



# EMRC Community Forum

18 September 2010

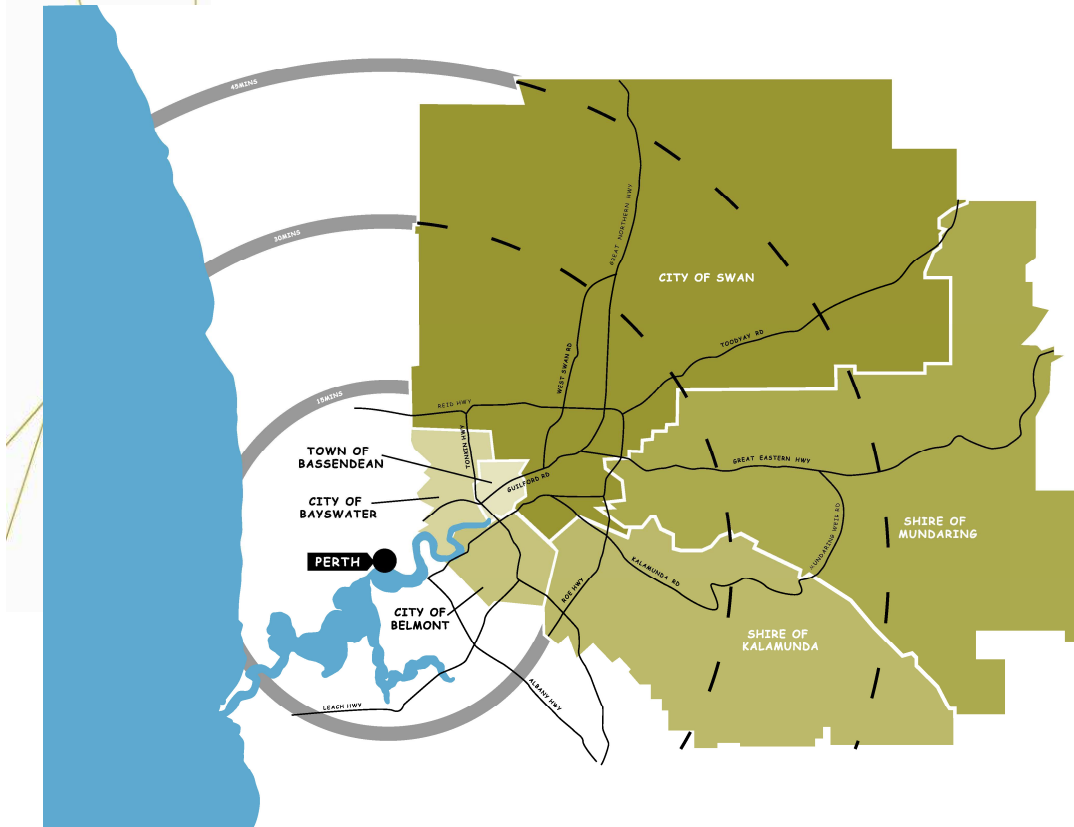


# Introduction

- Background to the Resource Recovery Project
- Technology options
- Current status
- Community engagement
- Community Task Force (CTF)

# Perth's Eastern Region

- **Resident population:** 303,894 (2008)
- **Land area:** 2,100 sq kms (one-third of Perth metropolitan area)



- Town of Bassendean
- City of Bayswater
- City of Belmont
- Shire of Kalamunda
- Shire of Mundaring
- City of Swan

# What do we mean by Resource Recovery ?



- Recovery of resources from the household waste stream and diversion of these resources from landfill. Also known as alternative waste treatment.
- Converts household waste to energy and/or compost depending on technology.
- Diverts between 70% and 90% of waste from landfill.
- Reduces greenhouse gas emissions by ~ 60,000 tonnes per year.

# Why Resource Recovery?

- Draft State Waste Strategy sets a recovery rate target for municipal waste of 70% by 2016 (currently 45%).
- Life of Red Hill is finite, resource recovery will help extend that life
- Part of a sustainable waste management solution building on reuse and recycling
- 2009/2010 EMRC received ~ 309,000 tonnes of waste, including 140,000 tonnes from member Councils (previous year 350,000 tonnes received)



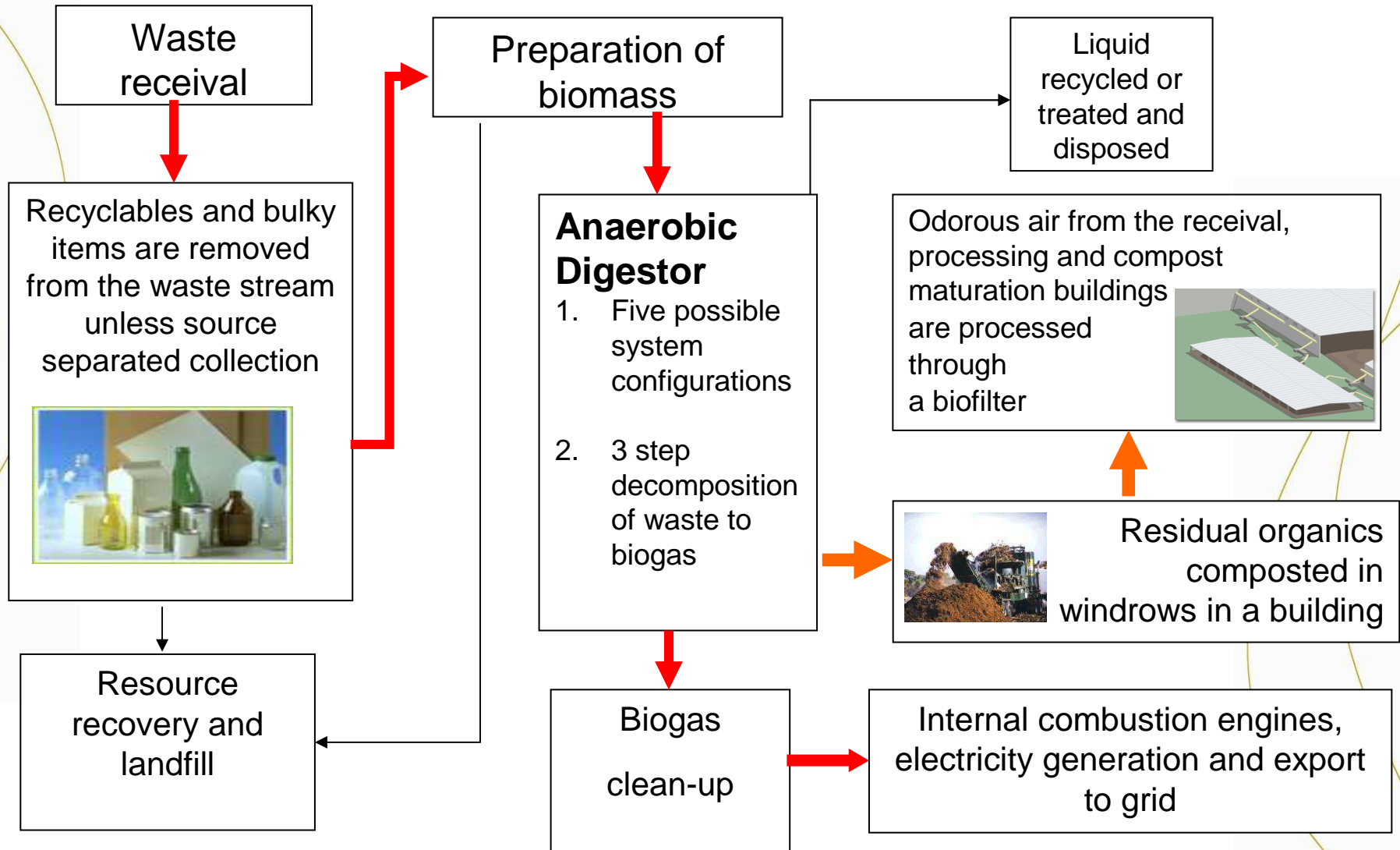
# What has EMRC been doing?

- EMRC, in partnership with its six member Councils, has been working to develop a more sustainable solution to managing waste in the region
- Future directions in waste management has been something EMRC has been investigating since the mid-1990's as part of its strategic planning
- The Resource Recovery (or Alternative Waste Management) Project has been a major development activity since 2001

# What options have been considered?

- The technology options being considered are:
    - Anaerobic Digestion (produces biogas and compost)
    - Gasification
    - Pyrolysis
    - Combustion
    - Plasma
- Thermal technologies – produce synthesis gas/bio-oil/char/electricity or heat/electricity and some residues – ash, slag

# Anaerobic Digestion



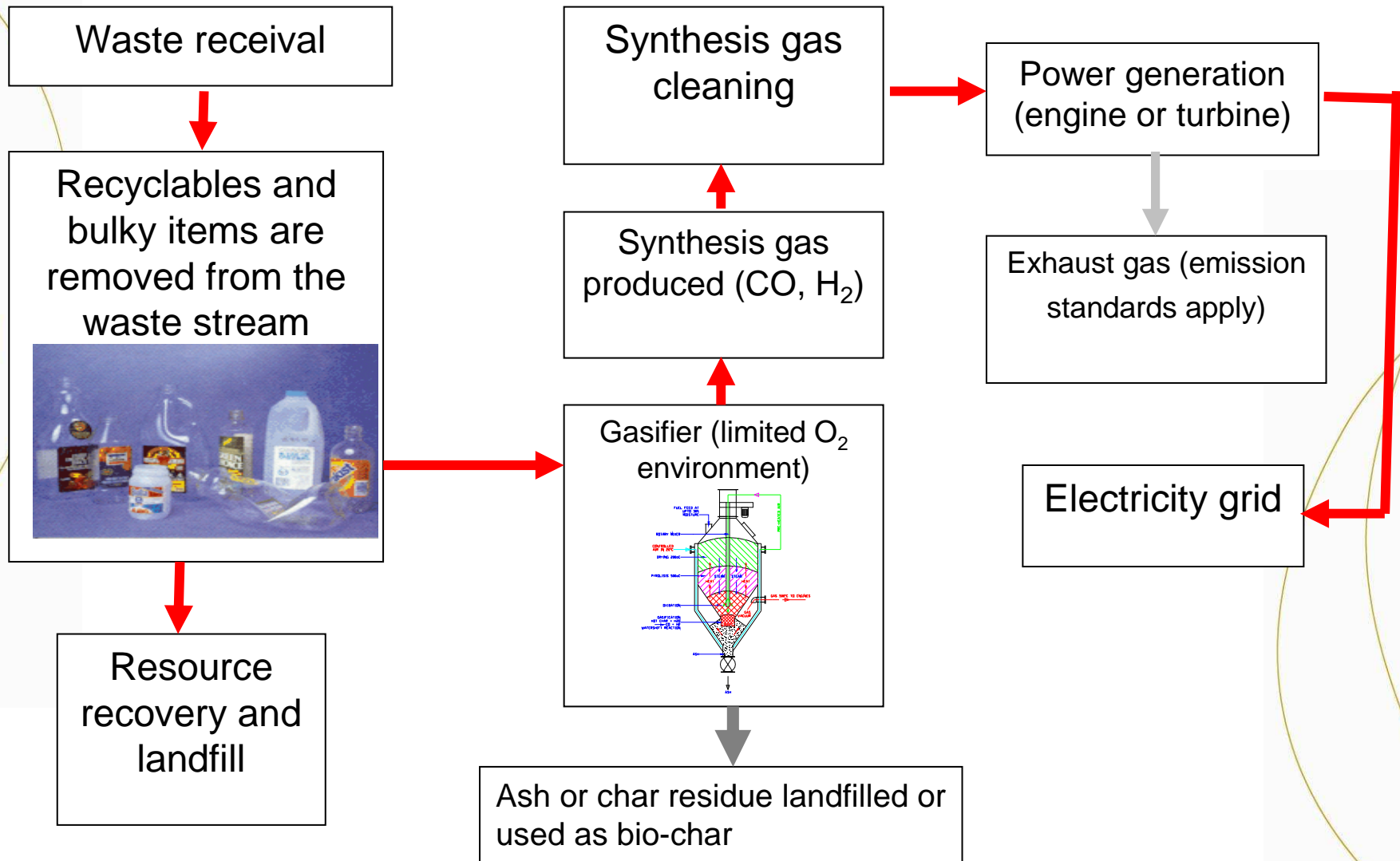


# Anaerobic Digestion

- Hundreds of technology providers and facilities world-wide using MSW, 4 in Australia
- WSN in Sydney and Bekon, Hanover, Germany



# Gasification / Pyrolysis



# Gasification / Pyrolysis

- Approximately 120 gasification plants worldwide using MSW
- Several pyrolysis plants using MSW
- Energos gasification plant, Stavanger, Norway



# Combustion

Waste receiptal  
including initial  
screening for  
hazardous content



Steam turbines  
produce electricity and  
waste heat

Electricity sold to grid,  
waste heat sold  
for district heating

Heat recovery in boiler

Exhaust gas cleaning –  
particulates, corrosives, toxics

Combustion Furnace  
(eg moving grate, 1100 °C)



Pollutants removed as  
fly ash – sent to landfill

Bottom ash processed to recover  
metals, ash used in road base or  
disposal at landfill

Strict EU emission  
standards  
for stack emissions

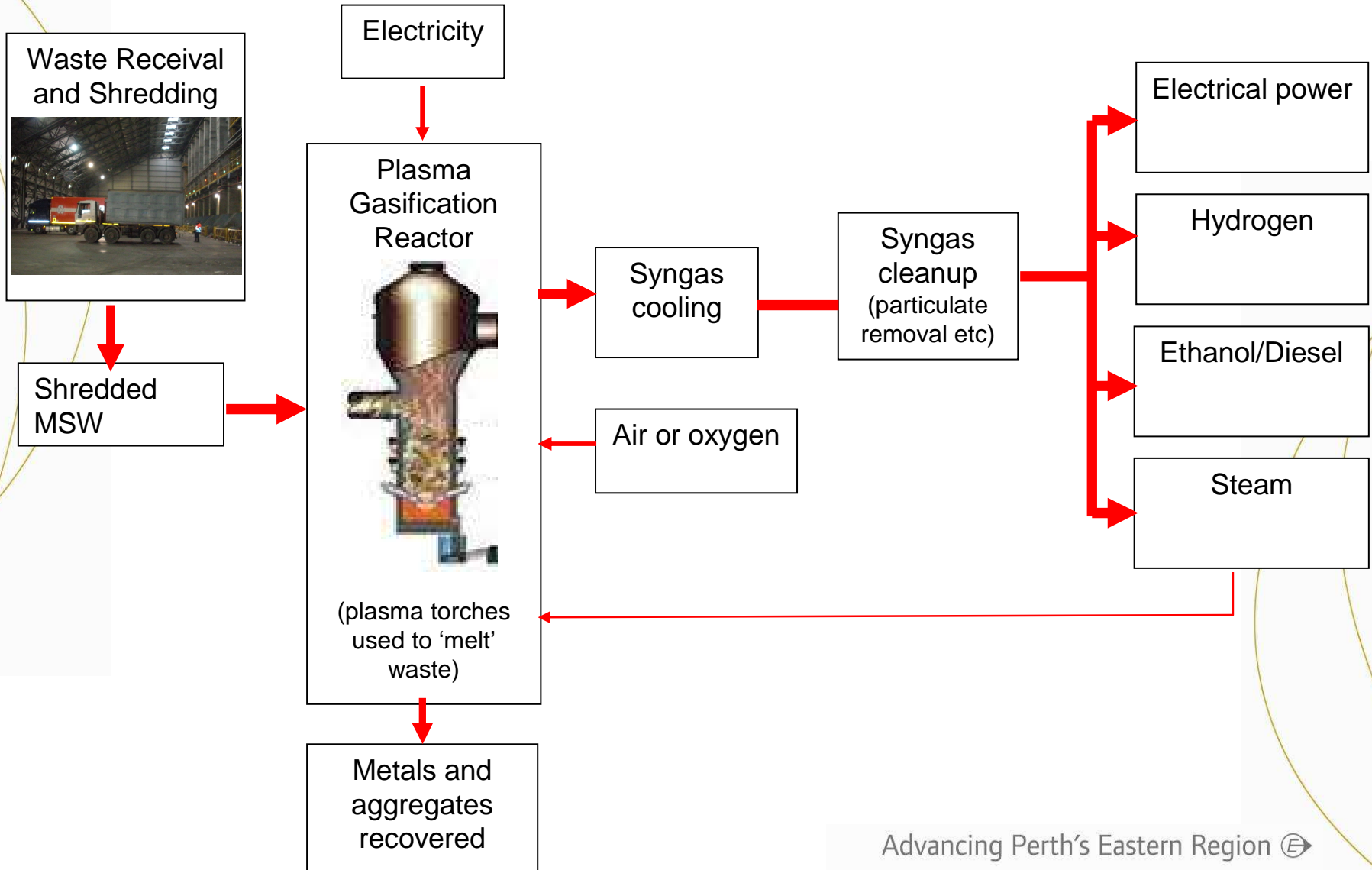


# Combustion

- About 2,000 facilities world-wide, including 1,301 facilities in Japan
- WtE facility in Villers St Paul, France



# Plasma





# Plasma

- There are about six commercial demonstration plants world-wide operating on MSW
- Connecticut, USA and Ottawa, Canada plants shown



# Renewable Power Generation

| <u>Technology Type</u>                          | <u>Net Power Export</u> | <u>Waste diverted from landfill</u> | <u>Footprint of RRF</u> |
|---|-------------------------|-------------------------------------|-------------------------|
| Anaerobic Digestion (60,000 tpa – 3 bin system) | 1.4 MW                  | 70%                                 | 3.5 hectares            |
| Gasification (90,000 tpa)                       | 8.3 MW                  | 90%                                 | 0.9 hectares            |
| Combustion (90,000 tpa)                         | 6.2 MW                  | 90%                                 | 3.8 hectares            |
| Landfill Gas & Power – Red Hill WMF             | 4.0 MW                  | 0%                                  |                         |

# RRF Site options – Red Hill WMF



# Current status

- Completed Expression of Interest process 2009
- May 2010, EMRC Council decided:
  - Red Hill Waste Management Facility is the preferred site
  - Design & Construct is the preferred contract ownership model at this stage
  - RRF technology options include:
    - Anaerobic digestion
    - Gasification
    - Pyrolysis
    - Combustion
  - Plasma only considered if part of the other thermal options
  - Third household bin to be considered in conjunction with AD technology
  - Proceed with environmental and planning approvals



# Current status

- July 2010 commenced environmental approval
- EPA have set a Public Environmental Review (PER) level of assessment
- Assessment will be based on anaerobic digestion technology and thermal technology options (gasification, pyrolysis or combustion)
- PER report available around May 2011 after detailed studies are completed

# Indicative timeline

| Date                       | Process  |
|----------------------------|--|
| July 2010                  | Commenced environmental approval process                       |
| January 2012               | Environmental and planning approvals obtained                  |
| March 2012 – July 2013     | Invite tenders, evaluate tenders, negotiate and award contract |
| August 2013 – January 2015 | Construct facility   |
| April 2015                 | Complete commissioning of RRF                                  |



# What are the cost implications?

- Capital cost estimated at between \$50 million and \$150 million – final costs will be determined at tender stage
- Additional cost per household per year estimated at between \$20 and \$60, depending on the technology option chosen

# Resource recovery park – a vision



- Proposed for EMRC's Hazelmere Recycling Centre
- Concept plan developed
- Multi-million dollar development – requiring partnerships
- Aims to bring together industry and community to enhance resource recovery
- Future activities could include:
  - Materials recovery facility
  - Commercial waste sorting
  - Reuse centre/tip shop
  - Community gardens
- Current activities - timber and mattress recycling, carpet recycling

# Timber recycling



- Recovers and processes industrial timber waste into a reusable woodchip
- Over 6,600 tonnes of wood waste recycled in 2009/2010
- Used in particleboard manufacture, poultry bedding, compost blend and coloured mulch
- Used poultry bedding is recycled into composts



# Mattress recycling



- Only WA facility for commercial recycling available since July 2009
- Capacity for up to 10,000 per year, recycled 9,300 in 2009/2010
- Steel, foam, timber and most of felt recycled
- Saves landfill airspace at Red Hill

# Community engagement



- Community engagement and waste education has been an integral part of the project
- Involves community reference groups
- Community briefings, community workshops, shopping centre displays
- Communications – website updates, community newspaper updates, mail outs, press releases, letterbox drops
- Research – surveys and focus groups
- Ongoing waste education program launched 2003 with the R-Gang, dedicated website, dedicated staff

# Community engagement

- 2004 Waste Management Community Reference Group established
  - 14 Members from six member Council areas (10 are from the original 15 members)
  - Provided feedback on project progress and waste education initiatives
- 2008 Red Hill Community Liaison Group formed – meet bi-monthly mainly on site operational issues but also for project updates
- 2010 EMRC Community Task Force formed – tasked with developing a community partnership agreement (CPA)



# Community forums



- 2005/2006 held two regional workshops covering sites, technologies, criteria and weightings, results fed into project reports
- 2008 to present - held briefings of resident & ratepayer groups and special interest groups
- April 2010 – presentation to councillors/officers and a community forum from Professor Themelis & Robin Davidov at EMRC on waste to energy technologies
- Planning another forum on anaerobic digestion technology for November/December

# Community Task Force

- July/August 2010 recruited Community Task Force
- Comprises eight community representatives
  - Two from within one km of Red Hill WMF
  - Two from between one km and ten km of Red Hill WMF
  - Four from across the region
- Two EMRC representatives
- Independent facilitator

# CTF Members

## FROM LEFT TO RIGHT

Back: Noel Hales (Hazelmere),  
Peter Jensen (Gidgegannup),  
Max Jamieson (Helena Valley)

Middle: Jan Foster-Hawking  
(Gidgegannup), Martin Chape  
(Bellevue),

Noelene Wigmore (Parkerville),  
Greg Jones (Stoneville)

Front: Joel Levin (facilitator),  
Peter Pearson (Bassendean)

## EMRC REPRESENTATIVES

(not in photograph)

Stephen Fitzpatrick, Prapti  
Mehta



# Community Task Force

- Meetings commenced August 2010 and will continue to August 2011
- This forum is to gather information and ideas for the CPA
- CTF will disseminate relevant project information to the community and bring their views back to CTF meetings

# Community Partnership Agreement



- Will document the community's requirements for operation of the facility to minimise impacts on community amenity
- Will provide a checklist for monitoring the performance of the facility
- Will be incorporated into the tender documents to be addressed by tenderers



# End

