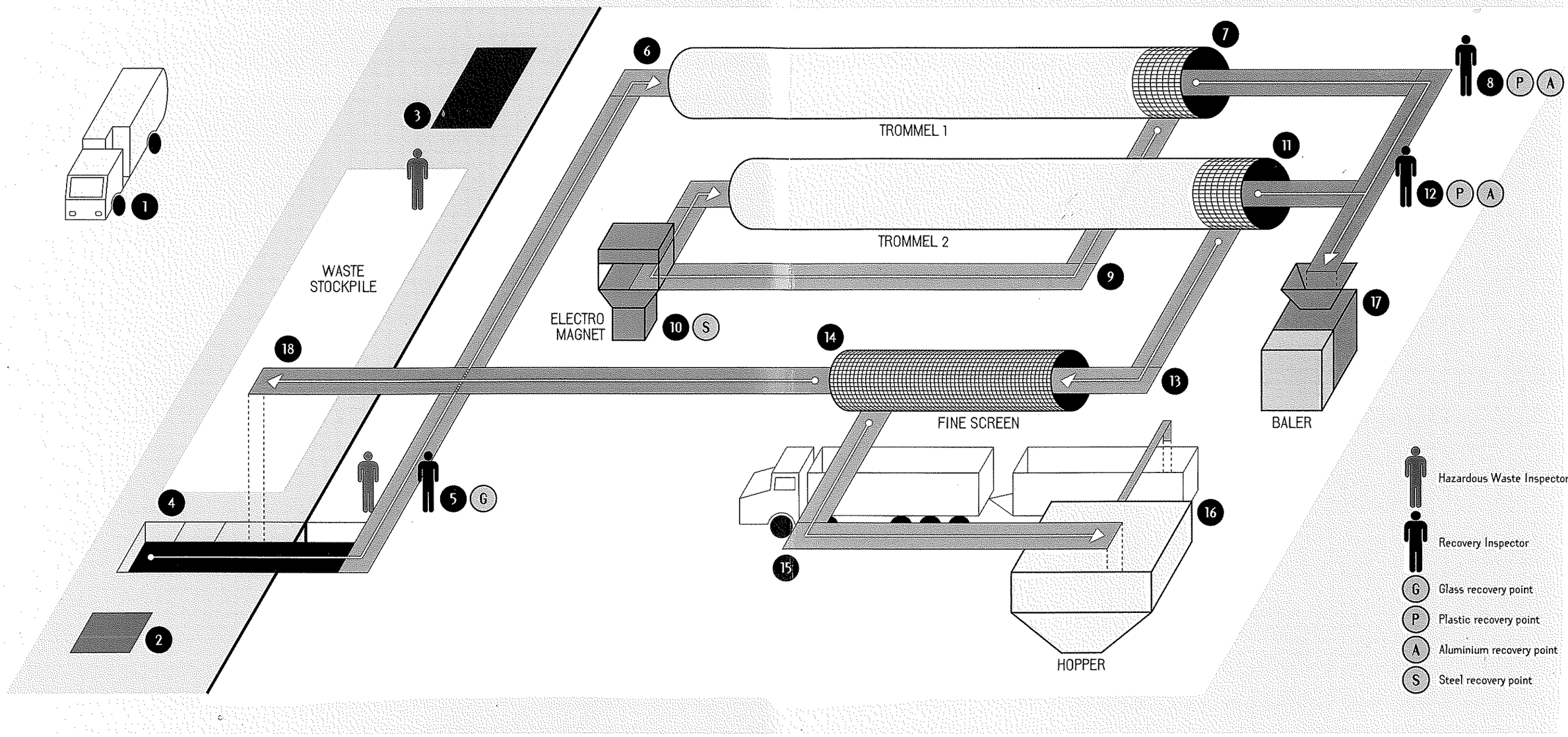
the waste sorting process



1 Domestic rubbish is collected five days a week in the City of Stirling's rubbish collection trucks. Rubbish is delivered to the plant and deposited in the enclosed waste reception hall.

2 Hazardous waste area – incorrectly disposed hazardous waste from the wheelie bin is recovered from the waste stockpile and set aside here. These are often dangerous and harmful products that cannot be recycled or sent to landfill. The City of Stirling operates a free hazardous waste disposal facility at the Balcatta Transfer Station for residents to dispose of hazardous waste correctly.

3 Non-recyclable material area – non-recyclable material from the wheelie bin is recovered from the waste stockpile and set aside here. This is combined with the output at point 17 and sent to landfill.

4 Inspected waste from the waste stockpile is loaded onto a large conveyor to begin the process here.

5 Glass recovery point – waste travelling along the conveyor is inspected and all intact glass bottles are recovered. Residents are requested NOT to wrap glass so it can be recovered at this stage. Broken bottle glass, window glass, pyrex and porcelain is not recyclable and is screened out of the final compost before it is used in agriculture.

6 Waste enters the first of the unique Atlas "trommels". A small amount of water is added to assist the process. This trommel tumbles the waste, tearing open bags, emptying tins and removing paper labels from tins and plastic bottles.

7 Trommel screen – waste material containing organics falls through the screen onto the conveyor below. Large non-organic and non-recyclable items move along to point 8.

8 Plastic and aluminium recovery point – the large non-organic and non-recyclable material is inspected and plastic milk bottles, cool drink bottles and aluminium cans are recovered ready for recycling. Non-recyclable materials continue to the baler at point 17.

9 Screened waste material from the first trommel moves along the conveyor towards the electro-magnet.

10 An electro-magnet is positioned above the conveyor and recovers all the stripped steel cans ready for recycling. Waste material then moves along the conveyor to the second trommel.

11 The waste material is tumbled a second time. Waste material containing the organics falls through the screen to the conveyor below. Smaller non-organic materials are screened out and move along to point 12.

12 Plastic and aluminium recovery point – the non-organic and non-recyclable material is inspected and plastic milk bottles, cool drink bottles and aluminium cans are recovered ready for recycling. Non-recyclable materials continue to the baler at point 17.

13 Screened waste material, now rich in organics, moves along the conveyor towards the final screen.

14 Waste material is tumbled a third time. Organic-rich material falls through the screen to the conveyor below. Finer non-organic material is screened out and moves along to point 18 to to be re-processed.

15 Organic-rich material moves along the conveyor to the hopper.

16 Waiting trucks are loaded with the organic-rich material. This is delivered to a 25,000-acre farm at Calingiri where the organic material is turned and matured for 14 weeks to become compost. This compost is a valuable source of hummus, bacteria and some minerals, perfect for use in depleted agricultural soils.

17 The baler collects and compacts the non-recyclable materials for delivery to a landfill site.

18 Fine non-organic material rejoins the cycle to be re-processed.

The whole process takes a little over one hour from when the waste first enters the cycle (4) to loading the organic-rich material onto the waiting trucks (16).

The City of Stirling has confronted the challenge to reduce the amount of domestic rubbish going to landfill.

The solution has created a recycling revolution.

revolution

International, National and State covenants have been established to reduce greenhouse gas emissions by reducing the amount of household waste sent to landfill.

In Western Australia, the government has adopted a vision of zero waste to landfill by the year 2020.

Recycling is one of the techniques used to reduce waste going to landfill. It is the third step in the trilogy of Reduce, Reuse and Recycle.

The recycling of plastic and glass bottles and steel and aluminium cans saves non-renewable resources and reduces greenhouse gas emissions by reducing the energy used to produce the packaging products. However, packaging containers make up less than 10% of the City's domestic waste stream.

Although organic materials (food, garden waste and paper products) are made from renewable resources, they make up the largest part of the domestic waste stream (in the order of 70%) and breakdown to produce greenhouse gas and leachate when disposed of in rubbish tips.

While methods of recovering bottles, cans and paper are well established, the recovery of the organic component using multiple bins is difficult and expensive.

The use of the Atlas sorting process allows the City of Stirling to adopt the single bin method of recycling. This has overcome the problems of:

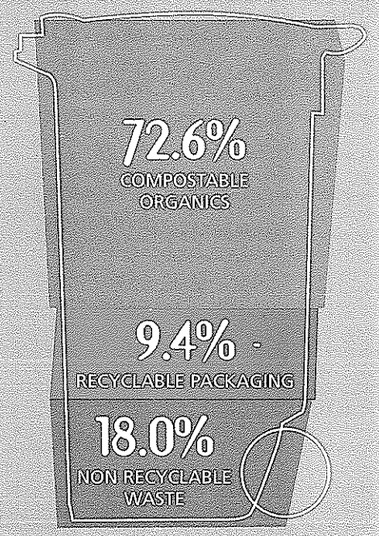
- Low participation rates – ***the contents of every bin is recycled.***
- Recycling organics as well as the packaging containers.
- Pollution from additional collection vehicles used to collect multiple bins.

As an added environmental bonus, recycling the organics in to compost and using it to grow crops allows the City's waste stream to become a valuable tool in maintaining crop production as the amount of usable farmland reduces due to factors such as dry land salinity and soil acidity.

A truly sustainable process.

typical wheelie bin contents

from DOMESTIC WASTE ANALYSIS 1999
for the City of Stirling by MURDOCH UNIVERSITY



City of Stirling's single bin

recycling

The City of Stirling introduced Single Bin Recycling in November 2001. The result has been an increase in the amount of domestic waste being recycled from 10 per cent to more than 60 per cent. This success is unmatched by any other local authority in Western Australia.

The key element to the success of Single Bin Recycling is the Atlas Materials Recovery Facility (MRF) in Noranda. Atlas, a Western Australian owned company built the facility using local resources in 1997.

The facility handles all of the City's domestic waste. It represents world's best practice and can sort all of the material placed in the household wheelie bin by separating out the recyclable components. Materials recycled include organics (food, garden waste and paper) and non-organics such as glass and plastic bottles as well as steel and aluminium cans.

The strength of the Single Bin Recycling system is that there is no requirement for the householder to pre-sort waste into multiple bins. Waste from the household wheelie bin is sorted at the facility on the day it is collected.

After sorting, the organic component is composted for use as a soil enhancer in agriculture. The non-organic materials (glass, plastic, aluminium and steel etc) are sold back to industry for recycling.