CCRC Solid Waste Management Strategy

2013-2023

Cassowary Coast REGIONAL COUNCIL

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List of Acronyms

C&D - Construction & Demolition Waste

C&I - Commercial & Industrial Waste

CPRS - Carbon Pollution Reduction Scheme

DEPH - Department of Environment Protection & Heritage

MGB - Mobile Garbage Bin

MRF - Materials Recovery Facility

MSW - Municipal Solid Waste

1 General

1.1 Purpose

The Cassowary Coast Regional Council Solid Waste Management Strategy (SWMS) provides an assessment of the existing waste management facilities and addresses garbage collection, resource recovery, waste minimisation and disposal throughout the Cassowary Coast region now and for the next ten years. The Strategy provides a decision model for an integrated waste management system for the Cassowary Coast Regional Council for the next 10 years.

The Strategy provides a strong emphasis on sustainable waste minimisation and resource recovery based on an environmentally, financially and socially responsible approach.

1.2 Council Overview

Cassowary Coast Regional Council (CCRC) was formed in 2008 by the amalgamation of the former Johnstone Shire Council (North) and Cardwell Shire Council (South) Local Government Areas. The amalgamated Council covers and area of 4,700 square kilometres and is located in North Queensland with Cairns to the north and Townsville to the south. It is also the gateway to Hinchinbrook Island, Australia's largest island national park.

The region is the home of 32,000 people from many cultures with 48 languages being spoken in the region. CCRC has 15,707 rateable properties within the council boundaries.

The main industry is agriculture (bananas and sugar cane) whilst there is also a significant tourist flow and a strong aquaculture and fishing base.

1.3 Waste Management Strategy Overview

Each of the previous councils had an existing waste strategy which has been reviewed for this strategy. External and internal changes have triggered the need for a new ten year strategy to address waste management planning in the total CCRC area.

The key factors prompting the need for the review include:

- The need to prepare, approve and implement a waste management strategy following the amalgamation of the former Johnstone Shire Council and Cardwell Shire Council areas forming the new Cassowary Coast Regional Council;
- The potential impact of a Carbon Pollution Reduction Scheme (CPRS) effecting the financial drivers in the waste management processes;
- The ability to integrate and standardise services and infrastructure across the new Council area; and
- The Legal requirement for CCRC to comply with the Waste Reduction and Recycling Act 2011 and its subordinate legislation.

Recommendations for the preferred waste management strategies for the CCRC are being developed through considerations of:

- Future population growth;
- Location of current waste infrastructure;
- Economic evaluations and sustainability;
- Environmental sustainability particularly with regards to resource recovery;
- Legal requirements;
- Community input;
- Compliance with best practice; and
- Practical and achievable options.

Waste management in the Cassowary Coast Regional Council Local Government Area covers a wide range of activities including:

- Provision of waste management infrastructure which includes two landfills and seven transfer stations to receive and dispose of most waste types;
- Municipal Solid Waste (MSW) and Commercial and Industrial (C&I) waste kerbside bin collections;
- Processing and disposal (if required) of material collected;
- Receival of waste at urban and rural waste transfer stations and the transportation to Landfill;
- Resource recovery options at selected waste transfer stations;
- Street litter bin collection on streets, parks and reserves;
- Litter collection in defined areas; and
- The management of illegally dumped rubbish (investigation and removal).

2 Relevant Waste Management Legislation

There are a great many changes in the legislative landscape which drives the way waste is managed in Australia. The industry is highly regulated and strives to meet competing objectives at all levels of government.

The various State Governments are the key regulator in the waste management industry in Australia with the Federal Government providing some overarching direction and policies.

2.1 Queensland Legislative Drivers

Key legislation which drives decision making in Queensland includes:

- *The Waste Reduction and Recycling Act 2011* (and subordinate legislation);
- *The Environmental Protection Act 1994* (and subordinate legislation);
- *The Sustainable Planning Act 2009; and*
- *The Local Government Act 1993.*

Other legislation has an affect on waste management systems and how specific waste is handled. For example the legislation regarding the management of asbestos containing material (ACM) is:

- *The Public Health Act 2005 and its regulation; and*
- *Work Health and Safety Act 2011 and its regulation.*

The Department of Environment and Heritage Protection (DEHP) is the key agency regulating most waste management activities.

The legislation outlined below underpins the Council's authority to manage waste and controls the operating environment within which Council will be expected to function when implementing the new CCRC Waste Management Strategy.

In 2010, the Queensland Government released the Queensland *Waste Strategy 2010 - 2020,* which deals with all types of waste. The Waste Strategy was designed for Queensland meet its contemporary obligations under the National Waste Policy and the Queensland Government targets contained in Toward Q2 - Tomorrow's Queensland. However, with a change of government this strategy is currently under review with some modifications expected but it is understood that the overall objectives of the strategy will not differ considerably.

The Queensland strategy has been underpinned by legislation to ensure the strategies are achieved. The legislation is the Queensland Waste Reduction and Recycling Act 2011 and its subordinate regulations and policies.

A summary of the potential impacts on and outcomes for CCRC as a result of this strategy includes:

- Certainty in making decisions about diversionary processes and providing best practice services;
- Incentives for exploring the use of regional contracting and service delivery;
- The opportunity of working with the commercial sector to establish resource recovery opportunities;
- A major impact on waste generated for Council's own activities; and
- Greater choice in 'green' purchasing of goods and services.

2.1.1 Waste Reduction and Recycling Act 2011

The Waste Reduction and Recycling Act is currently the principal piece of legislation for the conduct of waste management programs in Queensland. This act was developed to address ecological sustainability and provide incentives to improving the environment. Its predecessor the Environmental Protection Act 1994 main focus was regulatory and no emphasis on positive strategies.

DEHP is empowered under the Act with strategic and regulatory responsibility for waste management activities in Queensland. The Act provides DEHP with the statutory authority to manage the environmental impacts of waste in Queensland and to minimise adverse effects on human health and the environment. Various regulations made under the Act deal with specific aspects of waste management, including the development of Waste Minimisation Strategies and implementation plans.

The principles which underpin waste management under this act are:

- **"**Polluter pays principle" — all costs associated with waste management should, where possible, be borne by the waste generator.
- "User pays principle" — all costs associated with the use of a resource should, where possible, be included in the price of goods and services developed from that resource. User pays ensures that those who generate the waste pay an appropriate price for managing and disposing of it.
- "Product stewardship principle" — the producer or importer of a product should take all reasonable steps to minimise environmental harm from the production, use and disposal of the product. Product stewardship recognises that everyone in a product supply chain is responsible for ensuring appropriate management during product design, manufacture and end of life phases.

2.1.2 Environmental Protection Act, Policy and Regulations

The Act has a number of pieces of subordinate legislation which deal with various components of the manner in which waste is managed in Queensland, including the:

- *Environmental Protection Act 1994*
- *Environmental Protection Regulation 2008*
- *Environmental Protection (Waste Management) Regulation 2000.*

The above legislation covers the regulatory side of waste management:

- Licensing of waste facilities;
- Defining waste;
- Tracking of regulated waste;
- The design rules for waste equipment; and
- Other regulators functions.

2.1.3 Local Government Act

The LGA provides councils the ability to levy utility charges for the provision of services such as waste collection and disposal, to raise levies for items such as landfill rehabilitation, and to charge user pays fees for the use of facilities such as transfer stations.

Local governments have the power to enter into beneficial enterprises to the benefit of the community in participation or partnership with the private sector. These enterprises will be subject to full competition and commercial accountability. Therefore more than ever before there will be pressure on local governments and the waste management companies they form to maximise their revenues from waste businesses whilst minimising waste.

It is often argued that NCP creates a conflict for Councils managing waste, in that waste often represents a significant course of revenue for larger Councils. Managers of waste within Council are therefore often provided with competing performance indicators to reduce waste and increase revenue.

Corporate and operational plans are proposed be a constant feature of the running of local government enterprises as well as asset management and monitoring of costs to ensure commercial viability. Beneficial enterprises therefore will be fully costed.

These changed operating conditions should be a major consideration for the CCRC Strategy planning and implementation phases, as future waste management operations will operate within this new competitive environment.

2.2 Federal Legislative Drivers

2.2.1 National Waste Policy

The Federal Government has become more active in the waste in recent years, with a review of waste management via the Productivity Commission. More recently, the Australian Government has released a national waste policy for Australia.

A recent snapshot of waste and recycling trends in Australia (Waste and Recycling in Australia, 2008) showed our waste increased by 28 per cent between 2003 and 2007. This occurred in spite of a big increase in recycling efforts, through kerbside recycling programs and actions by the commercial and industrial sectors.

The policy sets directions in six areas:

- Taking responsibility – shared responsibility for reducing the environmental, health and safety footprint of products and materials across the manufacture-supply-consumption chain and at end of life;
- Improving the market – effective and efficient Australian markets operate for waste and recovered resources, with local technology and innovation being sought after internationally;
- Pursuing sustainability – less waste and improved use of waste to achieve broader environmental, social and economic benefits;

- Reducing hazard and risk – reduction of potentially hazardous content of wastes with consistent, safe and accountable waste recovery, handling and disposal;
- Tailoring Solutions – increased capacity in regional, remote and indigenous communities to manage waste and recover and re-use resources; and
- Providing the evidence – access by decision makers to meaningful, accurate and current national waste and resources recovery data and information to measure progress and educate and inform the behaviour and the choices of the community.

The policy contains sixteen strategies and roles of relevant jurisdictions, those with affect on the CCRC strategy are:

- Product stewardship framework legislation to allow the impacts of a product to be responsibly managed during and at the end of life (tyres, oil, packaging material, etc)
- Sustainable procurement – green buy;
- National definition and classification of waste;
- Continued government focus to reduce the amount of biodegradable material sent to landfill;
- Management of safety, environment and health risks from landfill gas emissions;
- Improvements in waste avoidance in the commercial and industrial waste stream;
- Continued government encouragement of best practice waste management and resource recovery for construction and demolition projects;
- Identify actions to build capacity and ensure appropriate suite of services is available to regional and remote communities; and
- Publish a three yearly waste and recovery report, underpinned by a system that provides access to integrated national core data on waste and resource recovery.

A new National Waste Policy is expected to clarify many matters arising from individual states approach to waste management and will have an impact in Queensland by filtering down through the Queensland Waste Management Strategy and future potential regulatory changes. CCRC needs to have regard to the national policy commitment to stimulating resource recovery.

2.2.2 Carbon Pollution Reduction Scheme (CPRS)

The Federal Government has introduced of an emissions trading scheme, aimed at reducing the amount of Carbon dioxide equivalent released to the environment, to reduce the potential impacts of global warming. The structure of scheme and how it impacts upon the waste sector is in a constant state of flux, as the system is being implemented.

The Carbon Price Mechanism (CPM) of applying a price on carbon does have a direct impact on CCRC. While the CCRC landfills do not trigger the threshold for applying a fee for the carbon dioxide equivalent emitted the wet waste from CCRC is currently disposed of at a landfill which triggers the threshold and as such CCRC pays this tax.

2.3 Impact of Legislation on CCRC

CCRC is required to prepare, adopt and implement a plan for managing waste in its local government area in a way that best achieves the objects of the WRR Act 2011. The objects of the act are as follows:

- To promote waste avoidance and reduction, and resource recovery and efficiency actions;
- To reduce the consumption of natural resources and minimise the disposal of waste by encouraging waste avoidance and recovery, re-use and recycling of waste;
- To minimise the overall impact of waste generation and disposal;
- To ensure a shared responsibility between government, business, industry and the community in waste management and resource recovery; and
- To support and implement national frameworks, objectives and priorities for waste management and resource recovery.

In meeting the obligations of the legislation Council is required by the 1st of December 2014 to ensure that:

- It addresses all aspects of waste management in the CCRC local government area in one or more waste reduction and recycling plans;
- It adopts and implements the plans;
- The plans are to include:
    - Waste reduction and recycling targets for:
        - Waste generated in carrying out CCRC activities;
        - Waste generated by households in the CCRC local government area;
        - Other waste generated in the CCRC local government area other than by CCRC;
    - Actions to be undertaken to improve waste reduction and recycling of:
        - Waste generated in carrying out CCRC activities;
        - Waste generated by households in the CCRC local government area;
        - Other waste generated in the CCRC local government area other than by CCRC;
    - Details of current and proposed waste infrastructure;
    - The management and monitoring of the CCRC performance under the plans;
    - Information about achieving continuous improvement in waste management;
    - Other matters prescribed under a regulation about the requirements for a local government's waste reduction and recycling plans.
- CCRC adopts the plan/ plans by resolution;
- Before adoption CCRC must consult with the public on the proposed plan and have the plan available for public comment for at least 28 days; and
- In finalising the plan CCRC must take into account any submissions received.

This report documents the review of the current waste management infrastructure network, the current levels of access to facilities and the current business model. It also documents the systems which need to implemented or amended to meet compliance. Many infrastructure related issues will be determined by the overall objectives of the council's waste management strategy.

3 Population and Population Growth

From a council waste management perspective, one of the key drivers of waste generation is population. Population growth is linked to waste generation and the demand for waste infrastructure. The location of the population typically represents the foci of the source of the majority of waste which CCRC manages. This section identifies the current population within the CCRC, as well as considering as best we can the future population forecasts for the area. In order to define the major loci of waste generation moving forward this section will present the:

- Current population
- Location of future population growth

3.1 Current Population

The population of the CCRC area in 2011 is around 31,000. It is estimated in 2016 that this population will be in the vicinity of 33,198 and by 2031 the population is estimated to be 34,841 (*2011 edition Queensland Government Population Projection)*. This represents no significant increase in population.

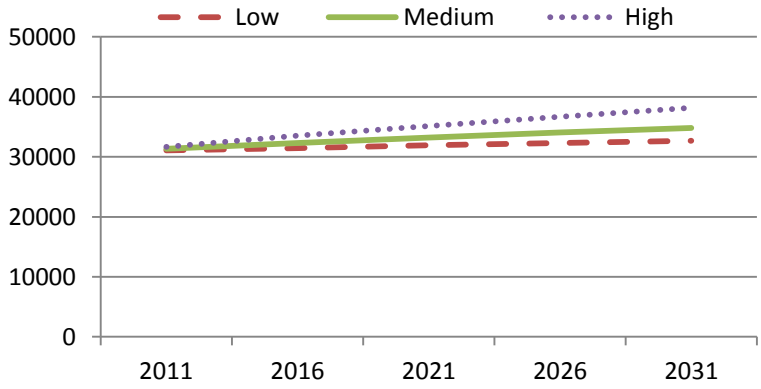


Figure 1 - Projected population growth for CCRC region
(Population and Dwelling Profile, Cassowary Coast Regional Council, Office of Economic and Statistical Research, Queensland Treasury and Trade)

3.2 Location of Future Population Growth

The location of population growth has an impact upon infrastructure and service delivery requirements. In-fill development around existing infrastructure will have an influence over whether the existing infrastructure can cope with the growth surrounding it, and therefore whether it requires upgrade or renewal. Encroachment surrounding existing infrastructure will also potentially create community pressure to close the facilities. Encroachment is therefore a serious issue which must be managed in order to protect the community infrastructure operated by Council.

Currently there is no urban encroachment experienced by any landfill/ transfer station other than Stoters Hill landfill and transfer station.

Any new major development if significant may require the development of new waste facilities in order to maintain the defined service levels and should be addressed at the planning stage.

4 Waste Generation

It is important to gain an understanding of the aspects of waste generation which determine a waste strategy. These aspects are:

- Total amount of waste generated;
- Source of the waste generated;
- Composition of the waste stream; and
- Waste with the potential for reuse, recycling, processing or treatment.

4.1 Total Waste Generation

Whilst there are other potential drivers of waste generation, the primary underlying drivers are the growth in population and the consumption activities of that population.

The growth in various specific waste types may be better defined in terms of other drivers, such as:

- Building approvals or value of construction for C & D waste;
- Economic activity rather than population to identify generation during recessionary periods; and
- Natural disasters for all waste types.

This strategy assumes that waste generated per capita does not increase, nor does the waste composition change. It is more a matter of what reusable content is in the waste being generated. The strategy will also focus on the need for the community to be environmentally responsible and reduce their eco footprint by avoiding the generation of waste, reducing waste being generated and the reuse of items and materials before considering recycling and finally if no options left, disposal. The waste hierarchy shown in paragraph 4.4 below encapsulates this principle.

For the period of 2011/12 (excluding Yasi waste) approximately 45,500 tonnes of waste was generated and delivered to the CCRC waste management facilities. This represents a figure of 1.46 tonnes of waste per person - the Australian average is less than 1 tonne per person.

Of the waste material received in 2011/12 (excluding Yasi waste), approximately 30,000 tonnes was disposed to landfill, whilst 17,800 tonnes was diverted in location of which 6,300 tonnes was wet waste which was transported to Townsville/ Ingham for final disposal. This represented a diversion rate of around 39%.

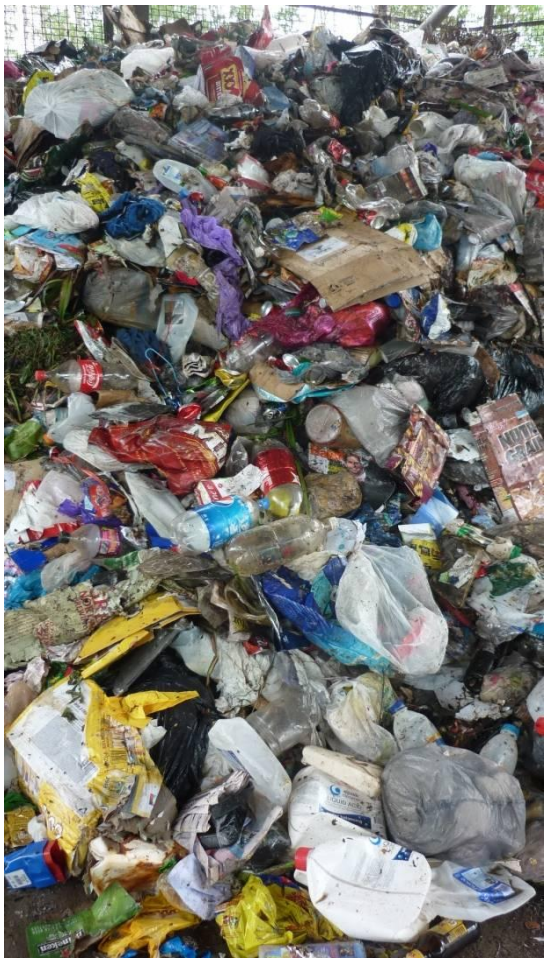
4.2 Source of Waste Generation

The source of waste generation is important to consider because of the level of influence Council can have over this waste stream. Council may be considering putting in place a waste reduction management system for this stream which is significantly expensive and it may be a barrier to the commercial operator entering the market to manage this stream. This is an issue which Council needs to consider carefully, both in terms of maintaining a

desired level of control (ensuring systems are in place) and ensuring that Council is not seen as acting anti-competitively.

Legislatively, the only waste stream that Council can significantly control is the domestic waste stream as Council has the ability to levy utility charges under the *Local Government Act 1993* and typically manage the collection of the waste from households.

The Queensland Waste Strategy identified that the typical source of solid waste generated comes from three main (generally accepted) sources, being:



Municipal Solid Waste (MSW)
(approx 23,300 tonnes were received 2011/12)

- MSW is typically considered waste which is generated by the domestic sector (kerbside domestic collection, parks, street sweeping and public places but does not include Council's commercial operation) ;
- Collected by kerbside collection and delivery in heavy vehicles – normally mixed waste which is not easily separated;
- Self haul by the residents to transfer stations of garden and bulky waste in light vehicles – this can generally be separated to ensure only that requiring disposal is taken to the landfill; and
- This waste stream is currently managed by Cassowary Coast Regional Council.

Commercial and Industrial Waste (C&I)
(approx 8,900 tonnes received in 2011/12)

- C&I waste is waste generated from commercial activities such as retail, wholesale, repair services, hospitality and agriculture;
- Commercial and industrial wastes are often very specific to the industry, the generator mainly relies upon council infrastructure for the management of this waste.
- There are exceptions where the waste is hazardous or regulated and outside of the Councils licences thus requiring the specific waste to be managed by a licenced third party;
- Some collection of C&I at kerbside is by Council and contractors for delivery in heavy vehicle – normally mixed with wet waste – included in domestic wet; and
- Majority of material collected by contractor for delivery by heavy vehicle to lower cost – the majority of the dry recyclables can be recovered and not require landfill.

Construction and Demolition Waste (C&D)
(approx 11,800 received in 2011/12)

- C&D waste is typically generated from the activities related to the construction industry and the demolition of buildings and other engineering works.
- The predominant materials from this source are often concrete and soils, however construction generates a certain amount of timber, plastic, cardboard and other wastes such as plasterboard;
- This waste is normally managed by Council's infrastructure however the producer is requested to separate the waste into reuse/recycle and disposal.

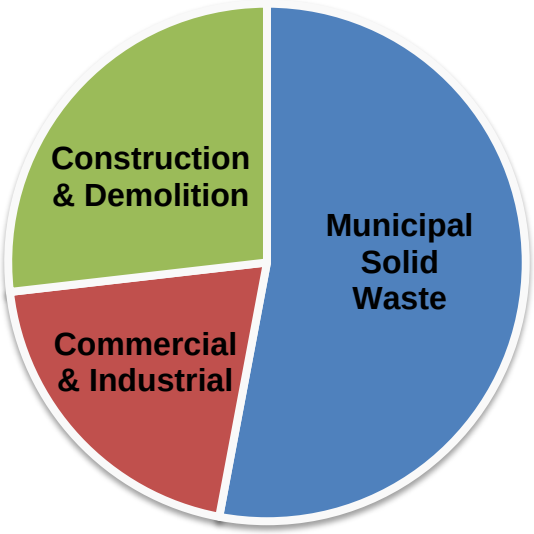


Figure 2: Percentage of Waste Types received in 2011/12 at CCRC Waste Facilities

These waste sources have slightly different characteristics and are managed in slightly different ways, generally related to the economic and legislative environment in which the various entities operate.

4.3 Waste Composition

The composition of the waste stream varies depending on the source from which it comes and the nature in which it is delivered to a facility.

The manufacture of materials and products is often focused on the use of raw materials which are pure and homogenous as a feed stock. Businesses are created on the ability to deliver a key feedstock to a specific process to allow the creation of a product. A large amount of time and effort can be spent through purifying and keeping materials separate.

One of the key issues facing managers of waste is the fact that the stream of material is not pure, it is mixed at the source and it is often handled in a manner which is based upon pure transport efficiency rather than logistical or resource management efficiency. Waste streams are heterogeneous, but in order to manage them from a diversionary perspective, waste is typically better separated at the source of generation and to be considered based upon its components.

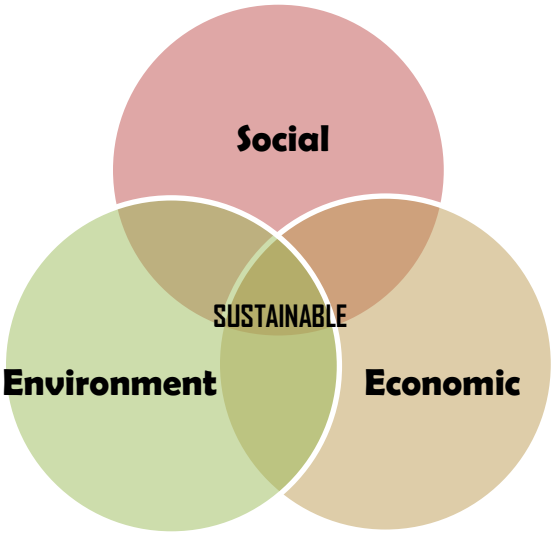
In order to allow specific diversionary activities and to consider various specific issues facing Council with the management of some waste types; the consideration of the composition of the waste stream is required.

No one system has been proven to remove the need for landfill, and still demonstrate product useability. Many diversion processes exist where treating waste streams results in a poor grade material which is typically land filled as it is unsuitable for any real commercial use in recycling.

It is considered that keeping waste sources as clean as possible is key to effectively managing waste as a resource. This needs to be addressed by the collection system put in place.

4.4 Waste Generated which can be Avoided, Reused, Recycled, Processed or Treated

It may be environmentally, economically and socially sustainable to remove some forms of recoverable material from the waste stream in preference to the disposal by landfill. This is a triple bottom line approach to waste diversion and is dependant on a full life cycle analysis of the product.



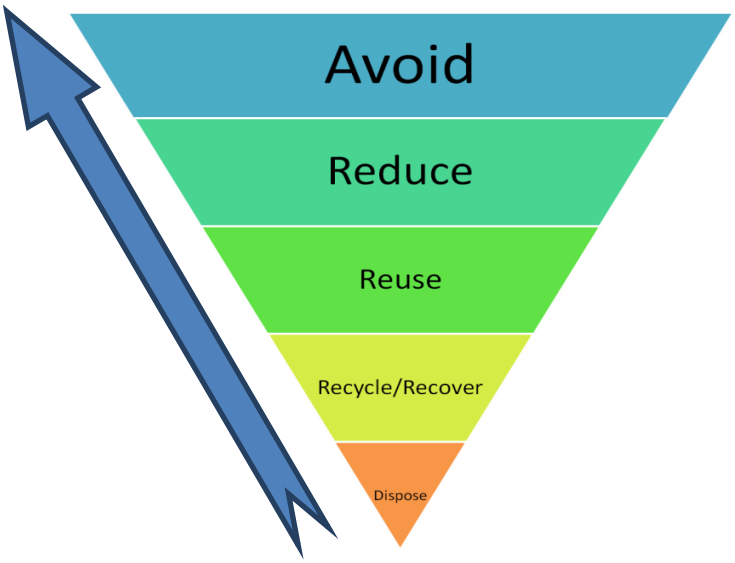
This life cycle analysis involves a number of factors:

- The type and quantity of waste presented at our facility;
- The ability to reuse or process the waste;
- The environmental cost of collection;
- The environmental cost of processing;
- The availability of technology to process the waste;
- The economic cost of all processes;
- The availability of markets for the products produced; and
- The social acceptance of the processes.

Currently, at the landfill or into the transfer station bin, the community presents mixed loads of waste which contain materials which are a valuable lost resource. Because this material has reached the facility mixed it is normally impractical to separate the resource from the waste.

The community has an environmental responsibility to ensure they are personally acting is a sustainable manner in managing their waste by using a hierarchical approach. The diagram of the Waste Hierarchy below shows the steps to go through so that when all else has failed and not before you dispose of the waste to landfill.

Most Preferred



Least Preferred

Unless waste is avoided, reduced, reused or separated, by the time the waste gets to a council facility it is normally too late to manage the recyclable material in a sustainable manner.

In CCRC the commercial waste sector operators are generally subject to the disposal and diversionary services provided by council unless there is a significant volume of a particular type of waste which avails itself to special treatment. However, there are some small businesses which have been developed in CCRC to manage specific types of recycling services as a business enterprise and not as a council directed business.

4.5 Growth in Total Waste Stream

The implementation of the Waste Reduction and Recycling Act 2011 mandates waste reduction targets, which are a reduction of waste to landfill by capturing the reuse/recyclable content of the waste. It is important that this capture/ separation is done before the waste is taken to the landfill/ transfer station gate.

This process will require cleaner production systems to be in place to capture waste before it is sent to landfill or in the ideal situation avoid the generation of the waste in the first place. Additionally the community is encouraged to try to reduce the generation of waste in the domestic or business process.

5 Solid Waste Infrastructure

STRATEGY 1

CCRC will provide and maintain waste management infrastructure which will:

- **Meet best practice service levels for access to facilities in the Cassowary Coast;**
- **Be designed to meet the key diversionary waste objectives of relevant legislation; and**
- **Provide approved locations for final disposal of waste which is not suitable to be removed from the waste stream.**

Waste management systems and infrastructure planning in Australia is generally undertaken in a situation where existing facilities are in operation. Whilst existing facilities can be disregarded in planning a system from first principles, this option is rarely taken where infrastructure is already in place due the difficulty and cost of developing waste management facilities. As a result infrastructure planning is typically undertaken with consideration of the existing infrastructure as well what the ideal system may look like.

In considering waste management infrastructure, a customer service approach has been taken. Whilst the number and location of facilities can be considered from a purely financial perspective, it is considered more appropriate that systems are developed based firstly upon an expected level of service and secondly, and as importantly, on the achievement of environmental objectives.

The system will be delivered to best meet these objectives at an affordable cost based upon the:

- Key drivers for waste management infrastructure
- Consideration of existing facilities
- Integration of waste system objectives with existing operations.

5.1 Key Drivers for Waste Management Infrastructure

Whether considering an existing system, or a totally new waste infrastructure system, three areas of simple objectives assist to define the requirements of the system at its highest level. These system objectives can be grouped into the following categories:

- Service level objectives - such as travel time to a facility;
- Diversionary objectives – such as the diversion of garden waste and other waste from being landfilled; and
- Financial objectives – such as the total life cycle cost of the system.

Whilst this is a simplistic view of a total system, at the strategic level, most questions related to the overall waste system and therefore the required infrastructure can be answered by considering these objectives.

The key components driving the infrastructure planning process relate to answering the following questions:

- What is the number and location of infrastructure/ facilities required?
- What type of facilities is required?
- Is there a need to upgrade existing facilities?
- Is there a need for new facilities?
- What are the optimal operating hours of the facilities to meet the community needs in a sustainable manner?

5.1.1 Number and Location and Capacity of Waste Facilities

From an overall system perspective, the number and location of facilities is one of the key components in driving system cost and levels of service. A Council is typically firstly interested in maintaining or providing a certain level of service which is satisfactory to its residential customers.

The first perception of the level of service provided to a resident is formed before the resident even reaches the facility. The time taken to reach a facility will create a perception of satisfactory service in the first instance.

CCRC has used these same principles to define a given level of service to its customers, related to the time taken to access any facility. Council has defined its service level across ranges such as, for example the industry best practice of:

- 80 per cent of the population within a 20 minute travel time to a facility; or
- 95 per cent of the population within a 30 minute travel time to a facility.

Whilst the existing facilities meet the objectives of the waste management system for access there is no requirement to consider infrastructure location and number in the short to medium term however the capacity of the facilities need to be addressed to ensure the facility fulfils its role during the period of the strategy.

The capacity of each facility will be addressed when each facility is described below.

5.1.2 Type of Infrastructure/Facilities Required

From a system level perspective, the waste management system will represent a flow of materials from the generator through to processing, diversion of recoverable material and finally disposal. The type of transfer station infrastructure will mainly be defined by customer service and underlying logistical considerations (such as the use of transfer stations by heavy vehicles).

Examples of measures of service related to operation of a piece of waste infrastructure include:

- Actual range of services provided on site (the ability to cater for different customers and waste types)
- Hours of operation
- Cleanliness, proximity and amenity
- Environmental protection

Processing and disposal infrastructure requirements will be mainly defined by diversionary objectives which will be dictated by:

- State Government mandated diversion targets;
- Community expectations;
- Other regulatory requirements;
- Technical capacity and capability;
- Regional sustainability (environmental and financial) of the materials identified for recovery;
- Optimising opportunities to recover waste as a resource; and
- Infrastructure and transport cost.

5.1.2.1 Landfills

A landfill is generally a difficult facility to locate. Community acceptance of this type of facility is low so ensuring available air space already approved is not squandered is critical. Where there is a requirement for additional landfill airspace, it is important that this is identified as early as possible, and steps are taken to locate and secure a site well in advance of it being required. Planning for such a facility is often required decades in advance.

The landfill site selection, acquisition, planning and development process will generally take at least 7 to 10 years in most cases, and can easily take more. It is important to 'telegraph' the need for a new facility far in advance of its actual requirement to assist in the planning process. The Department of Environment and Heritage Protection (DEHP) have previously advised Council that they were not in favour of approving new landfill sites in the wet tropics.

A common misconception in the community is that new technologies will remove the need for landfill. There are no examples of processing technologies which remove the need for a landfill all together.

5.1.2.2 Transfer Stations

Waste transfer facilities are developed for a number of reasons. From a logistical perspective they operate to consolidate smaller loads into larger more efficient loads, reducing the effort and cost required to transport waste material. They also provide a safer and more environmentally acceptable customer interface for the deposit of waste material.

In recent years, the use of transfer facilities has become more wide spread as environmental requirements and liability for poorly run landfills increase. The use of waste transfer facilities if designed correctly as part of an overall system can increase the flexibility of a waste management system where the location of the landfill (and other diversionary) components of the system becomes less important. That is, the waste transfer facility will allow for the disposal location and system to change without major changes to the waste transfer network (and therefore impact upon time taken to reach a facility by the general public). Whilst the on site operations may change, once a waste transfer facility is correctly located, the location will rarely need to change significantly, provided adequate buffers are included in the facility site.

The number of transfer stations required within a system will vary depending on the requirements for the facility. The need to cater for heavy vehicles will be determined by the logistics of the system, and the location of the final disposal point for these heavy vehicles. Generally speaking, a waste collection vehicle can travel further than a residential customer is willing to travel, and still be efficient from a system perspective. Smaller vehicles will typically bring a larger number of small loads, whilst heavy vehicles will typically bring a smaller number of heavier loads.

Where the focus of a waste transfer facility is on the customer interface, then a larger number of smaller facilities are typically required as residential customers are less likely to accept travelling for a significant time period to dispose of waste. Further, it is much less efficient (from a total effort perspective) to allow smaller vehicles to travel the same time or distance that a heavy vehicle will (with a consolidated load).

From an infrastructure design perspective, the capacity of a waste transfer facility is a factor of:

- The number of tipping stalls available to the public to allow the unloading of material for disposal
- The level of diversion of waste materials away from landfill (a significant number of transactions relate to garden waste only, which do not effect the requirement for tipping stalls at the disposal area)
- The average time taken by a customer vehicle to dispose of material at a tipping stall and then move on
- The peak number of vehicles which dispose of waste at the peak hour on the peak day (this will determine the worst case queuing scenario)

5.1.3 Need for Existing Facility Upgrades

Existing facilities may well be located to meet customer service levels both now and in the future. They may however require upgrade in the future. Upgrades to existing facilities are typically driven by:

- ‘In- fill’ population growth increasing the number of transactions at a facility (for a waste transfer facility)
- Changes in waste policy which change the manner in which waste is managed, or increase the number of transactions (for example, free tipping or the use of vouchers typically increase the number of transactions, resulting in a need for a higher capacity facility)

- Changes in technology which increase yield or change some other design parameter of the original facility

5.1.4 Need for New Facilities

The need for new facilities may be identified in an infrastructure planning process. The need for new facilities is typically driven by:

- Significant localised spatial population growth into localities to which existing facilities cannot provide the desired level of service (requiring new customer interface infrastructure)
- The depletion of landfill airspace over time (requiring new disposal infrastructure)
- The introduction of new diversionary objectives (requiring new diversionary infrastructure)
- Changes to regulatory standards or other objectives of the system

Many of these requirements can again be identified in the infrastructure planning process to assist Council to identify its future infrastructure needs.

5.1.5 Optimal Operating Hours

In order to meet DEHP licence requirements and Workplace Health and Safety guidelines facilities are required to have at least one staff member present while the facility is open to the public.

While some in the community would like the facilities to be open 24/7 the Council needs to balance the operating costs with the need to provide a service and provide opening hours applicable to the usage the facility receives. The industry standard is for small rural transfer stations with predominately residential clients which receive less than 5,000 visitors per year is to open for approximately 12 hours per week. These hours are normally a half day on the weekend days and another half day during the week.

5.2 Consideration of Existing CCRC Facilities

The information collected in the strategy coupled with diversionary targets will identify gaps in facility types. A schedule for infrastructure provision can be developed along with an approximate time at which each piece of infrastructure is required including a planning estimate of cost.

Council can then begin funding the delivery of the relevant infrastructure with a clear plan which is open and transparent. The plan would be reviewed continuously with regard to actual capacities and requirements for upgrade etc. The following sections discuss, within the Cassowary Coast context:

- The level of service currently provided by existing infrastructure and how this is currently utilised
- The capacity of existing infrastructure
- How the existing infrastructure meets likely future waste system objectives based upon population and waste generation forecasts

CCRC already operates a waste management infrastructure network which includes:

- Waste disposal facilities - landfills (including ancillary diversionary activities on landfills/ transfer station such as scrap metal, garden waste and concrete recycling)
- Customer interfaces - waste transfer facilities (which may incorporate diversionary activities as above and include other diversion opportunities such as the temporary storage of batteries, oil, chemical drums, chemicals and tyres pending off site recycling or disposal options)

The existing infrastructure is situated at locations which have been in place for some time and have varying levels of community acceptance. Considerations regarding this existing infrastructure relates to:

- The level of service they currently afford the population (in terms of location and community travel time to access the facility);
- Their capacity to serve the current usage and remaining capacity;
- Their performance in terms of customer service and diversionary waste management objectives;
- Their ability to continue operations without adverse impact upon the community; and
- How these facilities might perform within the future waste management system required.

Whilst there are a myriad of planning and operational considerations related to the suitability of existing facilities, when reviewing existing infrastructure the main factors to consider are:

- The current number and location of facilities meets the desired level of community service (with respect to travel time access)
- The existing facilities will meet the future demand or if they may require upgrade
- There is a need for the development of new facilities over the planning period to replace or augment the existing facilities

5.2.1 Level of Customer Service of Existing Facilities (Travel Time)

As raised in earlier sections, by far the majority of Council customers at transfer stations (measured by numbers of transactions) are domestic in nature. One of the initial and primary factors in their perception of level of service relates to how long it takes them to reach a facility of any kind which meets their needs for waste disposal. This factor will assist in defining if the existing network has the appropriate number and location of facilities to meet the desired level of service expected by the community. Travel time is related to road networks and the location of the population.

The current CCRC facilities meet the industry proximity standard for travel time for the residential sector. One of the facilities, Murray Upper Transfer Station, could be taken out of the equation and the service level could still be met. However as this area is isolated more often by floods during the wet season than other areas so it may be judicious to retain this site in the network.

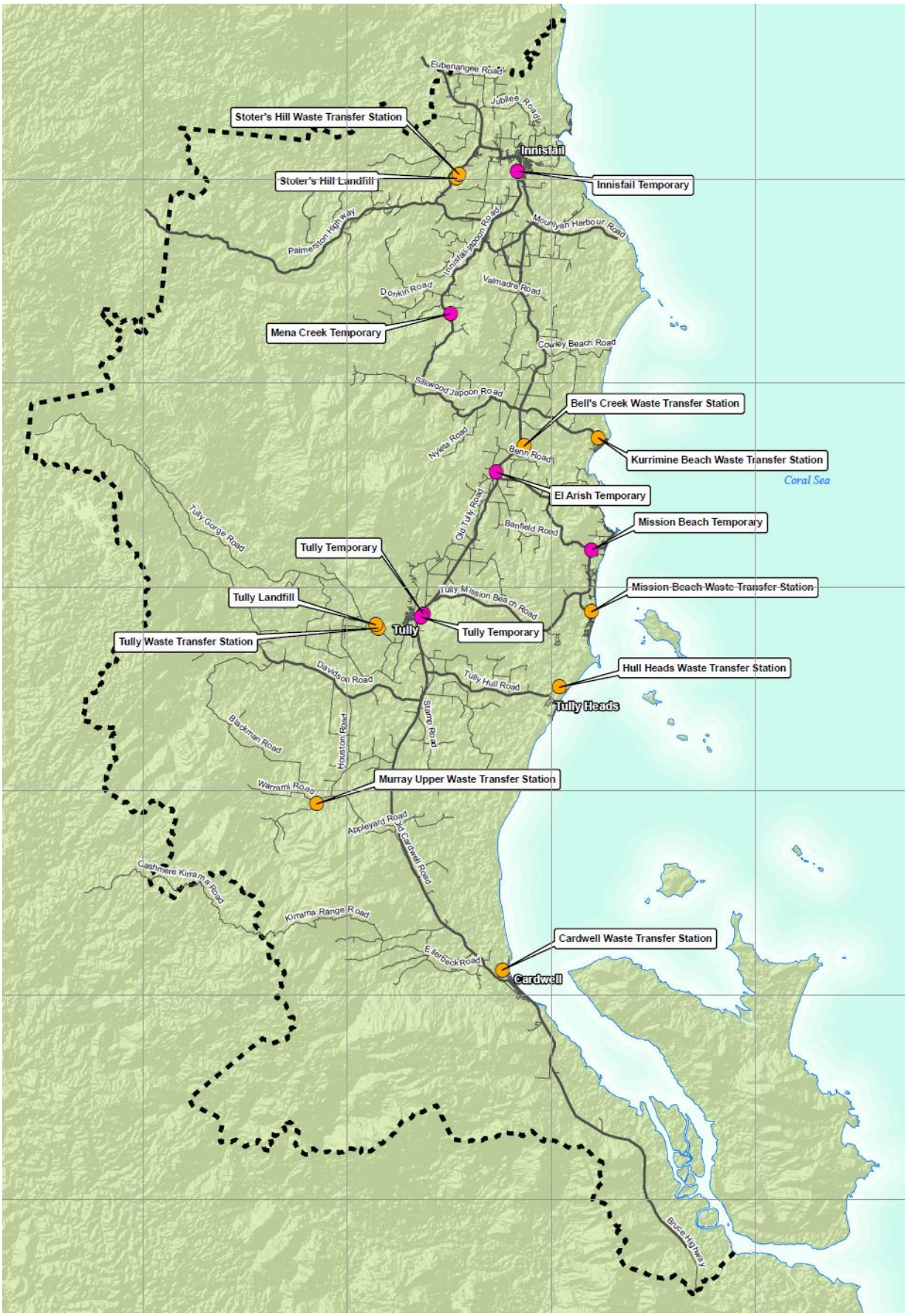


Figure 3 - Location of Council waste management facilities

5.2.2 Level of Customer Service of Existing Facilities (Opening Hours)

Whilst the location and number of facilities is a strategic issue, the hours of operation are an emotive customer service issue and must be dealt with in the strategy. The opening hours were addressed during the community consultation phase and the majority consensus being that the hours need to be established within industry guidelines.

It is an industry norm that transfer stations which are predominately residential with less than 5,000 transactions per year have opening hours of twelve (12) to fifteen (15) hours per week normally spread over three or four days.

During the past twelve months the patronage of the CCRC waste transfer stations was recorded by the transactions undertaken at each site. The table below shows a summary of those transactions.

Transfer Station	Number of Annual Transactions	Average Daily Transactions
Bell's Creek	2659	9
Cardwell	5512	18
Murray Upper	749	3
Hull Heads	1222	5
South Mission Beach	5252	17
Tully (incl. Landfill)	10230	28
Stoters Hill	24185	66

As previously stated in paragraph 5.1.5, waste facilities are not able to be open when supervising staff are not present.

The location of the facilities at Cardwell, South Mission Beach and Tully are within the industry standard for travel time for the above mentioned communities.

Murray Upper and Hull Heads are open for 20 hours and Bells Creek is open for 44 hours. It is proposed to revise these opening hours to align with the twelve to fifteen hours norm.

5.2.3 Capacity and Functions of the Existing Facilities

Even where existing facilities are well located from an access service level perspective, they may not have the appropriate capacity to deliver the service required over time. For example, a landfill which reaches its final capacity can no longer be used as part of the network (for disposal).

Council operates a number of facilities throughout its region in order to deliver waste management services to its customers. The ranges of facilities which are currently operated by Council are detailed in paragraph 5.2.3.1 and include:

- **Transfer station facilities** - waste is received from the residential and commercial sectors under supervision of the transfer station attendant and then placed in a bulk container for transport to a landfill. There are also drop off facilities available for some recyclables. Transfer stations are located at:
  - Cardwell;
  - Hull Heads;
  - Murray Upper;

  - South Mission Beach;
  - Bells Creek
  - Tully; and
  - Stoters Hill;

- **Landfills facilities** - waste is sent from transfer stations. Waste enters the landfill after being checked by a transfer station attendant. The waste is transported to the landfill using all variants of commercial vehicles. CCRC landfills are licenced by the Department of Environment and Heritage Protection (DEHP). The two landfills are located at:
  - Jarra Creek Road, Tully; and
  - Quarry Road, Stoters Hill, Innisfail.

When considering the capacities of this infrastructure, landfills and transfer facilities are measured in a different manner.

Both waste disposal facilities (landfills) are licensed to operate under the provisions of the *Environmental Protection Act 1994.* The DEHP sets waste acceptance bands under which facilities must be licensed to dispose of waste, for example up to 50,000 tonnes per annum, however they are not licenced to receive putrescible ("wet") waste.

Councils existing landfills are licensed under the following categories:

- Tully Landfill – more than 20,000 and up to 50,000 tonnes per annum
- Stoters Hill Landfill – more than 20,000 and up to 50,000 tonnes per annum

Future capacity will most definitely be lacking under the current licence arrangements.

One of the questions Council has to address within this process relates to its ability to close landfills. Many councils in Queensland are asking the same question as they rationalise the number of landfills they operate. In CCRC this is not totally appropriate due to the travelling distance between the southern part of the shire and the location of Stoters Landfill in the far north of the shire.

5.2.3.1 Waste Transfer Facility Capacity and Function

CARDWELL WASTE TRANFER FACILITY

The Cardwell waste transfer facility is a township transfer station which operates six days a week. The facility operates to receive domestic vehicles, greenwaste and limited C&I and C&D. In the F/Y 2011/12 it completed 5,512 transactions. The site is supervised whilst it is open.

The facility has drop off facilities for:

- Metal and white goods (also car bodies);
- Greenwaste;
- Clean Concrete;
- Batteries;
- Tyres;
- Domestic quantities of engine oil; and
- Reuse items.

The facility has a saw-tooth configuration and is able to house two 30 cubic metre Roll-On Roll-Off (RORO) containers for dry waste mixed.

The site has the capacity to meet the community needs during the period of the strategy.

Currently no formal “Tip Shop” – facilities are required to accommodate one in the future.

HULL HEADS WASTE TRANFER FACILITY

The Hull Heads waste transfer facility is a rural transfer station which operates five days a week. In the F/Y 2011/12 it completed 1,222 transactions. The facility operates to receive small domestic vehicles only and is supervised whilst it is open.

The facility has drop off facilities for:

- Metal and white goods (also car bodies);
- Greenwaste;
- Clean Concrete;
- Batteries;
- Tyres;
- Domestic quantities of engine oil; and
- Reuse items.

The facility has a saw-tooth configuration and is able to house one 30 cubic metre RORO container for dry waste mixed.

The site has the capacity to meet the community needs during the period of the strategy.

Currently no formal “Tip Shop” – facilities are required to accommodate one in the future.

MURRAY UPPER WASTE TRANFER FACILITY

The Murray Upper waste transfer facility is a rural transfer station which operates five days a week. In the F/Y 2011/12 it completed 749 transactions. The facility operates to receive small domestic vehicles only and is supervised whilst it is open.

The facility has drop off facilities for:

- Metal and white goods (also car bodies);
- Greenwaste;
- Batteries;
- Tyres;
- Domestic quantities of engine oil; and
- Reuse items.

The facility has a saw-tooth configuration and is able to house one 30 cubic metre RORO container for dry waste mixed.

The site has the capacity to meet the community needs during the period of the strategy.

Currently no formal “Tip Shop” – facilities are required to accommodate one in the future.

SOUTH MISSION BEACH WASTE TRANFER FACILITY

The South Mission Beach waste transfer facility is a village transfer station which operates six days a week. The facility operates to receive domestic vehicles, greenwaste and limited C&I. In the F/Y 2011/12 it completed 5,252 transactions. The site is supervised whilst it is open.

The facility has drop off facilities for:

- Metal and white goods (not car bodies);
- Greenwaste;
- Batteries;
- Tyres;
- Domestic quantities of engine oil; and
- Reuse items.

The facility has a saw-tooth configuration and is able to house two 30 cubic metre Roll-On Roll-Off (RORO) containers for dry waste mixed.

The site has the capacity to meet the community needs during the period of the strategy, however, the site will need to be re-configured to accommodate resource recovery activities.

Currently no formal “Tip Shop” – facilities are required to accommodate one in the future.

BELL'S CREEK WASTE TRANFER FACILITY

The Bell's Creek waste transfer facility is rural/village transfer station which operates six days a week. The facility operates to receive domestic vehicles, greenwaste and limited C&I. In the F/Y 2011/12 it completed 2,659 transactions. The site is supervised whilst it is open.

The facility has drop off facilities for:

- Metal and white goods (not car bodies);
- Greenwaste;
- Batteries;
- Tyres;
- Domestic quantities of engine oil; and
- Reuse items.

The facility has a saw-tooth configuration and is able to house two 30 cubic metre Roll-On Roll-Off (RORO) containers for dry waste mixed.

The site has the capacity to meet the community needs during the period of the strategy.

Currently no formal “Tip Shop” – facilities are required to accommodate one in the future.

TULLY WASTE TRANSFER FACILITY

The Tully waste transfer facility is a township transfer station which operates seven days a week. It is a front end transfer station to the Jarra Creek landfill. The facility operates to receive domestic vehicles carrying MSW and commercial vehicles carrying C&I and C&D. In the F/Y 2011/12 it completed 10,230 transactions. The site is supervised whilst it is open.

The facility has drop off facilities for:

- Metal and white goods;
- Greenwaste;
- Concrete;
- Cardboard;
- Batteries;
- Tyres;
- Domestic quantities of engine oil; and
- Reuse items.

The facility has a configuration which is able to house two 30 cubic metre Roll-On Roll-Off (RORO) containers for dry waste and a tipping floor with a compactor for wet waste.

The site has the capacity to meet the community needs during the period of the strategy.

STOTERS HILL WASTE TRANFER FACILITY

The Stoters Hill waste transfer facility is a township transfer station which operates seven days a week. It is a front end transfer station to the Stoters Hill landfill. The facility operates to receive domestic vehicles carrying MSW and commercial vehicles carrying C&I and C&D. In the F/Y 2011/12 it completed 24,185 transactions. This site is serviced by a weighbridge. The site is supervised whilst it is open.

The facility has drop off facilities for:

- Metal and white goods;
- Greenwaste;
- Concrete;
- Cardboard;
- Batteries;
- Tyres;
- Domestic quantities of engine oil; and
- Reuse items.

The facility has a configuration which is able to house two 40 cubic metre compactor containers for dry waste tipping floor and a tipping floor with a compactor for wet waste. It also accommodated three 30 cubic metre Roll-On Roll-Off (RORO) containers for dry waste.

The site has the capacity to meet the community needs during the period of the strategy.

5.2.3.2 Landfill Capacity and Function

The physical capacity of each facility has been estimated by Council and provided for the purposes of the analysis. Capacity is a key item within this type of analysis and the best manner in which to obtain this data is via the conduct of a contour survey. The survey data is then compared with a final closure profile to identify the actual volume of airspace within the void between these two levels. The capacity is discussed below.

Council reported that the quantities of waste disposed to landfill at each facility in the 2011/12 financial year were:

- Tully Landfill – 7,829 tonnes
- Stoters Hill Landfill – 21,030 tonnes

Council currently disposes of around 30,000 tonnes of waste per annum, the remainder being diverted from landfill as resource recovery or as “wet” waste transported to Springmount Waste Facility, Mareeba for disposal.

JARRA CREEK LANDFILL, TULLY

The Tully landfill is located in the suburb of Jarra Creek, approximately 5 km west of the Tully Township. The entrance to the Tully landfill and transfer station is directly off the Jarra Creek Road.

The site covers an area of approximately 12 hectares and is described as Lot 638 CWL2436 Jarra Creek Road. A tributary of Jarra Creek traverses the site.

Surrounding land uses are rural. The Tully facility is well located for the delivery of services to customers from the southern end of the CCRC.

The Tully landfill is licenced under the *Environmental Protection Act 1994* to receive up to 50,000 tonnes of waste per annum for disposal.

Whilst garden and construction and demolition waste are diverted from landfill, certain volumes of the processed material is used on site for cover, rehabilitation, erosion control and road base.

Tully Landfill has in its current cell no air space left. The construction of a cell within the current footprint to accommodate a further 100,000 plus cubic metres of waste which will include some Cyclone Yasi debris has been recently completed. This will provide the Tully site with five years of airspace on the current footprint. This will mean that an alternative needs to be found to replace the landfill airspace in Tully during the period of the strategy.

STOTERS HILL LANDFILL, INNISFAIL

The Stoters Hill landfill is located in the Innisfail suburb of Stoters Hill, approximately 5 km North West of the Innisfail town centre off the Palmerston Highway. The facility is located in a council owned quarry. The site covers an area of approximately 38 hectares and is described as Lot 2 RP734667, Lot 1 RP 719182, Lot 2 NR4009, Lots 1&4 RP720775 Quarry Road, Stoters Hill.

Surrounding land uses are generally urban/rural used for rural residential and crops. The landfill is located inside an active quarry with the spent areas used for depositing waste. The landfill commenced operation on this site ten years ago.

The Stoters Hill landfill is licensed under the *Environmental Protection Act 1994* to receive up to 50,000 tonnes of waste per annum for disposal.

Whilst garden and construction and demolition waste are diverted from landfill, certain volumes of the processed material is used on site for cover, rehabilitation and erosion control and road base.

Stoters Hill Landfill has no final figure for airspace available as it is linked with the material excavated from the quarry site. However it is estimated at more than 3.60 M cubic metres (50+ years) airspace in the quarry.

5.2.4 Need for Facility Upgrades

As detailed above the existing facilities are well located to meet customer service levels both now and in the future, however, there will be a need to upgrade some facilities to improve their capacity or their function.

5.2.5 Need for New Facilities

There is no need for any waste receival facilities in Cassowary Coast in the life of the strategy. However, there is a need to source Material Recovery Facilities and Recycling Processing Facilities and an alternative landfill option in the southern area.

ACTIONS FOR STRATEGY 1

ACTIONS	COMPLETION TARGET
1.1 Investigate the options for the provision of additional air space at the Tully Landfill.	**6th May 2014**
1.2 Establish formal "Tip Shop" facilities at the following Transfer Stations at • **Tully Transfer Station;** • **Stoters Hill Transfer Station;** • **Cardwell Transfer Station;** • **Hull Heads Transfer Station;** • **Murray Upper Transfer Station;** • **South Mission Beach Transfer Station; and** • **Bells Creek Transfer Station**	**1st July 2014**
1.3 Establish bins at all Transfer Stations to receive selected domestic recyclables. • **Aluminium Cans;** • **Steel Cans;** • **Paper & Cardboard; and** • **Plastic Containers (Type 1 to 6)**	**1st December 2013**
1.4 Establish an agreement with a regional Material Recovery Facility (MRF) to receive recyclables from the Transfer Stations.	**30th June 2013**
1.5 Investigation of the opening hours for the Transfer Stations with less than 5,000 transactions per year.	**1st July 2013**
1.6 Award a new contract for the operation of the Transfer Stations, Landfills, Gatehouses and Tip Shops.	**1st December 2013**

6 Existing Solid Waste Services

STRATEGY 2

CCRC will provide solid waste services which will:

- **Standardise the domestic waste collection services provided in the CCRC defined waste collection area;**
- **Standardise Public Place waste services;**
- **Address Litter and Illegal Dumping management; and**
- **Advise the residents of CCRC on environmentally, socially and financially responsible waste management.**

CCRC willingly accepts its role in providing programs to manage its legal and social responsibilities in providing programs for solid waste generated in the Cassowary Coast. Although not all waste generated is the responsibility of council however CCRC will ensure that services and facilities are available for the domestic community as required by law.

The commercial sector is able to choose collection provider and may establish waste facilities provided they located and operated in accordance with legislation.

The CCRC solid waste services includes a number of programs:

- Management function;
- Waste collection program;
- Waste receival and disposal program;
- Litter Management program;
- Waste minimisation program; and
- Research of alternative waste management technologies.

6.1 Cassowary Coast Region Council Waste Management Function

CCRC's waste management operations fit within the Planning and Environment Department of Council. The responsible organisation is the Waste Section which comes under the Manager of Environmental Services. A Technical Officer Waste Management supervises Waste Section and the main responsibilities of this officer include:

- The provision of advice to the community on environmentally, socially and financially responsible waste management;
- Waste Collection Program;
- Waste Contracts Supervision;
- CCRC Waste Facilities Management;
- Council waste minimisation programs; and
- The supervision of CCRC staff and equipment involved in waste management.

6.2 CCRC Waste Collection Program

As defined in chapter 4 of this document, the waste generated in the Cassowary Coast can be defined as MSW, C&I and C&D. CCRC responsibility for the collection of this waste is a combination of council and commercial. Normally council is responsible for the collection program for Municipal Solid Waste (MSW) while the collection of commercial and industrial waste (C&I) and construction and demolition waste (C&D) is normally left to the commercial sector.

In providing a collection program for MSW (domestic waste) the Waste Section offers a wheelie bin service for the collection of waste material from the kerbside of approximately 15,100 domestic properties weekly in the defined waste collection area:

- In the South (old Cardwell Shire) approximately 6,230 services are collected weekly under a CCRC day labour service model using a single 240 litre mobile garbage bin for mixed “wet” and “dry” waste. The bin is collected from the kerbside of residential properties and some commercial properties and transported back to Tully Waste facility and dumped on the wet floor for compacting and then transported out of CCRC for disposal even though the majority of the waste is not “wet”;
- In the North (old Johnstone Shire) approximately 8,870 services are collected weekly under a contractor service model using a combination of a 120 litre “wet” bin and a 240 litre “dry” bin. The bins are collected into a split compaction garbage truck from the kerbside of residential properties and some commercial properties and taken to Stoters Hill Waste Facility. The “wet” bin is dumped on the wet floor for placing in a compaction unit and transported out of CCRC for disposal. The “dry” bin is placed on the transfer station floor for minimal sorting of recyclable product then transported to the landfill for disposal. The contract expires on the 31st of July 2014.

Properties which are unable to be serviced from the property boundary by the normal waste collection vehicle are not included in the defined waste collection area.

Neither system had a dedicated kerbside recycling opportunity. All waste collected in the southern system was deemed wet and transported to Mareeba for disposal. While in the northern system the “dry” bin is deemed available for positive sort for recyclables on the transfer station floor. In reality some of this bin is contaminated and along with the 120L “wet bin” ends up being transported to Mareeba for disposal.

An objective of this strategy is to standardise the kerbside collection in the gazetted waste collection area to ensure the same system is in place throughout the entire council area to ensure the same level of service and also that the minimum quantity of waste is transported out of Cassowary Coast for disposal.

It is estimated that for the waste generated in the south in 2011-12 that approximately 2,400 tonnes of waste was transported from Tully to Mareeba which could have been disposed of at the Tully landfill if a separate bin system for ‘wet’ and ‘dry’ was in place.

In this strategy the following options were analysed using the triple bottom line approach (social, environmental, financial):

- The most appropriate means of servicing MSW kerbside bins (day labour v contractor);
- Type of MSW bin service:
    - 1 bin mixed waste transport to a landfill outside CCRC for disposal (as per the southern system); or
    - 2 bin disposal of “dry” at Stoters/ Tully and “wet” outside CCRC for disposal (as per the northern system);
- The most appropriate method of servicing Public Place Bins (as per MSW);

- The collection options for C&I and C&D.

Recycling will be discussed in detail in the waste minimisation section (Chapter 7) of this strategy.

6.3 CCRC Waste Receival and Disposal Program

The waste disposal program is based on the management and operation of the solid waste receival facilities (transfer stations) and the waste disposal facilities (landfills) detailed in chapter 5 of the document.

The program is managed using the following business systems supervised by the CCRC Technical Officer Waste:

- The operation of the transfer stations is in compliance with the DEHP approved site based management plan (SBMP) and contracted (Contract expires 1 July 2014);
- The operation of the landfills is in compliance with the DEHP approved licence conditions and site based management plan (SBMP) and contracted (Contract expires 1 July 2014);
- The transport of the bins from the transfer stations to the landfills is contracted(Contract expires 1 July 2014);
- The transport of the "wet" waste in compacted bins to the Springmount Waste Facility, Mareeba. Both the transportation and the disposal are contracted (Contract expires 30 June 2017).

Waste minimisation is practised at all facilities and is detailed in chapter 7 to this document.

6.4 Litter Management Program

Litter and illegal dumping are a community issue of concern. Under the Waste Reduction and Recycling Act 2011 council has the authority to regulate littering and illegal dumping.

Littering regulations covers the unlawful disposal on waste material from a cigarette butt to 240 litres. Illegal dumping covers any amounts above littering.

There are large on the spot fines for both offences as a deterrent. The regulatory staff of council manages the investigation and legal aspects of littering and illegal dumping including issuing of fines. The Council staff collect material illegally dumped on Council controlled land and dispose of it at landfill.

Diligent policing of illegal dumpers, advertising in the community successful legal outcomes and encouraging the community to report polluters will go a long way to reducing the adverse outcomes of illegal dumping.

ACTIONS FOR STRATEGY 2

ACTIONS	COMPLETION TARGET
2.1 Review the organisational structure of the Waste Section within Environmental Services	**1ST July 2013**
2.2 Award a single contract for the provision of Domestic Kerbside Collection for the entire Cassowary Coast Regional Council defined waste collection area using a two bin system ('wet and dry")	**1st December 2013**
2.3 Standardise the CCRC Public Place Bin System	**1st December 2013**
2.4 Prepare a Litter and Illegal Dumping Plan	**1st December 2014**

7 Resource Recovery

STRATEGY 3

CCRC will work with industry and the community to:

- **Provide infrastructure and services which will maximise the recovery of beneficial resources from the CCRC waste streams;**
- **Investigate and assess alternative waste management technologies which could be appropriate for the Cassowary Coast;**
- **Assist in the development of Cleaner Production Plans for all departments of CCRC.**

An important element of the strategy is to identify environmentally sustainable, socially acceptable and financially sound options for resource recovery.

When waste minimisation is discussed, the general thought in the community is kerbside recycling. However, this is only a very small piece in the resource recovery picture and is towards the bottom of the waste hierarchy for effective resource recovery programs.

The objective of all resource recovery programs is to manage waste types at the highest point possible within the waste hierarchy which is waste avoidance.

The responsibility for waste reduction starts with us, the consumer being responsible for the waste we generate. There are many facets to resource recovery. The following facets will be discussed in the chapter:

- Current resource recovery programs at CCRC waste facilities;
- Domestic kerbside recycling;
- Other domestic recycling and resource recovery programs;
- Commercial waste reduction and resource recovery programs; and
- Alternative waste technologies.

7.1 Current Resource Recovery at CCRC Facilities

Using the waste figures for 2011/2012, CCRC is currently diverting from landfill approximately 39% of the waste received through the gates of the facilities. Examples of how the community can take a positive role in resource recovery and the current council programs operating within the waste hierarchy are shown in the table below:

Hierarchy	Waste Type	Waste Management
Avoid generating waste	Packaging materials	Buy items with minimal packaging. Buy bulk containers and decant in preference to single use containers (for example avoid bottled water use a water bottle filled from the tap).
	All	Buy only what is needed and buy green (recycled/ reusable products). Buy quality products built to last.
Reduce waste generated	MSW	In the home use leftovers for another meal instead of disposing. Only cook the quantity and type of food that will be consumed
	White goods	Buy goods with a high energy rating.
	Construction Materials	Purchase ready cut to your specifications timber, metal etc. Buy better made products which may be more expensive but will last.
Reuse	Furniture/ toys/ kitchenware/ clothing/ sporting equipment/ etc	These items should not enter the waste stream unless they are beyond repair. If unwanted or not needed then there are opportunities for these items to be taken to opportunity shops or given to family and friends rather than putting them in the “bin”. CCRC has reuse areas “Tip Shops” at each of the transfer stations where item can be made available for other users.
Recycle	Greenwaste / oil/ tyres/ paper/ cardboard/ batteries/ Metal/ concrete/ untreated timber/	At each of the CCRC transfer stations facilities are available for the mulching of greenwaste, temporary storage of oil/batteries/ tyres before they are taken off to recycle. Cardboard and paper is currently mulched with the greenwaste and used as soil treatment. Philanthropic organisations have placed bins at some stations to recover aluminum cans. Each Transfer Station has a diversion area where metal is recovered. At each landfill and designated transfer stations areas are dedicated for clean concrete so this can be crushed and reused around the site and is available for other council projects. The main issue is source separation to ensure the material is clean.

Recover/ Treat	Carbon based products	Currently the putrescible "wet" waste is transported to Springmount, Mareeba for disposal. In the future technology should be available to gasify carbon waste into energy to generate electricity, Council are currently in discussion with prospective providers.
Disposal	All other waste	All remaining material is disposed of at landfill.

Currently informal "Tip Shops" are operating at each of the transfer station, these are informal arrangements but are encouraged in order to keep valuable resources out of the landfill. Part of this strategy is to develop more formalised Tip Shops at each of its facilities and involve the community in these ventures.

7.2 Domestic Kerbside Recycling

The Queensland government, in their waste minimisation targets requires council to implement domestic waste reduction programs. Kerbside recycling is only one option; there are other options available to council. This strategy addresses kerbside recycling and its environmental effectiveness in regional North Queensland and also looks at other programs which could be considered which might have a better environmental outcome.

It is the common belief in the community that kerbside recycling is the best option for waste reduction and will save the planet and CCRC should have a domestic kerbside recyclables collection program. Unfortunately kerbside recycling does not always provide an environment benefit to the community. Based on last years waste figures and current operations in local authorities with kerbside recycling, material available to be recovered in a kerbside recycling service would represent 3.5% of the waste currently going to landfill (CCRC Waste Data for 2011/12).

A number of important factors determine if a kerbside recycling collection will be sustainable and the environmentally responsible thing to do. These factors include:

- **What materials are deemed to be recyclable** – this needs to be based on a life cycle analysis of the product, the ability to sort the product, if processing or treatment facilities are available close by and if there are markets for the recycled product;
- **The collection of the material at kerbside** – the distance traveled to collect and transport to a Material Recovery Facility (MRF) along with the quantity of recyclables recovered and the contamination in the material. It is to be noted that to collect recyclables at kerbside within the CCRC defined waste collection area a truck will need to travel approximately 4,000 kilometres to collect 80 tonnes of recyclables.
- **The sorting of materials** – the ability of the MRF to sort the selected materials and send them for processing/treatment;
- **The processing/treatment of the selected materials** – Is the processing facility within a sustainable distance from the MRF (e.g. the Queensland Glass study showed that processing glass greater than 150 kilometres from the MRF was environmentally unsound and the National Kerbside Recycling study showed that recycling at kerbside greater than 1,300 kilometres from processing plants incurred

an environmental cost); can the recyclables be processed economically and environmentally;

- **Market of the Recycled product** – is there a market for the recycled product. For example, there are huge quantities of recycled brown glass sitting at Visy MRFs in Victoria without a market.
- **Community Participation** – Would the community participate responsibly in a kerbside recycling program? As an example for the well established program in Townsville City approximately 62% of the community puts out recycle bins and of those the contamination rate is 10%. Significant education is ongoing in the Townsville program. This is a normal/ typical presentation rate.
- **Can the community afford the kerbside recycling program (or are they willing to pay)** - A kerbside recycling program comes with a cost. There is a requirement to increase the collection fleet by at least twenty five percent (50%) for a fortnightly pickup. The gate fee at the MRF (~ $80 per tonne) is significantly more than landfill disposal costs. Significant additional community education is required to run a successful program.

There is a financial cost if council were to implement a kerbside collection of recyclables. Using the cost of the CCRC waste operations in 2011/12 as a guide, the estimated costs for operating a kerbside recycling system using a combination of options is contained in the table below:

	Current Cost	Recycling by contracting all services	Recycling – day labour for all services	Recycling – contracted services except day labour for Southern waste
Cost Per Service	$160	$180+	$253+	$190+
Collection and process costs	$2,415,840	$2,717,820	$8,820,047	$2,868,810
Additional cost per household		$20+	$93+	$30+

+ The will be additional cost to pay the for the Capital equipment costs.

In CCRC there will be a system of “Wet” and “Dry” bins. This system is required because the landfills in the CCRC are not licensed to dispose of “wet” (putrescible) waste.

If CCRC were to consider kerbside recycling it would need to consider what configuration of bins could be used. The “wet” waste is placed in a 120L MGB and the “dry” waste is placed in a 240L MGB. The “dry” bin currently has recyclable material plus all other non recyclable packaging material, such as damaged household and recreational items, unwanted building material, E waste, chemicals and dry batteries etc.

As there is still be a requirement to separate the wet and dry if a kerbside recycling system was introduced, there would be a requirement for a third bin at each household which would in effect require a further truck for the collection run.

In summary the reasons the strategy does not endorse kerbside recycling collection is:

- As no processing facilities are located north of Brisbane it is environmentally unsound to add to the waste miles by travelling 4,000 klms per week to collect 45 tonnes of recyclables;
- To implement the system in CCRC it would require a third bin to be collected from each premises;
- The system comes with a large financial cost;
- At the Community Consultation 85% of the participants once informed of the environmental costs agreed with the Council position of not proceeding with kerbside collection but to review the situation when processing facilities are established and accessible in the FNQ region.

Whilst it is not always environmentally beneficial to recycle some materials normally recycled at kerbside (glass, most plastics) in FNQ, if we do not use large trucks to cover many kilometres to collect small amounts of this material some items (paper, some plastics, aluminum cans) do provide beneficial re-use if collected using more environmentally friendly systems such as drop off at transfer stations.

Currently many forms of recycling are being undertaken in CCRC. Examples of these are:

- Diversion of metal at the transfer stations;
- Diversion of clean concrete at Cardwell, Tully and Stoters;
- Diversion of greenwaste at all transfer stations;
- Capture of motor oil at all transfer stations;
- Recovery of tyres at all transfer stations;
- Capture of wet acid batteries at all transfer stations;
- Recovery of aluminum cans at most transfer stations;
- Capture of reusable/resalable items at all transfer stations;
- Collection of cardboard, plastics type 1 and 2 at Stoters; and
- Recovery of gas bottles at all transfer stations.

7.3 Other Domestic Waste Reduction and Resource Recovery Programs

Discussed below are other programs which can be supported in the community which will assist in reducing your ecological footprint and in some instances if fully implemented will provide a much better outcome than recycling.

7.3.1 Education of the Community on Minimisation of Waste Generation - Consumption

The most effective and environmentally beneficial way of minimizing waste generation in the domestic sector is to encourage the community to avoid generating waste. This can be done through the following programs:

- Community education and awareness of consumption and offering alternatives;
- Education in the schools;
- Education of stall holders at community events;

- Encouraging industry to implement a Cleaner Production Plan which will not only significantly reduce their waste but also save real money for the business.
- Support for the charity groups which offer alternatives (Op Shops, Food Bank, Social Enterprises).

7.3.2 Developing Opportunities for the Community to Participate

The majority of the community would like the opportunity to reduce waste. The following community based waste reduction and resource recovery programs are either currently in place or could be investigated for community participation:

- **Worm farming/composting at home.** The placement of a compost bin/or worm farm at the home to remove the food waste from the waste stream can be an important step in keeping this waste out of the waste stream and at the same time providing the resident with a beneficial resource for gardening.
- **Use of the charity opportunity shop.** There are already a number of charity shops in the community which reuse household items, clothing, toys and furniture. Using these facilities when disposing of reusable items will save landfill space and save money for members of the community who cannot afford new goods.
- **Use of the "Tip Shop".** Each of the transfer stations provide the opportunity for dropping off reusable items (household utensils, toys, clothing, books, furniture, safe working electronic goods and sporting goods). Keeping these items separate and giving them to the attendant will save landfill space, waste transportation costs and will give the items another life. Formal "tip shops" need to be developed at each of the waste facilities to give the community opportunities to drop off and purchase items.
- **Greenwaste** One of the easiest waste streams to divert from landfill is greenwaste. The main objective is to encourage residents to keep greenwaste out of the kerbside collection and self haul it to a transfer station where it is processed into mulch or composted. Very few local authorities have a kerbside greenwaste collection system because of the cost and the limited environmental outcome. Those who do have one normally combine it with food waste and limit it to densely populated areas.
- **Oil Recycling.** Domestic quantities of oil are currently being dropped off at transfer stations and are then taken away for recycling into furnace oil mainly for ships.
- **Battery Recycling.** Wet batteries are dropped off at the transfer stations and collected by recyclers for the recycling of the metal.
- **Metal Recycling.** Pads are available at all transfer stations for the collection of clean metal for recycling.

7.4 Commercial Waste Reduction and Resource Recovery Programs

Half of waste generated in Cassowary Coast is generated in the commercial sector. This is also the sector with the potential to recover most of the waste. Unlike the domestic sector, Council does not have any direct control over the behaviour of this sector as their waste management programs are usually driven by economics. However, strategies to encourage waste reduction in the commercial sector can be "encouraged" by:

- Establishing user friendly cost effective programs for resource separation;

- "Discouraging" processes which do not maximise waste recovery;
- Advising the commercial sector of the financial/ environmental benefits of establishing cleaner production programs in their businesses;
- Use financial instruments (landfill fees) to encourage waste minimisation; and
- Provide technical waste management advice to the commercial sector.

7.4.1 Existing Commercial Waste Reduction Programs

Currently CCRC has a number of programs in place to encourage the commercial sector to minimise their waste and maximise their resource recovery:

- **Greenwaste Processing.** Located at each of the landfills are greenwaste pads available to receive clean commercial greenwaste. To encourage the commercial sector to separate their greenwaste and use these facilities the cost of disposal is 20% of the unseparated material.
- **Metal Recovery.** Commercial customers are able to dispose of "clean" metal free of charge at all transfer stations. The material is then recycled.
- **Concrete Processing.** At selected transfer stations commercial customers are able to dispose of "clean" concrete for $35 per tonne compared to $80 per tonne for mixed loads. The concrete is crushed and reused on site in lieu of quarried rock. It is also available for construction pads.
- **Cardboard Recycling.** In Innisfail a commercial operator provides a drop off area for free for commercial cardboard. Council does not want to compete for the small resource as there is already a program operational. In Tully a system is being set up for the receival of commercial quantities of cardboard.
- **Tyre Recycling.** There are companies which collect tyres for recycling. They collect on site for commercial operations. Tyres are a regulated waste and commercial operators are required to utilise an approved collector.
- **Drummuster.** The Drummuster program is in place where used agricultural containers are collected for recycling.

7.5 Alternative Waste Technology (AWT)

Regional (Local Authority Waste Management Advisory Committee) and national (Waste Management Association of Australia) waste industry professional bodies provide updated information on waste technologies currently available and their appropriateness for the CCRC requirements. CCRC's current membership in these organisations affords CCRC access to this information and also the opportunity to be part of the waste knowledge program.

The normal waste management system is to separate reusable, recyclable and treatable material from the waste stream and dispose of the rest at landfill. The material sent to landfill is entombed forever in a landfill constructed to ensure no emissions escape from the site.

Industry is developing alternatives to this in order to save the requirements of landfill space and ensure the reuse of the material at a higher level in the waste hierarchy. Unfortunately a number of these are in their infancy, very expensive and sometimes experimental. An example of this is the Cairns Bedminster composting system.

However, during the period of this strategy it is believed some viable, cost effective systems will be developed and implemented which would be an answer to council's landfill issues.

Examples of this are two waste to energy plant proposals, one in Ingham and one at Babinda. Neither of which are currently operational and in the case of the Babinda plant yet to receive DEHP approval. It is the Babinda plant which is of most interest as it proposes to use MSW and C&I in its gasification process converting waste to energy.

Internationally some plants are operational and producing energy to the grid from waste.

ACTIONS FOR STRATEGY 3

ACTIONS	COMPLETION TARGET
3.1 CCRC Waste Section is to work with other councils in the region to encourage industry to establish processing facilities for recyclables thereby improving the environmental outcome for recycling in FNQ.	**Ongoing**
3.2 CCRC retains membership in the Waste peak body groups such as LAWMAC and the Waste Management Association of Australia and attend professional meetings to ensure staff have access to current technologies, regulations and practices.	**Ongoing**
3.3 Operate a drop off facility for selected recyclables at the transfer stations and include the transportation of the recyclables in the tender for transporting waste from the transfer stations.	**1st December 2013**
3.4 Investigate and implement the best system to operate Tip Shops (for re-use items) at the transfer stations.	**1st July 2014**
3.5 Provide advice to industry on the environmental and financial benefits of Cleaner Production Programs.	**Ongoing**
3.6 Encourage industry to establish viable Alternative Waste Technology Programs in FNQ.	**Ongoing**
3.7 When processing facilities are operational in the region review the triple bottom line assessment of kerbside recycling.	**Ongoing**

7.6 Community Waste Education

STRATEGY 4

CCRC will rationalise its community education on solid waste management to empower the community through the provision of consistent messages which are professionally delivered.

In order to ensure any system operates successfully it is critical that the users of the system are aware of the system, accept the system and know how to use the system to their advantage.

The strategy is compiled of a number of systems:

- A collection system;
- An avoidance/ recycling system;
- A material receiver/processing system; and
- A waste disposal system.

Programs need to be put in place so that the whole community can embrace these systems and develop some ownership.

This includes:

- Council staff:
- Residents;
- Commercial Operators;
- Visitors/ Tourists; and
- Waste Services Sector

ACTIONS FOR STRATEGY 4

ACTIONS	COMPLETION TARGET
4.1 Establish a Council working group to coordinate all waste information being released in all departments of council to ensure messages to the community are accurate, consistent and timely.	**1st July 2013**
4.2 Develop a Waste Education Plan which is comprised of a: • **Program for the residents on the "Wet" and "Dry" collection system;** • **Program designed to encourage the community to manage waste in accordance with the waste hierarchy;** • **Program targeted at educating school children to reduce consumption of resources and recovery resources from waste;** • **Program targeted at reducing waste and maximising resource recovery in the commercial and industrial sector; and** • **Program to address Cleaner Production in Council Departments.**	**1st March 2014** **1st December 2014** **1st December 2014** **1st July 2015** **1st July 2015**
4.3 Develop a Waste Education Action Implementation Plan for the implementation and assessment of the education programs.	**1st July 2014**

8 Summary of Strategies

SOLID WASTE INFRASTRUCTURE	
STRATEGY 1	CCRC will provide and maintain waste management infrastructure which will: • Meet best practice service levels for access to facilities in the Cassowary Coast; • Be designed to meet the key diversionary waste objectives of relevant legislation; and • Provide approved locations for final disposal of waste which is not suitable to be removed from the waste stream.
EXISTING SOLID WASTE SERVICES	
STRATEGY 2	CCRC will provide solid waste services which will: • Standardise the domestic waste collection services provided in the CCRC defined waste collection area; • Standardise Public Place waste services; • Address Litter and Illegal Dumping management; and • Advise the residents of CCRC on environmentally, socially and financially responsible waste management.
RESOURCE RECOVERY	
STRATEGY 3	CCRC will work with industry and the community to: • Provide infrastructure and services which will maximise the recovery of beneficial resources from the CCRC waste streams; • Investigate and assess alternative waste management technologies which could be appropriate for the Cassowary Coast; • Assist in the development of Cleaner Production Plans for all departments of CCRC.
COMMUNITY WASTE EDUCATION	
STRATEGY 4	CCRC will rationalise its community education on solid waste management to empower the community through the provision of consistent messages which are professionally delivered.

9 Summary of Strategy Actions

The table below contains the actions and timeframes for the implementation of the strategy.

ACTIONS	COMPLETION TARGET
SOLID WASTE INFRASTRUCTURE	
1.1 Investigate the options for the provision of additional air space at the Tully Landfill.	**6th May 2014**
1.2 Establish formal "Tip Shop" facilities at the following Transfer Stations at • **Tully Transfer Station;** • **Stoters Hill Transfer Station;** • **Cardwell Transfer Station;** • **Hull Heads Transfer Station;** • **Murray Upper Transfer Station;** • **South Mission Beach Transfer Station; and** • **Bells Creek Transfer Station**	**1st July 2014**
1.3 Establish bins at all Transfer Stations to receive selected domestic recyclables. • **Aluminium Cans;** • **Steel Cans;** • **Paper & Cardboard; and** • **Plastic Containers (Type 1 to 6)**	**1st December 2013**
1.4 Establish an agreement with a regional Material Recovery Facility (MRF) to receive recyclables from the Transfer Stations.	**30th June 2013**
1.5 Investigation of the opening hours for the Transfer Stations with less than 5,000 transactions per year.	**1st July 2013**
1.6 Award a new contract for the operation of the Transfer Stations, Landfills, Gatehouses and Tip Shops.	**1st December 2013**
EXISITING SOLID WASTE SERVICES	
2.1 Review the organisational structure of the Waste Section within Environmental Services	**1ST July 2013**
2.2 Award a single contract for the provision of Domestic Kerbside Collection for the entire Cassowary Coast Regional Council defined waste collection area using a two bin system ('wet and dry")	**1st December 2013**
2.3 Standardise the CCRC Public Place Bin System	**1st December 2013**
2.4 Prepare a Litter and Illegal Dumping Plan	**1st December 2014**

ACTIONS	COMPLETION TARGET
RESOURCE RECOVERY	
3.1 CCRC Waste Section is to work with other councils in the region to encourage industry to establish processing facilities for recyclables thereby improving the environmental outcome for recycling in FNQ.	Ongoing
3.2 CCRC retains membership in the Waste peak body groups such as LAWMAC and the Waste Management Association of Australia and attend professional meetings to ensure staff have access to current technologies, regulations and practices.	Ongoing
3.3 Operate a drop off facility for selected recyclables at the transfer stations and include the transportation of the recyclables in the tender for transporting waste from the transfer stations.	1st December 2013
3.4 Investigate and implement the best system to operate Tip Shops (for re-use items) at the transfer stations.	1st July 2014
3.5 Provide advice to industry on the environmental and financial benefits of Cleaner Production Programs.	Ongoing
3.6 Encourage industry to establish viable Alternative Waste Technology Programs in FNQ.	Ongoing
3.7 When processing facilities are operational in the region review the triple bottom line assessment of kerbside recycling.	Ongoing
COMMUNITY WASTE EDUCATION	
4.1 Establish a Council working group to coordinate all waste information being released in all departments of council to ensure messages to the community are accurate, consistent and timely.	1st July 2013
4.2 Develop a Waste Education Plan which is comprised of a: • Program for the residents on the "Wet" and "Dry" collection system; • Program designed to encourage the community to manage waste in accordance with the waste hierarchy; • Program targeted at educating school children to reduce consumption of resources and recovery resources from waste; • Program targeted at reducing waste and maximising resource recovery in the commercial and industrial sector; and • Program to address Cleaner Production in Council Departments.	1st March 2014 1st December 2014 1st December 2014 1st July 2015 1st July 2015
4.3 Develop a Waste Education Action Implementation Plan for the implementation and assessment of the education programs.	1st July 2014

10 Community Consultation

The above strategies were taken out to the community for consultation commencing 30th of October2012 and submissions closing 12th of December 2012.

The consultation was facilitated and guided by the principles of the International Association for Public Participation (IAP2) and IAP2's methodology, core values and ethics were embedded in the planning, delivery and evaluation. The Community Consultation Outcomes Report was received and its actions adopted by Council on the 17th of February 2013.

The consultation was multi faceted:

- The draft strategy in its entirety was placed on the CCRC website (30th October 2012) with the opportunity for the community to respond;
- Facility was also made available on the Council's facebook for informed comment;
- A community survey was placed on-line and also made available at all of the community events.
- Five community meetings were held at population hubs throughout Cassowary Coast where the strategy was formally presented and community input encouraged by a facilitator;
- Community members and Industry groups were invited to be part of a focus group to workshop the strategy. One group was based on the waste industry of Cassowary Coast and the other was community based. Due to poor response the industry sector focus group meeting was cancelled and replaced with two face to face workshops with two interested parties;
- CCRC staff set up an information booth at the community markets at Innisfail, Tully, Mission Beach and Cardwell during November; and
- Information packages were located at each of the council libraries and customer service centres.

The community was made aware of the consultation process through:

- The local newspapers weekly using advertisements and local stories;
- The local ABC rural radio and 4KZ;
- Some school newsletters;
- Direct email to community groups and organisations;
- Advertisements in each of the libraries and community service centres.
- CCRC website and facebook;
- Direct email to all Council staff.

The majority of the strategies proposed actions were strongly supported by the community (12 out of 17) or supported (4) with one not supported, that action has been removed from the strategy.

11 Conclusion

The Strategy provides Council with a road map for managing the solid waste generated within Cassowary Coast and allow the Cassowary Coast Regional Council to meet its legislative responsibilities.

The success of the strategy truly depends upon all sectors of the community embracing the principles and implementing the actions which impact on their sector.

The strategy is built on an environmentally, financially and socially sustainable approach to waste management.

With good community participation in the strategy and the sound technological input by CCRC staff it is anticipated that Council will have a strategy which can be implemented without being a burden on the community or the environment. In effect it will foster a knowledgeable and proactive community.