of disposal site in each region are summarised in Table 1. Waste disposal sites have been categorised into four distinct groups based on the types of waste they are accepting:

- Cleanfill (consented) - accepting cleanfill material (as defined by the relevant regional council) and operating under a resource consent issued by that council;
- Cleanfill (unconsented) - operating as a permitted activity under the relevant regional plan, unknown to council or the council has decided a consent is not required;
- Closed MSW Landfill rehabilitation - accepting cleanfill as defined by the regional council as part of the re-contouring or capping of a closed MSW landfill;
- MSW Landfill – landfill accepting municipal solid waste that was not excluded from the survey i.e. MSW Landfills that were not identified in the '2006/07 National Landfill Census' (MfE, 2007);
- Non MSW Landfill – landfill that is accepting waste that is not cleanfill according to the regional council definition e.g. material with the potential to cause leachate. This includes 'managed fill sites' in Auckland, 'Restricted Waste Disposal Facilities' in Gisborne and a range of sites accepting construction and demolition (C&D) waste in other parts of New Zealand.

The solid waste disposal site data collection template contains further information on the types of waste these sites are accepting including the terminology used by councils to describe the non MSW landfills.

- **Table 1 Number and type of landfill within each region**

Region	Type of disposal sites present	Number
Northland	Cleanfill (consented)	1
	Closed MSW landfill rehabilitation	1
Auckland	Non MSW Landfill	4
	Cleanfill (consented)	30
	Closed MSW landfill rehabilitation	1
Bay of Plenty	Cleanfill (consented)	15
Gisborne	Non MSW Landfill	2
Waikato	Cleanfill (consented)	15
	Non MSW Landfill	1
	MSW Landfill	1
Taranaki	Cleanfill (consented)	20
	Closed MSW landfill rehabilitation	2
Hawkes Bay	Cleanfill (consented)	3
	Cleanfill (unconsented)	15

Region	Type of disposal sites present	Number
Horizons	Cleanfill (consented) Cleanfill (permitted) MSW Landfill[2]	3 8 1
Wellington	Cleanfill (consented) Non MSW Landfill	12 2
Tasman	Cleanfill (consented)	9
Nelson	Cleanfill (consented) Cleanfill (permitted)	3 1
Marlborough	Cleanfill (consented)	7
West Coast	Cleanfill (consented) Cleanfill (permitted) Non MSW Landfill Closed MSW landfill	6 2 2 2
Southland	Cleanfill (consented)	4
Otago	Cleanfill (consented) Cleanfill (unconsented) Closed MSW landfill rehabilitation MSW Landfill[3]	2 9 1 2
Canterbury	Cleanfill (consented) Cleanfill (permitted)	19 6
Chatham Islands	MSW Landfill[4]	3
Total		214

3.2.2 Quantity Estimate – Solid Waste Disposal Sites

Accurate quantity information was obtained for some regions while total quantity for others has been estimated as noted in Table 2. These estimates were derived by multiplying the region's population by the annual tonnage of waste produced per person in Canterbury (where we have the most accurate quantity information). The Canterbury total waste tonnage of 868,958t/yr which was divided by the Canterbury's population of 521,832 to give an annual tonnage of waste per person of 1.67 t/yr/capita.

This approach assumes that the quantity of waste material is directly related to population and for the purposes of this assessment is probably appropriate. In reality waste generation is more complex than this and for non municipal waste is likely to be related to a variety of factors

[2] Waiouru Landfill (NZDF/Transfield), not included in the 2006 Landfill Census.

[3] Patearoa and Tarras Landfills (Central Otago DC), not included in the 2006 Landfill Census.

[4] All three municipal landfill sites on the Chatham Islands were excluded from the 2006 Landfill Census.

including building activity, broader economic activity, population, socioeconomic status and the cost/location of municipal waste disposal sites.

Upper and lower estimates of regional waste quantities are also provided in the table using the lowest and highest per capita waste figures in column 4. This gives a reasonable idea of likely minimum and likely maximum quantities of waste produced in each region where we have insufficient quantity data from the site operators. The lower estimate was derived by multiplying the Gisborne per capita waste volume of 0.31t/capita/yr by the regional population. The upper estimate was derived by multiplying the Taranaki per person waste volume (2.45t/waste/capita) by the Northland population and so on. Note that the quantity figures in Table 2 do not include tonnages of material disposed of at the municipal solid waste landfills that were excluded from the survey.

As noted in Section 2.7 there are a range of ways that waste quantity data from one could be used to estimate quantities for another area. Factors that may have an influence include building activity, broader economic activity, rural/urban split and the nature of economic activity (manufacturing, primary sector, services). The figures presented in Table 2 are simple per capita estimates with no attempt to take other factors into account.

Table 2 Actual/estimated regional quantities of waste to waste disposal sites

Region	Total quantity (t/yr)	Population (2006 census)	t/waste/ capita	Estimated total regional t/yr based on Canterbury (1.67 t/person)	Estimated total regional t/yr based on Gisborne) 0.31 t/person)	Estimated total regional t/yr based on Tasman (1.96 t/person)
Northland	unknown	148,470	-	247,233	46,714	290,452
Auckland	unknown	1,303,068	-	2,169,877	409,991	2,549,195
Bay of Plenty	126,000	257,379	0.4896	-	-	-
Gisborne	14,000	44,496	0.3146	-	-	-
Waikato	597,700	382,716	1.5617	-	-	-
Taranaki	100,000	104,127	0.9604	-	-	-
Hawkes Bay	unknown	147,783	-	246,089	46,498	289,108
Wellington	unknown	448,956	-	747,604	141,257	878,294
Tasman	87,300	44,625	1.9563	-	-	-
Nelson	46,500	42,888	1.0842	-	-	-
West Coast	25,900	31,326	0.8268	-	-	-
Southland	19,207	90,873	0.2114	-	-	-
Otago	unknown	193,800		322,717	60,976	379,131
Canterbury	868,958	521,832	1.6652	-	-	-
Marlborough	30,760	42,558	0.7228	-	-	-
Chatham Islands	unknown	609	-	1,014	192	1,191
Horizons	unknown	222,423	-	370,380	69,982	435,127
Known quantities	1,916,325	4,027,929	1.2262	1,916,325	1,916,325	1,916,325
Estimated quantities	NA	NA	NA	4,104,915	775,610	4,822,499
TOTAL (known + estimated)	**NA**	**4,027,929**	**NA**	**6,021,240**	**2,691,935**	**6,738,824**

3.3 Organic Waste Processing Facilities

Organic waste processing facilities in New Zealand are predominately open windrow systems with a small number of in-vessel systems. The majority of material being processed is greenwaste from commercial sources and public drop off. Other materials processed in smaller quantities include putrescible waste, biosolids, pig/chicken manure, bark/sawdust and paunch grass. The numbers of facilities in each region is shown in Table 3. Total annual quantities of material being processed are shown where this information was provided.

Table 3 Regional organic waste processing facilities with quantities of waste

Region	Number of facilities	Number of responding sites and as % of total surveyed	Quantity of material (t/yr)[5]
Northland	2	1 (50%)	477t/yr for 1 site
Auckland	4	4 (100%)	120,200(60,000T animal waste / 8,100t food / 58,100 greenwaste)
Bay of Plenty	7	5 (71%)	42,880 for 5 sites
Gisborne	1	1 (100%)	3,150
Waikato	8	6 (75%)	42,608 for 6 sites
Taranaki	9	3 (33%)	27,540 for 3 sites
Hawkes Bay	2	1 (50%)	3,000 for 1 site
Horizons	5	1 (20%)	2,940 for 1 site
Wellington	5	4 (80%)	26,200 for 4 sites
Tasman	3	1 (33%)	1,890 for 1 site
Nelson	1	1 (100%)	1,800
Marlborough	1	0 (0%)	No info
West Coast	0	-	No sites
Southland	3	3 (100%)	6,727
Otago	2	2 (100%)	2 facilities - no quantities
Canterbury	18	8 (44%)	60,239 for 8 sites
Chatham Islands	0	-	No sites
Total	71	41 (57%)	NA

[5] Quantity data is from survey responses where available or from consent records.

3.4 Used Tyres

The survey has found that in general the infrastructure for processing used tyres into saleable product as an alternative to landfill disposal is minimal. There are only four tyre recycling facilities in NZ, in New Plymouth, Wanganui, Otaki and Auckland. There are also a number of businesses that collect tyres, shred them and dispose of them to landfill.

There are also a number of undocumented businesses that do not own shredding equipment. They are apparently collecting tyres and providing them to farmers or illegally dumping on private property.

In general, rural council involvement is limited to stockpiling tyres at transfer stations or landfills where they are either collected by farmers for use as silage tarpaulin covers or shredded and disposed of at landfill. Policies relate to charging for tyre disposal to recover the cost of shredding and disposal or may ban tyres from landfill altogether. Some policies also set limits on the size of stockpiles at landfills.

In urban areas used tyres are more of an issue where they are taking up valuable landfill space or being illegally dumped. In Auckland for example it is estimated that in 2007 10,500 tyres were illegally dumped. The collection, shredding and disposal cost was covered by local authorities.

TyreTrack has been set up to promote the responsible disposal of tyres and is supported by MfE. TyreTrack estimates that 20-25% of used tyres have been tracked by this service and are disposed of at landfill or recycled. However given that use of the system is voluntary with no monitoring it is impossible to verify the numbers and location of where the collected tyres are disposed.

TyreTrack is not widely promoted by local authorities. Steve Downes of TyreTrack notes that Invercargill City Council is an exception. Many local authorities comment that the scheme is limited in its effectiveness due to the fact that it is voluntary with inadequate checks on where tyres are going and which members actually own and operate shredding equipment.

4. Regional Summaries

4.1 Introduction

This section presents a brief summary of the data collected on the planning framework, non MSW landfills, organic waste processing and used tyre management in each region. The information is presented in summary form only.

4.2 Northland Region

Table 4 summarises the data supplied by the waste facilities in the Northland Region. It gives the number of facilities, the number of sites that provided quantity information and the quantity of waste they estimated that they received. The last row provides an estimate of the total quantity of material accepted at all sites.

- **Table 4 Number of sites and quantities of waste accepted**

	Organic Waste Processing Facilities	Solid Waste Disposal Sites[1]	Tyre Processing Facilities
Number of sites	2	2	0
No. (% of total) of sites providing quantity information	1 (50%)	1 (50%)	n/a
Quantity of waste accepted by responding sites	477	16,000	n/a
Estimated total quantity of material accepted from all sites	n/a	247,232[2] t/yr 46,714[3] - 290,452[3] tyr	n/a

Notes:
1. Table excludes 3 MSW Landfills that were excluded from the survey
2. Based on Canterbury per capita figure of 1.665 t/capita.yr
3. Based on Gisborne per capita figure of 0.315 t/capita.yr
4. Based on Tasman per capita figure of 2.448 t/capita.yr

4.2.1 Planning Rules

Cleanfill

- The cleanfill definition is consistent with that of MfE.
- Cleanfills are permitted up to 1000m^3/year and the discharge of contaminants to water bodies is kept within certain levels.

Organic waste processing

- There is no definition of composting facilities.
- The discharge of contaminants to land is permitted provided that no contaminants enter water, there are no hazardous substances discharged and odour is contained.

4.2.2 Solid Waste Disposal Sites

The closed Pohe Island landfill in Whangerei is accepting cleanfill as part of the rehabilitation. There is also a cleanfill in Whangarei that is accepting cleanfill as part of the rehabilitation of

dredge ponds. Northland Regional Council assumes that the majority of cleanfill material is being disposed of as a permitted activity therefore there are uncertainties regarding the locations of sites and quantities of material being dumped. The quantity of material being dumped has been estimated as being in the range 46,714 - 290,452 t/yr.[6]

4.2.3 Organic Waste Processing Facilities

There are two consented composting operations in the region - Sustainable Waste Management Limited (of which little is known) and Avoca Lime Company. Avoca Lime Company is accepting 2,500m3/yr of paunch grass which is mixed with sawdust and composted in a windrow system. Green waste is accepted at the Whangarei Transfer Station and transported to Living Earth in Auckland for processing into compost. A small amount of green waste is accepted at Far North District Council transfer stations for shredding.

4.2.4 Management of Used Tyres

Councils are not doing any work to manage end of life tyres and do not hold any information regarding them. The Council does not know how many used tyres are produced in the region but estimates that many would be used to hold down silage covers or other uses on farms. Tyres that are collected commercially are taken to Auckland for disposal. The local authorities do not have any intentions for end of life tyre management in the future as they are not seen as a priority. The public are reporting incidents of illegal tyre dumping but the councils do not field many queries regarding tyre disposal.

[6] Based on Gisborne (lower) and Tasman (upper) data

4.3 Auckland Region

Table 5 summarises the data supplied by the waste facilities in the Auckland Region. It gives the number of facilities, the number of sites that provided quantity information and the quantity of waste they estimated that they received. The last row provides an estimate of the total quantity of material accepted at all the solid waste disposal sites.

- **Table 5 Number of sites and quantities of waste accepted**

	Organic Waste Processing Facilities	Solid Waste Disposal Sites [1]	Tyre Processing Facilities
Number of sites	4	35	1
No. (% of total) of sites providing quantity information	4 (100%)	8 (23%)	unknown
Quantity of waste accepted by responding sites	120,200 t/yr	739,340	unknown
Estimated total quantity of material accepted from all sites	n/a	2,169,869[2] t/yr 409,991[3] – 2,549,195 t/yr	unknown

Notes:
1. Table excludes 3 MSW Landfills that were excluded from the survey
2. Based on Canterbury per capita figure of 1.665 t/capita.yr
3. Based on Gisborne per capita figure of 0.315 t/capita.yr
4. Based on Tasman per capita figure of 2.448 t/capita.yr

4.3.1 Planning Rules

Landfills

The definition in the Auckland Air, Land and Water Plan is consistent with the MfE Cleanfill Definition. The discharge of contaminants onto or into land from a cleanfill is a permitted activity where:

- the siting, design, installation and management is in accordance with the MfE 'A Guide to the Management of Cleanfills' (2002);
- The site is not located in a wetland, natural lake, natural stream or high use stream management area(s); and
- The site is not located in a floodplain or watercourse, an area with a high risk of instability or a site with a slope greater than 150.

The operation of a landfill activity is currently subject to the provisions of the Auckland Regional Plan: Sediment Control (2001). Under the Sediment Control Plan, earthworks on all soils within the sediment control protection area, with an area less than 0.25 hectares is a permitted activity.

Earthworks on all soils outside the sediment control protection area, with an area of less than 1.0 ha where the land has a slope less than 15º or an area less than 0.25 ha where the land has a slope equal to or greater than 15º are also permitted.

Auckland Regional Council has also recently consented six 'managed fill sites' where low level contaminants can be discharged. Two of these sites have not been included in the survey as they are disposing of waste onsite from their own operations. As well as cleanfill as defined by MfE, these sites can also accept low level contaminants according to certain criteria.

Organic Waste Processing
Composting is defined as the biological treatment or decomposition of organic material under controlled conditions. Composting is permitted subject to capacity restrictions (between $10m^3$-$100m^3$ of compost on site at any one time) dependant of materials being processed and whether the activity is within the Urban Air Quality Management Area.

4.3.2 Solid Waste Disposal Sites

The Regional Council is developing a register of landfills. These sites are carefully regulated with consent conditions related to truck movements, noise, dust and volumes. Thirty cleanfills were identified in this survey. There are six managed fills, two of which have been excluded as the material is from their own operations and is dumped on site. There is also one closed MSW landfill, Greenmount Landfill, which is accepting cleanfill as part of the rehabilitation. The total quantity of material being dumped has been estimated to be 2,169,869t/yr[7].

4.3.3 Organic Waste Processing Facilities

Four organic waste processing facilities are present within the Auckland Region. The total annual tonnage of material processed is 120,200t/yr. PVL Proteins are processing 60,000t/yr of fish waste into a fertiliser. The remainder of the material is mainly greenwaste and small amounts of food waste. Processing technology is a mix of invessel (Vertical Composting Units) and open windrow. The product is a compost which is sold to the public and businesses or used onsite.

4.3.4 Management of Used Tyres

The Auckland Regional Council does not have a role in end of life tyre management. However, the ARC notes that there are non consented storage and recycling sites operating within the Auckland Region. The Auckland City Council has experienced large scale illegal dumping of used tyres – there were 10,500 tyres illegally dumped in 2007. There is one tyre recycler in the region, J. J. Laughton.

[7] Based on Canterbury per capita waste tonnage

4.4 Bay of Plenty

Table 6 summarises the data supplied by the waste facilities in the Bay of Plenty Region. It gives the number of facilities, the number of sites that provided quantity information and the quantity of waste they receive.

- **Table 6 Number of sites and quantities of waste accepted**

	Organic Waste Processing Facilities	Solid Waste Disposal Sites	Tyre Processing Facilities
Number of sites	7	15	0
No. (% of total) of sites providing quantity information	5 (71%)	15 (100%)	-
Quantity of waste accepted by responding sites	42,880 t/yr	126,000 t/yr	-

Note: Table excludes 1 MSW Landfill that was excluded from the survey

4.4.1 Planning Rules

Landfills

The cleanfill definition is largely consistent with that of MfE. The definition allows for up to 10 percent (by volume) of untreated timber in each load of cleanfill.

Cleanfill sites that do not discharge leachate or contaminants to land are included in the definition of 'earthworks' and addressed by rules in section 9.2 of the Proposed Water and Land Plan. Permitted Activity thresholds for Earthworks and Quarries not in the urban area, the riparian management zone, the coastal zone or the erosion hazard zone depend on the slope of the site.

Where a Cleanfill site does discharge leachate or contaminants to land or water or is not within the slope thresholds consent is required for a discretionary activity under rule 37 of the Proposed Regional Water and Land Plan.

Organic Waste Processing

The Proposed Regional Water and Land Plan provides a definition of Green Waste as waste organic material, including:

(a) vegetative material, but not tree trunks or limbs larger than 100 mm diameter;

(b) vegetable peelings or trimmings and other organic kitchen wastes; and

(c) soil attached to plant roots.

Green waste does not include hazardous substances, treated timber, or animal products including manure, feathers, carcasses and the like (other than as an occasional or incidental input).

The discharge of leachate from composting operations to land in circumstances where leachate may enter water is a permitted activity, subject to conditions on the types of material composted, the discharge of leachate to surface water, the ponding of leachate, stormwater diversion and the distance from water bodies (streams, lakes, rivers and the CMA). Where a composting operation is an enclosed system, or the composting is carried out on a concrete pad where the leachate is recirculated into the pile, resource consent is not required under the Proposed Regional Water and Land Plan.

Under the Regional Air Plan, commercial composting is a discretionary activity.

4.4.2 Solid Waste Disposal Sites

There are 16 cleanfills in the region accepting an estimated combined total of 126,000t/yr (EBoP Waste Stocktake).

4.4.3 Organic Waste Processing Facilities

There are eight organic waste processing facilities operating within the Bay of Plenty region. Five of these eight sites have reported they are processing a total of 42,880t/yr of organic material. Vitec are processing fish silage, the others are using greenwaste, chicken manure, bark, sawdust and biosolids and feedstocks.

4.4.4 Management of Used Tyres

Environment Bay of Plenty does not have any specific controls regarding the management of used tyres. However, the Council is monitoring the situation and working with territorial authorities. The total number of end of life tyres disposed of in the region each year is not known however 3,165 tyres were accepted at Whakatane's Burma Road transfer station from May to December 2007. Whakatane and Kawerau district councils are considering putting up the disposal cost of tyres at their landfills to recover costs. Councils would also like information regarding economically viable reuse options and best practice guidance.

Council does not have any specific intentions for end of life tyre management in the future. The management of used tyres is seen as a waste issue that regional support may be given to if territorial authorities seek assistance.

4.5 Gisborne District

Table 7 summarises the data supplied by the waste facilities in the Gisborne District. It gives the number of facilities, the number of sites that provided quantity information and the quantity of waste they receive.

- **Table 7 Number of sites and quantities of waste accepted**

	Organic Waste Processing Facilities	Solid Waste Disposal Sites	Tyre Processing Facilities
Number of sites	1	2	0
No. (% of total) of sites providing quantity information	1 (100%)	2 (100%)	-
Quantity of waste accepted by responding sites	3,150 t/yr	14,000 t/yr	-

Note: Table excludes 1 MSW Landfill that was excluded from the survey

4.5.1 Planning Rules

Landfills

The definition of cleanfill is consistent with MfE's definition. Cleanfills are permitted providing odour is contained, material is contained, vermin are excluded and the siting is suitable.

Gisborne also has two Restricted Waste Disposal Facilities (RWDF). These sites have specific consent to accept waste that is not cleanfill but not to accept domestic, hazardous or liquid waste. Acceptable materials include asbestos, cured asphalt, untreated sawdust and wood-waste, boiler ash, low level contaminated soils.

Organic Waste Processing

All Commercial Composting Activities require a consent under Rule 2.6.6 of the District Plan.

4.5.2 Solid Waste Disposal Sites

- The survey identified no cleanfills.
- There are two 'Restricted Waste Disposal Sites' in Gisborne accepting at total of 14,000t/yr as estimated by the site operators.

4.5.3 Organic Waste Processing Facilities

There is one composting operation accepting 3150t/yr (estimate of operator) of greenwaste, bark and grape marc.

4.5.4 Management of Used Tyres

The Council has no specific policies to manage used tyres and their numbers are unknown. Options for disposal of tyres in Gisborne include:

- Transpacific AllBrites Resource Recovery Facility accepts tyres and disposes of them at the Tirohea landfill;
- The GDC rural transfer stations collect and then dump tyres at AllBrites or the Waiopu Landfill;
- The Tonylon Restricted Waste Disposal Facility also disposes of tyres;
- The Matokitoki Restricted Waste Disposal Facility used to take tyres but not anymore. Farmers take tyres for silage heaps (holding down the tarps).

4.6 Waikato Region

Table 8 summarises the data supplied by the waste facilities in the Waikato Region. It gives the number of facilities, the number of sites that provided quantity information and the quantity of waste they receive.

- **Table 8 Number of sites and quantities of waste accepted**

	Organic Waste Processing Facilities	Solid Waste Disposal Sites	Tyre Processing Facilities
Number of sites	8	17	0
No. (% of total) of sites providing quantity information	6 (75%)	17 (100%)	-
Quantity of waste accepted by responding sites	42,608 t/yr	597,700 t/yr	-

Note: Table excludes 7 MSW Landfills that were excluded from the survey

4.6.1 Planning Rules

Landfills

The cleanfill definition used by Environment Waikato definition is consistent with that of MfE. A resource consent is required for any cleanfill accepting over 2500m^3/year. The Council requires written notification of any cleanfill disposal over a total of 1000m^3. The Council holds discretion over any relevant matters regarding solid waste management activities in the Rural Zone other than cleanfilling.

Organic Waste Processing

Organic material is anything that originally came from a plant and or an animal (including garden and kitchen waste or manure), which can decompose naturally. Composting is permitted providing the total volume of compost produced at the site does not exceed 20 cubic metres per annum. Or if carried out at a council run transfer station the total volume of greenwaste on site does not exceed 1500 m^3.

4.6.2 Solid Waste Disposal Sites

There are 15 cleanfills and two C&D landfills accepting an estimated 597,700t/yr (Environment Waikato, 2006).

4.6.3 Organic Waste Processing Facilities

There are eight composting operations in the region six of which are processing a combined total of approximately 42,608t/yr (Environment Waikato, 2006). There are six windrow operations and two VCU systems (Tirohia and Matamata).

4.6.4 Management of Used Tyres

Tyres are dealt with on a case by case basis in the region as there are no specific policies. The Council believes the issue is a national one that is best addressed by producer responsibility. Implementing producer responsibility legislation would be the most effective option for dealing with them.

4.7 Taranaki Region

Table 9 summarises the data supplied by the waste facilities in the Taranaki Region. It gives the number of facilities, the number of sites that provided quantity information and the quantity of waste they receive.

- **Table 9 Number of sites and quantities of waste accepted**

	Organic Waste Processing Facilities	Solid Waste Disposal Sites	Tyre Processing Facilities
Number of sites	9	22	1 proposed facility
No. (% of total) of sites providing quantity information	3 (33%)	22 (100%)	-
Quantity of waste accepted by responding sites	27,540 t/yr	100,000 t/yr	-

Note: Table excludes 2 MSW Landfills that were excluded from the survey

4.7.1 Planning Rules

Landfills

- The cleanfill definition is consistent with that of MfE.
- All solid waste disposal sites require resource consents - there are no permitted cleanfills in the region.

The Taranaki Regional Council has implemented a monitoring programme for a number of cleanfill operators within the Taranaki region. The monitoring is reported on a biennial basis.

Organic waste processing

The Council defines composting as; *"Composting: The biological breakdown of organic solids, so as to stabilise them, producing a humic substance (compost) valuable in some circumstances as a soil conditioner".*

Biofills are defined as *"Biofills: A concept in which it is envisaged a landfill is designed and operated as an anaerobic digester on a grand scale. The processes of decomposition are controlled and managed in a similar manner to other digesters. At present, the concept is not fully realised due to the prevailing inability to control and modify adequately landfill decomposition processes and their rates of reaction".*

4.7.2 Solid Waste Disposal Sites

There are 22 cleanfills, two of which are closed MSW landfills accepting cleanfill as part of their rehabilitation. The total annual quantity of cleanfill dumped is around 254,870t/yr according to site operators.

4.7.3 Organic Waste Processing Facilities

There are nine composting operations in the region processing a range of material including chicken manure, greenwaste, food waste and biosolids using windrow and vermicomposting techniques. Three of these facilities are processing a combined total of 27,540t/yr.

4.7.4 Management of Used Tyres

There are no specific policies to manage used tyres although the burning of tyres is prohibited unless a special incinerator is used. Meredith Metal recyclers in New Plymouth have recently acquired a tyre granulator and plan to export granulated material to China.

4.8 Hawkes Bay

Table 10 summarises the data supplied by the waste facilities in Hawkes Bay. It gives the number of facilities, the number of sites that provided quantity information and the quantity of waste they estimated that they received. The last row provides an estimate of the total quantity of material accepted at all the solid waste disposal sites.

- **Table 10 Number of sites and quantities of waste accepted**

	Organic Waste Processing facilities	Solid Waste Disposal Sites[1]	Tyre Processing Facilities
Number of sites	2	18	0
No. (% of total) of sites providing quantity information	1 (50%)	7 (39%)	-
Quantity of waste accepted by responding sites	3,000 t/yr	50,720t/yr	-
Estimated total quantity of material accepted from all sites	n/a	246,089[2] t/yr 46498[3] – 289,108[4]	-

Notes:
1. Table excludes 3 MSW Landfills that were excluded from the survey
2. Based on Canterbury per capita figure of 1.665 t/capita.yr
3. Based on Gisborne per capita figure of 0.315 t/capita.yr
4. Based on Tasman per capita figure of 2.448 t/capita.yr

4.8.1 Planning Rules

Landfills

The Cleanfill definition is consistent with that of MfE with the exception of an allowance of 10% by volume of untreated timber in each load. Cleanfill disposal is permitted providing that the discharge is no greater than 50 m^3/d and the cleanfill meets other criteria related to the discharge of containments, groundwater contamination, dust and erosion control. Where the volume of solid contaminants on the subject property is greater than 100 m^3 the Hawkes Bay Regional Council is to be notified.

Organic waste processing

- Composting operations are permitted providing odour and dust are contained, surface ponding and runoff is excluded and compost application meets certain criteria.
- Composting or storage of more than 100 m^3 (in total) of raw material at any one time is a discretionary activity.

4.8.2 Solid Waste Disposal Sites

The Council developed a spreadsheet containing the particulars of cleanfill sites two years ago - 18 of these are relevant to this survey. These sites were located largely through word of mouth with three having resource consent. None of the sites are actively monitored. Site visits are only carried out if the site becomes an environmental/human risk. An estimated 246,088 t/yr are received at these sites.[8]

4.8.3 Organic Waste Processing Facilities

The Napier City Council operate an outdoor windrow composting system processing 3,000 t/yr of greenwaste.

Greenwaste from the Napier/Hastings waste transfer station goes to Panpac where it is used as fuel along with wood processing waste wood waste fired boiler. Agrich Organics have recently closed their composting facility in Awatoto due to biosecurity issues.

4.8.4 Management of Used Tyres

The Council does not hold any information on end of life tyres in Hawke's Bay and the numbers are unknown. The Council prohibits the burning of tyres.

Hawkes Bay Regional Council are currently working with the Napier City Council and the NZ Fire Service to resolve the current problem of a "tyre mountain" (estimated to be well in excess of 200,000 tyres) which is sited at the end of Mersey Street, Pandora Industrial area, Napier. The person responsible (Bill Lambert at 'Retired Tyre Company') for this tyre storage is still attempting to ship these tyres to China. The main concern is the risk of fire, in particular the possibility of arson, as the prevailing wind blows directly over the Napier City residential and main industrial areas and the smoke from any fire involving the tyres would result in a mass evacuation of the residential areas.

The main concern for the Regional Council is to prevent any further major tyre storage unless the storage meets appropriate guidelines.

The Council is looking to facilitate a solution to the current tyre storage problem. Tyre dumping on Hawke's Bay river banks has increased greatly over the last two years as people seek to avoid paying any disposal costs.

[8] Based on Canterbury per capita waste tonnage

4.9 Horizons (Manawatu-Wanganui Region)

Table 18 summarises the data supplied by the waste facilities in the Manawatu-Wanganui Region. It gives the number of facilities, the number of sites that provided quantity information and the quantity of waste they estimated that they received. The last row provides an estimate of the total quantity of material accepted at all the solid waste disposal sites.

- **Table 18 Number of sites and quantities of waste accepted**

	Organic Waste Processing Facilities	Solid Waste Disposal Sites[1]	Tyre Processing Facilities
Number of sites	5	12	1
No. (% of total) of sites providing quantity information	1 (20%)	6 (50%)	1 (100%)
Quantity of waste accepted by responding sites	2,940	26,462 t/yr	18,000tyres/yr
Estimated total quantity of material accepted from all sites	n/a	370,380[2] t/yr 69,982[3] – 435,127[4] t/yr	n/a

Notes:
1. Table excludes 8 MSW Landfills that were excluded from the survey
2. Based on Canterbury per capita figure of 1.665 t/capita.yr
3. Based on Gisborne per capita figure of 0.315 t/capita.yr
4. Based on Tasman per capita figure of 2.448 t/capita.yr

4.9.1 Planning Rules

Landfills

In the operative Manawatu-Wanganui Regional Plan there is no mention of cleanfills. In a practical sense cleanfills are considered as permitted under the general permitted activity provisions. This was confirmed by Council staff. Therefore, locating disposal sites proved to be difficult in the absence of formal records or monitoring activity.

The proposed Horizons One Plan defines cleanfill and has set permitted activity criteria as follows;

- The cleanfill definition is consistent with that of MfE. Cleanfill may contain up to 5% by weight putrescible matter, degradable or leachable components;
- Cleanfill means a landfill that accepts only material that, when buried or placed, will not have an adverse effect on the environment;
- Cleanfills are permitted up to 2,500m^3/year and must be sited appropriately with regard to landscape type and slope stability.

Organic waste processing

Composting is defined as *"the biological treatment or decomposition of organic material under controlled conditions to produce a stabilised product which is potentially beneficial to plant growth."*

Composting is permitted providing the material is greenwaste, free of hazardous substances, is sited with regard to at-risk habitat, water resources and the operation is managed to collect runoff and offensive odours are contained.

4.9.2 Solid Waste Disposal Sites

There are 11 cleanfills and one MSW landfill that was not included in MfE's 2006 Landfill Census (Waiouru, owned by the NZ Defence Force and operated by Transfield Services Limited). These sites accept an estimated 69,982 – 435,127 t/yr[9].

4.9.3 Organic Waste Processing Facilities

There are five composting operations in the region. The quantity of material being accepted is only known at one facility.

4.9.4 Management of Used Tyres

Burgess Matting & Surfacing Ltd in Wanganui is recycling approximately 18,000 tyres per year into rubber matting surfaces for play areas.

The Council has no policy to manage used tyres and take a 'hands off approach to the activity. Their numbers are unknown however:

- A small percentage of used tyres are used to hold down silage covers;
- The council has no future plans to manage tyres other than to encourage TA's to implement the waste hierarchy of reduce, reuse, recycle;
- The Palmerston North City Council are "collecting" tyres at the former Awapuni landfill (now known as the Resource Recovery Centre).

[9] Based on Gisborne (lower) and Tasman (upper) data

4.10 Wellington Region

Table 11 summarises the data supplied by the waste facilities in the Wellington Region. It gives the number of facilities, the number of sites that provided quantity information and the quantity of waste they estimated that they received. The last row provides an estimate of the total quantity of material accepted at all the solid waste disposal sites. This is a function of the Wellington region's population multiplied by the Canterbury waste tonnage per capita (1.665t/capita/yr) for which we have the most accurate quantity information.

- **Table 11 Number of sites and quantities of waste accepted**

	Organic Waste Processing Facilities	Solid Waste Disposal Sites[1]	Tyre Processing Facilities
Number of sites	5	14	1
No. (% of total) of sites providing quantity information	4 (80%)	4 (29%)	0
Quantity of waste accepted by responding sites	26,200 t/yr	211,750 t/yr	-
Estimated total quantity of material accepted from all sites	n/a	747,604[2] t/yr 141,257[3] – 878,294[4] t/yr	-

Notes:
1. Table excludes 6 MSW Landfills that were excluded from the survey
2. Based on Canterbury per capita figure of 1.665 t/capita.yr
3. Based on Gisborne per capita figure of 0.315 t/capita.yr
4. Based on Tasman per capita figure of 2.448 t/capita.yr

4.10.1 Planning Rules

Landfills

- Cleanfill definition is consistent with that of MfE.
- Cleanfills do not require resource consent providing there is no contamination of water bodies.
- Landfills, rubbish dumps and tips are discretionary activities (discharge rules; 2, 10, 20 and 23). Deposition in, on or under the foreshore or seabed is a non-complying activity.
- There are several "construction and demolition landfills" covered by resource consents. These sites are accepting material that does not meet the cleanfill definition.

Organic waste processing

Rule 20 in the Discharges to Land Plan states that composting is permitted on sites where the organic material was generated and providing that odour, gas and dust are contained within the site. Otherwise the activity is discretionary according to Rule 23.

4.10.2 Solid Waste Disposal Sites

There are 12 consented cleanfills in the region that are discharging contaminants to water or air. There are also two consented construction and demolition landfills. An estimated 747,602[10] t/yr is received at these sites.

4.10.3 Organic Waste Processing Facilities

There are five composting operations in the region processing over 26,000 t/yr of greenwaste according to the operators.

4.10.4 Management of Used Tyres

There are no specific policies. Tyres are generally collected, shredded and dumped at MSW landfills. Matta Products in Otaki produce playground matting using shredded tyres.

[10] Based on Canterbury data

4.11 Tasman District

Table 12 summarises the data supplied by the waste facilities in Tasman District. It gives the number of facilities, the number of sites that provided quantity information and the quantity of waste they receive.

- **Table 12 Number of sites and quantities of waste accepted**

	Organic Waste Processing Facilities	Solid Waste Disposal Sites	Tyre Processing Facilities
Number of sites	3	9	0
No. (% of total) of sites providing quantity information	1 (33%)	9 (100%)	-
Quantity of waste accepted by responding sites	1,890 t/yr	87,300 t/yr	-

Note: Table excludes 2 MSW Landfills that were excluded from the survey

4.11.1 Planning Rules

Landfills

The cleanfill definition is consistent with that of MfE with the exception of an allowance for up to 10% by volume of organic material.

There are no rules specific to the discharge of cleanfill material or solid waste (landfill) material to land. Therefore, the activities are both deemed to be discretionary under Rule 36.1.16 of the Tasman Resource Management Plan. Discharges to air from landfills are covered in the plan which is a discretionary activity under Rule 36.3.10 B (i).

Organic waste processing

Composting is permitted providing it contains no hazardous substances, there is no leachate runoff into water, the site is >50m from a water body, >20m from a domestic water supply, >10m from an adjoining property and there is no objectionable odour beyond the property boundary. Otherwise the activity is discretionary.

4.11.2 Solid Waste Disposal Sites

The District contains nine cleanfill sites disposing an estimated 87,200 t/yr.

4.11.3 Organic Waste Processing Facilities

There are three composting operations diverting greenwaste from landfill in the District. Greenwaste to Zero is operating a windrow system receiving approximately 1850 t/yr of

greenwaste from members of the pubic and council landscaping contractors. Bay Landscapes are buying bark chippings from Bark Processors and mixing them with a fish based fertiliser. Tasman Valley Compost is also producing compost however the quantities of material being accepted are unknown.

4.11.4 Management of Used Tyres

The Council has no specific policies to manage used tyres. They are disposed of at the MSW landfill at a charge ranging from $3 to $25 depending on tyre size.

4.12 Nelson City

Table 13 summarises the data supplied by the waste facilities in Nelson City. It gives the number of facilities, the number of sites that provided quantity information and the quantity of waste they receive.

- **Table 13 Number of sites and quantities of waste accepted**

	Organic Waste Processing Facilities	Solid Waste Disposal Sites	Tyre Processing Facilities
Number of sites	1	4	0
No. (% of total) of sites providing quantity information	1 (100%)	4(100%)	n/a
Quantity of waste accepted by responding sites	1800 t/yr	46,500 t/yr	n/a

Note: Table excludes 1 MSW Landfills that was excluded from the survey

4.12.1 Planning Rules

The cleanfill definition is consistent with that of MfE. No organic material is allowed.

Older cleanfills that cannot meet this definition are operated with minimal consent conditions. Sites that have been consented more recently are subject to more stringent regulations including the development of site management plans.

4.12.2 Solid Waste Disposal Sites

There are four cleanfills currently operating in Nelson, one of which is unconsented as it was formed before the current rules were in place. The total volume of material dumped is 46,500t/yr according to site operators.

4.12.3 Organic Waste Processing Facilities

There is one operation that is accepting approximately 1,800t/yr of greenwaste.

4.12.4 Management of Used Tyres

- Numbers are unknown.
- Tyres are rimmed and quartered at transfer station and sent to York Landfill. Whole tyres are accepted at the landfill for $5.
- The Council intends to find an alternative use for them such as incorporation into road surface or hardfill.

4.13 Marlborough District

Table 17 summarises the data supplied by the waste facilities in the Marlborough District. It gives the number of facilities, the number of sites that provided quantity information and the quantity of waste they receive.

- **Table 17 Number of sites and quantities of waste accepted**

	Organic Waste Processing Facilities	Solid Waste Disposal Sites	Tyre Processing Facilities
Number of sites	1	7	0
No. (% of total) of sites providing quantity information	none	7 (100%)	n/a
Quantity of waste accepted by responding sites	n/a	30,760 t/yr	n/a

Note: Table excludes 1 MSW Landfill that was excluded from the survey

4.13.1 Planning Rules

Landfills

The cleanfill definition is consistent with that of MfE.

Cleanfills are permitted providing the total volume of material is less than 1000m^3, the site is operated within certain hours, is not within certain land classifications and the site is rehabilitated once complete. Resource consents specify either 5% or 10% organic material.

Clive Pinkham's cleanfill in Picton is allowed 5% timber, steel, road bitumen, iron, plasterboard and other structural materials.

Organic waste processing

Although composting is not defined in the Marlborough Sounds Resource Management Plan, the Plan sets out specific site management commitments which must be met for an operation to be permitted.

4.13.2 Solid Waste Disposal Sites

There are seven cleanfills in the District accepting over 30,760 t/yr according to site operators.

4.13.3 Organic Waste Processing Facilities

Green Fingers Partnership is the only composting operation in the District. The quantities of greenwaste and bark being received are unknown.

4.13.4 Management of Used Tyres

The Council transfer station and landfill accepts approximately 2,000 used tyres each year which are quartered and landfilled. There is no future management plan.

The burning of any other PVC plastic, or rubber tyres, treated timber, or agricultural chemical wastes is prohibited.

4.14 West Coast Region

Table 14 summarises the data supplied by the waste facilities in the West Coast Region. It gives the number of facilities, the number of sites that provided quantity information and the quantity of waste they receive.

Table 14 Number of sites and quantities of waste accepted

	Organic Waste Processing Facilities	Solid Waste Disposal Sites	Tyre Processing Facilities
Number of sites	0	12	0
No. (% of total) of sites providing quantity informatoin	n/a	12 (100%)	n/a
Quantity of waste accepted by responding sites	n/a	25,900 t/yr	n/a

Note: Table excludes 2 MSW Landfills that were excluded from the survey

4.14.1 Planning Rules

Landfills

The cleanfill definition is consistent with that of MfE.

The discharge of solid waste into or onto production land is a permitted activity up to a total of 5000m^3 provided that there is no contamination of water, no hazardous substances are dumped, smoke, dust, gas or odour is not noxious, dangerous or objectionable, and litter is contained in the property boundary. Otherwise it is a discretionary activity.

Cleanfills are not monitored on the West Coast.

Composting

Composting is permitted provided that the waste is from the owner's property, water is not contaminated, no hazardous substances are used and litter is contained. Otherwise, composting is a discretionary activity.

4.14.2 Solid Waste Disposal Sites

There are 12 solid waste disposal sites on the West Coast. Nine are consented and three are unconsented in agreement with the Regional Council. An estimated 25,900 t/year is disposed of at the six main disposal sites according to the site operators There are however, many cleanfill disposal sites used by earthworks contractors that accept less than 1000 m^3/year. These are used by

roading contractors to dump slip material. Transit NZ are currently employing Opus consultants to find suitable sites in negotiation with the Department of Conservation.

There is a history of illegal dumping of cleanfill on the West Coast largely due to large distances between cleanfills and extent of reserve land and DOC owned land.

4.14.3 Organic Waste Processing Facilities

There are no composting operations on the West Coast. Green waste is shredded and used for landfill cover at several of the MSW landfills in the region.

4.14.4 Management of Used Tyres

The councils have no specific policy to manage use tyres.

4.15 Southland Region

Table 15 summarises the data supplied by the waste facilities in the Southland Region. It gives the number of facilities, the number of sites that provided quantity information and the quantity of waste they estimated that they received.

- **Table 15 Number of sites and quantities of waste accepted**

	Organic Waste Processing Facilities	Solid Waste Disposal Sites	Tyre Processing Facilities
Number of sites	3	4	0
No. (% of total) of sites providing quantity information.	3 (100%)	4(100%)	n/a
Quantity of waste accepted by responding sites	6,727 t/yr	19,207 t/yr	n/a

Note: Table excludes 1 MSW Landfills that was excluded from the survey

4.15.1 Planning Rules

Landfills

The cleanfill definition is consistent with that of MfE.

They are permitted activities providing the material is produced on site, no offal or hazardous waste is disposed of and waste is not disposed with 50m of: a water body, a water supply bore, a historic place or any property boundary.

The plan also states that discharge of cleanfill or tree stumps is a permitted activity provided it is not located within 10m of a bed of any lake or river, is not deeper than 2m and is <500 m3 in volume.

4.15.2 Solid Waste Disposal Sites

There are four cleanfills operating in the Invercargill area that are accepting a total of 19,207 t/yr. There are likely to be other smaller sites in the region that the survey was unable to locate.

4.15.3 Organic Waste Processing Facilities

There are three open windrow systems in the region operated by district/city councils processing a total of 6,727 t/yr of greenwaste and a small amount of biosolids.

4.15.4 Management of Used Tyres

The councils have no specific policy to manage used tyres and no plans to develop any.

4.16 Otago Region

Table 16 summarises the data supplied by the waste facilities in the Otago Region. It gives the number of facilities, the number of sites that provided quantity information and the quantity of waste they estimated that they received. The last row provides an estimate of the total quantity of material accepted at all the solid waste disposal sites. This is a function of the Otago region's population multiplied by the Canterbury waste tonnage per capita (1.665t/capita/yr) for which we have the most accurate quantity information.

- **Table 16 Number of sites and quantities of waste accepted**

	Organic Waste Processing Facilities	Solid Waste Disposal Sites[1]	Tyre Processing Facilities
Number of sites	2	14	0
No. (% of total) of sites providing quantity information	none	5 (36%)	n/a
Quantity of waste accepted by responding sites	n/a	21,270 t/yr	n/a
Estimated total quantity of material accepted from all sites	n/a	322,717[2] t/yr 60,976[3] - 435,127[4] t/yr	n/a

Notes:
1. Table excludes 8 MSW Landfills that were excluded from the survey
2. Based on Canterbury per capita figure of 1.665 t/capita.yr
3. Based on Gisborne per capita figure of 0.315 t/capita.yr
4. Based on Tasman per capita figure of 2.448 t/capita.yr

4.16.1 Planning Rules

Landfills

The cleanfill definition is consistent with that of MfE. Cleanfills are permitted activities with no size constraints. There is no monitoring or record of cleanfills.

Farm landfills are permitted activities providing they are sited with respect to water resources and no hazardous waste or any other toxic matter, sewage, offal, or animal effluent is dumped and impacts beyond the site are not objectionable and waste is not burned.

Greenwaste landfills are permitted providing they do not allow groundwater seepage into the pit, are located >50m from a water resource for humans or >100 m for a human water resource, leachate does not enter a water body and does not have impacts beyond the property boundary.

Organic waste processing

Composting is a permitted activity providing groundwater does not seep into the pit, it is >50m from a water body, leachate does not enter any water body, there are no impacts beyond the property boundary and the majority of greenwaste is sourced on the property. Otherwise the activity is discretionary.

4.16.2 Solid Waste Disposal Sites

There are two MSW landfills not covered in MfE's 2006 landfill survey (Tarras and Patearoa, both owned and operated by Central Otago District Council). They are used by the local rural residents to dump very small amounts of waste and have no leachate or gas collection systems. The closed Wanaka landfill is accepting cleanfill as part of its rehabilitation.

The survey located eleven cleanfills.

Cleanfill disposal is likely to be in the range 60,976 - 379,131 t/yr[11].

4.16.3 Organic Waste Processing Facilities

There are two windrow composting operations in the region. They are based at the Green Island transfer station in Dunedin and Wanaka municipal waste landfill (which is now closed for municipal waste). The quantity of material processed is not known.

4.16.4 Management of Used Tyres

There is no specific policy to manage used tyres. Tyres are stockpiled at landfills where they are collected by farmers. The stockpile has size restrictions.

[11] Based on Gisborne (lower estimate) and Tasman (upper estimate) data

4.17 Canterbury Region

Table 16 summarises the data supplied by the waste facilities in the Canterbury Region. It gives the number of facilities, the number of sites that provided quantity information and the quantity of waste they receive.

- **Table 16 Number of sites and quantities of waste accepted**

	Organic Waste Processing Facilities	Solid Waste Disposal Sites	Tyre Processing Facilities
Number of sites	18	25	0
No. (% of total) of sites providing quantity information	8 (44%)	25 (100%)	n/a
Quantity of waste accepted by responding sites	60,239 t/yr	868,958 t/yr	n/a

Note: Table excludes 2 MSW Landfills that were excluded from the survey

4.17.1 Planning Rules

Landfills

The cleanfill definition is consistent with that of MfE. Most consents allow vegetative material of between 2.5 and 5% of the volume of each load.

Cleanfills are permitted if they were established before 2002 subject to certain conditions regarding dispersal of contaminants and odour.

The Water Quality Plan requires consent for cleanfilling activities in some situations:

- Rule WQL40 - Excavation of land in the Coastal Confined Gravel Aquifer System, or over an unconfined or semi-confined aquifer – restricted discretionary activity.
- Rule WQL41 Deposition of more than 20 cubic metres of material into excavated land over an unconfined or semi-confined aquifer - controlled activity.

Cleanfills in Christchurch City operate under the Christchurch City Council Cleanfill Licensing Bylaw 2003 which requires the person that owns or controls the land to obtain a license where more than $50m^3$ is disposed of in a 12 month period. Cleanfills are inspected under the Bylaw and the licensee is required to report on volumes of material being disposed. The licensee is required to report on volume of material and sites are inspected. Vegetative matter must comprise less than 2.5% by volume per load and plasterboard must comprise less than 2.5% by volume per load.

Organic waste processing
Composting is defined as the biological reduction of organic matter to a relatively stable product, but it does not include bedding material (for example, straw) used as part of housing systems in intensive farming operations, nor does it include silage.

4.17.2 Solid Waste Disposal Sites
There are 25 cleanfills in the region accepting 868,958 t/yr of waste. All are consented or permitted under existing use rights such as at the numerous quarries around Christchurch.

4.17.3 Organic Waste Processing Facilities
There are 18 composting operations in the region with a range of in vessel and windrow systems.

4.17.4 Management of Used Tyres
Under the Proposed Natural Resources Regional Plan - Chapter 3 Air Quality burning tyres is prohibited. The control of the location and management of a place to store or dispose of used tyres is a function of the district/city councils, except if the tyres are buried as this is a discharge to land. The Regional Council also manages other discharges such as preventing contamination of storm water, odour, soil or air.

Environment Canterbury has no work planned with used tyres, but would support initiatives by their TLAs in this area.

Environment Canterbury would support a product stewardship scheme for tyres or a levy on new, second hand and refurbished tyres to cover the cost of recycling or disposing of old tyres. Legal backing for tyre track or a similar system may help our enforcement units who regularly get old tyres dumped on land or riverbeds, the most problematic being the large / commercial loads.

4.18 Chatham Islands

4.18.1 Planning Rules

Landfills

Cleanfills are not defined in the District Plan.

Cleanfills are permitted provided the waste is not from industrial premises, does not impact on water resources and aquatic life (criteria is not well defined). Otherwise activities are discretionary with respect to the type of contaminant to be discharged, the effect on ecosystems and rural amenity, the rate or frequency of the discharge.

Organic waste processing

Composting is not defined in the District Plan.

4.18.2 Solid Waste Disposal Sites

There are a total of three solid waste disposal sites on the Island accepting an estimated 1,014 t/yr. These are not consented, were not included in the 2006 Landfill Census and no information is held on them. They accept any type of waste, have no leachate collection/gas abstraction and are not lined.

4.18.3 Organic Waste Processing Facilities

None

4.18.4 Management of Used Tyres

No information is held on used tyres and their numbers are unknown.

The Council does not work to manage used tyres. Tyres are possibly used by farmers or go to the landfills.

5. MfE Cleanfill Definition

The Ministry for the Environment has defined acceptable cleanfill material in the 2002 document 'A Guide to the Management of Cleanfills'

For regional plans it is expected that the discharge of materials in the following list could be considered as a permitted activity for cleanfills. For district plans the placement of these materials could be expected to be permitted in areas where the plan provides for cleanfilling activities.

Asphalt (cured) - Weathered (cured) asphalt is acceptable: After asphalt has been exposed to the elements for some time, the initial oily surface will have gone and the asphalt is considered inert.

Bricks - Inert - will undergo no degradation.

Ceramics - Inert.

Concrete (un-reinforced) - Inert material. Ensure that other attached material is removed.

Concrete (reinforced) - Steel reinforcing bars will degrade. However, bars fully encased in intact concrete will be protected from corrosion by the concrete. Reinforced concrete is thus acceptable provided protruding reinforcing steel is cut off at the concrete face.

Fibre cement building products - Inert material comprising cellulose fibre, Portland cement and sand. Care needs to be taken that the product does not contain asbestos, which is unacceptable.

Glass - Inert, and poses little threat to the environment. May pose a safety risk if placed near the surface in public areas, or if later excavated. The safety risk on excavation should become immediately apparent, so glass is considered acceptable provided it is not placed immediately adjacent to the finished surface.

Paunch grass – stomach contents from abbatoir/freezing works.

Road sub-base - Inert.

Soils, rock, gravel, sand, clay, etc - Acceptable if free of contamination

Tiles (clay, concrete or ceramic) - Inert.

References

Sustainability Victoria ‘Waste Wise Events Waste Volume to Weight Conversion Table’ http://www.sustainability.vic.gov.au/resources/documents/Waste_Volume_to_Weight_Conversion_Table.pdf

USEPA ‘Measuring Recycling - A Guide for Local and State Governments', (1997)

Environment Waikato Technical Report TR0744 ‘Waikato Regional Waste Infrastructure Stocktake and Strategic Assessment’ (2006)

Environment Bay of Plenty Technical Report ‘Bay of Plenty Waste Infrastructure Stocktake and Strategic Assessment’ (2006)

Ministry for the Environment ‘The 2006/07 National Landfill Census’ (2007)