

# **The State of the Shire- Year 2000 Benchmark**

## **Chapter 5 - Solid Waste Management Technical Paper**

**April 2001**

## **Chapter 5 Solid Waste Management**

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## **CHAPTER 5 – SOLID WASTE MANAGEMENT**

### **5.1. Introduction**

Council has mandatory responsibilities under the Local Government Act, Health Act, and Environmental Protection Act to provide and manage systems of waste collection and disposal for the Shire’s municipal waste. This paper examines solid waste management by detailing present and proposed strategies to improve waste management and minimisation.

The issue of integrated waste management is addressed via the waste management strategy, with system assessment made by waste stream analysis, wheelie bin survey and waste management community attitude survey as conducted by the Council. The paper also details current and future initiatives and programs implemented and planned by the Council including composting, community education, waste management, audits/surveys, vermiculture, drummuster, pre-cyclone clean-up, household hazardous waste, clinical and related waste program and the monitoring and review of these. These initiatives form part of a 4-year waste management plan.

### **5.2. Integrated Waste Management**

#### 5.2.1. Waste Management Strategy

The Waste Management Strategy establishes a comprehensive range of management actions aimed primarily at reducing quantities of both wet and dry wastes through avoidance, reuse and recycling of the municipal, commercial, industrial, building and demolition wastes of the Shire.

Through the strategy Council, business and the general community are being asked to share the responsibilities of managing wastes to achieve realistic waste quantity reduction of 40%.

The waste reforms proposed respond to strong community and legislative messages that sustainable practices need to be implemented which offer opportunity for cost savings.

A \$120 000 per annum saving to Council can be achieved when wet waste disposal quantities are reduced from the initial 7100 tonne in 1999 to 5000 tonne of wet waste per annum. For the year 2000, 6231 tonnes were transported to Townsville. This reduction results from better community waste separation which is directly related to the well publicised education and enforcement programs and better separation of waste at the transfer station by the contractor.

This strategy has been developed to provide community co-operation and is based around the waste management hierarchy of ecologically sustainable development (ie)

- Waste avoidance
- Waste re-use
- Waste recycling
- Energy recovery from waste
- Waste disposal

A number of action plans and projects have now been implemented and include:

#### *Recycling*

Council’s segregation of both wet and dry waste streams allows the maximum options of waste diversion, recycling, and resource recovery. Although minimal quantities of available recyclables are presently extracted (due wholly to lack of sustainable initiatives) it could be undertaken at any time in the future once feasible. Council will continue to pursue sustainable initiatives through waste minimisation, resource recovery, and recycling at local, regional and state levels.

### *Composting*

Council implemented a pilot composting project in December 1999 as a strategy to reduce wet waste volumes. The project was initiated to identify cost savings through wet waste volume reduction and levels of community co-operation/interaction. The project was to provide such data for assessment as to future composting feasibility within the Shire.

Results have indicated that there is significant community support to the program and potential for overall waste management cost savings over the longer term. A plan is in place for the expansion of composting in the Shire, with the targets being 750 premises by December 2000, of which 850 were achieved, 1500 premises by December 2001, 2250 premises by December 2002, and 3000 premises by December 2003.

### *Community Education*

The Community Education program is a proactive initiative to promote waste avoidance through community participation and attitude change. It aims to promote waste management education and community involvement by providing the information, tools and incentives necessary to reduce waste quantities. The target of this program is a wet waste volume reduction from 7100 tonnes to 5000 tonnes per annum over the between July 2000 – June 2004.

### *Waste Management Plans*

These policies aim to develop waste avoidance, minimisation policies, guidelines, targets and enforcement procedures for existing and future developments by establishing a framework to ensure waste avoidance and minimisation procedures are adopted by existing and future developments. The target for this program is a reduction in the commercial and industrial and construction and demolition waste stream by 50%.

### *Audits/Surveys*

At present, available data regarding actual types of waste being collected and disposed within the Johnstone Shire is seriously lacking, making it difficult to plan effective management, and possibly resulting in the making of uninformed decisions. The use of periodic/systematic waste audits/surveys allows for the assessment of waste stream composition, changing trends and service requirement. Environmental Management Systems such as the ISO – 14 000 series rely on the gathering of information by an organisation with the aim that the organisation will have a knowledge of their potential impacts and therefore be able to act accordingly.

### *Vermiculture*

Council has received funding to introduce a vermiculture program in the Shire for premises such as flats and multi storey dwellings where compost bin installations were not viable. This program is due to commence in March 2001, and has set its targets as 20-30 commercial premises and 20 households.

### *Drummuster*

Council provides 5 collection points in the Shire for receiving empty, clean agricultural/veterinary product containers twice yearly. Drummuster also operates at transfer stations daily.

### *Clean Up*

The pre-cyclone clean up is an ongoing annual program to reduce hazards on premises during November of each year. Clean-up Australia Day is also conducted in the Shire and is a national event held on the first Sunday of March.

*Household Hazardous Waste*

Council promotes the Overseas Pharmaceutical Aid for Life (OPAL) and Remove Unwanted Medicines (RUM) programs to remove pharmaceutical waste from the domestic waste stream. Residents can return expired or unused pharmaceutical waste to participating chemists. The promotion of such programs should contribute to significantly reducing the amount of hazardous material entering Council’s waste stream.

*Clinical and Related Waste Program*

Clinical and related wastes are defined as wastes arising from medical, nursing, dental, veterinary, pharmaceutical practices/facilities during investigation/treatment of patients. These wastes are prohibited from landfill. Commercial collection services are available

*Implementation*

Council has approved a four-year program for implementation of its waste management strategy.

**5.3. System Assessment**

5.3.1. Waste Stream Analysis

Prior to the new waste management approach in the Johnstone Shire, there was very little accurate data on the types of waste entering the Shire’s waste stream. The opening of staffed transfer stations and a weighbridge meant accurate records could be kept on the types of waste material entering and leaving the transfer stations.

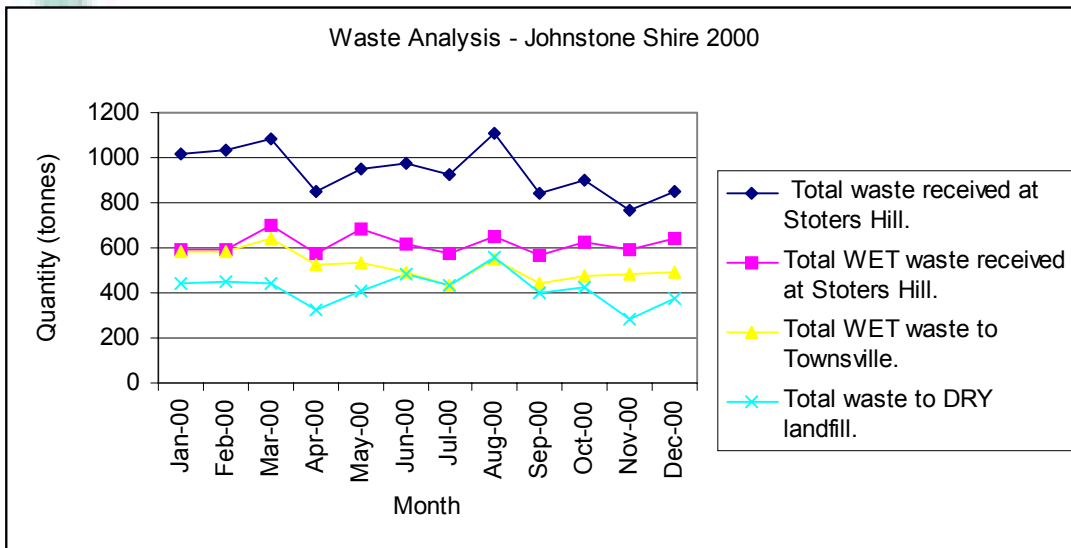
Five categories of waste were identified as making up the Shire’s total waste stream. These five categories are:

- Wet waste – materials that constitute wet waste include putrescible items (eg food scraps, green waste), nappies, tissues, unrinsed containers, any small items that may contain a chemical (e.g. aerosols, glue).
- Dry waste – those materials that are solid and will not emit chemicals or gases upon landfill disposal e.g. clean plastic, glass, tins, cans, cardboard, paper, timber, fabrics.
- Recyclables – recyclable material collected includes aluminium cans, steel, cardboard, glass, lead/zinc/copper.
- Regulated waste – wastes accepted include oil, asbestos, batteries, tyres and chemical drums
- Miscellaneous waste – includes car and motorbike bodies and greenwaste

This study was conducted over the period July 1999 to June 2000. As such, figures for the quantities of recyclables, regulated waste and miscellaneous waste for all of 2000 are not available. The table below summarises wet and dry waste disposal in the year 2000.

|                  | <b>Total Waste Received at Stoters Hill</b> | <b>Total Wet Waste Received at Stoters Hill</b> | <b>Total Wet Waste to Townsville</b> | <b>Total Dry Waste to Landfill</b> |
|------------------|---|---|--------------------------------------|------------------------------------|
| <b>January</b>   | 1018.92                                     | 587.64  | 578.12                               | 440.8                              |
| <b>February</b>  | 1033.48                                     | 591.02  | 580.28                               | 453.2                              |
| <b>March</b>     | 1085.5                                      | 697.68  | 644.38                               | 441.12                             |
| <b>April</b>     | 850.4                                       | 574.96  | 522.5                                | 327.9                              |
| <b>May</b>       | 948.92                                      | 687.06  | 537.26                               | 411.66                             |
| <b>June</b>      | 974.1                                       | 619.72  | 488.86                               | 485.25                             |
| <b>July</b>      | 928.67                                      | 573.14  | 436.48                               | 429.19                             |
| <b>August</b>    | 1106.36                                     | 649.36  | 552                                  | 554.36                             |
| <b>September</b> | 842.3                                       | 568.68  | 442.06                               | 400.24                             |
| <b>October</b>   | 901.28                                      | 624.94  | 477.72                               | 423.56                             |
| <b>November</b>  | 764.86                                      | 590.02  | 480.1                                | 284.76                             |
| <b>December</b>  | 846.8                                       | 642.2   | 491.68                               | 378.04                             |

Table 5.1 Waste Disposal and Quantities per Month (tonnes) January - December 2000



The major findings of this analysis were:

- Waste separation at the household is affected by seasonal changes with the wet season showing the poorest separation rates, probable as a result of residents using the larger (dry bin) in disposal of the increased quantity of greenwaste (eg grass clippings and branches)
- Residents respond well to public education as shown when a Waste Services Information Calendar was distributed throughout the Shire in March 2000 coinciding with a dramatic decrease in wet waste transported to Townsville.
- The tourist season impacts by increasing wet waste quantities entering the Bells Creek Waste Transfer Station.
- The addition of 600 services in the Mission Beach area in early March 2000 resulted in a significant increase of wet waste quantities entering Bells Creek and being transported to Townsville.
- Commercial waste going to the dry landfill, which makes up 39% of the total waste collected, appears to decrease during the wet season, possibly due to the slow down of the building industry.
- On average for the 1999/2000 financial year 574.8 tonnes of wet waste was transported to Townsville per month.
- On average for the 1999/2000 financial year 474.642 tonnes of dry waste was disposed in Stoters Hill landfill per month.

5.3.2. Wheelie Bin Survey

A wheelie bin survey was conducted in October 2000 to gather a representative database of residential MGB usage within areas of the Shire for assessment to guide education and other strategies by determining wet and dry waste stream contamination rates and quantities of bin presentations, providing hands on information and positive promotion /householder feedback, and identifying households and areas with poor waste separation practices.

The results of the initial survey are presented below.



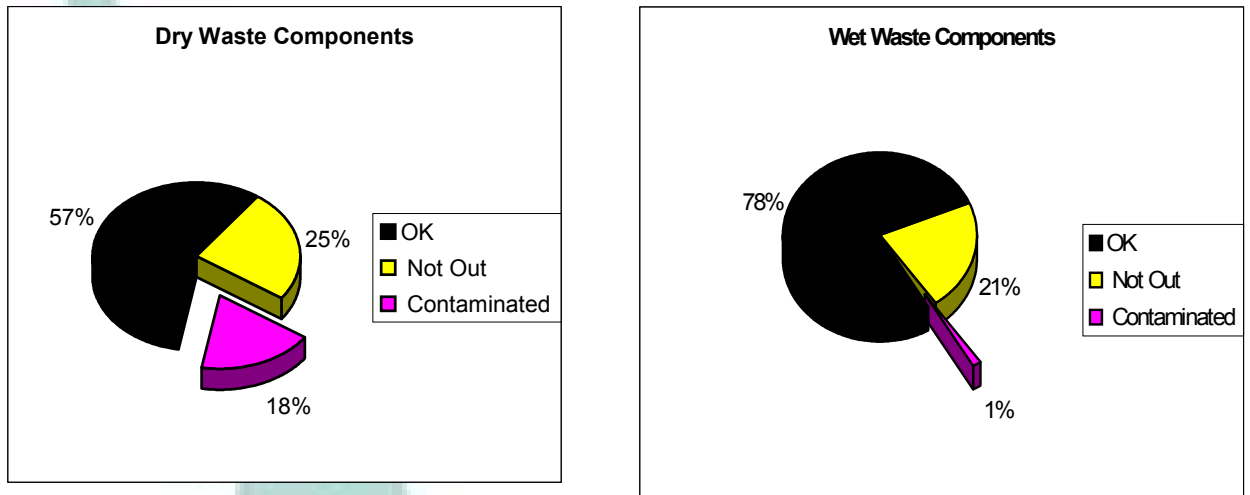


Figure 5.1 Results of Wheelie Bin Survey

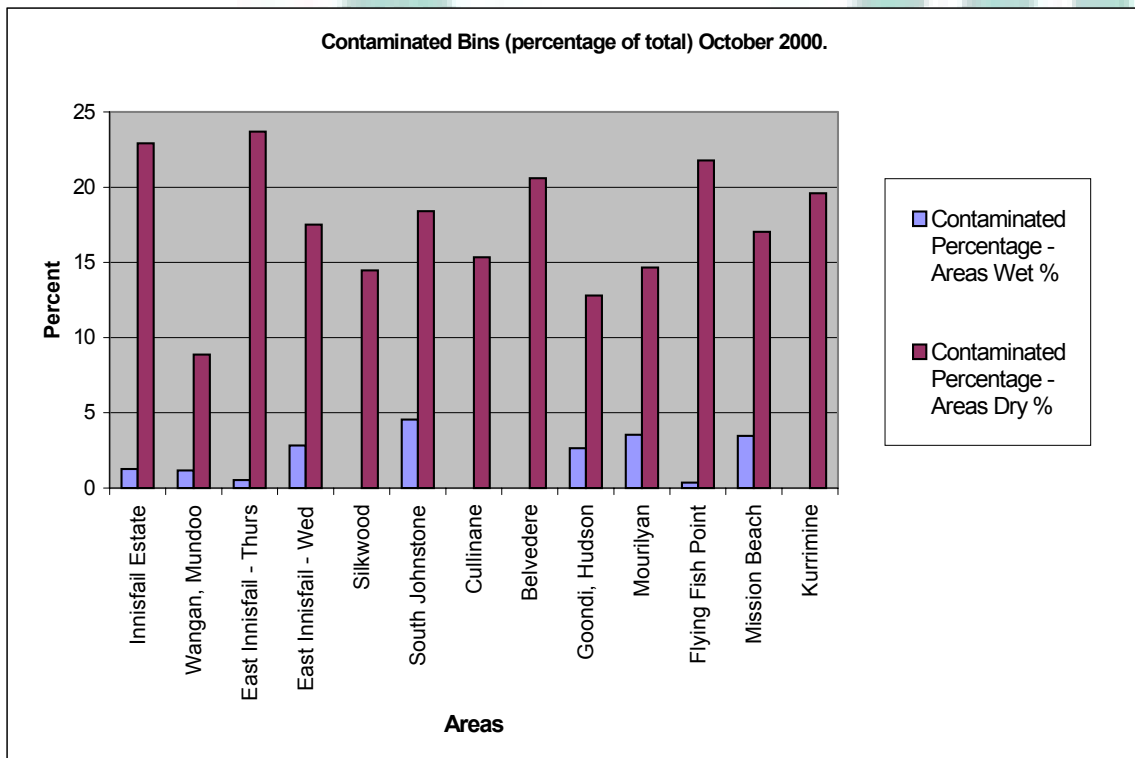


Figure 5.2 Results of Wheelie Bin Survey by Area

5.3.3. Waste Management Community Attitude Survey

Council conducted a survey on the Community’s Attitude on Waste Management in June 2000. This survey was designed to gain information on resident’s demographical status, knowledge and attitude towards wet and dry separation, attitude towards other waste services, and attitude towards waste management education/promotion, with a total of 235 surveys completed for analysis.

On analysing the surveys the results indicate the following:

- 94% of respondents understand the difference between wet and dry waste.
- 85% of respondents approve of the system.

- 76% of respondents always separate, 17% sometimes separate and 5% don't separate at all (2% did not specify).
- 0-20 and 31-40 year olds are the most complacent at separating their wet and dry waste.
- 46% of respondents use either Stoters Hill or Bells Creek Waste Transfer Station with domestic and greenwaste the most commonly disposed material.
- 69% of respondents are aware that disposal of domestic waste up to a trailer or ute load is free of charge with 26% unaware.
- 88% of respondents are satisfied with their collection service.
- Respondents in the Southern area of the Shire are slightly less satisfied with their collection service than respondents in the North area.
- Respondents rate recycling (71%) as the favoured option for Council to provide or subsidise with a household hazardous waste collection (67%), second and a garden tidy / greenwaste removal service (62%) last.
- 61% of respondents indicate they would participate in a composting program.
- 74% of respondents think residents need more education / information on waste management with an information booklet / waste services calendar the most popular education material and newspaper advertising next with 15%.

It is recommended that Council continue with an education campaign and consider options for future services for residents. Funding should also be sought to assist with educational material and similar future studies to compare a trend in the attitudes of residents of the Shire.

#### 5.3.4. Complaints

In the year 2000, the EPA received 5 waste complaints for incidents in the Johnstone Shire. The nature of these complaints included 2 general complaints, a complaint regarding regulated waste, and 2 complaints regarding dumping of waste. Only 2 of these complaints were from known sources. All five complaints were resolved in the year 2000.

The Johnstone Shire Council also received complaints about waste in the year 2000.

- 1 complaint received about the clean-up
- No complaints were received about refuse
- One waste pollution complaint was received

#### **5.4. Deficiencies in Data**

A more comprehensive assessment of solid waste management could be achieved by collecting information about quantities of waste disposal by category of waste.

#### **5.5. Recommendations**

##### *Monitoring and Review*

- That a monitoring and review program be implemented to monitor characteristics and flow of waste materials and resources through regular data collection, analysis and audit, make comparisons and measure performance efficiency and make projections, promote continuous improvement to and system refinement.
- It is recommended that Council continue with a community awareness and education campaign and consider options for future services for residents.
- Funding should also be sought to assist with educational material and similar future studies to compare a trend in the attitudes of residents of the Shire.
- That a waste information database be developed and maintained
- That a reporting system providing current waste stream status, benchmarks, trends, targets, variations and comparisons be established
- That qualitative and quantitative performance indicators for communication and education, waste source quantity reduction, reuse/reprocessing disposal, market development, and service provision be established.
- That Council consider implementation of rate based cost incentives to encourage compliance with waste separation initiatives.



### **5.6. Bibliography and Further Reading**

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