




## MINUTES

### CERTIFICATION OF CONFIRMATION OF COMMITTEE MEETING MINUTES

**5 SEPTEMBER 2013**

I, Cr Tony Cuccaro, hereby certify that the following minutes [pages 1 to 77] of the Meeting of **RESOURCE RECOVERY COMMITTEE** held on 5 September 2013 were confirmed at a meeting of the Committee held on 6 March 2014.



**Signature**

Cr Tony Cuccaro

**Person presiding at the Committee Meeting held on 6 March 2014**

## RESOURCE RECOVERY COMMITTEE

### MINUTES

5 September 2013

(REF: COMMITTEES-15840)

A meeting of the Resource Recovery Committee was held at the EMRC Administration Office, 1<sup>st</sup> Floor, 226 Great Eastern Highway, BELMONT WA 6104 on **Thursday, 5 September 2013**. The meeting commenced at **5:00pm**.

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## 1 DECLARATION OF OPENING AND ANNOUNCEMENT OF VISITORS

The Chairman opened the meeting at 5:00pm.

## 2 ATTENDANCE, APOLOGIES AND LEAVE OF ABSENCE (PREVIOUSLY APPROVED)

### Committee Members

|   |                                       |                    |
|---|---------------------------------------|--------------------|
| Cr Tony Cuccaro ( <b>Chairman</b> )           | EMRC Member                           | Shire of Mundaring |
| Cr Jennie Carter ( <i>from 5:02pm</i> )       | EMRC Member                           | Town of Bassendean |
| Cr Frank Lindsey                              | EMRC Member                           | Shire of Kalamunda |
| Cr David Färdig                               | EMRC Member                           | City of Swan       |
| Mr Simon Stewert-Dawkins                      | Director Operational Services         | Town of Bassendean |
| Mr James Riley<br>(Deputising for Mr Pearson) | Manager Environmental Health Services | City of Bayswater  |
| Mr Ric Lutey                                  | Director Technical Services           | City of Belmont    |
| Mr Sam Assaad<br>(Deputising for Mr Higham)   | Manager Infrastructure Services       | Shire of Kalamunda |
| Mr Shane Purdy                                | Director Infrastructure Services      | Shire of Mundaring |
| Mr Jim Coten                                  | Executive Manager Operations          | City of Swan       |
| Mr Peter Schneider                            | Chief Executive Officer               | EMRC               |

### Leave of Absence Previously Approved

*Cr Alan Radford (from 1/9/2013 to 7/9/2013 inclusive)*

### Apologies

|                   |  |                    |
|-------------------|--|--------------------|
| Cr Phil Marks     | EMRC Member                                      | City of Belmont    |
| Mr Doug Pearson   | Director Technical Services                      | City of Bayswater  |
| Mr Clayton Higham | Director Development and Infrastructure Services | Shire of Kalamunda |

### Deputy Committee Members - Observers

|               |             |                    |
|---------------|-------------|--------------------|
| Cr Gerry Pule | EMRC Member | Town of Bassendean |
|---------------|-------------|--------------------|

### EMRC Officers

|                        |                                      |
|------------------------|--------------------------------------|
| Mr Stephen Fitzpatrick | Manager Project Development          |
| Mr Hua Jer Liew        | Director Corporate Services          |
| Mr Johan Le Roux       | Manager Engineering/Waste Services   |
| Mr Dave Beresford      | Project Engineer – Resource Recovery |
| Ms Giulia Bono         | Administration Officer (Minutes)     |

### Guests

|                  |                             |
|------------------|-----------------------------|
| Ms Janelle Booth | A.Prince Consulting Pty Ltd |
| Mr Dan Dragovich | Herbet Smith Freehills      |
| Mr Wade Dunstan  | Stantons International      |
| Mr John King     | Cardno                      |

## 3 DISCLOSURE OF INTERESTS

Nil

## 4 ANNOUNCEMENT BY THE CHAIRMAN OR PERSON PRESIDING WITHOUT DISCUSSION

Nil



**5 PETITIONS, DEPUTATIONS AND PRESENTATIONS**

**5.1 PRESENTATION BY MS JANELLE BOOTH OF A.PRINCE CONSULTING PTY LTD**

Item 5.1 was presented later in the meeting in conjunction with Item 11.2 EMRC Waste Stream Audit and Analysis 2013.

Cr Carter entered the meeting at 5:02pm.

**6 CONFIRMATION OF MINUTES OF PREVIOUS MEETINGS**

**6.1 MINUTES OF THE RESOURCE RECOVERY COMMITTEE MEETING HELD ON 6 JUNE 2013**

That the Minutes of the Resource Recovery Committee meeting held on 6 June 2013, which have been distributed, be confirmed.

**RRC RESOLUTION(S)**

MOVED CR LINDSEY                                  SECONDED CR FÄRDIG

THAT THE MINUTES OF THE RESOURCE RECOVERY COMMITTEE MEETING HELD ON 6 JUNE 2013, WHICH HAVE BEEN DISTRIBUTED, BE CONFIRMED.

**CARRIED UNANIMOUSLY**

**7 QUESTIONS BY MEMBERS OF WHICH DUE NOTICE HAS BEEN GIVEN**

Nil

**8 QUESTIONS BY MEMBERS WITHOUT NOTICE**

Nil

**9 ANNOUNCEMENT OF CONFIDENTIAL MATTERS FOR WHICH MEETINGS MAY BE CLOSED TO THE PUBLIC**

**Confidential Item 14.1 Resource Recovery Facility, Red Hill – Tender Process was dealt with at this point in the meeting.**

NOTE: Section 5.23(2) of the Local Government Act 1995, details a number of matters upon which Council may discuss and make decisions without members of the public being present. These matters include: matters affecting employees; personal affairs of any person; contractual matters; legal advice; commercial-in-confidence matters; security matters; among others.

The following report item is covered in section 14 of this agenda.

9.1 Resource Recovery Facility, Red Hill – Tender Process

**10 BUSINESS NOT DEALT WITH FROM A PREVIOUS MEETING**

Nil



## 11 REPORTS OF EMPLOYEES

### 11.1 HAZELMERE PYROLYSIS PROJECT UPDATE

REFERENCE: COMMITTEES-16042

#### PURPOSE OF REPORT

To advise Council on the status of the implementation of the Hazelmere wood waste pyrolysis project.

#### KEY ISSUES AND RECOMMENDATION(S)

- Ansac have executed a Clean Technology Innovation Fund agreement with the Commonwealth Government's Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education.
- Meetings will be held in September 2013 with senior representatives of Ansac and Anergy to progress the contract and facilitate the next stages of project implementation.
- Work has been completed to form a basis for the environmental approval.
- The grid connection application to Western Power was lodged on 14 June 2013.
- An application to the Independent Market Operator (IMO) for capacity payments from 2014/2015 was lodged but rejected by the IMO based on insufficient progress by Western Power on the grid connection application.
- The next stage of the grid connection process with Western Power, an Early Undertakings Agreement contract has been executed and will take up to 12 weeks to complete.
- Community engagement on the proposed project has commenced with the Hazelmere community.

#### Recommendation(s)

That the report be received.

#### SOURCE OF REPORT

Director Waste Services

#### BACKGROUND

The 8 December 2011 meeting of Council (Ref: Committees-13323) considered the proposed investigation into the feasibility of pyrolysing wood waste and other residuals at EMRC's Hazelmere site and resolved that:

1. *COUNCIL APPROVE EMRC PARTICIPATION IN A PROJECT TO ESTABLISH THE FEASIBILITY OF PYROLYSIS OF WOOD WASTE AND OTHER RESIDUALS AT HAZELMERE TIMBER RECYCLING CENTRE INVOLVING AN INITIAL FEASIBILITY STUDY FOLLOWED BY A SECOND STAGE DETAILED ENGINEERING STUDY.*
2. *THE OUTCOMES OF THE FIRST STAGE FEASIBILITY STUDY WILL BE REPORTED TO COUNCIL AND APPROVAL SOUGHT TO PROCEED WITH THE SECOND STAGE FEASIBILITY STUDY."*



*Item 11.1 continued*

The 19 April 2012 meeting of Council (Ref: Committees-13576) resolved that:

*“COUNCIL, BY ABSOLUTE MAJORITY:*

- 1. APPROVES EXPENDITURE OF \$80,000 FOR THE SECOND STAGE DETAILED ENGINEERING STUDY INTO A PYROLYSIS PLANT AT EMRC'S HAZELMERE SITE INVOLVING THE SPECIFICATION OF THE PLANT EQUIPMENT REQUIRED AND A BETTER COST ESTIMATE.*
- 2. APPROVES THE REALLOCATION OF \$80,000 FROM 24399/00.JH (CONSTRUCT AND COMMISSION RESOURCE RECOVERY PARK) TO 72884/00.JF (EVALUATE RESOURCE RECOVERY PARK OPTIONS) TO COVER THE COSTS OF THE SECOND STAGE DETAILED ENGINEERING STUDY.*
- 3. SUPPORTS A GRANT APPLICATION TO THE CLEAN TECHNOLOGY INNOVATION FUND IN JULY 2012, TO BE PREPARED AND SUBMITTED BY ANSAC WITH INPUT FROM EMRC AND UWA AND SEEKING PROJECT FUNDING SUPPORT FOR A DEMONSTRATION WOOD WASTE PYROLYSIS FACILITY AT HAZELMERE.”*

The 20 June 2013 meeting of Council (Ref: Committees-15654) resolved:

*“THAT COUNCIL:*

- 1. PROCEED WITH THE HAZELMERE WOOD WASTE PYROLYSIS PROJECT.*
- 2. BY ABSOLUTE MAJORITY IN ACCORDANCE WITH SECTION 5.42 OF THE LOCAL GOVERNMENT ACT 1995 AUTHORISE THE CEO TO ENTER INTO A CONTRACT BETWEEN EMRC AND ANSAC FOR THE ENGINEERING, PROCUREMENT, CONSTRUCTION AND COMMISSIONING OF THE HAZELMERE WOOD WASTE PYROLYSIS PLANT TO THE VALUE OF \$7,440,000 SUBJECT TO A, B, AND C;*
  - a) EXECUTION OF A FUNDING AGREEMENT BETWEEN THE COMMONWEALTH GOVERNMENT AND ANSAC PTY LTD FOR GRANT FUNDING UNDER THE CLEAN ENERGY INNOVATION FUND;*
  - b) RECEIPT OF ENVIRONMENTAL AND OTHER STATUTORY APPROVALS FOR THE PROJECT; AND*
  - c) DEVELOPMENT OF A POWER PURCHASE AGREEMENT BETWEEN EMRC AND AN ELECTRICITY RETAILER.”*

## **REPORT**

Ansac have executed a Clean Technology Innovation Fund agreement with the Commonwealth Government's Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education. This occurred in early July 2013, shortly before the funding profile of the Clean Technology Innovation Fund was changed by the Federal Government on 16 July 2013 due to budget constraints. There have been no announcements by the Federal Government as yet, but the successful grant is listed on the AusIndustry website under the Clean Technology Innovation page.

The grant agreement sets out a schedule of payments to Ansac against project milestones with matching payments by the EMRC. The first payment to Ansac from the EMRC is approximately \$250,000.00 and is due at the end of September 2013.

As part of the grant application, the EMRC was required to sign a Heads of Terms agreement.



*Item 11.1 continued*

A draft contract to design and construct the Hazelmere pyrolysis plant has been developed by Anergy and was received in mid-August 2013 for comment. A project meeting has been scheduled for the week of 2 September 2013 to review the contract and resolve any differences and progress the next steps.

**Western Power grid connection and power purchase agreement**

The grid connection application to Western Power was lodged on 14 July 2013 after considerable effort by the EMRC and its electrical consultants and with input from Ansac. Ideally, the application should have been lodged earlier in the year but information was not available from Ansac.

An application to the Independent Market Operator (IMO) for capacity payments from 2014/2015 was lodged but advice was received from the IMO that they were unable to consider the application for the next round of capacity payments because of insufficient progress by Western Power on the grid connection application. This means that the next opportunity for capacity payments will be in June 2014 for the 2016/2017 allocation.

The next stage of the grid connection process with Western Power is via an Early Undertakings Agreement and a contract has been executed for this and will take up to 12 weeks to complete.

In relation to a power purchase agreement, preliminary discussions have been held with Synergy but indications are that they would be unable to negotiate an agreement until the first half of 2014 because of demerger processes with Verve. Discussions have also been held with Perth Energy regarding a power purchase agreement.

**Environmental approval**

A mass balance has been completed for the project showing the fate of various parameters which will form the basis of an impact assessment model for the plant.

A background noise survey is being conducted as a prelude to noise modelling for the proposed plant.

**Community engagement**

Community engagement meetings were held with the Hazelmere Progress Association and the Community Action Network in July. Although the attendance at these meetings was low there was a lot of interest and key issues were identified as follows:

- Traffic impacts on the Hazelmere residential area;
- Stormwater management; and
- Re-use store access.

Information on the pyrolysis project and the Hazelmere Resource Recovery Park is being prepared for the EMRC website and newsletters.

**STRATEGIC/POLICY IMPLICATIONS**

Key Result Area 1 – Environmental Sustainability

- 1.1 To provide sustainable waste disposal operations
- 1.3 To provide resource recovery and recycling solutions in partnership with member Councils
- 1.4 To investigate leading edge waste management practices

**FINANCIAL IMPLICATIONS**

Funds are provided in the annual budget for 2013/2014 and 2014/2015 for expenditure to undertake capital works for the project and once in operation would reduce expenditure to dispose of any surplus wood chip.



*Item 11.1 continued*

## **SUSTAINABILITY IMPLICATIONS**

The Resource Recovery Project is aimed at reducing greenhouse gas emissions from the EMRC's waste disposal operations and State programmes for reduction of waste to landfill.

## **MEMBER COUNCIL IMPLICATIONS**

| <b>Member Council</b> | <b>Implication Details</b> |
|-----------------------|----------------------------|
| Town of Bassendean    | } Nil                      |
| City of Bayswater     |                            |
| City of Belmont       |                            |
| Shire of Kalamunda    |                            |
| Shire of Mundaring    |                            |
| City of Swan          |                            |

## **ATTACHMENT(S)**

Nil

## **VOTING REQUIREMENT**

Simple Majority

## **RECOMMENDATION(S)**

That the report be received.

## **RRC RECOMMENDATION(S)**

MOVED CR LINDSEY

SECONDED MR PURDY

That the report be received.

**CARRIED UNANIMOUSLY**





## 11.2 EMRC WASTE STREAM AUDIT AND ANALYSIS 2013

**REFERENCE: COMMITTEES-16024**

### PURPOSE OF REPORT

To advise Council of the results of the May 2013 waste audit of member Council household waste plus waste received at the Red Hill Waste Management Facility.

### KEY ISSUES AND RECOMMENDATION(S)

- Consultants A.Prince Consulting Pty. Ltd. (APC) completed waste audits during May 2013.
- Two waste streams were audited – 2013 household kerbside mobile garbage bins (MGB's) of the six member Councils, and the mixed waste stream at Red Hill - this included the City of Stirling Materials Recovery Facility (MRF) residues from the Atlas Plant, and the Balcatta transfer station waste.
- Results of the household MGB audit composition were similar to the 2004 audit, however a reduction in weight disposed per household was evident.
- Audit results are available for the combined waste stream to Red Hill as well as the MGB results for individual Councils.
- The auditors have made recommendations related to increased recycling opportunities, diversion of material from landfill and highlighted significant options for recovery of material from the waste stream.
- The results provide EMRC with compositional data for the waste strategy and any potential National Greenhouse & Energy Reporting Act 2007 (NGER) reporting requirements.

#### **Recommendation(s)**

That the report be received.

### SOURCE OF REPORT

Project Engineer – Resource Recovery

### BACKGROUND

The EMRC conducted a waste audit during September 2004 using APC, the results of which were presented to the 18 November 2004 Strategic and Secondary Waste Treatment Committee (SSWTC) meeting. The purpose of this audit was to ascertain any seasonal variation within, and characterise the domestic waste stream including Bayswater green waste, commercial and trailer waste and residuals from regional recycling facilities disposed of at Red Hill. This was a follow-up audit from one conducted in 2002 'summer' which was to characterise the waste stream and provide information which would be useful to the development of a future resource recovery facility.

After calling for tenders, APC was awarded the audit and the work was carried out during May 2013.



*Item 11.2 continued*

## REPORT

APC conducted the waste audit over 3 weeks in May 2013. The audit was divided into 3 components:

1. Domestic waste stream (kerbside 240 litre mobile garbage bins);
2. Baled residual waste from Atlas materials recovery facility (on behalf of City of Stirling); and
3. Mixed waste stream from the Red Hill Waste Management Facility (excluding domestic waste as previously audited under components).

The first part of the audit was the baled residual waste from the Atlas plant. Samples were collected from the baling process over a 3 day (6–8 May 2013) period every hour consisting of approximately 100kg each. These were transported to EMRC's Hazelmere facility the following day for auditing.

The second portion APC audited was the contents of the 240 litre mobile garbage bins for domestic waste in the six member councils – the Cities of Bayswater, Belmont and Swan, the Shires of Kalamunda and Mundaring and the Town of Bassendean. To provide consistency in reporting 100 bins were audited from each member Council providing a total of 600 samples. This was an aggregated, weight based audit, including moisture testing. This part of the audit was conducted over 6 days from 10–17 May 2013. APC used the WA Department of Environment and Conservation's *Kerbside and Recycling Audit Manual 2008* (the Manual) as a guideline for the collection method. The streets in which samples were collected were based on the socio-economic average for the particular member Council. The waste was sorted into 34 discrete categories.

The final part of the audit was the combined waste stream disposed of at Red Hill, including a visual audit at the transfer station. APC followed the *NSW EPA Disposal Based C&I Waste Audit Methodology 2008* as a guideline for the audit methodology. The audit of Red Hill included a visual assessment of all loads deposited at the landfill face with the exception of the domestic kerbside waste stream, contaminated soils and Atlas baled waste. The kerbside waste and Atlas baled waste were physically audited separately in the weeks prior to the visual audit. The composition data from those two audits was applied to the relevant Atlas and council vehicles and combined with the visual audit results. Garbage bags of rubbish were extracted for sorting from some C&I loads where bags comprised more than 20% of the load and these were physically audited at a location on-site away from the tip face.

Summary results are as follows:

### Kerbside Audit

- **Waste Generation:** The average weight of waste produced per household per week in the audited councils was 12.8kg. Households in Bassendean produced the most waste per week – 15.2kg, while households in Mundaring, who have a 140 litre mobile garbage bin for waste collection, produced the least – 9.9kg. (Refer Attachment 1).
- **Composition of waste stream:** The largest proportion of the waste stream comprised food, at 27%, followed by garden organics, at 25%, and recyclable items for which a recycling service is currently provided, at 15%. (Refer Attachment 1).
- **Proportion of Vegetation in the Waste Stream:** The average rubbish bin in the region contained 25% garden organics. The highest proportions were found at Kalamunda (33.5%) and Belmont (30.5%). Bayswater, which has a separate containerised green waste service, has the lowest proportion of green waste in its garbage (7.3%). Swan (22.8%) and Mundaring (21.8%) had similar proportions but do not provide a containerised green waste service but Mundaring provide a transfer station drop off to residents. These results may be due to the more rural nature of some of the dwellings in these areas. (Refer Attachment 1).
- **Proportion of Recyclables:** The average proportion of recyclable material in the waste for all councils audited was 15%. Of the recyclable items, paper and cardboard accounted for 7% and containers 6.3%. The proportion of this material was as high as 16.8% in Kalamunda, and as low as 13.7% in Bassendean. (Refer Attachment 1).



*Item 11.2 continued*

- Moisture Content Range:** The Guideline for Determining the Renewable Components in Waste for Electricity Generation (Clean Energy Regulator, 2001) was used to specify the 11 categories for moisture content. The results presented the average moisture content for the six member councils by material. There was a significant range for some of the materials ranging from 9% to 73%. This reflects the actual variability in the moisture content of the materials, such as nappies and food. Some materials, such as paper, may have been contaminated by other moisture during the collection/compaction process. Kitchen organics made up the highest average of 72.9% followed by garden organics 57% and magazines the lowest at 9% with the overall average moisture content being 41%.
- Presentation and Utilisation Rates:** Every second house in the defined street was selected, as prescribed in the 'Manual'. The presentation rate is defined as the proportion of households presenting garbage bins for collection as shown in the table below. Utilisation is the percentage that the bin is full. An APC supervisor accompanied the collection truck to record the number of bins collected, bin volumes, presented and non-presented bins. Whereas the presentation rate was relatively consistent the utilisation of capacity varied significantly. Swan had the highest presentation rate of 91% with the lowest being Belmont 75%. Utilisation was highest from Mundaring 90% (note: 140 litre bin) and lowest being Bayswater 40%. However comparing volume disposed, Bayswater has the least amount and Belmont the greatest. Bayswater had significantly less garden organics presented due to the third 'Green waste' bin provided by Council.

| Council        | Households surveyed* | General waste presented | Presentation rate | Bin Size Ltr | Median % full | Ltrs Presented | Average Weight kg |
|----------------|----------------------|-------------------------|-------------------|--------------|---------------|----------------|-------------------|
| Bassendean     | 130                  | 100                     | 77%               | 240          | 45%           | 108            | 15.2              |
| Bayswater      | 120                  | 100                     | 83%               | 240          | 40%           | 96             | 10.5              |
| Belmont        | 134                  | 100                     | 75%               | 240          | 70%           | 168            | 15.1              |
| Kalamunda      | 113                  | 100                     | 88%               | 240          | 50%           | 120            | 13.2              |
| Mundaring      | 113                  | 100                     | 88%               | 140          | 90%           | 126            | 9.9               |
| Swan           | 110                  | 100                     | 91%               | 240          | 50%           | 120            | 13.1              |
| <b>Overall</b> | <b>720</b>           | <b>600</b>              | <b>83%</b>        |              | <b>55%</b>    | <b>123</b>     | <b>12.83</b>      |

\*excluding units and vacant land

- Waste Audit Comparison 2004 and 2013:** Composition of the garbage stream in 2013 was similar to that found by APC in 2004, even though the 2004 audit was conducted in September (early spring) and the 2013 audit was conducted in May (early autumn). The average weekly waste generation per household has reduced to 12.8kg/hhld/wk from 15.9kg/hhld/wk with garden organics reducing from 32% to 25%, however food waste increased on average from 21% to 27%. There was no trend for recyclables in the waste stream. Bayswater, Bassendean and Swan had reductions due to less paper in the waste. The overall recyclables average reduced from 16.6% in 2004 to 15.1% in 2013. (Refer Attachments 2 and 3).

**Red Hill Landfill Audit**

A total of 1,679 vehicle entered the site during the week of the audit 19 -25 May 2013 with between 219-234 per day during the week and 141–183 during the weekend, mostly to the transfer station. The audit captured 89% of the vehicles (1488); this was due to operational constraints mostly at the tip face. A total of 7,149 tonnes of material was disposed during the week (excluding contaminated soil and hazardous material).



*Item 11.2 continued*

- **Landfill Usage:** Of the total vehicles audited, 896 (60%) commercial operators visited the landfill tip face during the audit period. It is estimated that 39,980m<sup>3</sup> of waste was deposited equating to around 6,972 tonnes. These quantities represent approximately 98% of the total waste over the week, with only 2% going to the transfer station. The busiest time recorded was Wednesday between 10.00 – 11.00am. Only 71 vehicles (8% of total) used the landfill on Saturday and even less, 23 vehicles, on Sunday (2.5%).
- **Transfer Station Usage:** During the audit period 592 vehicles (40%) were audited at the transfer station. However by contrast only 610m<sup>3</sup>, or 177 tonnes, were disposed at this part of the facility. The busiest days were Saturday and Sunday, 19% and 20% of the transfer station total respectively.
- **Waste Composition Transfer Station:** Of the vehicles using the small vehicle area 35% were car and trailer and 32% were utility vehicles (Ute). The highest volumes of waste disposed were in the 'building material' category 18% (47% by weight), wood products 14%, and recyclable material 14%, when including paper and cardboard this raises to 23%. Recycling facilities are provided for patrons, however, only a minor fraction utilise this, improved signage may assist with raising awareness. Potentially recoverable or divertible material made up approximately 88% of the waste disposed over the week of the audit.
- **Landfill Disposal Face Composition:** A smaller range of materials (from commercial loads) was disposed at the main disposal face. Plastic (34%), paper and cardboard (13%) made up nearly 50% of the waste stream. Vegetation, wood products, and organics accounting for a further 26%. The remainder was made up of garbage bags (8.3%) and minor fractions of building materials, textiles and incidentals.
- **Commercial Garbage Bag Composition:** Bagged waste was extracted from C&I loads where bags comprised more than 20% of the load. A sample of 10-15 bags were removed for physical sorting away from the tipping area. Some 166 bags or 1.9 tonnes of material was sorted during the audit. The majority of the waste was paper/cardboard (32%) and organics 26%. Recyclables made up 12% and other plastic 15%. The remainder was minor fractions of textiles, vegetation and wood products and some incidentals.
- **Baled Waste Atlas Plant Composition:** The baled residual material from the Atlas facility was small fractions of waste and covered with organic material which made for difficulties in sorting and distinguishing the components. The major proportion of the material was identified as organic material (50%) that could be composted and plastic contributing around 40%.
- **Audit Comparison – Landfill:** A comparison of the 2004 and 2013 audits for the main disposal area highlighted a significant increase in plastic and a reduction in paper/cardboard and wood products. Garden vegetation and bagged waste were relatively similar. Some other categories were reported in an alternate format. (Refer Attachment 4).
- **Audit Comparison – Transfer Station:** The results of the 2004 and 2013 audits are similar in many respects. Paper/cardboard, wood/timber, textiles and garbage bags varied marginally in volume over the two audits (+/- 2%), however garden vegetation reduced by 9% from 14.3% to 5.1%. This may be due to the seasonal variations of the audits. (Refer attachment 5).
- **Potential Material Recovery Options:** By weight, the largest areas for potential recovery include organic materials for composting or mulching (40%), followed by recyclable materials, such as glass, metal, plastics, textiles, mattresses and e-waste (18%). C&D wastes, such as concrete, bricks, asphalt and tiles can be crushed and used for engineering purposes such as roadbase (7.5%). While the individual components are recoverable the practicality of recovering the material is challenging in some circumstances. Other materials such as cardboard, garden organics, metals and wood are in some cases delivered as single waste streams to the site and are therefore easier to recover and transport to the EMRC's appropriate processing facility. (Refer Attachment 6).



*Item 11.2 continued*

APC has made a number of recommendations for future audits and waste management, including:

1. There is potential to increase recycling in all councils. In each council, 14–17% of the waste stream is recyclable.
2. A smaller general waste bin, reinforced with a clear and consistent education campaign, may result in increased waste diversion from landfill.
3. There is an opportunity to divert more recyclables at the Red Hill transfer station by greater education and signage.
4. A more detailed audit of the timber and wood fraction of the Red Hill transfer station material could determine opportunities for reprocessing or reuse.
5. Additional opportunities for the diversion of materials from landfill including key target materials, such as cardboard, wood and garden organics for carbon emissions purposes and building material, metals and plastics to further increase recovery of resources from the site.

The results of the waste audit provide valuable information for the future implementation of the Resource Recovery Project together with a current picture of household disposal behaviour which will also be useful for the project and the regional waste education program.

### **STRATEGIC/POLICY IMPLICATIONS**

Key Result Area 1 – Environmental Sustainability

- 1.1 To provide sustainable waste disposal operations
- 1.2 To improve regional waste management
- 1.3 To provide resource recovery and recycling solutions in partnership with member Councils

### **FINANCIAL IMPLICATIONS**

The waste audit costs were included for in the 2012/2013 Resource Recovery budget.

### **SUSTAINABILITY IMPLICATIONS**

The activity is consistent with the development of a sustainable waste solution for the Region.

### **MEMBER COUNCIL IMPLICATIONS**

| <b>Member Council</b> | <b>Implication Details</b> |
|-----------------------|----------------------------|
| Town of Bassendean    | } Nil                      |
| City of Bayswater     |                            |
| City of Belmont       |                            |
| Shire of Kalamunda    |                            |
| Shire of Mundaring    |                            |
| City of Swan          |                            |



*Item 11.2 continued*

**ATTACHMENT(S)**

1. Chart of Kerbside Waste Bin Consolidated Composition – Total and by Council – 2013 (Ref: Committees-16117)
2. Chart of Kerbside Waste Bin Weekly Weight Per Household Comparison – 2004 and 2013 (Ref: Committees-16118)
3. Chart of Kerbside Waste Bin Consolidated Composition Comparison – 2004 and 2013 (Ref: Committees-16119)
4. Chart of Red Hill Landfill Audit Composition Comparison – 2004 and 2013 (Ref: Committees-16120)
5. Chart of Red Hill Transfer Station Audit Composition Comparison – 2004 and 2013 (Ref: Committees-16121)
6. Chart of Red Hill Potential Material Recovery Options (Ref: Committees-16122)

**VOTING REQUIREMENT**

Simple Majority

**RECOMMENDATION(S)**

That the report be received.

**Discussion ensued**

The Director Waste Services provided a brief overview of the report.

Ms Booth presented Item 5.1, a presentation on the results of the EMRC 2013 waste audits by A.Prince Consulting Pty Ltd at this point in the meeting.

Ms Booth left the meeting at 5:56pm.

**RRC RECOMMENDATION(S)**

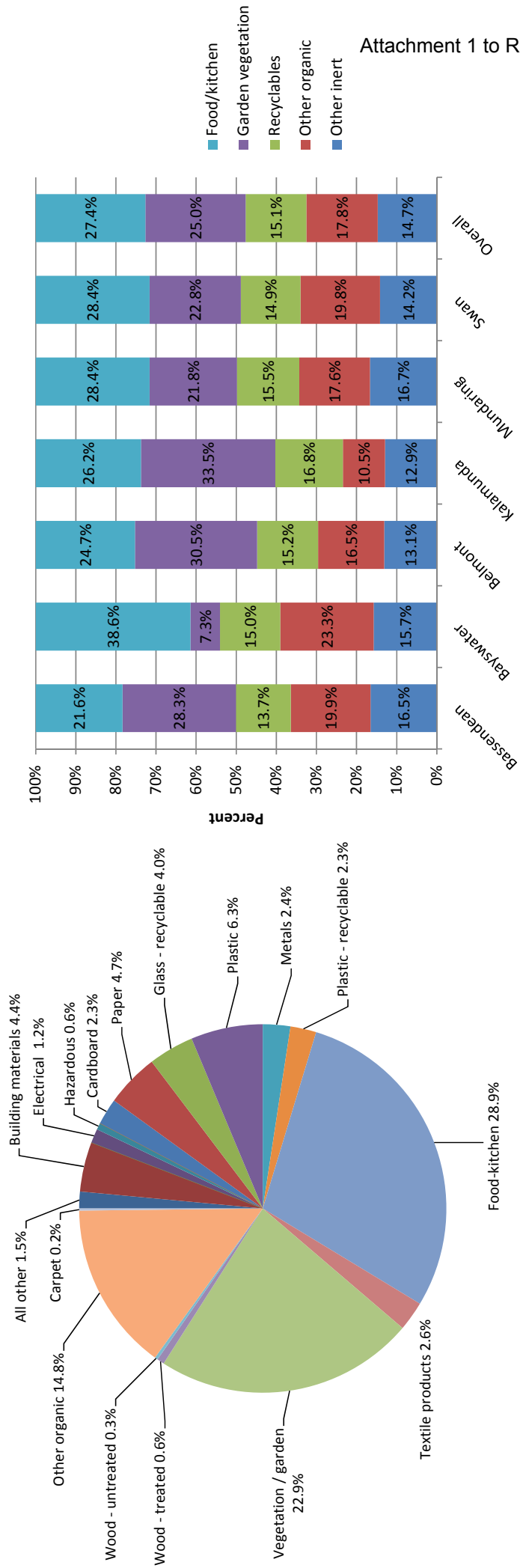
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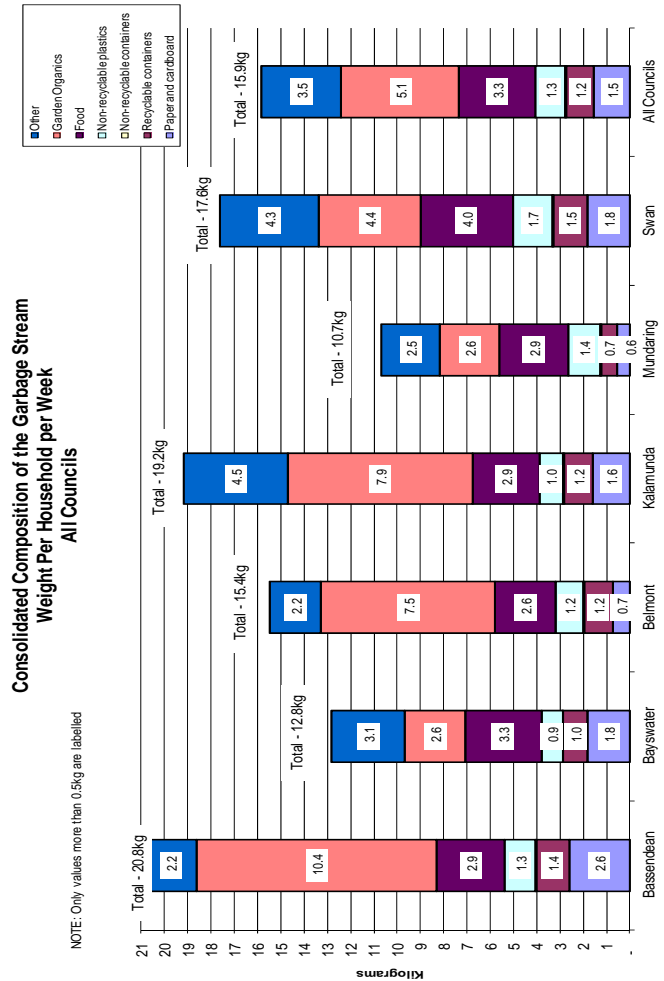
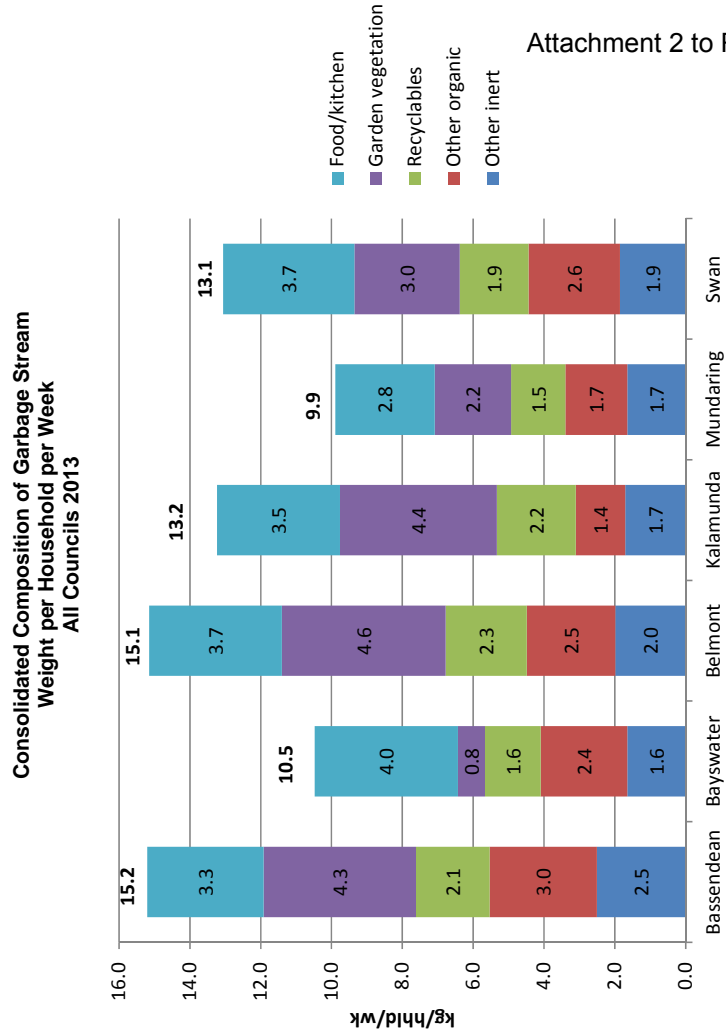
That the report be received.

**CARRIED UNANIMOUSLY**

Attachment 1. Chart of Kerbside Waste Bin Consolidated Composition – Total and by Council - 2013.



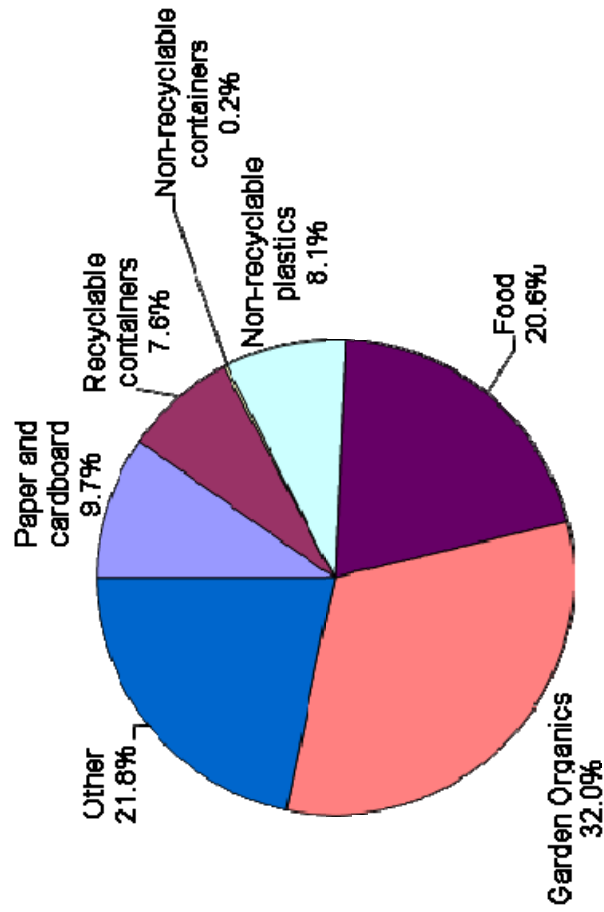
Attachment 2. Chart of Kerbside Waste Bin Weekly Weight per Household Comparison - 2004 and 2013.



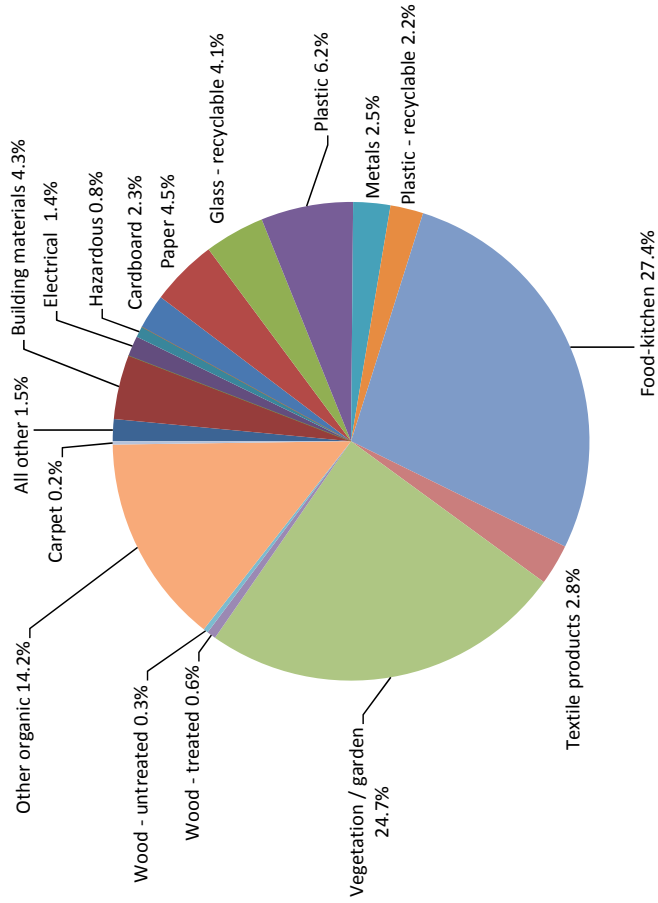


Attachment 3. Chart of Kerbside Waste Bin Consolidated Composition Comparison - 2004 and 2013.

### Consolidated Composition of Garbage All Councils 2004

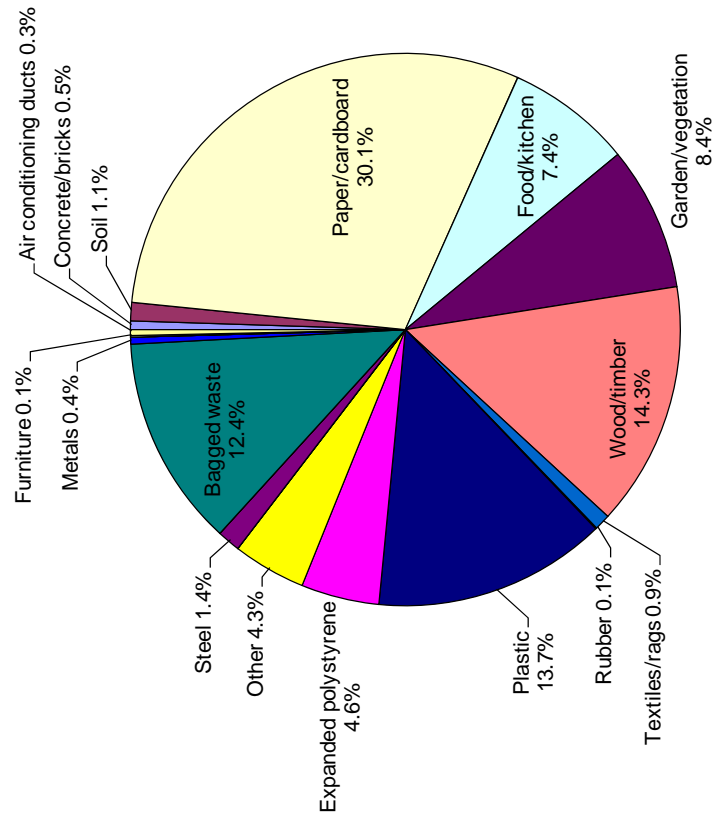


### Consolidated Composition of Garbage All Councils 2013

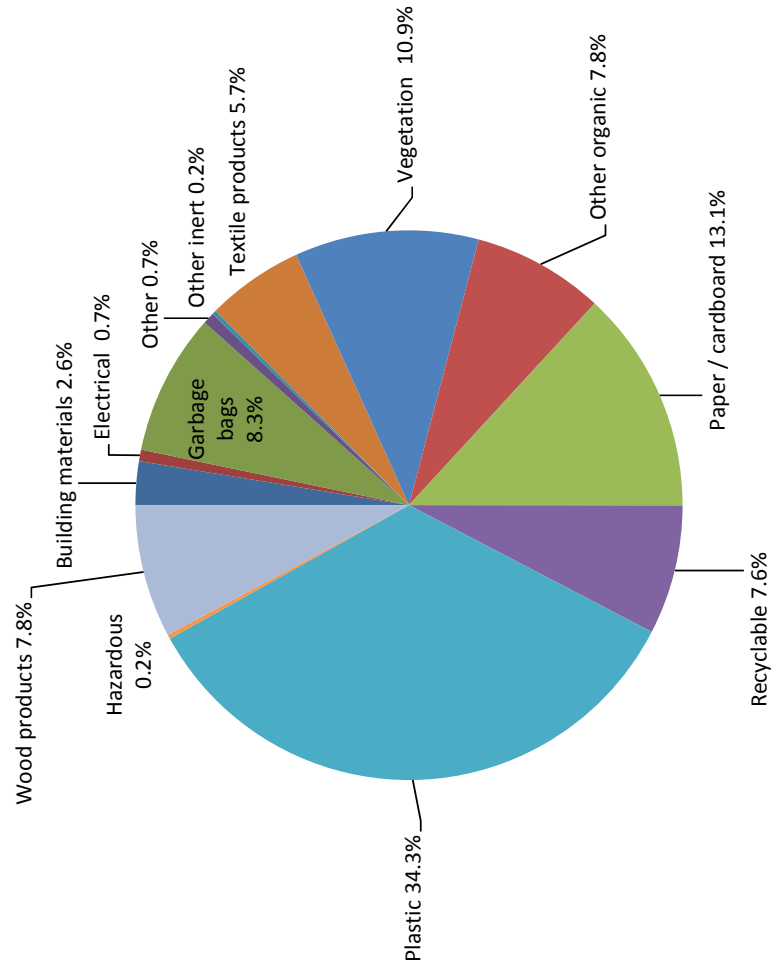


Attachment 4. Chart of Red Hill Landfill Audit Composition Comparison - 2004 and 2013.

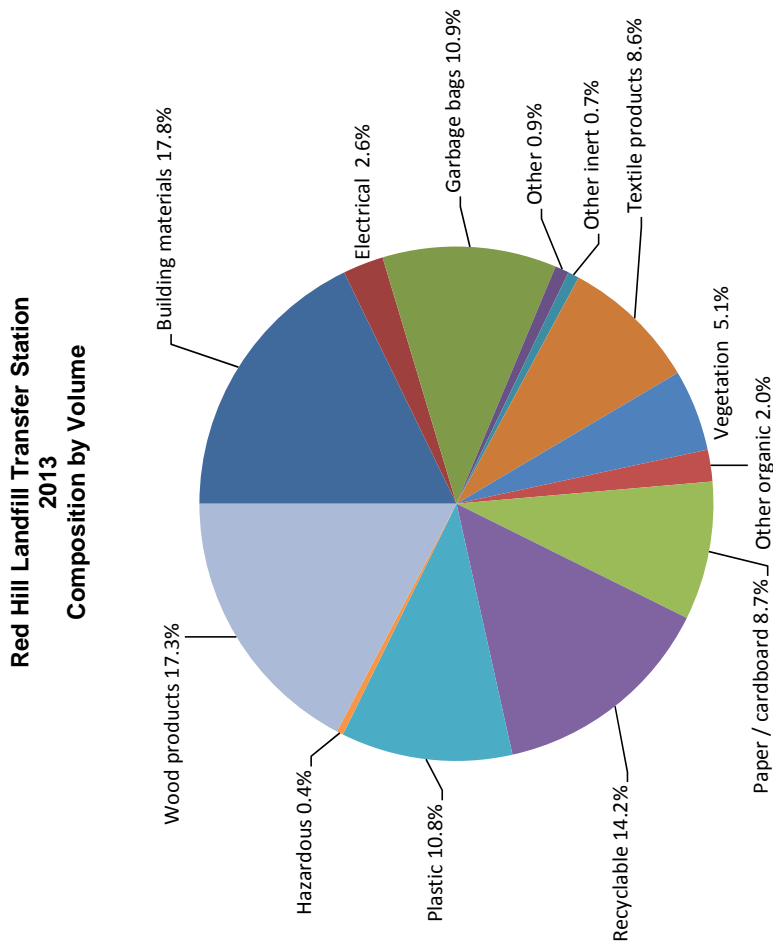
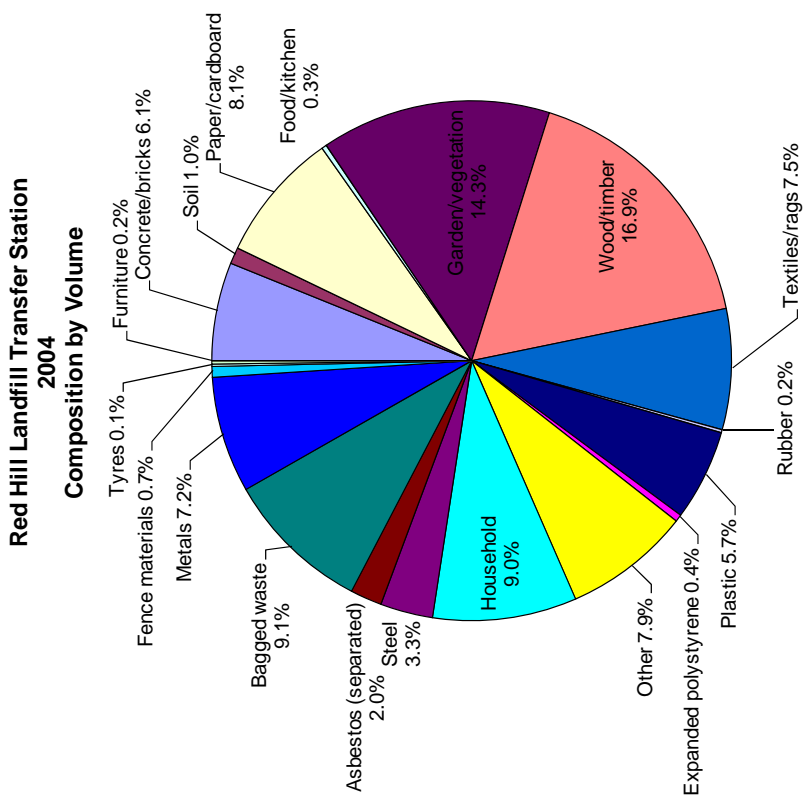
**Red Hill Landfill 2004  
Composition by Volume**



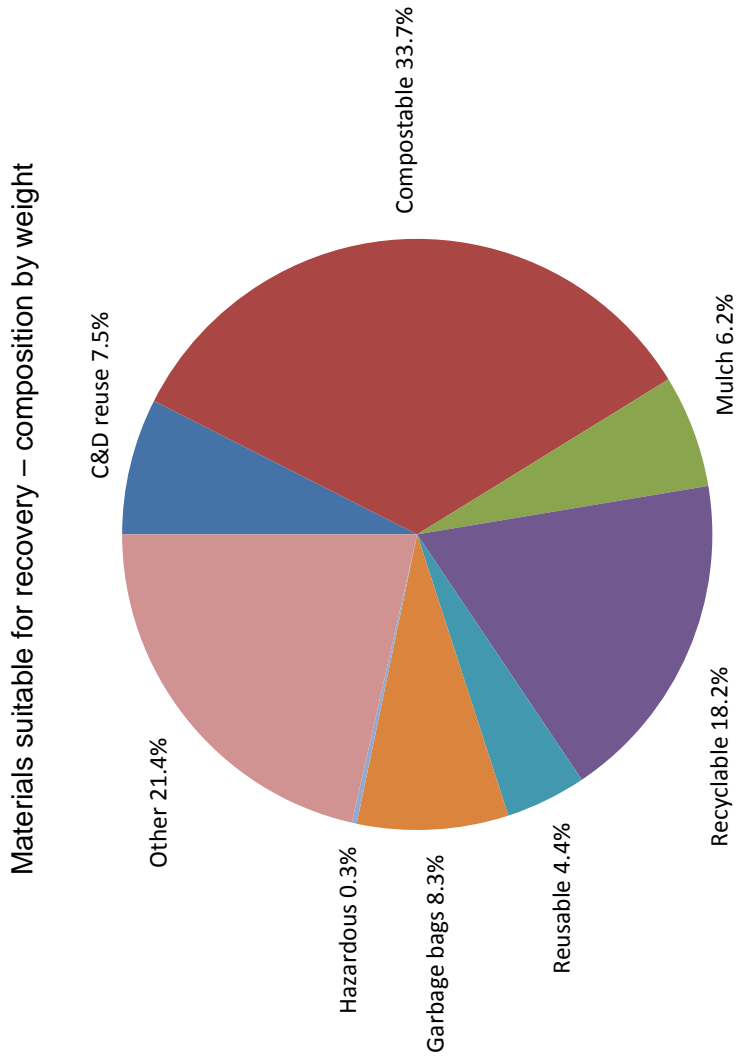
**Red Hill Landfill 2013  
Composition by Volume**



Attachment 5. Chart of Red Hill Transfer Station Audit Composition Comparison - 2004 and 2013.



Attachment 6. Chart of Red Hill Potential Material Recovery Options.





### 11.3 RESOURCE RECOVERY FACILITY – PROJECT UPDATE

**REFERENCE: COMMITTEES-15277**

#### **PURPOSE OF REPORT**

To advise Council of the progress of the Resource Recovery Facility (RRF) project.

#### **KEY ISSUES AND RECOMMENDATION(S)**

- The Environmental Protection Authority (EPA) released its Report and Recommendations on the proposed RRF at Red Hill in July 2013.
- Three appeals were lodged on this report and recommendations.
- Final Ministerial approval is expected in September 2013.
- The next stages of the project involve preparations for the tender process, deciding on the contract ownership model, amending the Establishment Agreement, developing a project plan, developing a participating member's agreement, deciding on the initial capacity of the plant and putting a funding arrangement in place.

#### **Recommendation(s)**

That the report be received.

#### **SOURCE OF REPORT**

Director Waste Services

#### **BACKGROUND**

On 30 April 2009 (Ref: Committees-9127), Council resolved to proceed with the Expression of Interest process.

At the 27 August 2009 meeting of Council (Ref: Committees-9571), it was resolved that:

- "1. *THE FOLLOWING RESPONDENTS TO THE EXPRESSION OF INTEREST ARE LISTED AS ACCEPTABLE TENDERERS:*
- A. ENERGOS AS;*
  - B. EVERGREEN ENERGY CORPORATION PTY LTD;*
  - C. GRD MINPROC LIMITED;*
  - D. MOLTONI ENERGY PTY LTD;*
  - E. SITA ENVIRONMENTAL SOLUTIONS;*
  - F. TRANSPACIFIC CLEANAWAY LIMITED; AND*
  - G. WSN ENVIRONMENTAL SOLUTIONS.*



*Item 11.3 continued*

2. *THE FOLLOWING RESPONDENTS TO THE EXPRESSION OF INTEREST ARE NOT LISTED AS ACCEPTABLE TENDERERS:*
  - A. *ANAECO LIMITED; AND*
  - B. *THIESS SERVICES PTY LTD.*
3. *THE RESPONDENTS TO EXPRESSION OF INTEREST 2009-10 BE ADVISED OF THE OUTCOME OF THE ASSESSMENT.*
4. *THE ATTACHMENT REMAINS CONFIDENTIAL AND BE CERTIFIED BY THE ACTING CHIEF EXECUTIVE OFFICER AND THE EMRC CHAIRMAN.*
5. *THE TENDER EVALUATION COMMITTEE BE ACKNOWLEDGED FOR THE SIGNIFICANT EFFORT PUT INTO EVALUATING THE EOI SUBMISSIONS."*

On 24 September 2009 (Ref: Committees-9922), Council resolved that:

- "1. *THE FOLLOWING PRELIMINARY RECOMMENDATIONS OF THE RESOURCE RECOVERY COMMITTEE FORM THE BASIS OF CONSULTATION BETWEEN THE EMRC AND THE MEMBER COUNCILS AND THE COMMUNITY WITH THE INTENTION OF REPORTING BACK TO COUNCIL IN APPROXIMATELY MARCH 2010 WITH A FINAL RECOMMENDATION:*
  - A) *RED HILL WASTE MANAGEMENT FACILITY IS THE PREFERRED SITE FOR THE RRF BASED ON ENVIRONMENTAL, ECONOMIC AND PLANNING CONSIDERATIONS, COMMUNITY RESEARCH AND THE POTENTIAL VALUE OF THE EMRC HAZELMERE SITE AS A RESOURCE RECOVERY PARK.*
  - B) *THE DESIGN & CONSTRUCT CONTRACT OWNERSHIP MODEL IS PREFERRED TO A BUILD OWN OPERATE CONTRACT MODEL.*
  - C) *THE RRF TECHNOLOGY OPTIONS INCLUDING ANAEROBIC DIGESTION, GASIFICATION AND PYROLYSIS ARE RANKED HIGHER THAN COMBUSTION AND PLASMA AT THIS STAGE BUT MORE INFORMATION IS REQUIRED BEFORE A FINAL PREFERENCE CAN BE DETERMINED.*
  - D) *A THIRD BIN FOR HOUSEHOLD ORGANIC WASTE COLLECTION IS CONSIDERED IN CONJUNCTION WITH ANAEROBIC DIGESTION TECHNOLOGY."*

Further, on 3 December 2009 (Ref: Committees-10346), Council resolved that:

- "1. *COUNCIL APPROVE A VISIT TO EASTERN STATES AND OVERSEAS RESOURCE RECOVERY REFERENCE FACILITIES TO BE UNDERTAKEN BY THE CHAIRMAN, RESOURCE RECOVERY COMMITTEE, MR JOHN KING, PROJECT DIRECTOR FOR CARDNO LIMITED AND THE MANAGER PROJECT DEVELOPMENT.*
2. *INFORMATION GAINED FROM THE VISIT BE REPORTED TO THE RRC AND COUNCIL IN EARLY 2010 AS PART OF THE FINAL RECOMMENDATION ON THE PREFERRED RESOURCE RECOVERY FACILITY OPTIONS."*

On 22 April 2010 (Ref: Committees-15130), Council resolved in relation to the reference facility visits that:

- "1. *THE REPORT BE RECEIVED.*
2. *INFORMATION GAINED FROM THE RESOURCE RECOVERY FACILITY VISITS BE APPLIED TO THE ANALYSIS OF THE PROJECT OPTIONS ON TECHNOLOGY, CONTRACT MODEL AND BIN COLLECTION SYSTEM.*
3. *THAT THE ATTACHMENT TO THIS REPORT REMAIN CONFIDENTIAL AND BE CERTIFIED BY THE CHIEF EXECUTIVE OFFICER AND CHAIRMAN."*



*Item 11.3 continued*

On 20 May 2010 (Ref: Committees-10810), Council resolved that:

- "1. *THE FOLLOWING OPTIONS ARE CONFIRMED AS THE PREFERRED OPTIONS FOR THE RESOURCE RECOVERY FACILITY:*
  - A) *RED HILL WASTE MANAGEMENT FACILITY IS THE PREFERRED SITE FOR THE RRF.*
  - B) *THE DESIGN & CONSTRUCT CONTRACT OWNERSHIP MODEL IS PREFERRED TO A BUILD OWN OPERATE CONTRACT MODEL AT THIS STAGE OF THE PROJECT.*
  - C) *THE RRF TECHNOLOGY OPTIONS INCLUDE ANAEROBIC DIGESTION, GASIFICATION, PYROLYSIS AND COMBUSTION. PLASMA TECHNOLOGY WILL ONLY BE CONSIDERED IF IT IS AN INTEGRAL PART OF ONE OF THESE TECHNOLOGIES.*
  - D) *A THIRD BIN FOR HOUSEHOLD ORGANIC WASTE COLLECTION BE CONSIDERED IN CONJUNCTION WITH ANAEROBIC DIGESTION TECHNOLOGY, OTHERWISE A TWO BIN SYSTEM IS RECOMMENDED FOR THE THERMAL TECHNOLOGY OPTIONS.*
2. *COUNCIL PROCEEDS WITH THE ENVIRONMENTAL AND PLANNING APPROVALS TASK FOR THE RESOURCE RECOVERY PROJECT BASED ON THE PREFERRED SITE AND TECHNOLOGY OPTIONS."*

On 21 October 2010 (Ref: Committees-11544), Council resolved to amend the Resource Recovery budget to allow for the predicted cost of baseline environmental monitoring and additional consultant costs as follows:

*"THAT THE BUDGET FOR SEEK ENVIRONMENTAL APPROVALS (TASK 15) IN THE ANNUAL BUDGET UNDER RESOURCE RECOVERY BE INCREASED FROM \$220,000 TO \$525,000 AND THAT THIS INCREASE BE FUNDED FROM THE SECONDARY WASTE RESERVE."*

On 23 June 2011 (Ref: Committees-12150), Council resolved that:

- "1. *COUNCIL NOTES THE ADVICE FROM SITA ENVIRONMENTAL SOLUTIONS AND WSN ENVIRONMENTAL SOLUTIONS OF THEIR INTENTION TO WITHDRAW FROM THE TENDER PROCESS FOR THE EMRC RESOURCE RECOVERY FACILITY.*
2. *THE LIST OF ACCEPTABLE TENDERERS BE AMENDED TO REMOVE SITA ENVIRONMENTAL SOLUTIONS AND WSN ENVIRONMENTAL SOLUTIONS.*
3. *SITA ENVIRONMENTAL SOLUTIONS BE ADVISED OF COUNCIL'S ACKNOWLEDGEMENT OF BOTH SITA ENVIRONMENTAL SOLUTIONS AND WSN ENVIRONMENTAL SOLUTION'S WITHDRAWAL FROM THE EMRC RESOURCE RECOVERY FACILITY TENDER PROCESS.*
4. *THE REPORT AND ATTACHMENTS REMAIN CONFIDENTIAL AND BE CERTIFIED BY THE CHAIRMAN AND THE CHIEF EXECUTIVE OFFICER."*

Council also resolved at the 23 June 2011 meeting (Ref: Committees-12157) that:

- "1. *COUNCIL CONFIRMS THE DESIGN & CONSTRUCT AND THE DESIGN BUILD OPERATE AND MAINTAIN CONTRACT MODELS ARE PREFERRED TO THE BUILD OWN OPERATE MODEL AT THIS STAGE OF THE PROJECT.*
2. *COUNCIL NOTES A FINAL DECISION ON THE PREFERRED CONTRACT MODEL WILL BE MADE PRIOR TO PREPARATION OF THE RESOURCE RECOVERY FACILITY TENDER DOCUMENTATION."*

Originating from the June 2011 CEOAC meeting (Ref: Committees-12380), Council resolved on 23 June 2011:

- "1. *THAT AT SOME POINT IN THE FUTURE, PRIOR TO TENDERS BEING CALLED FOR THE RESOURCE RECOVERY FACILITY, THE ESTABLISHMENT AGREEMENT BE AMENDED TO REFLECT THE RESOURCE RECOVERY FACILITY AS A "NEW PROJECT."*
3. *THAT MEMBER COUNCILS BE ADVISED OF THE IMPLICATIONS OF THE PROPOSED AMENDMENT."*



*Item 11.3 continued*

On 18 August 2011 (Ref: Committees-12849), Council resolved:

*“THAT COUNCIL CONFIRMS THE TECHNOLOGY OPTIONS FOR THE RESOURCE RECOVERY FACILITY AT RED HILL WASTE MANAGEMENT FACILITY AS ANAEROBIC DIGESTION AND GASIFICATION.”*

At the 3 November 2011 meeting of Council (Ref: Committees-13114), a clarification of gasification technology was provided and what this class of thermal waste treatment technology includes.

On October 2012 (Ref: Committees-14718), Council resolved that:

- “1. THE PREFERRED LOCATION FOR THE RESOURCE RECOVERY FACILITY BE CHANGED FROM SITE B2 IN THE NORTH-WEST CORNER OF LOT 12, RED HILL WASTE MANAGEMENT FACILITY TO LOT 8 (SITE E), TOODYAY ROAD, SUBJECT TO THE GRANTING OF APPROVAL FOR THE REZONING OF LOTS 8, 9 AND 10 AND COMPLETION OF THE LAND TRANSACTION WITH BORAL.*
- 2. THE CURRENT PROPOSAL BEFORE THE ENVIRONMENTAL PROTECTION AUTHORITY FOR A RESOURCE RECOVERY FACILITY AT RED HILL IS AMENDED NOMINATING SITE E AS THE PREFERRED LOCATION.”*

By way of explanation, the three contract ownership models being considered for the RRF are as follows:

**Build Own Operate**

Under a Build Own Operate (BOO) contract delivery model, the Contractor will be required to build, finance, own and operate the facility for a fixed period of time (the economical life of the facility and anticipated to be for 20 years). Under this contract model, some of the project risks, and in particular, the risks associated with the design, construction and performance of the RRF, are transferred to the Contractor.

**Design and Construct**

Under a Design and Construct (D&C) contract delivery model, the Contractor will design and construct a facility that conforms to agreed standards and performance requirements. If the D&C model was adopted by the EMRC, the Contractor will also be required to operate the facility for a minimum of 12 months and up to two years after the completion of wet commissioning. Under this contract model, the operational and ownership risks would be assumed by the EMRC, particularly following transfer of operational responsibilities to the EMRC and expiry of warranties and defects liability periods. The EMRC may operate the facility using its own staff or enter into a separate contract for the operation of the facility under this D&C contract delivery model.

**Design, Build Operate and Maintain**

Under a Design, Build Operate and Maintain (DBOM) contract delivery model, ownership of the RRF is with the EMRC but operation and maintenance is with the Operator. The EMRC will contract with the main contractor, who is most likely to be an Operator or technology provider who will be responsible for subcontracting and managing the risk of a builder for the construction phase. The EMRC will be required to obtain its own funding for the RRF and will have to fund construction payments during the construction phase and service payments during the operation phase, usually by way of regular monthly payments linked to the amount of waste processed by the RRF.

As with the BOO, the Operator's involvement in the RRF continues until the expiry of the operation term. However, unlike the BOO, the operating period under a DBOM can be less than under a BOO as it does not have to match the duration of the debt repayments. This is because the debt repayments are made by the EMRC direct to its financier, rather than by the Operator to its financier.

Under this contract model, the project risks associated with the design, construction and performance of the RRF, are transferred to the Contractor whereas the ownership risk resides with the EMRC.





Item 11.3 continued

### **Acceptable Tenderers and Technologies**

| <b>Acceptable Tenderers as at 1 September 2011</b>                    | <b>Technology Offered at EOI Stage</b> |
|---|--|
| Energos AS  | Gasification                           |
| Evergreen Energy Corporation Pty Ltd                                  | Anaerobic Digestion                    |
| Amec (formerly Amec Minproc Limited)                                  | Anaerobic Digestion and Combustion     |
| Phoenix Energy Australia Pty Ltd<br>(formerly Moltoni Energy Pty Ltd) | Combustion                             |
| Transpacific Cleanaway Limited  | Anaerobic Digestion                    |

### **REPORT**

On 22 July 2013 the EPA issued its Report and Recommendations on the proposed Resource Recovery Facility at Red Hill (refer Attachment 1). The EPA has concluded that the proposal can be managed to meet the EPA's objectives provided there is satisfactory implementation by the proponent of the recommended conditions.

Matters addressed in the conditions include:

- a) Minimising the cumulative odour emissions;
- b) Ensuring a robust odour control system design, should anaerobic digestion be the chosen technology; and
- c) Ensuring that, should gasification be the chosen technology, it is consistent with the EPA and Waste Authority's strategic advice.

The potential for increased cumulative odour impact was a key consideration of the assessment and requires the EMRC under condition 6 of the approval to reduce cumulative odour levels prior to operation of the anaerobic digestion or gasification facility to as low as reasonably practicable. This will require the investigation of options and measures to reduce the cumulative impacts from Red Hill Waste Management Facility, for by example, relocating the green waste windrows and re-running the odour modelling to demonstrate the chosen measures provide an overall improvement.

For the anaerobic digestion technology option, the approval conditions include:

- Peer review of the detailed design of the total odour control system,
- Air Quality Report at Works Approval stage including a rerun of the dispersion modelling,
- Odour limit on biofilter (500 odour units),
- Building under negative air pressure, and
- Fast acting doors on waste receipt/processing building.

For the gasification technology option, the approval conditions include:

- Must meet the technology considerations in the EPA's and Waste Authority's section 16(e) strategic advice on waste to energy technologies;
  - Components have operated reliably elsewhere,
  - Can operate within the emission standards equal to the EU Waste Incineration Directive,
  - Operated at a similar scale to that proposed, and
  - Components have a successful track record in treating the proposed waste streams.

A time limit of five years applies from the date of the final approval and substantial progress must be made within this period otherwise the approval lapses.

Compliance reporting is required throughout the implementation period and public availability of all validated environmental data is required for the life of the proposal.



*Item 11.3 continued*

There were three appeals on the EPA report from:

1. Swan Valley Ratepayers and Residents Association;
2. Environment House; and
3. Alliance for a Clean Environment.

The EMRC has responded to the Appeals Convenor on the matters in these appeals, none of which is substantive.

The next steps in the implementation of this project relate to the preparation for the tender process:

1. Decide on contract model(s).
2. Decide on initial RRF capacity.
3. Develop draft tender specification.
4. Amend Establishment Agreement to make the RRF a new project (Deed of Variation).
5. Prepare Project Plan.
6. Prepare Member Council Participation Agreement.
7. Consultation with member Councils.
8. Individual MC resolutions to proceed with the tender.
9. EMRC Council resolution to proceed with the tender.

Preparations for the tender process (Task 17 of Cardno contract)

This was intended to involve pre-tender workshops to decide the scope of the tender, the tender evaluation criteria, the tender evaluation method and the tender evaluation committee. A workshop meeting would be useful to ensure that the member Councils understand the tender process and evaluation methodology and to select an evaluation committee.

Contract Delivery Mechanism (Task 11 of Cardno contract)

This was reviewed in June 2011 with the addition of the Design, Build, Operate and Maintain (DBOM) as one of the preferred contract delivery models. The DBOM and the Design and Construct (D&C) contract delivery models are preferred over the Build Own Operate (BOO) contract delivery model.

Other options have been investigated recently including an alliance type of contract as used by Main Roads and WaterCorp. To facilitate the tender process, the tender will need to specify preferably one preferred contract delivery model.

Staging of the Project (Task 8)

Cardno prepared an outline report on this task in June 2006, which addressed member Council waste tonnage projections, State policy on resource recovery, product markets and technology providers for a broad range of technologies. For various reasons, the final report on Task 8 was never completed and would have considered economies of scale, technology changes, the effect of the Resource Recovery Park and the staging options for the RRF.

The RRF proposal for environmental approval was based on either an anaerobic digestion facility of up to 150,000 tonnes per annum capacity or an energy from waste (gasification) facility of up to 200,000 tonnes per annum. These capacity limits were based on 2010 EMRC member Council waste tonnage projections to 2050. Either of these two technology options can be staged in their capacity development to suit the tonnage committed by the member Councils and potential growth in waste tonnage driven by population growth.

So the initial capacity of the RRF needs to be determined as part of the tender specification.



*Item 11.3 continued*

Amendment of the EMRC Establishment Agreement

Council's June 2011 resolution requires the Establishment Agreement to be amended to reflect the Resource Recovery Facility as a new project.

If adopted, this Further Deed of Variation means that member Councils will need to agree to participate in the project and by doing so, provide a proportional guarantee for any borrowings by the EMRC in order to finance the project, noting that a proportion of the funding would be provided from the Secondary Waste Reserve.

Participating Members Agreement and Project Plan (Task 9).

The Participating Members Agreement will:

- set out the requirements for a guarantee of any loan funds on a proportional basis.
- establish the commitment to deliver waste and pay the gate fee.
- require agreement to the pricing structure to be used for the RRF fee.

A business plan will be required to satisfy the requirements of the Local Government Act 1995.

Funding Arrangements

Preliminary discussions were held with the WATC in 2010 and 2011 regarding funding arrangements for the RRF. This would need to be revisited to understand their current procedures and processes and develop an in principle agreement for loan funding before proceeding with a tender.

The financial commitment requirements from participating member Councils was discussed at the 4 August 2011 meeting of RRC (Ref: Committees-12853, report item 9.6). The report noted that:

Prior to calling for tenders from the acceptable tenderers, the EMRC would need an agreement in principle from the participating member Councils that they would deliver their waste to the RRF for the term of the contract (under a BOO or DBOM) or the life of the facility (under a D&C). This then sets the capacity requirement for the RRF in the tender specification. It would also allow the EMRC to finalise preparations for a loan facility with the Western Australian Treasury Corporation (WATC), subject to adjustments for the final tendered price and the loan offset from use of the Secondary Waste Reserve.

**STRATEGIC/POLICY IMPLICATIONS**

Key Result Area 1 – Environmental Sustainability

- 1.3 To provide resource recovery and recycling solutions in partnership with member Councils

**FINANCIAL IMPLICATIONS**

All costs covered within this report are accounted for in the annual budget approved by Council.

**SUSTAINABILITY IMPLICATIONS**

The Resource Recovery Facility and/or Resource Recovery Park will contribute toward minimising the environmental impact of waste by facilitating the sustainable use and development of resources.



*Item 11.3 continued*

### **MEMBER COUNCIL IMPLICATIONS**

| <b>Member Council</b> | <b>Implication Details</b> |
|-----------------------|----------------------------|
| Town of Bassendean    | } Nil                      |
| City of Bayswater     |                            |
| City of Belmont       |                            |
| Shire of Kalamunda    |                            |
| Shire of Mundaring    |                            |
| City of Swan          |                            |

### **ATTACHMENT(S)**

Report and Recommendations – EPA – Report 1487 – July 2013 (Ref: EMRC-16148)

### **VOTING REQUIREMENT**

Simple Majority

### **RECOMMENDATION(S)**

That the report be received.

### **Discussion ensued**

The Director Waste Services provided a brief overview of the report including the status of the environmental approval and the steps remaining in the project implementation.

### **RRC RECOMMENDATION(S)**

MOVED CR FÄRDIG

SECONDED MR COTEN

That the report be received.

**CARRIED UNANIMOUSLY**



# Report and recommendations of the Environmental Protection Authority



**Resource Recovery Facility,  
Red Hill**

**Eastern Metropolitan Regional Council**

Report 1487

July 2013

## Public Environmental Review Environmental Impact Assessment Process Timelines

| Date     | Progress stages  | Time<br>(weeks) |
|----------|--|-----------------|
| 21/12/10 | Level of assessment set  |                 |
| 24/10/11 | Final ESD approved   | 44              |
| 23/07/12 | Environmental Review Document (ERD) released for public review     | 39              |
| 17/09/12 | Public review period for ERD closed                                | 8               |
| 18/12/12 | Final Proponent response to ERD issues raised                      | 13              |
| 4/04/13  | EPA released s16e strategic advice on waste-to-energy technologies | 14              |
| 26/06/13 | Final information required for assessment received from Proponent  | 12              |
| 17/07/13 | Transmittal of EPA report to the Minister for Environment          | 3               |
| 22/07/13 | Publication of EPA report  | 5 days          |
| 05/08/13 | Close of appeals period  | 2               |

Timelines for an assessment may vary according to the complexity of the project and are usually agreed with the proponent soon after the level of assessment is determined.

In this case, the Environmental Protection Authority met its timeline objective in the completion of the assessment and provision of a report to the Minister.



Dr Paul Vogel  
Chairman

17 July 2013

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Assessment No. 1844

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5. Summary of submissions and proponent's response to submissions



# 1. Introduction and background

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for Environment on the key environmental factors and principles for the proposal by the Eastern Metropolitan Regional Council (EMRC), to develop a Resource Recovery Facility (RRF) at the existing Red Hill Waste Management Facility (WMF) in the Perth metropolitan area.

The proposed facility would be used to process kerbside municipal solid waste. The EMRC are proposing to use one of two technology options for processing waste:

- anaerobic digestion; or
- gasification.

Further details of the proposal are presented in Section 2 of this report. Section 3 discusses the key environmental factors and principles for the proposal. The conditions to which the proposal should be subject, if the Minister determines that it may be implemented, are set out in Section 4. Section 5 provides the EPA's conclusions, and Section 6 presents the EPA's recommendations.

Appendix 5 contains a summary of submissions and the proponent's response to submissions and is included as a matter of information only and does not form part of the EPA's report and recommendations. Issues arising from this process, and which have been taken into account by the EPA, appear in the report itself.

## **Red Hill Waste Management Facility**

The existing Red Hill WMF began operation as a landfill in 1981 and has expanded to be one of Perth's largest landfills. It receives Class III and Class IV waste, with dedicated cells for putrescible waste and contaminated soil, a greenwaste processing area for producing mulch and compost, and a transfer station for recyclable material.

The establishment of the RRF would assist the EMRC in diverting waste from landfill and increase the life expectancy of the Red Hill WMF.

## **Strategic advice on Waste-to-Energy technologies**

The EPA and the Waste Authority have recently undertaken and released their strategic review on 'Environmental and Health Performance of Waste to Energy Technologies' (EPA, 2013) under section 16(e) of the *Environmental Protection Act 1986* (EP Act). This strategic review is available on the EPA's website as EPA Report 1468.

The strategic review concluded that it has been demonstrated internationally that modern Waste-to-Energy plants can operate within strict emission standards with acceptable environmental and health impacts to the community when a plant is well designed and operated using best practice technologies and processes.

The EPA supports the establishment of Waste-to-Energy plants in Western Australia, subject to a number of principles which are outlined in the EPA's section 16(e) advice.

## 2. The proposal

The EMRC are proposing to develop a RRF to process kerbside municipal solid waste within the existing Red Hill WMF (Figure 1).

The EMRC is proposing to use one of two technology options which are:

- anaerobic digestion, with a maximum capacity of 150,000 tonnes per annum (tpa); or
- waste-to-energy using a gasification process, with a maximum capacity of 200,000 tpa.

The proponent intends to make a final decision on the technology to be used following the environmental impact assessment process. If approved, the detailed design would be undertaken through the Engineering, Procurement and Construction phase.

### ***Anaerobic digestion***

Three anaerobic digestion technologies, Kompogas, Bekon and Amec Minproc, were considered by the EMRC. The technologies proposed were used as a basis for predicting environmental impacts.

Anaerobic digestion technology processes the organic fraction of municipal solid waste. Organic waste is fed into a fermenter, where microorganisms process the waste to produce biogas and compost. The biogas is then burnt in gas engines to produce energy.

Residual digestate is produced by the anaerobic digestion process and is separated from the residual liquid through a filter press or centrifuge and matured through aerobic composting. Surplus liquid residue from the process would be utilised as liquid fertiliser, discharged to the Red Hill landfill leachate management system or treated in a waste water treatment plant.

### ***Gasification***

The Energos technology has been used to model the environmental impacts for gasification technology. The gasification facility would consist of a number of components including the following:

- fuel bunker and transport system;
- thermal conversion unit, consisting of a primary gasification chamber for converting waste to syngas and a secondary chamber for syngas combustion;
- heat recovery steam generator;
- power generation system; and
- flue-gas cleaning system.

The first Energos facility was commissioned in 1997, and Energos technology has been used for processing residual municipal solid waste and commercial waste. The most recently established plant is the Sarpsborg II plant in Norway, which was commissioned in 2010.

The gasification technology facility would process the non-recyclable fraction of municipal solid waste. The facility would consist of four modules of 50,000 tpa each to give a total capacity of 200,000 tpa. The proposed capacity is greater than for anaerobic digestion since it would process both the organic fraction plus non-recyclable material that has calorific value.

To be considered a Waste-to-Energy plant, a facility needs to have reasonable efficiency. The proponent has advised that the Energos plant is expected to have an efficiency of approximately 0.59. Increasing the efficiency to the European Union Waste Incineration Directive (WID) (EU, 2000) standard of 0.65 would require higher steam pressure which the proponent considers unfeasible for Western Australian conditions, and the EPA accepts this, in this circumstance.

The gasification process would produce residual bottom ash and fly ash. This would be disposed of in the appropriate class of landfill located at the Red Hill WMF.

The main characteristics of the proposal are summarised in Table 1 below. A detailed description of the proposal is provided in Section 4 of the PER (EMRC, 2012a) and in the section 43A application (EMRC, 2012b).

**Table 1: Summary of key proposal characteristics**

| <b>Summary of the Proposal</b> |   |
|--------------------------------|---|
| Proposal Title                 | Resource Recovery Facility  |
| Proponent Name                 | Eastern Metropolitan Regional Council   |
| Short Description              | <p>The proponent proposes to construct and operate a resource recovery facility for the processing of waste to produce energy at Red Hill.</p> <p>The waste management facility would use one of the following technologies:</p> <ul style="list-style-type: none"> <li>• anaerobic digestion; or</li> <li>• gasification.</li> </ul> |

**Table 1 (continued)**

| <b>Anaerobic Digestion</b>   |                              |  |
|--|------------------------------|--|
| <b>Element</b>   | <b>Location</b>              | <b>Proposed Extent Authorised</b>  |
| Resource Recovery Facility and associated infrastructure   | Site E, Red Hill (Figure 1). | Clearing of up to 0.85 ha of remnant vegetation.   |
| Waste types accepted for processing:   |                              | The organic fraction of municipal solid waste from either a source separated collection system or from the rubbish bin using the mechanical separation designed into the facility. |
| <p>Excluded wastes:</p> <ul style="list-style-type: none"> <li>• wastes with heavy metal concentrations greater than the requirements for Class III landfill;</li> <li>• 'Scheduled' wastes such as polychlorinated biphenyls and organochlorines;</li> <li>• Asbestos;</li> <li>• highly corrosive or toxic liquids or gases such as strong acids or chlorine or fluorine;</li> <li>• radioactive waste;</li> <li>• explosives; and</li> <li>• materials already deposited in the onsite landfill.</li> </ul> |                              | Not to be processed.   |
| Quantity of waste to be processed:   |                              | Up to 150,000 tpa.   |
| Odour concentration emitted from biofilter:  |                              | Less than 500 odour units.   |
| Building under negative pressure:  |                              | Waste may only be accepted while the building is being maintained under negative pressure.   |
| Fast Acting Doors:   |                              | Waste may only be accepted while the Fast Acting Doors are fully operational.  |

**Table 1 (continued)**

| <b>Gasification</b>  |                              |  |
|--|------------------------------|--|
| <b>Element</b>   | <b>Location</b>              | <b>Proposed Extent Authorised</b>  |
| Resource Recovery Facility and associated infrastructure   | Site E, Red Hill (Figure 1). | Clearing of up to 0.85 ha of remnant vegetation.   |
| Waste types accepted for processing:   |                              | Municipal solid waste from the rubbish or residual bins of a two bin or three bin collection system. |
| Excluded wastes: <ul style="list-style-type: none"> <li>• wastes with heavy metal concentrations greater than the requirements for Class III landfill;</li> <li>• 'Scheduled' wastes such as polychlorinated biphenyls and organochlorines;</li> <li>• Asbestos;</li> <li>• highly corrosive or toxic liquids or gases such as strong acids or chlorine or fluorine;</li> <li>• radioactive waste;</li> <li>• explosives; and</li> <li>• materials already deposited in the onsite landfill</li> </ul> |                              | Not to be processed.   |
| Quantity of waste to be processed:   |                              | Up to 200,000 tpa.   |

During the assessment the EMRC moved the proposed location to the western portion of the Red Hill WMF (Site B2 to E, Figure 1).

The EPA agreed that the change in location to Site E reduced the overall predicted environmental impacts compared to Site B2 and approved the change under section 43A of the EP Act. Table 1, *Summary of key proposal characteristics* includes relevant changes to the proposal made under section 43A of the EP Act.

The potential impacts of the proposal initially predicted by the proponent in the PER document (EMRC, 2012a) for Site B2 and their proposed management are summarised in Table ES2 of the proponent's document. The potential impacts predicted by the proponent for Site E are detailed in the section 43A application (EMRC, 2012b).

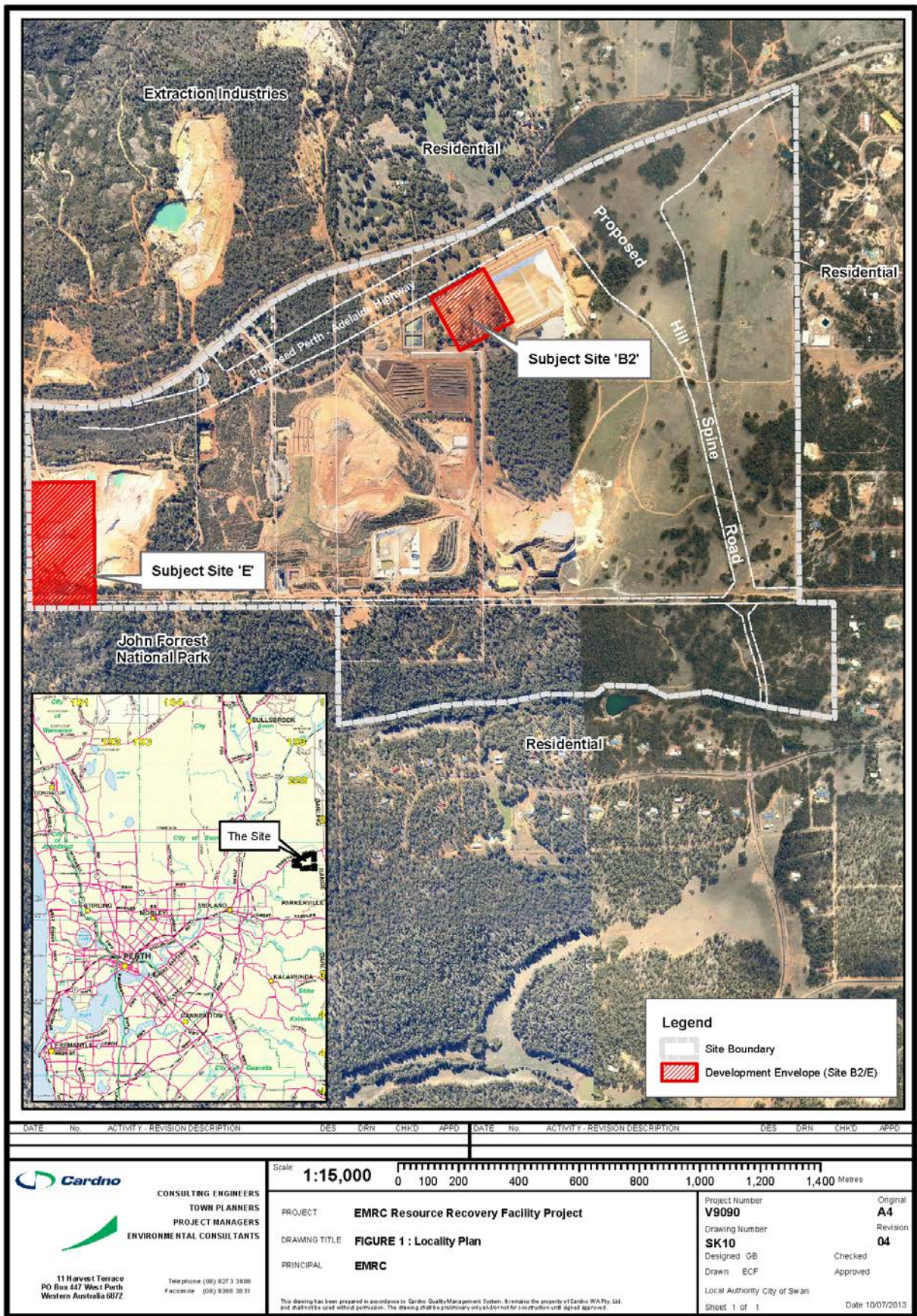
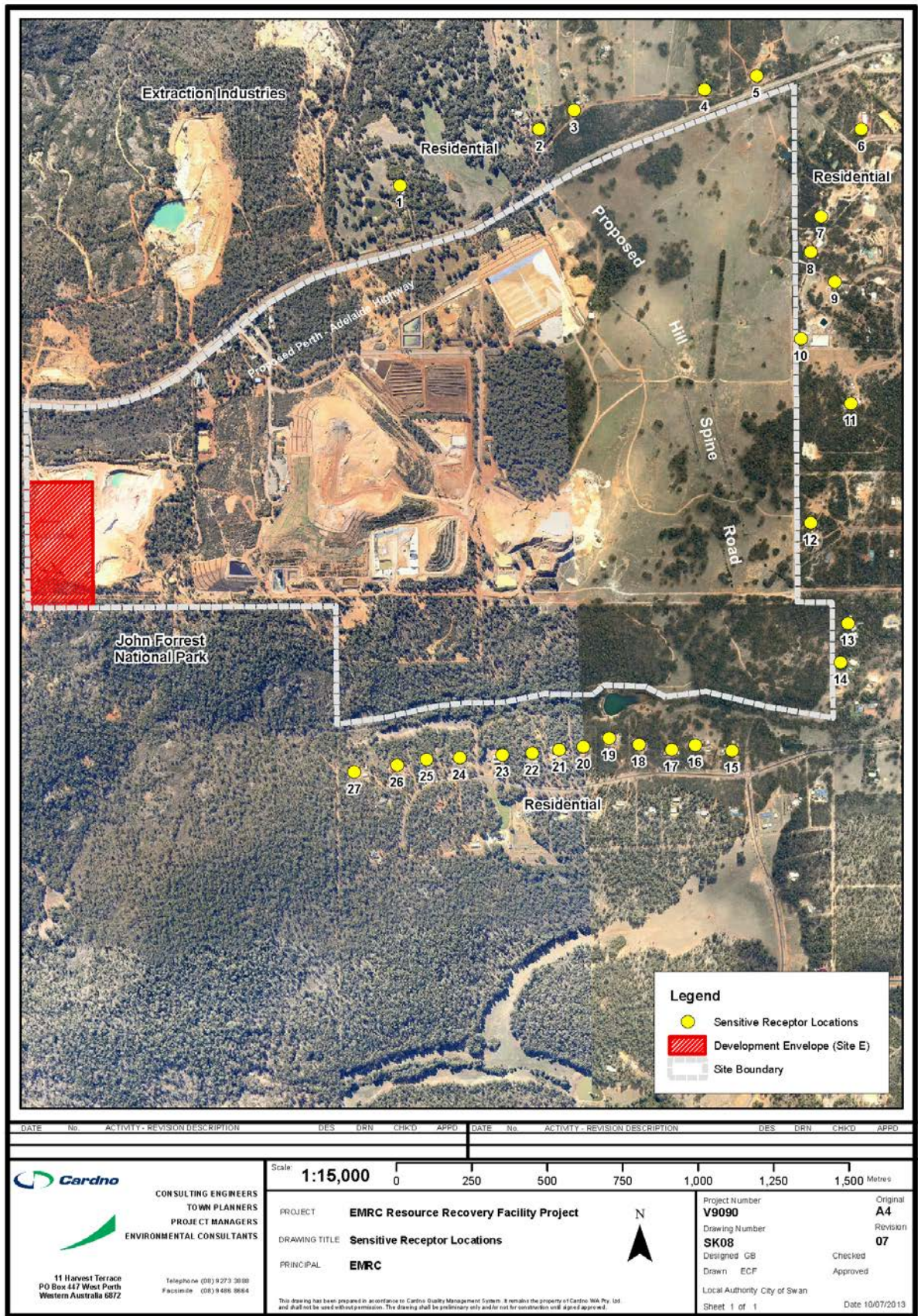


Figure 1: Development envelope including regional context



**Figure 2: Locations of sensitive receptors surrounding the Red Hill Waste Management Facility**



### 3. Key environmental factors and principles

Section 44 of the EP Act requires the EPA to report to the Minister for Environment on the key environmental factors relevant to the proposal and the conditions and procedures, if any, to which the proposal should be subject. In addition, the EPA may make recommendations as it sees fit.

For this assessment, the EPA is assessing each of the proposed technologies (anaerobic digestion and gasification) on their individual merits to determine whether the EPA's objectives can be met. The assessment should not be seen as a comparison of the technologies.

The identification process for the key environmental factors selected for detailed evaluation in this report is summarised in Appendix 3. The reader is referred to Appendix 3 for the evaluation of factors not discussed below. A number of these factors, such as inland waters environmental quality and amenity (noise), are relevant to the proposal, but the EPA is of the view that the information set out in Appendix 3 provides sufficient evaluation.

It is the EPA's opinion that the following key environmental factors for the proposal require detailed evaluation, for both anaerobic digestion and gasification technology, in this report:

- (a) Air quality; and
- (b) Amenity (odour).

The above key factors were identified from the EPA's consideration and review of all environmental factors generated from the PER document, the section 43a application, and the submissions received, in conjunction with the proposal characteristics set out in Table 1.

Details on the key environmental factors for anaerobic digestion and their assessment are contained in Sections 3.1.1 – 3.1.2. Details on the key environmental factors for gasification and their assessment are contained in Sections 3.2.1 – 3.2.2. The description of each factor shows why it is relevant to the proposal and how it will be affected by the proposal, taking into consideration environmental impact management by the proponent. The assessment of each factor is where the EPA decides whether or not a proposal meets the environmental objective set for that factor.

The following principles were considered by the EPA in relation to the proposal:

- (a) the precautionary principle;
- (b) the principle of intergenerational equity;
- (c) the principle of the conservation of biological diversity and ecological integrity;

- (d) principles relating to improved valuation, pricing and incentive mechanisms; and
- (e) the principle of waste minimisation.

## **3.1 Anaerobic digestion**

### **3.1.1 Air quality**

#### **Description**

The proposal is located to the west of the existing Red Hill WMF, and the nearest residence is approximately one kilometre to the south-east. Predominant winds have been recorded north to north-easterly during the morning and west to south-westerly during the afternoon. During operation of the anaerobic digestion facility, air emissions would be produced from the exhausts of the gas engines, the biogas burner and the flare. These emissions include oxides of nitrogen and sulphur ( $\text{NO}_x$  and  $\text{SO}_2$ ), carbon monoxide, Non-Methane Volatile Organic Compounds (NMVOC), and formaldehyde.

A baseline air quality monitoring study was conducted between April and July 2011 to characterise the existing background levels of pollutants. This study included the continuous measurement of the oxides of nitrogen and sulphur ( $\text{NO}_x$  and  $\text{SO}_2$ ), carbon monoxide, and particulate matter ( $\text{PM}_{10}$  and  $\text{PM}_{2.5}$ ). Discrete campaign-based monitoring was also conducted for polycyclic aromatic hydrocarbons, total suspended particles, particulate matter ( $\text{PM}_{10}$ ), metals, hydrochloric and hydrofluoric acids, hydrogen sulphide, volatile organic compounds and carbonyls.

Air dispersion modelling was undertaken based on the data from Amec Minproc and Bekon anaerobic digestion technologies to assess potential impacts on air quality. Both direct and cumulative impacts were considered. Initial modelling was undertaken using an eight metre exhaust stack and exceedances of air quality standards were predicted. Emissions were remodelled with a 25 metre stack, which resulted in the predicted Ground Level Concentrations (GLC) complying with air quality standards.

All criteria pollutants were predicted to be compliant with the National Environment Protection Measure (NEPM) air quality standards at discrete receptors. The maximum predicted GLC for the two anaerobic digestion technologies for  $\text{NO}_x$  and  $\text{SO}_2$  for example, was found to be less than 18 per cent and 0.4 per cent respectively at discrete receptors (see Figure 2) for maximum one hour average concentrations. Cumulative impacts of these pollutants at discrete receptors were found to be 30 per cent and 3.6 per cent of the respective assessment criteria. Other pollutants including NMVOCs and formaldehyde were found to meet relevant air quality standards and guidelines.

The proponent intends to use best practice and a stack of appropriate height and design to ensure compliance with air quality standards. The stack design would be finalised during the detailed design stage. Monitoring of air emissions would be conducted for the life of the project and would be detailed in a publicly available emissions management and monitoring plan, to be developed as part of the Works Approval required under Part V of the EP Act. The details of the plan would be dependent on the final design of the facility and would include development of standard operating procedures to deliver low emission outcomes, regular maintenance of all equipment to ensure compliance with standards, a contingency plan, and regular review of the management plan.

### **Submissions**

Key matters raised in submissions focused on:

- shortcomings in the air quality modelling;
- the effect of an inconsistent waste mix on the outcomes of the model;
- cumulative impacts from air emissions from additional industrial facilities in the area; and
- the baseline monitoring data for air emissions not covering a full year.

### **Assessment**

The EPA's environmental objective for this factor *is to maintain air quality for the protection of the environment and human health and amenity.*

The EPA notes that the results of the air dispersion modelling predict compliance with the NEPM standards for criteria pollutants, and that other emissions also meet relevant criteria.

Following the EMRC's final tender process the supplier of the anaerobic digestion technology would be chosen. Since the air emissions data is based on example emission data, the EPA has recommended condition 8, which requires that emissions from the chosen anaerobic digestion facility be benchmarked against best practice. Condition 8 also requires the preparation of an Air Quality Report that sets out emission rates and addresses normal operations, start up, shut down, and equipment failure conditions. The Air Quality Report also requires revised air quality modelling.

The main source of emissions is from the gas engine exhausts, and the EPA considers that these point sources are most appropriately managed via the Works Approval and Licence required under Part V of the EP Act. The Air Quality Report required by condition 8 would form part of the Works Approval application.

### **Summary**

Having particular regard to the:

- (a) air dispersion modelling results predicting compliance with the NEPM;
- (b) provisions of Part V of the EP Act; and
- (c) recommended condition 8,

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for air quality provided the recommended condition is imposed.

### **3.1.2 Amenity (odour)**

#### **Description**

The organic waste to be processed is inherently odorous and the facility has the potential to emit odours. To minimise odour potential the facility would be maintained under negative pressure, with all odorous exhaust air treated through a biofilter. The facility would also be fitted with fast acting doors to minimise the escape of odours. There is potential for odorous emissions during operational hours when the roller doors are open to allow waste trucks to enter and exit.

Site specific odour monitoring was undertaken in January 2011 to determine odour emission rates for all odorous sources at the existing WMF. Monitoring outcomes concluded that major sources of odour are the greenwaste windrows and the landfill gas engine exhausts.

Of the three anaerobic digestion technologies, Amec Minproc had the highest odour emission rate from the biofilter and therefore the Amec Minproc technology rate has been used to predict odour impacts. Dispersion modelling using site specific meteorological data was used to predict cumulative impacts from the existing operation and the anaerobic digestion facility. Results predict one exceedance of the odour criteria under current WMF operations at one sensitive receptor (Receptor 12, Figure 2).

The exceedance at Receptor 12 is mainly due to the existing greenwaste windrows, which contributes up to 78 per cent of maximum odour concentrations at this location. The predicted cumulative odour impacts are dominated by the existing operations at Red Hill and the proposed anaerobic digestion facility would not significantly increase odour impacts. The proponent is considering managing the exceedance at Receptor 12 through the relocation of the greenwaste windrows to a suitable location that would be identified through dispersion modelling.

#### **Submissions**

Key matters raised in submissions focused on:

- whether the use of a biofilter to manage odours is appropriate in Perth's hot and dry climate;

- odour complaints being prevalent for the existing Red Hill WMF; and
- management actions to reduce existing odour emissions.

### **Assessment**

The EPA's environmental objective for this factor *is to ensure that impacts to amenity are reduced as low as reasonably practicable.*

The Department of Environment Regulation (DER, formerly the Department of Environment and Conservation) has advised that it does not consider the proponent's odour modelling to be conservative due to the odour monitoring techniques used to gather input data, and the historic odour complaint data for the WMF. However, the DER recognises that the anaerobic digestion facility as modelled would not significantly increase the odour impact.

The DER has also recommended the relocation of the greenwaste windrows as a means to minimise cumulative odour impact. Given the existing complaints and the DER's advice, the EPA considers that in order for the cumulative odour impacts to be considered acceptable, the proponent would need to reduce existing odour emissions. The EPA has recommended a condition to achieve this.

Condition 6 requires the preparation and implementation of a Cumulative Odour Reduction Report, which would involve the investigation of management measures to reduce the existing impact. Condition 6 also requires that a re-run of the odour emission modelling be undertaken to demonstrate an overall reduction in the predicted cumulative odour impacts.

The DER also advised that a suitably sealed building can be achieved and that biofilters are capable of controlling odour adequately from anaerobic digestion type facilities. However, the DER noted that the ongoing operational management of the biofilter is crucial to good performance in Perth's hot and dry climate.

The EPA notes that the biofilter is responsible for approximately 94 per cent of the emissions and fugitive emissions through the fast acting doors responsible for the remaining 6 per cent. The EPA has recommended condition 7 to ensure that the odour emissions from the anaerobic digestion facility are minimised and appropriately managed. Condition 7 requires an independent peer review of the detailed design of the odour control system, which specifically addresses such things as:

- building orientation and sealing;
- performance and specification of the air extraction system to maintain the building under negative pressure;
- biofilter design, size and loading;
- degree of automation of the monitoring and control system for critical parameters;
- redundancy incorporated into the design;

- robustness of the facility and design, and operational protocols;
- monitoring required to demonstrate odour performance; and
- technology suppliers warranty with respect to odour performance,

with particular emphasis on the design process control, management and maintenance of the biofilter.

The EPA notes that the detailed design of the odour control system would form part of the Works Approval application under Part V of the EP Act, and the DER would further assess the odour prevention and minimisation measures at this time.

## **Summary**

Having particular regard to the:

- (a) anaerobic digestion facility being a minor contributor to the cumulative odour impact from the WMF;
- (b) recommended condition 6 requiring cumulative odour impact to be reduced; and
- (c) recommended condition 7 requiring peer review of the odour control system;

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for amenity provided the recommended conditions are imposed.

## **3.2 Gasification**

### **3.2.1 Air quality**

#### **Description**

Gasification technology uses a thermal conversion unit to convert waste into a fuel gas. This fuel gas is then burnt to raise steam and produce electricity. The exhaust emissions from the steam boiler are vented through a stack and have the potential to impact air quality.

As discussed in Section 3.1.1, baseline monitoring was conducted for the project area to characterise existing GLCs of pollutants.

Air dispersion modelling using Energos technology data was undertaken to predict GLCs of pollutants. The modelling results predict that the criteria pollutants comply with the NEPM standard. The highest GLC predicted was the one-hour average nitrogen oxide (NO<sub>x</sub>) emissions at 7.8 per cent of the assessment standard for discrete receptors. Other pollutants including dioxins and mercury were predicted to meet relevant air quality standards and guidelines. Results from the cumulative assessment also predict compliance with assessment criteria for all parameters.

To illustrate a worst case, modelling was also undertaken using the emission limits from the WID. Results from this worst case predict that the GLCs would still comply with the relevant standards.

The proponent intends to monitor air emissions. This would be done for the life of the project and would be detailed in a publicly available emissions management and monitoring plan, to be developed as part of a Works Approval application. The details of the plan would be dependent on the final design of the facility and would include development of standard operating procedures to deliver low emission outcomes, regular maintenance of all equipment to ensure compliance with standards, a contingency plan, and regular review of the management plan.

### **Submissions**

Key matters raised in submissions focused on:

- shortcomings in the air quality modelling;
- effect of an inconsistent waste mix on the outcome of the model;
- cumulative emissions from additional industrial facilities in the area;
- Energos type facilities have been experiencing emission problems; and
- stack emissions increasing from inefficiency of filters.

### **Assessment**

The EPA's environmental objective for this factor is *to maintain air quality for the protection of the environment and human health and amenity*.

#### ***Emission standards***

The EPA and the Waste Authority's strategic review of the Environmental and Health Performance of Waste-to-Energy Technologies (EPA, 2013) identifies the European Union WID as the appropriate standard for Waste-to-Energy facilities in Western Australia.

The EPA notes that the proposed continuous monitoring of the main stack emissions is appropriate. However, for those emissions that are not continuously monitored (e.g. heavy metals, dioxins and furans), the EPA considers that during the initial operation of the plant (minimum of two years following receipt of Certificate of Practical Completion) that more frequent testing should be required.

The EPA notes that under Part V of the EP Act, the DER can specify in the Works Approval that the plant must be constructed to meet the requirements of the WID. The DER can also specify stack emission limits as it deems appropriate in the operating Licence.

The EPA also notes that gasification technology (as opposed to combustion) offers the potential for emissions at much lower concentrations than the limits in the WID, and considers that for these emissions it is appropriate for the DER to set targets lower than those in the WID.

The EPA considers that the Works Approval and Licensing processes under Part V of the EP Act are the appropriate regulatory mechanisms to specify the emission limits and monitoring criteria.

Following the EMRC's final tender process there is the possibility of an alternative gasification technology being chosen. The EPA considers that an alternative equivalent technology could be implemented provided that it meets the technology considerations in the EPA and Waste Authority's strategic advice for Waste-to-Energy plants (EPA, 2013). The EPA has recommended condition 9 to allow for this.

Condition 9 requires the preparation of documentation to demonstrate that the chosen gasification technology has been operated reliably elsewhere, can operate within the WID limits, has a successful track record in treating the waste streams proposed, has operated at a similar scale to the proposal, and has a configuration of components that has been demonstrated elsewhere.

## **Summary**

Having particular regard to the:

- (a) air dispersion modelling results predicting compliance with the NEPM;
- (b) provisions of Part V of the EP Act;
- (c) monitoring and management measures proposed; and
- (d) recommended condition 9,

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for air quality provided the recommended condition is imposed.

### **3.2.2 Amenity (odour)**

#### **Description**

The main source of odour for the gasification technology would be through the truck entry and exit doors of the facility. The building is maintained under negative pressure and the extracted air is passed into the combustion chamber. As such, the gasification technology does not need biofilters to control odours.

As discussed in Section 3.1.2, odour monitoring was conducted at the Red Hill WMF to characterise existing odour sources and emission rates. Odour modelling of the existing WMF predicted one exceedance at Receptor 12



(Figure 2). Cumulative odour modelling was undertaken to predict odour impacts for Energos technology and results showed that there would be no additional exceedances of the odour criteria with the addition of a gasification facility.

### **Submissions**

Key matters raised in submissions focused on:

- odour complaints generated from the existing WMF;
- that further investigations should be made to reduce odour emissions from the greenwaste windrows; and
- concern regarding odour impacts at nearby residents.

### **Assessment**

The EPA's environmental objective for this factor is *to ensure that impacts to amenity are reduced as low as reasonably practicable*.

As discussed in Section 3.1.2, the EPA considers that in order for the cumulative odour impacts to be considered acceptable, the proponent would need to reduce existing odour emissions from the WMF. The EPA has recommended a condition that would achieve this.

Condition 6 requires the preparation and implementation of a Cumulative Odour Reduction Report, which would involve the investigation of management measures to reduce the existing impact. Condition 6 also requires that a rerun of the odour emissions modelling be undertaken to demonstrate an overall reduction in the predicted cumulative odour impacts.

The EPA notes that the detailed design of the odour control system would form part of the Works Approval application under Part V of the EP Act and that the DER would further assess the odour prevention and minimisation measures at this time.

### **Summary**

Having particular regard to the:

- (a) gasification facility being a minor contribution to the cumulative odour impact; and
- (b) recommended condition 6 requiring cumulative odour impact to be reduced,

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for amenity, provided the recommended condition is imposed.

### **3.3 Environmental principles**

In preparing this report and recommendations, the EPA has had regard for the object and principles contained in s4A of the EP Act. Appendix 3 contains a summary of the EPA's consideration of the principles.

## **4. Conditions**

Section 44 of the EP Act requires the EPA to report to the Minister for Environment on the key environmental factors relevant to the proposal and on the conditions and procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit.

### **4.1 Recommended conditions**

Having considered the information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by the EMRC to develop and operate a RRF, is approved for implementation.

These conditions are presented in Appendix 4. Matters addressed in the conditions include the following:

- (a) minimising the cumulative odour emissions;
- (b) ensuring a robust odour control system design, should anaerobic digestion be the chosen technology; and
- (c) ensuring that, should gasification be the chosen technology, it is consistent with the EPA and the Waste Authority's strategic advice.

It should be noted that other regulatory mechanisms relevant to the proposal are the Works Approval and License required under Part V of the EP Act.

### **4.2 Consultation**

In developing these conditions, the EPA consulted with the proponent and the DER in respect of matters of fact and matters of technical or implementation significance. Minor changes, which did not change the intent or scope, were made to some conditions to improve clarity. Condition 8 was amended to improve consistency with EPA Guidance Statement 55 *Implementing best practice in proposals submitted to the environmental impact assessment process*, and Schedule 1 Table 2 was amended to make the authorised extent more practical.

## 5. Conclusion

The EPA has considered the proposal by the EMRC to develop a RRF to process kerbside municipal solid waste within the Red Hill WMF using either anaerobic digestion or gasification technology.

The EPA recognises the potential for waste facilities to diminish amenity via odour, and has paid particular attention to ensuring that odour is minimised and managed to prevent unacceptable impacts. Given the historical odour complaints from the Red Hill WMF, and the potential for increased cumulative odour impact with the addition of a RRF, the EPA has recommended a condition to reduce cumulative odour emissions.

For anaerobic digestion, the EPA has also recommended a condition requiring peer review of the detailed design of the total odour control system for anaerobic digestion to ensure it is well designed and appropriately managed so that odour emissions are acceptable.

The EPA and the Waste Authority recently released the section 16(e) strategic advice for Waste-to-Energy plants. This advice noted that the WID is the appropriate standard for Waste-to-Energy technologies. The EPA notes that the Energos gasification technology meets the WID emission limits however, following the EMRC's final tender process, there is the possibility of an alternative gasification technology being chosen. The EPA considers that an alternative equivalent technology could be implemented provided that it meets the technology considerations in the EPA and the Waste Authority's section 16(e) strategic advice. The EPA has recommended condition 9 to allow flexibility for this possibility.

The EPA considers that the Works Approval and Licensing process under Part V of the EP Act managed by the DER will be critical to ensure that the RRF is appropriately managed.

The EPA has therefore concluded that the proposal can be managed to meet the EPA's objectives provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 4 and summarised in Section 4.

## 6. Recommendations

The EPA submits the following recommendations to the Minister for Environment:

1. That the Minister notes that the proposal being assessed is for the development of a RRF using either anaerobic digestion or gasification technology at the Red Hill WMF in Perth;
2. That the Minister considers the report on the key environmental factors and principles as set out in Section 3;
3. That the Minister notes that the EPA has concluded that it is likely that the EPA's environmental objectives would be achieved provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 4 and summarised in Section 4; and
4. That the Minister imposes the conditions and procedures recommended in Appendix 4 of this report.

# **Appendix 1**

## **List of submitters**

**Organisations:**

Alliance for a Clean Environment Inc.

City of Belmont

Department of Indigenous Affairs

Department of Water

Department of Health

Department of Environment and Conservation

Environment House

Gidgengannup Progress Association

Jewel Nominees

Mount Helena Residents and Ratepayers Progress Association

Save Perth Hills

Stoneville and Parkerville Progress Association

Transition Town Guildford

**Individuals:**

7 individual submissions

# Appendix 2

## References

EMRC (2012a) Public Environmental Review: *EMRC Resource Recovery Facility*, prepared by Cardno (WA) Pty Ltd for EMRC, July 2012.

EMRC (2012b) *EMRC Resource Recovery Facility Section 43A Application: Relocation of RRF*, prepared by Cardno (WA) Pty Ltd for EMRC, October 2012.

EPA (2003) *Implementing Best Practice in proposals submitted to the Environmental Impact Assessment process*. Environmental Protection Authority Guidance Statement No. 55, December 2003.

EPA (2013) *Environmental and Health Performance of Waste to Energy Technologies*. Report No. 1468. Environmental Protection Authority, Government of Western Australia, April 2013.

EU (2000) European Parliament and Council of the European Union (2000) Waste Incineration Directive (WID). *Directive 2000/76/EC of the European Parliament and of the Council on the Incineration of Waste*. Official Journal of the European Communities. L332/91.

EU (2005) European Union *Best Available Technology, Energy Efficiency Regulation* required under EUD-COM (2005), 667 final.



## **Appendix 3**

**Summary of identification of key environmental factors and principles**

| Preliminary Environmental Factors   | Proposal Characteristics   | Government Agency and Public Comments   | Identification of Key Environmental Factors   |
|-------------------------------------|--|---|---|
| <b>LAND</b>                         |  |   |   |
| Flora and Vegetation                | <p>Clearing of 0.85 hectares remnant vegetation.</p> <p>Site location historically cleared for quarry operations.</p>  | No submissions received on this factor.   | <b>Not considered to be a key environmental factor.</b>   |
| Terrestrial Fauna                   | <p>Clearing of 0.85 hectares remnant vegetation.</p> <p>There are three Threatened Species likely to utilise the project area.</p>   | No submissions received on this factor.   | <p>Majority of the site has been cleared and is unlikely to have significant impact on fauna habitat.</p> <p><b>Not considered to be a key environmental factor.</b></p>  |
| <b>WATER</b>                        |  |   |   |
| Inland Waters Environmental Quality | <p>The closest surface water body to the site is a small creek located 300 metres north of the site, and flowing in a westerly direction. There are also two prevalent water tables beneath the site.</p> <p>A breach of the facility, flooding or regular housekeeping activities could lead to contamination of the environment and result in decreased water quality.</p> | <p><b>Department of Environment Regulation:</b></p> <ul style="list-style-type: none"> <li>Combustion of waste materials will produce large amounts of bottom ash and fly ash that are likely to contain potentially leachable material. Appropriate leaching tests should be undertaken to demonstrate the suitability of bottom and fly ash materials for use or disposal outside of a lined landfill cell.</li> </ul> <p><b>Public submissions:</b></p> <ul style="list-style-type: none"> <li>Concern that the close proximity of the Helena and Mundaring reservoirs to the project site may potentially impact drinking water catchments and sources.</li> <li>The gasification plant may result in large amounts of toxic material (ash) being placed in the Red Hill landfill, which may potentially contaminate land and water.</li> </ul> | <p>The nearest surface water body is located upstream from the proposed facility and is unlikely to be impacted from potential spills and leakages.</p> <p>The Red Hill site is an operating waste facility and has lined cells that can accept up to class IV waste.</p> <p>Under Part V of the EP Act, the DER can regulate the ongoing management and monitoring of contaminated discharge during the Works Approval stage and implement relevant conditions for the licence to manage environmental impacts.</p> <p><b>Not considered to be a key environmental factor.</b></p> |
| <b>AIR</b>                          |  |   |   |
| Air Quality                         | The proposal would produce air emissions, including NO <sub>x</sub> , SO <sub>x</sub> and other pollutants from the  | <p><b>Department of Environment Regulation:</b></p> <ul style="list-style-type: none"> <li>The DER recommends that the air quality modelling be revisited to reflect worst case emissions, and that any</li> </ul>  | <b>Considered to be a key environmental factor and discussed in Sections 3.1.1 and 3.2.1 Air Quality under the relevant</b>   |

| Preliminary Environmental Factors | Proposal Characteristics                                 | Government Agency and Public Comments  | Identification of Key Environmental Factors |
|-----------------------------------|--|--|---|
|                                   | <p>anaerobic digestion and gasification technologies</p> | <p>shortcomings be identified and addressed.</p> <ul style="list-style-type: none"> <li>• Potential failure modes can cause increased air emissions and measures should be identified to correct this.</li> </ul> <p><b>Department of Health:</b></p> <ul style="list-style-type: none"> <li>• The DOH is satisfied with the level of conservatism used for the modelled substances and that the proposed technologies are unlikely to cause health effects, provided emissions remain consistently below the recommended air quality health based references for the life of the facility.</li> </ul> <p><b>Public submissions:</b></p> <ul style="list-style-type: none"> <li>• Concerns that an inconsistent waste mix could change the modelled outcome, which may cause health impacts during operations.</li> <li>• Existing SO<sub>x</sub>, NO<sub>x</sub> and particulate levels are already poor in the area and no information on cumulative impacts from emissions has been provided.</li> <li>• Air monitoring was done during winter months and no monitoring was undertaken during summer months, which raises concern that monitoring locations were selectively located to avoid prevailing dry easterly winds.</li> <li>• Strong easterly winds during the morning and westerly winds during the evening would cause harmful emissions to be transported back and forth through dense populations.</li> </ul> | <p>technology heading.</p>                  |

| Preliminary Environmental Factors | Proposal Characteristics  | Government Agency and Public Comments   | Identification of Key Environmental Factors  |
|-----------------------------------|---|---|--|
| <b>PEOPLE</b>                     |   |   |  |
| Human Health                      | Establishment of the project can affect human health from exposure to air pollution, contamination of the food chain, water contamination, noise and increased risks of injury. | <p><b>Department of Health:</b></p> <ul style="list-style-type: none"> <li>• Statements and comments related to impact on public health are recommended, particularly in relation to odour control and the reuse of treated solid (compost) and liquid wastes.</li> <li>• The PER should include disaster preparedness, health, social and mental wellbeing of the workforce and visitors.</li> </ul> <p><b>Public submissions:</b></p> <ul style="list-style-type: none"> <li>• Consideration should be given to indirect exposure pathways to human health such as from drinking water and food.</li> <li>• Anaerobic digestion technology is preferable to gasification technology as there is less risk to human health.</li> <li>• Standards for compounds including dioxins, nanoparticles and some heavy metals are not available and, in the absence of standards, may result in human health impacts.</li> </ul> | <p>Potential impacts from emissions on human health are considered through other factors including air quality, amenity (odour), and inland waters environmental quality.</p> <p><b>Not considered to be a key environmental factor.</b></p>   |
| Heritage                          | The DIA Register of Aboriginal Sites indicates the closed boundary of one Heritage Place overlaps Lots 8, 9 and 10.   | <p><b>Department of Indigenous Affairs:</b></p> <ul style="list-style-type: none"> <li>• There is potential for cultural material to be revealed in the relatively undisturbed sections of the land, and should cultural or skeletal material be discovered during the project, work should cease immediately and be reported to the DIA.</li> <li>• All relevant documents on heritage surveys undertaken should be provided to the DIA.</li> <li>• The proponent is obligated to abide by the requirements of the <i>Aboriginal Heritage Act 1972</i>.</li> </ul>   | <p>No Aboriginal heritage sites were recorded within the project area. Surveys also did not identify any new heritage sites.</p> <p>Heritage would be managed under the <i>Aboriginal Heritage Act 1972</i>.</p> <p>The proposed RRF would not impact any registered sites.</p> <p><b>Not considered to be a key environmental factor.</b></p> |

| Preliminary Environmental Factors | Proposal Characteristics   | Government Agency and Public Comments   | Identification of Key Environmental Factors  |
|-----------------------------------|--|---|--|
| Amenity (noise)                   | Construction and operation of the facility would increase noise impacts to nearby receptors. The facility would be operating 24 hours a day. | <p><b>Department of Environment Regulation:</b></p> <ul style="list-style-type: none"> <li>Existing noise emissions already exceed the assigned levels by up to 9 dB at one of the nearby residences. The proponent should develop a Noise Management Plan to ensure overall noise emissions from all operations comply with the noise regulations.</li> <li>Reversing beepers on heavy machinery have been identified by the local community to be a source of noise impact and less intrusive mobile equipment reversing safety systems should be used to minimise impacts.</li> </ul> <p><b>Public submissions:</b></p> <ul style="list-style-type: none"> <li>Concerns that noise emissions from the facility would impact nearby residents.</li> </ul> | <p>Noise modelling was undertaken for the anaerobic digestion and gasification technologies to predict noise levels generated from the facility.</p> <p>The worst case predicted noise level to surrounding residences is 26 dB from anaerobic digestion and 25 dB from gasification technology. This represents a noise level at least 9 dB below the assigned noise level at receptors and at least 4 dB below the adjusted assigned noise level, which takes into account contributing industry noise. Results show that noise compliance can be achieved at all times.</p> <p>Action has been undertaken to control existing noise exceedances generated by the Landfill Gas Power Station, and noise monitoring will be undertaken to ensure compliance.</p> <p>Noise can be managed under the <i>Environmental Protection (Noise) Regulations 1997</i>.</p> <p><b>Not considered to be a key environmental factor.</b></p> |
| Amenity (odour)                   | Odour would be generated from the facility due to the nature of the waste used for processing.   | <p><b>Department of Environment Regulation:</b></p> <ul style="list-style-type: none"> <li>The DER recommends that the chosen technology for odour prevention represent best practice, and that odour will be controlled under worst case odour loading.</li> <li>The use of a biofilter for managing odour at an anaerobic digestion facility is a high risk strategy due to Perth's hot and dry climate.</li> <li>The existing waste disposal facility has generated a</li> </ul>   | <p><b>Considered to be a key environmental factor and discussed in Sections 3.1.2 and 3.2.2 Amenity (odour) under the relevant technology heading.</b></p>   |

| Preliminary Environmental Factors | Proposal Characteristics | Government Agency and Public Comments   | Identification of Key Environmental Factors |
|-----------------------------------|--------------------------|---|---|
|                                   |                          | <p>number of odour complaints during warmer months, and the challenge of reducing the impact has not been met by the proponent.</p> <p><b>Department of Health:</b></p> <ul style="list-style-type: none"> <li>• DOH supports further investigation to reduce emissions from the greenwaste windrows to ensure ambient odour concentration criteria is met.</li> </ul> <p><b>Public submissions:</b></p> <ul style="list-style-type: none"> <li>• Odour emissions from the facility are concerning for nearby residents.</li> </ul> |   |

Abbreviations:

DER – Department of Environment Regulation (formerly the Department of Environment and Conservation)

DIA – Department of Indigenous Affairs

DOH – Department of Health

RRF – Resource Recovery Facility

dB - decibels

| <b>PRINCIPLES</b>   |     | <b>Relevant<br/>Yes/No</b>  | <b>If yes, Consideration</b> |
|---|-----|---|------------------------------|
| <p><b>1. The precautionary principle</b><br/> <i>Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.</i><br/> <i>In application of this precautionary principle, decisions should be guided by –</i><br/> <i>(a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and</i><br/> <i>(b) an assessment of the risk-weighted consequences of various options.</i></p>   |     |   |                              |
|   | Yes | Specialist surveys and assessment have been undertaken to inform the environmental assessment process. A risk assessment of possible environmental impacts has been conducted and environmental management measures have been proposed to minimise the risk to the environment. |                              |
| <p><b>2. The principle of intergenerational equity</b><br/> <i>The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.</i></p>  |     |   |                              |
|   | Yes | The project would contribute to current and future waste management outcomes and provide benefits for future generations without negatively impacting on health, diversity and productivity of the environment.   |                              |
| <p><b>3. The principle of the conservation of biological diversity and ecological integrity</b><br/> <i>Conservation of biological diversity and ecological integrity should be a fundamental consideration.</i></p>  |     |   |                              |
|   | Yes | Site specific studies have been undertaken to determine the presence of significant flora, fauna and ecological communities.  |                              |
| <p><b>4. Principles relating to improved valuation, pricing and incentive mechanisms</b><br/> <i>(1) Environmental factors should be included in the valuation of assets and services.</i><br/> <i>(2) The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement.</i><br/> <i>(3) The users of goods and services should pay prices based on the full life-cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste.</i><br/> <i>(4) Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structure, including market mechanisms, which enable those best placed to maximize benefits and/or minimize costs to develop their own solution and responses to environmental problems.</i></p> |     |   |                              |
|   | Yes | Environmental management costs would be incorporated into planning of the project.  |                              |
| <p><b>5. The principle of waste minimisation</b><br/> <i>All reasonable and practicable measures should be taken to minimize the generation of waste and its discharge into the environment.</i></p>  |     |   |                              |
|   | Yes | Best practice emission controls would be used to minimise the discharge of air emissions into the environment.<br><br>The proposal would reduce the amount of waste to landfill and increase the recovery of resources.   |                              |

# **Appendix 4**

## **Identified Decision-making Authorities and Recommended Environmental Conditions**



### **Identified Decision-making Authorities**

Section 44(2) of the EP Act specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This Appendix contains the EPA's recommended conditions and procedures.

Section 45(1) requires the Minister for Environment to consult with decision-making authorities, and if possible, agree on whether or not the proposal may be implemented, and if so, to what conditions and procedures, if any, that implementation should be subject.

The following decision-making authorities have been identified for this consultation:

| <b>Decision-making Authority</b>        | <b>Approval</b>                 |
|---|---------------------------------|
| 1. Department of Environment Regulation | Works Approval and Licence      |
| 2. City of Swan                         | Building and Planning Approvals |

RECOMMENDED ENVIRONMENTAL CONDITIONS

**STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED  
(PURSUANT TO THE PROVISIONS OF THE  
ENVIRONMENTAL PROTECTION ACT 1986)**

RESOURCE RECOVERY FACILITY, RED HILL

**Proposal:** Resource Recovery Facility at Red Hill.

**Proponent:** EASTERN METROPOLITAN REGIONAL COUNCIL  
Australian Company Number 89 631 866 056

**Proponent Address:** 1st Floor Ascot Place, 226 Great Eastern Highway  
BELMONT WA 6984

**Assessment Number:** 1844

**Report of the Environmental Protection Authority Number:** 1487

The proponent may implement the Proposal subject to the implementation conditions and procedures set out below in this Statement.

**Note:** Schedule 3 provides definitions of terms and phrases used in this statement.

**1 Proposal Implementation**

- 1-1 The proponent shall use either anaerobic digestion technology or gasification digestion technology, but not both.
- 1-2 If anaerobic digestion technology is used when implementing the Proposal, the proponent shall not exceed the authorised extent of physical and operational elements provided for in Table 2 in Schedule 1 of this Statement and shall also ensure the requirements of conditions 2, 3, 4, 5, 6, 7 and 8 of this Statement are met, unless amendments to the Proposal and the authorised extent of the Proposal has been approved under the EP Act.
- 1-3 If gasification waste digestion technology is used when implementing the Proposal, the proponent shall not exceed the authorised extent of physical and operational elements provided for in Table 2 in Schedule 2 of this Statement and shall also ensure the requirements of conditions 2, 3, 4, 5, 6 and 9 of this Statement are met, unless amendments to the Proposal and the authorised extent of the Proposal has been approved under the EP Act.

## **2 Contact Details**

- 2-1 The proponent shall notify the CEO of any change of its name, physical address or postal address for the serving of notices or other correspondence within 28 days of such change. Where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.

## **3 Time Limit for Proposal Implementation**

- 3-1 The proponent shall not commence implementation of the proposal after the expiration of 5 years from the date of this statement, and any commencement, within this 5 year period, must be substantial.
- 3-2 Any commencement of implementation of the proposal, within 5 years from the date of this statement, must be demonstrated as substantial by providing the CEO with written evidence, on or before the expiration of 5 years from the date of this statement.

## **4 Compliance Reporting**

- 4-1 The proponent shall prepare and maintain a compliance assessment plan to the satisfaction of the CEO.
- 4-2 The proponent shall submit to the CEO the compliance assessment plan required by condition 4-1 at least six months prior to the first compliance assessment report required by condition 4-6, or prior to implementation, whichever is sooner.

The compliance assessment plan shall indicate:

- (1) the frequency of compliance reporting;
  - (2) the approach and timing of compliance assessments;
  - (3) the retention of compliance assessments;
  - (4) the method of reporting of potential non-compliances and corrective actions taken;
  - (5) the table of contents of compliance assessment reports; and
  - (6) public availability of compliance assessment reports.
- 4-3 The proponent shall assess compliance with conditions in accordance with the compliance assessment plan required by condition 4-1.
- 4-4 The proponent shall retain reports of all compliance assessments described in the compliance assessment plan required by condition 4-1 and shall make those reports available when requested by the CEO.
- 4-5 The proponent shall advise the CEO of any potential non-compliance within seven days of that non-compliance being known.
- 4-6 The proponent shall submit to the CEO the first compliance assessment report 15 months from the date of issue of this Statement addressing the 12 month period from the date of issue of this

Statement and then annually from the date of submission of the first compliance assessment report.

The compliance assessment report shall:

- (1) be endorsed by the proponent's Managing Director / General Manager / Chief Executive Officer or a person delegated to sign on the Managing Director's / General Manager's / Chief Executive Officer's behalf;
- (2) include a statement as to whether the proponent has complied with the conditions;
- (3) identify all potential non-compliances and describe corrective and preventative actions taken;
- (4) be made publicly available in accordance with the approved compliance assessment plan; and
- (5) indicate any proposed changes to the compliance assessment plan required by condition 4-1.

## **5 Public Availability of Data**

5-1 Subject to condition 5-2, within a reasonable time period approved by the CEO of the issue of this statement and for the remainder of the life of the proposal the proponent shall make publically available, in a manner approved by the CEO, all validated environmental data (including sample design, sampling methodologies, empirical data and derived information products (e.g. maps)) relevant to the assessment of this proposal and implementation of this Statement.

5-2 If any data referred to in condition 5-1 contains particulars of:

- (1) a secret formula or process; or
- (2) confidential commercially sensitive information.

the proponent may submit a request for approval from the CEO to not make this data publically available. In making such a request the proponent shall provide the CEO with an explanation and reasons why the data should not be made publically available.

## **6 Odour – Existing Operations**

6-1 The proponent shall reduce the cumulative odour levels prior to operation of the anaerobic digestion or gasification facility to as low as reasonably practicable.

6-2 The proponent shall prepare a Cumulative Odour Reduction Report.

6-3 The Cumulative Odour Reduction Report required pursuant to condition 6-2 shall:

- (1) investigate options and propose measures to reduce the cumulative odour impact from the Red Hill Waste Management Facility by management measures such as relocating the greenwaste windrows; and

- (2) provide a re-run of the model (SLR Consulting Australia 2012 '*Resource Recovery Facility: Odour Impact Assessment for Lot 8 (Site E) Toodyay Road*' Report) to demonstrate that the chosen measures from 6-3(1) provides an overall improvement in predicted cumulative odour impacts,

to the satisfaction of the CEO on advice of the DER.

- 6-4 Prior to operation of the anaerobic digestion or gasification facility the proponent shall implement management measures approved by the CEO to meet condition 6-1.

Should the option be anaerobic digestion, then condition 7 and 8 applies.

## **7 Odour Control System**

- 7-1 The proponent shall ensure that maximum odour emissions from the anaerobic digestion facility are less than those listed in Column 3 of Table 2 in Schedule 1.

- 7-2 The proponent shall commission an independent peer review of the detailed design of the total odour control system, prior to submission of a Works Approval, that addresses:

- (1) building orientation (shielding of openings from prevailing winds);
- (2) sealing of the building to minimise fugitive emissions;
- (3) location of extraction points, ducting and fans, and performance specification of the air collection network within the building;
- (4) humidification system in the building and at the air inlet of the biofilter;
- (5) biofilter surface irrigation system;
- (6) degree of automation of the monitoring/control system for critical parameters such as temperature, relative humidity, volumetric flow of the air at the inlet of the biofilter as well as the back-pressure, and the temperature and moisture content of the biofilter media;
- (7) biofilter type (open, covered or enclosed) and design (suitability for Western Australia's hot and dry climate);
- (8) biofilter size and loading, number of building air changes per hour;
- (9) type of biofilter media used;
- (10) redundancy incorporated in the design;
- (11) the robustness of the facility design and operational protocols to achieve (or better) the authorised extent in Schedule 1;
- (12) the verification / monitoring required to demonstrate compliance with the authorised extent in Schedule 1; and
- (13) the technology suppliers warranty with respect to achieving the authorised extent in Schedule 1,

to the requirements of the CEO.

The peer review should have particular emphasis on the design, process control, management, and maintenance of the biofilter.

- 7-3 The proponent shall submit a copy of the peer review report required by condition 7-2 to the DER with the application for the Works Approval.

## **8 Air Quality**

- 8-1 The proponent shall ensure that emissions from the anaerobic digestion facility are as low as reasonably practicable.

- 8-2 The proponent shall prepare an Air Quality Report.

- 8-3 The Air Quality Report required pursuant to condition 8-2 shall:

- (1) benchmark the emissions for all criteria pollutants from the chosen anaerobic digestion technology against best practice;
- (2) set out emission rates for all the sources;
- (3) address normal operations, start up, shut down, and equipment failure; and
- (4) provide a rerun of the model (Synergetics 2012 '*Air Quality dispersion modelling of the proposed Resource Recovery Facility (RRF) at Red Hill Waste Management Facility – Location RRF on Lot 8, Toodyay Road – for Eastern Metropolitan Regional Council*' Report),

to the satisfaction of the CEO on advice of the DER.

- 8-4 The proponent shall submit the Air Quality Report required by condition 8-2 to the DER with the application for the Works Approval.

Should the option be gasification, then condition 9 applies.

## **9 Gasification Technology**

- 9-1 The proponent shall ensure that the gasification technology to be implemented is consistent with the EPA and the Waste Authority's strategic advice ('*Environmental and Health Performance of Waste to Energy Technologies*: Report No. 1468' under section 16(e) of the *Environmental Protection Act 1986*).

- 9-2 The proponent shall prepare and submit documentation that demonstrates the chosen gasification technology:

- (1) uses only components that have operated reliably elsewhere;
- (2) can operate well within emission standards equal to the 'Directive 2000/76/EC of the European Parliament and of the Council (4 December 2000)';
- (3) uses only components that have a successful track record in treating the waste streams proposed;
- (4) has operated at a similar scale to that proposed; and

(5) has a configuration of components that has been demonstrated elsewhere,

to the satisfaction of the CEO on advice of the DER.

- 9-3 The proponent shall commission an independent peer review, to provide comment on the validity of the documentation prepared for condition 9-2 to demonstrate the chosen gasification technology meets points (1), (2), (3), (4), and (5) of condition 9-2 to the satisfaction of the CEO on advice of the DER.
- 9-4 The proponent shall submit a copy of the documentation required by condition 9-2 and the peer review required by 9-3 to the DER with the application for the Works Approval.

## Notes

The following notes are provided for information and do not form a part of the implementation conditions of the Statement:

- The proponent for the time being nominated by the Minister for Environment under section 38(6) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal unless and until that nomination has been revoked and another person is nominated.
- If the person nominated by the Minister, ceases to have responsibility for the proposal, that person is required to provide written notice to the Environmental Protection Authority of its intention to relinquish responsibility for the proposal and the name of the person to whom responsibility for the proposal will pass or has passed. The Minister for Environment may revoke a nomination made under section 38(6) of the *Environmental Protection Act 1986* and nominate another person.
- To initiate a change of proponent, the nominated proponent and proposed proponent are required to complete and submit *Post Assessment Form 1 – Application to Change Nominated Proponent*.
- The General Manager of the Office of the Environmental Protection Authority was the Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the *Environmental Protection Act 1986* at the time the Statement was signed by the Minister for Environment.

## ANAEROBIC DIGESTION OPTION

### Schedule 1

**Table 1: Summary of the Proposal**

|                          |   |
|--------------------------|---|
| <b>Proposal Title</b>    | EMRC Resource Recovery Facility   |
| <b>Short Description</b> | The proponent proposes to construct and operate a resource recovery facility for the processing of waste to produce compost and biogas using anaerobic digestion technology. The biogas would be burnt in gas engines to produce electricity. |

**Table 2: Location and authorised extent of physical and operational elements**

| Element  | Location                    | Authorised Extent  |
|--|-----------------------------|--|
| Resource Recovery Facility and associated infrastructure   | Site E, Red Hill (Figure 1) | Clearing of up to 0.85 ha of remnant vegetation.   |
| Waste types accepted for processing:   |                             | The organic fraction of municipal solid waste from either a source separated collection system or from the rubbish bin using the mechanical separation designed into the facility. |
| Excluded wastes: <ul style="list-style-type: none"> <li>• Wastes with heavy metal concentrations greater than the requirements for Class III landfill</li> <li>• 'Scheduled' wastes such as polychlorinated biphenyls and organochlorines</li> <li>• Asbestos</li> <li>• Highly corrosive or toxic liquids or gases such as strong acids or chlorine or fluorine</li> <li>• Radioactive waste</li> <li>• Explosives</li> <li>• Materials already deposited in the onsite landfill</li> </ul> |                             | Not to be processed.   |
| Quantity of waste to be processed:   |                             | Up to 150,000 tpa.   |
| Odour concentration emitted from biofilter:  |                             | Less than 500 odour units.   |
| Building under negative pressure:  |                             | Waste may only be accepted while the building is being maintained under negative pressure.   |
| Fast Acting Doors:   |                             | Waste may only be accepted while the Fast Acting Doors are fully operational.  |

### Figures

Figure 1 Development envelope and locations of sensitive receptors surrounding the Red Hill Waste Management Facility



## GASIFICATION OPTION

### Schedule 2

**Table 1: Summary of the Proposal**

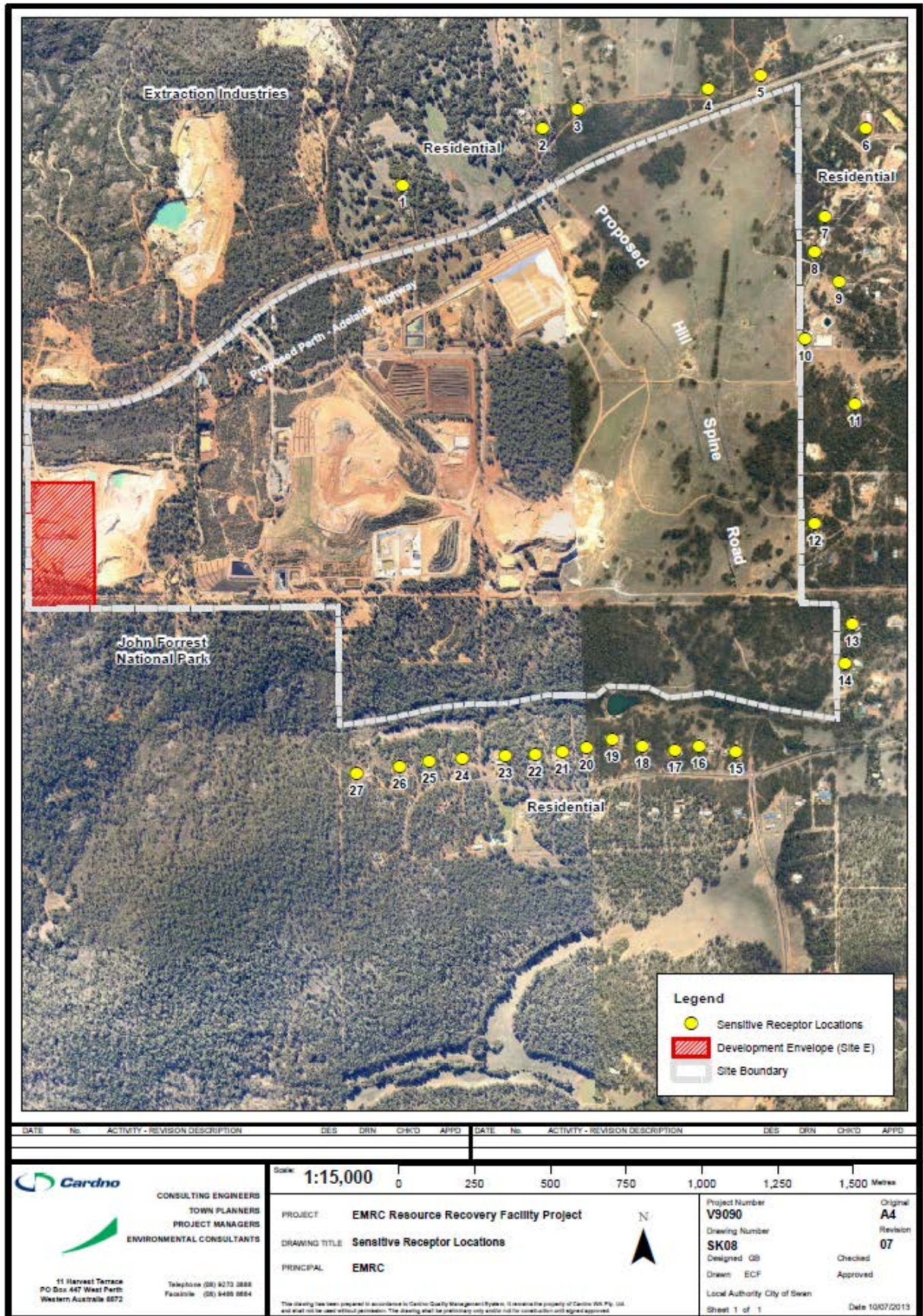
|                          |   |
|--------------------------|---|
| <b>Proposal Title</b>    | EMRC Resource Recovery Facility   |
| <b>Short Description</b> | The proponent proposes to construct and operate a resource recovery facility for the processing of waste to produce steam using gasification technology. The steam would be used in a steam turbine to produce electricity. |

**Table 2: Location and authorised extent of physical and operational elements**

| Element  | Location                    | Authorised Extent  |
|--|-----------------------------|--|
| Resource Recovery Facility and associated infrastructure   | Site E, Red Hill (Figure 1) | Clearing of up to 0.85 ha of remnant vegetation.   |
| Waste types accepted for processing:   |                             | Municipal solid waste from the rubbish or residual bins of a two bin or three bin collection system. |
| Excluded wastes: <ul style="list-style-type: none"> <li>• Wastes with heavy metal concentrations greater than the requirements for Class III landfill</li> <li>• 'Scheduled' wastes such as polychlorinated biphenyls and organochlorines</li> <li>• Asbestos</li> <li>• Highly corrosive or toxic liquids or gases such as strong acids or chlorine or fluorine</li> <li>• Radioactive waste</li> <li>• Explosives</li> <li>• Materials already deposited in the onsite landfill</li> </ul> |                             | Not to be processed.   |
| Quantity of waste to be processed:   |                             | Up to 200,000 tpa.   |

### Figures

Figure 1 Development envelope and locations of sensitive receptors surrounding the Red Hill Waste Management Facility



**Figure 1: Development envelope and locations of sensitive receptors surrounding the Red Hill Waste Management Facility**

### Schedule 3

| Term or Phrase      | Definition  |
|---------------------|---|
| CEO                 | The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the <i>Environmental Protection Act 1986</i> , or their delegate.  |
| Criteria pollutants | Key air pollutants set by the National Environment Protection Measure for Ambient Air Quality, which includes carbon monoxide, ozone, sulphur dioxide, nitrogen dioxide, lead and particles (PM <sub>10</sub> ).  |
| DER                 | Department of Environment Regulation  |
| EPA                 | Environmental Protection Authority  |
| EP Act              | <i>Environmental Protection Act 1986</i>  |
| ha                  | hectare   |
| Odour unit          | The concentration of odorant(s) at standard conditions that elicits a physiological response from a panel (detection threshold) equivalent to that elicited by one Reference Odour Mass (ROM), evaporated in one cubic metre of neutral gas at standard conditions. |
| tpa                 | Tonnes per annum  |

## **Appendix 5**

### **Summary of Submissions and Proponent's Response to Submissions**

N.B. This appendix was not provided by the EPA.



**12 REPORTS OF DELEGATES**

Nil

**13 NEW BUSINESS OF AN URGENT NATURE APPROVED BY THE CHAIRMAN OR PRESIDING MEMBER OR BY DECISION OF MEETING**

Nil

**14 CONFIDENTIAL MATTERS FOR WHICH THE MEETING MAY BE CLOSED TO THE PUBLIC**

**Item 14.1 Resource Recovery Facility, Red Hill – Tender Process was dealt with earlier in the meeting at Item 9 Announcement Of Confidential Matters For Which Meetings May Be Closed To The Public**

**RECOMMENDATION (Closing meeting to the public)**

That the meeting be closed to members of the public in accordance with Section 5.23(2)(c) of the Local Government Act for the purpose of dealing with matters of a confidential nature.

**RRC RESOLUTION**

MOVED CR FÄRDIG

SECONDED CR LINDSEY

THAT THE MEETING BE CLOSED TO MEMBERS OF THE PUBLIC IN ACCORDANCE WITH SECTION 5.23 (2) (C) OF THE LOCAL GOVERNMENT ACT FOR THE PURPOSE OF DEALING WITH MATTERS OF A CONFIDENTIAL NATURE.

**CARRIED UNANIMOUSLY**

The doors of the meeting were closed at 5:05pm and members of the public departed the Council Chambers.

Ms Booth departed the meeting at 5:05pm.

The Director Waste Services, Director Corporate Services, Manager Engineering/Waste Services, Project Engineer – Resource Recovery, Mr Dan Dragovich, Mr Wade Dunstan, Mr John King and the Administration Officer (Minutes) remained in Council Chambers.



#### **14.1 RESOURCE RECOVERY FACILITY, RED HILL – TENDER PROCESS**

**REFERENCE: COMMITTEES-16044**

This item is recommended to be confidential because it contains matters of a commercial-in-confidence nature.

The Committee considered the Confidential Item circulated with the Agenda under Separate Cover.

#### **RECOMMENDATION [Meeting re-opened to the public]**

That the meeting be re-opened, the members of the public be invited to return to the meeting and the recommendations passed behind closed doors be recorded.

#### **RRC RESOLUTION**

MOVED CR FÄRDIG

SECONDED CR LINDSEY

THAT THE MEETING BE RE-OPENED, THE MEMBERS OF THE PUBLIC BE INVITED TO RETURN TO THE MEETING AND THE RECOMMENDATIONS PASSED BEHIND CLOSED DOORS BE RECORDED.

**CARRIED UNANIMOUSLY**

The doors of the meeting were re-opened at 5:35pm and members of the public returned to Council Chambers.

Recording of the recommendations passed behind closed doors, namely:

#### **14.1 RESOURCE RECOVERY FACILITY, RED HILL – TENDER PROCESS**

**REFERENCE: COMMITTEES-16044**

#### **RRC RECOMMENDATION(S)**

MOVED CR FÄRDIG

SECONDED CR LINDSEY

THAT:

1. THE CURRENT EXPRESSION OF INTEREST/TENDER PROCESS FOR THE EMRC RESOURCE RECOVERY FACILITY (EOI 2009-10) BE CANCELLED AND ACCEPTABLE TENDERERS ADVISED ACCORDINGLY.
2. COUNCIL CONTINUE WITH THE RESOURCE RECOVERY PROJECT IMPLEMENTATION.
3. THE REPORT REMAINS CONFIDENTIAL AND IS CERTIFIED BY THE CHAIRMAN AND CEO.

**CARRIED UNANIMOUSLY**



## **15 FUTURE MEETINGS OF THE RESOURCE RECOVERY COMMITTEE**

The next meeting of the Resource Recovery Committee will be held on **Thursday, 10 October 2013 (if required)** at the EMRC Administration Office, 1<sup>st</sup> Floor, Ascot Place, 226 Great Eastern Highway, Belmont WA 6104 commencing at 5:00pm.

### **Future Meetings 2013**

|          |    |                       |    |                            |
|----------|----|-----------------------|----|----------------------------|
| Thursday | 10 | October (if required) | at | EMRC Administration Office |
| Thursday | 21 | November              | at | EMRC Administration Office |

## **16 DECLARATION OF CLOSURE OF MEETING**

There being no further business, the Chairman declared the meeting closed at 6:12pm.