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Palerang Council  
Resource Recovery  
Strategy

# **RESOURCE RECOVERY STRATEGY**

## **REPORT**

**for**

**PALERANG COUNCIL**

June 2006

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## 1. EXECUTIVE SUMMARY

### 1.1 Introduction

In 2005, Palerang Council adopted a 20 year Waste Management Strategy. A key part of this initiative was to develop a Resource Recovery Strategy which would aim to turn waste streams into resources, with the objective of minimising waste to landfill.

This project is to develop the draft Resource Recovery Strategy (RRS) for Council. The Brief for this project required the consultant to:

- identify, classify and quantify the extent of waste generated and received in the Palerang Council area;
- estimate the current volume of waste going to landfill in the shire;
- consult with key stakeholders including the Palerang community;
- analyse the waste streams and develop options with timeframes that will turn waste into resources and thus minimise the amount of waste going to landfill.

Pryor Knowledge (ACT) Pty Ltd (Geoff Pryor) was commissioned to undertake the project as lead agency for a consortium comprising:

- Orbtek Pty Ltd (Rob Gourlay)
- Sustainable Futures Group Pty Ltd (Ian McComb)
- The Sustainability Science Team Pty Ltd (Walter Jehne and John Schooneveldt)

### 1.2 Areas of responsibility

The New South Wales (NSW) *Waste Minimisation Act* of 1995 (the Waste Act) defines waste as substances that are discarded, rejected, unwanted, surplus or abandoned.

The NSW Local Government Act, 1993, gives responsibility for waste matters to local councils. The NSW Government's *Waste Avoidance and Resource Recovery (WARR) Strategy 2003* produced by the NSW Environment Protection Authority describes council responsibilities in general terms as:

*"...dealing with municipal waste, through garbage, recycling and hard rubbish collections. Councils also have responsibility for a number of specific waste functions including domestic waste collection services and street cleaning. They regulate many of the activities such as housing developments, pollutant control, littering, and illegal dumping. Some Councils operate landfills and recycling facilities."*<sup>1</sup>

In rural areas such as Palerang, councils accept and manage variable quantities of commercial and industrial waste.

The Department of Environment and Conservation (DEC) has responsibility for administering environmental protection legislation covering air and water quality, waste, contaminated land, noise control, pesticides, hazardous chemicals, transport of dangerous goods, and radiation. The Department uses compliance audits to assess the extent to which a licensee or other regulated entity meets the required standards. It does not have direct control over local Government in relation to resource recovery and waste management.

Palerang Council has recently become a member of the South East Resource Recovery Regional Organisation of Councils (SERRROC) that aims to enhance local efforts to implement the WARR strategy. The Council has been a member of the South East Resource

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<sup>1</sup> p15 NSW Government's Waste Avoidance and Resource Recovery Strategy 2003

Recovery Group (SERRG) a voluntary group of Councils which includes Bega Valley, Cooma Monaro, Eurobodalla, Goulburn-Mulwarre, Queanbeyan, Snowy and Yass Valley Councils.

### **1.3 Palerang Council area and population**

Palerang Council area comprises some 5,200 sq kms and includes all of Lake George and the villages of Araluen (pop 120), Braidwood (pop 1,100), Bungendore (pop 2,000), Captains Flat (pop 450), Majors Creek (pop 150), Nerriga (pop 50) and a number of smaller villages. About 5,000 people live in rural residential zones consisting of 2-16 ha lots on the western side of the shire adjacent to the ACT and Queanbeyan. A further 2,000 live on farms. The total population is around 11,000 people. Council expects the growth rate of Palerang Council to be around 2% per annum but a major Department of Defence Project at Bungendore and other developments may increase this population rate in the short term.

### **1.4 Present services and waste volumes**

Palerang provides weekly kerbside domestic waste collection services (140 L wheelie bins) at Bungendore, Braidwood, and Captains flat with weekly kerbside recycling collection services (140L mingled wheelie-bins) at Braidwood and fortnightly (240 L mingled bins) at Bungendore and Captains Flat. The contents of the recycling collections are passed on to ACT materials recovery facility (ACT MRF) at a cost of \$51 per tonne.

Council operates landfill sites at Araluen, Braidwood, Bungendore, Captains Flat, Macs Reef, Majors Creek and Nerriga.

All landfill sites are open for limited periods. Those at Braidwood, Bungendore and Macs Reef have paid tip supervisors on site during the opening hours, with local residents opening and closing gates for the required opening hours on a voluntary basis at other times for other sites. Separation of recyclable materials at landfill sites is encouraged and the separated materials are recovered and sold periodically.

Recycling stations consisting of a bank of wheelie bins for bottles, cans and plastic containers, are presently provided at Carwoola, Wamboin, Captains Flat, Hoskinstown, Burra and Urila.

Data for the following sections is a summary of that found in the Attachments. The estimated quantities of materials collected and or deposited at various sites will vary greatly depending on definitions used, sampling methods and who is doing the estimating. In Attachments 3, 4 & 11, there are figures derived from the investigations undertaken for this project, including a survey of the Captains Flat land fill site.

The quantities of material deposited at the Palerang Landfill sites range from a total of 2500 tonne/year, if municipal waste only is considered based on past assessments, to 15,000 tonne per year if commercial, industrial and construction wastes are included. **The figure we propose for Palerang to use as a benchmark is 9500 tonnes per year covering all waste streams.** This can be rapidly reduced if externally sourced material and organic materials are redirected from landfill. Further details are found in Table 12 of Attachments 3, and Attachment 11.

Some of the commercial wastes include clean fill that can be used for rehabilitating landfill sites and is legally, but not effectively, waste. Clean fill represents a considerable saving to Council and a material that would otherwise have to be purchased. Other materials where significant savings can be made include reduction of out of area material and utilization of greenwaste and organics.

An estimated 17% of the total waste stream originates outside the shire. Approximately nine tonnes/week of co-mingled recyclable material is now sent to the ACT for processing. Other flows include local residents using the Collector and Tarago Landfills, and Burra residents using ACT or Queanbeyan facilities. Overall, it is likely that tipping fees in surrounding areas deter significant quantities of waste leaving the shire area.

The uncertainties associated with verifying the quantities mentioned above are discussed in the main report. It is considered unnecessary to undertake more research on the precise quantities, as the strategy that is proposed allows for systematic ongoing quantification and evaluation.

Because of the imprecision about quantities of waste, we have used the conservative figure of 1 tonne per household per year as a basis for estimating the costs in our recommendations. This would give a current average waste to landfill of between 5000 and 6000 tonne per annum for the shire as a whole. This figure might seem low compared to other local government areas, but the highly dispersed nature of the shire population makes the transportation of these small quantities relatively expensive.

### **1.5 Survey results and consultations**

The Consortium members assisted Council in the design of a survey questionnaire and conducted a number of consultation forums throughout the shire.

Details of the survey are found in Attachment 6. The questions asked and the results obtained are listed and in graphic format. Below we summarise the key points.

The questionnaire was sent to 5821 resident ratepayers and 1502 (26%) were returned. Around 1101 (73.3%) of these were from rural ratepayers, 342 (22.8%) from urban ratepayers and 59 (3.9%) were categorised as neither of these representing non-residents and businesses. The 26% return rate is very high over all, but the preponderance of rural returns suggests that waste is a much bigger issue for rural rather than urban ratepayers, who have established services.

Rural and rural residential rate payers do not have collection services. At present they pay a general waste charge of \$180 per year per property to cover landfill operations and urban ratepayers pay \$333 per annum, consisting of \$253 per property for kerbside wheelie bin collection and \$80 general waste charge for landfill operations.

Of those who returned the questionnaire, 65.1% predominantly use the existing landfills to manage their waste: 57.7% using landfills within the shire and 7.4% using landfills outside the shire area. Council waste collection services are used by 20.4% of the respondents and 12.8% use other contractors to manage their waste. Around 8.4% use their own properties and 13.2% use municipal bins or make other arrangements.

As the majority of respondents were rural residential ratepayers with no kerbside services it is not surprising that such a high proportion of respondents used landfill. These ratepayers also showed a high tendency to compost their organic waste (58%) and feed kitchen scraps to animals (33%). They also showed a strong tendency to recycle generally.

In addition to the survey, consultation forums were held with community representatives at Araluen, Burra, Braidwood, Bungendore, Captains Flat, Nerriga, Tarago and Wamboin. Details of these consultations are found in Attachment 5.

In summary, at these consultations there were strong views that existing landfill sites should be maintained and improved to meet Occupational Health and Safety standards. Forum participants considered that the sites should be supervised to stop illegal dumping and that recycling should be encouraged through landfill layout and education initiatives. There was recognition that price was important when people considered waste management options, but there is ambivalence about mechanisms such as charging for access to landfill on a user-pays basis, even though this would encourage better sorting of waste streams at source. There was general support for exploring local enterprise opportunities using existing waste streams, but not strong support for extending kerbside collections beyond the existing urban centres.

### **1.6 The central issue**

The Waste Management Strategy adopted by Council in June 2005 envisages the progressive closure of all landfill sites in the shire over a 20 year period, with incentives for recycling, but with the eventual disposal of any remaining waste to Woodlawn, Mugga Lane or other regional landfill. It sees charges for waste management increasing from present levels to around \$600 per household in today's prices if kerbside collections outside urban areas were to be introduced.

While it is agreed that the existing landfill sites need to be closed progressively as they reach their capacity, the rate at which these limits are reached depends crucially on the effectiveness of the shire's waste minimisation strategies. The more that can be recycled, the longer the life expectancy of the existing landfills. The construction of new landfill sites is possible, but would be very expensive and need to meet strict new licensing requirements. It is not a favoured option.

At present, Woodlawn can only legally take waste from Sydney, and the ACT has a policy of No Waste. It would be unwise for Council to adopt a strategy that has both legal and policy impediments that are outside Council control, although pursuing access rights to Woodlawn is a 'backup' option. However, even if the abovementioned impediments could be removed, Council would be forced to meet whatever conditions such external bodies choose to invoke. This would put Council in the position of being dependent upon the price set by these bodies with no other alternatives.

In this context, a practical course for Council would be to maintain current landfill capacity for as long as possible. This can be achieved by the adoption of a vigorous resource recovery strategy along the lines recommended below. As one Councillor put it during our consultations, *'if managed well, landfill sites are a valuable asset for the shire and not a liability.'*

### **1.7 The recommended solution**

To give effect to the recommended Resource Recovery Strategy, Council needs to immediately implement the following steps.

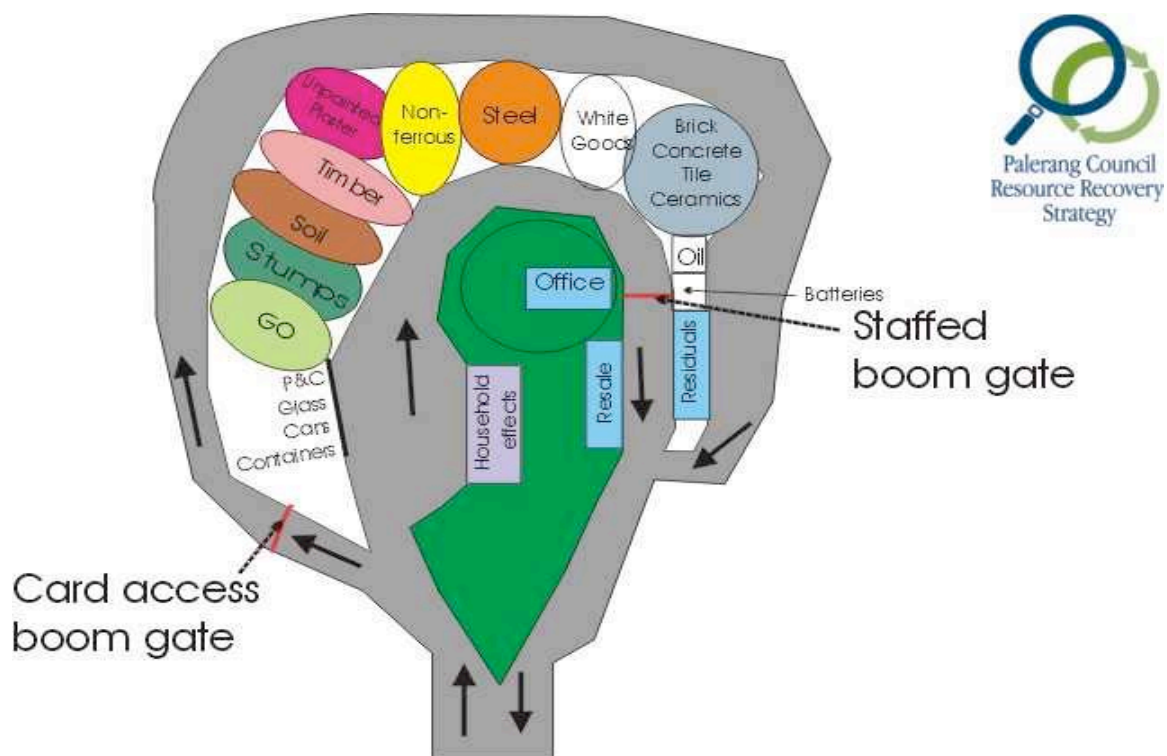
1. Appoint a dedicated Resource Recovery Officer with responsibility for waste minimisation, resource recovery and residuals management across the Palerang Council
2. Commence discussions with private contractors, local business (especially in Braidwood and Bungendore) and relevant community associations in relation to waste recovery business operations.
3. Develop a set of promotional materials to explain the new arrangements, including good composting practices.

As a priority, Council needs to better control overall access to the existing landfill sites. While the current system of tip passes works reasonably well for supervised sites it is quite ineffective at unsupervised sites.

Supervision by staff will also enable Council to introduce tipping charges for undifferentiated loads. These charges should be set to (1) encourage recycling and discourage unseparated loads, and (2) make a substantial contribution to the cost of supervision. As time passes, improvements in arrangements will mean lower operational costs.

Figure 1 below sets out an idealised transfer/waste management centre that separates the public from the landfill, encourages recycling, and that would involve minimal supervision.

**Figure 1** A Category 1 Model Transfer Station



Consistent with the existing Waste Management Strategy, it is recommended that the Bungendore Transfer Station be the first to be established under this new model. This aims to keep the Bungendore landfill capacity operational for as long as possible and reduce the need to transfer residual waste streams to other landfills within the shire, notwithstanding that there are complaints about the existing site.

It is also proposed that present Drop-off Recycling centres should be up-graded, and new ones constructed, and that existing landfill sites should be upgraded. These activities should be staged with the Drop-Off Recycling Centres being an immediate task and other up-grading activities being undertaken over the next three years. Initially the Drop-off Recycling centres might be for co-mingled recyclables, but in a year or so this effort should turn to separation of recyclables. These facilities could potentially operate under the auspices of local associations where there is an interest.

It is recommended that an organic bin kerbside collection system be introduced in Bungendore, Braidwood and Captains flat, similar to a current operation in Queanbeyan, and to one under consideration in Goulburn. This would provide the feedstock for a later pilot bio-



conversion facility for the shire. In formal discussions with the NSW Department of Environment and Conservation, there is strong support for this action, including potentially some initial funding as part of a project with the two other local councils mentioned above, to establish an effective bio-conversion process.

As approximately 70% of NSW waste streams are organic in origin, a bioconversion facility has the potential to produce a massive reduction in waste now going to landfill. Such a facility produces valuable materials such as compost, worm liquid, soil conditioners and liquid fertilisers that can be sold to a wide market. This is a process which may take time to establish and commercial investment is required. Nevertheless, in our consultations we found there are some local people with an interest in considering such a bio-conversion facility on a commercial basis under contract to Council.

**1.8 Financial implications**

The following Table summarises the envisaged outcomes for this project. The details of these calculations are found in Section 5 and Attachment 8. However it appears that the initial outlay from setting up the necessary infrastructure, amortised over a 20 year period, and allowing for 4% inflation increase annually, plus anticipated income from charges of unseparated loads and sales of products, and present waste charges, means that the Resource Recovery Strategy is a viable proposition.

The data used in our calculations is based on Council sources and NSW Department of Environment and Conservation handbook on the design and operation of rural and regional Transfer stations.

Table 1: Financial results for a Resource Recovery Strategy

<b>Year</b>	<b>2006/7</b>	<b>2007/8</b>	<b>2008/9</b>	<b>2009/10</b>	<b>2010/11</b>	<b>2011/12</b>
Expenses	1,209,115	1,332,674	1,464,522	1,314,820	1,371,366	1,429,715
Income	1,302,900	1,403,410	1,447,480	1,485,735	1,517,270	1,543,700
Net result	93,785	70,736	-17,042	170,915	145,904	113,985

The assumptions behind these calculations are important. The principal assumption is that by employing a Waste Officer, part time staff at each landfill, by provision of distributed Drop-off recycling stations and charging to source separate at each landfill, then over time the Resource Recovery strategy will become a positive one for residents and Council alike. Assumptions regarding sales and productivity increases at land fill sites are difficult to be specific about.

In this section of the report we also briefly discuss the notion of ‘externalities’. These are costs which are born by the overall community rather than by individuals. They need to be part of Council considerations, especially in light of global warming and other resource depletion. This matter has become one of especial significance in the political arena with the release of the so-called Stern report in the UK<sup>2</sup> which states that “what we do in the next 10 or 20 years can have a profound effect on the climate in the second half of this century and in the next.”

**1.9 Conclusions**

Achieving potential positive financial results from implementing a Resource Recovery Strategy will depend upon the extent to which Palerang residents effectively recycle their

<sup>2</sup> [http://www.hm-treasury.gov.uk/media/8AC/F7/Executive\\_Summary.pdf](http://www.hm-treasury.gov.uk/media/8AC/F7/Executive_Summary.pdf)

materials and expected productivity improvements in the way the system operates. This can be an uneven process. Offsets to these issues include population increases, personal consumption patterns and associated packaging and production materials. Whilst there is considerable recycling already, there is room for improvement.

The following factors are all important

- on-going education about the importance of recycling
- how to effectively recycle
- an easily accessed infrastructure
- having local champions
- good staff and efficient operations at Transfer Stations and Landfill sites
- Council is leading by example
- financial drivers including charging for unseparated, co-mingled loads

In the end, the real outcomes will depend upon a culture in support of resource recovery across all aspects of the Palerang council.

There is a market for separated recyclable materials, although perhaps variable over time. Nevertheless, Palerang has the space to store materials until there is enough of these materials that will attract buyer attention. There is a role for local organisations in these aspects of a Resource Recovery Strategy and the proposed Waste Resource staff person will be important.

Collecting and composting available 'greenwaste' is an especially significant opportunity.

### **1.10 Recommendations**

1. That Council adopt a Resource Recovery Strategy
2. That a culture of recycling is encouraged across the whole Palerang Council, including within Council operations, and that this matter is in the forefront of public discussions and any financial package related to waste management in future years.
3. The responsibility for the practical implementation of a Resource Recovery Strategy will be considerably assisted by the employment by Council of a Waste Resources staff person
4. That the implementation strategy and timetable as outlined in detail in section 4.2 be implemented.
5. That a charging regime be introduced at all landfill sites for unseparated loads.
6. That a charge is introduced in the Burra section of Council to off-set capital and operating costs of Recycling Stations and Drop-off points

## 2. INTRODUCTION

The background to this project is outlined in the Executive Summary above. A general background on the Palerang Council is given at Attachment 1.

### 2.1 What is Waste?

In nature there is no waste. Everything not needed by one organism becomes the input for another. However, in western consumer oriented societies, waste is and will remain a significant issue for local government. Internationally recognised principles such as polluter pays, downstream liability for damage to human and environmental health, and the requirement for originators of products to take responsibility for their products at the end of their useful life will have enormous long term consequences. The first of these principles is becoming well recognised in Australia, especially in relation to greenhouse gas emissions. The second one has long been recognised under common law and the third will become law in this country when the World Trade Organisation principles come into force in 2008.

These principles will impact on the design of manufactured products, nature and quantities of associated packaging materials and the processes used to produce them. In the long term they will result in substantial reductions in overall waste streams. However it will always be necessary for local authorities to oversee and, when appropriate, manage recycling services, especially the recovery of organic materials which represent around 60% of current waste streams. Organic material can best be recycled locally and is the most effective means of supporting local enterprises that use organic products in agriculture, viticulture and horticulture.

In the short term however, local authorities continue to be faced with the primary responsibility for waste generated in their area. The NSW *Waste Minimisation Act* of 1995 (the Waste Act) defines waste as substances that are discarded, rejected, unwanted, surplus or abandoned.

The NSW Local Government Act, 1993, gives responsibility for waste matters to local councils. The NSW Government's *Waste Avoidance and Resource Recovery (WARR) Strategy 2003* produced by the NSW Environment Protection Authority describes Council responsibilities in general terms as

*"...dealing with municipal waste, through garbage, recycling and hard rubbish collections. Councils also have responsibility for a number of specific waste functions including domestic waste collection services and street cleaning. They regulate many of the activities such as housing developments, pollutant control, littering, and illegal dumping. Some Councils operate landfills and recycling facilities."* (p15)

In rural areas close to larger urban populations, such as Palerang, council also must accept and manage quantities of commercial and industrial waste.

The subject matter of this report is *waste*, which is defined in the WARR glossary as "*those materials that are generally disposed of at solid and inert landfills*".

The NSW Local Government Act identifies 'garbage' as "*refuse other than trade waste and effluent*". It includes any other substance defined as waste for the purposes of the Protection of the Environment Operations Act 1997 (the POEO). A substance is not precluded from being waste merely because it is capable of being refined or recycled. However, our report also covers "commercial and industrial waste", most of which is produced from the small retail business sector in the towns of Bungendore and Braidwood. Other significant

components are farm waste, out-of-area flows and non-council collected rural-residential wastes.

The sections dealing with waste in the POEO Act divides waste into different classes based on their sources: whether it is liquid or solid and its impact on the environment. NSW does not recognise gaseous emissions as “wastes” even though they have a huge environmental impact. For example, the value of CO<sub>2</sub> for plants and its potential to be fixed as soil carbon and provide food security for the growing human populations appears not to be specifically noted.

Under the POEO Regulations, waste is categorised as being (1) municipal, (2) commercial and industrial and (3) construction and demolition. In general discussions of waste in Palerang, because of its particular demographic make-up, there is a tendency to focus primarily upon **municipal waste**, which is waste arising from domestic premises and from council activities associated with servicing residential and public areas. However, the waste streams of rural property owners (about 2000 people: or 18% of the Palerang population) are important but arrive at various deposit sites (landfill or recycling deposit drop-off points) through either a self-haul process or via a private contractor.

In NSW the disposal of domestic waste on farms is also governed by the POEO Regulations. In practice, where waste is organic, on properties large and small, it tends to be recycled for the most part, although residual, other recyclable materials, household hazardous chemicals or products or specified dead animals are brought to landfill. In Palerang, rural residential areas and the smaller villages do not have Council kerbside waste collection services. This service is restricted to Bungendore, Braidwood and Captains Flat.

**2.2 Commercial and industrial (C&I)** waste is defined as waste materials generated by commercial establishments such as offices, stores, vehicle repairers and hotels, and non-biodegradable waste generated in industrial or manufacturing processes and domestic waste collected by a non-council contractor. As there are relatively low levels of commercial or industrial activity in Palerang Council, this category, as might be expected, is low volume and tends to be either placed in existing kerbside collection bins, taken by proprietors themselves to landfill or contracted privately for disposal. However, a significant component of the out-of-area waste being delivered to the Palerang landfills is C&I.

**2.3 Construction and demolition (C&D)** waste results from construction, refurbishment or demolition of new or existing buildings. Given the nature of some of the forthcoming projects in the shire, there might be expected to be some short term impact to Council’s waste management and resource recovery strategies. Such materials also come in from sources external to the shire. Some of this is planned for, while some is not.

The waste stream can also be considered by dividing it into commodity types such as food, paper, plastics, wood, concrete, glass etc. The NSW Department of Environment and Conservation (DEC) uses 12 categories following the recommendation made by Dr. D Knapp and M. Van Deventer (2001)<sup>3</sup>. This type of categorisation is important for potential recycling of goods and impacts upon Transfer Station design described below.

## **2.4 Waste as a Resource**

Concern with resource recovery means that when we use the term ‘waste’, what we mean is “resources which we can re-use”<sup>4</sup>. As the NSW WARR Strategy suggests, there must be a

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<sup>3</sup> Dr. D Knapp and M. Van Deventer (2001)

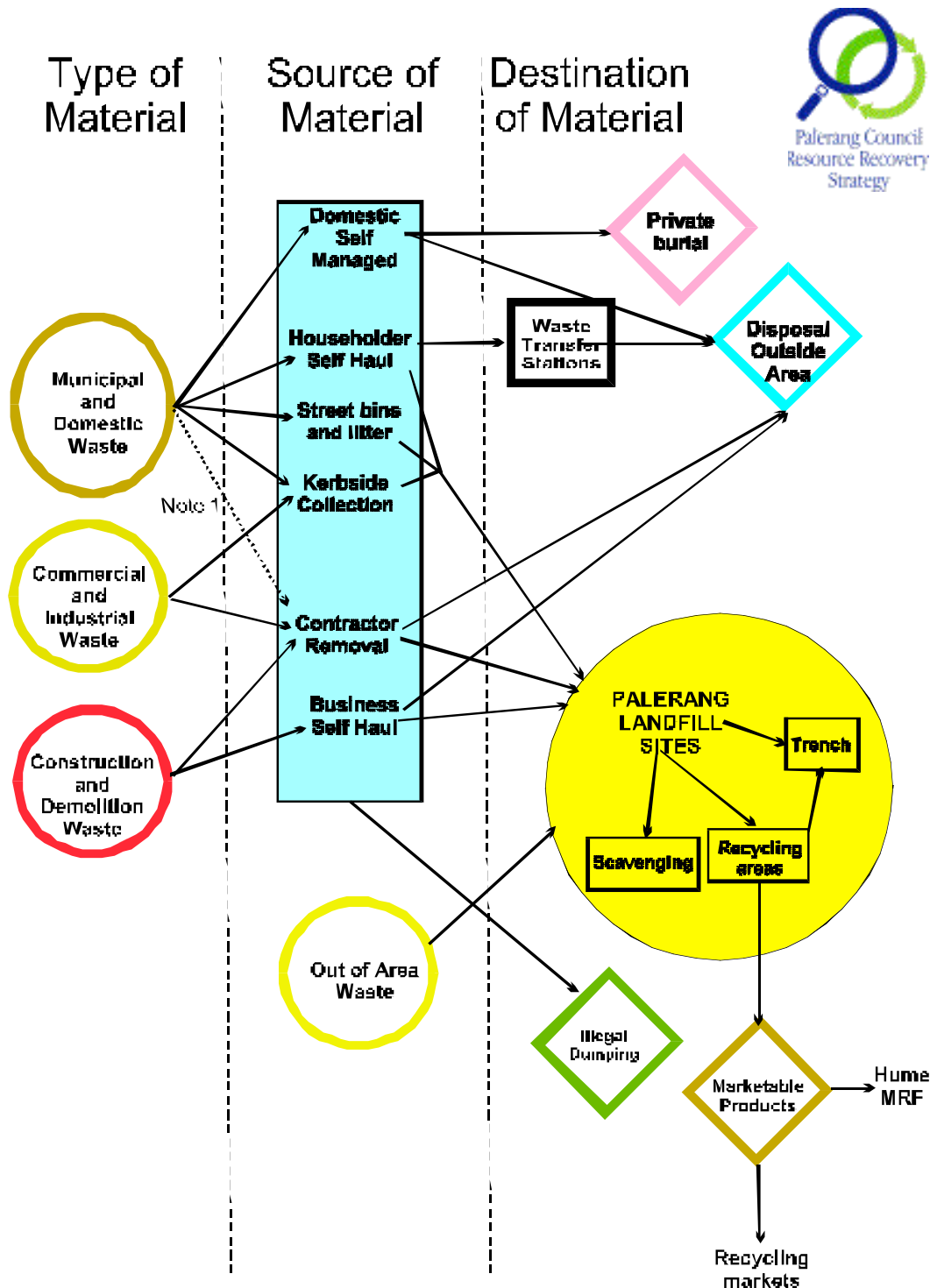
<sup>4</sup> P7, NSW Government’s Waste Avoidance and Resource Recovery Strategy 2003,

change in attitude on the part of the community which moves from thinking of disposal to thinking of re-use and recycling, and even more deeply, to prevention and avoidance of waste.<sup>5</sup>

Additional details of NSW legislative requirements are at Attachment 2.

Figure 2 below sets out the material flows of ‘waste’ in Palerang Council as we have found it in our study.

**Figure 2:** Material flows of waste in Palerang Council

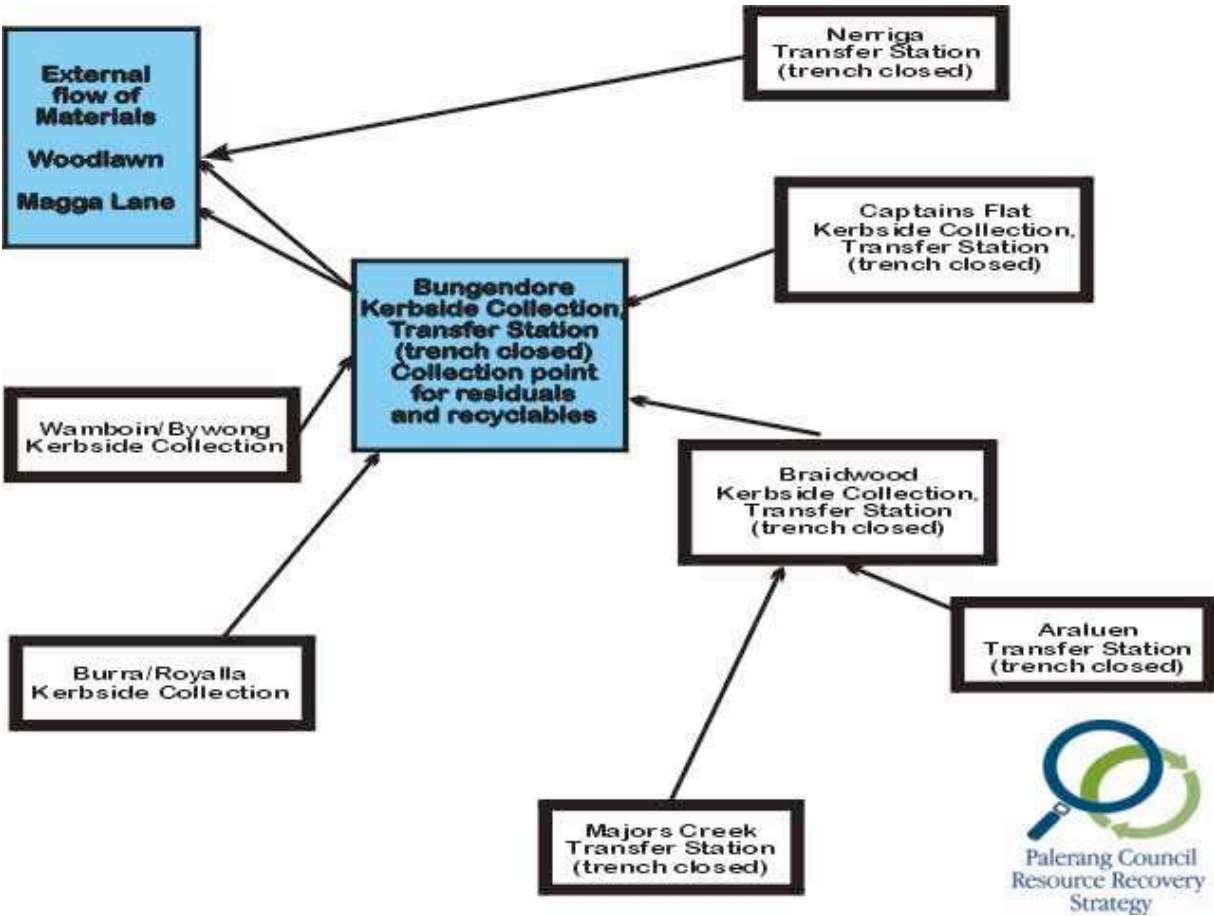


Note 1: Domestic waste once picked up by a non-Council contractor becomes commercial waste  
P7 Ibid

Figure 3 below is an overview of the system which would be in place by closing landfill trenches without a Resource Recovery Strategy. Under these arrangements, in the end, so-called waste materials are picked up and taken to central locations within the shire, only to be then further transported to locations external to the Palerang council and for which significant entry charges apply.

This arrangement has important potential weaknesses. It is based on a collection process where, to keep costs down, a high cost vehicle can only pick up co-mingled recyclable materials per trip. These materials are then transported to sites outside the shire for a second separation by highly capital intensive processes, and for which there are charges. This process leads to a loss of potential associated economic benefits for internal shire organisations. The process is also inconsistent with the ultimate aim of sustainable development. Later we will investigate these matters in more detail, including the matter of process costs.

**Figure 3** An alternative to a Resource Recovery Strategy



### 3 DEVELOPMENT OF THE STRATEGY

#### 3.1 Aim

The primary aim of a Resource Recovery Strategy for the Palerang Council is to minimise the amount of waste going into landfill, and to do so in a cost effective manner that fits within the broader NSW Government's WARR Strategy. The approach in this report to developing our recommended resource recovery strategy involves three broad stages as outlined below.

- |         |  |
|---------|--|
| Stage 1 | Data collection and review, project promotion, initial key stakeholder meetings (including relevant State Government Departments) and a questionnaire to all residents. See Attachments 1-6, 11 for the basic data |
| Stage 2 | An analysis of collected data, holding of community consultation forums, a Planning Forum, development of a Draft Resource Recovery Strategy and discussion of outcomes with the Council Waste Committee.          |
| Stage 3 | Finalisation of a proposed Resource Recovery Strategy, public review and completion of project reports.  |

#### 3.2 Stage 1

In summary, this stage is now completed and covered:

- a short review of the legislative context – details are in Attachment 2, discussed in 3.2.1;
- a detailed survey of waste deposits at the Captains Flat landfill site in January this year – details are in Attachment 3 but also discussed 3.2.5;
- placement of project materials on the Council web site;
- meetings with key NSW Government Department representatives;
- preparation and data collection from a shire-wide questionnaire – Attachment 6 – discussed in 3.2.5; and
- community forums and other key stakeholder discussions including forums with local business people – Attachment 5.

##### 3.2.1 Legislative context

Legislated responsibilities for waste management, the setting and monitoring of standards and enforcement arrangements are complex. The URS report prepared for Council in 2005 gives a recent summary. Since then, in March 2006, the NSW government updated the *Protection of the Environment Operations Act 1997* by including specific requirements for tracking waste and imposing waste levies. Legislation relevant to waste management includes:

- Environmental Planning and Assessment Act, 1979
- Protection of the Environment Administration Act, 1991
- Local Government Act, 1993
- The Protection of the Environment Operations Act, 1997
- Waste Avoidance and Resource Recovery Act 2001

A brief summary of the relevant provisions is provided at Attachment 2.

The NSW Government's *Waste Avoidance and Resource Recovery (WARR) Strategy 2003* produced by the NSW Environment Protection Authority describes Council responsibilities in general terms as:

*“...dealing with municipal waste, through garbage, recycling and hard rubbish collections. Councils also have responsibility for a number of specific waste functions including domestic waste collection services and street cleaning. They regulate many of the activities such as housing developments, pollutant control, littering, and illegal dumping. Some Councils operate landfills and recycling facilities.”<sup>6</sup>*

### **3.2.2 Waste deposits at the Captains Flat Landfill and from bin audits.**

The Project Brief required a survey of the disposal of waste at the Captains Flat Landfill site. Two consultants recorded visitor numbers, vehicle types and origins and estimated volumes and types of waste deposited for three days in January. A specific report was made on the results of this investigation and is included in **Attachment 3**.

Bin audits were also carried out for Bungendore, Braidwood and Captains Flat. They covered both recyclables and unseparated household waste. The results are summarised in section A3.3.1 Audit of Kerbside Bin Contents. Attachment 3 also has details.

The NSW Government’s WARR Strategy makes it clear that putting waste into landfill is highly undesirable for economic, environmental and social reasons. Waste streams contain valuable resources that, if recovered cost effectively, would be competitive with and possibly more economic than, extracting them from the natural environment. The natural environment benefits from a lower demand on its resources. However, the main environmental benefit of eliminating landfill is that landfill sites are damaging because they produce greenhouse and other gaseous emissions and leach toxins into the surrounding region. They also breed vermin and harbour disease, including soil diseases, have odours, fires, windblown litter, and inherent problems with the daily covering of waste.

Council has decided to close the landfill sites at Captains Flat and Macs Reef Road, and transfer the management of the Collector Landfill site (which was within the Palerang Shire Boundary) to the adjoining Goulburn-Mulwaree Council, which includes the village of Collector. A small proportion of Palerang residents use the Tarago landfill site.

### **3.2.3 The placement of project materials on the Council web site**

Materials were placed on the Council’s web site. This included details of the project, such as consultation forums, but also a discussion kit which identified key issues, facilitated local small group discussion and was another mechanism for feeding information back to the consultants on this matter. This facility was not however used by local people.

### **3.2.4 Meetings with Council staff, NSW Government Department representatives, business people and contractors**

This step included:

- an initial discussion with Council staff, including all on-site landfill staff
- meetings with representatives of DEC, EPA,
- brief discussion with private contractors regarding processes in place for collection of waste in rural residential areas such as Burra and Wamboin,

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<sup>6</sup> P15 Ibid



- Meetings were also held with businesspeople in Bungendore, and the Braidwood Chamber of Commerce.

Meetings were held with key NSW Government officers and representatives from adjoining Councils. These included Department of Environment and Conservation, NSW Environmental Protection Authority, Queanbeyan Council. Meetings were also arranged with ACT NOWaste, Revolve. Additionally, the consultants participated in a forum organised by Zero Waste Australia. Contact was made with local private contractors operating in the shire and with some who operate in other shires.

Consortium members visited all landfill sites in the shire, the Collector landfill site and a number of the recycling drop-off points. Interviews were held with staff where they were employed at a landfill site, or other key local stakeholders with a direct interest or involvement and where there is no staff at the relevant landfill site. Estimates were made of the volumes and waste types at each of these sites and data from NSW DEC was collected – see Attachment 3. Discussions also focused on design issues and the collection of materials by private sector companies.

### ***3.2.5 Preparation and data collection from a shire-wide questionnaire***

Assistance was provided to Council staff to develop a questionnaire that was distributed by mail to 5,821 residents. Allowance was made in distributing the questionnaire for those who owned a number of properties and also for government-owned properties. The result was that a simple survey form was mailed to virtually all resident ratepayers. It was considered this method offered the most practical way of ensuring that the maximum number of residents could be reached with a high probability of a reasonable return rate.

Of the 5821 questionnaires sent out, 1,502 (26%) were returned. Around 1,101 (73.3%) of these were from rural and rural residential ratepayers, 342 (22.8%) from urban ratepayers and 59 (3.9%) were categorised as neither of these. The 26% return rate is high over all in terms of general return on such surveys. The preponderance of rural returns suggests that waste is a much bigger issue for rural and rural residential ratepayers.

Rural ratepayers do not have collection services. At present they pay a general waste charge of \$180 per year per property to cover landfill operations and planned new waste facilities, landfill closures and restoration, and general resource recovery programs, while urban ratepayers pay \$333 per annum consisting of \$253 per property for kerbside wheelie bin collection and \$80 general waste charge for landfill operations.

Of those who returned the questionnaire, 65.1% predominantly use the existing landfills to manage their waste. Of these, 57.7% use landfills within the shire and 7.4% use landfills outside the shire area. Council waste collection services are used by 20.4% of the respondents and 12.8% use other contractors to manage their waste. Around 8.4% use their own properties and 13.2% use municipal bins or make other arrangements.

As the majority of respondents were rural and rural residential ratepayers with no kerbside services, it is not surprising that such a high proportion of respondents used

landfill. These ratepayers also showed a high tendency to compost their organic waste (58%) and feed kitchen scraps to animals (33%). They also showed a strong tendency to recycle.

Regarding kerbside collection, if we consider differentiating between urban communities and rural and residential, then 26.2% of the town respondents favoured kerbside collection, and 18.3% expressed at best low support, while for rural and residential communities the figures were reversed. That is, 15.7% of the respondents favoured kerbside collection while 39.8% effectively did not.

A detailed analysis of the survey results is included in **Attachment 5**.

### **3.2.6 Community forums**

This step entailed holding community forums. Community forums were promoted and organised in six locations. The forums were advertised in the local newspapers and promoted through word of mouth, with the assistance of local associations and key individuals, on the Council web site and through posters displayed throughout the shire. Attendance was very good at Wamboin/Bywong, Araluen, Majors Creek, Nerriga and Burra, but poor at Bungendore, Braidwood and Tarago. This is consistent with the survey results that showed that landfill issues are not so important where existing kerbside collections are in place and operating well. Although outside the Palerang borders, Tarago was chosen to reach those ratepayers who might use the Collector or Tarago landfill sites. A full report on the community consultation forums is at **Attachment 4**.

### **3.3 Stage 2 Data collection and analysis**

This stage included:

- a literature search on overseas experience, the NSW legislative requirements, and previous reports. The results of this literature research are presented throughout the report;
- analysis of available demographic data and projected population data for the shire. This is presented in Attachments 11, along with mappings of the flows of materials through the shire.

The data mentioned above was presented and discussed at a small planning forum with key stakeholders from around the Palerang Council on March 22<sup>nd</sup>, and also at a project directions presentation of the draft Resource Recovery Strategy to a meeting of Council on May 4<sup>th</sup>.

The broad directions proposed in the draft Strategy were endorsed to enable preparation of a final Draft Resource Recovery Strategy that will be circulated more widely for discussion among the community.

### **3.4 Stage 3**

The Draft Resource Recovery Strategy is to be made available to the community for comment, after which time the report will be reviewed and a final copy produced.

## **4. STRATEGY DISCUSSION**

This section outlines the basis to a Resource Recovery Strategy

### **4.1. Principles**

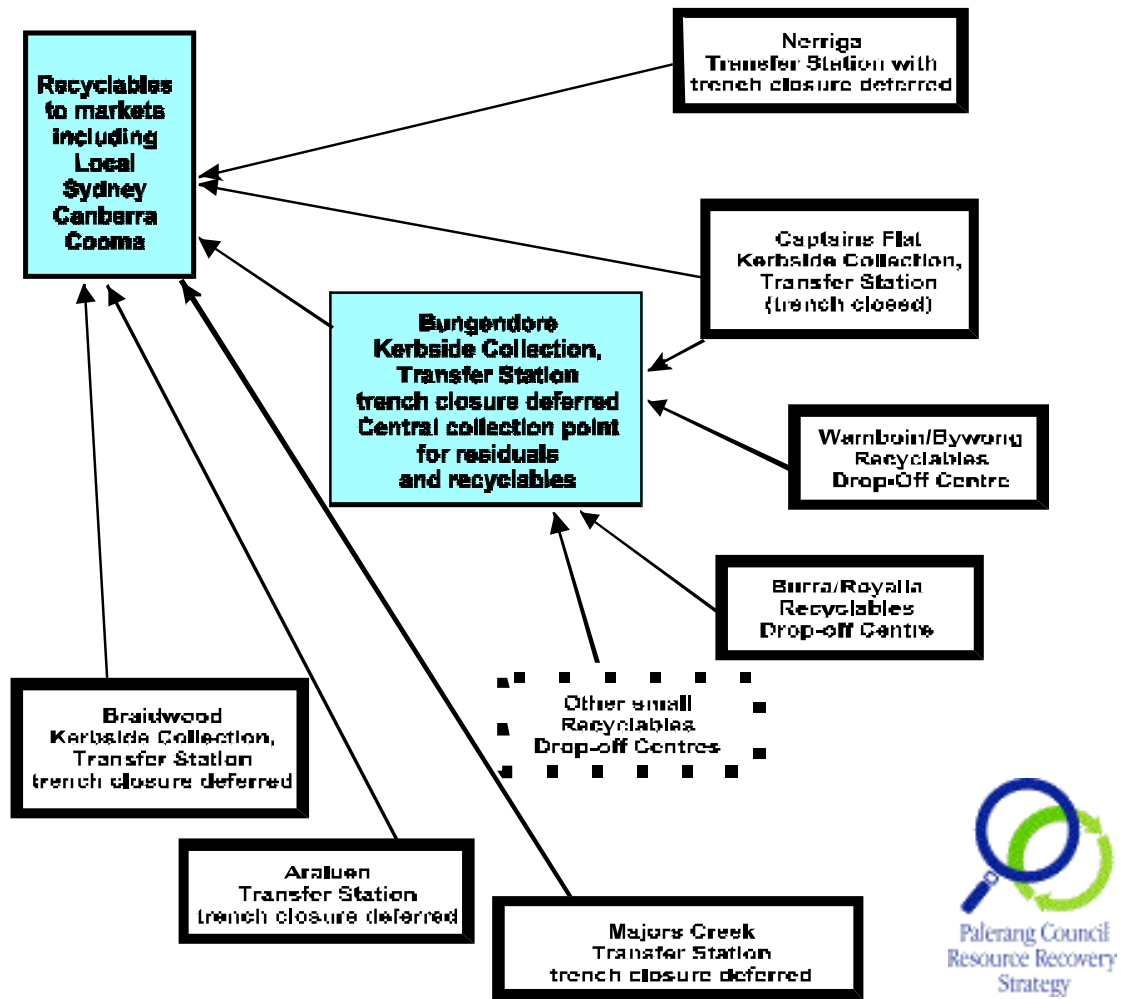
The principles used to underpin this resource recovery strategy were:

- provide a practical and economic waste management operation for Palerang Council;
- achieve high levels of resource recovery;
- operate within the NSW WARR Strategy objectives;
- keep resources within the shire and within control of local residents;
- leverage economic and social benefits for residents from effective management of the waste stream;
- reward those who implement sustainable practices;
- leverage knowledge-based industries from the waste stream;
- put in place a flexible arrangement that copes well in the light of future trends and changes, including demographic profiles, population changes, consumer behaviour, environmental laws and new technologies;
- minimise risk for Council;
- portray Palerang Council as a leading edge example of effective resource management;
- ensure Palerang Council can operate effectively within a regional context

Even though the Resource Recovery Strategy has a 10 year time horizon, we believe many of the actions which are outlined below can be phased in over a comparatively short period of five years. A key feature of the Strategy is that it is a dynamic process, and there is considerable scope for flexibility to meet changed circumstances as they arise.

Figure 4 below is a diagram of the material flows which are envisaged in the proposed strategy. The details of the economic arguments associated with this proposed strategy will be explained later.

Figure 4 Resource Recovery Materials Flows



## 4.2. Overview

The steps proposed for putting the Resource Recovery Strategy into practice are listed below. They need not be sequential and can involve parallel activities. The financial implications of the Strategy are discussed in section 5.

- Stage 1        Implement an effective organisational, promotion and learning-based process on waste recovery. Appoint a Waste Resources Staff Officer to manage and monitor the implementation of the waste recovery strategy – complete by November 2006.
- Stage 2        Provide the rural communities with ten new basic Drop-off Recycling centres straight away – complete by November 2006.
- Stage 3        Initiate the process for designing the Bungendore Transfer Station, and upgrade/establish Transfer Stations for recyclables at Burra, Royalla, Wamboin and Carwoola – complete by June 2007.
- Stage 4        Employ staff (part time at smaller sites) at each landfill site, who will monitor the use of the site through employing the existing tip pass, and organise to limit direct access to trenches. Staff will collect better data – commence on July 1<sup>st</sup> 2007.
- Stage 5        Implement a charging regime at each landfill site – commence on July 1<sup>st</sup> 2007. This will include a charging regime for the Burra section of the shire as there is no waste charge for residents at this time despite there being infrastructure and running costs incurred on behalf of residents.
- Stage 6        Build Bungendore Transfer Station in 2007/8.
- Stage 7        Build Transfer Stations at Araluen, Majors Creek, Nerriga and Braidwood. Initiate the implementation of organic recovery facilities at relevant waste management sites in towns and villages. Introduce an organics collection process for existing kerbside routes –commence July 1<sup>st</sup> 2008.
- Stage 8        Facilitate a wider bio-conversion processing operation linked to towns and villages.

## 4.3 Discussion of each stage

### ***Stage 1        Setting in place an effective organisational, promotion and learning-based process to be completed by the end of October 2006.***

The first stage of the proposed Strategy is to ensure firm foundations for subsequent action. This includes ensuring that not only are technical and systemic matters to handle waste in place and operating effectively, but also that there is widespread community awareness and understanding of the way the Resource Recovery Strategy is being implemented and what behavioural changes might be involved.

*Step 1.*

*Project implementation structure.*

Establish a Project Implementation Committee either as, or under the auspices of, the Council Waste Committee. The role of this group would be to monitor and evaluate Strategy outcomes. Members of such a Committee might include Councillors, key staff, and representatives from Business and key community organisations.

It is essential that Council identify/employ a Resource Recovery Officer to be specifically responsible for all activities involving waste minimisation, resource recovery and residuals management in Palerang Council, including consideration of organic waste recovery.

*Step 2*

*Implement a detailed communications strategy.*

This step should commence early in implementing the Resource Recovery Strategy, but it will need to be on-going. The communications strategy will introduce the idea of resource recovery to residents, and prepare them for the new Transfer Station and landfill arrangements.

Evidence from the survey suggests that recycling is generally supported and understood by the community, especially in relation to organic wastes. The challenge therefore is to ensure the waste management system can meet community expectations and reward those who source separate and recycle. Of course, there will always be a proportion of the community who will not be good at recycling and supervision will be necessary, but in the scheme of things this is significantly cheaper than managing mixed waste with subsequent separation.

*Step 3.*

*Preparations for establishing effective entry points on existing and staffed landfill sites.*

This step involves the entrances to existing landfill sites. We propose simple entrance gates be installed for Bungendore and Braidwood in order to facilitate better flow of people using the site and separating material. Model designs for these sites are presented in Attachment 6

The evidence from consultation forums and individual interviews reinforces the need for staff supervision to both guide and monitor the disposal of material at a Transfer Station. It is widely agreed that no public access should be given to open trenches.

The new tip card system aims to ensure that only local residents are able to use landfill facilities. This has not been effective at unsupervised sites. The introduction of tipping fees along the lines recommended below and at least at the same level as

imposed by surrounding local government areas and the ACT will reduce the incidence of non-residents dumping. These charges must be structured to encourage separation of recyclable materials through the design of the Transfer Station. Unseparated loads would attract a high fee and possibly a surcharge from non-residents.

The principles underlying the designs for the various Transfer Stations illustrated at Attachment 6 aim to:

- collect more accurate data upon visitor arrival through a simple form design and data to be recorded for each day of opening;
- require no charge for well separated and accurately deposited materials;
- use boom gate techniques to assist in traffic flows;
- facilitate secure and accurate record of payments;
- have excellent signage and instructions;
- give no public access to open trenches;
- include gardens and landscaping; and
- facilitate resale of household goods.

*Step 4.*

*Local Business forum on waste collection*

Not a great deal is known about waste collection from business premises in Palerang. Arrangements seem to vary considerably. Businesses are concerned about packaging materials (paper, cardboard, plastics and mixtures thereof). There is also a small food service sector which produces materials such as organic wastes, as well as other small businesses which produce wastes which need to be monitored such as oil and chemicals. Additionally, farm businesses generate significant quantities of materials, most of which can be recycled if appropriate systems are established.

Business waste is likely to be placed in domestic kerbside containers (eg. bottles), while less frequently and for larger enterprises, they are placed in larger skips (paper and cardboard) and taken away by a contractor. Some businesses self haul to landfill sites.

The value of working more closely with business is to improve collection of recyclable materials at source. It also offers the potential for new micro businesses to utilise available materials such as inorganic materials (iron, steel, plastic etc) and organic matter in worm farm and other composting activities. There are also excellent examples of artists and artisans using recycled materials. The opportunity here is to identify people who might use materials both of a reasonable quality and quantity.

*Step 5.*

*Private contractors meeting*

A number of private waste contractors operate within the shire. They range from the smaller companies which collect household waste from residents living in non-urban areas of the shire (eg Burra, Urila, Bywong, Wamboin), to large organisations employed by Council to take the recyclables to the Materials Recycling Centre in Canberra (eg Thiess).

The role of these companies in an overall strategy for Palerang merits deeper consideration than has been possible during the brief period of this consultancy. At present, smaller contractors visit properties according to individual property owner needs. There is no strong incentive for these contractors to incorporate wider environmental costs which governments are currently not taking into account. The NSW Government WARR strategy, or waste tracking of the POEO regulations, will make this approach less attractive in the future.

For many of these companies, costs are the immediate focus. Payment of costs for depositing co-mingled loads will have a significant impact, but it is one which might be turned to advantage by suggesting that they request their clients to separate their waste materials better. Theoretically, this action should not alter any process steps for these companies. In fact, it might be an added bonus to help them participate in finding a market for such recyclables, rather than adopting other arrangements with existing deposit locations, as is presently the case.

In the light of the possibilities mentioned above, it is recommended that Council facilitate a meeting with small companies to discuss the issues involved. Such a meeting would also facilitate source separation and recycling among their clients. It also has a potential connection to step 7 below.

*Step 6.*

*Product market opportunities*

The thrust of this Resource Recovery Strategy is to change the focus from a “push” effort where Council seeks to persuade the community to do the right thing, to a “pull” focus where key stakeholders see merit in identifying the sources of waste and can extract value from the separated products.

Under the auspices of the SERRROC, it is proposed that a mechanism is developed to generate more detailed knowledge about potential markets and buyers of recycled materials. This information will be of use for local associations (see next step) and might be undertaken in conjunction with companies such as Smorgons, Sims or Revolve etc.



*Step 7.*

*Community Association workshops for recycled materials businesses.*

During the consultation part of this project, a number of community associations raised the issue of whether they might operate small businesses based on running Transfer Stations at landfill sites. There are many issues associated with such proposals, but such an approach could result in considerable benefits at a shire level. To help establish such initiatives, Council could facilitate access to practical advice about operating a materials recycling enterprise on a private basis, either as a profit or not-for-profit arrangement. This might be done through arranging workshops and key note speakers or through direction to other business enterprise development programs.

It is proposed a series of workshops be planned and held for interested local associations on the subject of operating local Transfer Station enterprises. This proposal might also be carried out within the framework of a SERRROC strategy.

A particular aspect to this activity is for more knowledge to be made available regarding composting. In Attachment 10, reference is made to the opportunities in this field. The suggestion is made that local or decentralised resource collection, sorting and processing/treatment at a designated and controlled space within a small village might be investigated and implemented.

*Step 8.*

*Through SERRROC, hire mobile weighing equipment.*

Over a number of years, discussions at a regional level have focused on the advantages derived from knowing more about the nature, volume and weight of materials which are deposited at landfill sites or Transfer Stations. The data collected for this project suggests that the quantities of municipal and domestic waste going to the various sites in Palarang Council may not be so different from what has been previously identified through other research carried out in this field. However, estimating these quantities precisely is difficult, but the problem is greatly reduced through the adoption of a Resource Recovery Strategy.

To help in the establishment of more precise quantity measures, it is nevertheless proposed that, within the South East Resource Recovery Regional Organisation of Councils (SERRROC) strategy, arising from its inaugural meeting, Palarang Council hire a mobile weighing machine to be used at its main sites of, Bungendore and Braidwood. Financial support for this action would come from the SERRROC budget.

**Stage 2**            ***Reaching out to the rural communities by providing nine new or upgraded Drop-off Recycling centres and which would be completed by October 2006.***

**Step 1**            The aim of this action is to provide facilities to those who live in non-urban areas. Survey results and consultation forums reflected some disquiet over the waste charge imposed upon residents when in fact they consider they received no service, nor were they being recognised for their efforts at recycling.

It is proposed that ten new Drop-off centres be established. These are defined in the report as Category 4 facilities which are constructed simply with some grading and preparation of the site, hardstand, seal, slab, bollards, iron framework and locks to hold down approximately 12-20 x 240 litre bins.

Proposed locations are: Ballalaba, Mongarlowe, Durran Durra, Boro, Mt Fairy, Taylors Creek, Bywong, Sutton Acres, Little Burra and Urila. These facilities are easily reached by residents throughout the Shire and will take, to begin with, co-mingled, recyclable materials. It is envisaged residents will, after a period, source separate these materials and these actions may be monitored by local associations/community groups as a potential money raiser.

**Stage 3**            ***Initiate the process for building the Bungendore Transfer Station, and upgrade 5 Transfer Stations for co-mingled recyclables materials – complete by June 2007.***

**Step 1**            *Design Bungendore Transfer Station*  
A model for this site is at Attachment 6. The Bungendore Transfer Station is defined in this report as a Category 1 facility. It will require some significant infrastructure and associated recycling facilities, including facilities for residuals. Upon eventual closure of the trench, these residuals will need to be transported elsewhere. The more materials recycled however, the longer the trench capacity will be available.

**Step 2**            *Design and construct 4 Transfer Stations with co-mingled recycling only capacity.*  
These would not take residuals. These are defined in this report as Category 3 facilities and consist of an up-grade from Category 4, with more structure to facilitate source separation and possibly an area set aside to hold volumes until transfer or usage becomes economic. It is envisaged that bigger containers will be available e.g. wool packs and containers etc and some slotted wall structure built to receive recycled materials. It may include 240 litre bins, depending upon final use and this number would also be 20 bins. These facilities are proposed for Royalla, Burra, Carwoola, Wamboin. It is recommended that discussions occur with Queanbeyan regarding the Royalla facility as some synergies may be achieved in joint action.

**Stage 4**      ***Employ staff at each landfill site, who will monitor the use of site through existing tip pass, and organise to limit direct access to trenches. Staff will collect better data.***

**Step 1**      The results of the consultation forums and landfill site visits demonstrated that staff on site have an important role to perform. This role covers checking on users, obtaining and recording data and providing advice and assistance to users regarding separation and deposit and monitoring the overall operations of a Transfer Station. Having staff is an excellent way to prevent the use of trenches and to facilitate improvements in resource recovery. They will also facilitate the potential gathering and effective storing of materials for subsequent sale that may be linked to income options for community groups. It is therefore recommended that staff be employed, as happens already for Bungendore and Braidwood, and that a pro-rata employment arrangement be instigated in each of Araluen, Majors Creek and Nerriga.  
It is envisaged that staff will receive training for the next proposed action of implementing a charging regime for co-mingled loads.

**Stage 5**      ***Implement a charging regime at each landfill site – commence on July 1<sup>st</sup> 2007, and a charging regime for the Burra section of the Shire.***

**Step 1**      *Introduce charges for co-mingled loads at landfill operations.*  
This may require temporary infrastructure, for example boom gates to prevent open access to the trench, and a covered accessible space for residuals before they are placed in the trench. To enable staff to facilitate separation of residual from co-mingled loads, it may be necessary to locate a space away from the open trench where such loads may be deposited. It is suggested this would be an additional element to the Captains Flat Transfer Station design.

**Step 2**      *Introduction of a charge for the Burra area.*  
Opposition to any change in arrangements regarding waste management within the Burra area of Palarang was voiced at our consultation forum. It should be noted that services are already being offered for recyclable materials and the true cost of disposal of residuals, where it happens, is being transferred to other jurisdictions. However, the cost ought not to be the same as paid by others in the shire as residents do have easy access to a landfill site.

We have also proposed that recyclables collection facilities should be developed, one in Burra Park, or potentially moved to another location closer to the Old Cooma Road (little Burra), and one in Royalla, the costs of which might be jointly shared with Queanbeyan Council. The cost for these facilities and the transport of recyclable materials need to be shared among the community. Discussion should also be initiated about the potential for local community groups to become part of the

operations of these facilities as a way of raising funds, or discussions might take place with the existing local contractor to have a role.

*Step 3*

*Monitor co-mingled charge program*

Data collection is an important task in this process, both quantitative (vehicle numbers, volumes, trends, costs etc) and qualitative (suggestions regarding traffic flows, ease of disposal, signage, attitudes, general design responses etc). The results of the implementation of charges and data collection will be useful in developing the fine detail of subsequent business opportunities and the final design for these locations.

*Step 4*

*Transfer Station management program for community associations*

Coincident with the introduction of a co-mingled charge we propose a pilot community, or private sector Transfer Station management arrangement, be located wherever demonstrated and serious community interest is shown. This will involve Palerang Council facilitating working with interested community groups to ensure the appropriate activities are undertaken and the prospective operators appreciate the real costs involved in such an operation. An element in this process might be to identify the benefits of storage of recycled materials until sufficient quantities are collected to sell into the market. A key element of this action might be the introduction of processes to compost organic wastes.

*Step 5*

*Confirm costing for collection of recyclable materials*

Application of the principle of resource recovery is not only a practice to meet wider NSW Government and Palerang Council ecological sustainable development policy objectives, but a process of ensuring value for money for the community. This requires a system based on:

- best practice source separation, and consequent low contamination;
- cost effective materials collection;
- collation and distribution of materials meeting identified quality standards (i.e. very low contamination);
- low risk in meeting and maintaining such conditions; and
- a robust, effective process for a long period.

There is scepticism regarding the economics of source separation at the more distant Drop-off Recycling stations, based on a belief that it is too costly given the existing investment in infrastructure, the need for repeated visits by collection vehicles for individual components, and there may be no room for longer periods of storage of items. This issue however may not be straightforward as it will depend upon a fluctuating market for separated items, entrepreneurial behaviour and attitudes towards sustainable behaviours by locals. Thus there is a need to monitor these circumstances as they may become beneficial to Council. This issue is taken up in further detail below in **Attachment 8**, section d.

**Table 1 The process options in Palerang are outlined in the following table.**

<b>Option</b>	<b>Maintain status quo</b>	<b>Centralised process to keep product</b>	<b>Decentralised process to keep product</b>	<b>Product stream specialist</b>
Description	Council, or contractor, collects kerbside or Transfer station recyclable materials which are taken to the ACT Materials Recovery Facility (MRF).	Recyclable materials are taken from Transfer stations, or kerbside collection, and stored at a central Palerang site.	Recyclable materials are retained at distributed centres, and collected by interested parties	Selected recyclable streams collected while remainder not separated or not until reach landfill sites where can be hand separated.
Strength	Known waste industry companies already in place. Limited risk. Particular sector expertise exists. Quick and easy collection.	Industry companies exist; Products kept within shire. Potential off-sets through sales.	Limited central infrastructure; Keeps control in local hands. Returns to local community.	Existing system elements in place. No new system required except for landfill separation process.
Weakness	Little recycling locally. Costly* both in terms of cash and the environment No local ownership.	No infrastructure internally to manage loads. Central storage location to support operations and requires management. Needs generation of product expertise. Needs separation of products	No guaranteed local expertise. Security for low contamination weak. No guaranteed long term management structure. Needs separation of products.	Not tackling long term environmental issues; limited returns to community; not in hands of locals. Still have to address non-major streams. No local business development.

\* see Attachment 8, section d

**Stage 6 Build Bungendore Transfer Station in 2007/8**

This stage is to build an agreed design for the Bungendore Transfer Station. The early construction of this Transfer Station has important implications. While an existing trench is available, the residuals from residents can still be left during the period of construction. By implementing a recycling strategy, through a charging regime for co-mingled loads and no access by residents to the trench, will also serve to extend the life of the existing trench.

**Stage 7** *Build Transfer Stations at Araluen, Braidwood, Majors Creek and Nerriga and subsequently introduce an organics collection process for existing kerbside routes to commence in 2008.*

*Step 1* *Confirm Transfer Station designs for Araluen, Braidwood, Majors Creek and Nerriga, and commence construction.*

Braidwood is defined as a Category 1 facility while the other three Transfer Stations are identified as Category 2 facilities. It will include extensive recycling facilities, a residuals facility but no access to the trench. It is clear that a staff member (full time for Braidwood and part time for the others) is required to maximise the potential for this arrangement. See Attachment 6 for design.

*Step 2.* *Plan a third organic waste kerbside collection process.*

This step in the overall Strategy will require investment in bins, transport, identification of a suitable deposit site and processing facility. It will also require public information over the period leading up to this process to inform people as to why the system is being put in place and what the benefits are. An incentive system might be considered in the light of the DEC 'City to Soil' pilot program results in order to facilitate minimum contamination. The timing of this activity might be influenced by a proposed DEC initiative in conjunction with adjoining councils and local business people.

An integral element in this process will be to ensure there are operations in place that utilise the product. This might be a worm or other composting process run at different sites by Council or under Council guidance, or by an expression-of-interest process prior to implementing a tender process. As part of this stage, ongoing education activities covering small worm farming and composting methods should be put in place. See Attachments 8 & 10.

This project is proposed because:

- organics occupy a large part of the waste stream and it is therefore important to consider what to do with them;
- it brings long term benefits to the community;
- it is consistent with neighbouring council actions; and
- offers the opportunity for enterprise development which may lead to the Council not having to manage this aspect of the collection process.

Our bin audits generated a figure of total organics including paper of 462kg/household/year. This suggests that about 650-700 tonnes per household per year of food organics can be realistically collected from a kerbside service collection. Experience at councils with these services suggest that the amount of garden organics would be at least this amount, leading to a total collection tonnage of about 1200 tonnes/year. Variable factors include the amount of paper included, seasonal influences and the amount of home composting/worm farming etc.

*Step 3.*

*Organic bin kerbside collection commences*

Commence operation of third bin kerbside collection process. This process needs to be monitored for results and covers community participation, contamination rates, product volumes and weight, processing success and overall systemic value.

***Stage 8***

***Support the establishment of a bio-conversion project in Palerang Council***

The results of monitoring the previous stages of this process will provide some important, basic business data (volumes and quality) that can be used by Council to promote a larger and perhaps regionally-based bio-conversion business. A prospectus can be developed encompassing the necessary business metrics and be able to demonstrate that suitable community campaigns and collection mechanisms are in place and functioning.

A bio-conversion project is envisaged as part of a wider regional project in conjunction possibly with SERRROC, or through direct DEC support. In turn, and with this longer term goal in mind, it is anticipated that organic business development will be emerging or at least catalysed by such potential futures.

## **5 FINANCIAL CONSIDERATIONS**

An assessment of the financial considerations for the Resource Recovery Strategy follows. The detailed workings which support these calculations are in Attachment 8.

### **5.1 Matters included in calculations**

The process of considering the financial implications of the Resource Recovery Strategy required an initial detailed design of the four different types of deposit facilities. There were four types as follows

#### **Category 1**

Major Transfer Station on landfill with open trench, and residuals taken away when trench closed – Bungendore and Braidwood

#### **Category 2**

Minor Transfer Station site on landfill site with residual removal by truck when trench closed – Araluen, Captains Flat, Majors Creek and Nerriga

#### **Category 3**

Transfer Station with recycling only and no residuals – located at Burra, Royalla, Carwoola, Wamboin

#### **Category 4**

Drop-off Recycling Centre for co-mingled material – located at Ballalaba, Mongarlowe, Durran Durra, Boro, Mt Fairy, Taylors Creek, Sutton Acres, Bywong, Little Burra, Urila

For each of these facilities the components were identified such as basic tracks, landscaping, administration facilities, gates, drop-off and separation facilities, bins, shed and operating equipment etc.

Operational costs covered staff, staff training, educational activities, site consumables, transport etc.

These costs were calculated and then allocated according to a timetable for implementation. This timetable is set out in Section 4 above.

Other costs were considered such as:

- overall program management expenses – a waste officer, office expenses, communications, forums and other meetings etc
- Kerbside waste and recyclables collection at Braidwood, Bungendore and Captains Flat

The costs for other projects were included:

- Clean-up Australia Day
- Public litter bins
- Roadside illegal dumping
- SERRROC
- Annual Hazardous Households collection
- Bulky goods collection
- Education activities across Palerang Council

The core philosophy of this Resource Recovery strategy is to support, or change, stakeholder culture towards recycling. To this extent we propose investment in people (Waste Resources Staff officer, Transfer Station part time staff, engagement of



community Associations and existing contractors) and infrastructure (prevention of using trenches, ability to source separate at all locations). Increased recycling will potentially reduce material flows to existing landfill sites and transfer stations, although population changes and other developments may offset this to some extent. The ability of the 'system' to continue to meet the sought-after culture change is a vital element in bringing about real resource recovery. These aspirations may meet some rigidities of the existing system whereby investment in equipment, dispersed communities and market fluctuations may make the change-over more difficult. However, the asset which exists for the moment in Palerang shire is land associated with the transfer stations. It is considered use of land to store separated materials is an effective strategy in comparison to transporting materials to external sites.

Within the calculations for the project were a number of specific issues. These included the following:

***a.) Special charge for Burra/Royalla section of Palerang Council***

The community consultation and survey results suggested that for this section of the Palerang Council, no change should be made to the way in which waste is collected and no charges should apply. However, already Council provides a number of Drop-off recycling facilities and in this report we propose these be improved and their number extended. It is appropriate that a charge be made to those residing in this part of the Council to cover a proportion of these expenses, recognising they do not have ready access to a landfill.

***b. Charging regime***

The survey results (see especially comments in questions 10 and 11) suggest a pricing regime might be put in place as one way to encourage more recycling by those using the various landfill sites. This matter was considered and a number of charging options were considered. Those who bring in a co-mingled load ought to be charged while those who bring in a sorted load will not be charged. The pricing options considered were as follows, but the charge rates are low in the light of other regional Council rates:

- \$20, \$16, \$15, \$12 as an average charge for small and medium vehicles and where the load was unseparated or co-mingled
- a charge for both separated and unseparated loads of \$16:\$8 or \$15:\$5 (co-mingled:separated)

***c. Income from sale of recyclable materials***

In 2005/6, Palerang council received \$60,000 from the sale of recyclable materials at Braidwood, Bungendore and Macs Reef Road landfill sites. For the resource Recovery Strategy to work, it must be possible not only to increase the level of recycling but for an income to be received from this activity to pay for the extra tasks involved in collection and source separation.

Forecasting sales for recycled products is complex as prices fluctuate for recycled goods. Nevertheless, it is expected that a Resource Recovery Strategy coordinated by the new Waste Resources Officer will lead to increased returns from the sale of recycled products that have been cleanly separated. The quality of the recycled product will influence the price received and thus low contamination is a prerequisite.

Factors affecting the income from recyclables are:

- 2% pa increase in population
- Increase in wealth per head of population
- Increased access to recycling infrastructure
- Increased prices for recycled materials
- Increase product collection from kerbside collection (by up to a third)
- Improvement in well sorted deposits of recyclables at Transfer Stations
- Community Co-operation

Furthermore, the re-use of organics products, when this happens, is a key factor in reducing materials to trenches as it is such a large part of the present waste stream.

Our investigation and analysis suggests there is an income to be gained from the sale of the recycled goods collected. In section d of Attachment 8 we suggest that approximately \$70,000 is available per year by which to implement the system necessary to make this work.

## 5.2 Overall Budget

More details of the basis to the figures in this section are found in Attachment 8.

The following Table lists the situation in Palerang Council at this point in time according to Council data.

Type of charge	Number
Total number of rate assessments in all of Palerang at April 2006	6960
Those who are paying for the kerbside collection	1500
Those paying waste levy of \$180 (previously \$140)	6400
Vacant blocks	290
Sub-total in Urila/Burra/Royalla	560

### Existing Charges

Domestic Waste Charge (DWC)	\$253/property inc \$60 for disposal
General Waste Charge (GWC)	\$180/property (but only \$80 if also paying DWC)
Urila/Burra/Royalla	\$90/property
Vacant blocks	\$70/property

**Table 2: Costs incurred in the Resource Recovery Strategy (\$)**

Expenses	2006/7	2007/8	2008/9	2009/10	2010/11	2011
New Capital costs	6680	105,100	247,338	257,231	267,521	278,100
New operational costs	10,000	10,400	399,600	636,160	661,606	688,100
Existing program costs	1,011,235	1,091,907	683,840	264,173	272,100	280,100
Management costs	51,000	60,000	70,000	80,000	90,000	100,100
Other expenses	130,200	135,408	140,824	146,457	152,316	158,100
Total expenses	1,209,115	1,402,815	1,541,602	1,384,021	1,443,543	1,506,400
5% reduction per year	1,209,115	1,332,674	1,464,522	1,314,820	1,371,366	1,421,400

### Note

The thrust of the Resource Recovery Strategy is to increase recycling and sales of products. With staff and a new system, it is a requirement, although the result will be expected, that a 5% reduction in expenses will occur as these people commence operations. It might be expected however that a figure of 5% is a minimum and higher levels of performance will be noted. Waste streams to landfills will decline given the dispersed Drop-off recycling stations while with improved source separation, more business interest is possible.

**Table 3: Income (\$)**

<b>Year</b>	<b>2006/7</b>	<b>2007/8</b>	<b>2008/9</b>	<b>2009/10</b>	<b>2010/11</b>	<b>2011/12</b>
*General waste charge - 6400 x 180	1,152,000	1,170,000	1,188,000	1,206,000	1,224,000	1,242,000
^Burra waste charge - 90 x 560	50,400	50850	54150	51750	52200	52650
Sale of recyclables	80,000	100,000	120,000	140,000	150,000	155,000
TS gate fees	12,000	73,500	75,705	77,800	80315	82725
Other waste fees	2,000	2060	2125	2185	2255	2325
HHW collection	6,500	7000	7500	8000	8500	9000
<b>Total income</b>	<b>1,302,900</b>	<b>1,403,410</b>	<b>1,447,480</b>	<b>1,485,735</b>	<b>1,517,270</b>	<b>1,543,700</b>

\*sale of recyclables - existing annual income from recyclables is \$60,000. This is from existing collections. It is anticipated collections will increase through the 10 new Drop-off centres (Category 4) and the up-graded and increased numbers of Transfer stations (Category 3). Not all of this will be new quantities as existing systems process much of this. Bin audits suggest an improvement might be achievable equating to approximately one third of the existing bins.

### 5.3 Finances discussion

Under the Resource Recovery Strategy presented here, it appears that the initial investment can be recovered in subsequent years.

The financial outcomes will depend upon the degree to which recyclables can be collected and sold, the importance of charging for co-mingled loads and the ability to store collected recyclables until the volumes are sufficient to warrant potential buyers to collect them. The market for recyclables will grow but perhaps not in a clear upwards trend.

What has not been included in these figures are the potential savings by not transporting collected recycled materials to an external location. This raises a very important matter of so-called ‘externalities’, or those factors which individuals tend not to pay attention to but which affect the broader community. The recent Draft Report from the Productivity Commission describes it as follows: “Externalities are impacts that arise from a transaction that are borne by parties not involved in the transaction.”<sup>7</sup>. Examples include noise, air pollution, site impacts, road use etc.

The Draft Report from the Productivity Commission looked at these matters and concluded there are costs associated with waste management systems. For example, in their survey of previous work on this issue, the Productivity Commission Report highlighted the work of the New South Wales Environment Protection Authority (EPA) which estimated that a heavy truck imposes external costs of between \$0.26 and \$0.28 for each kilometre it travels (EPA NSW 1996c).<sup>8</sup> The NSW EPA report went on to point out that “It estimated that transporting waste to landfills imposes external costs of between \$2.30 and \$2.90 per tonne of waste (EPA NSW 1996c).”<sup>9</sup>

In a very interesting summary paragraph in the Draft Report from the Productivity Commission, the following was included under the heading “The Estimates of the total external costs of landfills.”. The report stated “*There have been a number of estimates of the total external costs of disposing waste to landfills in Australia and overseas. The NSW EPA (1996c) estimated that the external costs of landfill were between \$10.50 and \$33.20 per tonne of waste disposed to landfill. This included waste transport externalities of between \$1.20 and \$2.90 per tonne of waste, which are not associated with landfill in particular. Landfills in metropolitan areas were estimated to impose larger external costs than those in rural and regional areas, mainly due to the impacts of traffic and lost amenity. The ACT government (2002) estimated that the ‘environmental costs’ of landfill were \$34 per tonne of waste. The OECD estimated that the external costs of landfills in Europe were between zero and approximately \$30.50, depending on the location of the landfill and whether it has systems to recover energy from the waste (Davies and Doble 2004). Nolan-ITU (2004b) estimated that the external costs of a best practice landfill are around \$202 per tonne of municipal waste accepted.*”<sup>10</sup>

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<sup>7</sup> P365 Waste Management Draft Report Productivity Commission May 2006

<sup>8</sup> P368 Ibid

<sup>9</sup> P369 Ibid

<sup>10</sup> P369 Ibid

While there can be some argument about the detail, the reality is that calculations of the externalities cannot be overlooked. Thus for the Palerang Council, the cost of taking the extra trips to the MRF (and later to the Woodlawn mine) is not the \$51/trip as used in existing calculations but more ranging from around an extra \$1.20 up to \$2.90/tonne. If we use the 470 tonnes of recyclables taken by Thiess as an example, this means an extra \$564 - \$1363 would be added for the extra trip. These figures do not include other externalities identified in the Productivity Commission report which the recycling of materials does not incur. Such considerations clearly make a big impact in support of a Resource Recovery Strategy but they are not recorded in the cash situation of Council in the immediate budgetary sense.

#### **5.4 Incentives**

A key element of the existing Council waste management strategy and system is that there exist few real incentives for people to change their way of behaviour, other than because of core personal and wider, community-based, ecological values.

The survey results and community consultation forums however suggested that a user-pays system, or some other form of price signal, might be an important way to influence behaviours and assist reduce the amount of un-separated waste going to landfill and increase the amount of recycling which occurs. These ideas were raised in the context of providing an incentive for those who do not 'do the right thing' but acknowledging those who do. They also were raised because of a perception that Council is not providing a service of one sort or another for the base charges which are applied.

These debates reflect the point made above that the existing system needs to be better explained to many residents so they can appreciate that even the best waste management system requires infrastructure. What they also reflect is a question of whether the charges linked to such systems provide good value-for money.

The incentives we envisage that might be put into place and appropriate in this strategy are:

- charging for co-mingled loads at all landfills
- easy access to Drop-off stations and effective landfill Transfer Stations for as many residents as is possible
- fostering income generating activities which can, at some stage, assist offset existing charges
- develop a series of small smart businesses based around recycling (including artisan work using recycled materials), either directly by those interested (including existing contractors) or through the engagement of local community associations or organisations

Incentives also need to be provided for those who work within the existing system, including those who supervise the existing landfill operations. It is already evident from survey comments and site visits that, as individuals, these people are interested in better recycling practices and indeed often go out of their way to facilitate this by encouragement, personal design of operations and gentle persuasion. An option is to take advantage of this personal disposition and skill set to suggest either there be an incentive to administration staff to achieve set recycling goals or that consideration be

given to a different management regime where private or community organisations might be given an opportunity to manage the Transfer Stations.

### 5.5 Management

Much of present thinking about waste deposit facilities is that they will be managed by council through staff employed for the purpose. However, this mode of operation might be reviewed for its efficacy in meeting resource recovery goals. Below, we briefly explore this matter further.

Claims have been made that private sector management of landfill operations and waste collection has apparently not proven locally in the past to have been as effective as initially promised. This may reflect a number of issues such as the nature of the contract under which the private sector operator functions and associated reporting and monitoring. Within the framework of a Resource Recovery Strategy, it may be more appropriate to revisit some of these approaches especially given that there is a greater interest in collection and sale of recyclables than was the case when such a scheme was previously implemented. The table below briefly compares some of the arguments regarding these options.

**Table 4: Waste Stream Management Options**

<b>Management Option</b>	<b>Description</b>	<b>Strengths</b>	<b>Weaknesses</b>
Council Manager	Staff on salary to manage operations. Equipment provided as required to meet material flows system requirements. Overseer supports the outcomes.	Operates to meet various NSW government requirements, especially where sites are registered by EPA. Smaller sites are not often registered but changes are coming where all such sites will be on an EPA register.	No immediate incentive to improve facilities or practices and yet informal practices demonstrate that employees have a commitment to recycling practices. Tends to give little or no community standing to the practices.
Council manager with incentives	Staff salaries based around core salary but with incentives based on such outcomes as reduced quantities to trench and to improved recycling.	As above plus builds on staff interest in the job. Potentially improved recycling through close community ties associated with employees on site and locally known.	Difficult to identify and measure the incentives until good quality, reliable data is collected.
Contracted manager	A contract tended out to operate the site or sites.	Opens up wider opportunities to be innovative. Relief from day-to-day operational	Requires good contract and on-going monitoring. Complexities in handling resident

		activities. Cost-effective arrangements if incentives are tied to business development.*	complaints.  Difficult to identify and measure the incentives until good quality, reliable data is collected.
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\*Note. The effectiveness of the Contracted Site Managers job can be more directly tied to the development of a small business. An employment contract can be prepared to encourage an economic outcome but where the benefits are jointly shared between Council and the contractor. Eg an initial fixed contract employment period for say two years at \$66,000 pa salary and thereafter on a business basis given that accurate data has been collected.



## 6. CONCLUSIONS AND RECOMMENDATIONS

Below we outline the conclusions which have emerged from this study. We also list a number of recommendations to be considered by Council.

### 6.1 Conclusions

Under the Resource Recovery Strategy presented here, the initial investment outlaid for infrastructure to facilitate effective recycling of materials in the waste stream can be recovered in subsequent years. However, a number of financial decisions were taken under the existing Waste Management Strategy and after submission by Council staff.

Achieving potential positive financial results will depend upon the extent to which Palerang residents effectively recycle their materials. This community action can be an uneven and variable one depending upon local circumstances and household behaviours. Clearly, there is a generally positive attitude toward recycling among Palerang residents, as measured by responses both in the survey and the consultation forums. The survey results demonstrate that many are already conscious of recycling and carry it out. Our bin audits suggest also that the level of recycling is good. However, there is room for improvement.

What will bring about the improvement? Personal commitment is important. More knowledge about the importance of recycling and how to do it certainly assists. An infrastructure which is easily accessed and supports recycling also assists. Having local champions will be important, including those who staff the Transfer Stations. The capacity for residents to observe that Council is leading by example is important. Financial drivers will be important. The importance of charging for unseparated, co-mingled loads is important.

In brief, a culture in support of resource recovery across all aspects of the Palerang council and an infrastructure which supports these personal and supportive predispositions will provide an excellent base to implementing a successful Resource Recovery Strategy.

The benchmark we propose for Council is a total waste to landfill of 9000 tonnes per year. However, this figure can be improved upon quite quickly by ensuring external waste to landfill is prevented and improving the recycling of greenwaste.

Separated recyclable materials can be collected and they can be sold. There is a market for these goods. The market for recyclables will grow, although perhaps not in a clear upwards trend. The ability to store the collected, uncontaminated recyclable materials, until the volumes are sufficient to warrant potential buyers to collect them, is important. The sites are available in Palerang Council for storing these items. There is a history of success in many of these tasks.

Collecting and composting available greenwaste is an especially significant opportunity.

We have also pointed out that the accounting associated with introducing a Resource Recovery Strategy should include triple bottom line<sup>11</sup> methods and acknowledge ‘externalities’. The importance of considering ‘externalities’ in the financial package associated with a Resource Recovery Strategy is growing at this time of global warming and the uncertainties of the oil-based economy. The triple bottom line method of accounting is important, even if challenging, to local governments in matters especially to do with resource recovery strategies.

## **6.2 Recommendations**

1. That Council adopt a Resource Recovery Strategy
2. That a culture of recycling is encouraged across the whole Palerang Council, including within Council operations, and that this matter is in the forefront of public discussions and any financial package related to waste management in future years.
3. The responsibility for the practical implementation of a Resource Recovery Strategy will be considerably assisted by the employment by Council of a Waste Resources staff person
4. That the implementation strategy and timetable as outlined in detail in section 4.2 be implemented.
5. That a charging regime be introduced at all landfill sites for unseparated loads.
6. That a charge is introduced in the Burra section of Council to off-set capital and operating costs of Transfer Stations and Drop-off points

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<sup>11</sup> Triple bottom line (TBL) was a term originally coined by John Elkington in 1994 to describe corporations moving beyond reporting only on their financial ‘bottom line’ to assessing and reporting on the three spheres of sustainability: economic, social and environmental. The notion of the triple bottom line has many meanings to many people, and can be applied at different levels in society by different stakeholders. However, there is general agreement that the triple bottom line principle is a useful approach for examining the operations of an entity, from a local council to a major corporation, to a nation.  
see <http://www.isa.org.usyd.edu.au/publications/documents/balancingact1.pdf>