Handbook for Design and Operation of

Rural and Regional Transfer Stations

Case Studies 25-37




Department of **Environment and Conservation** NSW

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25. Berridale Transfer Station

Snowy River Shire Council

Key Facts	
Throughput (tonnes/year)	220tpa mixed waste + 550tpa recyclables*
Cost to build ($)	~$50K
Owner	Council
Operator	Cooma Monaro Shire Council under contract to Snowy River Shire
Designer	Cooma Monaro Shire Council
Topography	Sloped
Site	Former landfill
Key Features	
Single weighbridge	✗
Dual weighbridge	✗
MRF	✗
Landfill	✗
Education centre	✗
2nd hand store	✗

* Does not include separated timber, construction and demolition materials, tyres, or drumMuster.

Berridale transfer station is in the town of Berridale situated to the south-west of Cooma. The Berridale transfer station is open between 2:00pm to 6:00pm Tuesday, Thursday, Saturday and Sunday, and is supervised during these times.

25.1 Project drivers

Snowy River Shire Council is following a strategic direction to close existing small landfill sites and move to a waste management system utilising transfer stations with waste transported to a regional landfill for disposal. The Berridale transfer station is located on the site of a former unsupervised landfill that was closed as part of following this strategy. Council also supports the operation of transfer stations due to improved safety compared to the former unsupervised landfill sites, and opportunities for increased resource recovery.

25.2 Design and construction

25.2.1 Site layout

The transfer station is constructed on a former landfill site and the layout makes best use of the sloping site. Drop-off points for recyclables such as waste oil, chemical drums, computers, tyres are located along the internal road leading to the transfer station platform. The platform consists of three bays to accommodate bulk containers for mixed waste and cardboard. Concrete blocks

have been used for the platform retaining wall, and concrete slabs are provided on top of the platform for at the base to support the bins.

Photo 25.1 Transfer platform

Stockpiles for larger bulkier items such as mattresses, scrap steel, and construction and demolition materials are located on higher ground behind the transfer station platform.

25.2.2 Bin capacity

Residual waste is collected in 33m^3 bins (modified shipping containers) as shown in Photo 25.2. The mixed waste container is fitted with a lid to prevent vermin from entering the waste and to help control wind blown litter. Bin lids are either kept open during operating hours or closed depending on weather. Two openings have been cut in the lid and fitted with smaller covers (as shown in Photo 25.2) to allow customers to easily dispose of domestic wastes without requiring to opener bin cover.

A 33m^3 shipping container is also provided for collection and transport of cardboard, Over 50 tonnes of paper and cardboard are collected from the Berridale transfer station each year.

Photo 25.2 Mixed waste container with lid

25.3 Resource recovery

Significant resource recovery initiatives are in place in conjunction with Cooma Shire Council under regional waste management arrangements. Through Council and contractor initiatives, services have now been put in place for separate recovery of:

- Paper/cardboard
- Glass
- Plastics
- Aluminium cans
- Steel cans
- Scrap metal and white goods
- Motor oil
- Gas bottles
- Cooking oil
- Mobile phones and phone batteries
- Smoke alarms
- Lead acid batteries
- Mattresses and some furniture[10]
- Computer equipment
- Shopping bags and
- Empty chemical containers (collected under the drumMUSTER program).

Provisions are also made for separation of tyres, timber, wood, garden organics, and construction and demolition materials. These materials are not currently recycled but are available to the general public.

Receptacles used for collection of domestic type recyclables (glass, plastics, aluminium and steel cans) include wire storage cages, skip bins, drums, and mobile garbage bins as shown in Photo 25.1, Photo 25.3 and Photo 25.4.

Photo 25.3 Glass recycling skips

[10] Suitable for recovery of metal

Photo 25.4 Cardboard recycling skip and containers for shopping bags, aluminium cans, and steel cans

Photo 25.8 Concrete and brick stockpile

Photo 25.5 Computer collection point

Photo 25.9 Building and demolition rubble stockpile

Photo 25.6 Cooking oil collection (Note: Cooking oil should be stored in a covered and bunded area)

Photo 25.10 DrumMUSTER and motor oil collection point

Photo 25.7 Stockpile of mattresses and furniture

25.4 Site operations

Council reports that Berridale transfer station is a well operated site that is supported by the local community. Council credits part of the efficient site operations to having staff local to the area employed in the management and supervision of the facility which has led to positive staff/ customer relations.

26. Nimmitabel Transfer Station

Cooma Monaro Shire Council

Key Facts	
Throughput (tonnes/year)	160 tpa mixed waste + 140 tpa recyclables*
Cost to build ($)	~$40K
Owner	Council
Operator	Council
Designer	Council
Topography	Relatively flat, slight slope
Site	Former Landfill
Key Features	
Single weighbridge	✗
Dual weighbridge	✗
MRF	✗
Landfill	✗
Education centre	✗
2nd hand store	✗

*Does not include separated scrap steel, timber, organics, construction and demolition materials, or tyres.

Nimmitabel is located 26km south of Cooma and has a local population of approximately 500. The Nimmitabel transfer station receives approximately 190 tonnes per year of mixed waste and recyclables (not including scrap steel and separated timber and organics). Transfer station operating hours are 9.00am to 12.00pm Monday, Friday and Saturday; 9.00am to 5.00pm Sunday; and 2.00pm to 5.00pm on Wednesday.

26.1 Project drivers

An unsupervised landfill was formerly in operation at the current transfer station site. Council concerns of safety risk and environmental impacts from the unsupervised landfill led to a decision (approximately 10 years ago) to replace it with a transfer station with limited supervised operating hours. Operation of a supervised transfer station was also desired as it would enable Council to pursue greater options for resource recovery of materials as they became available.

26.2 Planning and development

26.2.1 Site selection

The Nimmitabel transfer station was constructed on the former landfill site as the land was available to Council and historically used as a waste facility. It was also a preferable location for continued servicing residents in the Nimmitabel township.

26.2.2 Development timeline

The total timeline for planning and development was less than one year, and included:

- Design of the proposed facilities by Council staff;
- Submission and approval of a development application (approximately 2 months); and
- Construction of the transfer station platform and required site works, which was undertaken by contractors (approximately 3 months).

26.2.3 Community consultation

One of the main drivers for the construction and operation of the new transfer station was to increase site safety by ensuring supervision during operating hours. Council employed a consultation strategy to come to an agreement with the community about limiting the facility operating hours. The strategy was as follows.

Operating hours of the new transfer station were not restricted immediately following commissioning of the new transfer station. For approximately one month, a Council staff member was placed at the transfer station site and took note of customer visitations throughout each day of the week. This information was later summarised by Council and used to draft proposed restricted opening hours. The proposed hours and information collected from the month long survey were then put to the Nimmitabel community at a local meeting with residents.

Survey information indicated that few (or no) residents accessed the facility on Tuesdays and Thursday, compared to the busiest times on Monday and Wednesday mornings and on the weekends. Discussions with the local community were used to come to an agreement that the facility would be open for 24 hours per week during the busiest times. This consultative approach has resulted in having facility operating hours supported by the majority of the local community.

26.3 Design and construction

26.3.1 Site layout

The design and layout of the transfer station has made use of the natural highs and lows of the former landfill site. The transfer station platform has been constructed in the centre of the site, with provisions for separate drop-off of scrap metal, timber, garden organics, waste cooking and engine oil, and mattresses located around the platform.

Each area is clearly marked with signs and internal roads leading to each area are highlighted by tyre borders (see Photo 26.2).

The transfer station platform has been constructed with a concrete top and bottom slab and concrete block retaining wall (as shown in Photo 26.1). There are handrails along the platform edge for safety. A shed is provided on the transfer platform for staff to provide protection from the elements due to the cold climate in Cooma during winter months (shown in the rear of Photo 26.5).

Photo 26.1 Transfer station platform

Photo 26.2 Layout of internal roads

26.3.2 Bin capacity

Bins are provided by Council's contractor (responsible for removal of all mixed waste and recyclables from the site). The Nimmitabel transfer station currently has in place two 33m^3 bins (which are actually retrofitted shipping containers), one each for cardboard and mixed waste.

Bins have been provided with lids which are left closed outside operating hours. This assists to prevent vermin entering the waste left onsite between collections. Lids also prevent rain ingress to the cardboard and control of wind blown litter.

The height of each bin sits above the transfer station platform and a metal plate (such as that used at Berridale, see Chapter 25) is used to prevent waste from falling between the platform and the bin, and to assist prevent customer slips and falls.

Photo 26.3 Bulk shipping containers used for transfer of mixed waste and cardboard

26.4 Resource recovery

Council is committed to maximising recovery of materials for beneficial reuse and preventing potential harm from inappropriate disposal of materials such as batteries and mobile phones in the mixed waste stream. It is hence always investigating potential opportunities to increase resource recovery from its rural and regional waste facilities with the assistance of its contractor.

Through Council and contractor initiatives, services have now been put in place for separate recovery of:

- Paper/cardboard
- Glass
- Plastics
- Aluminium cans
- Steel cans
- Scrap metal and white goods
- Motor oil
- Gas bottles
- Cooking oil
- Mobile phones and phone batteries
- Smoke alarms
- Lead acid batteries
- Mattresses
- Computer equipment and
- Shopping bags.

Provisions are also made for separation of tyres, timber, wood, and garden organics. Potentially reusable items are also separated from general mixed wastes and kept on the transfer station platform for sale to customers.

Receptacles used for collection of domestic type recyclables (glass, plastics, aluminium and steel cans) are in the process of being upgraded from wool-sacks and metal drums (shown in Photo 26.4) to wire storage cages and skip bins such as those in use at Cooma landfill and Berridale transfer station (see Chapter 25).

Customer relations management is included as part of the training provided to transfer station staff. This training assists staff to provide better service to the community and to educate customers about the resource recovery services provided by Council.

Photo 26.4 Plastics recycling at Nimmitabel

Photo 26.5 Colour separated glass and aluminium can collection

Photo 26.7 Stockpiled timber and wood

Photo 26.6 Scrap metal stockpile

Photo 26.8 Separate collection of waste cooking and engine oil

27. Cowra Waste Management Centre

Cowra Shire Council

Key Facts	
Throughput (tonnes/year)	6,000 tpa mixed waste* + 1,200 tpa construction and demolition + 1,500 garden organics + 1,000 tpa other recyclables
Cost to build ($)	$1M
Owner	Council
Operator	Council
Designer	Combination – Council and sub consultant
Topography	Slight slope – almost flat
Site	Greenfield
Key Features of site	
Single weighbridge	✓
Dual weighbridge	✗
MRF	✓
Landfill	✓
Education centre	✗
2nd hand store	✓

*Includes waste disposed of directly to landfill and not through the transfer station.

Cowra Shire Council (CSC) operates a WMC at Cowra that incorporates a MRF, landfill, and transfer station. The WMC is a full cost recovery centre and is the major waste management facility in the Cowra LGA; handling all kerbside collected waste and recyclables as well as self-hauled waste, and commercial loads from the shire. There are also eight village recycling stations in the shire.

27.1 Project drivers

Prior to 1998 CSC operated a landfill that was approaching full capacity. In addition, the site was also under encroachment by surrounding housing developments, reducing buffer zones around the site. This prompted CSC to investigate alternative sites for a new WMC. CSC opted to build a transfer station and MRF to coincide with establishment of a landfill at the new WMC.

Drivers for the construction and operation of the transfer station included:

- The desire to increase resource recovery and conserve landfill airspace;
- Cost recovery opportunities, reducing the impact of Councils General Fund;
- The need for restricted access;
- Environmental responsibilities and obligations as set by the EPA; and
- Customer service and satisfaction.

The MRF allows for manual sorting and processing of recyclables collected from domestic households using the current crate service collections, as well

as recyclables self-hauled and dropped-off at the WMC. Recyclables are baled and transported to markets in Sydney for processing.

An effective reuse centre operates at the MRF. People drop goods off that may be purchased by others that wish to reuse them.

27.2 Planning and development process

27.2.1 Site selection

CSC selected an appropriate site for establishment of the new WMC by considering:

- Available land that was already owned by Council;
- Buffer zones around the site;
- Life span potential; and
- Accessibility for customers and collection vehicles.

27.3 Community consultation

Intensive public consultation was undertaken over the 18 month period leading up to the opening of the new WMC. Various public meetings, editorial and direct education campaigns were conducted to explain to residents and ratepayers the need, opportunities and benefits of the new WMC.

27.3.1 Education program

When the new WMC was developed a new kerbside recycling system was introduced and an education program was undertaken. This was a six-month campaign that largely targeted commercial operators, households, and school groups. Information distributed as part of the campaign contained information about the new recycling program as well as the operation of the MRF at the WMC.

School groups regularly visit the Cowra WMC for educational purposes. They undertake specific annual projects that include a site visit the facility.

27.4 Design and construction

18 months of research and investigation went into the design that would best meet Councils requirements, state government legislation and public demand. All design and construction was carried out internally by Council staff.

Only small vehicles and trailers are permitted at the Cowra waste transfer station. The design has therefore been based around efficient servicing of these vehicles, since commercial vehicles go directly to the landfill tipping face.

27.4.1 Site layout

All vehicles must pass through a single lane weighbridge to enter this site. There is a boom gate at the end of the weighbridge to prevent access to the site without notification of the gatehouse attendant.

The site layout is designed so that small vehicle traffic is directed in a clockwise direction around the different drop-off points as shown in Photo 27. 5. Vehicle movement around the transfer station is one-way traffic flow only. The larger vehicles proceed past the recyclables drop off area and reuse centre and continue through to the landfill tipping face.

There is extensive and well maintained landscaping at this site which has resulted in a very positive impact on visual amenity. CSC has reported that this factor, plus a commitment to a very high standard of housekeeping has had significant benefits in respect to customer behaviour. The management approach appears simple ie: because the site is a nice clean place to visit, customers do the right thing in regards to waste separation and appropriate disposal.

Photo 27.1 Site entrance

Photo 27.2 Site weighbridge

Photo 27.3 Landscaping on roundabout, visible as you enter the WMC

Photo 27.4 Trees planted along boundary to assist visual screening

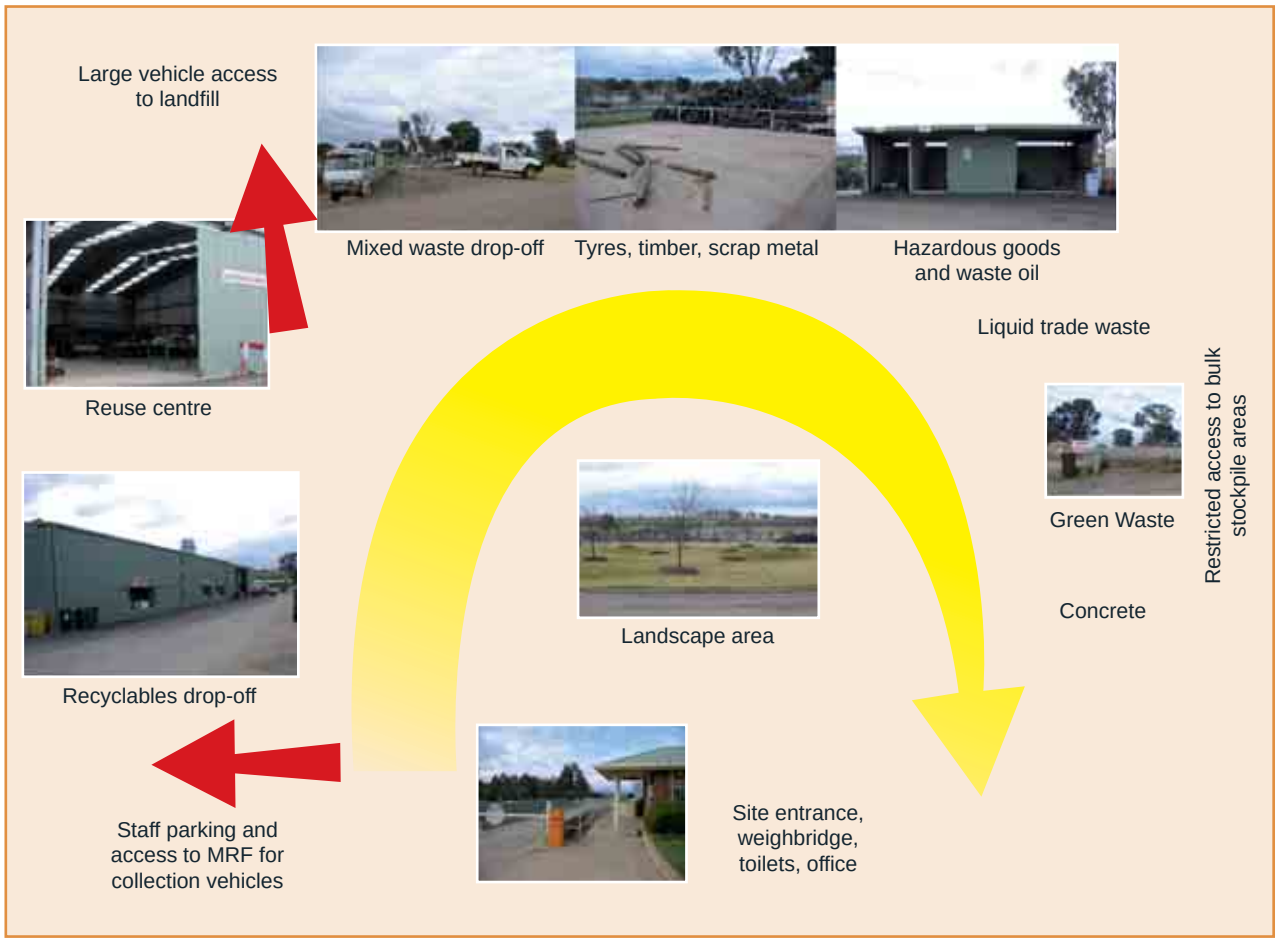

Photo 27.5 Site layout of Cowra transfer station

27.4.2 Recyclables drop-off shed

The recyclables drop-off area consists of skip bins for recyclables placed within a shed enclosure and “windows” for each of the different recyclables cut out of the shed side. This design enables customers to place recyclables into the skip bins from outside of the shed (see Photo 27.6).

Photo 27.6 Recyclables drop off

27.4.3 Reuse centre

CSC deliberately developed a large shed to provide ample undercover floor space to meet future storage and sorting requirements. This allows floor space for the reuse centre and undercover storage of kerbside collection service bins, it will also provide room to expand future resource recovery and reuse activities.

27.4.4 Transfer vehicle

Due to the relatively small waste throughput, customers dispose of mixed waste loads into the tray of a parked site truck as shown in Photo 27.7 (owned by CSC). The truck is then emptied at the landfill (onsite) as required. This eliminates the need for use of bulk skip bins and a special vehicle for collection and transfer of the skip bins for mixed waste.

There is provision to have up to two vehicles parked in the designated concrete hard-stand area if required, however WMC staff manage variations in waste throughput by using either the smaller or larger site truck as required.

Photo 27.7 Mixed waste drop-off

27.4.5 Platform

The height of the platform is approximately 1m above ground level. The platform height was designed to accommodate the use of tray-trucks for collection and transfer of mixed waste as per current practice, but it will also support the future use of bulk skips if required. There are moveable safety barriers across the drop-off area. Barriers are generally left in the lowered position when the drop-off area is in use.

The platform retaining wall is constructed of precast concrete blocks. There is a steel grate to cover the gap between the truck and the platform ledge. The grate folds up when not in use.

Grades and benches were constructed utilising existing natural contours.

27.4.6 Design for Supervision and Security

The WMC is designed to be a user-friendly facility. Staff do not directly supervise customers, instead a number of staff move around the WMC providing assistance to customers and ensuring waste and recyclables are being disposed of appropriately. This encourages visitors to the facility to have practical knowledge about sorting what is and isn’t recyclable and a visual understanding of the process involved.

There are 11 permanent staff and 1 casual on-site at the Cowra WMC. This is due to the co-location of the landfill, MRF, transfer station, as well as CSC's waste management staff in the WMC office (as opposed to in Council chambers). Greywater is also managed by the WMC. This central location of staff and management of like areas allows diversification of staff skills and utilisation in all areas of the WMC.

27.4.7 Timing

The WMC commenced operation in 1998 with a period of 3 years from feasibility and commissioning. This included time spent visiting a range of other transfer stations to obtain ideas for the design of the Cowra facility.

27.4.8 Drainage

Water runoff from the site is directed to a silt dam where it is regularly tested. This water is then reused to irrigate trees and lawn, vehicle wash down and fire fighting activities.

Rainwater from the MRF and reuse centre roof is drained into two rainwater tanks located behind these sheds (see Photo 27.8). The tank water services all WMC amenities including the office. No town water ids used at the WMC.

Photo 27.8 Cement rain water tanks behind the MRF and reuse centre

27.5 Construction

27.5.1 Costs

The setup cost of the transfer station was approximately $985K, this included the cost of the WMC site weighbridge, gatehouse and office, MRF and reuse sheds, but excludes the cost of MRF equipment, plant and the landfill cell. The WMC generates a surplus and a portion of these funds go into an Environmental Reserve used for environmental activities including education campaigns.

27.5.2 Structures used for separation of recyclables

Designated storage bays for separated bulky recyclables including whitegoods, tyres, timber, and scrap steel have been constructed using sheet metal strips as shown in Photo 27.9. Operation of heavy equipment for collection and movement of these recyclables has led to significant damage to the structures, particularly as the physical structure of the bulky items increases the likelihood of bits of steel or timber being caught in the gaps between the strip sheeting. The metal strips are also rusted and weakened.

Finances permitting, WMC staff would recommend changing the construction of the storage bays from their current form to concrete walls to prevent further damage.

Photo 27.8 Cement rain water tanks behind the MRF and reuse centre

Photo 27.10 Damage to storage bays

Photo 27.11 Damage to storage bay

27.6 Operation

27.6.1 Weighbridge

The design of the gatehouse and site office features a walkway between the office and the weighbridge customer (see Photo 27.12 and Photo 27.13). This ensures the weighbridge attendant is safe from vehicle access yet has direct contact with the customer to gain money and vehicle details such as registration details. The attendant is also able to clearly see all contents on the vehicles that enter the weighbridge and adequately assess their load type and weight. This also allows the attendant to direct the vehicle to the appropriate area of the facility.

Other sites have utilised intercom systems to contact customers. The ergonomics of weighbridge and office layout need to be carefully considered especially on higher volume sites.

The office layout allows the attendant to see waiting vehicles through the window when they are working at their computer. A mirror has been placed near the window to assist with vehicle visibility.

Whilst all vehicles are required to enter the site over the weighbridge only commercial vehicles are charged by weight. Vehicle weights for regular commercial customers are recorded in the weighbridge data management system so that the vehicles do not require to be weighed on exit. Small vehicle charges are based on visual estimates of waste type and volume.

Photo 27.12 Site entry (view from inside the WMC)

Photo 27.13 Close up of distance between site office and weighbridge

Photo 27.15 Signage at liquid waste area (Note: Liquid waste should be stored in a covered and bunded area)

27.6.2 Hours of operation

Normal hours of operation are 7:00am and 4:00pm Tuesday to Friday and 8:30am-5:00pm Saturday and Sunday. The site is closed on Mondays to allow emptying of bays and use of heavy equipment when there are no small vehicles moving about the site.

Photo 27.16 Example of signage outside reuse centre

27.6.3 Resource recovery

Customers have the ability to drop off items in the reuse centre that can potentially be sold. Resource recovery was a major factor influencing the design of this facility, which can be seen by the extent of space and infrastructure provided to assist separation and recovery of materials, compared to a focus on providing bulk bins for disposal of mixed waste.

Photo 27.17 Example of cardboard/paper signage

27.6.4 Signage

Signage has been provided at the site to help customers identify key operational areas of the site as well as required traffic flows. All signage is written in clear, large print with consistent format as shown in the following photos.

Photo 27.14 Signage at recycling facility

28. Orange Ophir Road Resource Recovery Centre

Orange City Council

Key Facts	
Throughput (tonnes/year)	15,000 tpamixed waste + 20,000 tonnes/year VENM + 6,000 tpa organics + 6,000 tpa construction and demolition + other recyclables
Cost to build ($)	$750K
Owner	Council
Operator	Contractor
Designer	Sub consultant: GEOLYSE
Topography	Sloping
Site	Former landfill
Key Features	
Single weighbridge	✓
Dual weighbridge	✗
MRF	✓
Landfill	✓
Education centre	✗
Reuse Centre	✓

Orange City Council operates a Resource Recovery Centre (RRC) located at Ophir Road (approximately 5kms north-east of Orange CBD). The RRC incorporates a MRF, landfill, and transfer station. The RRC is the major waste management facility in the Orange LGA, handling all kerbside collected waste and recyclables from surrounding areas, as well as self-hauled waste, and commercial loads. A 'HUB' regional and resource reprocessing facility is being built to take all the waste from both Orange Council and Cabonne Council (see case study on the 'HUB' facility in Chapter 29).

28.1 Project drivers

The main reason this transfer station was developed was to prevent small vehicles from accessing the active tipping face of the landfill. Council also wanted to increase resource recovery at the site. Based on current landfilling rates, the Ophir Road landfill will be full within 11 years.
In addition, Council wanted to increase the amenity and aesthetics of the site.

28.2 Planning and development process

28.2.1 Site Selection

The site chosen was a site that already contained a landfill (for the past 45 years) owned by a private company. Council took over the site in 1994 and to coincide with a new recycling contract, a MRF was built in 1995. To take advantage of the existing infrastructure, roads and topography (the site is sloping), a transfer station was built in 1997/98. There was no formal site selection process.

Photo 28.1 Signage informing customers of the Community Art Project

28.3 Community consultation

There was no formal community consultation for this site selection process since the decision was already made for the transfer station to be based at the site where the existing landfill and MRF were located. However, there are educational programs in place and Council have facilitated education programs through various educational institutions as outlined below.

28.3.1 Education program

Council has produced *'The Orange Waste Reduction Book'* which outlined Council's reasons for promoting waste reduction and recycling and details Council services. It gives information on how to recycle and compost, the Reuse centre and the new HUB facility. It also details waste service charges and the waste collection calendar.

Additionally, Orange City Council has facilitated a project by the Orange TAFE, Canobolas Rural Technology High School and Anson Street School students under the direction of some artists to create an outdoor gallery of sculpture and artworks at the Resource Recovery Centre. This opportunity provided students with an opportunity to transform the industrial facility into a sculpture park (see Photo 28.1 and Photo 28.2).

Photo 28.2 Community art project sculptures on display behind the transfer station skip bins

28.4 Design and construction

Only small vehicles and trailers are permitted at the Orange waste transfer station since larger commercial trucks can go directly to the landfill tipping face. The design has therefore been based around efficient servicing of these vehicles.

28.4.1 Site layout

All vehicles must pass through a single lane weighbridge to enter this site as shown in Photo 28.3.

Photo 28.3 Site entry via a single lane weighbridge and gatehouse

Current site layout is such that customers are directed over the single lane weighbridge. On the customers left hand side, connected to the MRF, is a drop off area where glass containers, paper and cardboard, metal cans can be deposited (see Photo 28.4).

Adjacent to the MRF is a further large shed and compound used by the current waste collection contractor for vehicle parking, equipment storage, maintenance and administration (see Photo 28.5).

Photo 28.4 Recyclables drop-off

Photo 28.5 Truck parking area

To access the transfer station, customers are directed in a right hand loop turn around the roundabout that leads to a platform where the transfer station, waste oil and reuse centre are located. There is both an indoor and outdoor storage area for sale items from the reuse centre.

Directions are well sign posted so there is little confusion for the customer when navigating around the site. New signs have recently been installed which have been standardised across the site. Customers leaving the transfer station platform proceed out of the facility and back onto Ophir Road without requiring to pass through the gatehouse.

Photo 28.6 View of the site entrance and transfer from the landfill

Photo 28.7 Transfer station, waste oil and reuse centre

Photo 28.8 Outdoor reuse centre and drop-off area

28.4.2 Skip capacity

There are four skip bins located at the transfer station, each approximately 30m^3 capacity. There are two domestic waste bins, one scrap metal bin and one garden organics skip bin. The number of skips was chosen based on current waste quantity information.

With budget constraints preventing roofing over the skip bins, the transfer station is partially covered (two of the four drop-off points are covered). The cover is really provided more for the customer than to cover the waste container. Bins are emptied regularly, normally twice per day during the week and four times per day during weekend periods.

Photo 28.9 Transfer station

Photo 28.10 One of the skip bins at the transfer station

28.4.3 Design for supervision and security

The transfer station bulk skips are located directly opposite the reuse centre. Hence staff in the reuse centre are able to help customers at the transfer station if needed. The reuse centre is run by a local community group.

28.4.4 Drainage

Land uses surrounding the Ophir Road site include the Orange Sewage Treatment Plant and biosolids storage area and the Phillip Street Quarry. Runoff and wastes collected from the gross pollutant traps on site are treated at the adjoining sewerage treatment plant.

28.4.5 Platform

The transfer station platform is approximately 2 metres high. The transfer station is built on a previously landfilled area. Because of the potential for movement it has therefore been constructed from precast concrete blocks (see Photo 28.11).

Skip bins are positioned close to the platform wall using guide rails. Whilst this is advantageous in minimising the gap between the platform and the skip bin, drivers must be very careful when reversing and lowering the bins into position to prevent damage to the retaining wall.

Photo 28.11 Waste transfer station platform, roof and skip bins

Photo 28.12 Position of shelter over drop-off area only

28.4.6 Roof

The roof height has been constructed to allow for unloading of small vehicles and trucks. This is because other commercial vehicles can go directly to the landfill tipping face. As mentioned previously (and shown in Photo 28.12), the roof does not extend directly over the skips since the cover was provided for the customer only.

28.4.7 OH&S

OH&S measures in place at the facility include:

- Methane outlets installed at the transfer station due previous land use as a landfill;
- Bollards located in front of the transfer station roof vertical support beams to protect them from vehicle damage (see Photo 28.13);
- Wheel stops located at the waste transfer station platform edge to prevent vehicles from backing into the skip bins;
- Rails and line markings to guide cars reversing back to the relevant skip bins (see Photo 28.14); and
- Chains placed across skip bins that are not in use.

Staff at the RRC are also trained to assist customers in reversing vehicles and trailers.

Photo 28.13 Bollard protecting vertical support beam

Photo 28.14 Guide rails and line markings between drop-off areas

28.4.8 Resource recovery

The following resource recovery activities have been integrated into the design of the Orange Ophir Road facility including:

- A public weighbridge/office for the receipt of all wastes/resources;
- A public waste receival area comprising of four drop off bays (two covered);
- A recyclables drop-off facility for cardboard and recyclables;
- A sump oil, lead acid battery collection and tyre recycling receival area;

- A comprehensive materials recovery facility for sorting recyclables;
- Facilities for the waste collection contractor (eg: vehicle parking, equipment storage, maintenance and administration); and
- A segregated drop off area for green wastes, bulk inert wastes, cars and metal wastes.

28.4.9 Construction

Since the transfer station is located on a formerly landfilled area there were additional construction issues that needed to be dealt with. As noted in Section 28.4.5, the platform was constructed of precast concrete blocks to allow for potential ground movement, and gas vents were installed to allow for venting of landfill gas. In addition the area was well compacted and lined with a geofabric membrane prior to the transfer station construction.

28.5 Operation

28.5.1 Signage

There is ample signage on site, which is clearly displayed and consistent in style and approach, to direct customers to the appropriate drop-off areas. The colour and format scheme used for signs with the RRC is consistent with road and street signs and other signs used throughout the Orange local government area. However as a general observation, customers may benefit from slightly larger signs.

Photo 28.15 Directions to drop-off areas

Photo 28.16 MRF sign

Photo 28.17 Information about accepted recyclables

Photo 28.18 Safety sign at entrance

29. Proposed Orange ‘HUB’ Regional Resource Reprocessing Facility

Orange City Council and Cabonne Shire Council

Key Facts*	
Design throughput (tonnes/year)**	~71,000 tpa in total, of which approximately 53,000 tpa will be potentially recovered or reprocessed
Cost to build ($)	-
Owner	Orange City and Cabonne Shire Councils
Operator	-
Designer	Councils with assistance from specialist consultants as required (concept design by Nolan-Itu Pty Ltd)
Topography	Low flat ridge, surrounded to the east and west by gently undulating topography
Site	Greenfield site
Key Features	
Single weighbridge	✓
Dual weighbridge	✗
MRF	✗
Resource Reprocessing facility	✓ (details yet to be determined)
Landfill	✓
Education centre	✗
Reuse Centre	Not determined as yet

*Note, the HUB facility is not yet operational. The information provided is based on the facility design as reported in the Hub Regional Resource Reprocessing Facility, Environmental Impact Statement 2005.

** Throughput from Year 13 onwards by which time the facility will receive all wastes from Orange and Cabonne local government areas.

Orange City Council currently operates a Resource Recovery Centre (RRC) located at Ophir Road (approximately 5kms north-east of Orange CBD). The RRC incorporates a MRF, landfill, and transfer station. The RRC is the major waste management facility in the Orange LGA, handling all kerbside collected waste and recyclables from surrounding areas, as well as self-hauled waste, and commercial loads.

A regional and resource reprocessing facility (known as the 'HUB') is being proposed to be built to provide for the future waste management needs of both the Orange and Cabonne LGA's (as of July 2006). The driver for this new facility is to develop a single regional waste and resource recovery facility to replace the limited capacity of landfills currently used by Orange and Cabonne. The selected site for the HUB facility is a 192.6-hectare site located near Orange and Molong.

29.1 Project need

The need to identify a site for a regional facility to replace existing landfills in Orange and Cabonne was first discussed by the Councils in 1996. At that time, the respective landfill capacities of Orange and Cabonne were approximately 16 years and 9 years. Following initial discussions, the Councils commissioned several studies aimed at assessing the benefits and feasibility of a regional facility, and to assist in identifying a suitable site.

29.1.1 Key stages in project planning

Key stages of the project included:

- 1997 – Regional landfill investigation/ feasibility study completed;
- 1998 – Draft Heads of Agreement was prepared between Orange City and Cabonne Shire Councils;
- 2000
  - > Formal Joint Venture Agreement signed between Orange City and Cabonne Shire Councils;
  - > Information brochure outlining need for new facility distributed to residents and community discussion meetings held;
  - > Site selection criteria established;
- 2001
  - > Discussion paper entitled 'Site selection criteria for the Regional Resource Reprocessing Facility' completed and made available for comment;
  - > Evaluation of sites; and
- 2002 – Orange City Council purchased preferred site;
- 2004 – Environmental studies commenced for the EIS to support the DA; and
- 2005 – Lodgement of DA and EIS.

29.2 Community consultation

The aims of the consultation undertaken for the HUB facility proposal were to:

- Increase public aware news of the proposal;
- Inform and provide information to individuals, or other parties, about aspects of the proposal that may be of interest to them;
- Provide opportunities for the community to meet with the project team to facilitate the flow of information and discuss any issues or comments that they may have on the proposal;
- Identify issues that needed to be reflected in the design of the proposal;
- Provide a range of forums/opportunities to express opinions, ideas or comments or provide (or seek) feedback on any aspect of the proposal; and
- Ensure that the best possible assessment was undertaken on the proposal that took into consideration input from the community as a whole.

The outcomes from the consultation process contributed to the prioritisation of issues for consideration in the design and assessment of the proposal. The components of the community consultation process are summarised in Table 20.

Table 20. Summary of consultation activities being undertaken for the 'HUB' facility.

Type of Consultation	Activity
Initial Research	Identification of land owners and residences adjoining the Hub site (a total of 25 land owners were identified).
Mail Outs	A direct mail out of correspondence together with the Forum for Feedback Newsletter to over 1300 households in the Cabonne/Orange area. Approximately 100 households registered their interest through this process and to be kept informed about the community consultation program. A direct mail out including an invitation to each community forum to all residents who expressed an interest in receiving invitations and/or information (ie six separate mail outs).
Information Package	Supply of an information package to interested people who contacted the consultant through press releases and advertisements in the local newspaper.
Information made available	Copies of the Forum for Feedback Newsletter together with feedback forms were also placed in the reception are of Cabonne Shire and Orange City Council offices and in the library.
Media	A copy of the two Forum for Feedback Newsletters was supplied to two local newspapers in which follow up newspaper articles were based. Contact details of the consultants were available to the community through media. Advertisements and agenda information placed in the local newspaper provided the details for each of the Community forums and invited interested people from within the community to participate.
Community Forum	There were six community forums held, 112 people attended the first five forums, a further 18 people attended the final forum. The community forums were co-hosted by a specialist consultant team undertaking one of the technical or scientific studies for the project. An information handout about the studies was also provided to forum participants.
Information to interested stakeholders	Specialist consultant study information and outcomes were provided to forum participants and summarised in the Forum for Feedback Newsletter.
Meetings with individuals and groups	Over sixteen meetings were held with individuals or groups to discuss issues, concerns, or provide additional information.

As a result of the community consultation process, a large number of issues were identified and classified broadly under;

- Planning and Policy
- Site Selection
- Hub Site Operation
- Litter and Indiscriminate Dumping
- Transport and Traffic
- Safety
- Air Quality and Noise
- Surface Water and Groundwater
- Weeds, Pests and Vermin
- Land Management
- Ecology
- Surrounding Land Value and Land Uses
- Implications on Existing Waste Management Facilities, and
- Implication on Rates.

Each of the issues raised were addressed in various sections of the EIS, and where required, responded to individually.

In addition, Orange City Council commissioned a survey to determine the Orange community attitude toward a range of waste management issues. The outcomes of the survey were also considered when determining the likely community support for a new waste treatment process and the community willingness and capacity to pay.

29.3 Site selection

The selection process for the proposed facility commenced in 2001 and involved informing the community of the search to find a site to develop the regional facility. Information from the community was then used to assist in the development of site selection criteria. A total of 22 criteria were developed and advertised for community comment.

The site selection criteria were developed to;

- Ensure that environmentally sensitive or inappropriate areas were identified and disqualified from further assessment from the outset;
- Provide a mechanism for the identification and weighing of the various attributes for each potential site; and
- Provide a uniform and consistent approach to the assessment of alternative sites.

Four sites were selected for assessment. These sites were identified through the initial feasibility study undertaken in 1997, and from the outcomes of advertising and community consultation undertaken in early 2001.

29.4 Processing technology assessment

A consultant was engaged to undertake an assessment of potentially suitable materials processing technologies that could be constructed and operated at the site to achieve the Councils aims of maximising resource recovery. A range of waste processing technologies were assessed taking into account:

- Minimum throughput
- Cost
- Residues for disposal
- Flexibility, and
- Environmental performance.

29.5 Assessment of options

A multi-criteria assessment was undertaken to holistically compare the potential impacts (both economic, environmental, and social) of various waste treatment and disposal scenarios.

Five scenarios were considered that varied in terms of: 1) the potential location of the resource reprocessing facility and landfill, 2) whether or not a resource reprocessing facility was included in the facility design, and 3) the timing of when wastes would be received from Cabonne Shire Council.

The multi-criteria assessment considered:

- Zoning and planning
- Land ownership
- Community acceptance
- Distance from residents/housing
- Compatibility with surrounding land use
- Environmental considerations
- Resource diversion
- Accessibility
- Overall cost to the community
- Expansion opportunity and life expectancy
- Local council support
- Resource recovery precinct
- Marketability of the recovered product, and
- Emergency event contingency.

The community and Council were involved in the assessment. Community and council preferences for selected criteria were used to developing rankings of the above issues and themes. Preferences were collected by undertaking a telephone survey of Orange City residents, workshop with Orange City and Cabonne Shire council officers, and distribution of a questionnaire to residents throughout the Molong area and others.

These rankings were then used to weight the assessment outcomes to reflect issues the community and council felt most strongly about. The weighting results indicated that the distance from residences/housing was the most critical issue for the residents surrounding the proposed site and district residents, while environmental issues represented the most critical issues to residents surveyed by telephone and the Orange City and Cabonne Shire Councils.

29.6 Planning and development approval

A development application and accompanying EIS for the HUB Regional Resource Reprocessing has been submitted to the Department of Planning for consideration. The public exhibition period for the EIS closed on 4 July 2005. As of July 2006 the Department of Planning was currently collating requests for further information raised through the public and statutory review period. It is anticipated that these requests will be forwarded to the Councils by the end of November.

30. Moss Vale Resource Recovery Centre

Wingecarribee Shire Council

Key Facts	
Throughput (tonnes/year)	~7,000 tpa mixed putrescible waste, 5,000 tonne/year inert, 8,000 tpa recyclables, 8,000 tpa construction and demolition materials
Cost to build ($)	~ $3 million
Owner	Council
Operator	Council (Reuse centre operated by volunteers)
Designer	Council with assistance from specialist sub-consultants
Topography	Flat
Site	Former landfill
Key Features	
Single weighbridge	✓
Dual weighbridge	✗
MRF	✗
Landfill	✗
Education centre	✓
Reuse Centre	✓

Wingecarribee Shire City Council operates a Resource Recovery Centre (RRC) located at Berrima Road in Moss Vale (approximately 120kms from Sydney). The RRC incorporates a transfer station, reuse centre and education centre. The RRC is the major waste management facility in the Wingecarribee LGA and handles all kerbside collected waste and recyclables from surrounding areas, as well as self-hauled waste, and commercial loads.

30.1 Project drivers

The concept of a Resource Recovery Centre was identified during 1995 as a result of Council's Waste Strategy to:

- Maximise resource recovery, and
- Minimise waste to landfill.

WSC's landfill self sufficiency ceased in 1998. The waste contract was going to be renewed shortly after the commissioning of the facility and so Council was keen to design both the facility and the new contract in such a way that they were complimentary to each other.

Council wanted the facility to be a 'one-stop shop' for all the solid waste management requirements of the Shire's residents and to centralise the Councils solid waste operations on the one site.

30.2 Planning and development process

WSC's landfill sufficiency ceased in 1998 and concept development and approvals took place between 1996 and December 1999 when Development Consent was issued.

The site is located within an area zoned as '5(a) Special Uses – Rubbish Depot' under Wingecarribee Shire Councils LEP (1989). An environmental impact statement was required to be submitted since the proposal was classed a designated development (as defined in the Environmental Planning and Assessment Act 1979). Since the development also required an operating licence from the EPA, it was also defined as an integrated development.

30.2.1 Timing

Detailed design and construction of the transfer station was undertaken by Council (with some specialist components sub-contracted) after Council acceptance of concept design and following development approval. Initial feasibility through to site opening was undertaken over approximately 6 years.

30.2.2 Site selection

The site was chosen after consideration of the findings of an earlier detailed site selection study (undertaken by external consultants). The study was originally commissioned in 1994 to investigate potential landfill sites.

Criteria used for the site selection evaluation included:

- Physical
- Accessibility
- Climate
- Environmental; and
- Financial liability.

30.3 Community consultation

Wingecarribee Shire Council has an Agenda 21 (Sustainability) Committee. This committee has been involved with the development of the RRC. Other forms of ongoing communications with the wide community include publication and distribution of flyers and public meetings. Regular contact is made with residents located on properties surrounding the site, this includes a representative from Council visiting these households once per year.

30.3.1 Education program

Within the onsite reuse centre is an area dedicated to promoting home composting, materials reuse, and waste minimisation. Results of the performance of the centre and achievement of Council's resource recovery aims are publicly displayed in the Education Learning Centre (which is located in the administration building) and in education materials regularly distributed to residents.

Photo 30.1 Worm farm display

To visually promote materials reuse, there is a sculpture located at the entrance (welcoming customers to the site) that is made entirely of recovered materials (shown in Photo 30.2). The centre itself was also constructed using as much recycled material as possible (see Section 30.4.6 for further detail).

Photo 30.2 Sculpture welcoming customers into the RRC

30.4 Design and construction

30.4.1 Site layout

The Moss Vale RRC is located on a site of approximately 5.4 hectares. A schematic overview of the site layout is provided in Figure 30.1. The site layout incorporates a single lane weighbridge and gatehouse (there is provision for a second weighbridge in the future), plant compound and contractor's office, an administration building, animal shelter, and various drop-off points for recyclables.

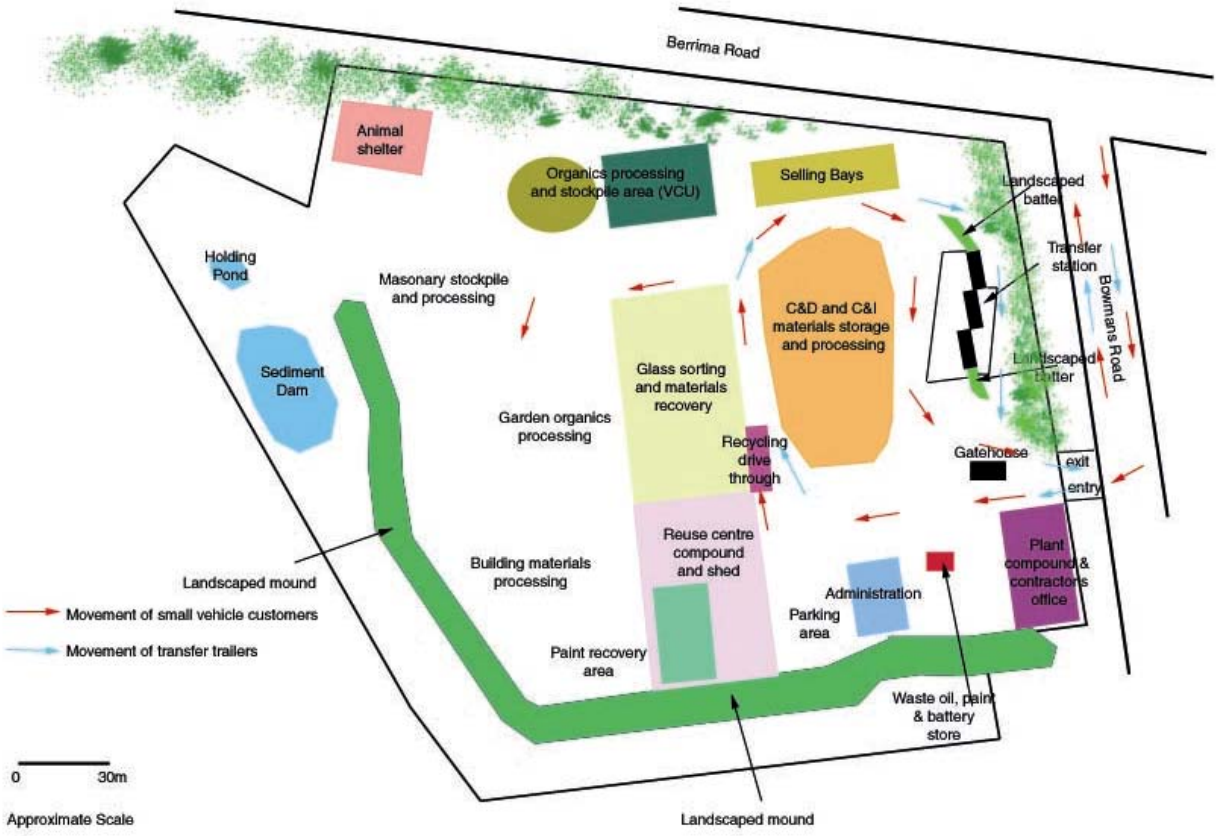

Figure 30.1 Schematic of Moss Vale RRC Site Layout (Schematic only, sizes are approximate).

30.4.2 Site entrance, gatehouse and weighbridge

There is a single lane weighbridge and gatehouse located at the site entrance. There is only a short approach to the weighbridge from the site boundary, therefore provisions for traffic queing and control have been incorporated on Bowmans Road. This includes installation of traffic lights to control flow into the site, and providing a waiting lane in Bowmans Road for traffic waiting to turn into the site. Customers are only weighed on entry to the site. The site design incorporates provision for a second weighbridge to be installed on the site exit if required in the future.

Photo 30.3 Signs outside site entrance used as part of the traffic control system

Photo 30.4 Vehicles turning into the site from Bowmans Road

Photo 30.5 Vehicles turning into site

Photo 30.6 Sign controlling traffic direction and speed within the site

30.4.3 Platform

Two drop-off bays are provided for mixed waste, and a further drop-off bay for paper and cardboard. Mixed waste is dropped into 75m^3 transfer trailers (trailers of up to 100m^3 can be used).

To maximize material density and reduce transport costs, mixed waste is regularly compacted into the trailers using a front-end-loader (as shown in Photo 30.8). Plant operators must be careful when compacting waste not to damage the overhead structures built over the mixed-waste drop off points. Cardboard and paper are compacted using a mechanical ram (shown in Photo 30.9).

The site has been built-up such that vehicles can access the transfer station platform as they complete a circuit of the RRC. There is no need to travel up a ramp to the drop-off points. Access to the rear of the platform is limited to transfer vehicles only.

To assist controlling wind-blown litter, rubber flaps are used to form a gasket between the top of the transfer station and the top of the transfer station trailers (as shown in Photo 30.10). The rubber flaps are raised and lowered using a lever as trailers are moved in and out of position. Cover over the drop-off areas and regular wetting and compaction of waste are also used to help control wind-blown litter.

Photo 30.7 View of transfer trailer from the base of the platform

Photo 30.8 Compaction of mixed waste using site plant

Photo 30.9 Cardboard and paper compactor

Photo 30.10 Rubber flaps used to assist controlling windblown litter

30.4.4 Cover

The site is on high ground and is subject to high winds, particularly throughout winter . This has lead to WSC enclosing the mixed waste and cardboard drop-off areas. Roof heights over the drop-off bays have been designed to cater for the different size vehicles that use each area.

The drop-off bay designated for use by small vehicles is enclosed on three sides, cover over the drop-off bays used by compactors and larger commercial vehicles is more like a wave-type shape (sloping back wall and curved upper lip) as shown in Photo 30.11. Additional wire mesh has been added to the cover in the large-vehicles drop-off area for additional control of litter (shown in Photo 30.12).

Cover has also been provided over the drop-off area for self-hauled recyclables as shown in Photo 30.13. The cover over this area has been designed like a tunnel so that customers can use the drop-off area with protection against wind and rain, prior to driving on to the remainder of the site.

The onsite reuse centre also incorporates a large shed-type structure for undercover storage of items (approximately 30m x 20m), as well as an outdoor storage area.

Photo 30.11 Different covers over small vehicles and compactor drop-off points

Photo 30.12 Wind-break and cover over large vehicles drop-off point

Photo 30.13 Drive-through structure provided for recyclables

30.4.5 Resource recovery

Resource recovery activities that are undertaken at the RRC include:

- Revolve centre – a highly patronaged centre for sale of reusable items, with both indoor and outdoor sales areas;
- Collection of commercial and domestic recyclables (glass, plastics, aluminum cans, paper and cardboard, etc);
- Recovery of scrap steel;
- Recovery of waste oil, paint, and lead acid batteries;
- Recovery of constructed and demolition materials including timber, metals (ferrous and non-ferrous), concrete, rubble, bricks and tiles, plasterboard, asphalt, and tyres;
- Recovery of commercial wastes including pallets;

- Recovery of inert materials and recyclables from mixed commercial wastes (undertaken by onsite sorting of a mixed waste stream);
- Mulching and onsite open windrow composting of garden organics; and
- Operation of a vertical composting unit that processes commercial food and grease trap sludges with shredded garden organics.

Photo 30.14 Cardboard and paper collection

Photo 30.15 Items for sale in the reuse centre

Photo 30.16 Items for sale at the reuse centre

Photo 30.17 Collection of timber pallets for recovery

Photo 30.18 Different grade mulch and gravel products available for sale

Photo 30.19 Collection of garden organics and onsite open windrow composting

30.4.6 OH&S

Safety features incorporated in the site design include:

- Various warning and safety signs throughout the site;
- One-way traffic flow throughout the site;
- Smoking is forbidden on the site;
- The use of moveable gates (shown in Photo 30.20) to close off access to mixed-waste drop off points when trailers are not in use, or when the drop-off area is unsupervised;
- Barriers /fences along the transfer platform edges to prevent falls off the platform;
- Landscaped mounds at the sides of the transfer station to prevent general access to the lower area where trailers are located (see Photo 30.26);
- Guards have been constructed around exposed piping (shown in Photo 30.21) to protect against damage from vehicles and plant; and
- Retrofit of the platform edge such that additional concrete support and 'rounding' of the platform edge have been provided to assist preventing damage from the movement of the front-end-loader when compacting waste into the trailers.

Photo 30.20 Gates used to control access to mixed-waste drop-off

Photo 30.21 Controls in place to minimise damage from vehicles

Photo 30.22 Retrofit of platform edge to support movement of site plant

30.4.7 Construction

The transfer station is located on a former landfill site which necessitated works such as:

- Capping of the existing landfill;
- Stormwater management;
- Leachate management;
- Airborne emissions;
- Landfill gas management; and
- Vector control.

Examples of design and operational features included as a result of locating the facility on a former landfill site include landfill gas vents throughout the site and around buildings, regular testing of stormwater, and raised structures used for offices.

The RRC was constructed using recycled materials where possible to demonstrate Council's commitment to resource recovery, and to demonstrate the potential to utilise recycled products in construction. Examples of how recycled materials were incorporated in construction include:

- Construction of a retaining wall from tyres (shown in Photo 30.23);
- Crushed masonry products were used as select fill and base course material;
- Timber and concrete railway sleepers used as borders and edging;
- Discarded conveyor belt has been used to form the gasket between the transfer station and the top of the transfer station trailers;
- Re-use of the plant shed from a former waste depot; and
- Onsite landscaping was made from soil and mulches from recycled materials.

Photo 30.23 Retaining wall made from recycled tyres and planted with vegetation

Photo 30.24 Recycled tyres to provide additional support for vehicle movement

30.4.8 Landscaping

Landscaping is used throughout the site to improve site appearance, and to provide screening of the facility from surrounding neighbours and passers-by.

Nature strips surrounding the site have been planted with native trees and shrubs. The site design also incorporates a noise mitigation mound running along the western border of the site. This top and sides of this mound has been planted with native shrubs and grasses providing further noise and visual impact control.

Photo 30.25 Vegetated mound on western site border

Photo 30.26 Landscaped batter adjacent to transfer platform

Photo 30.27 Landscaped batter and retaining wall on Bowman Road (leading to site entrance)

30.5 Operation

30.5.1 Signage

Clear and consistent signage incorporating large print is used throughout the site to assist customers locate the correct drop-off points for different recyclables, reusable items, and wastes. Signs are also used effectively to convey safety information, assist control contamination, and advertise products for sale.

Figure 30.2 Sign on access road on approach to the facility

Photo 30.28 Sign in recycling drop-off area to assist control contamination

Photo 30.29 Sign indicating products for sale

30.5.2 Housekeeping and ongoing management

Council has put in place a management plan that includes ensuring the site is always kept clean and easy to navigate. This encourages residents to use the RRC for all waste management requirements and maximises resource recovery. Site employees are also always actively seeking to minimise litter, dust, odour, and noise. This has resulted in a well kept, well run site that the surrounding local public and commercial operators feel comfortable in using both for waste disposal, and to buy recycled items such as compost, building products, and household goods (from the reuse centre).

30.5.3 Costs

With the opening of the RRC came a major increase in waste disposal fees. This was partly because the full cost recovery of the development was built into the new gate fees, and also because other waste operators (that operated facilities accepting waste from Wingecarribee's RRC) had increased their gate fees. Revenues from sale of recycled products assist to help minimise ongoing operational costs.

30.6 Environmental controls

A number of environmental controls for inclusion in the site design and operation were identified from the environmental assessments undertaken for the EIS for the site development. These controls aim to control odour, noise, dust, litter, amenity, and other impacts from the sites.

Controls include:

- Development of a three metre high noise barrier on the south-west border of the site;
- Sealing Bowman Road between Berrima Road and the RRC entrance;
- Using water sprays to minimise dust and litter on windy days;
- Storage of unprocessed putrescible food waste in the organics processing area will not exceed one day;
- Shredding of garden organics and timber will not be undertaken at the same time in order to limit noise;
- Establishment of a complaints register;
- Daily litter patrols; and
- Segregation of clean and polluted stormwater flows, with onsite treatment of polluted flows.

31. Blayney Shire Transfer Station

Blayney Shire Council

The Blayney transfer station is located approximately 5km from the town centre off the main highway. It is open daily under supervision between 10:00am to 12:00pm and 3:00pm to 5:00pm (3:00 to 6:00pm in daylight savings hours).

31.1 Site layout

The transfer station has been designed with a simple drive-in, drive out design for both the public and general waste collection contractors. As recyclables and other items from the site can be collected by collection contractors outside normal operating hours, the site has been designed with separate access for contractors to recyclables collection points, which are outside the lockable area of the transfer station.

Photo 31.1 Entrance to Blayney transfer station from the Mid-Western Highway

31.2 Design and construction

There is one skip bin used for disposal of general waste. The skip bin is approximately 40m^3 in capacity. There is a 2.3m drop from the platform to the base of the bin, thus safety barriers and numerous signs warning of this potential danger are used to minimise risk.

The site layout has taken advantage of natural sloping topography for the height for the platform. The position of the skip bin has been excavated out of the existing site slope, rather than the platform being built up around it. This is shown in Photo 31.3.

Photo 31.2 Signage and safety barriers surrounding the general waste skip bin

Photo 31.3 Natural topography used to for transfer platform

31.2.1 Staff facilities

As the site is open for at least five hours per operating day, staff facilities include a small site office and port-a-loo. Staff pride and good housekeeping are evident from the well-maintained small garden and landscaped area around the facility (see Photo 31.4).

Photo 31.4 Staff facilities

31.2.2 Resource recovery

The site incorporates a number of provisions to encourage resource recovery. Reusable items are recovered for resale as shown in Photo 31.5. Other recovery includes collection of lead acid batteries, glass, plastics, cardboard, and paper and aluminium/steel cans, and scrap steel. The resource recovery is well organised and tidy.

Photo 31.5 Outdoor reuse centre

Photo 31.6 Collection of colour separated glass

Photo 31.7 Lead acid battery collection area (Note: Batteries should be stored in a covered and bunded area)

31.3 Operation

To assist minimising the costs of recyclables collection and processing, some recyclables are placed out for collection in mobile garbage bins, similar to those used in the local domestic kerbside collection. These bins are wheeled outside the main transfer station area for collection by the contractor when undertaking the domestic service (as shown Photo 31.8). Other recyclables such as scrap steel are stored in the contractor area so that they can also be collected outside normal operating hours as required.

Photo 31.8 Mobile garbage bins used for recyclables collection

Photo 31.9 Recycling bins for collection

32. South Grafton Transfer Station

Clarence Valley Council

Key Facts	
Throughput (tonnes/year)	~1,000 tpa mixed waste + additional recyclables*
Cost to build ($)	$300K
Owner	Council
Operator	Council
Designer	In-house
Topography	Sloping
Site	Existing landfill
Key Features	
Single weighbridge	✓
Dual weighbridge	✗
MRF	✗
Landfill	✓
Education centre	✗
2nd hand store	✗

*Waste through the transfer station only, does not include waste directly disposed at the landfill face.

The South Grafton transfer station is a low usage site with approximately 45 vehicles using the site per day. The transfer station manages approximately 1,000 tonnes of mixed waste from a residential and commercial population of about 10,000. The facility is open Monday to Friday from 8:00am to 5:00pm, and Saturday and Sunday mornings.

32.1 Project drivers

The South Grafton transfer station was constructed in 1998 at the South Grafton WMF that is located approximately 10 kms from Grafton. The South Grafton WMF is the only waste facility within the Clarence Valley LGA that has a landfill on site.

The main project drivers for establishment for the transfer station were to discourage smaller vehicles to the landfill face for OH&S reasons.

32.2 Planning and development process

Community consultation was undertaken as part of the overall development process for the WMF. Additional consultation was not undertaken specifically for construction of the transfer station, which was an addition to the WMF following establishment of the landfill.

The total timeline for planning and development of the South Grafton WMF (including the transfer station) was approximately 7 years.

32.3 Design and construction

32.3.1 Site layout

Site layout was designed to complement existing infrastructure which includes an active landfill, gatehouse, office, weighbridge and internal roads.

The transfer station is located adjacent to the site entrance. Activities at the transfer station are visible to the gatehouse staff which allows gatehouse staff to assist customers at the transfer station during quiet periods.

Barricades (as shown in Photo 32.1) are used to ensure traffic enters the transfer station area from the required direction. These barricades can be moved when required to allow access to the site for service vehicles.

Photo 32.1 Barricades to control traffic flow

32.3.2 Skip bin capacity and layout

The site includes a partially enclosed shelter that covers two 10m^3 skips used for mixed waste. The shelter serves as a storage area for site plant and equipment including the 'Litter Critter' (shown in Photo 32.4) and tools.

The litter critter is used to collect litter about the site, council report it is particularly useful for removing plastics and other light waste materials. The litter critter was bought 2 years ago for approximately $5,000-$7,000.

Photo 32.2 Mixed waste drop-off point

Photo 32.3 Area behind bins used for storage

Photo 32.4 The 'litter critter'

32.3.3 Platform and cover

The platform at the mixed waste drop-off point is approximately 1.5m high. It is constructed from concrete blocks and gravel fill. The platform cost approximately $10-$15K to construct.

The drop-off area for mixed waste is partially enclosed (two sides) due to prevailing westerly winds at the site. The roof is approximately 3.5m high. The shed structure cost approximately $15,000K to construct.

Drop-off points for recyclables, waste oil, and hazardous materials are located around the transfer station perimeter as shown in the site layout. Cover is provided over the hazardous materials storage and waste oil storage areas.

Photo 32.5 Waste transfer platform

32.3.4 OH&S

OH&S measures incorporated into the site design include:

- Reduced platform height from choice of skips used for mixed waste transfer;
- Rails across the platform edge where there are no bins;
- Fire hose on the transfer station platform;
- Wheel stops at the edge of the platform to prevent vehicles backing too close to the platform edge; and
- Covered, locked, and bunded hazardous materials storage area accessed only by staff with appropriate training.

32.3.5 Weighbridge

There is a single covered weighbridge located on the site (shown in Photo 32.6). The decision to cover the weighbridge was based on providing additional protection to customers and gatehouse staff from rain. Traffic lights and signs are used to control vehicle flow and access to the site. There is a boom gate on the site exit.

The location of the gatehouse and weighbridge is located close to the transfer station and site office and amenities.

Photo 32.6 Site weighbridge and gatehouse

Photo 32.7 Cover over weighbridge

32.3.6 Construction

The site was designed and constructed by Council. The total cost of construction of the transfer station was approximately $300K. Construction did not require additional services to be connected to the site as water and electricity were already connected.

32.4 Operation

To maximise staff utilisation, the weighbridge operator also runs the call centre for customer enquiries and complaints relating to Councils domestic waste management service (including ordering new bins) as well as the WMF operation.

Typically there are 4 or 5 staff working on site at any one time, except on weekends when only one staff member is required.

Contractors enter the site via boom gates which are automatically operated via a swipe card system. This enables a faster and more efficient operation.

32.4.1 Future expansion

Sufficient space has been allowed for at the site for the future construction on an education centre and potentially a new MRF. There are plans to build an education centre and new office/administration building on site within the next 18 months to 2 years adjacent to the transfer station.

32.4.2 Resource recovery

A HAZCHEM waste storage area is provided at the site and staff are trained in the identification, separation, and storage of hazardous items. This facility was set up with funding assistance provided by the Regional Waste Forum.

Other resources recovered within the transfer station area include waste oil, gas bottles, and household recyclables. Household recyclables are collected using the same mobile garbage bins as used for the domestic recycling collection service. Bulk cages are provided for cardboard recycling.

Concrete crushing and recovery of garden organics is also undertaken at this site as part of the wider WMF operations.

Photo 32.8 HAZCHEM storage area

Photo 32.9 Collection of domestic recyclables

Photo 32.10 Waste oil collection

Photo 32.11 Bulk cages for cardboard recycling

33. Baryulgil Transfer Station

Clarence Valley Council

Baryulgil transfer station is a remote and unsupervised site located approximately one hour from Grafton. The facility services local aboriginal communities as well as wider farming communities, receiving approximately 150 tonnes of mixed waste per year.

33.1 Project drivers

In 2004, Clarence Valley Council was formed from the amalgamation of the Councils of Grafton City, Maclean Shire, most of Pristine Waters and Copmanhurst, as well as a portion of Richmond Valley. Previously the Baryulgil site was a small village landfill within the Copmanhurst Council LGA. The landfill however reached capacity and this was when the transfer station was built. Due to the size of the local community and small quantity of wastes received, the landfill had been unsupervised. It was therefore decided that the transfer station would also be unsupervised as this was what local residents were accustomed to.

33.2 Construction

The transfer station platform was originally constructed using timber, however due to fires at the site (both in the bin and on the platform) it has been rebuilt using concrete blocks backfilled with gravel (see Photo 33.1). The blocks allow for some movement, which is required as the facility is constructed on a former landfill (see Photo 33.2).

Photo 33.1 Transfer station platform

Photo 33.2 Platform movement due to ground settlement

33.3 Design for OH&S

As well as fires, there were a number of OH&S risks identified at the unsupervised site, including the incidence of a site-user falling into the transfer bin. This prompted Council to trial restricted site opening hours. This proved unsuccessful as residents broke the through the fencing to access the site. The site was re-opened as an unsupervised site.

To minimise further fall risk, Council has ensured that:

- There is a safety rail in place along the edge of the platform and fences along the sides;
- Wheel stops are in place to prevent vehicles backing too far towards the edge; and
- The height of the skip bin is above the edge of the platform.

There are signs in place at the site to encourage residents to dispose of wastes appropriately into the skip bin provided (as shown in Photo 33.3). However, as the safety provisions at the site make it difficult to unload wastes straight from a trailer into the skip, it has been observed that some residents continue to dump waste on the waste transfer platform instead of in the bin (see Photo 33.4).

Photo 33.3 Signage at site entrance

Photo 33.4 Dumped waste in front of bin on the platform

Additionally, signage at the site (see Photo 33.3) is aged and indicates that waste should be dumped in a 'trench'. This is a good example of needing to ensure signage is updated to reflect current operating practices, and to be appropriately designed such that the local community easily understands it.

33.4 Operation

Perimeter fencing surrounds the site to assist controlling litter. However as the site is unsupervised light materials (such as plastics) can still escape the fencing if not collected regularly (see Photo 33.5).

Site operating costs are approximately $15,000 per year with one of the major components being clean up and transport of waste. As the site is unsupervised there is no revenue collected from gate fees. The cost of the site is therefore covered through other Council rates and charges.

The 30m^3 bin is emptied fortnightly. Council staff undertake cleaning and site maintenance when they are in the area. However as the site is remote and staff may not be in the area often it is difficult to guarantee regular site inspection and maintenance.

Photo 33.5 Site fencing

33.4. Resource recovery

Recovery of scrap metal is currently being trialed to assess whether a separate collection would be justified given scrap metal quantities (see Photo 33.6).

Photo 33.6 Scrap metal recycling

34. Grafton Transfer Station

Clarence Valley Council

Key Facts	
Throughput (tonnes/year)	~2,000 tpa mixed waste + additional recyclables
Cost to build ($)	$500K (does not include cost of MRF)
Owner	Council
Operator	Contractor
Designer	Council
Topography	In-house
Site	Greenfield
Key Features	
Single weighbridge	✗
Dual weighbridge	✗
MRF	✓
Landfill	✗
Education centre	✗
2nd hand store	✗

The Grafton transfer station manages approximately 2,000 tonnes of mixed waste from a residential and commercial population of about 10,000. Both commercial and small vehicles use the site. The facility is open seven days a week from 8:30am to 4:00pm. A MRF is also located the site and which is open on weekdays.

34.1 Project drivers

The Grafton transfer station facility has been open since 1993, it was built in conjunction with a new MRF at this time. The main drivers for the construction of this facility were to:

- Increase convenience ie: no need for customers to travel to the new landfill in South Grafton;
- Reduce overall traffic flow (particularly trucks and trailers) across the 2-lane Grafton Bridge by diverting traffic away from South Grafton;
- Decrease travel times for residents to access waste facilities; and
- Increase resource recovery by minimising the amount of waste taken to the landfill site at South Grafton.

34.2 Planning and development

34.2.1 Site selection

Various sites were considered for the new waste transfer station with the main features sought for the new site including:

- Location on the northern side of the Grafton Bridge;
- Appropriate buffer distances to local residents;

- Preferably appropriate zoning and buffer distances such that an EIS would not be required and;
- Preference for a Council owned site.

Vacant land adjacent to an existing Sewerage Treatment Plant (STP) was selected as the preferred development site. This site had in the past been used for storing soils and other construction materials from Council works and services.

Benefits of locating the site adjacent to the STP included that potential odour and noise issues would greatly add to the existing impacts from the STP. Locating the facility on this site would thus have little impact on local amenity. The site chosen also did not require an EIS to be undertaken, hence the DA process took only approximately 4 months.

The site has sufficient buffer areas to the closest residential properties, however it is still located for convenient access for the majority of the local community.

34.2.2 Community consultation

As an EIS was not required to support the DA, consultation undertaken for this facility was the same as that required for any DA. This involved having the application open to public for comment for 28 days. Letters were also written to residents in the immediate vicinity of the facility.

34.3 Design and Construction

The facility was designed to service both small vehicles and large commercial vehicles. Site design incorporates a MRF to process all recyclables collected from the domestic kerbside recycling service.

34.3.1 Site layout

The Grafton transfer station does not have a weighbridge, however all waste is subsequently weighed after transfer to the South Grafton landfill.

Normal traffic flow through the site on weekdays is as shown in Figure 34.1. All small and large vehicle enter the site through the same entrance, however there are separate exits for transfer vehicles compared to customers.

On weekends, where only one staff member is present at the facility, the normal site entry is closed, and customers are required to enter and leave via the same point (the normal exit).

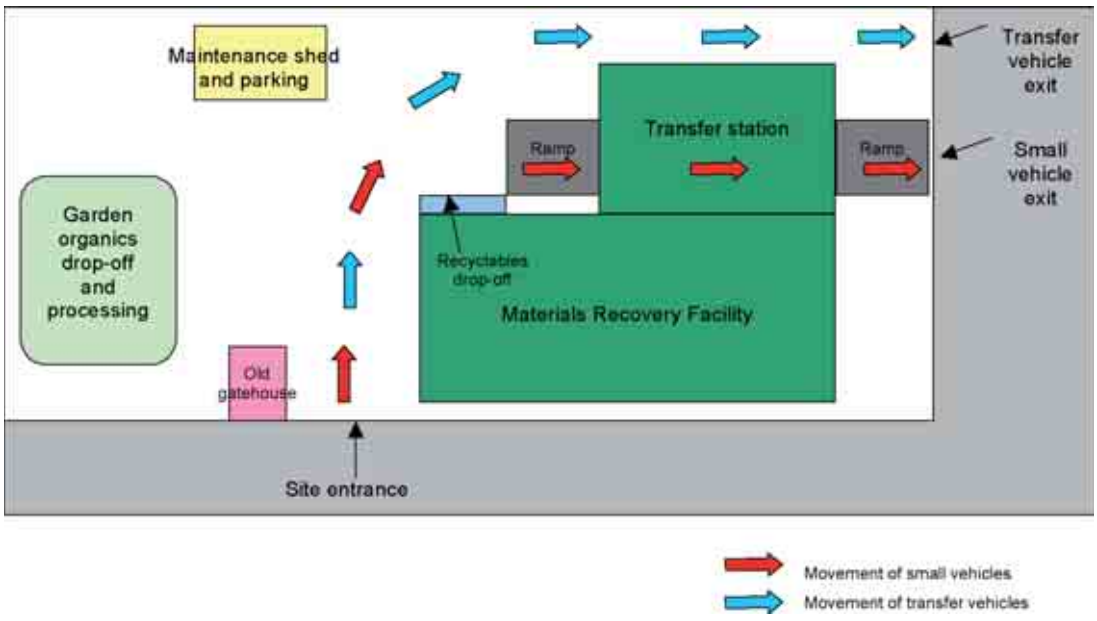

Figure 34 1 Schematic overview of normal traffic flow (weekdays).

Photo 34.1 Site entry/exit

34.3.2 Bin capacity

Four skip bins are located at the transfer station arranged in a saw tooth arrangement (shown in Photo 34.2). The original design intention of the four-bay bin design was to have one bin for scrap steel, one bin for garden organics, and two bins for general waste. However, this is not always possible since the mixed waste bins can fill up very quickly during peak times.

A cost analysis was undertaken to determine the optimal number and size of transfer bins for mixed waste. The cost analysis considered the size of the transfer bin, required height of the platform (and hence construction costs) for servicing larger/smaller bins, and the trade-off with transfer costs. The analysis indicated that in the long-term using larger sized skips would be more cost efficient for operations. However the additional cost of constructing a higher platform, and the associated OH&S risk from having higher bin sides was considered prohibitive at the time. Hence the platform was designed to service skips of 20m^3 (or similar) capacity.

Photo 34.2 Sawtooth arrangement

34.3.3 Platform

The platform width has been sized to allow sufficient turning circle for both small vehicles, and the compactors delivering kerbside recyclables to the MRF. The platform is approximately 8m wide (see Photo 34.3).

Photo 34.3 Waste transfer platform

34.3.4 Supervision

Originally, the site design incorporated an office/gatehouse at the front entrance of the site so that a gatekeeper could collect charges and provide directions to customers. However due to low patronage, it has been considered that this member of staff could be better utilised elsewhere on site.

The facility is not busy enough to justify permanently locating an attendant on the transfer station platform. Instead, on weekdays (when the MRF is in operation and traffic flow runs past the MRF), MRF staff monitor when a customer arrives at the site, collect the required charges, and can assist the customer in unloading their waste if required. The problem with this arrangement is that there is the potential for customers to incorrectly dispose of mixed waste in the garden organics drop-off area (located adjacent to the site entrance) rather than taking it to the mixed-waste drop-off at the transfer station platform.

34.3.5 Design for resource recovery

The existing MRF was built in 1993, prior to the amalgamation of Grafton City Council with Maclean, Copmanhurst and Pristine Waters. It was built only to manage recyclables from the Grafton local government area but is currently processing recyclables from Grafton as well as most of the Clarence Valley and McLean areas.

34.3.6 Cover

The waste transfer station structure is enclosed on two sides as shown in Photo 34.5. The cover extends out over the skip bins to provide some protection from rain ingress to the mixed waste.

Recyclables from the domestic kerbside service are feed into the MRF from a hopper and conveyor belt system located on the transfer station platform. Therefore the roof-height was designed to accommodate the extended operating height of the collection vehicles.

Photo 34.4 Cover over skips

Photo 34.5 Transfer station platform and MRF

Photo 34.6 Unloading kerbside recyclables

Photo 34.7 Conveyor used to feed recyclables into MRF

34.3.7 Resource recovery

Resource recovery activities undertaken at the transfer station include recovery of:

- Garden organics (mulched and sold to the public, or sold as fuel)
- Scrap steel and old drums
- Gas bottles
- Cardboard and paper
- Plastics
- Glass
- Waste oil (cooking and motor oil); and
- Lead acid batteries.

In the past there was a reuse centre located at the site that was run by a contractor out of a shed located near the transfer station. This operation has since ceased due to financial reasons. Some items are still recovered for resale on the transfer station platform.

Photo 34.8 Recyclables accepted at the MRF

Photo 34.9 Collection of old drums on the transfer station platform

35. Maclean Transfer Station

Clarence Valley Council

Key Facts	
Throughput (tonnes/year)	Approximately 4,000 tpa mixed waste + 3,000 tpa additional recyclables
Cost to build ($)	-
Owner	Council
Operator	Contractor
Designer	Combination – consultant and in-house
Topography	Flat
Site	Greenfield
Key Features	
Single weighbridge	✗
Dual weighbridge	✗
MRF	✓
Landfill	✗
Education centre	✗
2nd hand store	✓

Maclean transfer station and recycling facility manages approximately 7,000 tonnes of waste and recyclables (including kerbside domestic garbage and recyclables) from a residential and commercial population of approximately 17,000. The facility is open 8:00am to 5.00pm Monday to Friday and 8:00am to 2.00pm on weekends. Approximately 3000 tonnes of recyclables are marketed annually through the facility.

35.1 Project drivers

The Maclean transfer station was constructed in 2001/2002. The main project drivers for establishment of the transfer station were:

- All waste generated from the Maclean area required transport to the new regional landfill at South Grafton following the closure of the Monoro landfill;
- At the time there were no adequate recycling facilities in the Maclean Shire; and
- Maclean Shire Council (now part of Clarence Valley Council) needed to develop a recycling facility if it was to attempt to achieve a target of 60% reduction in waste to landfill (then target set under the Waste Minimisation Act 1996).

35.2 Planning and development process

35.2.1 Site selection

The current site for the WMF was selected after consideration of five alternative sites, including the Mororo landfill site. The current site was determined as most suitable after considering:

- Distance to haul waste to the regional landfill in Grafton;
- Centrality to the population of the Maclean Shire;
- Cost of construction;
- Time period for development;
- Acquisition (Council already owned the land); and
- Environmental factors.

A major concern with the current site location is residential encroachment which is highlighting odour, noise, and traffic impacts from the site. Note, activities at the site include green waste mulching, concrete crushing, and the operation of a MRF. Acoustic barriers have been added to the transfer station since its original opening to assist in minimising noise.

35.2.2 Planning and environmental approvals

Development of the transfer station and MRF was permissible with consent under the local environment plan. An EIS was required to support the proposal since the nearest dwelling to the proposed development site is less than 250m.

35.3 Design and construction

A number of site constraints have been identified, in particular, the lack of sufficient space to adequately manage current waste and recyclables quantities. This has impeded additional resource recovery initiatives that the current site operator wishes to undertake.

35.3.1 Site layout

The transfer station layout was designed with a separate entrance and exit for the intention of having all one-way traffic throughout the site. However both Council and the site operator note that the existing site layout has proven confusing for customers. This has resulted in customers using both the entry and exit for either purpose and irregular flow of traffic throughout the site.

Source separated green waste, concrete, and large steel items are not located within the main transfer station area (refer Figure 35.1). The original design intention was to have customers travel from the entrance past the green waste, concrete, and scrap steel area prior to circling round the rear of the transfer station platform, then up to the platform where the reuse centre and drop-off bins for mixed waste are located. However, there are also drop-off points for concrete and other recyclables located behind the MRF, and customers can get confused and drive down the back of the site past these drop-off points, even if they have nothing to drop-off in this area.

Customers that enter the site via the wrong entrance (the heavy vehicles exit) may have to travel around the site more than once to access the relevant drop-off point/s. Rather than continue around the transfer station in a one-way circular motion, customers have been known to turn against the required flow of traffic to double-back to a drop-off point. Again, this has led to confusion with vehicle direction around the WMF.

These issues could potentially be addressed through increased and improved signage indicating correct vehicular flow and access. There are currently limited signs directing traffic flow, and as they are not fixed in place (as shown in Photo 35.1), they can easily be knocked over by vehicles or moved by customers.

Photo 35.1 Signage to direct traffic flow

The site layout could also be modified to have only a single entrance and exit point for customers, with the other access kept closed at all times other than when bulk transport and collection vehicles are accessing the transfer bins or MRF.

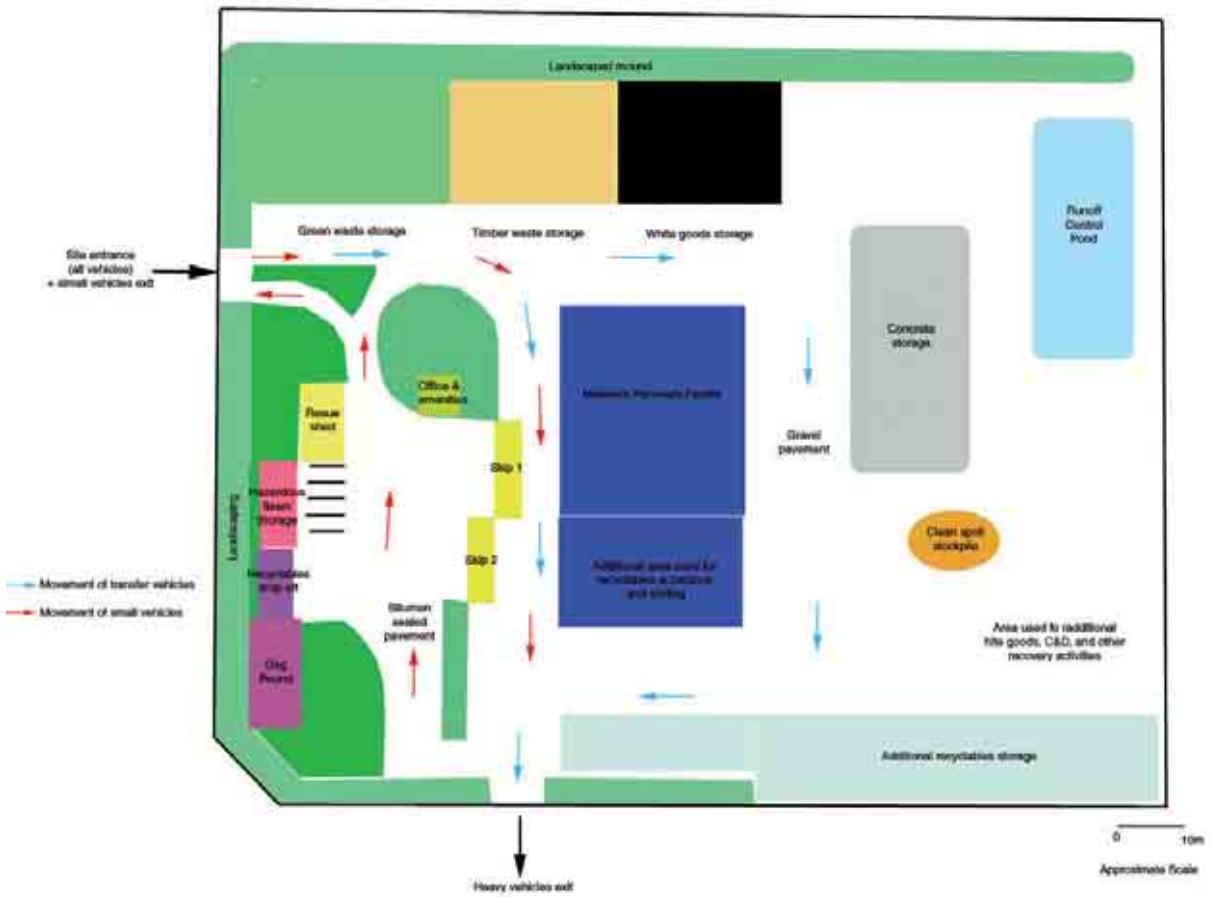

Figure 35.1 Schematic overview of Maclean transfer station site layout.*

35.3.2 Platform

The platform is approximately 2.5m high. The original transfer station design incorporated safety rails in front of the skip bins and on the platform edges to assist in preventing falls. The rails at the front of the waste unloading area however have since been damaged by both customers and the site plant used to compact waste into the skip bins. Rails have since been replaced with chains (as shown in Photo 35.2).

Photo 35.2 Chain across drop-off bay

Moveable steel plates are attached to the edge of the platform (as shown in Photo 35.3). These are designed to cover the gap between the platform and the skip to assist preventing litter (and customers) from falling between the gap. The plates are raised and lowered manually, and whilst they are reported to work quite well, it was commented that there was the occasional tendency for the flaps to be either damaged or get caught up by the larger vehicles (including compactor vehicles) that use the transfer station.

35.3.3 Skip bin capacity and layout

The site includes two separate sheds over the two skip bins. The sheds are separate as one of them was originally designed to house a conveyor system intended to load waste from the drop-off area into a compactor unit and skip bin. The conveyor belt system was selected so that customers could load waste onto the belt rather than directly into skips, minimising the risk of falls.

However, due to the variety of mixed and bulky wastes received at the site, waste often got stuck or caught on either the belt or at the drop-off point into the bins. This required the site operator to manually dislodge the caught items which posed further OH&S risk. The conveyor belt system was removed shortly after the transfer station commenced operation, and the second enclosure was therefore retrofitted to accommodate an additional skip bin following the failure of the conveyor belt system.

Skip bin capacity is estimated at about 65 – 70m^3 per skip. There is provision for the use of two skips at the site. The large skip bin capacity was chosen in an effort to reduce the costs associated with waste transport from the site. Each skip bin is 2.5m high.

The number of skips was determined based on waste quantities delivered to the former Mororo landfill site.

Partially enclosed roof structures are provided over the skip bins, however the structures are very narrow, and obvious damage to the structures has been caused from the reversing of the large skip bins into the confined space (see Photo 35.4). Damage to the furthest end of the enclosed areas has also been caused from reversing the skips too far into the enclosures as there are currently no barriers in place (or other mechanisms to assist drivers know when to stop).

Photo 35.4 Damage to shelters from transfer bins and trailers

Photo 35.5 Double-shelter enclosure for skip bins

Photo 35.6 Damage to shelter

35.3.4 Weighbridge

There is currently no weighbridge at the site. Should waste and recyclables quantities in the region increase the current lack of a weighbridge may become an issue. This is because there is currently insufficient space to allow for a weighbridge installation at either of the sites two entrances, hence a major retrofit of the site layout would be required to accommodate any future weighbridge infrastructure.

35.4 Operation

Operation of the site is contracted to a private operator. Under current contract arrangements, the operator is paid a set fee for operation that is to cover both the cost of all waste and recyclables sorting, processing, and disposal, or pre-processing. Under this arrangement there has been a significant reduction in the waste disposed of to landfill due to the potential financial benefit of the operator to maximise resource recovery.

However, the difficulty with this arrangement is that despite the best intentions of the operator to recover as much materials as possible, space constraints at the site make separation and storage of materials difficult. This in turn has led to issues with site housekeeping and OH&S risk, particularly when a front end loader is used to spread waste loads for sorting. Loads are often dumped on the ground to permit the operator to scavenge as much as possible prior to loading the residual waste into the skip bins.

Photo 35.7 Salvaged items in front of mixed waste drop-off area

36. Bathurst Waste Management Centre

Bathurst Regional Council

Key Facts	
Throughput (tonnes/year)	40,000 tonnes/year*
Cost to build ($)	$3.5M
Owner	Council
Operator	Council
Designer	Combination – Council and sub consultant
Topography	Relatively steep slope
Site	Greenfield
Key Features of site	
Single weighbridge	✗
Dual weighbridge	✓
MRF	✗
Landfill	✓
Education centre	✗
2nd hand store	✗

*Includes waste disposed of directly to landfill and not through the transfer station, also includes recyclables.

Bathurst Regional Council built a new transfer station at the Bathurst landfill site approximately two years ago. The landfill itself has been located at this site for approximately sixty years.

The facility is Council owned and operated with a throughput of approximately 40,000 tonnes/year. Approximately 10,000 customers visit the site per year. The WMC is open to the public seven days a week between 7:30am – 5:00pm. The planning stage of the Bathurst facility took place over 12 months and was funded from Council waste reserves.

36.1 Project drivers

The main driver for construction of the transfer station was a need to improve resource recovery and reduce waste to landfill. It was also desirable to keep small vehicle customers away from the active landfill area.

36.2 Design and construction

The facility was designed in-house and the construction was a combined effort between Council and sub-contractors. The upgrade cost approximately $3.5 million and included a new gatehouse with dual weighbridges, staff amenities building, recycling facility, stormwater and site runoff collection systems and storage dams, and a leachate collection system.

Specific changes to the site include:

- A new gatehouse and dual weighbridge so that waste loads entering the site can be accurately weighed and charged (see Photo 36.1);
- An all weather recycling/transfer station facility which will eliminate the need for small vehicles to go to the tipping face (see Photo 36.2);
- A wash bay facility for the cleaning of Council collection vehicles and operational plant; and
- Staff offices and amenities.

Council is also considering the potential establishment of a salvaged goods recycling centre where items delivered to the Bathurst Waste Management Centre that are capable of being re-used could be sold back to the public.

The transfer station does not use skip bins, rather customers are required to unload waste into a shallow pit where it is then loaded into vehicles using a front-end loader. (see Photo 36.3, Photo 36.4 and Photo 36.5).

Photo 36.1 Double lane weighbridge and gatehouse

Photo 36.2 Mixed waste drop off

Photo 36.3 Shallow pit

Photo 36.4 Truck waiting to be loaded at the end of the push-pit

Photo 36.5 Unloading bays are barricaded during quiet periods

36.2.1 Issues with the current design and layout

A number of design issues have become apparent since commencing operation. These are summarised as follows:

- The site gatehouse and weighbridge is located at the lowest point of the site and may be subject to flooding during high rain events;
- Due to the prevailing wind directions and the position of the transfer station shed at Bathurst, the back panel of the shed has been completely blown out in the past;
- The recycling sheds are small making it difficult to collect bins and crates using plant, often customers overfill the storage areas and recyclables flow out and around on the ground (see Photo 36.6);
- No provisions were incorporated in the site design for undercover storage of waste oil and lead acid batteries (see Photo 36.7);
- The mixed waste pit width is large but customers can only access the front section of the pit, hence waste tends to pile up over the edge of the drop off area, or customers try and push waste further into the pit;
- Damage to the retaining wall from plant moving waste is obvious (see Photo 36.8);
- The original design and operations incorporated additional staff compared to current staffing levels;
- There are complaints by operators about double handling for both waste and recycling from this site; and
- Signage directing traffic is unclear leading to confusion about the required direction of traffic flow.

Photo 36.6 Recycling Sheds

Photo 36.7 Collection of waste oil and lead acid batteries (Note: Batteries and waste oil should be stored in a covered and bunded area)

Photo 36.8 Waste disposal area with damage to retaining wall

37. Kempsey Waste Management Facility

Kempsey Shire Council

Key Facts	
Throughput (tonnes/year)	
Cost to build ($)	
Owner	Council
Operator	Council
Designer	Council
Topography	Flat
Site	Existing waste management facility with landfill
Key Features	
Single weighbridge	✓
Dual weighbridge	✗
MRF	✗
Landfill	✓
Education centre	✗
2nd hand store	✓

Kempsey Shire Council operates three small transfer stations in South West Rocks, Stuarts Point and Bellbrook, and a larger landfill site (incorporating a transfer station) on Crescent Head Road, to service a local population of over 28,000. The Crescent Head Road facility is open from 7.00am to 4.30pm on weekdays, and 9:00am to 4:00pm on weekends.

37.1 Project drivers

In 2003, Kempsey Shire Council (KSC) released a revised Waste Management Strategy. This strategy reinforced KSCs commitment to align with the current NSW Waste Avoidance and Resource Recovery Strategy.

A number of actions were identified in the Kempsey Waste Management Strategy aimed at helping to achieve Strategy goals and objectives. One of these actions was to close smaller landfills that did not meet EPA requirements. As part of the landfill rationalisation program, KSC closed all small sites and constructed a series of transfer stations in their place.

The larger of the landfill facilities, located on Crescent Head Road, was upgraded to meet EPA standards. The landfill upgrade included construction of a transfer station to minimise small vehicle activity at the landfill face and to encourage greater resource recovery.

The Crescent Head Road landfill and transfer station facility is owned and operated by Council. Prior to 2003, this facility (as well as a number of the other small transfer stations) was operated by contractors.

37.2 Design and construction

37.2.1 Site layout

Drop-off points for recyclables including glass, plastics, cardboard, and aluminum cans are located outside the site gates as shown in Photo 37.6. Small vehicle customers are not required to be weighed as they enter the Crescent Head Road WMF (small vehicles entry is shown in Photo 37.1). Drop-off points for further recyclables including lead acid batteries, waste oil, and reusable items are located adjacent to the small vehicles entry.

The transfer point for mixed waste from small vehicles is located on the opposite side to the recyclables drop-off points, still in sight from the gatehouse.

37.2.2 Transfer station design

The Crescent Head Road transfer station consists of two push pits (located back-to-back) covered with a flat roof as shown in Photo 37.2. The main intention of the roof is to cover the push-pit, however it does extend almost 2m over the customer drop-off area, providing some protection to customers.

The push-pits are relatively small in size, each measuring approximately 4m across by 8m long. There are two pits however only one of the pits is currently in use, meaning that it can require frequent emptying during peak periods. The second pit may be used in the future for collection of recyclables or other materials.

The main issue with current design and operation is the double-handling associated with needing to empty the pit using a front-end-loader. Particularly as the back-to-back design of the pits requires the front-end loader to drive into the pit to collect the waste, and then reverse out of the pit to load the waste into a waiting vehicle (as shown in Photo 37.4 and Photo 37.5). This results in greater time required for servicing, as well as creating additional litter, dust, and odour. Generation of litter further increases time required for cleaning around the area.

The small size of the push-pits, combined with the large size of the front-end loader, also results in waste being pushed over the edge of the pit during waste collection, which further increases litter and time required for cleaning.

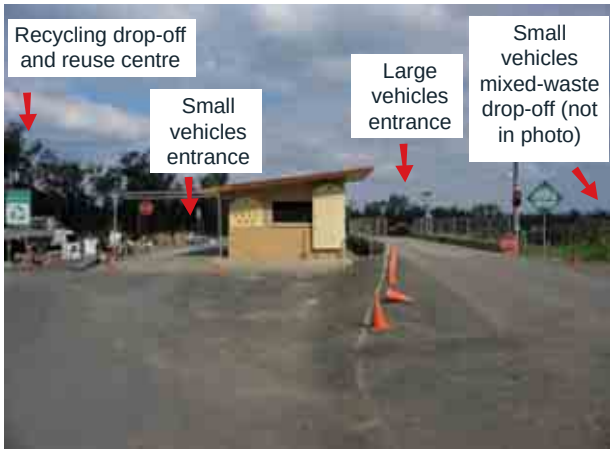

Photo 37.1 Gatehouse and weighbridge

Photo 37.2 Kempsey transfer station (view from rear)

Photo 37.3 Push pit

Photo 37.4 Collection of waste by the loader

Photo 37.5 Loading waste into truck for transfer to landfill

37.3 Resource recovery

Provisions for collection of glass, plastics, aluminium cans, and cardboard are located outside the fence, adjacent to the site entrance to allow for materials drop-off outside normal operating hours. Used oil, lead acid batteries, and reusable items have designated storage areas on site (as shown in Photo 37.9 and Photo 37.6).

Items for resale are currently stored under a carport type shelter or in the open. There is a shed located behind this cover that was originally intended for the reuse centre, however due to limited onsite storage, this shed is currently used to house equipment required for the landfill operations.

Photo 37.6 Glass, paper, cardboard, and aluminium can recycling – located outside site entrance

Photo 37.7 Reuse centre

Photo 37.8 Stockpiled lead acid batteries (Note: Batteries should be stored in a covered and bunded area)

Photo 37.9 Collection of waste oil (Note: Waste oil and other liquid wastes should be stored in a covered and bunded area)

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Notes

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