



Background Paper
on
Local Government
Waste Management Infrastructure

PREPARED BY THE



MUNICIPAL WASTE ADVISORY COUNCIL
"Getting the Environment Right"

April 2011

Status of this Paper

This Consultation Draft Background Paper has been prepared through the Municipal Waste Advisory Council (MWAC) for the Western Australian Local Government Association (WALGA). MWAC is a standing committee of WALGA, with delegated authority to represent the Association in all matters relating to solid waste management. MWAC's membership includes the major Regional Councils (waste management). The Regional Council members of MWAC include the Eastern Metropolitan Regional Council, Mandarie Regional Council, Southern Metropolitan Regional Council, Rivers Metropolitan Regional Council, Western Metropolitan Regional Council and the City of Geraldton-Greenough. This makes MWAC a unique forum through which all the major Local Government waste management organisations cooperate. This Background Paper therefore represents the consolidated view of Western Australian Local Government. However, individual Local Governments and Regional Councils may have views that differ from the positions taken here.

The Municipal Waste Advisory Council's member organisations are:

Eastern Metropolitan Regional Council
City of Geraldton-Greenough
Mandarie Regional Council
Rivers Regional Council
Southern Metropolitan Regional Council
Western Australian Local Government Association
Western Metropolitan Regional Council

EXECUTIVE SUMMARY

The term 'waste management infrastructure' is applied to the infrastructure needed in order to carry out waste management activities. For example, landfills, inert and putrescible transfer stations, recycling plants, material recovery facilities, resource recovery facilities and green-waste reprocessing facilities. All of these facilities are currently in operation in Western Australia (WA). The infrastructure required to process Municipal Solid Waste (MSW) in WA is coordinated by Local Governments and Regional Councils.

Local Governments and Regional Councils face a number of challenges when developing and operating waste management infrastructure; most notably, the funding and planning of these facilities. In addition, both the Perth Metropolitan Area and Non-Metropolitan Western Australia have particular local issues that can impact on waste management activities that need to be considered.

Landfills have traditionally been the preferred form of waste management infrastructure in WA, with Local Government performing the role of both managers and operators. As a result, Local Governments are responsible for the management and operation of 87 of the 97 landfills throughout the metropolitan and south west of WA (7 of these are private/ Local Government partnerships). Landfill, however, is no longer the only means of waste disposal in Western Australia.

One driver for pursuing alternatives to landfill can be traced back to the Select Committee on Recycling and Waste Management Final Report (1995, p. 2) recommendation that

No new landfill sites should be established on the coastal sand plain because of their potential to pollute groundwater.

This policy is also reflected in the 1997 State Planning Strategy and the Department of Water's Water Quality Protection Note 'Landfilling with inert materials.'

The population projections for the Perth Metropolitan area indicate that by 2031, the 'Perth and Peel region will need 328,000 more dwellings to accommodate an additional 556,000 residents' (WAPC 2009, p. iii). The anticipated increase in population and the subsequent increase in waste produced will directly impact on waste management infrastructure – not only the amount of waste sent to landfill, but also the amount of material being processed by materials recovery facilities. As stated in Appendix 2 of the Draft II Waste Strategy for Western Australia, 'potential strains on waste infrastructure will become apparent in certain geographic areas over the next 10 years unless there is planning or efforts to boost the recycling rate' (2009a, p. 4). Many Local Governments and Regional Councils have identified their future priorities in regard to the planning of infrastructure for MSW. Without direction from the State Government in regard to strategic planning across the State, however, Local Governments face many challenges.

Every year the Municipal Waste Advisory Council (MWAC) undertakes the task of developing at least one policy statement on a waste management issue. For 2010, it was agreed that a policy statement on waste management infrastructure be produced which will also establish a checklist for Local Governments undertaking development of new waste management infrastructure and upgrades to existing infrastructure. This draft Background Paper has been developed in order to inform the policy statement and the subsequent checklist. The Background Paper also includes a number of case studies in order to offer solutions to key concerns within Local Government in WA in regard to the development of waste management infrastructure.

Background Paper: Local Government Waste Management Infrastructure

CONTENTS

EXECUTIVE SUMMARY	3
1. INTRODUCTION.....	5
2. WASTE MANAGEMENT INFRASTRUCTURE IN WESTERN AUSTRALIA	5
2.1 Alternatives to Landfill (Drivers).....	5
TABLE 1 Summary of Lessons Learned	7
2.2 Waste management operations in Western Australia	7
<i>Case Study- The Regional Council Structure</i>	8
2.2.1 Metropolitan Area	9
2.2.2 Non-Metropolitan Areas.....	10
2.2.3 Funding	10
<i>Case Study – Mandarie Regional Council (MRC) Build Own and Operate (BOO)</i>	12
2.2.4 External Challenges.....	12
TABLE 2. SWOT analysis – Summary of key core issues for the provision of MSW infrastructure.....	12
<i>Case Study – Voluntary Regional Organisations of Councils (VROC) or Regional Organisations of Councils (ROC)</i>	15
3. WASTE MANAGEMENT INFRASTRUCTURE ELSEWHERE	15
4. LOCAL GOVERNMENT FEEDBACK.....	17
5. RECOMMENDATIONS.....	20
6. REFERENCES.....	23
APPENDIX 1. Definitions of Waste Management Infrastructure.	25
APPENDIX 2. Waste Management Infrastructure in Perth Metropolitan Area.	26
APPENDIX 3. Parameters for Consideration of Waste Management Infrastructure.....	28
APPENDIX 4. Contractual Arrangements.....	31

1. INTRODUCTION

The purpose of this paper is to provide a background to the issues surrounding waste management infrastructure in Western Australia, and Local Government and Regional Council waste management infrastructure in particular. This research may be used to inform the development of a policy statement on waste management infrastructure in the future, the purpose of which will be to establish a checklist for Local Governments undertaking development of new waste management infrastructure and upgrades to existing infrastructure.

2. WASTE MANAGEMENT INFRASTRUCTURE IN WESTERN AUSTRALIA

The term 'waste management infrastructure' is applied to the infrastructure needed in order to carry out waste management activities. For example, landfills, inert and putrescible transfer stations, recycling plants, material recovery facilities, resource recovery facilities and green-waste reprocessing facilities. All of these facilities are currently in operation in Western Australia (WA). The infrastructure required to process Municipal Solid Waste (MSW) in WA is coordinated by Local Governments and Regional Councils. **Appendix 1** provides definitions of the various forms of waste management infrastructure in operation in Western Australia.

Landfills have traditionally been the preferred form of waste management infrastructure in WA, with Local Government performing the role of both managers and operators. As a result, Local Governments are responsible for the management and operation of 87 of the 97 landfills throughout the metropolitan and south west of WA (7 of these are private/ Local Government partnerships).

2.1 Alternatives to Landfill (Drivers)

Landfill is no longer the only means of waste disposal in Western Australia. One driver for pursuing alternatives to landfill can be traced back to the Select Committee on Recycling and Waste Management Final Report (1995, p. 2) recommendation that

No new landfill sites should be established on the coastal sand plain because of their potential to pollute groundwater.

In addition, the State Planning Strategy (WAPC 1997, p. 53), released in 1997, stated

Ensure that unlined landfill sites on the Swan Coastal Plain are phased out and no new landfill sites are located up-gradient of any environmentally sensitive groundwater or surface water body.

This policy is also reflected in the Department of Water's Water Quality Protection Note 'Landfilling with inert materials' (2006, p. 3) which states that

New inert landfills should not be developed on the Swan Coastal Plain where there are viable alternatives.

The practice of diverting waste from landfill is also reinforced by the primary objects of the *Waste Avoidance and Resource Recovery Act 2007* (WARR Act), which are, 'to contribute to sustainability,

and the protection of human health and the environment' and the move towards a waste free society in Western Australia by –

- (a) promoting the most efficient use of resources, including resource recovery and waste avoidance; and*
- (b) reducing environmental harm, including pollution through waste; and*
- (c) the consideration of resource management options against the following hierarchy –*
 - (i) avoidance of unnecessary resource consumption;*
 - (ii) resource recovery (including reuse, reprocessing, recycling and energy recovery);*
 - (iii) disposal.*

The WARR Act outlines that Local Governments are responsible for the collection of 'local government waste' which means

- (a) waste from residential sources; and*
- (b) any other waste of a kind prescribed by the regulations for the purposes of this paragraph, but does not include sewerage or waste of a kind prescribed by the regulations as excluded for the purposes of this definition.*

Draft II of the Waste Strategy for Western Australia (2010b, p. 16) also includes targets which can be seen as a State Government directive for reducing waste to landfill. For example, the Resource Recovery Targets for Local Governments include:

- 1. In metropolitan Perth at least a 70% recovery rate for municipal waste by 2016 (up from approximately 45%).*
- 5. In larger regional areas with a population greater than 25,000 at least a 45% recovery rate for waste by 2016.*
- 6. The Waste Authority will assist Local Government and Industry to be guided by the EPA in determining which forms of resource recovery are acceptable under which conditions.*

The justification for the drive towards an increase in resource recovery is given by the Waste Authority as

The quantity of waste generated in Western Australia is steadily growing, a trend that is predicted to continue. As our population grows and our standard of living increases, we consume more materials and produce more waste. Currently, 25% of Western Australia's total waste is recycled.

(Waste Authority 2010, p. 6)

The population projections for the Perth Metropolitan area indicate that by 2031, the 'Perth and Peel region will need 328,000 more dwellings to accommodate an additional 556,000 residents' (WAPC 2009, p. iii). The anticipated increase in population and the subsequent increase in waste produced will directly impact on waste management infrastructure – not only the amount of waste sent to landfill, but also the amount of material being processed by materials recovery facilities. As stated in Appendix 2 of the Draft II Waste Strategy for Western Australia, 'potential strains on waste infrastructure will become apparent in certain geographic areas over the next 10 years unless there is planning or efforts to boost the recycling rate' (2009a, p. 4). Local Governments and Regional Councils have identified the future priorities in regard to the planning of infrastructure for Municipal Solid Waste (MSW). Without direction from the State Government in regard to strategic planning across the State, Local

Governments face many challenges.

The Report 'Delivering Key Waste Management Infrastructure: Lessons Learned from Europe' (CIWM 2005, p. ii), highlights that the poorest performing European countries in regard to resource recovery and diversion of waste to landfill are characterised by four main features, including:

- The lack of certainty which creates difficulties in securing key waste management infrastructure;
- Poor strategic planning capability with little cooperation between tiers of government;
- Weak local accountability and ownership of waste related issues so that issues are repeatedly deferred; and
- Politically inconsistent messages and fiscal incentives which contradict the promotion of the waste hierarchy.

Table 1 outlines a number of successful policies in well-performing European countries (with the aim of reducing reliance on landfill), such as Germany, Austria, Denmark, Sweden and the Netherlands.

TABLE 1 Summary of Lessons Learned

Approach in leading EU Countries	Potential Benefit(s)
Alternative systems of financing, such as prudential-style borrowing, underwritten by direct (potentially variable) local taxation	Allows broader spread of risk to make projects more acceptable to contractors and investors
A clear mandate for Regional Planning Authorities to lead waste capacity planning (back by up-to-date, reliable waste data)	Facilities shared in infrastructure and distances local politicians from unpopular decisions
A transparent system of compensation for local communities in which treatment facilities are constructed	Eases protests against new facilities whilst delivering social infrastructure projects, and potentially lower council tax bills
Integration of strategic planning for MSW infrastructure with that for non-hazardous industrial wastes	Lower gate fees, fewer waste treatment sites and reduced transport emissions

Source: The Chartered Institution of Wastes Management 2005

This Background Paper seeks to highlight a number of examples in order to offer solutions to key concerns within Local Government in WA in regard to the development of waste management infrastructure. In particular, as the above example illustrates, alternative approaches to financing, providing support to communities and the integration of strategic planning for MSW has gone some way to address concerns within many European countries.

2.2 Waste management operations in Western Australia

Across Western Australia, there are various types of waste management infrastructure in operation. **Appendix 2** lists the waste management infrastructure in the Perth Metropolitan area. The Department of Environment and Conservation (DEC) estimate, as informed by their 2007 online survey of Local Governments, that there are 206 waste management facilities throughout the State. As the response rate to the online survey reporting was not 100 per cent, it is possible that this table under represents the number of facilities in the State. In addition, private landfills were not included in all Local Government responses (DEC 2008, p. 14).

Waste management solutions must cater to the local area. The composition and quantity of MSW can vary from region to region, influenced by demographics, geographical constraints and socioeconomics. As such, not all waste infrastructure is appropriate for all regions. Consideration must

be given to the parameters of each technology when making a decision on the most appropriate technology for a particular region. In 2009 MWAC developed a Discussion Paper on Alternative Waste Treatment (AWT) which outlines the drivers and challenges for AWT development in Western Australia. The information below regarding the considerations behind the implementation of various AWT technologies has been adapted from this Paper. Although the information has been written specifically for the development of AWT facilities, these parameters could be applied to any waste management infrastructure.

Parameters for Consideration

Environmental

- Environmental considerations.
 - Physical – topography, proximity to surface water bodies, depth to groundwater, soil characteristics.
 - Climate – temperature, propensity of thermal inversions and winds, rainfall.
 - Specific environmental sensitivities.
- Waste characteristics – density, moisture, recyclability, combustibility, hazardous materials.

Social

- City Characteristics – population density, infrastructure development, planned development, size of city.
- Social and political – degree of and importance assigned to community involvement, political constraints and the nature of these constraints, social and cultural practices.
- Existing AWT in the State.
- Social risk assessment at the planning phase of the process provides the opportunity to gather public opinion, interests and concerns providing a framework for follow up public consultation which would correspond to every step of the project.

Economic

- Cost of technology (variable factor for each location, Local Government and technology).
- Type of contract entered into to operate AWT.

The planning process should incorporate input from public and private entities with expertise in MSW, management, public health, environmental protection, finance, urban infrastructure and social issues.

Appendix 3 outlines the triple-bottom line approach adapted from the MWAC Discussion Paper on Alternative Waste Treatment, and can be applied to the development of various waste management infrastructure.

Case Study– The Regional Council Structure

Section 3.61 and Section 3.68 of the Local Government Act 1995 provides the head of power for the establishment and administration of a Regional Local Government. The intention is to permit Local Governments to jointly establish an entity that will perform one or a number of functions on behalf of its members. In the case of the Perth metropolitan area, Regional Councils have been developed primarily to increase the efficiency of regional waste management services.

Some of the main governance points are:

- S 3.61 requires an establishment agreement be entered into by all parties;
- S 3.62 allows a Regional Local Government to have a similar structure to that of a Local Government;
- S 3.64 sets out the compulsory content of the establishment agreement;
- S 3.66 limits the operations of the Regional Local Government to only those things stated in the establishment agreement and limits the operations of a Regional Local Government (i.e. no electoral provisions, inability to levy rates and service charges).

The Establishment Agreement will describe the purpose of the Regional Council. For example, the purpose of the Southern Metropolitan Regional Council is:

- (a) to plan, coordinate and implement the removal, processing, treatment and disposal of waste for the benefit of the communities of the participants;
- (b) to influence local, State and Federal Governments in the development of regional waste management policies and legislation.

In addition, the Establishment Agreement will contain clauses that determine the make-up of the Council of the Regional Local Government; how the activities of the Regional Local Government are funded; how a member may withdraw from involvement in the Regional Local Government; and dispute resolution provisions.

2.2.1 Metropolitan Area

The Perth Metropolitan area generated approximately 5.3 million tonnes of waste in 2006/07 (Cardno 2008, p. ii). It has been estimated that approximately 3.6 millions tonnes of this was sent to landfill and 1.7 million tonnes was recycled (2008, p. ii). **Appendix 2** outlines the infrastructure in operation in the Perth Metropolitan area and the responsible authority.

Draft II of the Waste Strategy for Western Australia states that

The network of transfer stations is adequate and well distributed, and demand for landfill can be met through current and planned future sites on the urban fringe. Standards of management and engineering at metropolitan landfills are generally good. The facilities for sorting and managing recyclables are limited, however, contributing to unnecessarily high levels of recyclable material being sent to landfill. There are plans for additional materials recovery facilities, but the recent fall in commodity prices could undermine the financial viability of these plans...

In recent years, several alternative waste treatment facilities have been established in Perth to pre-treat municipal solid waste and recover materials prior to disposal at landfill. These facilities have contributed to improved recycling, improved diversion from landfill, and improved management of greenhouse gases. As with all waste management facilities there is a potential issue of interaction between facilities and neighbours which requires careful planning and careful management (Waste Authority 2010b, p. 11).

There are a number of issues facing Local Governments and Regional Councils which can directly impact on their ability to deliver these services. Issues include:

- *Local Government tender regulations* – particularly with regard to larger contracts. A major problem with these arrangements is the time frames involved (see **Chapter 3** for example). One solution is to have documents (contract etc.) ready before going to tender to reduce time needed.
- *The approvals process* – see section on **External Challenges** below.
- *Community concerns regarding certain infrastructure/ as well as 'not in my backyard'*.
- *Landfill Levy* – a variable or unstable levy affects investment. There is a push to have Minister for the Environment commit to a schedule of increase for the Levy for at least a 5 year period.
- *Contracts/ lack of certainty* – Local Governments often use contractors to deliver waste services. These contracts are often for substantial periods (5 – 10 years). They set an operating environment, and although they are likely to include some variability, they constrain how a service will be delivered and the outcomes achieved.
- *Cost/risk* – undertaking the development of large infrastructure projects can put a lot of stress

on Local Governments and Regional Council agreements.

2.2.2 Non-Metropolitan Areas

In non-metropolitan areas, alternatives to landfill are likely to be constrained due to low population density and consequent volume of material generated, and a greater distance to travel (for example, most recyclable material is transported to Perth, then to market), resulting in greater expense. Many non-metropolitan Local Governments have limited revenue raising capacity and currently waste management is not covered by the Federal Assistance Grants (FAGs).

Draft II of the Waste Strategy for Western Australia states that

Almost every small town in rural Western Australia has its own landfill, mostly operated by the local council. Many of these are unlined, so that leachate can leak into the environment. Methane, a powerful greenhouse gas that arises from decaying organic wastes, is not collected and so vents into the atmosphere. In smaller settlements, landfills are often unattended, leading to increased risk of fires and dumping of inappropriate materials (Waste Authority 2010b, p. 11).

In addition, the Waste Authority made the following commitment which will impact on non-metropolitan Local Governments:

The Waste Authority will consider the development of regulation to declare the collection and management of solid waste as an essential service. As part of this, and in partnership with others, the Waste Authority will develop a waste infrastructure plan for the south-west of Western Australia, in the first instance, from around Geraldton to Albany (Waste Authority 2010, p. 5).

Feedback from non-metropolitan Local Governments in regard to issues of managing and operating waste management infrastructure include:

- *Networks of transfer stations* – there is a need for strategic planning across areas to ensure success.
- *Environmental impacts of landfill* – the likelihood of leachate and methane from landfills is dependent on a number of different localised factors such as volume of waste, climate condition and waste compaction.
- *Inconsistent licence conditions for existing license conditions* – of particular concern considering the high rate of staff turn over in some areas (and loss of corporate knowledge).
- *Lack of strategic planning* – There appears to be minimal discussion about where the next landfills/infrastructure will be. Sometimes staff do not know about a site until it has been 'dug'. There is a lack of strategic planning, particularly in smaller areas.
- *The need for experienced staff* – It is hard to attract the right person to rural Local Governments, and most often the Environmental Health Officer is put in charge. Whether or not this is the best model needs some investigation.
- *Lack of planning for new facilities* – New industries in regional areas continue to fail to plan for the disposal of their waste. Sometimes landfill operators know of an increase in waste, or waste type, when the problem arrives at the gate.
- *Local Government amalgamation* – the feelings surrounding forced amalgamations can impact on discussions around regional cooperation regarding waste management service provision.

2.2.3 Funding

Currently, Local Government and Regional Council revenue is limited to four main sources of income

(WALGA 2008, p. 73):

- 1) Rates;
- 2) Fees and charges (many Regional Councils also receive money from gate fees);
- 3) Grants and contributions; and
- 4) Profit from business enterprise.

As outlined in WALGA's Systemic Sustainability Study Report (2008, p. 73), of the above revenue sources, 'Rates is the set over which Local Governments have the most discretion, although this discretion is limited by the ratepayer's capacity to pay and the inherent political process.' In addition,

Fees and charges also offer some level of discretion but are restricted by sporadic external State Government regulation and, in some cases; prices are limited to the cost of provision. Grants and contributions are most commonly influenced by the quantum of transfers by other governments while business enterprise profit is inherently risky and subject to the political process due to the current inability to establish commercial trading entities (such as companies and Associations) (2008, p. 73).

There are also a number of external factors that directly impact on Local Government and Regional Councils ability to successfully raise money to assist in their investments. For example, the Forum of Regional Councils (FORC) argue in their Paper on 'Essential Municipal Solid Waste Services' that the present 'regulatory, economic and operating environment' in the State discourages investment due to the uncertainty caused by significant financial investment large-scale projects require and the unpredictable planning and approvals process. For example:

- Recycling markets are currently depressed, adding to the overall cost of providing these services;
- The current business climate requires tenderers for Resource Recovery Facility (RRF) projects to take on more risk (from Local Government) through disproportionately high pricing;
- Investment recovery from RRFs is long term; and
- The limit of State Government loan funds for projects not owned by Local Government. (FORC 2010, p. 9).

Local Governments also need to consider what contractual arrangements suit their particular situation. Types of contractual arrangements include:

- *Local Government own and operate;*
- *Build Own Operate (BOO)* – Similar to BOOT projects, but the service provider retains ownership of the asset in perpetuity;
- *Build Own Operate Transfer (BOOT)* – Involves the private sector in the provision of new infrastructure. A private consortium can finance and construct infrastructure, with the consortium owning, operating and carrying end-user risk. Most AWT facilities have been built under similar contracts;
- *Design and Construct (D&C)* – Where the owner contracts with a single entity that is responsible for both design and construction. The SMRC site is the only AWT facility to be built under this contract; and
- *Alliance* – An agreement between two or more entities that undertake to work cooperatively on the basis of sharing project risk and reward, to reach agreed outcomes. Alliances take a team approach and are based on principles of good faith and trust.

More details of these contractual arrangements are set out in **Appendix 4**.

Case Study – Mindarie Regional Council (MRC) Build Own and Operate (BOO)

The MRC decided to undertake BOO arrangements based on the belief that ‘waste processing is a specialist activity best left to the specialists’ (pers. comm. 2010). Therefore, the MRC wanted a contractor to operate the facility for the duration of the contract instead of transferring operation to the Regional Council after a short period.

The contractor (BioVision2020) was contracted to construct the facility, commission and then operate it for a 20 year term. The MRC provided the minimum technical requirements to which the facility was to be designed (annual waste to be received, size of the waste delivery vehicles, number of vehicles per day etc.).

BioVision was responsible for all design and construction activities. There was minimal input from the MRC as the contractor had to own and operate the facility for 20 years; hence, was motivated to utilise the appropriate quality materials to ensure longevity of the plant with minimal maintenance costs. The MRC commented that, if this was a BOOT contract, there would be no long-term motivation for the contractor to install top quality materials unless the client specifies the material requirements, as well as also being regularly on site to ensure that the appropriate materials are utilised. The same goes with the mechanical equipment.

The MRC indicated that one negative aspect to a BOO contract is that there is a lack of control due to the fact that they are not operating the facility, but this can be fixed through contractual conditions. The reality is, however, that direct control was not sought in this case, hence the desire for a BOO contract.

2.2.4 External Challenges

The Cardno Report *Assessment of Waste Disposal and Material Recovery Infrastructure for Perth* (2008, p. viii) presents a summary of key issues for the provision of MSW infrastructure, outlined in **Table 2**.

TABLE 2. SWOT analysis – Summary of key core issues for the provision of MSW infrastructure

	Helpful (to achieving the objective)	Harmful (to achieving the objective)
Internal Origin (attributes of the industry)	<p>STRENGTHS:</p> <ul style="list-style-type: none"> • Establishment of Regional Councils • Efficient management of well engineered landfills • Landfills, transfer stations, MRFs, RRFs well placed geographically • Proactive planning in RRFs • MRF and greenwaste available capacity 	<p>WEAKNESSES:</p> <ul style="list-style-type: none"> • Difficulty in siting new MSW infrastructure • Difficulty in obtaining approvals for MSW facilities • Lack of planning for future waste facilities • Limited State Government guidance for future sites and technologies
External Origin (attributes of the industry)	<p>OPPORTUNITIES:</p> <ul style="list-style-type: none"> • Investigation of more RRF technology options • Better matching of collection systems to processing • Carbon Pollution Reduction Scheme impacts • Market developments for RRF products 	<p>THREATS:</p> <ul style="list-style-type: none"> • Medium term life expectancy and need for future sites • Lack of diversity in RRF technology • Economic conditions and commodity prices

Source: Cardno 2008, p. viii.

As identified in the Cardno’s (2008) ‘Assessment of Waste Disposal and Material Recovery

Infrastructure for Perth', in Western Australia, a number of challenges exist in developing waste management infrastructure; most notably the planning system (in particular, the approvals process) and limited State Government guidance. In addition, Local Government structural reform also has the potential to impact on the development of waste management infrastructure in the State.

Planning

As outlined in 'Appendix 2: Waste in Western Australia – additional data', of the Waste Authority's Draft II Waste Strategy for Western Australia

A crucial underpinning of modern waste management is the infrastructure needed for its collection, handling, processing and disposal. Waste infrastructure is expensive and is usually established by municipal authorities, even though private companies generate most of the material inputs. While waste infrastructure is essential, siting is often the subject of 'not in my backyard' disputes
(Waste Authority 2010b, p.3)

In addition, as identified in the Report 'Municipal Waste Management in Western Australia' (2009, p.88), Local Government's decisions regarding suitable site selection for waste facilities are also 'often frustrated by the actions of external planning bodies that do not take waste management issues into account'.

The approvals process is of particular concern to Local Governments. For some Local Governments in Western Australia, approvals for new sites (for example, transfer stations) have taken up to five years. This delay will impact how quickly sites can be prepared and may mean significant delay in implementing any landfill site consolidation. The implementation of AWT facilities can take between 5 and 7 years, and often with contracts for at least 20 years which are required to secure the infrastructure. This has the potential to impact on Local Governments looking for alternatives to landfill. These planning issues highlight a lack of understanding of waste management services within the State Government, and in particular, the significance of these services to the wider community.

Local Governments and the waste industry have also become aware of a lack of strategic planning for waste services across the State. For example, the State Government's 'Directions 2031: Draft Spatial Framework for Perth and Peel' aims to plan appropriately for projected growth over the next 20 years:

It is estimated that by 2031, future census year, the Perth and Peel region will need 328,000 more dwellings to accommodate an additional 556,000 residents. Our challenge is to find room for this new growth while preserving our unique local environments and valued quality of life... It is also critical that the provision of infrastructure is fully integrated with land use planning and development (2009, p. iii).

The document does not mention the planning of waste services which are certain to be impacted by the projected growth of the metropolitan area.

The absence of planning for waste is also evident in the State Government's 'Industrial Land Strategy 2009 Perth and Peel', a collaborative effort between the Department of Planning (DoP), LandCorp, the Department of Environment and Conservation (DEC) and the Department of State Development (DSD). It is intended that the Strategy will address the following:

- Identify the areas, type and locations of general and light industrial land required over the next 20 years.
- Review the industrial land development program and identify possible extension opportunities.

- Identify and evaluate the suitability of locations for new general and light industrial estates.
- Develop a strategy to facilitate the delivery of general and light industrial land and assist in the restoration of the Government's long-term general and light industrial landbank (2010, p. v).

Strategic planning for waste infrastructure has not been considered in this document. This includes provisions for municipal solid waste and commercial and industrial waste. Within the document it has been identified that '[e]xisting industrial estates need to be protected from the increasing encroachment for non-industrial uses in industrial zoned areas and residential encroachment' (2010, p. vii). This consideration is also very relevant to the waste industry and it is a concern that it does not appear in the State Government's planning documents.

With the advent of the Waste Strategy for Western Australia, there is an expectation that the State Government will have a greater role in the planning of future waste infrastructure. This involvement will potentially see greater coordination of activities and financial assistance to meet targets.

State Government and the Waste Strategy for Western Australia

The Draft II Waste Strategy for Western Australia states that the 'continued development of resource recovery infrastructure and technologies is a priority, particularly for larger regional areas' (Waste Authority 2010b, p. 17). In addition, with the inclusion in the strategy of high resource recovery targets for both Metropolitan and larger regional areas, there is an expectation that Local Governments will see a commitment from the Waste Authority for additional funding to develop this infrastructure. At the time of publication, the final versions of the Waste Strategy and the Waste Authority Business Plan have not been made public.

Draft II of the Waste Strategy, however, does make the following commitment:

The Waste Authority, in collaboration with the Departments of Planning, Local Government and Heritage and Regional Development and Lands, will develop a state-wide planning framework for the provision and siting of resource recovery, including composting, infrastructure. The framework will include contingency planning for the recovery of waste generated from major population areas (Waste Authority 2010b, p. 20).

Local Government Structural Reform

This direction from the State Government has the potential to limit new activities which may mean that waste management may have a lower priority within these groupings than it would otherwise. If the number of Local Governments is reduced the activities required to move to a new structure will also take time.

Negative feelings towards forced amalgamations have the potential to limit discussions regarding other forms of regional cooperation. Parochial sentiments heightened by this process can potentially block the formation of Regional Councils or regional agreements proposing to cooperatively deal with regional waste management service delivery.

In addition, as identified in the draft 'Local Government Enterprises as a Means of Improving Local Government' Discussion Paper prepared by Conway Davy Pty Ltd for WALGA,

...the State Government approach to local government reform has been to focus on capacity building and structural reform: it has not to date addressed the broader issue of how local governments can act in a more commercially efficient manner to develop alternative revenue

streams or to enter into commercial partnerships with the private sector to achieve its objectives (2010, p. 3).

It has been expressed that the push for reform from the current State Government is perhaps being driven in such a manner that may miss a number of opportunities.

Case Study – Voluntary Regional Organisations of Councils (VROC) or Regional Organisations of Councils (ROC)

Voluntary Regional Organisations of Councils or Regional Organisations of Councils (they are the same thing) are established to encourage and promote cooperation amongst Local Governments in a region. These groups are voluntary and consist of like-minded Local Governments that join to share resources. The VROC nominates a host Local Government which is then subject to the same legalities as Local Governments and Regional Councils. Where particular activities are proposed and agreed, a formal agreement on a project by project basis is required.

In Western Australia there are nine VROCs or ROCs. These are:

- Avon Regional Organisation of Councils (AROC)
- Batavia Regional Organisation of Councils (BROC)
- Capes Regional Organisation of Councils (CAPEROC)
- Central Midlands Voluntary Regional Organisation of Councils (CMVROC)
- Goldfields Voluntary Regional Organisation of Councils (GVROC)
- North Eastern Wheatbelt Regional Organisation of Councils (NEWROC)
- Rainbow Coast Regional Council
- Roe Regional Organisation of Councils (Roe ROC)
- South East Avon Voluntary Regional Organisation of Councils (SEAVROC)
- Southern Link Voluntary Regional Organisation of Councils (SLVROC)
- Western Suburbs Regional Organisation of Councils (WESROC)
- Wheatbelt East Regional Organisation of Councils (WE-ROC)

Some of the primary aims of VROCs/ ROCs are to provide inter-municipal cooperation, resource sharing initiatives, liaison on town planning schemes and local laws, and regional planning and development.

Roe ROC recently put together a regional landfill facility. The facility is shared between the Shires of Corrigin, Kondinin, Kulin and Narembeen. The population of the area is approximately 4,200, covering 19,050 sq km.

Advantages of such an arrangement could include less administrative burden for the Local Governments overall. One disadvantage could include the flexibility of the arrangement.

3. WASTE MANAGEMENT INFRASTRUCTURE ELSEWHERE

3.1 Further Case Studies

The following case studies have been included to highlight the range of issues facing the development of waste management infrastructure, both in Australia and Internationally.

Case Study – The Eastern Creek ‘Urban Resource–Reduction, Recovery and Recycling’ facility (UR-3R) (NSW)

In 2002, the New South Wales (NSW) State Government announced the approval of a public/ private partnership between Waste Service NSW and Global Renewables, who built, owned and operated the Eastern Creek ‘Urban Resource – Reduction, Recovery and Recycling’ facility (UR-3R) near Sydney, an

‘...alternative solution in waste management to traditional landfill and bioreactor landfill, the Eastern Creek UR-3R Facility will divert around 80 per cent of waste away from landfill by separating out valuable products such as metal, plastic, paper and glass, and converting the

organic component of the waste stream into compost and fertiliser products' (Waste Service NSW n.d.).

In 'Summary of Contracts – Eastern Creek UR-3R Facility', Waste Service NSW outlined the 'Operational Phase' of the contract:

'During the first phase, known as the "Operational Phase", GRL (Global Renewables Pty Ltd) is obliged to finance, design and construct the Facility... Once the Facility is constructed, Waste Service NSW will be obliged to supply to the Facility, and GRL will be obliged to process using the Facility, a certain tonnage of waste (and Waste Service NSW will be obliged to pay to GRL a performance-based fee for processing that waste) for the following 25 years' (2003, p. 6).

In December 2003, Fairfield City Council (a NSW Local Government with a population of 194,543 people) (Fairfield City Council Website 2010) became the foundation partner in the Facility 'when it signed a 20-year contract with Waste Service NSW. Under the contract, Waste Service NSW will supply 60,000 tonnes of Fairfield City's waste for processing at the Eastern Creek UR-3R Facility each year' (Waste Service NSW n.d.).

In 2008, the UR-3R plant changed hands. As reported in *Waste Management and Environment*, 'While the technology apparently delivered as promised (and is now being deployed in the UK) the economic viability of AWT's lofty promises was brought into question by the \$75 million facility's inability to make money. Eventually, GRD Group gifted Emergent Capital the keys to its showcase site just to stop the \$500,000 a month stain the facility was leaving on its books (Lamb 2009). The cause of loss, it has been claimed, is that 'GRD apparently locked itself into a long-term contract with an overly optimistic diversion rate at too low a price – believed to be lower than current Sydney landfill prices. The gap between Eastern Creek's gate fee and its processing cost appears to be in the order of \$34/tonne' (Lamb 2008).

Case Study – Proposed AnaeCo DiCom system, Barwon Regional Waste Management Group (VIC)

In 2008, AnaeCo and its DiCom system was announced as the preferred tender for receiving and processing the waste for the Barwon Regional Waste Management Group (comprising of the City of Greater Geelong, and the Shires of Surf Coast, Colac Otway and Golden Plains in Victoria) (Begg 2008).

Recently, the Barwon Regional Waste Management Group 'terminated its agreement for the provision of an AD Processing Facility due to "timing" issues. Barwon have advised they will return to the market with a new tender shortly and have publicly advised that AnaeCo are encouraged to tender again' (Lake Macquarie City Council 2010, p. 161). Due to the timeframes put in place to finalise contracts, the period AnaeCo had to negotiate the contract lapsed. It has been suggested that to avoid this happening, Local Governments should have all documents prepared before going to tender.

European Comparisons

As discussed earlier, the Report 'Delivering Key Waste Management Infrastructure: Lessons Learned from Europe' (CIWM 2005), highlights a number of important factors that must exist for resource recovery initiatives to be successful. The Report identifies (2005, pp. i-ii) four broad themes which have assisted in the development of new waste management infrastructure:

1. A regime of certainty.
 - Clear forward planning for future waste capacity needs;

- An effective “ban” on the landfill of waste that does not meet certain limit values, often with a transition period ban to ensure the industry has adequate time to prepare for change;
 - Strict regulation and leadership at the national level with regard to operating standards at waste treatment facilities;
 - Strong municipal ownership or co-ownership of waste treatment infrastructure with the ability to secure long term minimum waste tonnages thus reducing risk and uncertainty.
2. Partnership working between three tiers of government.
- Strong regional tier with transparent responsibility for forward planning of future waste capacity needs;
 - Routine liaison between regional and municipal tiers to update data identified at municipal level;
 - Municipal implementation of waste management plans and cooperation between municipalities on shared infrastructure;
 - National tier providing overarching integrated, coherent framework of waste management policy.
3. Transparency and public trust.
- Leadership and strict adherence to EU regulations pertaining to waste management;
 - Waste reported as a separate element on local authority tax bills (i.e. council tax) and often ring fenced for reinvestment into more sustainable waste management practices;
 - Clear compensation mechanisms for communities in which waste treatment plants are sited,
4. An integrated approach across waste streams.
- Cost reduction through integration of MSW with other non-hazardous waste streams, such as commercial and industrial wastes;
 - Implementation of universal standards or limit values – for example, with regard to the biodegradability of waste sent to landfill – so that the same facility can treat a number of different waste streams.

In her presentation ‘Observations on European Waste Management in a Victorian Context’, which looks at European waste management sites that representatives from the Waste Management Association of Australia (WMAA) visited in 2004, Cheryl Murdoch comments that:

‘A significant difference between Australia and Europe is that the waste to energy technologies are generally more widely accepted and therefore advanced in comparison to Australia. There are many examples of incineration as well as power plants and cement kilns fuelled by Refuse Derived Fuels (RDF)’ (2004, p. 3).

In addition, Murdoch comments that the European Union waste strategy links targets to economic growth, therefore making provisions for projected waste growth as well. Communities throughout Europe all appear to accept the additional taxes imposed upon them to cover the establishment and operational costs of waste management infrastructure (Murdoch 2004, p. 23).

4. LOCAL GOVERNMENT FEEDBACK

Towards the end of 2010, MWAC canvassed WA Local Governments for their comments in regard to

funding provisions for waste infrastructure and services throughout the State. MWAC received a representative sample from across WA, including remote Local Governments and regional centres.

Issues for Metropolitan Local Governments

Comments received from metropolitan Local Governments focused on the issues of: planning; sub-divisions/housing developments; and, public perception of Alternative Waste Treatment (AWT) technologies.

One Local Government representative commented that issues continue to arise in regard to the provision of dedicated waste sites. The following suggestion was made:

'A long-term review of sites throughout the metro and near-metro areas needs to be undertaken as a matter of urgency by the DEC/Waste Authority and the Department of Planning, similar to the review undertaken 4 years ago to site hazardous waste precinct i.e. a holistic metropolitan plan.'

The development of new sub-divisions was also raised as a concern, as:

'The size of house blocks and multi-level unit developments has created a number of issues for the collection of waste and recyclables bins. Smaller housing blocks, the reduction in the width of roadways in new subdivisions and limited turning space are proving difficult for the safe and efficient collection of these bins.'

It was suggested that the planning of housing estates, and the planning of roads within them, be reviewed to assess the accessibility of the collection of bins and the effect of large trucks on the local community. Another suggestion was that multi-level collection points suitable for the safe movement of collection vehicles need to be incorporated in future building development applications.

The issue of public perceptions of AWT was raised as a concern, as the public does not see this infrastructure as environmentally friendly, and are instead seen as potentially hazardous. It was suggested that a coordinated public education programme would be worthy of consideration.

Issues for Non-Metropolitan Local Governments

The main issues raised by non-metropolitan Local Governments include: transport costs; the interpretation of licence conditions; environmental impacts of landfills (in particular managing sites with high groundwater levels or located near surface waterway); funding; and, planning.

For many Local Governments, the cost of transport is an issue and has been cited as an impediment to the establishment of larger regional landfill sites and MRFs. As one Local Government commented:

'There needs to be some incentive for non-metropolitan Local Governments in the transport costs of handling waste for them to be successful in establishing regional entities.'

In addition to the establishment of regional waste facilities, there was a comment that not having landfills or transfer stations close to town-sites was also an issue, for the delivery of services, as well as the general travel costs.

One Local Government commented that the interpretation of licence conditions and the relationship between DEC staff and Local Government staff can be an issue in regional and remote Local

Governments: The conditions are often open to interpretation and Local Governments officers feel the DEC do not communicate well at a district/ regional level.

Funding is seen as a major issue for regional and remote Local Governments, especially in regard to providing baseline funding for kerbside and recycling services. One Local Government agreed that funding should be:

‘introduced to small regional councils that have revenue below a particular value and not based on a comparable council from elsewhere in the State or Nation. Funding could be on a sliding scale relevant to the geographical placement from a major centre and also based on the community’s commitment to progress to improve their waste management.’

Another comment was that there is a need for flexibility to help smaller Local Governments ‘get on board in relation to assisting them meet their obligations to waste management’, especially when their success is reliant on funding and/or the support from the community.

In regards to planning, one Local Government raised the issue of planning for future landfill sites:

‘The principle concern for a number of Local Governments is the lack of interest shown by Government Departments in addressing a critical shortage of land available for waste management.’

This is a concern for both metropolitan and non-metropolitan areas, especially considering the pressure of acquiring land for residential developments and the conflict with other land uses.

End-of-Life Considerations

Local Governments were asked to describe their end-of-life management issues and plans for their waste management sites, if any. Responses were varied: one Local Government responded by stating that they follow statutory regulation including groundwater monitoring and sampling, clay cover renewal and methane capture and flaring etc.; another Local Government was looking at post-closure options for the potential re-use of former landfills to profit on high land values; and, another Local Government commented that their current operation is to rehabilitate as they go. Many Local Governments, however, do not currently have anything in place for end-of-life. One Local Government commented that they are currently seeking funding to develop a strategic waste and operation place to address this shortcoming.

Responsibility for Waste Infrastructure

Local Governments were asked to answer the following question: ‘Who do you think is best placed to manage waste management operations/pay for infrastructure in Western Australia (with particular attention to siting, funding, project management, operations, contingency management) of all types of waste management infrastructure?’ The vast majority of respondents identified Local Governments as being best placed to provide these services, with support from the private sector, and State and Federal Governments:

‘Local Government in partnership with the private sector are best poised to manage waste operation. In addition, the State Government should provide some level of funding and/or a financing vehicle that provides rebates, reduced interest loans or offset costs from Treasury, especially for the first five years to help ensure the success of projects. Additionally, State Government agencies must be required to engage with Local Governments with regards to

waste, particularly in the planning process where new projects will contribute to increased generation of waste (i.e. the establishment of a new satellite town).'

Another Local Government commented that:

'Local Government has committed millions of dollars into infrastructure, collection services and waste management programs and is committed to long-term strategies to undertake these services. This commitment needs to be recognised and supported by the State Government and the Waste Authority. The State Government/ Waste Authority should undertake a review/study of siting waste management infrastructure within the Perth metro and adjoining regional areas from which Local Government can prepare long-term strategies.'

Many Local Governments commented on the leadership role the State Government should be playing in regards to the planning of waste infrastructure, but mentioned that the absence of a Waste Strategy impacted on their ability to do so. The comment was also made that State Government should be more amenable to working in partnership with Local Government on waste issues. The potential role of the Federal Government as a major infrastructure provider, and potential source of infrastructure funding, was also mentioned.

Other Feedback

Training for Local Government waste operators (and DEC staff) was mentioned as an issue for both metropolitan and non-metropolitan Local Governments, as well as the lack of resources at the DEC (too few people knowledgeable about waste operations to assist).

There was overwhelming concern expressed in relation to the WARR Levy, and the way the money raised has been expended:

'Local Government pays about 80% of funds into the Levy Account for putrescible landfills and therefore should be eligible to obtain significant funding to provide services to the community. Over the past four years the availability of funds to Local Government has dropped dramatically to a stage this year there will be no SWIS grants.'

Another respondent also commented that:

'The current levy is inequitable because the highest tax rate is on the smallest waste stream. MSW is levied more, but has the smallest stream compared to C&D and C&I. Additionally, there is a misconception that C&D and C&I are not as damaging to the environment as MSW.'

5. RECOMMENDATIONS

The following recommendations have been made with guidance from the research and feedback documented above. It is proposed that the following recommendations assist the Municipal Waste Advisory Council in prioritising advocacy activities as regards issues relating to Local Government waste management infrastructure in WA.

Local Government feedback has highlighted a number of key concerns relating to waste management infrastructure. Notably, in the non-metropolitan area, there appears to be a number of issues with the way licensing conditions for landfills and other waste infrastructure are interpreted, communicated and

monitored. In addition, the current communication and relationship between DEC staff and regional and remote Local Governments have also been raised as an issue. It is recommended that MWAC engage with the DEC to ensure that these issues are addressed.

Recommendation

That the Municipal Waste Advisory Council engage with the Department of Environment and Conservation to ensure adequate sector consultation in the development of future regulations, as well as in the areas of training, communication and industry development.

Appropriate training for the waste management sector was also raised as an issue, especially in non-metropolitan areas. Work is being undertaken in this area by the Electrical Utilities and Public Administration (EUPA) Training Council that may go some way to address these issues.

Recommendation

That the Municipal Waste Advisory Council engage with the Electrical Utilities and Public Administration (EUPA) Training Council in order to assist in the development of consistent training standards across the Local Government waste management sector.

Planning for future developments and the impacts on waste facilities was cited as an issue in both metropolitan and non-metropolitan areas. MWAC has developed a Position Paper on Waste Management as an 'Essential Service' where the same issue was raised as a priority for future MWAC advocacy activities. The following recommendations are taken from the Position Paper and will go some way to address the issues raised by Local Government respondents to this paper.

Recommendation

That MWAC engage with the Western Australian Planning Commission (WAPC) in order to ensure adequate consultation of Local Governments and Regional Councils in regard to the planning of waste services.

Recommendation

That MWAC engage with the Western Australian Planning Commission (WAPC) in order to increase awareness of issues such as residential encroachment on buffers and delays in planning approval of new infrastructure.

There is an expectation that regional and remote Local Governments are able to provide a basic level of service to their communities, comparable to those in the Perth Metropolitan area. Without the rates base, however, many Local Governments are unable to raise baseline funding for the delivery of these services. The following recommendations have been developed as part of the MWAC Local Government Waste Management Funding Discussion Paper in order to go some way to address these shortcomings.

Recommendation

That the Municipal Waste Advisory Council continues to support the introduction of Container Deposit Systems (and other Extended Producer Responsibility schemes) in Western Australia and nationally.

Recommendation

That the Municipal Waste Advisory Council investigate the potential for Royalties for Regions programmes to fund larger waste management projects in regional and remote Local Governments.

Concern over the use of WARR Levy funds was raised by a number of Local Government respondents. Currently 75% of the money raised through the Levy funds the operations of the Department of Environment and Conservation, with 25% allocated for waste activities (however, the Waste Authority and the Office of the Waste Authority are also funded from this 25%).

The WALGA Policy Statement on Waste Levy and Strategic Waste Funding states that a clear rationale for the Levy is essential for assessing the appropriateness of all policy decisions which relate to the Levy, such as how it is charged, the rate applied and where the money is spent. The primary rationale supported by Local Governments is:

‘that it provides a means of generating secure funding for strategic activities in waste management. For the purposes of the Levy, appropriate strategic activities must be identified by a current State Waste Strategy.’

In addition, the Policy Statement states that:

‘Local Government strongly opposes the application of the Levy to non-waste management related activities, such as funding State Government core activities. Local Government supports funds from the Levy being applied to strategic waste management activities.’

It is recommended that MWAC continue to challenge the State Government on the distribution of money raised through the Levy, in order to ensure that adequate funds are allocated to waste management activities for Local Governments.

Recommendation

That the Municipal Waste Advisory Council continues to advocate for increased WARR Levy funds to be hypothecated for strategic waste management activities.

6. REFERENCES

- Arndt, Raphael Henry 2000, 'Is Build-Own-Operate-Transfer a Solution to Local Government's Infrastructure Funding Problems?', *Australian Civil Engineering Transactions* Vol. 42, pp. 19-25.
- Begg, Peter 2008, 'Radical new waste system to be built', *Geelong Advertiser*, Accessed 29 November 2010, http://www.geelongadvertiser.com.au/article/2008/11/20/32421_news.html
- Cardno 2008, *Assessment of Waste Disposal and Material Recovery Infrastructure for Perth (Towards 2020)*, Waste Authority of Western Australia, Perth.
- The Chartered Institution of Wastes Management 2005, 'Delivering Key Waste Management Infrastructure: Lessons Learned from Europe – Final Report'
- Conway Davy Pty Ltd 2010, 'Draft Local Government Enterprises as a Means of Improving Local Government: A Discussion Paper.'
- Department of Environment and Conservation 'Landfill Waste Classification and Waste Definitions 1996' (As amended December 2009).
- Department of Environment and Conservation 2008, *Zero Waste Plan Development Scheme (ZWPDS) Phase 1 Report 2006-07*, Waste Management Branch, Perth.
- Department of Water 2006, *Water Quality Protection Note: Landfilling with inert materials*, Government of Western Australia.
- Environmental Defenders Office WA Inc. 2002, *Factsheet 5. Environmental impact assessment in Western Australia*.
- Fairfield City Council Website 2010, 'Community Profile', Accessed 29 November 2010, <http://profile.id.com.au/Default.aspx?id=356>
- Forum of Regional Councils 2010, 'Essential Municipal Solid Waste Services'.
- International Association for Public Participation 2000, *Core Values for the Practice of Public Participation*.
- Lake Macquarie City Council 2010, 'City Strategy Committee Meeting – Monday 1 November 2010', Accessed 29 November 2010, http://www.lakemac.com.au/downloads/2010_11_01_stand%20Pages%20150-227.pdf.pdf
- Lamb, Garth 2008, 'CleanTech: GRD offloads high-tech UR-3R waste facility', *Waste Management and Environment*, Accessed 29 November 2010, <http://www.environmentalmanagementnews.net/storyview.asp?storyid=447889§ionsourc=s0>
- Lamb, Garth 2009, 'AWT – rise of the machines', *Waste Management and Environment*, Accessed 29 November 2010, http://www.wme.com.au/categories/waste_management/mar3_09.php
- Murdoch, Cheryl 2004, 'Observations on European Waste Management in a Victorian Context', Baxter

Group Limited.

The Select Committee on Recycling and Waste Management 1995, *Recycling and Waste Management Final Report 1995*, Legislative Assembly of Western Australia, Perth.

Waste Authority 2010a, 'Appendix 2: Waste in Western Australia – additional data' in 'Draft II Waste Strategy for Western Australia', Government of Western Australia, Perth.

Waste Authority 2010b, 'Draft II Waste Strategy for Western Australia', Government of Western Australia, Perth.

Waste Service NSW 2003, 'Summary of Contracts – Eastern Creek UR-3R Facility'.

Waste Service NSW n.d. 'The Eastern Creek UR-3R Facility – Urban Resource-Reduction, Recovery and Recycling – FREQUENTLY ASKED QUESTIONS', Accessed 29 November 2010, http://www.grd.com.au/deposit/documents/0000000197/040827_eastern_creek_ur3r_qa_v3_1_final.pdf

Western Australian Government 2007, *Waste Avoidance and Resource Recovery Act 2007*

Western Australian Planning Commission 1997, 'State Planning Strategy – Part 2', <http://www.planning.wa.gov.au/Publications/> Accessed 28 October 2010

Western Australian Planning Commission 2009, 'Directions 2031. Draft Spatial Framework for Perth and Peel. June 2009', Perth.

APPENDIX 1. Definitions of Waste Management Infrastructure.

Term	Definition
Landfill	<i>A site used for disposal of solid material (i.e. is spadeable) by burial in the ground that is licensed as a landfill under the Environmental Protection Act 1986.</i>
Class I Landfill	<i>An un-lined landfill designed to accept inert wastes.</i>
Class II Landfill	<i>An un-lined landfill designed to accept putrescible and inert wastes.</i>
Class III Landfill	<i>A lined landfill, which may include leachate collection, designed to accept putrescibles and inert wastes.</i>
Class IV Landfill	<i>A double-lined landfill with leachate collection, designed to accept contaminated soils and sludges (including encapsulated wastes).</i>
Class V Landfill	<i>The Mount Walton East Intractable Waste Disposal Facility.</i>
Inert Transfer Station	<i>Facility where inert waste is collected and stored temporarily before transport to a final destination.</i>
Putrescible Transfer Station	<i>Facility that receives putrescible waste for onward transfer to landfill or a resource recovery facility.</i>
Material Recovery Facility	<i>Facility that received and separates co-mingled recyclables by material type for baling and transfer.</i>
Resource Recovery Facility	<i>Facility that receives MSW for reprocessing (into energy or compost), diverting this waste from landfill.</i>
Greenwaste Reprocessing Facility	<i>Facility producing mulch or compost from greenwaste.</i>
Alternative Waste Treatment (AWT) Technology	<i>Technology designed to recover more resources from the waste stream while minimising the impact on the environment, falling into three categories: Modifications to conventional landfilling; thermal treatment; and, biological treatment.</i>

Source: Based on Department of Environment and Conservation 'Landfill Waste Classification and Waste Definitions 1996' (As amended December 2009).

APPENDIX 2. Waste Management Infrastructure in Perth Metropolitan Area.

	Regional Council	Name of Facility	Local Government (Location)	Owner
Class I Landfill	EMRC	Happy Valley	Shire of Kalamunda	Moltoni Corporation
		Mundaring Transfer	Shire of Mundaring	Shire of Mundaring
	MRC	Eclipse Resources	City of Wanneroo	Eclipse Resources
		Non-Organic Disposals	City of Wanneroo	Non-Organic Disposals
		RCG Nine Mile Quarry	City of Wanneroo	RCG
	RRC	Alexander Drive	City of Stirling	Atlas Group
	SMRC	Tims Thicket	City of Mandurah	Cleanaway
		Lefroy Road Quarry	City of Fremantle	City of Fremantle
		Bibra Lake Landfill	City of Cockburn	Moltoni Corporation
		Eclipse Resources	Town of Kwinana	Eclipse Resources
Class II/III Landfill	EMRC	RCG Quinns Quarry	Town of Kwinana	RCG
		Thomas Rd Quarry	Town of Kwinana	Waste Stream Management
	MRC	Red Hill (Class III)	City of Swan	EMRC
	RRC	Tamala Park (Class II)	City of Joondalup	MRC
		Hopkinson Rd (Class III)	City of Armadale	City of Armadale
SMRC	South Cardup (Class III)	Shire of Serpentine-Jarrahdale	West Australian Landfill Services	
	Henderson Rd (Class II)	City of Cockburn	City of Cockburn	
Class IV Landfill	EMRC	Millar Rd (Class III)	City of Rockingham	City of Rockingham
Inert Transfer Station/ Recycler	EMRC	C&D Recycling (Recycler)	?	C&D Recycling
		Capital Demolition (Recycler)	City of Bayswater	Capital Demolition
		Instant Waste (Transfer)	City of Bayswater	Instant Waste
		Hazlemere Timber (Recycler)	?	EMRC
		Westbins (Transfer)	?	Westbins
	RRC	All Earth Group (Recycler/ Transfer)	City of Gosnells	All Earth Group
	SMRC	Veolia Environmental (Recycler/ Transfer)	?	Veolia Environment Pty Ltd
		Waste Stream Management (Transfer)	City of Canning	Waste Stream Management
		Total Waste (Transfer)	City of Canning	Westmore Corporation
Putrescible Transfer Station	EMRC	Bayswater Transfer Station	City of Bayswater	Cleanaway
		Walliston Transfer Station	Shire of Kalamunda	Shire of Kalamunda
		Mundaring Transfer Station	Shire of Mundaring	Shire of Mundaring
	MRC	Balcatta Transfer Station	City of Stirling	City of Stirling
		South Perth Transfer Station	City of South Perth	City of South Perth
	RRC	Mandurah Transfer Station	City of Mandurah	City of Mandurah
		Ranford Road Transfer Station	City of Canning	City of Canning
	SMRC	Welshpool Transfer Station	City of Canning	WALS
Walcott Transfer Station		City of Nedlands	WMRC	
Material Recovery Facility	EMRC	Brockway Transfer Station	City of Nedlands	WMRC
	EMRC	Bayswater MRF	City of Bayswater	Cleanaway
	MRC	Wangara MRF	City of Wanneroo	City of Wanneroo
	RRC	Maddington MRF	City of Gosnells	Cleanaway
Mandurah MRF		City of Mandurah	Cleanaway	
SMRC	SMRC MRF	City of Canning	SMRC	

		Perth Engineering and Maintenance	City of Cockburn (?)	Perth Engineering and Maintenance
		VISY	City of Canning (?)	VISY
		AMCOR	City of Canning	AMCOR
	Outer Region	Green Recycling	City of Bunbury	Perth Waste
Resource Recovery Facility	MRC	BioVision 2020	City of Wanneroo	BioVision 2020
		Atlas	City of Stirling	Atlas
	RRC		Town of Kwinana	
	SMRC	SMRC RRRC	City of Canning	SMRC
	WMRC	AnaeCo	City of Nedlands	AnaeCo
Greenwaste Reprocessing Facility	EMRC	Purearth	City of Bayswater	Purearth
		Red Hill Landfill	Shire of Mundaring	EMRC
	MRC	Eclipse Resources	?	Eclipse Resources
		Soiland	City of Wanneroo	Soiland
		Greens Recycling Facility	City of Wanneroo	City of Wanneroo
	RRC	Bioorganics	?	Bioorganics
		All Earth	City of Gosnells	All Earth Group
		Custom Compost	?	Custom Compost
	SMRC	Millar Rd Landfill	City of Rockingham	City of Rockingham
		Greenwaste Services	?	Greenwaste Services
		Amazon Soils	?	Richgro
		Biowise	Town of Kwinana	SITA
		SMRC Greenwaste	City of Canning	SMRC
		Eclipse Resources	Town of Kwinana	Eclipse Resources
WMRC	WMRC Greenwaste	City of Nedlands	WMRC	

Source: Based on information from Cardno 2008 *Assessment of Waste Disposal and Material Recovery Infrastructure for Perth – Towards 2020*.

APPENDIX 3. Parameters for Consideration of Waste Management Infrastructure.

Environmental Considerations

Environmental considerations need to be addressed throughout the planning phase of any facility, and continue throughout the life of a plant. It is these environmental considerations and impacts which may be a key community concern. The evolution of science and technology has perhaps been more rapid than the education of the community and government policy, with current environmental management practices and controls minimising and in many cases eliminating negative environmental impacts. As a consequence, particular forms of AWT are deemed unacceptable by communities. If WA is to achieve the States vision of *Towards Zero Waste*, it is important that technologies, as long as they meet environmental standards, be considered. Responsibility rests with both State and Local Government, to set standards and implement best practice environmental management.

Environmental concerns follow the lifespan of a facility, from identifying an appropriate site for a facility to the retirement of a facility. Where the facility has potential to significantly impact the environment, an Environmental Impact Assessment (EIA) will be required. The significance of the environmental impacts will be decided by the Environmental Protection Authority (EPA) based upon the following factors

- The extent and consequences of biophysical impacts;
- The environmental values of the area affected;
- The extent to which emissions (if any) may impact on the health, comfort, welfare, convenience, comfort or amenity of people;
- The potential of the biophysical impacts to significantly and adversely affect the social surroundings of people;
- The extent and rigour to which potential impacts have been investigated and described in the referral, and the confidence in the reliability of the predicated impacts;
- The extent to which the proposal implements the principles of sustainability;
- The ability of 'decision-making authorities' to place conditions on the proposals to ensure required environmental outcomes are achieved; and
- The likely degree of public interest and the extent to which interested and affected people have been consulted (Environmental Defenders Office WA Inc. 2002).

The EPA then decide on the level of assessment required. There are four types of formal assessment, which are briefly described below.

- Assessment in Referral Information (ARI): Where the proposal raises one or more significant, but manageable, environmental factors however conditions set by another authority will not be appropriate.
- Environmental Protection Statement (EPS): Where the proposal raises a number of significant environmental factors, which can be readily managed. The proponent must submit an EPS document and the EPA reports on the proposal to the Minister outlining conditions which should be applied to the proposal.
- Public Environmental Review (PER): Applies to a proposal of local or regional significance which has a number of significant environmental factors. The proponent must submit an Environmental Scoping document, which identifies environmental factors and associated studies, as well as a PER document addressing environmental factors identified in the scoping document. A four to eight week period of public review follows, and the proponent is required to respond to each submission. The EPA reports on the proposal to the Minister.
- Environmental Review and Management Programme (ERMP): Where the proposal is of State significance which raises a number of significant environmental issues. The proponent once again is required to submit an Environmental Scoping Document (which may have a public review of two weeks) and an ERMP which has an associated public review of 10 – 12 weeks. The proponent is required to respond to each submission after which the EPA will report to the Minister (Environmental

Defenders Office WA Inc. 2002).

Once a proposal has been approved, the Department of Environment and Conservation (DEC) will then assess the proposal and if acceptable, will issue a Works Approval prior to the construction, and a Licence prior to operations. Currently, any Incinerator which processes 100kg or more per hour of material, or a compost facility which processes 1,000 tonnes or more per year require a Licence prior to operations.

As part of an EIA, an ecological evaluation may be required to ensure that there is no potential for the proposed development to impact on protected matter. Such protected matter could include; world heritage property, a national heritage place, internationally important wetlands (RAMSAR Wetlands), nationally listed threatened species and ecological communities and any nationally listed migratory species. Should there be potential for harm or impact, Australia Government approvals will be required under the *Environmental Protection and Biodiversity Conservation Act 1999*.

Social Evaluation

One of the main drivers of any given decision is social awareness and acceptance of any proposed technology. Waste management may be a contentious issue, with few members of society welcoming a waste disposal/processing facility, be it landfill or AWT near their homes. It is recommended that within the planning phase of the project, a Social Risk Assessment be of high priority and include the following components:

- Identify stakeholders;
- Develop a program for all stakeholders;
- Profile social/economic situation of the area;
- Identify concerns and issues of stakeholders and develop social impact categories i.e. employment, property values, conservation;
- Identify probability, magnitude and extent of effects of the project;
- Create strategies for mitigating potential adverse social effects arising from lack of understanding; and
- Monitor progress and report to stakeholders.

Community consultation (CC) should be included in the initial stages of the project to ensure that an appropriate level of consultation takes place within a suitable timeframe. The underlying principles of community consultation are outlined below:

- Community must be given the opportunity to give input into decisions about matters which may affect their lives;
- The CC process should actively seek out and facilitate the involvement of those individuals and groups potentially affected by the decisions;
- All participants should have fair and equitable access to the community consultation process;
- The planned community consultation process to be communicated to all participants at the outset with participants involved in defining how they participate;
- The community should be provided with the information they need to participate;
- The CC process to communicate the interests and concerns of all participants;
- The community's contribution and concerns must be taken into consideration when making decisions;
- The community consultation process should provide feedback to the participants on how their input was incorporated and how it affected the decision; and
- All commitments made as part of the CC process should be made in good faith (International Association for Public Participation 2000).

Community involvement through community consultation does not secure outcomes that are acceptable to all parties or resolve all differences. It does, however, give the community the opportunity to view concerns within a fair and transparent process. Community consultation represents best practice environmental management, and the EPA gives consideration to the level of community consultation the proponent has undertaken when deciding on the level of assessment required for the proposal. An adequate community consultation process should limit the number of public appeals received on a proposal and allow the Minister to make more informed decisions when deciding on the proposal.

The Department of Environment (DEC) have produced a comprehensive document, *Interim Industry Guide to Community Involvement (December 2003)*, which outlines in detail the community consultation process. The document provides tools for effective community involvement from the proposal planning stage and through the life of the development.

Economic Considerations

Decision makers must consider the financial costs associated with both the establishment, operational and maintenance of waste management infrastructure. Long term planning is also required to ensure consideration of what will happen at the end of the facilities life.

Local Governments also need to consider what contractual arrangements suit their particular situation. Types of contractual arrangements include:

- Local Government own and operate;
- Build Own Operate (BOO);
- Build Own Operate Transfer (BOOT);
- Design and Construct (D&C);
- Engineering Procurement Construction Management (EPCM);
- Alliance; and
- Joint Venture (incorporated or unincorporated).

The different contractual arrangements have various advantages and disadvantages and the particular model selected will depend on the requirements of the individual Local Government or Regional Council.

There are substantial costs surrounding waste infrastructure in the developmental phase, with planning, design and community consultation. Furthermore, the EIA process and approvals significantly adds to this cost, coupled with the cost of land and buffer zones which will be essential in Ministerial sign-off of any EIA process.

When considering the economic parameters of a particular technology, an evaluation of the availability of feedstock throughout the life span of a facility must be acknowledged. This analysis should incorporate current and forecast population densities, to ensure the technology has the capacity to cope with current and increased feedstock during the entire lifespan of a facility. Further analysis should be made on the markets of end products to ensure there is a commercially viable market for the product. Without a strong end of product market, the facility will not be economically viable.

Cost considerations differ between technologies, with the construction and operational costs associated with energy from waste technologies greater than that of biological technologies. For example, energy from waste operations may need to consider the costs associated with connection to the grid, whereas biological AWT may require market development for its end product.

Risk Considerations

The development of AWT technology, in particular, has associated risks. It is imperative that these risks be addressed and mitigation strategies be put in place in the planning phase. Risks that should be considered with all AWT include:

- Feedstock and energy supply contracts;
- Community support;
- Operational risk;
- Occupational Health and Safety;
- Financial risk;
- EIA; and
- Commercial risk.

APPENDIX 4. Contractual Arrangements.

Contractual arrangement	Description
Build Own Operate (BOO)	Similar to BOOT projects, but the service provider retains ownership of the asset in perpetuity. The government only agrees to purchase the services produced for a fixed length of time.
Build Own Operate Transfer (BOOT)	<p>BOOT involves the private sector in the provision of new infrastructure. Private consortiums can finance and construct infrastructure, with the consortium owning, operating and carrying end-user risk.</p> <p>The consortium operates the infrastructure for a time period under a concession or franchise awarded by the government, and derives revenue from this arrangement. At the end of the concession/franchise period, ownership is transferred to the government.</p> <p>The BOOT method features long-term maintenance of infrastructure. This method is used when a revenue source is available, independent of government revenue.</p>
Design & Construct (D&C)	<p>Under a D&C, the owner contracts with a single entity that is responsible for both design and construction. Thus the contractor employs the designer through external consultants, or designs "in house".</p> <p><i>Advantages:</i></p> <ul style="list-style-type: none"> ▪ Reducing cost and time through the contractor having input into the constructability of the design ▪ Relative certainty of price by having the constructor prepare and take responsibility for its own quantities, rates and lump sums ▪ A single line of responsibility for the design and construction phases, rendering it unnecessary to distinguish between defect in design and defects in construction ▪ Reduced claims and disputes by eliminating the interface between the owner-employed designers and contractors under a tradition contract. <p><i>Disadvantages:</i></p> <ul style="list-style-type: none"> ▪ There can be considerable investment required in the preparation of D&C tenders including a significant demand on resources from multiple design and construction organisations. In a tight labour market this may be difficult.
Alliance	<p>An agreement between two or more entities that undertake to work cooperatively on the basis of sharing project risk and reward, to reach agreed outcomes. Alliances take a team approach and are based on principles of good faith and trust. Parties involved agree on the target cost estimate for the project.</p> <p>A Board is established to manage the contract with membership from each of the entities involved in the project. The Board is the decision making and managerial body, and participants relinquish any entitlements to legal or equitable courses of action against any other participants, except in situations of wilful default or possible insolvency.</p> <p>Alliance contracts are characterised by proactive collaboration and strong relationships with all involved, working towards optimum project outcomes and minimisation of the conflicts and disputes sometimes associated with a traditional contract. By working together, risk is embraced, uncertainty is dealt with, and flexibility allows for issue resolution.</p> <p>A feature of these contracts is a 'no disputes' clause, where partners agree not to use arbitration or litigation as a disputes resolution technique.</p> <p>Alliances are effective where a strategy of embracing risk is more appropriate than transferring risk.</p>

Source: Adapted from MainRoads (QLD) 'Contracts' (Factsheet). Accessed 19 November 2010 at <http://www.tmr.qld.gov.au/~media/4f5b1a17-8fe0-4255-9515-f0407f678fe1/contractsjanuary2009.pdf>
 'BOO' definition from Arndt 2000, p. 20.