Zero Waste Events: Management of Biodegradable Event Waste in Australia

Zero Waste SA

FINAL REPORT

16 November 2005

ZERO WASTE EVENTS: MANAGEMENT OF BIODEGRADABLE EVENT WASTE IN AUSTRALIA

FINAL REPORT

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1 Introduction

On 25 October 2004, Zero Waste SA launched the Zero Waste Events Program in Adelaide, South Australia. The Zero Waste Events Program provides financial assistance and advisory support to event organisers wishing to improve waste management practices at events held within South Australia.

The primary aims of the Program are to maximise the source separation and diversion of event waste from landfill and to promote Zero Waste objectives in the community.

In order to ensure that the source separation of biodegradable waste at Zero Waste Events leads to successful diversion from landfill, it is necessary to establish sustainable pathways for the treatment of this new and evolving waste stream.

To achieve this, a series of pilot-scale trials is proposed by Zero Waste SA to test potentially suitable treatment methods with regard to technical viability and potential environmental impacts. The outcomes of the trials will facilitate the receival and treatment of biodegradable event waste by local processors. To scope the proposed trials, it is necessary to characterise the waste stream first and identify potentially suitable treatment options.

The objectives of this desktop study are to:

- Review past Australian Zero Waste Events in order to first characterise the biodegradable event waste stream and to identify treatment methods used to date; and
- Select potentially suitable treatment methods for the proposed pilot-scale trials.

2 Review of Zero Waste Events in Australia

Numerous events that aim to maximise waste diversion from landfill are held annually around Australia. These events may be branded in a number of ways. For example, in New South Wales such events have been titled 'Waste Wise Events', as part of the Resource NSW Waste Wise initiative. In line with the terminology used under the South Australian Zero Waste Events program, this report will refer to all such events as 'Zero Waste Events'.

Data collected from past Zero Waste Events in Australia provides useful information regarding typical waste volumes, waste composition and successful treatment methods for the biodegradable waste stream. Relevant data from a selection of events has been summarised in Appendix A. These particular events were selected for review based mainly on the availability of relevant waste management information.

The selected events include:

- The Great Taste - Less Waste Manly Food and Wine Festival, NSW (2000);
- The Taste of the Nation Festival of Food, NSW (1998);
- WOMADelaide, SA (2001);
- Illawarra Folk Festival, NSW (2001);
- Music at the Creek, NSW (2001); and
- Campbelltown Proud Day, SA (2004).

All of the selected events used biodegradable catering products and separated the biodegradable waste stream from the general waste stream. Event organisers reported a positive outcome in terms of successful diversion of waste from landfill and response from patrons, and the majority continue to hold Zero Waste Events.

2.1 Biodegradable Event Waste Generation

Based on the patronage numbers from WOMADelaide, the Illawarra Folk Festival, and Music at the Creek, an average weight of biodegradable waste generated per patron visit at the event was calculated. For these three events, the average mass of biodegradable waste collected was 130 grams per patron visit (refer Appendix A).

The Manly Food and Wine Festival generated an average of only 22 grams per patron visit, as reusable plates and a dishwashing service were utilised in addition to biodegradable plates. The use of disposable plates was also minimised at The Campbelltown Proud Day, resulting in the mass of biodegradable waste generated averaging only 13 grams per patron visit, as only napkins were used for food service. As disposable plates tend to make up a large proportion of the biodegradable waste stream at events, these events were excluded from the calculation of an average mass of biodegradable weight generated. Patronage data was unavailable for the Taste of the Nation Food Festival.

2.2 Biodegradable Event Waste Composition

A comprehensive search of the Internet and literature databases and personal communications with event organisers revealed only limited information in relation to the composition of biodegradable event waste in Australia.

The most comprehensive composition data available was from the 1998 'Taste of the Nation Festival', held in Sydney NSW. A detailed physical audit of the biodegradable waste stream from this event was carried out by APrince Consulting (1998).

The organisers of this event provided eight public area bin stations, comprising one litter bin, one recyclables bin, two biodegradables bins and a box for returnable plastic wine glasses. Each food or wine stall was provided with small plastic buckets for the collection of food, glass, other recyclables (PET and aluminium cans) and litter. Catering products used included reusable plastic glasses, paper plates and biodegradable cutlery.

The composition data collected for the biodegradable waste stream is summarised in Table 1 (APrince, 1998). The results in Table 1 indicate that the biodegradable waste stream for the event was comprised of 48% paper plates, 26% food waste, 18% other paper and cardboard waste, 5% disposable cutlery and 3% non-biodegradable contaminants on a weight basis.

The most significant variations between the public area waste and that generated from stallholders was the proportion of food and catering products. Predictably, the public area bins contained a higher proportion of catering products (paper plates and disposable cutlery) and a lesser proportion of food waste.

Table 1: Taste of the Nation Festival of Food – Biodegradable Waste Stream Composition

Category	Public Place Bins		Stallholder Bins		Combined	
	kg	% (w/w)	kg	% (w/w)	kg	% (w/w)
Disposable cutlery	12	5	1	2	13	5
Paper plates	122	50	14	34	136	48
Liquid paperboard	4	2	1	2	4	2
Cardboard	19	8	2	4	21	7
Other paper	20	8	6	15	27	9
Food	56	23	16	39	72	26
Contamination	8	3	1	3	9	3
Total	242	100	40	100	282	100

Although the composition data shown above is considered to be relatively representative of event waste (based on visual assessments of waste from other events), the composition of this waste stream is highly dependent on a number of factors. These factors include the type of catering products used, the collection system and the level of communication and promotion of Zero Waste principles with the caterers and the patrons of the event.

2.3 Biodegradable Event Waste Contamination Levels

Contamination levels in biodegradable event waste can affect the processing costs and marketability of the final recycled organic product, depending on which treatment method is used. The level of contamination is a strong determinant of whether a processor will accept the event waste for treatment and needs to be managed carefully by event organisers. Contamination of the biodegradable waste stream collected at the selected Zero Waste Events was assessed either by volume (visually) or by weight. Event organisers generally identified contamination as anything that was not biodegradable and included aluminium cans, plastic, glass bottles, etc.

An audit of the volume and type of contamination in the biodegradable waste stream was conducted for WOMADelaide's 2001 event. This event used biodegradable cutlery, plates and cups, which were collected with food and other biodegradable wastes in bins with cornstarch bin liners. Of the ten bags audited, the contamination rate by weight ranged from 0.1% (w/w) to 4.4% (w/w), with an average contamination of 2.5% (w/w). Contaminants included plastic cups, plastic film and other food wrappers and drink containers.

As presented in Table 1, the audit of the biodegradable waste stream generated at the 1998 Taste of the Nation Festival of Food provided a contamination rate of 3% (w/w). For other events, for which contamination was assessed visually, the contamination estimates ranged from 3% (v/v) to 10% (v/v).

The rate of contamination in the biodegradable waste stream at Zero Waste Events is highly dependent on the extent of the education program implemented to communicate and promote Zero Waste principles. Another factor that can impact on the rate of contamination is the type of event being held. For example, at an open event (eg. street party) the contamination rate is likely to be higher because a proportion of the waste in the biodegradables bin may originate from food vendors that are not formerly part of the event and are therefore not required to use compliant catering products. Ticketed or closed events such as WOMADelaide give the best opportunity to control the waste management practices onsite to achieve lower rates of contamination.

2.4 Biodegradable Event Waste Treatment

A summary of methods used for the treatment of the biodegradable event waste streams is provided in Table 2. In general, only limited information was reported on the success of the various treatment methods in processing the biodegradable event waste.

Table 2: Summary of Treatment Methods

Event	Treatment	Pre-Processing
Great Taste Less Waste Manly Food and Wine Festival (2000)	Commercial vermiculture unit (off site)	Contamination manually removed; waste shredded.
Taste of the Nation Food Festival (1998)	Vertical Compost Unit (VCU)	Not specified
WOMADelaide (2001)	Open windrow composting (off site)	Collection via *BiobiN* ™
Illawarra Folk Festival (2001)	Open windrow composting (off site)	Not specified
Music at the Creek (2001)	Open windrow composting (at venue)	Not specified
Campbelltown Proud Day (2004)	Composting (off site)	Not specified

3 Review of Treatment Options for Biodegradable Event Waste

A desktop study was undertaken to assess the suitability of selected methods for the treatment of biodegradable waste from Zero Waste Events in South Australia. The primary objective of this study was to assess a range of treatment methods for their suitability for inclusion in the pilot scale trials proposed by Zero Waste SA. The assessed treatment methods were selected from previous practices identified in Section 2 (open windrow composting, in-vessel composting and vermiculture) and other organic waste treatment methods used for similar feedstocks (covered aerated static pile composting and anaerobic digestion).

The following factors were considered in the assessment process:

- Capital & operating costs;
- Environmental impact; and
- Technical feasibility.

As the proposed treatment of biodegradable event waste is based on biological systems, consideration needs to be given to ratio of carbon to nitrogen to ensure effective processing. Using the figures in Table 1, an estimated carbon: nitrogen (C:N) ratio can be developed for biodegradable event waste. The C:N ratio may need to be adjusted to optimise processing, especially composting. Using a likely composition of 5% (w/w) wooden cutlery, 70% (w/w) paper products and 25% (w/w) food, the C:N ratio would be in the range of 100:1 – 200:1 depending on the final values for carbon, nitrogen and moisture content of the component materials.

While each event will yield a different composition of event waste, it is expected the mass of paper and cornstarch based catering will greatly exceed the mass of food collected for most events, resulting in C:N ratio greater than that ideal for composting. That is, the biodegradable event waste will require some adjustment of C:N ratio such as blending with other appropriate feedstocks for effective degradation.

3.1 Open Windrow Composting

Open windrow composting is well established as a method for processing green organics. This method essentially involves forming windrows of organic feedstocks and periodically turning the windrows to improve aeration, porosity and mixing (refer Figure 1 below). The open windrow composting process normally takes between 8 and 16 weeks to complete. This method is currently used by most South Australian composters for the processing of green organics.

a) Capital and Operating Costs

The treatment of biodegradable event waste using open windrow composting would involve minimal additional capital costs to the composter, because the event waste would be incorporated into their existing commercial open windrows. Some minor capital costs may

include a sorting facility for removing contaminants or litter fences. Operating costs of processing event waste in open windrow would be similar to the cost of processing green organics by the same method but would largely depend on the level of contamination encountered. Currently, the gate fee for disposal via open windrow composting is $20 - $40 per tonne and is indirectly linked to current landfill disposal costs.

Figure 1: Open Windrow Composting

b) Environmental Impact

Open windrow composting of biodegradable event waste is associated with several potential environmental impacts. The high proportion of paper waste and lightweight biodegradable polylactic acid (PLA) products presents an increased risk of litter and the processing of food waste has the potential to generate odour and to attract insects, vermin and scavenging birds.

Pre-treatment of the biodegradable event waste using a ‘static pile’ method may be required to appropriately manage the potential environmental impacts. This method involves batching the event waste with green organics on delivery and optimising the C:N ratio with nitrogen-based feedstocks. The static piles are completed by covering the blended event waste with additional green organics. Because static piles are not turned, this method helps to prevent release of odour and litter escape during the initial stages of composting. After several weeks in a static pile, the putrescible fraction and paper/cardboard waste will be significantly degraded, reducing the risk of odour, vermin and litter. The piles can then be incorporated into a conventional open windrow system with reduced environmental impact.

c) Technical Feasibility

Due to the establishment of open windrow composting systems in South Australia and their known ability to degrade food, paper and cardboard effectively, the technical feasibility of treating biodegradable event waste using open windrow composting is high. Using established

practices and existing infrastructure; open windrow composting can accommodate the expected volume of event waste while addressing the intermittent supply and loading peaks associated with the material.

It is anticipated that the quality and marketability of the final product from composting event waste using an open windrow system would be similar to that currently being achieved by commercial composters using green organics only, if the contamination is kept to an acceptably low level.

d) Summary

In combination with static pile pre-treatment, open windrow composting is potentially suitable for the treatment of biodegradable event waste.

3.2 Covered Aerated Static Pile Composting

An alternative to the conventional open windrow composting method is the covered aerated static pile system. The covered aerated static pile is formed by placing blended waste over a network of perforated pipes, typically on an engineered base. It is then covered with a membrane permeable to oxygen and carbon dioxide but impermeable to larger molecules. Commercial systems, such as Gore™ Cover, use a Gortex membrane to cover the piles (refer Figure 2 below).

As the anticipated C:N ratio of event waste is going to be higher than the desired 20 – 40 then some mixing with other feedstocks will be required before loading and processing commences.

The covered aerated static pile system is available as a proprietary technology and is not currently used in South Australia. There is some commercial interest in the use of a covered aerated static pile for the treatment of this type of waste due to the potential transferability of the treatment method to other similar waste streams that require a higher degree of process control and environmental management.

a) Capital and Operating Costs

A higher capital investment would be required for the covered aerated static pile due to the additional infrastructure required, including the aeration system and covers. The operating costs would be in the same order to open windrow composting, where the costs of reduced turning would roughly match the costs associated with the operation of the blowers.

b) Environmental Impact

The major advantage of the covered aerated static pile system over the open windrow system is that the cover assists in the containment of both odour and litter, and prevents access by birds, insects and vermin. Given the likely composition of the biodegradable fraction of event waste, this advantage may be significant.

c) Technical Feasibility

The covered aerated static pile system also offers a higher degree of process control in degrading waste. The process control system can adjust the level of aeration in response to oxygen and temperature values in the pile thus optimising the degradation of the event waste.

Figure 2: The GORE™ Covered Pile Static Composting System

While there is no data available regarding the use of this system for the treatment of event waste, it is probable that biodegradable event waste would compost effectively using such a system. While the covered aerated static pile system could be used as a preliminary treatment phase prior to conventional open windrow composting, it is expected that covered aerated static pile system would be used as an alternative to open windrow composting.

d) Summary

The covered aerated static pile composting system has the advantages of both, a high level of process control and environmental control. For this reason, the covered static pile composting is considered to be potentially suitable for the treatment of biodegradable event waste.

3.3 In-Vessel Composting

In-vessel composting involves the use of some form of vessel or chamber in which the composting takes place in a controlled manner. These can range from highly engineered units to relatively simple units. In a typical in-vessel composting system, air is actively pumped through the composting materials to provide adequate oxygen to the compost process, and is recirculated through the system and/or vented through a biofilter. Some systems may also include mechanical processes to enable the agitation and throughput of composted material.

In-vessel systems allow a high level of process control. For example, in most in-vessel systems composting parameters such as temperature, oxygen and moisture content are

automatically monitored and adjusted as required. A number of in-vessel composting systems are available in Australia. Examples include the Hotrot, Vertical Composting Unit (VCU) (refer Figure 3) and the Natural Recovery Systems (NRS) model.

Figure 3: Vertical Composting Unit

The locally built BiobiN™ is a mobile in-vessel composting unit (refer to Figure 4) and is primarily designed to stabilise putrescible waste at the source, with minimal environmental impact. While university trials have validated the BiobiN™'s ability to compost food waste into a mature compost, it is used primarily as a collection and storage system, integrating with other forms of larger-scale composting. The BiobiN™ has been used successfully in the past for the collection and pre-treatment of event waste, particularly for large events held over a number of consecutive days.

Figure 4: BiobiN™ Adelaide Central Market, SA

a) Capital and Operating Costs

The costs associated with the establishment and operation of in-vessel systems vary considerably depending on the type of system selected. However, capital expenditure and ongoing maintenance and operating costs are generally high in comparison to conventional open windrow or covered aerated static pile composting.

b) Environmental Impact

As the waste is fully contained within an in-vessel unit vented by a biofilter, potential issues associated with odour, litter and access by vermin are minimised. Another advantage over open windrow composting systems is the relatively low space requirement for in-vessel systems allowing them to operate in more built-up areas.

c) Technical Feasibility

It is technically feasible to use in-vessel composting systems to treat the biodegradable fraction of event waste. The quality of the composted product generated from in-vessel systems is similar to that from open windrow systems and therefore marketability is expected to be comparable.

There are currently no large-scale commercial in-vessel composting systems in use in South Australia for the treatment of biodegradable waste, due mainly to the prohibitive establishment costs and relatively low landfill disposal charges. A South Australian mushroom company operates a sophisticated Dutch tunnel composting system at Monarto for the preparation of its growing media, although it is not used for the treatment of organic waste streams. However, there is some interest from South Australian commercial composters in the use of in-vessel systems for processing highly putrescible waste streams such as food waste, which require a high degree of process and environmental control.

d) Summary

Although in-vessel composting systems are technically viable for the treatment of biodegradable event waste, the establishment of these systems specifically for the treatment of events waste is not considered economically feasible. There are plans to establish an in-vessel composting facility for the processing of food waste in South Australia by 2006. Until such a facility is available, it is not considered a priority or economic to test in-vessel composting for the processing of biodegradable event waste. Creating an effective pilot-scale model of a particular proprietary technology would be expensive and may raise some commercial/legal issues.

However, the locally developed BiobiN™ provides potential benefits if used for the collection and pre-treatment of event waste, particularly for large events held over a number of consecutive days. This system has been used successfully for the storage and collection of event waste at major events such as WOMADelaide.

3.4 Vermiculture

Vermiculture, also known as vermicomposting, is the process by which organic waste is fed to and processed by worms. Through the process of digestion, the worms convert the waste into castings (vermicasts). The use of vermiculture as a method for converting organic waste into a soil conditioner has been practiced for many years and a number of commercial scale facilities exist in Australia.

a) Capital and Operating Costs

Systems vary greatly in terms of engineering complexity and therefore the capital and operating expenditure required. The windrow wedge system, a pile of organics established on a lined surface through which the worms migrate laterally, is rudimentary in design and inexpensive to establish (Ellery, D. pers. comm. 11 November 2004). In contrast, an example

Figure 5: Tryton Vermiculture Facility, Lismore, NSW

of a highly engineered facility is the $6.5 million Tryton Waste Services' vermiculture facility operating in Lismore, New South Wales since 2001 (refer Figure 5).

b) Environmental Impact

The environmental impacts associated with the use of vermiculture for the treatment of organic waste will depend greatly on the type of system employed, but should be minimal for a well-managed system. In order to minimise litter escape, a cover would be necessary unless the system is enclosed.

c) Technical Feasibility

Pre-processing of the waste is not essential, but will assist in the speed and efficiency of the waste processing (Ellery, D. pers. comm. 11 November 2004). This may include shredding to reduce particle size and moisture conditioning. Although cardboard serves as a good bulking agent and carbon source, processing efficiency is expected to improve with the addition of a supplementary high-nitrogen feedstock (eg. garden waste, additional food waste).

The ability of a vermiculture system to effectively degrade biodegradable plastic, such as PLA, has not been researched extensively, however it is considered unlikely as the degradation of biodegradable plastics commonly requires temperatures in excess of those suitable for vermiculture. While biodegradable plastics are not expected to be detrimental to the vermicultural process, they are expected to remain essentially undegraded.

Although some commercial vermiculture facilities exist in regional South Australia, no commercial scale units are currently in use in metropolitan Adelaide. Hence, any large system for the treatment of waste generated in Adelaide would need to be purpose built. However, smaller vermiculture systems can be relatively low-tech, inexpensive and simple to establish.

d) Summary

Vermiculture is not considered suitable for the treatment of biodegradable event waste containing biodegradable plastics. However, vermiculture may be suitable for small-scale events where the event waste consists mostly of paper-based materials and food waste, and the cost of event waste disposal is likely to be prohibitive. This option would require establishment of a small-scale vermiculture system prior to the event.

3.5 Anaerobic Digestion

Anaerobic digestion involves the degradation of organic waste by bacteria in an oxygen-free environment, producing biogas as a by-product. The system typically consists of a heated digester tank, a gas collection system and a gas-fuelled generator if electricity is to be produced. In addition to the biogas, the process also produces a residual solid material, which may be aerobically composted to produce a high nitrogen soil conditioner.

a) Capital and Operating Costs

The cost associated with the establishment of a commercial scale system is high and financial feasibility relies heavily on the generation of income from the biogas.

Figure 6: Anaerobic Digester, Kristianstad, Sweden

b) Environmental Impact

The anaerobic digestion system is highly engineered and fully contained, so environmental impacts are minimal.

c) Technical Feasibility

Anaerobic digestion is well suited to feedstocks with high moisture content and low C:N ratio such as manures and putrescible food waste, which maximises the generation of methane. As a result, the event waste stream, comprised largely of paper plates and other biodegradable catering products, would not generate significant volumes of methane to warrant its inclusion into an anaerobic digestion system. Anaerobic digestion is a highly managed process relying heavily on consistent feedstock characteristics and loading rates to maintain optimum performance.

While anaerobic digestion has been used to treat sludges from wastewater treatment plants in South Australia for a number of years, there are currently no commercial scale digesters for the treatment of food waste in South Australia.

d) Summary

Anaerobic digestion is not considered to be a suitable treatment method due to the physical characteristics and intermittent supply of biodegradable event waste. The establishment of such a system for this purpose is not technically or economically feasible and this waste stream would be unlikely to be incorporated into any future large scale systems.

4 Conclusions and Recommendations

4.1 Zero Waste Events in Australia

Based on a limited number of selected case studies, the biodegradable waste stream generated from Zero Waste Events can be broadly characterised as follows:

- On average, each patron visit at a Zero Waste Event is expected to generate approximately 130 g of biodegradable waste;
- The biodegradable waste stream will predominantly consist of paper and cardboard waste (~50% w/w) and a smaller proportion of food waste (~25% w/w); and
- Contamination in the biodegradable waste stream from Zero Waste Events is likely to be in the range of 2% to 10% by weight and consist primarily of recyclable drink containers and plastic food wrappers;

In general, the following factors will also influence the composition and contamination rate of the biodegradable waste stream:

- The type of catering products used;
- The effectiveness of the education program for both caterers and patrons used ; and
- The type of event (ie. open or closed).

For the events reviewed in Section 2, the treatment methods included vermiculture, in-vessel composting (Vertical Composting Unit) and open windrow composting. Little information was available from the case studies regarding the effectiveness of the treatment method used.

4.2 Biodegradable Event Waste Treatment Methods

To enable the scoping of a series of pilot scale trials, a number of treatment methods were investigated in terms of their suitability to treat biodegradable event waste. As C:N ratio is an important factor in biological degradation, an estimated range of C:N values was developed for event waste based on the composition results from the reviewed case studies. The estimated C:N ratio was determined to be in the range of 100 – 200.

The assessment criteria include expected costs (both capital and operating), the ability to manage anticipated environmental impacts and technical feasibility. Three methods were short-listed as potentially suitable for the treatment of this waste stream based on the current state of organic processing in South Australia.

While in-vessel composting may offer a more controlled method of processing event waste, it would be both expensive to trial at pilot-scale and implement at full-scale until a suitable unit is established in South Australia. The nature of the event waste with its high C:N ratio would make it unsuitable for anaerobic digestion and this method would be technically unviable.

While the BiobiN ™ can be used as a stand alone in-vessel composting system, its greatest advantage is when it used as storage and transport system, particularly for longer events, where it enables the event waste to be stored for several days with minimal environmental impacts.

1) Combined Static Pile and Open Windrow Composting

Conventional open windrow composting is considered the most practical treatment option for biodegradable event waste because it is already well established in South Australia. This form of composting allows the event waste to be incorporated into existing green organics composting as a minor feedstock. However, due to the potential environmental impacts associated with turning or agitating event waste, it is recommended that this method is used with a preliminary static pile pre-treatment to enable degradation of food and litter-prone catering products first.

2) Covered Aerated Static Pile Composting

An alternative to the conventional open windrow composting method is the covered aerated static pile system. There is some commercial interest in the use of a covered aerated static pile for the treatment of this type of waste due to the potential transferability of the treatment method to other similar waste streams that require a higher degree of process control and environmental management.

The covered aerated static pile composting system has the advantages of both, a high level of process control and environmental control. For this reason, the covered static pile composting is considered to be potentially suitable for the treatment of biodegradable event waste.

3) Vermiculture

Although no large-scale facilities currently exist in metropolitan Adelaide, vermiculture warrants further consideration for treating biodegradable event waste generated at small, community-based events using existing community/school worm farms. Vermiculture potentially offers an alternative treatment path for the event waste stream when collected volumes are low as this may result in event waste being uncommercial for composters to accept and process.

4.3 Recommendations

It is recommended that:

1. A pilot scale trial be undertaken to assess the performance of the combined static pile and open windrow method and its suitability to process biodegradable event waste and manage its potential impacts;
2. If open windrow composting is ineffective in managing the potential environmental impacts, then a pilot-scale trial using covered aerated static piles should also be considered;
3. A vermiculture trial would help to determine the pre-processing requirement for this waste stream and the efficacy of this method for the treatment of biodegradable catering items, in particular for small events using local worm farms.

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APPENDIX

Australian Zero Waste Events Summary

GREAT TASTE – LESS WASTE MANLY FOOD AND WINE FESTIVAL

Organiser	Manly Council
Date(s)	Saturday 3 June 2000 – Sunday 4 June 2000
Location	Manly, NSW
Patronage	~ 30,000
System	Mobile dishwashing service and refund system for reusable food service items (cups) Compostable food service items (paper plates, cornstarch cutlery) Source separation of waste into recyclable plastic and glass, compostables and residual waste
Total waste collected	11.157 tonnes
Compostables	0.657 tonnes (0.022 kg/patron)
Contamination	240 litres (~3%)
Treatment of compostable waste	Manually screened to remove visible contamination Shredded using an electric shredder Council owned commercial vermiculture unit
Source	www.wastewiseevents.resource.nsw.gov.au

TASTE OF THE NATION FESTIVAL OF FOOD

Organiser	Community Aid Abroad
Date(s)	Saturday 17 October 1998
Location	Fitzroy Gardens, Sydney, NSW
Patronage	Unknown
System	Reusable plastic wine glasses Compostable food service items (plates and cutlery) Source separation of waste into recyclables, compostables, residual waste and returnable plastic wine glasses
Total waste collected	0.633 tonnes
Compostables	0.282 tonnes
Contamination	0.009 tonnes (~3%)
Treatment of compostable waste	Verticle Compost Unit (University of NSW)
Source	www.wastewiseevents.resource.nsw.gov.au

WOMADELAIDE

Organiser	Adelaide Festival Centre Trust
Date(s)	16 –18 February 2001
Location	Adelaide, SA
Patronage	74,500
System	Reusable plastic wine glasses Compostable food service items (plates and cutlery) Source separation of waste into recyclables, compostables and residual waste
Total waste collected	16.9 tonnes
Compostables	8.7 tonnes (0.117 kg/patron)
Contamination	(2.5 %)
Treatment of compostable waste	Peat's BiobiN and open windrow composting
Source	www.epa.sa.gov.au/cp_womad ; Pers. comm. S. Verschoor, 4 November 2004

ILLAWARRA FOLK FESTIVAL

Organiser	Illawarra Folk Club
Date(s)	12-16 September 2001
Location	Kiama, NSW
Est No of patrons	~ 4,000
System	Compostable food service items (plates and cutlery) Source separation of waste into recyclables, compostables and residual waste
Total waste collected	3.0 tonnes
Compostables	0.67 tonnes (0.168 kg/patron)
Contamination	<10%
Treatment of compostable waste	Open windrow composting at local waste transfer station
Source	www.wastewiseevents.resource.nsw.gov.au

MUSIC AT THE CREEK

Organiser	Braidwood Folk Music Club
Date(s)	2001
Location	Majors Creek, NSW
Est No of patrons	~ 4,000
System	Compostable food service items (plates and cutlery)and recyclable cups Source separation of waste into recyclables, compostables and residual waste
Total waste collected	1.425 tonnes
Compostables	0.442 tonnes (0.111 kg/patron)
Contamination	0.04 tonnes (~ 9%)
Treatment of compostable waste	Open windrow composting at venue
Source	*A Waste Wise Event Music at the Creek Going for Zero* Resource NSW (2002)

CAMBELLTOWN PROUD DAY

Organiser	City of Campbelltown
Date(s)	Sunday 28 March 2004
Location	Campbelltown, SA
Patronage	~ 4,000
System	Food service items not provided Source separation of waste into recyclables, compostables and residual waste
Total waste collected	0. 095 tonnes
Compostables	0.051 tonnes (0.013 kg/patron)
Contamination	Unknown
Treatment of compostable waste	Composted using bins located at Council offices
Source	*Campbelltown Proud Day A Waste Oddity 2004*, Campbelltown City Council (2004)