



CASE STUDY – IMPROVING RESOURCE RECOVERY CENTRES

Wycheproof Resource Recovery Centre

Overview

The Buloke Shire Council has recently upgraded its resource recovery centre that services the small regional locality of Wycheproof, located in north-west Victoria. The resource recovery centre, which is located approximately five kilometres to the west of the town, underwent the following low-cost, yet effective, upgrades, which were completed in March 2015:

- > closing of the site's landfill
- > installation of a drop-off ramp and platforms that utilised shipping containers and used tyre retaining walls.

Waste and recycling items accepted

The resource recovery centre provides the Wycheproof community with a dedicated facility where a number of recycling streams (presented in the table below) can be dropped off and source-separated, along with some general waste items. The site does not accept asbestos and prescribed or liquid wastes of any kind.

Recyclable items accepted

- > household recyclables (e.g. mixed glass bottles and jars, plastic containers and bottles, aluminium cans, steel cans, paper and cardboard)
- > scrap steel including car bodies and wire
- > white goods including fridges, freezers, washers, dryers and water heaters
- > green waste
- > tyres
- > e-waste (computer peripherals and televisions)
- > mattresses.

Continuous upgrades towards best practice

The upgrade works commenced in October 2014 and were completed in late March 2015, with the main objectives to:

- > upgrade the existing facilities at the site to meet best practice and align with the Buloke Shire Council's Buloke Waste Management Strategy (2012 – 2022)
- > close the site's landfill (although the site still maintains a deceased animal pit)
- > improve the site layout, to allow easier access and a better flow of traffic
- > increase the site's capacity in order to reduce collection frequencies
- > allow easier and more effective separation and sorting of recyclable materials, which would lead to increased diversion rates and resource recovery.

With only a small budget of approximately \$50,000, of which \$25,000 was contributed by Sustainability Victoria, Buloke Shire Council and its contractors utilised as many re-usable materials available at the site as possible.

Through liaising with local businesses and researching other resource recovery centre upgrades, the council ultimately decided to make the following upgrades:

- > Construct retaining wall and drop-off platforms utilising used shipping containers, as well as used tyres.
- > Restructure and seal the site roads, ramps and platforms.
- > Install safety barriers and signage at the drop-off platforms.
- > Lay down a reinforced concrete slab to support two 33m³ hook-lift skip bins (for waste and recycled goods to be dropped off)
- > Rehabilitate the landfill site.

The final total cost for the upgrade was slightly over budget at approximately \$56,000, however, this is still reasonably low priced for an upgrade of this calibre. The main cause for this overspend was a lack of locally available gravel and clean fill for the site, which needed to be transported from outside the Wycheproof region. The two shipping containers were relatively inexpensive, at approximately \$3,500 per container.

SNAPSHOT

TONNES PROCESSED

Resource recovery centre:
Approximately 160 tonnes to landfill and 147 tonnes recycled per annum.

NUMBER OF STREAMS RECYCLED 7

TYPE

Resource recovery centre, via customer "Sort & Save", via platform drop-off arrangement.

NUMBER OF OPERATORS REQUIRED

One

FUTURE OPPORTUNITIES

- > updated data management system
- > resale shop
- > improved drainage works.

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The upgrade was also an opportunity to improve site management practices. Key outcomes from the upgrade include:

- › Since the conversion to a resource recovery centre, wind-blown litter has been reduced significantly (being in a wind prone region, wind-blown litter had been a problem when the site operated as a landfill).
- › Green waste is now shredded to use as mulch for rehabilitating areas of the landfill, and will be offered back to the community once the quality is acceptable, rather than being burnt annually as was done previously.
- › The OH&S for employees and the general public at the shire has improved with an improved site layout and better safety rails and gates at the tipping point.
- › The public can now easily drive their utes or trailers to the tipping face of skip bins via the ramp and platforms, as well as to the scrap metal, green waste and mattress drop-off areas, the cardboard and glass/plastic recycle skip bins and the e-waste cage.
- › The general consensus from business and the general public is the resource recovery centre is more user friendly and aesthetically pleasing since the upgrades, which encourages them to sort their loads.
- › The resource recovery centre operator has seen huge improvements with load sorting and a greater understanding and importance of recycling among its visitors.

Management of the facility

The resource recovery centre is council owned and managed. One operator per shift oversees the site, with a pool of adequately trained relief operators available to fill in shifts where required. Since the upgrades, the regular operators have taken greater ownership for the site, which helps keep relief operators accountable. The resource recovery centre is open from 2.30pm to 5.30pm Mondays and Fridays, Wednesdays from 9.00am until 12:00 noon, and Sundays from 12.00 noon to 5.00pm.

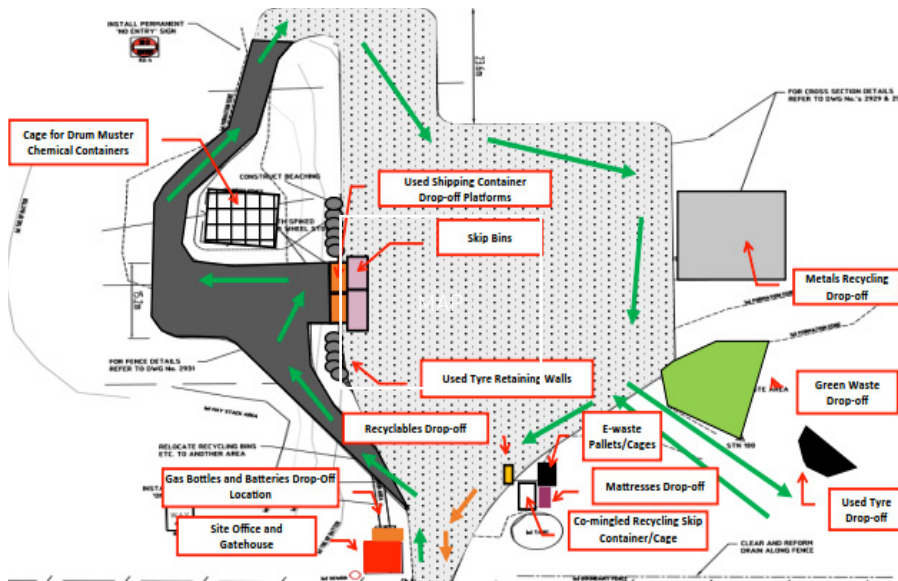
Due to the remoteness of the site and region, there is a challenge in getting all of the operators from the council's various resource recovery centre and landfill sites in the same place at the same time to conduct training. To help overcome this challenge, the council has developed in-house manuals, which are at all sites, and conducts "toolbox meetings". The toolbox meetings enable the site operators to get together, usually once or twice a year and on a weekday evening, to discuss and conduct training sessions regarding:

- › OH&S
- › improving site operations
- › data collection
- › general site management and improvement opportunities.

Data collection and management are further challenges in managing the site, currently involving very simple hand written receipts and spreadsheets. Further, some of the operators who are not as familiar with the latest technology find it difficult to learn new systems, such as the spreadsheets, and users who do not input data correctly can corrupt these spreadsheets. Because of this, managers are currently backing up data in a master spreadsheet on a weekly basis, which is time-consuming. To improve this, the council is working towards designing and implementing an easier to use, more secure and more accurate data collection and management system for resource recovery. This system will be used on tablets and improve the timing for invoicing of resource recovery centre account holders.



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Key learnings for similar low cost upgrades

A number of challenges and key learnings were identified during the upgrade that should be considered by resource recovery centres/transfer stations interested in implementing similar innovative and low-cost upgrades. These include:

- › Ensure shipping containers used for retaining walls are cross-braced to prevent bowing of the exposed wall when compacting fill inside the container.
- › Ensure the gap between the shipping containers is filled by welding steel plate between the gap on the front face, to prevent back fill from escaping due to erosion at the tipping face.
- › When swapping bins out, the waste contractor makes every effort to get the bins as close to the tipping face as possible, however rubbish does tend to fall into the gap. A potential remedy to this is installing a hard rubber stop, similar to the rubber bump stops in truck loading bays, along the top edge of the tipping face. The bin could then be pushed up against this to fill the gap.
- › The hook-lift bins have mesh lids, which minimise the drifting of litter from the bins. However, the lids do not currently open high enough for the backhoe to be able to access the rubbish to compact it. The consequence of this is a need for more frequent pickups of the bins and light loads going to landfill. Negotiations are currently underway with the waste contractor to redesign the bin lids' lift mechanism to allow them to open wider.

Site layout

The site layout, depicted above, enables effective source separation and drop-off for the customers at the facility through the following process:

- 1 Customers enter the resource recovery centre at the gatehouse.
- 2 The gatehouse operator determines the fee for the customer's load, which is based on:
 - the vehicle or trailer volume
 - the type of load (i.e. general waste load, furniture)
 - the amount of recyclable material able to be separated within the load (i.e. plastics, metals).
- 3 Customers drive through the resource recovery centre and drop-off waste and recyclables into the designated bins and areas.
- 4 Machinery is used by operators to transport and compact waste and recyclables and bins.

Equipment

The main equipment utilised by the resource recovery centre is a small front-end loader with an attached backhoe. Operators use this to assist in manoeuvring material at the site, as well as to compact waste and recyclable materials.

Future opportunities

Further opportunities identified include:

- › Redesign of the lift mechanism on the mesh lids on the bulk bins, which would allow them to open up high enough to compact rubbish in the skip bins using the backhoe.
- › Planned introduction of electronic data recording in the next financial year to improve data capture and consistency for reporting.
- › Planned upgrade of site office to improve amenities for operator in the next financial year. As part of this upgrade, line of site to monitor customers using the facilities will be improved to ensure dumping of rubbish is carried out correctly and materials are deposited in the correct locations to reduce contamination.
- › Improved drainage works planned to assist with the removal of standing water in areas that limit access to stockpiles.
- › Potential resale shop (most likely utilising shipping containers again), which could be transported to the local markets for resale of the items



Further information

For more information contact Sustainability Victoria on 03 8626 8700 or visit www.sustainability.vic.gov.au