Appendix E

Tweed Shire Domestic Solid Waste Management Strategy

APC Environmental Management

DOMESTIC SOLID WASTE MANAGEMENT STRATEGY

FOR

TWEED SHIRE COUNCIL

June 2007

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Document status

Rev. no.	Document	Authors	Editor	Date
1	Draft	Anne Prince, Rick Ralph	Pat Skinner	January 2007
3	Final	Anne Prince,	Pat Skinner	June 2007

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CHARTS AND TABLES

ACRONYMS

AGT	= Australian Glass Technologies
APC	= APrince Consulting
AS	= Australian Standard
CCA	= Copper Chrome Arsenic
C&D	= Construction and demolition
C&I	= Commercial and industrial
DA	= Development Application
DECC	= Department of Environment and Climate Change
EMP	= Environmental Management Plan
EPL	= Environmental Protection Licence
FTE	= Full-Time Equivalent
GCCC	= Gold Coast City Council
JRG	= Jurisdictional Recycling Group
LEMP	= Landfill Environmental Management Plan
MRF	= Materials Recovery Facility
MSW	= Municipal Solid Waste
NPWS	= National Parks and Wildlife Service
SEQROC	= South East Queensland Regional Organisation of Councils
WMS	= Waste Management Strategy
WRAP	= Waste Reduction and Purchasing Policy

EXECUTIVE SUMMARY

Tweed Shire Council (TSC) appointed APrince Consulting (APC) to prepare a Waste Management Strategy for the council area. APC has previous experience in developing waste plans for similar coastal areas which are experiencing substantial population growth, balancing equitable service delivery for rural and urban areas and meeting the expectations of the 'sea and tree changers' as well as those of long-term residents.

The Tweed area is a popular holiday destination for visitors from NSW, other Australian states and overseas. It has over 30 kilometres of coastline which attracts visitors all year round but particularly in the summer school-holiday period, a time which places strain on resources and services. The region is also one of the State's fastest growing areas with increasing numbers of 'sea and tree changers' and retirees choosing to live permanently in the area. The airport at Coolangatta also allows professional people to base themselves in the area and still have easy access to the capital cities.

Tweed Shire Council and the Department of Environment and Climate Change's National Parks and Wildlife Branch control and manage the land assets of the area.

The recommendations in this Waste Strategy are based on sound quantitative and qualitative research. A review of previous studies, reports and correspondence on waste management relating to the past and current systems were made available to the consultants for review and provided invaluable background information. In addition, the consultants undertook:

- Extensive stakeholder consultation
- Market research to determine the current attitudes, views, opinions and behaviour of local residents and visitors
- Detailed analysis of historical and current data to determine usage patterns at waste disposal facilities
- Exploration of a range of options for the collection, treatment and disposal of the various waste streams generated.
- Detailed community consultation program

There are a number of factors that influence waste generation and therefore hinder our efforts towards waste avoidance; these include:

- Economic activity and consumption – as people achieve higher social economic status or as positive economic conditions occur, there is a higher level of consumption of goods and services, leading to more waste.
- Population – an increase in waste generated has been shown to have proportional links to population increases.

Tweed Shire is currently experiencing and is expected to continue to experience both of these conditions.

Council currently contracts out the collection of household waste, recycling and optional green waste services and public litter bins, and provides a bi-annual bulky household waste collection. The contractor also undertakes the day-to-day management of the Stotts Creek Landfill and all activities on that site, including the operation of the current putrescible and inert landfill cell and composting operations. The contractor sub-contracts the operations of the tip shop and Materials Recovery Facility (MRF) where recyablables are separated and processed for on selling and / or export.

The current Waste Management Services Contract commenced in 2004 and expires on 30th November 2009, and Council is seeking guidance and direction on the provisions which should be contained in the new contract. The NSW DECC has developed a Model Waste and Recycling Collection Contract, which specifies that a period of 24 months should be allowed from the commencement of the preparation of the tender documents to the service implementation.

Council introduced a divided 240-litre garbage and recycling service for which the divider was originally positioned for a 70:30 division with 70% of the space for garbage and 30% for recycling. A community survey in 2003 clearly indicated that there was insufficient room for recyclables with the current configuration and, as a result, Council required the new contractor to reposition the divider to a 50:50 position.

Council provides domestic waste services to 31,566 premises. In 2005–06 Council collected 23,394 tonnes of domestic waste, 6,560 tonnes of recyclables and 2,109 tonnes of garden waste representing a diversion rate of 27%.

The current waste management program has been audited as part of a North East Waste Forum waste characterisation project, and it was found that, on average, 15% of the recycling stream contained material unsuitable for recycling which is termed contamination. This is consistent with an annual audit conducted in September 2006 by the contractor, which found 17.9% contamination.

Based on data provided by the contractor for the performance of the Materials Recovery Facility (MRF), where all kerbside-collected recyclables are sorted using a mix of mechanical and manual methods, only 60% of what the householder places in the recycling section of the bin is recovered. The remaining 40% is lost as glass fines and contamination, therefore just 2.5 kg per household are recovered.

The NSW State Waste Strategy has set a target of 66% diversion for municipal waste by 2014. The regional audit found that currently the garbage bin comprises 48% organic material and a further 23% consists of undiverted recyclables. Up to 70% of the Tweed Shire garbage stream can be classified as potentially recoverable resources, leaving a residual waste of 30%, or 3.5 kg per household per week. Clearly, Council has to address the organics stream and improve its current performance and be aligned to the state target.

Results from neighbouring Councils Clarence and Lismore indicate that it is possible to reduce the quantity of garden organics in the garbage stream by up to 80%, and food organics by up to 50%.

As part of this project a community survey was undertaken, in which 215 residents were randomly selected and interviewed. The key results reveal that 36% of people indicated the rubbish side of their domestic waste bin was full to overflowing each collection, while 37% indicated the recycling side was full to overflowing and 28% indicated that both sides of the bin were overflowing. When asked what people did with any excess recyclables, the majority placed it in the rubbish bin, kept it until the next collection, used the neighbour's bin or took it to work.

When asked if Council should introduce a dedicated kerbside recycling container the majority of the residents, 59%, supported this outcome. When the analysis was undertaken based on household size, households with 1–2 people were fairly equally represented, with 47% supportive and 49% opposed to its introduction. However, in families with three or more people, the results were very clear, with 82% in support and only 18% in disagreement. Clearly Council has a mandate to introduce a separate recycling bin.

Council provides a voluntary user-pays garden organics service in a 240-litre bin on a fortnightly collection schedule. Currently 25% of households have signed up for the service. During the survey, 47% of respondents indicated they did not know about the service. When asked if this should become a standard service, overall 42% supported this. However, when the results were analysed by type of dwelling and location, 50% of single households in townships supported the introduction, while those living on acreage mulched their garden waste, and medium-density dwellings tended to contract garden services.

Council offers free mulch at Murwillumbah depot, however, 62% of survey respondents said they did not know about this option while 58% did not know mulch was offered for sale at Stotts Creek. Several comments were made about the poor quality of the mulch, particularly at the Murwillumbah depot.

In total, 116 suggestions for improvements to the waste management programs were offered by the survey participants, with the key common emerging themes relating to the need for greater recycling and waste capacity, the need for a three-bin system, the quality of the mulch and the need for continued education of the community.

A detailed community consultation program followed the delivery of the draft waste strategy and included:

- promotion of the Draft Waste Plan in the Tweed Link which is delivered to all residents,
- preparation of a community consult document summarising the eleven key recommendations and the Executive Summary of the draft Waste Plan was available upon request from Council offices or web site,
- an opportunity to meet or talk with the consultants was provided the week of 5th March,
- presentations Progress Associations,
- briefing with the current contractor
- Tweed Link advertisements sought feedback on draft strategy

Council's website recorded 81 hits on the Community Consultation Summary document and 291 hits on the Draft Waste Strategy Executive Summary. Consultants

and Council staff attended and presented at three Progress Association meetings. In total, five letters and nineteen emails were received. A response was forwarded to each submission received addressing or clarifying any particular area of concern.

The community consultation program yielded a disappointing result in terms of the number of community responses however, the quality of the feedback was very high and mostly well considered reflecting an informed and caring community. There was in principle support for all recommendations except for the co-tendering with Gold Coast City Council for collection and processing services.

Based on the community consultation feedback Council staff and the consultants made a number of changes to the recommendations of the draft Domestic Waste Management Strategy including: removing 10 recommendations associated with co-tendering with Gold Coast City Council, seeking DECC approval for processing food waste during trials, the provision of a chemical storage cabinet and training of staff to receive and process chemicals. A further 11 recommendations were modified.

Council should therefore offer a standard 240-litre commingled recycling service fortnightly, a user-pays garbage service based on the size of the bin, with 80-litre, 140-litre and 240-litre options and a compulsory garden waste service for all single residential premises in townships, and an optional service for multi-unit dwellings.

The consultants recommended that Tweed Shire Council should enter into discussions with Gold Coast City Council, as both domestic contracts expires in a similar time frame. The option of a regional collection contract should be fully explored, as it is considered that Tweed Council would benefit from the economies of scale achieved by joining with a larger council, particularly when the boundary between the two councils is indistinguishable at Tweeds Heads and Coolangatta. However, this approach was not supported by the local community and has been removed from the final Waste Management Strategy document.

Currently, Council will retain ownership of the MRF at Stotts Creek at the expiration of the contract in 2009, however, the plant is old and antiquated, and will require a significant and costly upgrade. Based on Ballina Council's investigations, Tweed Council may need to spend $1 million to upgrade the current facility to process the 6,500 tonnes collected per year, with a processing cost of up to $200 per tonne.

Visy Recycling purchased the Cleanaway MRF at Carrara, which currently processes all Gold Coast, Beaudesert, Ballina and Lismore Councils' dry recyclables. This plant is currently the only one in Australia that has a glass refining operation attached, so that all glass placed in the bin by the householder is either recovered for reuse in glass manufacture or is processed and used in a variety of other applications. It is recommended that Tweed Council discuss processing options directly with Visy, who are quoting a processing cost of $15 per tonne up to 6,000 tonnes and $10 per tonne between 6,000–10,000 tonnes per year plus transport. A local MRF could not compete with the Visy costs and this option will remove the need to undertake the $1 million dollar upgrade of the current facility.

The Stotts Creek Landfill current putrescible cell is nearing capacity and is expected to full by 2010. Council has acquired a nearby site for future landfill and quarrying activities and is proceeding with site investigation and designs. The site development

and operating costs are unknown at the time of writing this report, however, we have determined that Council has a number of other options available in addition to developing the proposed new site.

Council could export waste from the area at a cost of $50 per tonne which removes the necessity of Council developing its own landfill for the foreseeable future. Veolia Environmental Services (formerly Collex), in partnership with JJ Richards, has constructed the Ti-Tree Bio-energy Landfill Facility at Willowbank, located west of Ipswich, where the bio-reactor rapidly breaks down waste by re-circulating leachate, and gas produced is used in renewable power generation and Thiess Services operates a secure fully engineered landfill at Swanbank near Ipswich. Both companies offer long-term contracts and can provide disposal for $25–$30 per tonne and transport for $25 per tonne.

The current MRF at Stotts Creek Landfill could be converted to a transfer station for loading directly into 100-m^3 walking-floor transfer trailers for transport to either of these sites.

Council also owns and operates a transfer station at Tyalgum and a landfill at Murwillumbah. The NSW Department of Environment and Climate Change (formerly the NSW EPA) is concerned about ground water contamination at both Murwillumbah and Stotts Creek landfill sites. In recent communication the DECC is suggesting Council establish post-closure plans for the Murwillumbah site. The DECC is particularly concerned about the green waste processing operations are exacerbating leachate issues. It is suggested that Council close the Murwillumbah operation and centralise all activities at Stotts Creek, which is centrally located in the council area.

Council recovers its operating costs for waste management through the Domestic Waste Management Charge applied to the council rates which for the 2006–07 financial year is set at $189. Council, through careful planning and good financial management, has a reserve fund of over six million dollars to allow for expected future changes in both the domestic service and also the need to establish a new local landfill before the end of this decade. Therefore, there are adequate funds to explore and implement the recommendations contained within this report and to expand the range of services offered at negligible additional cost.

We believe that the approach recommended in this report following the community consultation program provides Tweed Shire Council with the most socially responsible, economically viable and environmentally sustainable outcome to achieve both community expectations and that of the state government.

Outlined below are the 35 recommendations in the order as they appear within this report which does not necessarily reflect their priority.

1. That Council continue to monitor the activities of the South East Queensland Waste and Recycling Network Group and the NEWF. It would appear that Tweed Shire has more in common with the Queensland group and its activity better reflects the immediate and long-term needs of Council.

2. ***That Council request the waste contractor to have trained staff available at all times to receive and process DrumMUSTER containers.***

3. ***That the contractor uses the service of the free DrumMUSTER training program.***

4. ***That Council continue to support the efforts of DrumMUSTER through community education and promotion of either continuous receipt of containers or one-off collection programs.***

5. ***Council continue to promote that asbestos should be removed, handled and stored in accordance with the Work Cover Regulation.***

6. ***That all batteries received at all waste depots be correctly stored.***

7. ***That Council include the correct disposal of gas cylinders and bottles in future community educational material and promote the drop-off of these materials at each waste disposal facility.***

8. ***That Council continue to support the operation of reuse facilities at all waste disposal facilities.***

9. ***Council ensures the community is informed about household hazardous collection programs.***

10. ***That Council continue to promote the current practice of source-separation and free delivery of recyclables at all waste facilities.***

11. ***That Council should introduce a new fully commingled recycling service in a 240-litre bin collected fortnightly to all of its residents.***

12. ***That Council should introduce a garden service in a 240-litre bin collected fortnightly to all single residential dwellings in townships.***

13. ***That Council offers an optional garden waste service to all medium-density and multiple-occupancy residential buildings.***

14. ***That Tweed Council offer residents a 140-litre bin as the standard service with the option of a differential service rate for an 80-litre or 240-litre in the interests of social equity. The price differential for these service options will be assessed once the tender for domestic waste management services is completed.***

15. ***That new lids in accordance with the Australian Standard 4123 Mobile Waste Container be provided to all existing and new domestic waste, recycling and garden organics bins as part of the collection contract.***

16. ***Council should continue to monitor developments by other local governments which have introduced or are proposing to introduce organic waste collection programs, in particular, Coffs Coast and Hastings Councils,***

to learn from their experiences. Council should also assess new and emerging technologies and processes which have applicability for the area.

17. ***That Council introduce dedicated collections for specific materials, that is, metals / whitegoods and continue with the bi-annual household cleanup service.***

18. ***Should Council maintain its own MRF, then the future collection contract should specify a maximum compaction for the collection of recycling at 180 kg/m^3 and in accordance with best practice.***

19. ***That Council enter into discussions with third parties in relation to the acceptance of Tweed Shire Council recyclables.***

20. ***That a two-bin system – garbage and 'containers only' or alternate litter bin system be trialled in key strategic areas.***

21. ***That a performance review of the system be undertaken three months after the system is introduced.***

22. ***Recycling stations should be provided in strategic visitor locations to reduce the incidence of visitors using private or commercial bins.***

23. ***That the existing blue litter bins should be replaced with green bins with red lids for rubbish and yellow lids for recycling.***

24. ***That Council develop a Waste Not DCP and place a notation or condition on all Development Approvals requiring the source separation and containerisation of all waste on building sites to minimise waste generation and prevent unintended pollution.***

25. ***That source-separation of loads prior to delivery is desirable due to the differential pricing policy to be applied to mixed loads at Stotts Creek and Murwillumbah landfills.***

26. ***That Council undertakes a community education and industry information campaign to promote source-separation of all loads delivered to the Stotts Creek landfill.***

27. ***That Council directly approaches the significant users of its landfills on a personal basis to inform and educate them regarding the role of source-separation and of Council's intention to introduce a substantial change to the future fee structure and charges for disposal of waste.***

28. ***That Council resolves to introduce differential landfill fees for sorted and unsorted loads and offer a significant price variation to create the necessary motivation for source-separation within the community.***

29. ***That council introduces a significant differential pricing policy to encourage source – separation by waste generators of building materials.***

30. That the current education and communication program delivered by the contractor be reviewed to assess and evaluate the effectiveness and value for money prior to developing the new contract specification.

31. Given the high proportion of visitors to the area, that the use of graphic images supported by the English words must be incorporated into all communication modes

32. That Council must commit sufficient and ongoing budgetary resources to continue the education of both residents and visitors.

33. That the waste depots should be renamed as Resource Recovery Centres.

34. That Council ensure that the new waste education centre is a demonstration site for green building and sustainable living and be called The Sustainable Living Centre.

35. That concurrently with developing plans for the local landfill, Council reviews other long-term disposal options for the Shire's waste as identified in the Strategy having regard to transport and disposal costs, method and number of vehicle movements to accurately assess traffic impact.

1. INTRODUCTION

The Tweed Shire is located on the far north coast of NSW and covers an area of 1,303 km^2.

Prior to European settlement, the area was home to the Bundjalung people. Captain James Cook, in 1770, identified and named two of Tweed Shire's most prominent features, Mount Warning (Aboriginal Wollumbin) and Point Danger. The area was first settled by timber-getters around 1844 with the river port of Tumbulgum was the population centre.

Tweed Shire Council today adjoins the shires of Byron, Lismore and Kyogle to the south and west and the Queensland State border to the north. The shire has 30 kilometres of natural coastline, together with wetlands, estuarine forests and farmlands.

The region is considered an area of high conservation significance which provides residents and visitors with a unique opportunity to observe a wide range of fauna and flora.

The Shire supports a population of about 73,800.[1] The table below details the key demographic and social indicators for the Shire compared to NSW. A full list of demographic information from the 2001 ABS census is provided in Appendix 1.

Table 1 - ***Tweed LGA and NSW Key Demographic and Social Indicators***

Indicator	Tweed LGA	NSW
Population	73,821	6,311,168
Households	30,286	2,343,677
Median age	43	35
Median weekly individual income	$281	$387
Percentage of households in separate houses	63.1%	70.3%
Percentage unoccupied dwellings	8.2%	8.9%
People per household	2.18	2.39
Percentage of households owned or purchasing	66.9%	64.4%
Percentage of households rented from housing authority	2.6%	4.9%
Unemployment Rate	12.6%	7.2%
Average vehicles per household	1.6	1.8
Median weekly household income	$514	$829

The median age of Tweed residents is much higher than the NSW average (43 years vs 35 years), possibly due to the large number of retired people in Tweed.

Income levels in Tweed are markedly lower than the NSW average both for individuals and households.

[1] ABS Census data 2001.

The proportion of households owned or purchasing is several percentage points higher in Tweed than the NSW average with the majority of people living in the northern end of the shire and along the coastal strip.

The majority of residents live in separate housing, which accommodate on average 2.7 people per households.

Retail, health and community services, and construction are major industries in the Tweed. Together these industries employed approximately 38% of the total workforce in 2001. Rising rural land prices and a push for rural-residential living is placing the primary industries sector under increased pressure. Agricultural industries of sugar cane and small cropping remain buoyant, while new ventures into alternative cropping; wineries and farm tourism have emerged. Tourism remains a key industry in the shire and employed approximately 10% of the work force in 2001.

The Tweed Shire is ageing; approximately 27% of residents are aged 55 and over. If current trends continue by 2011, 34% of residents will be in this age sector. The Tweed Shire has proportionally more families in the lower- to middle-income range compared to the state average. In 2001, 46% of households earned less than $500 per week; 18% of these households received an income less then $299 per week.

The Tweed continues to experience high youth unemployment. A limited number of new jobs and a trend in casual and part-time employment have forced the migration of young adults out of the area for work and education. The closure of the railway and a lack of public transport in rural areas have meant most residents must rely heavily on private transport.

The Tweed Valley, like most of coastal Australia, is experiencing significant growth and development as people seek to retire early and invest in a coastal and rural community. Population growth continues to increase, with a five-year estimated average of 2.5%, and conservative projections predict that the population may increase by an additional 40,000 people by 2016. The future coastal, rural-residential, and tourism accommodation development will require careful management to ensure the unique qualities which attract people to the Tweed area are preserved.

The proximity of the Gold Coast – Coolangatta airport provides a ready access for intrastate, interstate and international visitors. The area offers a holiday destination with a relaxing coastal lifestyle with over 30 kilometres of coastline. The peak periods for visitors are the summer months and school holidays.

2. TWEED SHIRE COUNCIL

Murwillumbah was declared a Local Government Municipality in 1902 and the Municipality of Murwillumbah and the Shire of Tweed was amalgamated in 1947 to create the Tweed Shire. Today the population is scattered through 17 villages, two townships and the major urban areas of Tweed Heads and South Tweed many bearing their names from the language of the original Aborigines.

The state government appointed three Administrators in May 2005 to govern the council area until elections are held in September 2008. The administrators are Frank Willan, Gary Payne and Max Boyd.

The council has approximately 34,000 ratable properties and operates on a $160 million budget, of which 38% is derived from rate revenue, with the remaining income from user charges (13%), grants and contributions (39%) and 10% interest and other income.

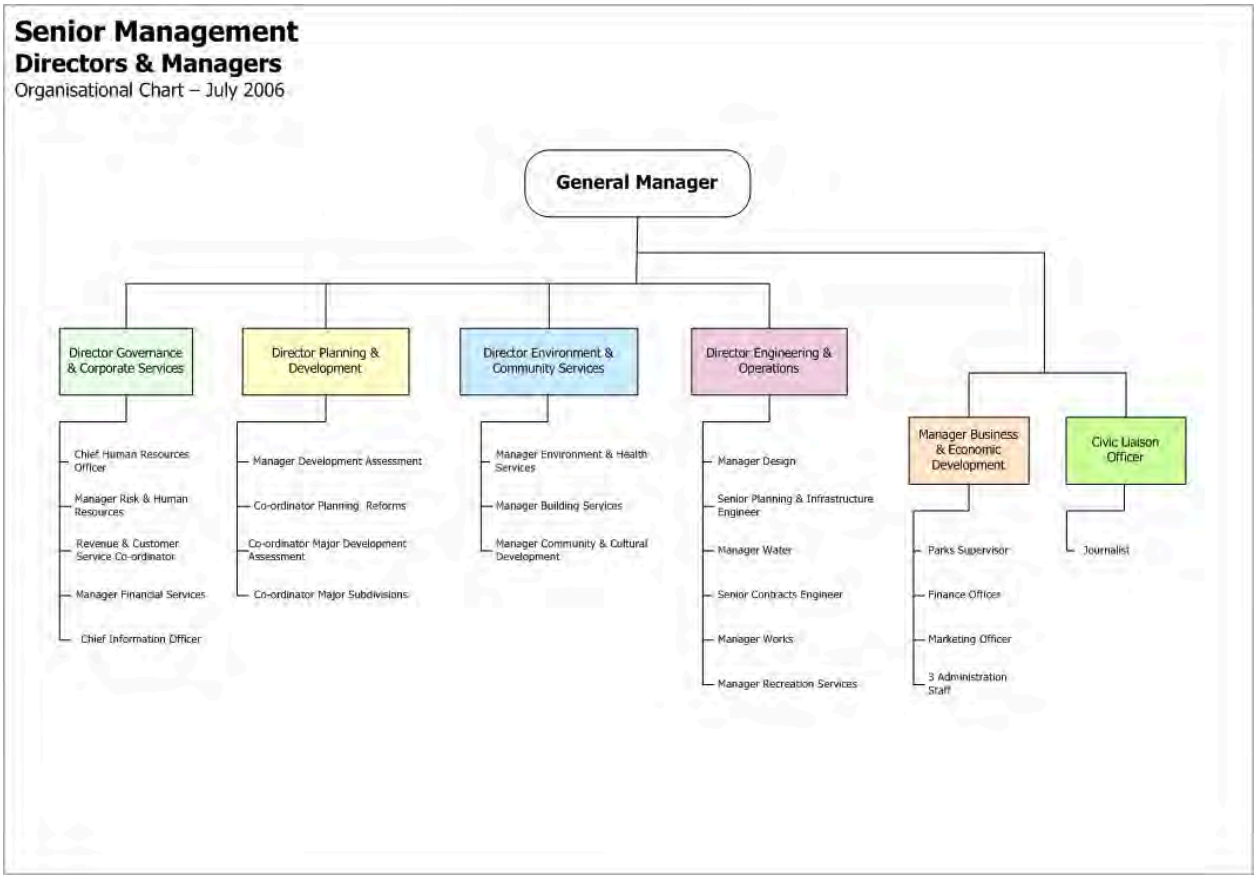
Tweed Council has developed a Strategic Plan titled Tweed Futures which states:

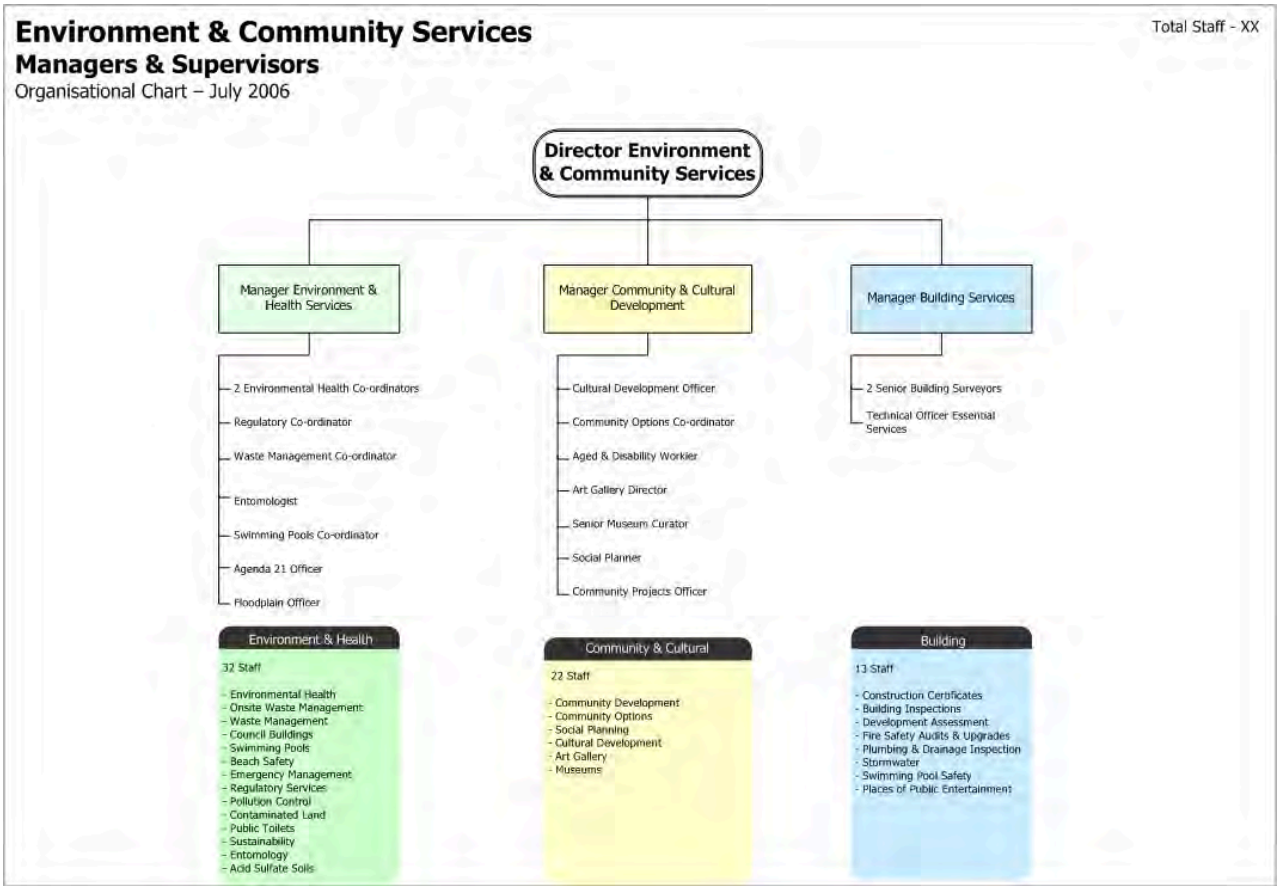
The Vision: *The Tweed is to become the premier area in which to live, work and visit.*

The Mission : *In partnership with the community, balance people's aspirations for development and enhancement of the unique environment by providing affordable quality services in a competitive manner.*

Waste Management is overseen by Council's Waste Management Co-ordinator, Ian Percy, and assisted by its Waste Management Officer, Adam Faulkner. Both positions report to the Manager, Environment and Health Services, and the Director, Environment and Community Services, Don Buckley. Together this team ensures all waste management services meet the expectations of the community, while overseeing the contract in place for the delivering of services and operation of the landfills and transfer station. Copies of the council's organisational chart and that of the Environment and Community Services division, are provided on this and the following pages.

Tweed Shire Council is currently an observer of the North East Waste Forum, however, due to its geographic location, the council relates more to activities occurring in the south-east corner of Queensland.


Senior Management
Directors & Managers
Organisational Chart – July 2006
General Manager
Director Governance & Corporate Services
Director Planning & Development
Director Environment & Community Services
Director Engineering & Operations
Manager Business & Economic Development
Civic Liaison Officer
Chief Human Resources Officer
Manager Risk & Human Resources
Revenue & Customer Service Co-ordinator
Manager Financial Services
Chief Information Officer
Manager Development Assessment
Co-ordinator Planning Reforms
Co-ordinator Major Development Assessment
Co-ordinator Major Subdivisions
Manager Environment & Health Services
Manager Building Services
Manager Community & Cultural Development
Manager Design
Senior Planning & Infrastructure Engineer
Manager Water
Senior Contracts Engineer
Manager Works
Manager Recreation Services
Parks Supervisor
Finance Officer
Marketing Officer
3 Administration Staff
Journalist


Environment & Community Services
Managers & Supervisors
Organisational Chart – July 2006
Total Staff - XX
Director Environment & Community Services
Manager Environment & Health Services
Manager Community & Cultural Development
Manager Building Services
2 Environmental Health Co-ordinators
Regulatory Co-ordinator
Waste Management Co-ordinator
Entomologist
Swimming Pools Co-ordinator
Agenda 21 Officer
Floodplain Officer
Cultural Development Officer
Community Options Co-ordinator
Aged & Disability Worker
Art Gallery Director
Senior Museum Curator
Social Planner
Community Projects Officer
2 Senior Building Surveyors
Technical Officer Essential Services
Environment & Health
32 Staff
- Environmental Health
- Onsite Waste Management
- Waste Management
- Council Buildings
- Swimming Pools
- Beach Safety
- Emergency Management
- Regulatory Services
- Pollution Control
- Contaminated Land
- Public Toilets
- Sustainability
- Entomology
- Acid Sulfate Soils
Community & Cultural
22 Staff
- Community Development
- Community Options
- Social Planning
- Cultural Development
- Art Gallery
- Museums
Building
13 Staff
- Construction Certificates
- Building Inspections
- Development Assessment
- Fire Safety Audits & Upgrades
- Plumbing & Drainage Inspection
- Stormwater
- Swimming Pool Safety
- Places of Public Entertainment

3. WASTE MANAGEMENT STRATEGY

Council committed to developing a Waste Management Strategy and issued a consultancy brief. In response, APC, which has a proven track record in developing innovative and practical waste plans and strategies for regional, rural and remote communities, was appointed, and stated that the key objectives of the project were:

- To develop a WMS for Tweed Shire Council that is supported by all key stakeholders and enables Council and the community to implement sustainable waste management practices for current and future generations
- To engage major waste generators and the broader community in the development of the WMP, so that the outcomes are supported in the implementation phase
- To develop the WMS in accordance with the waste management hierarchy and the principles enshrined in the guidelines and best-practice principles of the NSW Department of Environment and Conservation's Model Waste and Recycling Collection Contracts.
- To increase the local community's and visitors' level of knowledge, awareness and understanding of local waste management issues and their role in providing solutions.

Outlined below is the way in which APC has structured this project in response to the project brief, to provide an affordable and realistic range of options which are practical and capable of being implemented by Council and its community.

Stage One – Research

- Detailed literature review of the extensive available documentation provided by the client
- Undertake market research to determine the views and issues, as seen through the eyes of visitors and residents
- Undertake extensive stakeholder consultation with regard to current and future waste management options.

Stage Two – Draft Waste Management Plan

In the second stage APrince Consulting has developed the draft Waste Management Plan, based on environmental, social and economic benefits for review and feedback by the Council and the community.

Stage Three – Community and Stakeholder Consultation

Community and stakeholder consultation will be undertaken to canvass the opinions and attitudes of residents and key stakeholders regarding the range of options developed in response to the research.

Stage Four – Final Waste Management Plan

A report on the feedback from the consultation phase of the project will be developed and provided to Council for consideration. Based on the feedback from the stakeholders, community and Council, the draft Waste Plan document will be refined and finalised.

This report:

- Provides an overview of previous studies relating to waste management practices
- Contains the results of a regional waste audit
- Contains the results of market research surveys conducted with residents and visitors
- Provides outcomes of stakeholder meetings in relation to views and opinions about current and future waste management practices.
- Contains an exploration of a range of options for the treatment of all waste types and provides a cost–benefit analysis of both the capital and operating costs for those options.
- Identifies strategies including education and infrastructure requirements to improve waste avoidance, minimisation and resource management, consistent with the goals of sustainability.
- Contains the community consultation program and outcomes
- Provides an action plan for implementation.

Following the completion of the Strategy, Council intends to implement the strategy and develop tender documents and new contract service provisions based on the strategy outcomes, in line with the NSW DECC Model Waste and Recycling Collection Contracts framework.

4. LITERATURE REVIEW

To assist the consultants, Council as well as the North East Waste Forum provided copies of internal and external reports, correspondence, and plans for review and evaluation relevant to the development of this plan. A summary of the key reports is provided below as a background to the evolution of waste management program.

4.1. Waste Collection and Disposal Strategy, 2003

In December 2003 Council adopted the Waste Collection and Disposal Strategy and resolved to encourage all sectors of the community to participate in waste avoidance as a strategy towards more sustainable waste management in the Shire. Specifically, the Strategy targeted three areas of waste generation:

- Domestic Streams – to increase the amount of recyclables recovered from the domestic sector
- Commercial and Industrial – to reduce green waste disposed of to landfill, increase recycling and reduce inert waste streams from its landfill
- Construction and Demolition – to increase the amount of recyclable material from this sector.

4.2 Waste Collection & Disposal Community Survey 2003

A community survey was undertaken by Council in December 2003 in the *Tweed Link* newsletter, to which 1,262 residents responded, equating to a response rate of 4.2%. The purpose of the survey was to determine the community's views in relation to current collection programs to provide input into the draft Waste Collection & Disposal Strategy, and for these matters to be considered as part of the development of a new waste collection contract. The key survey results are detailed below:

1. 46% of respondents considered the existing collection bin to be adequate.
2. 49% considered the existing recycling section too small.
3. Of these 49%, almost 50% preferred a 50/50 garbage/recycling split instead of the 70/30 split.
4. 45% of respondents preferred a separate 240-litre recycling bin serviced fortnightly.
5. Only 32% of respondents were prepared to pay an extra $35 per year for this extra bin.
6. 34% of respondents were prepared to accept a 140-litre garbage bin collected weekly.
7. 44% of respondents indicated they would use a fortnightly garden waste collection service.
8. Only 33% indicated that they would be prepared to pay $35 extra for the garden waste service.
9. 89% of respondents indicated their satisfaction with the biannual clean-up service, with over 65% indicating a preference for the collection to be held in May and November.

45% indicated a preference for a separate 240-litre recycling bin serviced fortnightly; only 32% of the respondents indicated that they would be prepared to pay an extra $35 per year for this service.

A similar situation occurs for garden waste whereby 44% of respondents supported a fortnightly green waste collection service, however, only 33% were prepared to pay an additional $35 per year for this service. Most support for a garden waste program came from Banora Point, Tweed Heads South, Terranora and the Tweed Coast residents, as detailed in the table below:

Table 2 - Community's Willingness to Pay for Garden Waste Collection Program

Area	Responses	Support introduction of garden waste service	Willingness to pay
Murwillumbah & Surrounds	197	30%	24%
Tweed Heads/Tweed Heads West	200	36%	24%
Kingscliff/Chinderah	135	40%	33%
Banora Point/Tweed Heads South/Terranora	575	50%	38%
Bogangar/Hastings Point/Pottsville	130	53%	42%

As a result of the survey findings, the previous 240-litre split 70/30 garbage bin, which provided just 72 litres for recycling and 168 litres for garbage, was modified to a split 50/50 garbage/recycling at the commencement of the new contract in December 2004, and an optional green waste service was offered.

4.3 The Local Government Action Plan 2003

This document was prepared to provide a framework that sets out how councils can contribute to the achievement of the outcomes and targets contained in the WARR Strategy. The Plan includes commitments, actions and sub-targets across a range of key waste management issues, wherein local government's best position is to initiate and sustain changes in practices.

4.4 North East Waste Forum – Regional Waste and Resource Management Plan 2006–2009

The North East Waste Forum aims to achieve the development and implementation of locally based solutions to waste management. The forum was established as one of four pilot regional waste management groups in 1996, with support from the EPA (now part of the DECC). The current financial member councils are Ballina, Byron, Clarence Valley, Lismore and Richmond Valley. The forum also has strong ties to the neighbouring councils of Kyogle and Tweed which, although not members, have been active participants in many of the forum's projects.

The councils have been working co-operatively since 1996 on priority issues for the region. Each council has its own strategy for dealing with its waste management, aimed at optimising resource use and recovery, improving waste management and educating the communities about waste and environment. This plan focuses on domestic waste but also deals resource recovery in the commercial and industrial and construction and demolition sector.

Funding of the forum's activities is shared between the DECC and member councils on a per capita basis. Funds have been verbally confirmed as being committed to from

the DECC for the period up to July 2009. The forum operates on an annual budget of $290,000, $150,000 funded by member Councils and $140,000 from the DECC.

4.5 NSW Environmental Education Plan 2006–2009

The NSW Council on Environmental Education has recently released this document which builds on the previous document 'Learning for Sustainability Plan', which sets out the strategic framework to developing environmental education in NSW, guided by a Vision to 'Achieve effective and integrated environmental education which builds the capacity of people in NSW to be informed and active participants in moving society towards sustainability'. The plan aims to address the needs of those delivering environmental education as well as those who seek access to it. A series of strategies, actions and outcomes have been set to help achieve these aims with a wide range of stakeholders identified to make the plan work.

4.6 North East Waste Forum Regional Education Plan 2006–2008

The North East Waste Forum Regional Education Plan 2006–2008 is consistent and meets the obligations that are identified within the NSW Government Environmental Protection Education Plan for Sustainability and also meets the commitments of the NSW WARR Strategy 2003 (revised in 2006).

This document was developed to assist the member councils in the provision of best-practice waste education programs for the regional community on the north coast of NSW, supports the Regional Waste Plan and provides a detailed planning approach for education actions identified in the regional plan. It is designed to assist local and regional educators to design, develop, deliver and evaluate education programs and projects about waste management.

Education, training, communication are now recognised as fundamental tools in achieving waste reduction measures throughout NSW and beyond.

Aim – The aim of the education program is to promote the adoption of sustainable waste practices by the north coast community through the provision of innovative education programs for our regional and local communities.

The objectives are:

- Increase awareness for the community about ways of producing waste through waste avoidance and resource recovery.
- To increase the skills of the community to make informed decisions and undertake sustainable waste practices.
- Encourage the adoption of these sustainable waste practices for engaging the community.
- Support the NEWF member councils in their education programs through providing consistent messages, shared projects, resources and materials.
- To build the capacity of NEWF member council personnel to undertake best-practice waste education planning and evaluation.

The target groups are:

- The member council communities

- education providers – TAFEs, primary school and high school teachers, early childhood centres
- businesses
- community groups
- visitors.

Strategic outcomes:

1. Increase community and education and support waste avoidance and resource recovery.
2. Provide environmental education programs that meet the specific needs of community sectors.
3. Enhance cross-sector co-ordination of programs.
4. Enhance the training, professional development and other support for those developing and delivering environmental education.
5. Provide consistent co-ordinated information and education for stakeholders.
6. Improve integration environmental education with other tools and strategies used to promote ESD.
7. Increase research and evaluation of effective environmental education.

5. POLICY FRAMEWORK

The government sector in general provides the overall regulatory and legislative framework in which the waste management industry operates, and provides strategic direction to the broader community and all stakeholders with regard to waste policy issues.

5.1 Commonwealth

Commonwealth bodies that influence waste policy include the Department of Environment and Heritage and the Department of Industry, Tourism and Resources. The Commonwealth influences waste management in four main ways:

1. International Treaties – governs the export of waste
2. National Environment Protection Council (NEPC) – aims to develop a harmonious approach to waste management across jurisdictions.
3. Levies and Excise – the Commonwealth can tax products, that is, levy applies to oils and lubricants
4. National Agreements – National Packaging Covenant.

In October 2005 the Federal Treasurer referred the matter of waste generation and resource efficiency in Australia to the Productivity Commission for inquiry and report within twelve months. The Commission was to examine and report on current and potential resource efficiency in Australia. Two consultation documents have been released for public comment. An Issues Paper was released in December 2005 and a draft Report in May 2006. Two rounds of public hearings have also been held. The final report has been delivered to the government for consideration. Under the *Productivity Commission Act 1998*, the Government is required to table the report in each House of the Parliament within 25 sitting days of receipt. The document has not as yet been considered by Parliament, nor has it been released publicly.

5.2 State Government

Most waste policy and management are developed and take place at the state government level. The Waste Avoidance and Resource Recovery Act 2001 (WARR Act) was enacted after a review of the previous Waste Minimisation and Management Act 1995. The review recommended that waste be regarded as a recoverable resource through the uptake of new waste processing technologies, and created a central State Government-based agency, Resource NSW, to replace the NSW Regional Waste Boards. Resource NSW had as its charter to develop a framework and to support the implementation of programs to avoid waste and recover resources.

Resource NSW released the Waste Avoidance and Resource Recovery Strategy in February 2003, which set targets for avoidance and resource recovery and was endorsed by the NSW Government. The targets are shown in the table below:

Table 3 - NSW Waste Targets

Stream	Baseline Resource Recovery 2003	Target by 2014
Municipal	26%	66%
C & I	28%	63%
C&D	65%	76%

In 2003 the NSW Government restructured the environment agencies and created a new state environment body called the Department of Environment and Conservation (DEC which incorporated the former Environment Protection Authority, NSW National Parks and Wildlife, Resource NSW and the Royal Botanic Gardens Trust.

Resource NSW became the Sustainability Programs Division, the aim of which is to accelerate the shift towards environmentally sustainable practices through:

- The Waste Avoidance and Resource Recovery Strategy and Environmental Trust
- Community education and information
- Partnerships focused on business and urban sustainability issues
- Programs with local government and other agencies.

The DEC established an Extended Producer Responsibility (EPR) Expert Reference Group to advise the Minister on EPR and Product Stewardship. The first EPR Priority Statement, published in March 2004, listed 16 wastes of concern, with the following nine materials having priority status. A supplementary EPR Priority Statement, published in March 2006, identified 17 wastes of concern with the seven priority materials. These are listed in the table below.

Table 4 - NSW Wastes of Concern – Priority Materials

2004 Priority Wastes	2005–06 Priority wastes
Computers	Computers
Televisions	Televisions
Ni-cad batteries	Mobile phones
Used tyres	Used tyres
Plastic bags	Plastic bags
Packaging wastes	Paint
Agricultural and veterinary chemicals	Office paper
Agricultural and veterinary chemical containers	

In November 2005, the NSW Government announced the City & Country Environment Restoration Program which would be funded from annual increases in the Waste and Environment Levy of $6 per year over the next five years, generating an anticipated $426 million. The levy is only applicable in the metropolitan and Extended Regulated Areas of Newcastle, Central Coast and Wollongong. The levy increase will be used to fund the following initiatives:

- $105 million: Riverbank to buy back water licences
- $30 million: Marine parks
- $13 million: Buy back perpetual crown leases

- $80 million: Urban sustainability grants
- $76 million: Strategic Environmental Trust grants
- $37 million: Native Vegetation Assistance Package
- $80 million: Local Government rebates
- $18 million: Illegal dumping.

In addition to the WARR Act, the following legislation and policies can influence waste management in NSW:

- *The Protection of the Environment Operations Act, 1997* Waste Regulations set out regulatory requirements for specific wastes, waste facilities and activities, transporters and the collection of the waste levy by the NSW EPA (now part of the DECC)
- *The Environmental Planning and Assessment Act 1979* directs the overall planning and building system in NSW**.**
- State Environment Planning Policy SEPP 48 (1995)
- *The Local Government Act 1993* guides councils in developing policies affecting waste management activities.

In March 2007 following the NSW state election the DEC was replaced with the Department of Environment and Climate Change (DECC) which brings together conservation and natural resources science and programs, including native vegetation, biodiversity and environmental water recovery, with the objective of integrating the government's approach to natural resource management. The DECC also includes the Greenhouse Office, formerly a specialist policy unit within the NSW Cabinet Office. Total responsibilities include:

- climate change and greenhouse issues, including the new climate change fund;
- programs to reduce waste, toxicity, litter and illegal dumping;
- air and water quality, noise control, and regulation of chemicals and radiation;
- national parks and reserves, including management of marine parks;
- biodiversity, threatened species and native vegetation management;
- protection of soils and land and catchment management;
- environmental water management and coastal lakes and estuaries;
- botanic gardens - Sydney's Royal Botanic Gardens and Domain, Mount Annan and Mount Tomah Botanic Gardens;
- Aboriginal cultural heritage and historic sites;and
- sustainability programs, including environmental education, energy efficiency and water conservation programs and renewable energy policy.

5.3 Local Government

As the closest interface between government, communities and business, local government has several important roles to fulfil, including providing waste and recycling services to the community, being a major buyer and consumer of goods and services, a local planner and regulator, a leader of local communities and key agent for social change.

Local Government is involved in service planning and delivery to the communities it serves, principally domestic waste, recycling and organics services. For historic

reasons connected with public health and sanitation, local government is responsible for the collection, transport and disposal of municipal solid waste generated by the community at a household level. In conjunction with this service, local councils also often collect recyclable materials and garden organics. In most cases local government provides infrastructure for waste disposal in regional and rural Australia**.**

While the number of councils operating their own services is still substantial, many councils now engage a contractor to provide some or all of these services. Councils using contractors typically enter into seven- to ten-year contracts. Many councils are entering into regional groupings to gain economies of scale in relation to contracting services for collection, processing (using alternative waste technologies) and for disposal.

Tweed Shire Council is responsible for establishing the policy framework and guidelines from which decisions about developments are made. As the local planning and consent authority, Council can influence and regulate a range of issues and contribute to the targets of the waste strategy. Council can use the DCP to better control and regulate waste reduction, minimisation and resource recoveries through building and development process by adopting a Waste Not DCP. Council can then influence the management of waste generated from the commercial and industrial, as well as the construction and demolition sectors.

6. CURRENT WASTE MANAGEMENT SYSTEM

Council has contracted out the collection services for waste, recycling, green organics, public-place litter bins and the management of the major landfill and associated activities, as part of a Waste Management Services Contract with Solo Waste Australia trading as Solo Resource Recovery which commenced on 1 December 2004 for a period of five years concluding in 2009.

6.1 Domestic Services

The contractor is responsible for providing a depot from which all staff commence and complete their duties, and vehicles that are not in use for this contract should be parked at the depot.

Collection vehicles must be of a reasonable standard and be freshly painted and sign written prior to the commencement of the contract.

Figure 1 – Domestic Collection Vehicle

At the commencement of the contract all domestic bins were divided 70:30 for waste and recyclables, however, based on the response to the feedback from the 2003 community survey, wherein the community indicated a clear preference for more space for recyclables, Council decided to move to a 50:50 division.

The Contractor was instructed by Council to retro-fit the current divided bin from a 70:30 division to a revised 50:50 division within six months of the contract commencement date.

Recyclable materials are deemed to be:

- Aluminium cans
- Glass bottles and jars,
- Liquidpaperboard cartons.
- Newsprint, magazines, cardboard
- Plastics – PET, HDPE, milk containers,
- Steel cans.

Figure 2 – Divided Domestic Bin

The exclusion or inclusion of additional materials is subject to negotiation with reference to availability, viability and market value. All collected recyclables must be transported to the MRF at Stotts Creek depot or other location agreed to between Council and the contractor for processing from time to time.

The contract provides for the collection of domestic waste in a 240-litre 50:50 divided bin for the co-collection of waste and recyclables. The current cost per service is $1.69 per week. Council offers residents an optional garden organics service at a cost

of $1.49 per week. Council did pay the contractor for a minimum of 30% of rateable properties, however currently only 5,600 or 25% of properties have elected to use this service after extensive promotion. Council has recently re-negotiated with the Contractor to revert to a fee for service basis for future payments.

A bi-annual clean-up service is offered in May and November at a cost of $1.31 per property, street litter bins are serviced at $1.78 and mobile garbage bins in parks and reserves at $4.50 per service.

The contract stipulates certain operating parameters including:

- Kerbside collection services occur between the hours 7.00 a.m. – 8.00 p.m. Monday to Friday, including public holidays. For high traffic and potential incident areas which generate OH&S concerns, Council can approve an earlier collection on a case-by-case basis. After receiving written notification from council, the contractor is required to deliver a replacement or repaired bin on the next collection day
- Where a bin is damaged beyond reasonable use, delivery shall be within 48 hours
- The contractor is liable for labour and materials used in the repairs or replacement where the bin has been damaged by the contractor
- Council is liable for the cost of repairs and replacement where damages occurred during the normal course of collection
- Any new services will have a bin delivered by the contractor on the next scheduled collection day
- All mobile garbage bins provided by the contractor throughout the term of the contract become the property of Council
- Should any spillage occur the contractor is responsible to ensure the area is left in a tidy condition
- All collected waste is deposited at the Stotts Creek waste depot
- All vehicles must be washed down on a daily basis.

On-property services are provided to the aged or infirm where other options have been exhausted for bin collection.

Figure 3 – Bins at MUDs

6.1.1 Multi-Unit Dwellings (MUDs)

For multiple-unit dwellings and high-rises, non-divided bins and bulk bins are provided and charged according to a schedule of rates.

6.1.1.1. Waste: The contractor must be able to offer a range of bin sizes and configurations for multi-unit residential premises and council caravan parks. Where bulk bins are provided in a compound, a wheel-out wheel-back service is provided.

6.1.1.2 Recycling: the contractors are to provide dedicated mobile garbage bins or separate bulk bins for the separation and collection of recyclable materials and the available recycling volume should be equal to that of the waste volume. A wheel-out,

wheel-back service is also provided for bins and/or bulk bins. These receptacles should be clearly marked to indicate the type of material to be deposited in each container and education material developed to educate and encourage residents to recycle.

6.1.2 Recycling Contamination Protocols

Figure 4 – Contaminated Recyclables

In relation to recycling contamination, the contract states that where an operator identifies that material is contaminated in the recycling section of the bin, s/he should alight from the vehicle and place a tag/sticker on the bin. Where gross contamination is evident the contractor should not empty the container until the residents have removed the contaminated or offending material, and the following protocol should take place:

1. Appropriate educational material is to be left at the household.
2. The contractor should tag and not service the bin and if the contamination occurs for a third time within 12 months of the first occasion,
3. the contractor is not to service the bin and notify council and a written warning is to be sent by the council to the owner.
4. If contamination continues to occur, the contractor is to seek approval to remove the bin for a period of three months and replace with undivided bins for an additional fee.

Following the expiration of the three-month period, a request from the owner or occupier to the council for the divided bin to be returned can be made.

6.1.3 Community Education

Council's objective is to minimise contamination in the recycling stream and maximise resource recovery, the contractor shall therefore ensure this objective is maintained through the implementation of a community education strategy. The contractor should be involved in the ongoing promotion and education of residents on broad issues of waste minimisation and specifics of the recycling scheme. Such promotion and education must first be approved by Council. The contractor should provide to Council before the 1 December and 1 June each year a six-month work program for six months in advance specifying the activities to be undertaken and a promotional budget for the following 12-month period as at 1 November of each year and a reconciliation statement of the previous 12 months' promotional activities by 1 February of the following year.

The contract requires the contractor to employ a full-time Recycling Education Officer and to commit $20,000 per year to promotional expenditure – school and community waste education.

6.1.4 Recycling System Performance

The contractor shall conduct a sample audit of the recyclables collection service annually to determine the yield per premises, material types and levels of contamination of the samples audited.

6.1.5 Materials Recovery Facility

All practical measures should be used to extract recyclable materials for recovery. Material that is unsuitable for recycling shall be deposited at the landfill at no cost to the contractor. The contractor shall have exclusive scavenging rights to the kerbside materials and have full ownership of the recyclables collected and retain all proceeds from the sale.

Benchmark pricing shall be applied to the recyclable material prices, whereby a 10% differential in market price will be applied (5% increase or decrease). Should the market place for the recyclable materials be lower than the benchmark, Council shall accommodate the contractor for the difference between the current market price payable multiplied by the tonnage of the commodity collected in any month. Should the market price exceed the recycled benchmark price by 5%, the council will receive the proceeds of the difference between the benchmark price and the sale price, multiplied by the tonnage collected for each month. These calculations shall be determined by the contractor from time to time and submitted to Council. If the market price for a commodity has reduced significantly below the benchmark for a period of 12 months or more and is unlikely to increase, the council may declare the respective recycled commodity as being a non-recyclable material. In this event, Council will take the necessary step to educate the general public to place this material in the waste stream and shall accommodate the contractor for the income lost from declaring this material un-recyclable.

The contractor shall submit quarterly records of the weight and composition of the material collected and processed and disposed of to landfill.
Ownership of the MRF and associated equipment and site works shall pass to the council on completion of the contract and it shall be in reasonable condition and working order. The paper and cardboard baler is not owned by the contractor and will not be part of the transfer assets.

6.1.6 Other Services

The contractor is responsible for the removal and disposal of dead animals upon notification from Council. Any animals removed from private property will be at the owner's expense and through direct relationship between the contractor and property-owner.

The contractor can also provide septic tank, chemical closet and night soil collection services, with the contents to be transported to the Chinderah sewerage treatment plant for discharge.

6.2 Waste Disposal

Council owns and operates one landfill at Murwillumbah for inert waste and a transfer station at Tyalgum. In addition, Council owns and contracts out the operation of the major landfill at Stotts Creek, approximately 13 km from Murwillumbah town.

Council sets its waste fees for the landfills and transfer station annually and the current schedule of fees effective from 1 July 2006 at all sites is provided below.

Table 5 - Domestic Waste Management Fees and Charges

Domestic Vehicle Type	Stotts Creek	Murwillumbah	Tyalgum TS
Sorted domestic waste			
Car, station wagon	$7	$7	$5
Small trailer, van, ute	$11		
Large trailer	$21		
Unsorted domestic waste		**N/A**	**$7**
Car, station wagon	$11		
Small trailer, van, ute	$17		
Large trailer	$26		

Table 6 - Commercial Waste Management Fees and Charges

Commercial Vehicle Type	Weight-based	Volume-based	
Minimum load	$20	$17	$27
Green waste	$30/t	$17	
General waste	$65/t		
Small truck <1 m^3		$28	
Small truck 1–3 m^3 , small skip		$54	
truck –4 m^3 , large skip		$103	
truck >5m^3		$156	
truck 1–3 m^3			
Waste generated outside Council	$74		N/A
Builders waste sorted (with permit)	$15/t		
Builders waste unsorted (with permit)	$32 t		
Builders waste unsorted (without permit)	$65 t		
Product	**Fee**		
Domestic green waste	$7		
Recycling, metals	Free		
DrumMUSTER containers	Free	N/A	
Asbestos	$78		
Dip site material	$136– $196	N/A	
Animals	$5– $14		
Clean cover material (prior arrangement)	FREE		
Tyres	Car $6, 4WD $8, truck $15		

6.2.1 Stotts Creek Landfill

The current site is approximately 13 km east of Murwillumbah, accessible from either Bartletts Road or Leddays Creek Road, which run off the Tweed Valley Way. The site is adjacent to cane fields and Council's Dog Pound. Its current opening hours are Monday to Friday from 7.00 a.m. to 4.00 p.m., Saturday–Sunday 10.00 a.m. to 4.00 p.m. Solo has control and management of the garbage depot as part of the Contract for the Provision of Waste Management Services, which expires on 30 November 2009.

Figure 5 – Disposal Charges

This landfill is operating in an old quarry site and has been used as a landfill for approximately 25 years. The site has been managed under contract by Solo and formerly the Richards family group of companies.. The site holds three separate licences issued by the NSW DECC detailed in the table below.

Table 7 - Landfill Licence Details

EPL No.	Site Description and area	Activity	Activity Threshold Tonnes per year	Review Date
12181	Lot 1 part DP 5902201 2.76 ha	Solid waste	55,000	9 December 2007
11974	Lot 1 part DP 590220 22.2 ha	Inert landfill	15,000	31 March 2007
6108	Lot 5 DP 221825 Lot 1 part DP 590220	Previous landfill	N/A	27 February 2011

The site accepts all waste types including putrescible and inert material, recyclables, garden waste, designated hazardous materials including batteries, oils, gas bottles and has a DrumMUSTER compound. Based on the available projections, the current putrescible landfill cell is due to fill by 2010 and the inert cell is due to fill by 2016.

The contractor is required to provide a Garbage Depot Manager and Supervisor which may include a plant operator to the transfer station, inert waste area and solid waste area as well as weighbridge operations at all times when open to the public. All operations must comply with the DECC-approved Landfill Environment Management Plan (LEMP). The operations of the MRF and Tip Shop are currently sub contracted by Solo.

Landfill Site General:

The contract states the contractor shall:

- Provide a site manager to oversee the depot operations
- Provide a weigh bridge operator from 7.00 a.m. – 4.00 p.m. Monday – Friday, 10 a.m. – 4 p.m. weekends, except Christmas Day and Good Friday.
- Account for all gate fees to the satisfaction of the council. Record quantities, types and sources of waste received.
- Check incoming loads where possible
- Direct traffic

- Maintain the road network within the landfill operation
- Maintain registers of complaints, incidents, emergency, staff training, equipment maintenance staff
- Control dust
- Maintain site security
- Pay electrical fees
- Maintain litter on the site and surrounding areas to a minimum.

Council is provided with a report detailing vehicle movements and fees collected and pays Council a royalty payment based on patronage in accordance with details contained in the Contract for the Provision of Waste Management Services. This information is then collated and supplied to the DECC as part of the annual reporting requirements.

Transfer station: the contractor shall provide appropriate facilities including storage and transport bins for depositing and collecting of recyclable materials and ensure that the public access for the tipping area is kept clear and free of obstructions. In addition, the contractor is required to:

- ensure wind-blown debris is minimised
- remove and replace bulk bins as and when necessary
- provide areas for the placement of recyclable waste which are adequately signed
- provide a minimum of one 36 m^3 transfer bin.

Figure 6 – Transfer Station

Landfill operation: the contractor shall be responsible for the management of the day-to-day impacts and operation of both the solid waste and inert landfills in accordance with the LEMP, including:

- the development of standard operating procedures
- checking of incoming loads
- management of the landfill space, including compaction and covering
- supply of covered material sourced on-site
- surface water management system
- pumping of water from sediment traps
- operation of the leachate collection and irrigation system
- construction of the tip face
- fire control
- management of pests, vermin and noxious weeds control, odour and noise control.

Council will be responsible for:

- the development of landfill infrastructure
- long-term environmental performance
- construction and maintenance of liners and drainage layers

- maintenance, construction and monitoring of sampling of ground water bores
- the supply, installation and maintenance of leachate systems and pumps,
- the installation, operation and maintenance of gas collection systems
- the development of landform,
- erosion control, fire control,
- maintenance of haul and sealed roads
- construction of the final layers.

The contractor was required, at the commencement of the contract, to undertake the following works at Stotts Creek Waste Deport at no cost to Council and the ownership of the fixtures will revert to Council at the expiration period of the contract.

Table 8 - Contractor's Obligations

Description and purpose	Estimated Contractor Cost	Completion Date	Status
Design and upgrade the existing transfer station to receive all recyclables	$470,000	1 December 2004	Complete
Design / construct a recycling education centre	$130,000		Outstanding *
Inert waste recycling program to divert recyclable inert material from landfill	$800,000		Ongoing
Upgrade the collection fleet and landfill equipment to improve operations	$1,200,000		Complete
Construction of a revolve centre compound	$50,000	1 December 2005	Complete

* due to site selection issues

A Landfill Environment Management Plan has been prepared for the site and inspections to audit compliance with the licence conditions have been carried out by the DECC.

Inert landfill:

The following materials are accepted and a brief description of their management is provided below.

Figure 7 – DrumMUSTER cage

6.2.1.1 Agriculture chemical containers – Council participates in the DrumMUSTER Program, whereby plastic containers must be triple-rinsed and free-from-liquid residual. These are stored in a wire compound that has been erected to contain accumulated containers. Collection occurs on twice per year over one or two days on each occasion, by authorised contractors. The most recent collection was scheduled for Friday 15 December 2006. DrumMUSTER advises that 1,111 containers were returned from 35 farmers, indicating a return or recovery rate of approximately 18.4%.[2] Currently, drums can only be delivered on these scheduled days due to limited number of staff

[2] DrumMUSTER Program Report, December 2006.

trained to inspect and record them. In situations where drums can be delivered to a depot at any time, this has proven to be extremely convenient for farmers and thus the recovery rates have been substantially increased and much greater than on Tweed's current program of only two collection days per year.

Figure 8 – Batteries

6.2.1.2 Asbestos – all asbestos is required to be double-wrapped in heavy-duty plastic, taped in accordance with health requirements and is buried onsite.

6.2.1.3 Batteries – lead acid batteries are stored in metal bins and are the contractor's responsibility for removal for recycling.

6.2.1.4 Recyclables – paper, cardboard, glass, plastics, aluminium and metal cans are collected in large, open-topped bulk bins and transferred to the onsite MRF for sorting and selling for remanufacture.

6.2.1.5 Chemicals and paints – currently Council's site is not licensed to receive and store chemicals and paints. However, Council participates in the Annual Household Hazardous Collection Program which NEWF co-ordinates, which historically collects large volumes of paint. Empty paint tins or tins with dried paint are accepted as metal recycling.

6.2.1.6 Construction and Demolition Waste – this material, including clean fill, rubble, brick and concrete, is received, recyclable metals are removed where possible and the residual buried in the inert landfill.

6.2.1.7 Gas bottles – are stored on-site until a sufficient quantity is generated for removal and are the contractor's responsibility for disposal.

6.2.1.8 Metals – all scrap metal, ferrous and non-ferrous, including motor vehicles, white goods, scrap metal and wire, are all stored separately at the landfill site. The material is stockpiled, and is the contractor's responsibility to remove for recycling. All proceeds remain with the contractor.

Figure 11 – Oil Storage Unit

6.2.1.9 Oils – are currently stored in a designated bunded lockable storage area and are the contractors responsibility for removal for recycling.

6.2.1.10 Tyres – the disposal of whole tyres has been banned by State legislation and tyres delivered to Council waste depots must be shredded prior to landfilling or collected for recycling. This is the contractor's responsibility

6.2.1.11 Vegetation and timber – garden waste, timber and pallets are delivered to the designated vegetation area, where they are stockpiled prior to being tub-ground and stockpiled as mulch for sale at \$15 per m^3,

Figure 12 – Green Waste

6.2.1.12 Wood – oversized materials are tub ground and added to the mulch stockpile.

6.2.2 Murwillumbah Landfill

The landfill is located on a 22.2 hectare site approximately 3 km south of Murwillumbah, with access from Wardrop Valley Road. It is adjacent to the Council Nursery, wetlands and opposite cane fields. The site is recorded as having been used as a waste depot since the late 1960s and is part of an operating quarry.

The site is managed by Council and includes an inert landfill, green waste processing area and scrap metal drop-off area.

Figure 13 and 14 – Murwillumbah Landfill

There is no weighbridge on site and all waste received is charged by volume. The current opening hours are Friday to Monday 10.00 a.m. to 4.00 p.m. Typically two staff operate the site with one stationed at the gate house to direct traffic and collect fees and the other at the tip face, who also acts as a plant operator on site.

A tip shop, currently subcontracted, is accommodated in two used shipping containers. No permanent shed or structure is provided for this activity. The tip shop operator also sorts the scrap metal to maximise a return.

The site holds a single Environment Protection Licence issued by the NSW DECC. detailed below:

Table 9 - Landfill Licence Details

EPL No.	Site Description and Area	Activity	Activity Threshold Tonnes per Year	Review Date
6106	Lot 1 DP 232745 and Lot 10 part DP 25812 2.76 ha	Inert Waste	3,500	27 February 2011

A Landfill Environment Management Plan for it has been prepared and inspections to audit compliance with the licence conditions have been carried out by the NSW DECC. The DECC are concerned that quarterly monitoring of groundwater has shown readings exceed trigger levels for pH and copper at two sites on thirteen separate occasions over the past three years. Council has engaged a consultant to undertake a detailed groundwater study and considers that the excessive levels maybe due to acid sulfate soils rather than directly from on-site leachate generation.

The landfill receives the following commodities:

6.2.2.1 Recyclables – modified bulk bins obtained from the contractor are provided for glass, plastics, aluminium and metal cans

Figure 15 – Recyclables Bin

6.2.2.2 Construction and Demolition Waste – This material, including clean fill, rubble, brick and concrete, is received and buried in the inert landfill or used as cover material to raise on-site profiles.

6.2.2.3 Metals – all scrap metal, ferrous and non-ferrous, including motor vehicles, white goods, scrap metal and wire, is stored separately at the landfill site. The material is stockpiled, and must be removed bimonthly by the licensee of the tip shop who contracts Smorgon Steel to remove the material for recycling. Payment summaries are provided to Council who receives 30% of all monies collected by the tip shop licensee for ferrous and non-ferrous metals. Since commencement of the licence agreement in September 2006, 227.38 tonnes of light-gauge steel & 7.52 tonnes of aluminium have been collected and recycled.

6.2.2.4 Vegetation and Timber – garden waste, timber and pallets are delivered to the designated vegetation area where it is stockpiled prior to mulching and placed in windrows for free collection by residents.

Figure 16 – Tyalgum Transfer Station

6.2.2.5 Wood – selected oversized materials are tub ground and added to the mulch pile. Most wood delivered in mixed loads is landfilled.

6.2.3 Transfer Station – Tyalgum

The existing landfill at Tyalgum was a

gully fill and has now been redeveloped as a transfer station to serve the local rural area where residents do not receive a kerbside collection service. Council has constructed a new shed, entrance and provided bulk bins for the collection of household waste, garden waste and recyclables which are transferred to Stotts Creek for disposal. The Council-employed operator removes some reusable items as a waste minimisation initiative. The transfer station is open 10 a.m. – 4 p.m. Saturday and Sundays only. The site presents well and appears to be well managed.

6.3 Waste Collection Services

It is generally accepted that the local council takes responsibility for domestic waste collections to residential premises and public litter bins. Council also provides a service to commercial premises of a standard bin, however, where waste generated exceeds this volume, the generator contracts with a private collector for a more frequent or larger bulk-bin service.

6.3.1 Domestic Premises

Council has contracted Solo Resource Recovery for its weekly collection of residential waste, including recyclables and a fortnightly kerbside organics service. A 240-litre divided waste/recycling bin is provided to 21,016 single residential premises. This represents 90% of all single properties in the council area.

The area also accommodates a further 10,550 multi-unit dwellings which are accommodated on 2,102 properties. These premises are serviced by a combination of bin configurations depending on size, scale and access, including divided bins, single 240-litre bins shared between units or bulk bins. The overall weekly presentation rate is reported as 95%.[3]

The total number of premises receiving a waste service is 31,566 premises however, Council estimates that only 5,000 of the 10,550 MUDs properties receive a recycling service.

The contents of the domestic bins are collected and transported to the Stotts Creek facility, where waste is discharged at the landfill, and recyclables at the adjoining MRF.

In 2005–06 Council disposed of to landfill 23,394 tonnes of domestic waste, and 6,560 tonnes of recyclables were collected. Of this, 1,892 tonnes were processed at the local MRF and 4,668 tonnes sent to Brisbane for sorting at the Visy MRF.[4] The weekly generation rates are estimated at 14.2 kg of waste and 4.00 kg of recyclables per household.

Council offers a fortnightly kerbside organics service to all non-rural properties. Approximately 5,600 of a total 22,340 properties currently participate in the service representing 25% of the total. Users of the service in 2005–2006 generated 2,109 tonnes or 14.7 kg of organics per household fortnightly.

[3] NEPM report to the NSW DECC by Council, as at 30 June 2006.
[4] NEPM report by Tweed Council.

6.3.2 Compost Bins and Worm Farms

Council offers compost bins and worms at below cost to the community. In the last 6 months from 1 July – 13 December 2006 with 34 worm farms and 32 compost bins have been sold.

6.3.3 Litter bins

Public litter bins are collected on the same schedule as residential bins. In the low season (May to October) public litter bins are serviced weekly, while in the high season (November to April) bins are serviced twice weekly and during the peak season - December/January School Holidays the majority of coastal bins are serviced daily.. In total, 364 public bins are located throughout the area in parks, reserve, streets and at popular tourist destinations.

Figure 17 – 240 litre litter bin

6.3.4 Commercial Premises

Typically commercial premises contract waste removal with a private operator, however, Council does service 270 non-residential premises with a divided bin service. Most other premises and generators have a regular service provided with a bulk bin, which is serviced based on generation needs. Regular uses of Council's Stotts Creek waste facility delivering loads of waste generated from this sector include:

Figure 18 – Commercial Cardboard

- Cleanaway
- Collex
- JJ Richard
- Richmond Waste
- Sita Environmental Solution
- Wanless.

Some contractors also provide a recycling service for cardboard as shown above.

Council has a number of skip companies that offer services to the domestic and commercial sector. The following companies are registered to deliver waste:

- Gold Coast Skips
- Ross Brims Bulk Transport
- Tweed Skips
- Gold Coast Bin Hire
- Smartskips Pty Ltd.
- Rick Skips.

6.3.5 Construction and Demolition

Construction companies either self-haul waste to the depot or contract a skip hire business to remove the waste on their behalf. Council has the following contractors listed on its records:

- Brims Earthmoving
- Twin Towns Sand and Gravel
- Munbilla Demolition
- Col Moore and sons
- Byrnesy's Excavations
- Barry Bros. Specialised Services.

6.4 Independent Waste Programs

6.4.1 Medical Waste

The local hospital, medical centres, dentists and veterinary practices should all have contracts in place for the collection of sharps and medical waste by a licensed transporter. Local pharmacies offer a free community service for the return of sharps containers, expired medications and pharmaceutical products. Council has provided fixed wall units for the collection of Sharps in 21 amenity locations, in addition to Council Depots, throughout the shire. These units are serviced by Pink Health Care.

Figure 19 – Sharps Container

6.4.2 Hazardous Waste

Currently there is no DECC -licensed site to receive or store hazardous chemicals in the area. Council has participated in the Household Hazardous Collection Program co-ordinated by the NSW DECC, whereby householders are notified and can deliver unwanted chemicals including herbicides, pesticides, batteries and oils for free. The service was last offered in 24 June 2006 at the Stotts Creek Landfill, where a total of 68 people presented 2,201 kg of material for assessment and correct disposal. The last scheduled collection was on 10th March 2007.

6.4.3 Bio-solids

Bio-solids from the Banora Point Waste Water Treatment Plant are graded as Class B and Council has a contract with Arkwood. The company collects the dried bio-solids twice a week and delivers them to farms located locally or to Toowoomba for land application. Council is not licensed to accept bio-solids at its landfills.

6.5 Waste Management Costs

As part of the development of this strategy, the consultants were provided with access to a number of budget documents. Mr Ian Percy, Waste Management Co-ordinator, is responsible for the preparation of the annual budget and reporting against its

performance. Currently approximately 4% of the $160 million annual general budget of Council is dedicated to waste management.

6.5.1 Cost Recovery

The Domestic Waste Management Charge is levied on all premises outside the general revenue rate system, allowing for full cost-recovery accounting. This charge is also outside the bounds of rate-capping. Waste management is managed as a business unit with the income derived from the Domestic Waste Management Charge offset against anticipated expenditure. Where this exceeds income the balance would be derived from borrowings however, when income exceeds expenditure these funds are placed in reserves.

Table 10 - The Domestic Waste Management Charge Components 06/07

Component	Cost	Total income
Domestic waste service charge	$95.00	$3,001,586
Waste minimisation & recycling	$31.20	$987,516
Domestic waste management fee	$62.80	$2,136,600
Sub-total	**$189.00**	**$6,125,702**
Optional Garden waste service	$35.00 *	$175,000
Total	**$224.00**	**$6,300,702**

* service subsidized from reserve funds

Council documents reveal a healthy reserve of $6,255,501 being held as at the 2004-2005 financial year.

6.6 Key Waste Management Issues

The following are the key issues for waste management in the Tweed:

- The area has one of the highest population growth rates in the state at 4% per year and is an ideal destination for the 'sea and tree' changers seeking retirement and tele-commuting
- Relatively small population spread over a large geographic area for servicing
- High visitation by tourists
- The Murwillumbah landfill has been identified as having groundwater contamination issues with high levels of copper and pH recorded. The DECC has mentioned, in recent correspondence, possible closure plans for this site
- There is no weighbridge at Murwillumbah landfill, with all charges volume-based.
- The Stotts Creek landfill's current operating putrescible cell is nearing capacity and is expected to fill by 2010.
- The DECC suspects that the old capped cells at Stotts Creek site are leaking and that leachate is now migrating across the site. However, it is unclear to what extent local acid sulphate soils are exacerbating current site conditions.
- The DECC advises that if green waste processing operations are not properly managed at that Stotts Creek and Murwillumbah landfills it may negatively influence leachate generation on-site,.
- Council provides a divided bin collected weekly for the co-collection of recycling and rubbish on a 50:50 division.

- Only 25% of households voluntarily use the garden organics service at $35 per year
- Council's current contract for kerbside collection services and Stotts Creek Landfill management expires in November 2009
- Council needs to consider the future domestic service and landfill management options.

7. WASTE CHARACTERISATION STUDY

Waste auditing, or characterising the waste stream, is imperative for accurately understanding the current composition and to be able to accurately plan, predict and undertake a cost–benefit analysis on various system options for improving resource recovery and increasing diversion from landfill, based on actual results.

Tweed Council was one of the participating councils in a Regional Municipal Waste Characterisation Study co-ordinated by the North East Waste Forum on both domestic waste and recycling collections in February and March 2005. The objectives of the study were to:

- determine the composition of each of the six participating councils
- determine the composition of the region as a whole and
- determine current performance of recycling and organics collection programs.

In addition the Council Waste Management Services Contract requires Solo to conduct quarterly waste audits.

This section contains the findings of the regional waste audit and the September 2006 Solo recycling audit.

7.1 Regional Municipal Waste Characterisation Study

This study was co-ordinated by the North East Waste Forum and conducted by Full Circle Environmental Solutions. The actual audit for the Tweed Shire was carried out from 3–8 April, 2005. A total of 126 bins were sampled, from which 1.5 tonnes of mixed waste and 0.7 tonnes of recyclable materials were analysed. The auditing was conducted at the Solo Resource Recovery Centre at Chinderah.

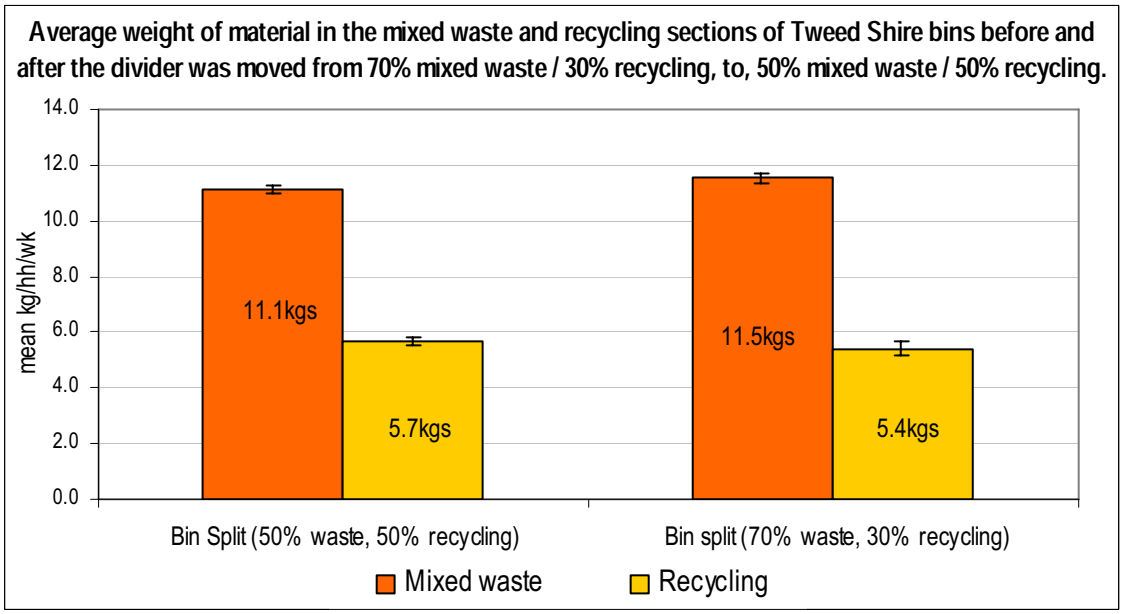
The audit found that the average resident places out 17.2 kilograms of waste for collection weekly, of which 11.7 kilograms consist of garbage and 5.4 kilograms consist of recyclables, representing a diversion rate of almost 27%.

The charts used in this section are taken directly from the report written by Full Circle Environmental Solutions.

7.1.1 Average Weight of Waste Streams by Bin Configuration

At the time of the survey, Tweed Shire Council was in the process of changing the divider from a 70:30 division – 70% waste to 30% recycling – to a 50:50 division. Of the 125 bins analysed in Tweed Shire, 54% of bins were split 50:50 and 46% of bins were split 70:30. The chart below shows the difference in weight between the two systems, with slightly more recyclables and less waste in the 50:50 division.

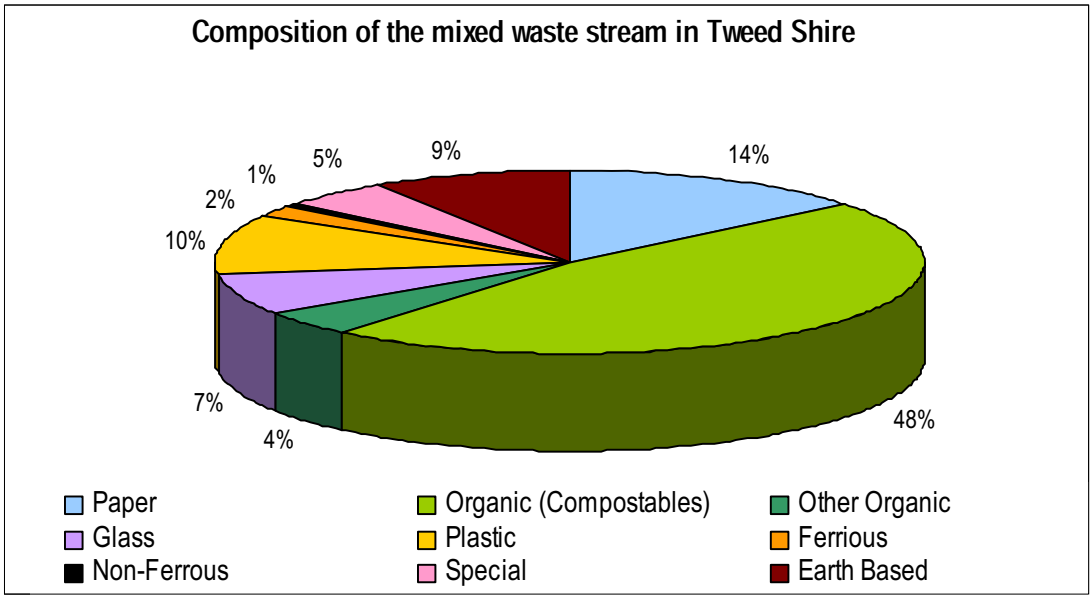
Chart 1 - Average Weight of Waste Streams by Bin Configuration[5]



7.1.2 Composition of the Residential Garbage Stream[6]

Organics material, at 48%, represents the largest component of the bin contents, followed by recyclable paper and cardboard, at 14%, and glass containers at 7%.

Chart 2 - Composition of the Residential Garbage Stream

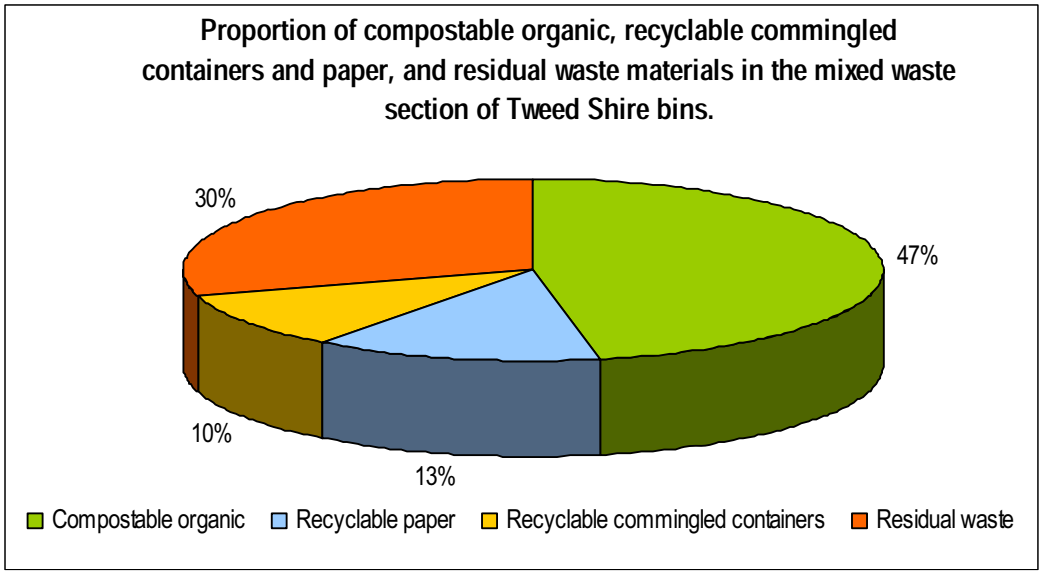


7.1.3 Potentially Recoverable Proportion of the Garbage Stream

Up to 70% of the Tweed Shire garbage stream can be classified as potentially recoverable resources or a mean weight of just over 8 kg/hh/wk, while residual waste comprises 30%, or 3.5 kg/hh/wk.

[5] Chart from Full Circle Environmental Solutions' 2005 Waste Characterisation Study of Tweed Shire Council.
[6] Chart from Full Circle Environmental Solutions' 2005 Waste Characterisation Study of Tweed Shire Council.

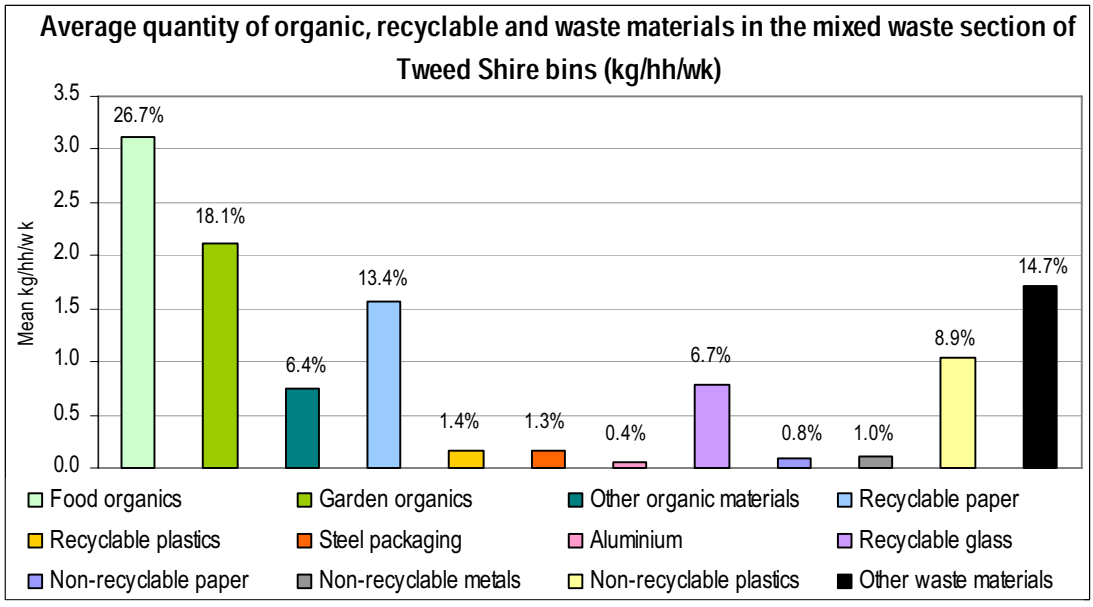
Chart 3 - Potentially Recoverable Proportion of the Garbage Stream[7]



7.1.4 Waste Generation – Kilograms per Household per Week

The average bin weighs 11.7 kg, with food waste comprising the greatest quantity at 26.7%, followed by garden organics at 18.1%. Together the organic fraction comprises 44.8%. Recyclable items comprise 23.2%, with paper 13.4%, glass 6.%, plastics 1.4% steel 1.3% and aluminium 0.4%.

Chart 4 - Waste Generation by Material Type[8]

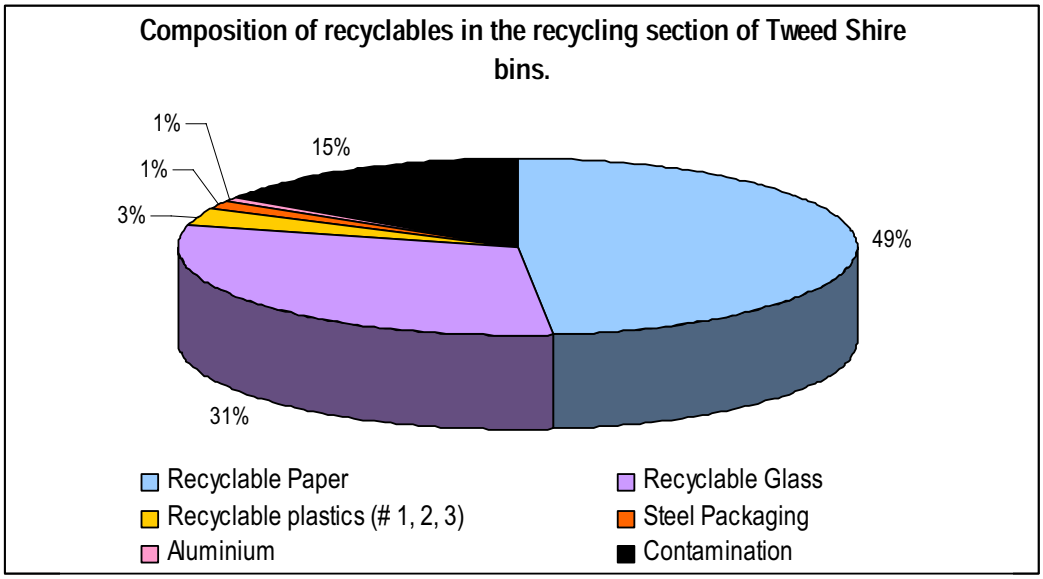


7.1.5 Recycling Stream Composition

Recyclable paper makes up 49% or 2.6 kg/hh/wk, followed by glass at 31% or 1.7 kg/hh/wk. Contamination was 15% or 0.8 kg/hh/wk.

[7] Chart from Full Circle Environmental Solutions' 2005 Waste Characterisation Study of Tweed Shire Council.
[8] Chart from Full Circle Environmental Solutions' 2005 Waste Characterisation Study of Tweed Shire Council.

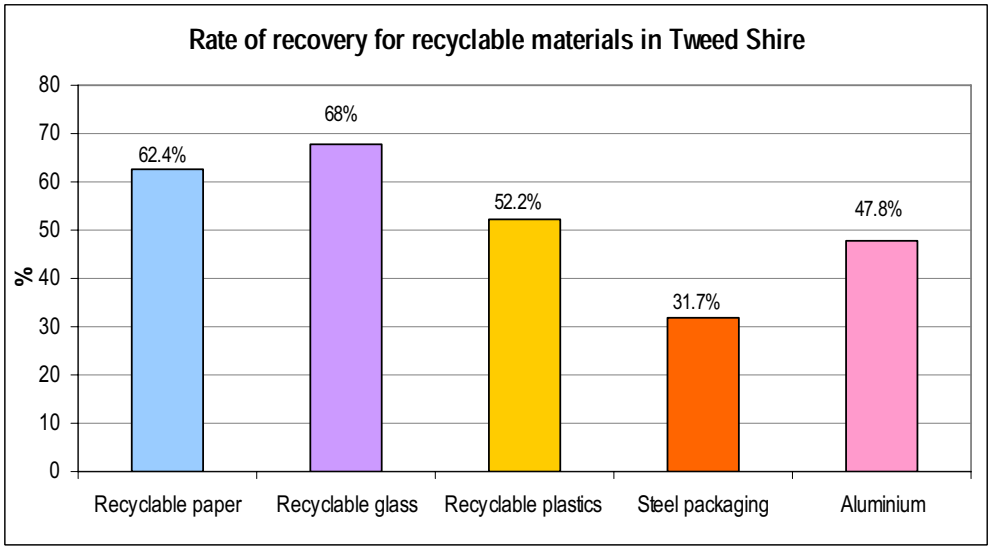
Chart 5 - Recycling Stream Composition[9]



7.1.6 Recyclables' Recovery Rates

This represents the amount of material recovered as a percentage of overall consumption and is calculated by dividing the weight of recyclables in the recycling bin by the combined weight of recyclables in the recycling bin and the weight of recyclables in the garbage bin. Paper and glass were the two material categories with the highest rates of recovery. The overall mean recovery rate for recyclables in Tweed Shire was 63%.

Chart 6 - Recyclable Recovery Rates[10]

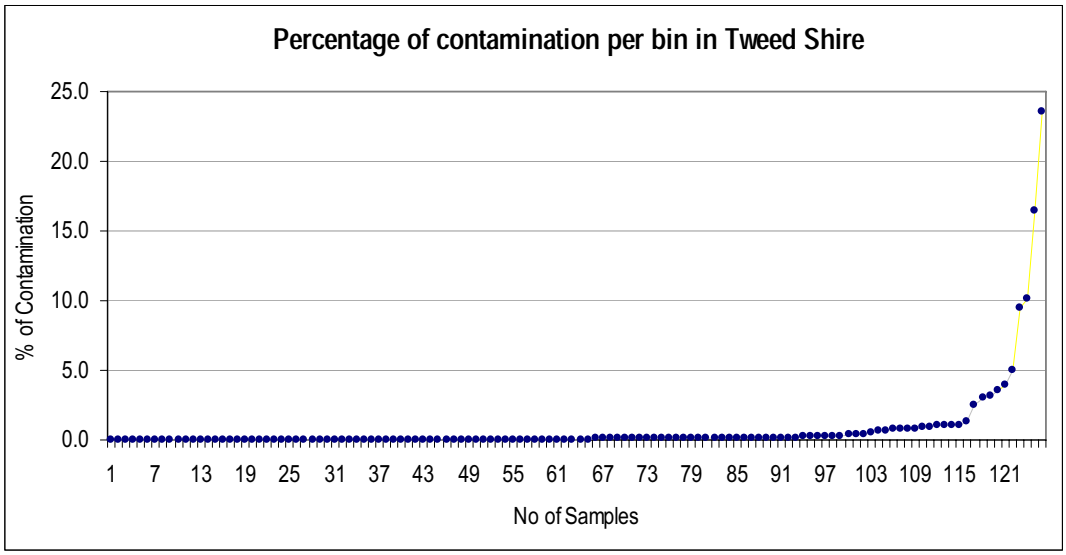


[9] Chart from Full Circle Environmental Solutions' 2005 Waste Characterisation Study of Tweed Shire Council.
[10] Chart from Full Circle Environmental Solutions' 2005 Waste Characterisation Study of Tweed Shire Council.

7.1.7 Recycling Contamination

The proportion of contamination in the sample ranged from 0% to 24%, with an average of 15%. While most residents are diligent, a small minority heavily contaminate the recycling section. Of the 126 samples, six samples were statistical outliers and, if removed from the analysis, contamination is reduced from 15% to 6%.

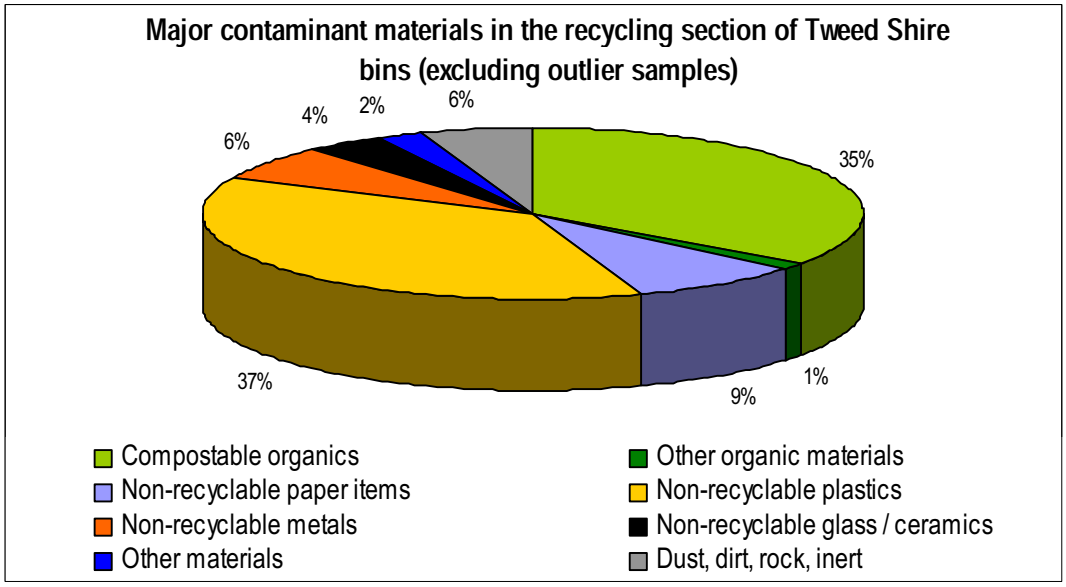
Chart 7 - Recycling Contamination by Household[11]



7.1.8 Composition of Contamination

A breakdown of the material comprising the contamination is provided below. Non-recyclable plastics at 37%, followed by compostable organics at 35%, were the most prevalent materials.

Chart 8 - Composition of Contamination in the Recycling Stream[12]



[11] Chart from Full Circle Environmental Solutions' 2005 Waste Characterisation Study of Tweed Shire Council.
[12] Chart from Full Circle Environmental Solutions' 2005 Waste Characterisation Study of Tweed Shire Council.

Table 11 - Comparison with DECC Performance Standards

Performance Measure	Unit	Description	Baseline	Target	Tweed Audit
			NSW		
Household net yield	kg/hh/wk	Total kerbside recyclables collected per household, excluding gross contamination	>4	>5.5	5.4
Per capita net yield	kg/pp/wk	Quantity of kerbside recyclables collected per person, excluding gross contamination	>1.5	>2.1	2
Net diversion rate	Percentage	Total proportion of domestic waste diverted to the recycling stream	19%	>29%	27%
Contamination rate	Percentage	Contaminants placed in recycling bins by householders	N/A	<3.5%	15%

Chart 9 - Tweed Audit Data v DECC Targets – Net Yield Per Week

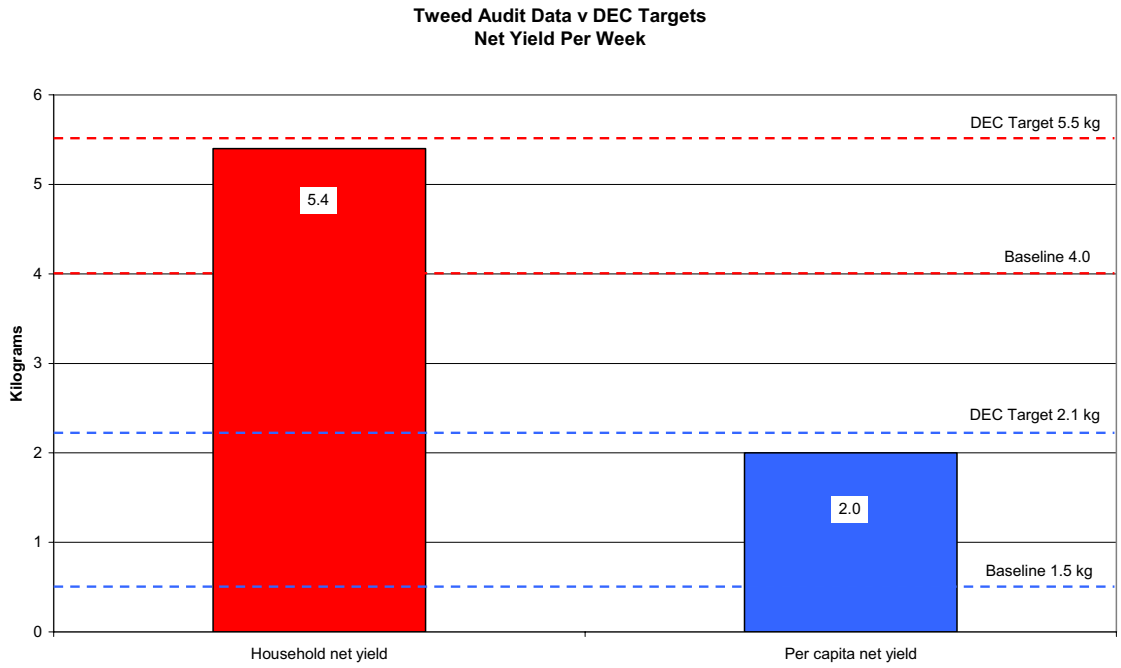
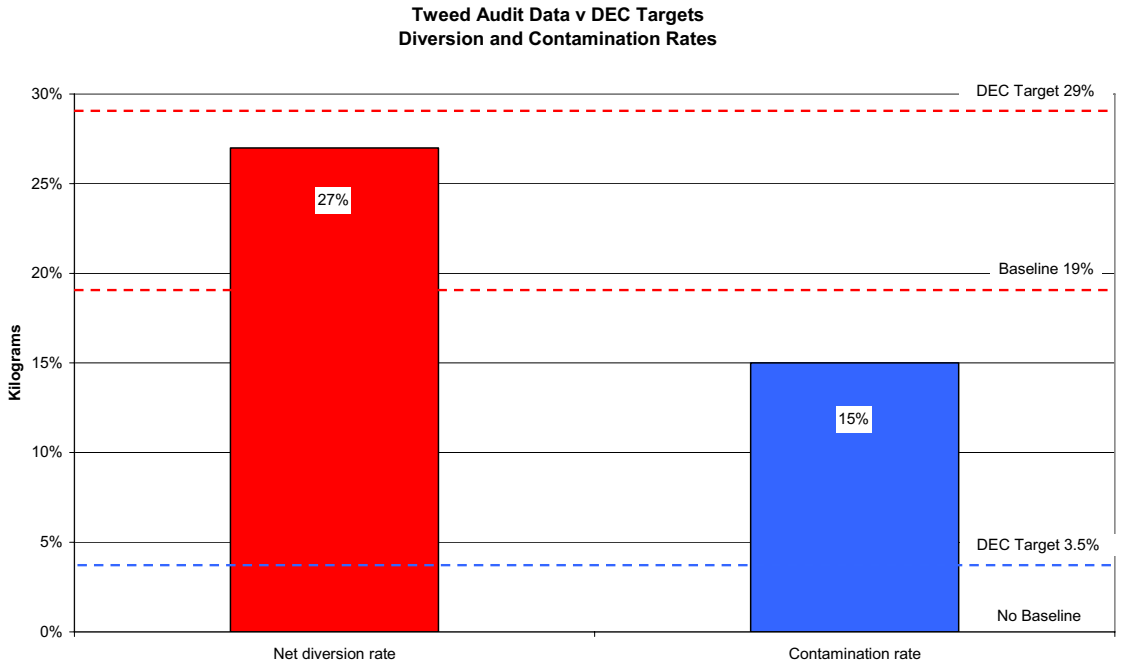


Chart 10 - Tweed Audit Data v DECC Targets – Diversion and Contamination Rates



7.1.9 Summary

Total waste stream (garbage and recycling)

- On average, each household in generates 17.1 kg of material weekly
- Net diversion of recyclables in the domestic kerbside waste stream was 27%.
- 76% of the waste stream is potentially recoverable materials.
  - Garden organic comprised 12.5% (or 2.1 kg/hh/wk);
  - Food organics comprised 19% (or 3.3 kg/hh/wk);
  - Recyclable paper materials comprised 24% (or 4.2 kg/hh/wk);
  - Commingled containers comprised 18%
  - Residual waste comprised 25% (or 4.2 kg/hh/wk).

Garbage stream

- The average weight was 11.7 kg, comprising:
  - Garden organics comprised 18%, or 2.1 kg/hh/wk
  - Food organics comprised 27%, or 3.1 kg/hh/wk
  - Recyclable paper comprised 13%, or 1.6 kg/hh/wk
  - Commingled containers comprised 10%, or 1.2 kg/hh/wk
- Residual waste 32%, or 3.7 kg/hh/wk.

Recycling stream

- The average weight was 5.4 kg/hh/wk
  - Recyclable paper comprised 48%, or 2.6 kg/hh/wk
  - Recyclable glass comprised 31%, or 1.7 kg/hh/wk
  - Recyclable plastics comprised 3.4%, or 0.2 kg/hh/wk
  - Steel packaging comprised 1.3%, or 0.1 kg/hh/wk
  - Aluminium comprised 0.8%, or 50 grams/hh/wk
- The overall recovery rate for recyclables was 63%

- The highest recovery rates were for recyclable glass (68%) and recyclable paper (62.4%), and the lowest was for steel packaging (31.7%)
- The average yield for all recyclables was 4.6 kg/hh/wk
- Average contamination was 15%, or 0.8 kg/hh/wk. Six samples, or 4.7% of the sample set, were identified as outliers, and, if excluded from the analysis, contamination decreased to 6%
- Non-recyclable plastics and compostable organics represented 37% and 35% respectively of the total contamination.

7.1.10 Comment

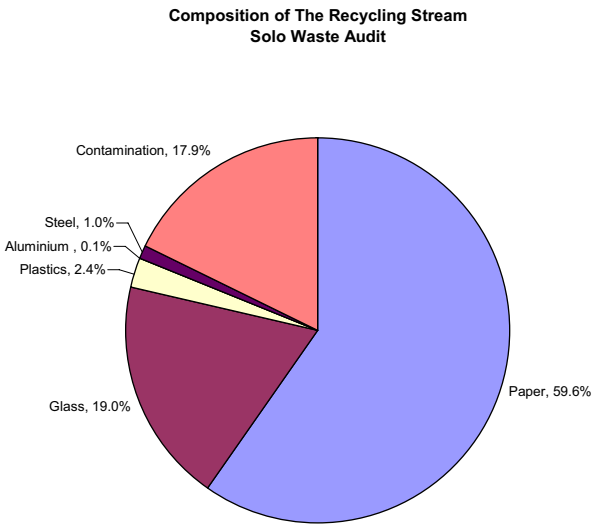
At the time of sampling, Tweed Shire Council was offering residents the option of a separate 240-litre organics bin with a fortnightly collection schedule. Results from both Clarence and Lismore indicate that it is possible to reduce the quantity of garden organics in the garbage stream by up to 80%, and food organics, by up to 50%.

The high proportion of non-recyclable plastics in the contamination stream is common and not surprising, considering that many residents have difficultly in identifying recyclable from non-recyclable plastics. Compostable organics contamination, on the other hand, is usually the result of deliberate actions.

7.2 Solo Waste Audit

The audit was conducted on 22 September 2006 at the Solo Resource Recovery Centre at Chinderah. Of the 31,000 services, 200 bins were audited, representing 0.65% of the service area. The audit was of the recycling stream only. In total, 826 kg of recyclables were audited representing a generation rate of 4.13 kg per household per week. The composition of the recycling stream comprised paper and cardboard at 59%, followed by glass at 19%. Contamination represented 17.9%.

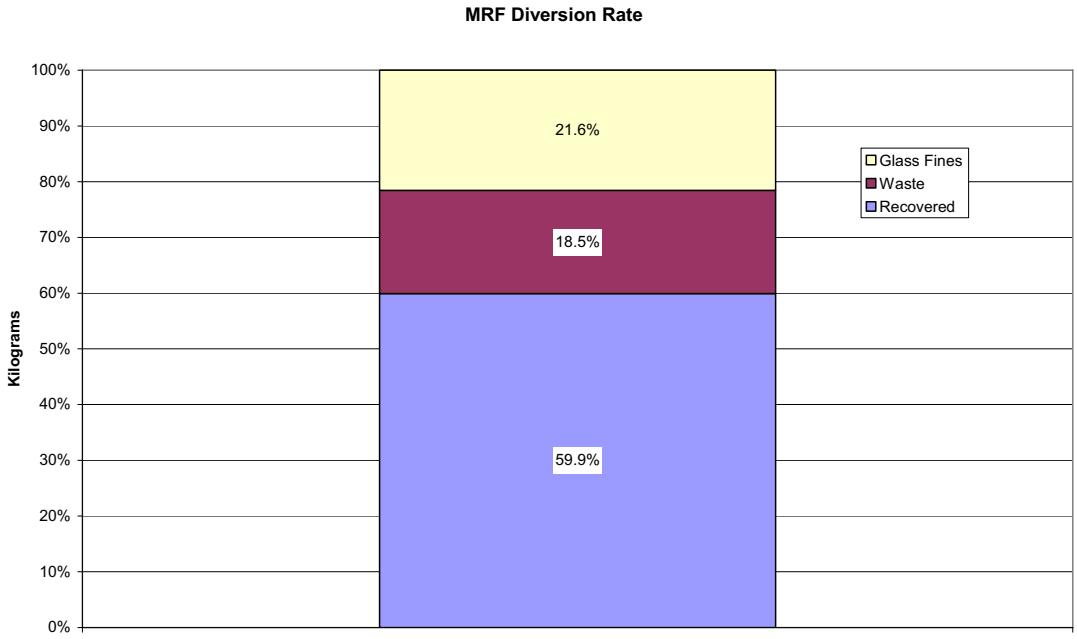
Chart 11 - Composition of the Recycling Stream – Solo Waste Audit



7.3 MRF Audit

Solo provide quarterly reports to Council to verify the quantity processed and recovered. These reports reveal that on average 2.5 kg per household are recovered, with the remaining material, 1.63 kg, lost as glass fines, contamination or waste. This represents an actual recovery rate of 60%, as shown in the chart below.

Chart 12 - MRF Diversion Rate



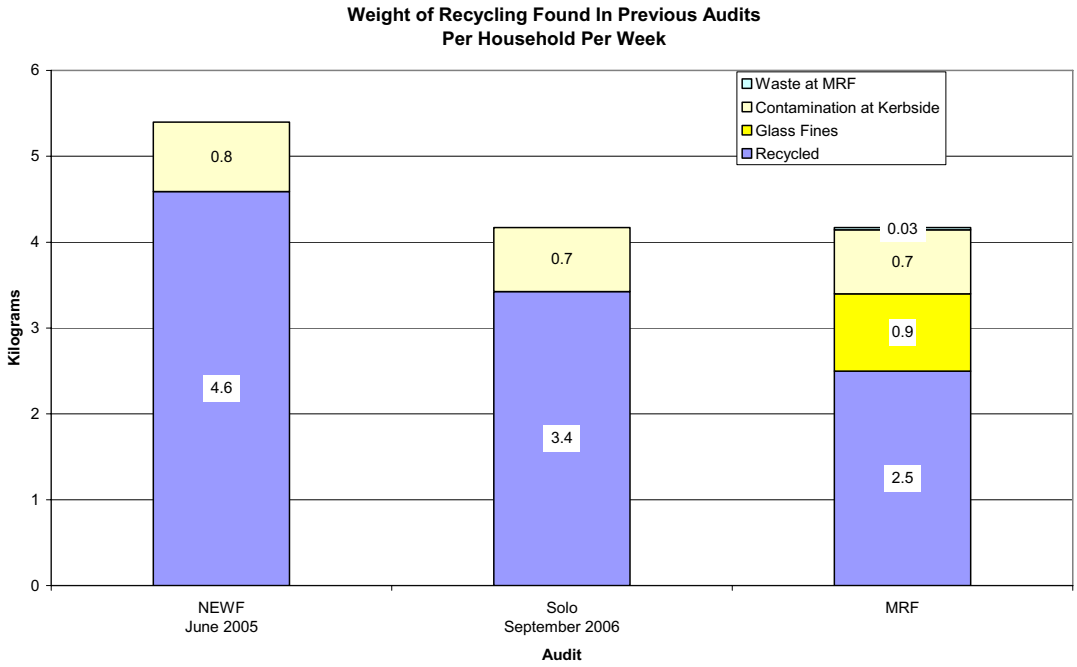
7.3 Comparison of Recycling Audits

The chart below shows the three audits of the recycling steam which have been conducted for Tweed Shire. The key finding is that of all the material placed at the kerbside, between 15–18%, is contamination representing between 0.7–0.8kg per household per week.

This amount then increases by a further 0.9 kg, as a significant quantity of the glass breaks during collection to a point where it is non-recoverable and is classified as glass fines.

Effectively, only 64% of what is placed out at the kerbside is recovered, due to loss of product at the processing and sorting stage at the MRF.

Chart 13 - Weight of Recycling Found in Previous Audits



8. MARKET RESEARCH

The success of almost any program depends on the quality and level of involvement by the target audience in the project's development. The best way to determine the attitudes and opinions of the target audience is to carry out a survey. Any survey should conform to the following guidelines:

- The survey sample must be representative
- The survey questions should be clear and easy to understand
- The survey questions should not be ambiguous, emotive or leading.

Using information gathered during the briefing and scoping visit and discussions with Council staff, a series of questions were formulated into surveys to canvass the community and visitors' attitudes, behaviour and opinions in respect of a range of waste management issues.

8.1 Method

During the development of the surveys, it became apparent that three separate surveys would be required for the local community. These were based on the following:

1. Urban – access to a current garbage/recycling and optional garden organics
2. Rural – access to no service
3. Tourist or visitor to area.

A statistically representative sample for the surveys was deemed to be 200 responses, based on the following breakdown of localities and proportional to the population.

Table 12 - Survey Distribution and Sample Size – Proposed and Actual

Postcode of residence	Target	Actual	Percentage
	Number	Number	
2483		2	1%
2484	40	40	19%
2485	60	39	18%
2486	80	91	42%
2487	20	28	13%
2488		6	3%
2489		8	4%
2490		1	0%
Total	**200**	**215**	**100%**

The surveys sought to explore the following issues:

- Knowledge of current waste management programs
- Methods of disposal of surplus waste
- Frequency of visitation to waste depots
- Willingness to pay and change behaviour
- Future waste management.

The survey was approved by council prior to commencement. Copies of the surveys can be found in Appendices 2–4. An article was published on the front page of the *Tweed Link* community newsletter, Issue 491 on 21 November, making residents aware of the project and seeking their support and participation. A copy is provided in Appendix 5.

The surveys were administered principally by face-to-face interviews from the 23rd to 26th November, 2006, by randomly approaching pedestrians in the following locations:

- Rainforest Tourist Information Centre
- Banora Point Shopping Centre
- Tweed City Shopping Centre
- Murwillumbah Swimming Pool.

In addition, a small number of surveys were administered using randomly selected phone numbers sourced from the current White Pages to gain the number of responses required by postcode.

8.2 Survey Results

This section provides the key findings of the 215 completed urban surveys and a full copy is provided in Appendix 6. However, only 14 visitor surveys and 4 rural surveys were completed. Statistically these are insufficient to undertake any meaningful analysis.

Q1. Do you live in an area with a kerbside garbage collection service? Yes / No

Two hundred and fifteen survey respondents were identified as living in the Tweed Shire with a kerbside collection service. A smaller number of residents identified that they lived in the area with no service and these residents completed a rural survey, which due to the limited number, were not analysed.

Many of the tables below are divided into the categories ‘Single house in township’ and ‘Other’.

Question 2. How often do you put your rubbish bin out for collection?

All residents living in town placed their bin out for collection weekly, while 91% of ‘other’ also had a weekly pick-up. Eight per cent of households had some other arrangements including: twice per week, use of bulk bin which was collected twice or three times per week

Question 3. Does your rubbish bin have a divider?

Of the six households that had bins with no dividers, one said that it did previously had a divider and the remaining five did not reply to the question regarding whether it had had a divider.

Question 4. Can you tell me what goes in which side of the rubbish bin?

The majority of residents (92%) correctly identified the separation of rubbish and recyclables, while 2% had difficulty and 6% did not respond, indicating they couldn't recall.

Table 13 - Question 5. On average, how full is your rubbish side each time you put it out?

Percentage	Single house in town	Other*	Total
< 25%	2%	4%	3%
25–50%	6%	7%	6%
50–75%	25%	28%	26%
7 –100%	27%	31%	28%
> 100%	40%	30%	36%
Total	100%	100%	100%

Table 14 - Question 6. On average, how full is your recycling side each time you put it out?

	Single house in town	Other*	Total
< 25%	1%	3%	1%
25–50%	7%	4%	6%
50–75%	21%	25%	22%
75–100%	29%	26%	28%
> 100%	41%	29%	37%
No response	1%	13%	6%
Total	100%	100%	100%

Table 15 - Questions 5 and 6. Average levels of rubbish/recycling

Response	Percentage
Rubbish up to 50%, recycling up to 50%	4%
Rubbish up to 50%, recycling 50%–100%	4%
Rubbish up to 50%, recycling >100%	1%
Rubbish 50%–100%, recycling up to 50%	4%
Rubbish 50%–100%, recycling 50%–100%	36%
Rubbish 50%–100%, recycling >100%	13%
Rubbish >100%, recycling up to 50%	1%
Rubbish >100%, recycling 50%–100%	10%
Rubbish >100%, recycling >100%	28%
No response	1%
Total	100%

(table population: Single houses in town only)

Table 16 - Question 7. Does your rubbish or recycling side fill up first?

	Single house in town	Other*	Total
Rubbish	36%	33%	35%
Recycling	32%	30%	31%
About the same	30%	25%	28%
No response	2%	12%	6%
Total	100%	100%	100%

Table 17 - Question 8. Do you put your rubbish/recycling in plastic bags before putting them in the bin?

Response	Number	Percentage
Rubbish yes, recycling yes	4	3%
Rubbish yes, recycling no	121	90%
Rubbish no, recycling yes	0	0%
Rubbish no, recycling no	6	4%
No response	4	3%
Total	135	100%

Single houses in town only

Table 18 - Question 9. Which materials do you separate for recycling?

	Single house in town (n 135)	Other dwelling types (n 80)	Total (n215)
Material	Percentage		
Glass bottles	89%	79%	85%
Aluminium cans	67%	51%	61%
Metal food cans	59%	49%	55%
Plastic drink containers	84%	73%	80%
Detergent/shampoo	13%	6%	11%
Paper/cardboard	96%	84%	91%
Milk cartons	69%	45%	60%
Other	1%	1%	1%

Table 19 - Question 10. What do you do with any excess recyclables?

	Single house in town	Other*	Total
Stotts Creek waste depot	1%	3%	1%
Murwillumbah depot	1%	0%	0%
Rubbish bin	5%	9%	7%
Other	20%	10%	16%
No response	73%	78%	76%
Total	100%	100%	100%

Table 20 - Question 10 'Other' included

Disposal method	Number	Disposal method	Number
Keep till next collection	23	Clubhouse bin	1
Neighbours bin	6	Tugan landfill	1
Takes to work	2	Paper in compost bin	1

(NB: Some people gave multiple answers)

Table 21 - Question 11. Do you think Council should introduce a separate bin for recycling collected every fortnight?

	Single house in town	Other*	Total
Yes	61%	54%	59%
No	36%	38%	37%
No response	3%	8%	4%
Total	100%	100%	100%

Table 22 - Question 11. Do you think council should introduce a separate bin just for recycling collected every fortnight? – by household size

	Household size		
	1 or 2	3 or more	Total
Yes	47%	82%	61%
No	49%	18%	36%
No response	4%	0%	3%
Total	100%	100%	100%

Single house in township only

Table 23 - Question 11a. Why?

'Yes' Responses			
Reason	Number	Reason	Number
1 bin not big enough, more space	32	Armidale Council has a crate with lid	1
Encourages more people to recycle	12	Absolutely, now	1
Brisbane/Byron/Orange/Dubbo/ Moree/Qld/Kiama has this system	5	Prefer no divider – easier large items and cardboard	1
Easier	4	Easy to pick up extra bin – truck in street anyway	1
Keep completely separate	3	Good idea	1
Recycle better with bigger bin	2	Large family	1
recycling into rubbish bin	1	cardboard would fit	1
		People can fill garbage without divider	1
Adequate for us	4	300-m driveway – only 1 bin	1
Not enough room for more bins	4		

Table 24 - Question 12. Do you have a wheelie bin for garden waste collected fortnightly?

	Single house in town	Other*	Total
Yes	36%	15%	28%
No	62%	75%	67%
No response	2%	10%	5%
Total	100%	100%	100%

Table 25 - Question 12a. If no, did you know Council provides this service for an additional cost of $35 per year (some rural areas excluded)?

	Single house in town	Other*	Total
Yes	45%	33%	40%
No	45%	48%	47%
No response	10%	19%	13%
Total	100%	100%	100%

Table 26 - Question 13. Do you think Council should introduce a fortnightly garden waste wheelie bin as a standard service for every property?

	Single house in town	Other*	Total
Yes	50%	29%	42%
No	41%	46%	43%
No response	9%	25%	15%
Total	100%	100%	100%

* Other = Single house on rural land, Villa, townhouse, Home unit, Caravan park

Table 27 - Question 14. What do you do with leaves, prunings and grass clippings?

	Single house in township (n135)	Other dwelling types (n80)	Percentage
Garden waste wheelie bin	38%	21%	32%
Take to waste depot	6%	5%	6%
Stotts Creek	3%	4%	3%
Murwillumbah	1%	1%	1%
Tyalgum	0%	0%	0%
Compost/mulch	35%	24%	31%
Burn	2%	1%	2%
Other	25%	45%	33%

Table 28 - Question 15. Do you use Council's bulky household clean-up service? If so, how often?

	Single house in town	Other*	Total
Once per year	35%	20%	29%
Twice per year	39%	28%	34%
Don't use it	24%	49%	33%
No response	2%	3%	4%
Total	100%	100%	100%

Table 29 - Question 16. Do you visit the waste depots or transfer station? If yes, which one?

	Single house in town	Other*	Total
Stotts Creek waste depot	33%	19%	28%
Murwillumbah waste depot	13%	4%	10%
Tyalgum transfer station	0%	3%	1%
Tugun	11%	8%	10%
Burleigh	0%	1%	0%
None, no response	43%	65%	51%

Table 30 - Question 17. Frequency of visits to waste depots/transfer stations

	Stotts Creek	Murwillumbah	Tyalgum
Weekly	0	1	0
Fortnightly	2	0	0
Monthly	11	3	1
Six times per year	7	1	0
4 times per year	6	4	0
3 times per year	3	2	0
Twice per year	10	7	1
Once per year	20	3	0
Not specified	1	0	0
Total	60	21	2

Table 31 - Question 18. Size of load delivered to waste depots/transfer stations?

	Stotts Creek	Murwillumbah	Tyalgum
Car, station wagon	14	5	2
Ute	18	8	0
Small trailer	20	8	0
Large trailer	1	0	0
Truck	4	0	0
Not specified	3	0	0
Total	60	21	2

Table 32 - Question 19. What type of materials do you take to the waste depot?

	Stotts Creek	Murwillumbah	Tyalgum
General household waste	22	8	1
Metals/whitegoods	6	4	0
Garden waste	29	10	2
Wood and timber	5	5	0
Building material	12	8	0
Furniture/mattresses	10	3	0
Paper/cardboard	6	1	0
Glass bottles	1	0	0
Plastic bottles	0	0	0
Aluminium cans	0	0	0
Car batteries	1	2	0
Motor oil	2	0	0
Tyres	0	3	0
Reuse shop	1	0	0
Other	4	1	0

Table 33 - Question 20. If Council were to close Murwillumbah landfill, would you travel to Stotts Creek Landfill, which is open 7 days per week?

	Single house in town	Other*	Total
Yes	50%	67%	52%
No	33%	33%	33%
No response	17%	0%	15%
Total	100%	100%	100%

Table population: those who currently use Murwillumbah

Table 34 - Question 21. Do you think the current opening hours at Stotts Creek landfill are adequate?

	Number	Per cent
Yes	60	57%
No	23	22%
No response	22	21%
Total	105	100%

Table population: those who currently use any waste depot/transfer station

Table 35 - Question 22. What do you do with any food waste?

	Single house in town	Other*	Total
Garbage bin	59%	75%	65%
Compost bins	27%	9%	20%
Worm farm	2%	0%	1%
Chooks	5%	4%	5%
Other	5%	8%	6%
No response	2%	4%	3%
Total	100%	100%	100%

Table 36 - Question 23. Are you aware that Council provides FREE mulch at the Murwillumbah depot?

	Percentage
Yes	33%
No	62%
No response	5%
Total	100%

Table 37 - Question 23a. Are you aware that Council provides mulch at Stotts Creek landfill for $15/trailer loaded?

	Percentage
Yes	35%
No	58%
No response	7%
Total	100%

Table 38 - Question 24. Do you have any suggestions on how waste management could be improved in Tweed?

	Suggestion	Number of responses
	Happy with service	17
Collection system – garbage	Optional bin size for garbage	1
	Overflowing bins get collected – didn't get collected at Byron.	1
	More garbage space needed	3
	Divided bin useless	1
	Weekly collection good. Extra one at Xmas	1
Collection system – Recycling	2 bins for recycling or more space fortnightly collection	37
	separate recycling bin free of charge.	4
Collection system – Garden waste	Garden waste – weekly service.	3
	Garden waste collection for townspeople	1
	Garden waste bin – cheap to start but will go up.	1
	Green bins should be provided to all residents without extra charge	1
	Organics service – in town yes, out of town optional.	1
	Organics optional	1
	Palm fronds a problem	1
Collection – general	3 bins	9
	More bins	3
Clean-up	Clean-up service too limiting, no paint and batteries.	
	Green waste should be included	3
	Too restrictive, should include building	1
		1
Mulch	Mulch at Stotts – too many weeds, poor quality	
	Mulch is crap and full of weeds, too big, chunky, plastic no presort,	1
	Mulch – not available sold to nursery 16 months ago	5
	Self-load at Murwillumbah – loaded would be better	1
		1
Tip fees	Dump rubbish for free. No extra charge.	
	Green waste – free tipping	1
	Happy to go to tip but $11 trailer load – palm trees too expensive	1
		1
Education	Educating all residents. Make sure everyone knows what to recycle	3
	More information about services	1
	Promote mulch options	1
Household hazardous	More emphasis chemical – paints, household hazardous chemical	1
	containers – contents and container	
Litter	Poor attitude – bottles everywhere	1
	Birds drag out rubbish.	1
Other related issues	Everyone do the right thing.	1
	Do away with junk mail	1
	Garbage bins need updating	1
	Bin cleaning service	1
	Trucks should be working properly. They drop things along the way.	1
	Drivers spill bin contents and don't pick up	1
	Dubbo would take car to drop-off centres – none here – need some	1
	Need program for small batteries	1
	Too much water wasted on cleaning bottles – shouldn't need it	1
	Green waste bins go into storm water drain when collected.	1
	Likes Lismore's service.	1
	Not interested as live in unit complex with own separate bins.	1
	Over 80 – neighbours take out bin, Collectors should come to door.	1
	Not impressed with garbage collectors' attitudes	1

Questions 25 and 26. Dwelling type and household size

Most respondents (63%) live in separate houses with three or more occupants while villa, townhouses and home units accounted for 27% of responses and tend to accommodate 1–2 people.

Table 39 - Questions 25 and 26. Dwelling type and household size

Type of Dwelling	Household Size		
	1 or 2	3 or more	Total
Single house in township	58%	72%	63%
Single house on rural land	4%	17%	8%
Villa, townhouse	18%	6%	14%
Home unit	18%	5%	13%
Caravan park	3%	0%	2%
No response	-1%	0%	0%
Total	100%	100%	100%

Table 40 - Question 27. Respondent's age by gender

Age	Male	Female	Total
16–24	2%	6%	5%
25–34	11%	10%	11%
35–44	6%	13%	10%
45–54	18%	17%	17%
55+	59%	53%	55%
No response	4%	1%	2%
Total	100%	100%	100%

8.3 Key Findings

Recycling container – the majority of the residents (59%) support Council introducing a dedicated kerbside recycling container. When the analysis was undertaken based on household size, families with 1–2 people were fairly equally represented, with 47% supportive and 49% opposed to its introduction. However, in families with three or more people the results were very clear, with 82% in support and only 18% in disagreement. The key reasons given to support the introduction of a dedicated bin were:

- one divided bin not big enough
- need more space
- encourages more people to recycle
- a number of other quoted councils use a two-bin system
- it would be easier.

Current divided bin – in relation to the current divided bin, 36% of people indicated the rubbish side was full to overflowing each collection, while 37% indicated the recycling side was full to overflowing and 28% indicated that both sides of the bin were overflowing. When asked what people did with any excess recyclables, the majority placed it in the rubbish bin, kept it till the next collection, used the neighbour's bin or took it to work.

When asked to indicate what material was placed in front or rear of the bin 8% failed to recall or indicated the wrong material. When asked if recycling was placed in plastic bags prior to being placed in the recycling bin, 3% indicated that was their common practice. The most commonly recycled materials were paper/cardboard and glass containers.

Garden organics bin – of those interviewed, 28% had a garden organics bin, however, 47% of people did not know the service was available. When asked if this should become a standard service, overall 42% supported this. However, when the results were analysed by type of dwelling and location, 50% of single households in townships supported the introduction, while those living on acreage mulched their garden waste, and medium-density dwellings tended to contract garden services.

Bulky household clean-up – the majority of urban residents (63%) supported a bi annual bulky household clean-up service with the majority of residents using it twice per years. Comments were made that it was too restrictive and people wanted to place out vegetation, building materials, batteries and paint tins for collection

Food waste – on average, 65% of households placed food in garbage bins with 20% composting and just 1% using a worm farm.

Waste depots – forty-nine per cent of urban respondents said they visited a council waste facility, with the majority visiting Stotts Creek 28%, once per year or monthly and 10% equally visiting Murwillumbah and Tugun in the Gold Coast City Council area.

The majority visited Murwillumbah twice per year. The most common items delivered were garden waste, household waste and building materials. The majority (57%) was satisfied with the opening hours of Stotts Creek Waste Depot, however, a comments that the depot should be opened earlier on weekends were made.

Mulch – 62% of respondents said they did not know that Council offered free mulch at Murwillumbah depot and 58% did not know mulch was offered for sale at Stotts Creek. Comments were made about the quality of the mulch at both sites, but in particular at the Murwillumbah depot.

In total, 116 suggestions for improvements were made, many offering multiple comments. Many common themes emerged, including the need for greater recycling and waste capacity, the need for a three-bin system, the quality of the mulch and the need for continued education of the community. Residents are concerned about the cost of the new services and the impact on local rates.

9. STAKEHOLDER CONSULTATION

A series of meetings were held with key stakeholders to discuss their views on waste management both in respect of Tweed Shire and within the North East Region. It has been found that informal consultation with a small number of key stakeholders has been found to be less intimidating and more likely to elicit information than conducting a survey or group meeting. Each meeting covered the following issues:

- Project outline
- Types and quantities of waste generated
- Exchange of regional and industry information
- Identification of opportunities for collaboration.

A summary of the key outcomes of these meetings is provided below by stakeholder group.

9.1 Regional Councils

9.1.1 Byron Shire Council – Russell Chaplin, Manager of Waste Services

Council operates its own landfill and over the past three years has actively focused on raising profiles, capping and rehabilitating the current landfill cell to meet with the EPA requirements prior to developing its new cell and expanding the current facility. Council has deliberately allowed green waste amnesty fee periods at landfill to bring in additional quantities of material, which was used to mulch and create a material suitable for topsoil layer for rehabilitation. Separated C&D had a 25% reduced gate fee of that for mixed C&D, and was recycled to create material for drainage layer. . These positive pricing signals were used to encourage supply of raw materials that were processed and used, with significant financial benefits and reduced demand on natural resources. Council expects to have its existing operations fully capped and compliant with state EPA guidelines by March 2007.

Council currently transports all of its domestic waste to Thiess in Swanbank, near Ipswich in Queensland. It is anticipated that Byron's new double lined bentonite GCL over 900mm clay cell will be ready by Easter 2007, when all domestic waste currently sent to Thiess at a total cost of $72.00 tonne will be redirected back into its own facility at a lesser cost. The expanded site has been modelled on satisfying Council's own requirements for a period of 5–7 years. However, Council is confident that with its continued focus on diverting waste and aggressive recycling options , the facility may last up to 12 years or more, based on current trends. Byron is participating in NEWF discussions regarding regional disposal options.

Solo Resource Recovery secured a ten-year contract with Council in 2004 for the provision of all domestic collection services and Council replaced its previously divided garbage/recycling bin system with a new two-bin waste and recycling service. To maintain a focus on reducing its waste generation, Council provided residents with the option of a differential charge for 80-, 140- or 240-litre garbage bins, and with a 240-litre fully commingled fortnightly recycling service. Currently 7% of residents have elected for a 80-litre bin, 82% a 140-litre bin and 11% for the 240-litre service. All residents are offered a fortnightly recycling service, excluding the remote rural residents.

Council generates approximately 75 tonnes of commingled recyclables per week, which are delivered to the Tweed Shire MRF located at the Stotts Creek landfillfor processing.

Byron Shire Council is an active participant in the North East Waste Forum (NEWF) process and expressed a view that it would like to see Tweed Shire Council rejoin and participate more actively.

9.1.2 Clarence Valley Council – Ken Wilson, Council's Sustainable Services Co-ordinator

The Clarence Valley Council was formed in 2004, following the amalgamation of four local government areas: Copmanhurst, Grafton, Maclean and Pristine Waters. Its major landfill, located at Grafton, has an estimated more than 100 years' disposal capacity. In addition to this facility, Council has inherited five other smaller sites following the merger, which are located at Copmanhurst, Glenreagh, Tyringham, Hermani and Baryulgil.

Council provides a two-bin system, for garbage and recycling as well as an organics service to selected residents (non-rural). All three bins have a 240-litre capacity. Council operates a combination of day labour and contractor services to provide the collection services. Current recycling processing contracts for recyclables are in place until 2012 and its organics processing contract is an 'evergreen' arrangement with the local contractor.

It was determined that, given the Council's geographic location, well south of Tweed Shire, apart from contributing to regional activities through the NEWF process Clarence Valley and Tweed Shire Council have limited opportunities for working together.

9.1.3 Lismore Council – Phil Klepzig, Councils Manager of Waste, Quarrying and Asphalt

Council operates its own day labour collection service and offers a three-bin collection system to its residents. Residents are provided with a 240-litre fortnightly commingled recycling service, 240-litre organics, including food waste, weekly service and a 140-litre fortnightly residual refuse bin service.

The system was introduced to maximize diversion from landfill and the Tryton worm farming operation at the landfill was seen as an end use for the organic waste component when that was introduced in 2000.

The fortnightly service of the residual bin does present issues to the community where disposable nappies are concerned however Council has no plans to change from the base level service of fortnightly residual collection. Council does offer a weekly waste service for residents for an extra charge and also a larger fortnightly waste bin if required.

Council now undertakes the shredding and mulching activities associated with the collected kerbside organics and delivered green waste as part of its waste operations.

A contract is in place for Tryton to have first option on the compost produced for their Worm Farm activities.

Currently the public uses the same landfill face as commercial vehicles delivering to the landfill. Council has commenced works to remove this potential liability by issusing tender documents for the construction of a waste receival and sorting facility for all domestic and a percentage of commercial deliveries.

Lismore was previously delivering its kerbside recyclables to Ballina Council's MRF, but, with its closure, is now hauling this to Visy at Carrara on the Gold Coast. Council is currently investigating the building, owning and operation of its own MRF, as it considers it can build a small MRF operation linked to its proposed new transfer station and recover additional recyclables in it.

Council has withdrawn its support from NEWF, as it was dissatisfied with the level of financial commitment required and of the performance and deliverables achieved by it. Council has now employed its own education officer to deliver its community needs.

9.1.4 Ballina Council – Mathew Fanning, Group Services Manager

Council's landfill is located immediately adjacent to the city's airport and has had a history of significant operational issues relating to birds and operating aircraft. Council has recently completed an internal evaluation of its landfill operations and has applied to the EPA to reopen the landfill for putrescible waste, as a means to delivering its long-term pre-closure plans.

For the past 12 months Council has been transporting and disposing of its waste at the Thiess Services facility in Swanbank, Queensland, at an average cost of $ 61.00 per tonne, including transport. This disposal method was required following the closure of its existing landfill and during the construction of the new landfill.

Council has closed its MRF as it needed a major capital upgrade and could not source adequate product quantity to remain a viable operation. . This decsion impacted on Lismore and Kyogle Councils, resulting in those Councils' reassessment of their future MRF processing options. Ballina has contracted the recyclables processing to Visy at Carrara on the Gold Coast, to where the recyclables are now transported.

Council decided the best long-term financial option for it was to reopen its current landfill with changed operational practices, and to develop a long-term pre-closure plan. The existing MRF building has been converted to a baling operation for waste, with the purchase of a waste baler. From March 2007 the landfill will be operational and baling will significantly reduce the current operational issues relating to birds, and maximise landfill space utilisation

Council is an active participant in NEWF and would like Tweed to rejoin as an active member, not project-based only.

9.1.5 Kyogle Shire Council – Scott Turner, Director of Planning, Environment and Community Services.

Council shares a common boundary with Tweed Shire to the western perimeter, however, Kyogle Shire covers a large geographic area. It only services 2,600 properties per week and does not offer a kerbside recycling service to its residents but promotes a drop-off system at the landfill. Council was affected by Ballina's decision to close its MRF and is now transporting its recyclables to Kevin Teeling in Casino.

Council's own landfill has an estimated 10- to 12-year capacity. However, due to buffer concerns with encroaching new developments, Council has DECided to transport its waste to Casino, approximately 35 km away, as the Casino landfill has more than 40 years' capacity, rather than continue with its own operations. Council has also directed all commercial waste from its current landfill facility, which it is now converting into a small transfer station. Council participates on an irregular basis in NEWF.

9.1.6 Gold Coast City Council – Rod Dawson, Acting Waste Services Manager

The city owns and operates four landfill operations. These are shown in the table below.

Table 41 - Gold Coast City Council Landfills

Landfill	Life Expectancy (Years)
Stapleton	15
Suntown	8 – 10
Molindinar	0.5
Tugan	> 20

Gold Coast does not charge its residents for disposal of waste delivered to any of the five landfills or several small transfer stations it operates, provided residency can be established by the user. A significant number of Tweed Shire's residents live immediately adjacent to the Gold Coast council boundary and Tweed's residents commonly use the Tugun landfill as it is closer and more convenient than the Stotts Creek waste facility.

Where Gold Coast residency cannot be established by users, the following fees and charges apply:

- Cars, small vehicles – $8.00 each
- Trailers, vans, utes – $13 each
- Commercial loads – $60 per tonne

Gold Coast City Council's domestic and commercial waste and recycling collection contracts are due to expire at the same time as Tweed Shire Council's, in 2009. It is currently completing an organics trial and the results will determine whether a service is introduced in the next contract across the city.

Council indicated a willingness to co-tender all waste collection services and processing contracts and to discuss developing an alliance with regard to future disposal options

9.2 Regional Waste Organisations

9.2.1 North East Waste Forum (NEWF) – Bernadette Thomas, Co-ordinator

NEWF is a jointly funded initiative of the region's Councils and the DECC. It replaces the previous NOROC group and was established to facilitate joint waste and education issues within the region on behalf of Councils and to focus on obtaining consistency of activity in this area.

It has three part-time Education Officers delivering Waste Wise, Council Waste Reduction and Purchasing Policy (WRAP) and general community education programs for its members. The annual budget is estimated at $390,000, funded $140,000 by Member Councils based on a self-imposed per capita levy and $150,000 from the DECC. Funding by the DECC is secured for a further two years.

There appears to be differing views within the region on the value of the organisation with several Councils endorsing the work, whereas others have withdrawn support.

9.2.2 South East Queensland Council of Mayors

The former South East Queensland Regional Organisation of Councils (SEQROC) Waste Working Groups have been replaced by a Waste and Recycling Network Group initiated by the Council of Mayors representing the region's nineteen member Councils. The new group is chaired by Harry Copeland of Brisbane City Council. The group is attempting to reinvigorate itself, however, at this stage is more of a network group rather than a structured organisation. The Chair welcomed any input from Tweed Shire to it.

A priority for the group is to encourage greater use of recycled construction and demolition materials by seeking to achieve consistency in product processes, outputs and in educating member councils of the value in reusing these materials, compared to virgin products.

9.3 State Government Agencies

9.3.1 New South Wales (DECC) – Geff Cramb, Regional Officer, Grafton

The DECC has expressed concern to Council regarding the level of contamination being observed in groundwater monitoring at the Stotts Creek waste facility and the fact that the background bore used as the base datum point also appears to be now contaminated. The DECC expressed the view that it would like to see more attention applied by Council to reviewing its data being collected and that there was a need to trend this information.

Recent tests now indicate that levels of contaminants appear to be migrating across the site from the old cells to the new cells, however, information to date is

inconclusive as to its point of entry or source. While it appears to be leachate-related, it could also be due to the acid sulphates from the adjacent cane fields.

The DECC also expressed the opinion that the Murwillumbah site also had serious groundwater issues, and that closing the landfill and converting it to a transfer station was a valid option, allowing long-term remediation of the site to commence if Council took this position.

9.3.2 Queensland Environmental Protection Agency

This regulator has no direct control or interface with activities conducted by local authorities outside its jurisdiction, unless transporting regulated and trackable wastes across state borders.

From a Queensland perspective, the EPA has no issues in respect of any future actions that Tweed Shire may take with regard to possibly transporting wastes into South East Queensland's large landfill facilities. It expressed the view that it would like to see waste minimisation at source encouraged and that any waste transported for disposal should be disposed of at a fully engineered facility that operates on sound environmental principles including the provision of mitigating CO_2 production from its methane generation.

The EPA would like to see Tweed Shire actively engaged in South East Queensland issues as they are developed, with regard to state waste policy, given the significant development and population growth which is and will continue to occur along the coastal corridor, which impacts on Tweed .

9.4 Landfill Operators

9.4.1 Thiess Services – Chris White Manager Commercial and Business Strategy– QLD / NT.

Thiess operates a secure fully engineered landfill at Swanbank near Ipswich in South East Queensland that is designed and engineered on environmentally sustainable principles for receiving, disposing and treating solid waste. The facility receives waste from within South East Queensland as well as northern NSW. Its current site has in excess of 40 years' capacity, based on current disposal volumes. The site's landfill gas generation is now being used by Swanbank Power Station to displace coal for its power generation.

The company expressed a desire to work with Tweed Shire should the opportunity arise and that it was willing to enter into a long-term disposal contract for transport and disposal of waste. Thiess has provided an estimate of $25–$30 per tonne for disposal plus transport, estimated to be approximately $25 per tonne.

9.4.2 Veolia Environmental Services – Colin Hines Manager, Resource Recovery Services

The company operates, in partnership with JJ Richards, the Ti-Tree Bio-energy Landfill Facility at Willowbank, located west of Ipswich.

The landfill has been designed and built as a operating bio-reactor with waste deposited rapidly broken down by re-circulating leachate, and gas produced used in renewable power generation. Veolia has provided to APC an indicative quotation to transport in 110 m^3 trailers. The transport cost and gate fee would both be approximately $25.00 per tonne, and the company would be willing to commit to a long-term contract.

9.5 Recycling Processors

9.5.1 Visy Recycling – John Hadden, Queensland General Manager

The company operates six MRFs in Queensland and is the largest operator nationally in its field. Visy is a vertically integrated organisation and uses the recyclables recovered from both the domestic and commercial sectors. The company is internationally recognised as a key player in recycling markets globally.

Early in 2006, Brambles decided to dispose of its global Cleanaway assets and sold its operating entity in Australia to US-based Kohlberg Kravis Roberts & Co. Visy Recycling purchased all of the Cleanaway MRFs and related processing contracts and has expressed a desire to maintain its significant profile in processing kerbside collected recyclables in the region.

Visy has offered its Carrara facility on the Gold Coast for processing of Tweed's recyclables when the existing Solo contract expires. It currently processes all recyclables collected from the Gold Coast City Council and Beaudesert Shire and is also contracted with Ballina and Lismore Councils. Visy indicated it would actively pursue growth and sustainability of supply to its paper mill in Brisbane and to this end will tender for Tweed's recyclables in any future contract opportunities. Indicative gate prices are provided based on throughput ie processing cost of $15 / tonne up to 6,000 tonnes, $10 / tonne between 6,000 – 10,00 tonnes per year plus transport.

9.5.2 AMCOR – Ian Lewis, State Recycling Manager.

Amcor has recently established a kerbside recyclables presence in Queensland and is currently constructing a MRF at its Petrie Paper Mill in Brisbane. The CP Manufacturing design is modular in form. The facility is currently under construction and will be commissioned by July 2007. The decision by AMCOR to establish a MRF presence will provide a long-term alternate option for councils in the region for potential reprocessing of commingled product, built on sustainable markets for paper and cardboard.

Recommendation:

1. ***That Council continue to monitor the activities of the South East Queensland Waste and Recycling Network Group and the NEWF. It would appear that Tweed Shire has more in common with the Queensland group and its activity better reflects the immediate and long-term needs of Council.***

10. ASSESSMENT OF DISPOSAL PRACTICES

10.1 Bi-annual Household Clean-up Service

Currently Council provides the clean-up service twice per year, in May and November. Council requests residents to present materials in three piles:

1. Recyclable materials – whitegoods
2. Reuseable material – furniture in reasonable condition
3. Waste.

The following restrictions apply:

- The maximum length of any item is 1.8 m
- Weight limit means able to be lifted by two people
- The maximum amount is 1 m^3 per household
- Only items detailed below are accepted.

The service accepts and rejects the following materials:

Table 42 - Household Clean-up Service

Accept ✓	Reject ✘
Furniture	Builders' rubble and household renovations
Floor Coverings	Green waste
Whitegoods	Fencing material
Mattresses	Car parts and tyres
	Paint
	Oil
	Gas bottles
	Asbestos

The collection occurs over four weeks. APC undertook a visual assessment of selected clean-ups on Sunday 26 November 2006. In total, 261 premises were visited, of which 115 had material on the footpath for collection. This represents a presentation rate of 45%.

The survey was conducted in Zone 3 in the following streets:

- Boyd St
- Enid St
- Gray St
- Lakes Dr East
- Riviera Ave
- Panorama Dr
- Lalina Dr
- Bilambil St
- Norman St
- The Quarterdeck

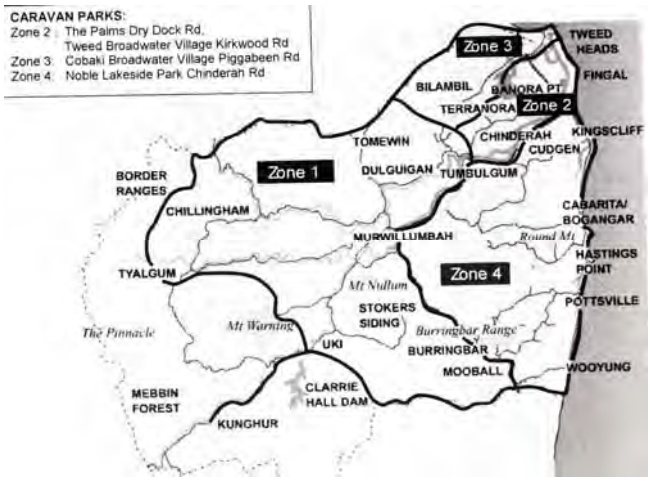
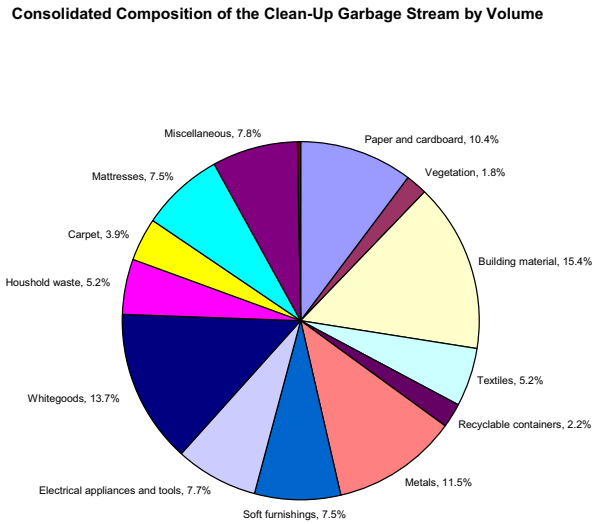


Figure 20 - Map showing collection Zones

10.1.1 Composition of Clean-up by Volume

The following chart shows the composition of the clean-ups by material type. Building materials represented 15.4%, followed by white goods (13.7%) and metals (11.5%). Cardboard represented the largest single group of materials.

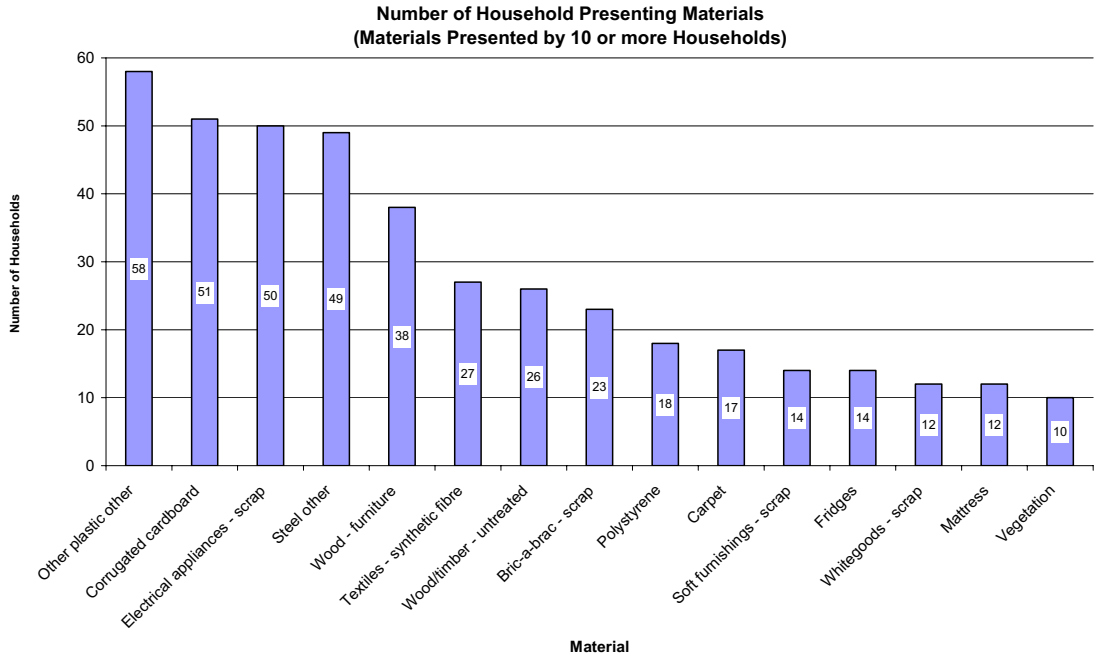
Chart 14 - Consolidated Composition of the Clean-up Garbage Stream by Volume



10.1.2 Household Clean-up – Number of Participating Households by Material

The chart below shows the number of participating households and the type of material they presented. Fifty per cent of premises placed out plastic items, 44% cardboard and paper, 43% whitegoods and 42% metals.

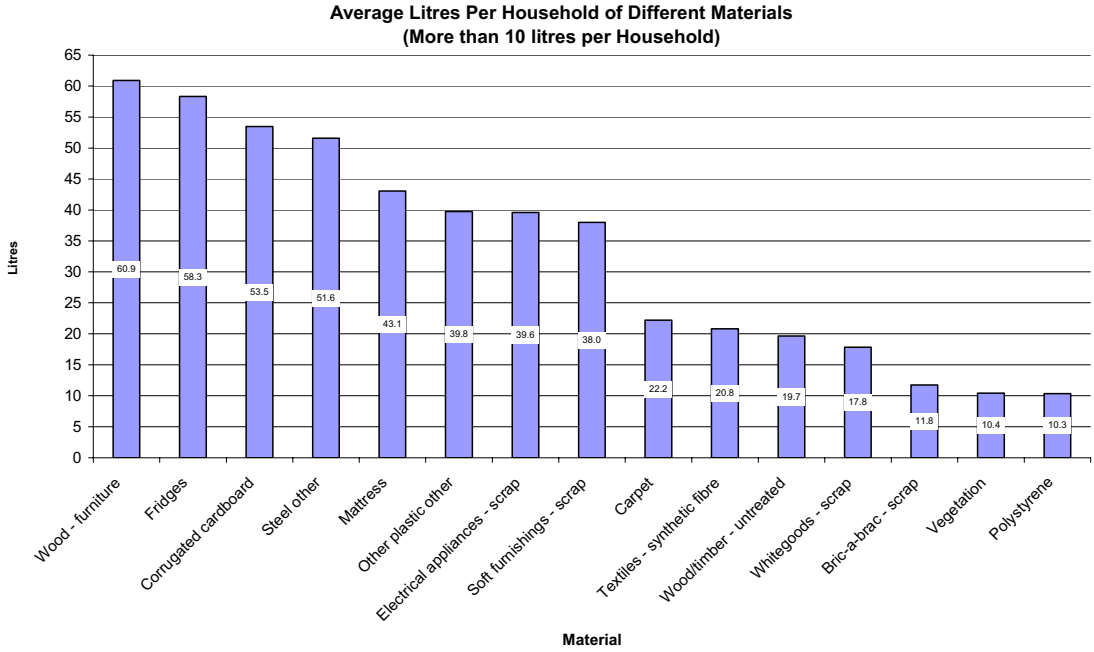
Number of Households Presenting Materials



10.1.3 Volume of Material by Household

The single largest amount of material placed out for collection was furniture, followed by fridges and cardboard. The high presence of cardboard may relate to the high transient nature of the population and the fact that cardboard does not easily fit into the divided rubbish and recycling bin, but can be stored flat until the next bulky collection.

Chart 15 - Average Litres per Household of Different Materials



10.2 Landfill Activity

Council, in its brief for the project, identified that more than 50% of waste currently being disposed of to landfill is from commercial and industrial sources. While we were provided with an array of data in relation to both landfill operations, upon evaluation it became evident that some data appeared to be inconsistent, specifically in relation to small vehicles as well as commercial movements.

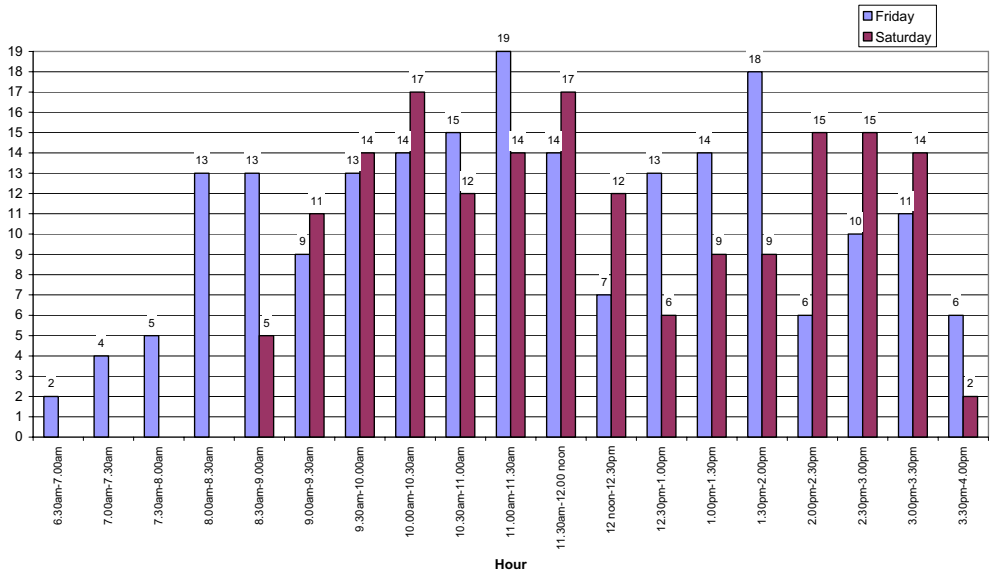
10.2.1 APC Observations at Stotts Creek and Murwillumbah landfills

The consultants felt it was imperative we ascertain the true number and type of transactions occurring and the type of loads delivered to all waste facilities over a given period. It was proposed to conduct a visual assessment over four consecutive days at the three waste facilities - Stotts Creek and Murwillumbah landfills and Tyalgum Transfer Station. Council did not support this approach initially so APC staff recorded the number and type of loads entering both landfill facilities only by time, day and registration plate over two consecutive days Friday 24th and Saturday 25th November, 2006 by sitting outside the landfills and recording passing traffic. The following charts detail the observations made by APC over this period.

10.2.2 Stotts Creek Landfill

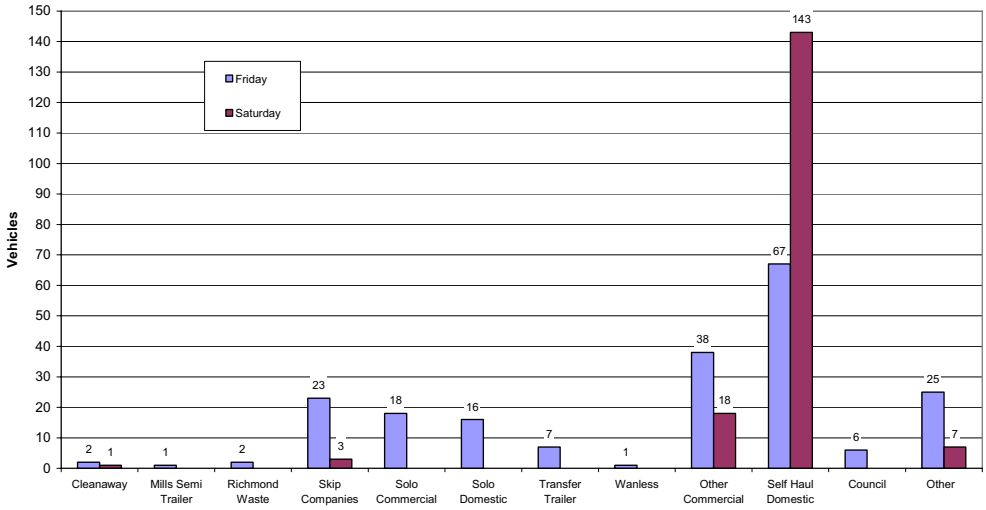
10.2.2.1 Number of vehicles per hour: The chart below details the number of vehicles entering the landfill over the course of the two sample days. The landfill is open from 7 am on weekdays and 10 am on weekends. Unofficially, Council is accepting loads from the public from 9am in stead of the advertised 10 am. On the Saturday 30 loads entered the landfill prior to the official opening time of 10 am which represents 17% of the total number 172 patrons.

Chart 16 - Number of vehicles per hour, Stotts Creek



10.2.2.2 Number of Vehicles by Patron: The chart below details the number of vehicles entering the landfill over the course of the two sample days by patron. On both days self-hauled domestic waste was the highest user category. Commercial users and skip operators were significant users on Friday but less so on the weekend.

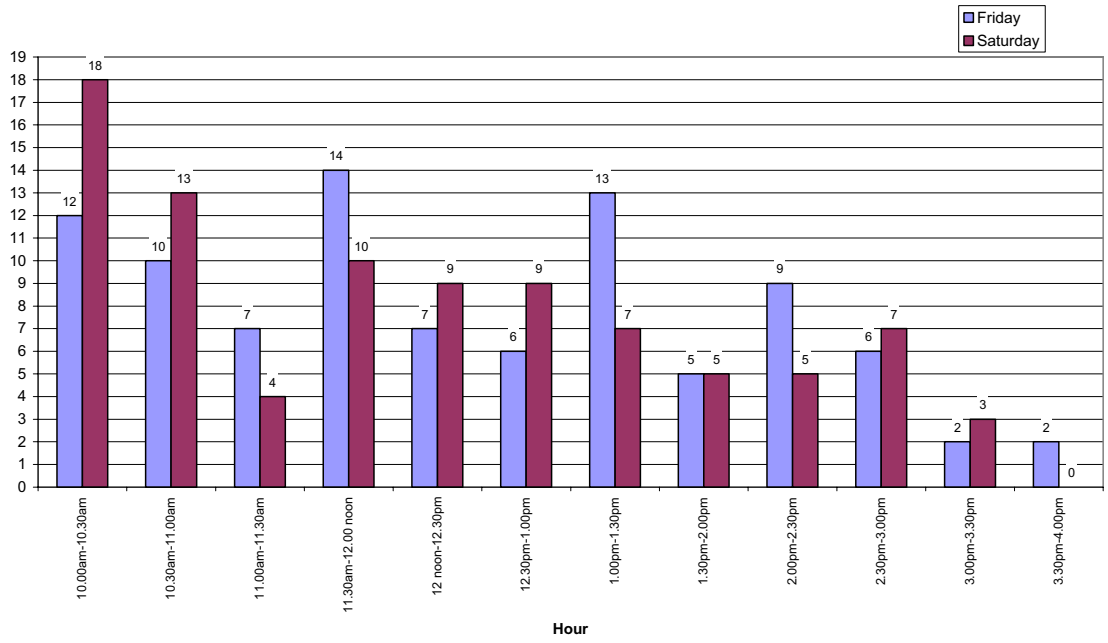
Chart 17 - Number of Vehicles by Patron, Stotts Creek



10.2.3. Murwillumbah Landfill

10.2.3.1 Number of Vehicles per Hour: The chart below details the number of vehicles entering the landfill over the course of the two sample days. The landfill is open from 10 am on weekdays and weekends. The highest number of users arrived between 10 – 10.30 a.m. on the Saturday morning. Whilst there is no distinct pattern of use over the two sample days the number of patrons was relatively consistent, with 93 patrons on the Friday and 90 on the Saturday.

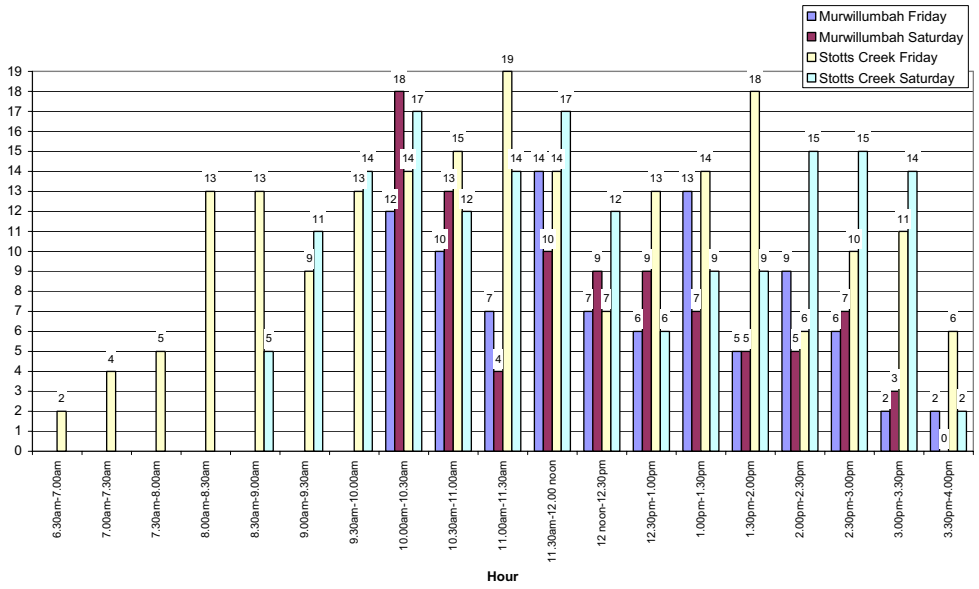
Chart 18 - Number of Vehicles per Hour, Murwillumbah



10.2.4 Stotts Creek and Murwillumbah Landfill Activity Compared

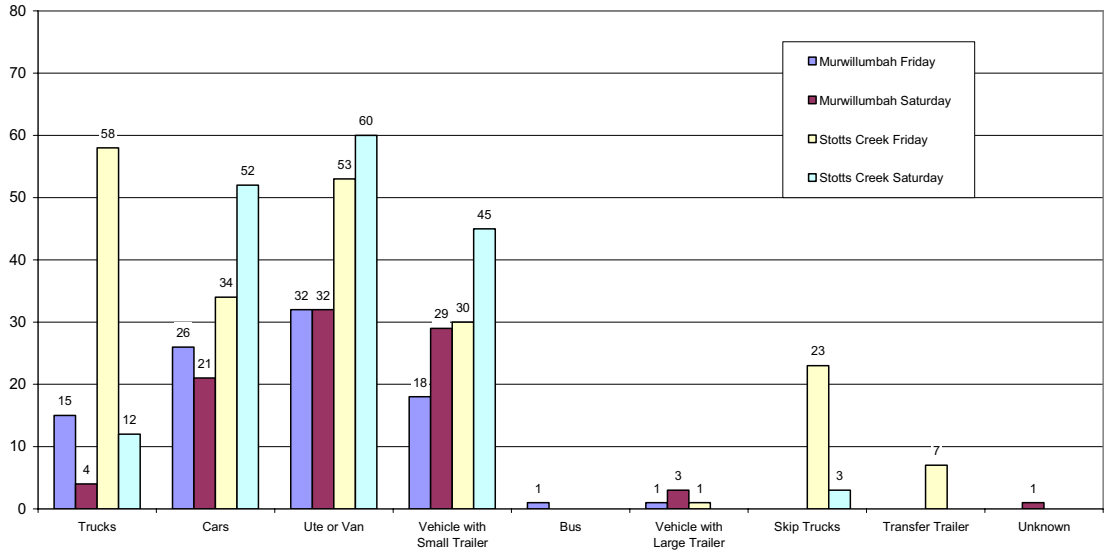
10.2.4.1 Number of vehicles per hour: The chart below shows the Use patterns at both landfills over both sample days. The minimum number of vehicles at both sites per half hour was six vehicles with the maximum per half hour peaking at 18 at Murwillumbah and 19 at Stotts Creek. In total, 206 patrons visited the Stotts Creek Landfill on the Friday and 172 on the Saturday, compared to 93 patrons visited Murwillumbah Landfill on the Friday and 90 on the Saturday. In total, 67% of the patrons visited Stotts Creek, compared to just 33% at Murwillumbah.

Chart 19 - Vehicles per Hour Both Landfills



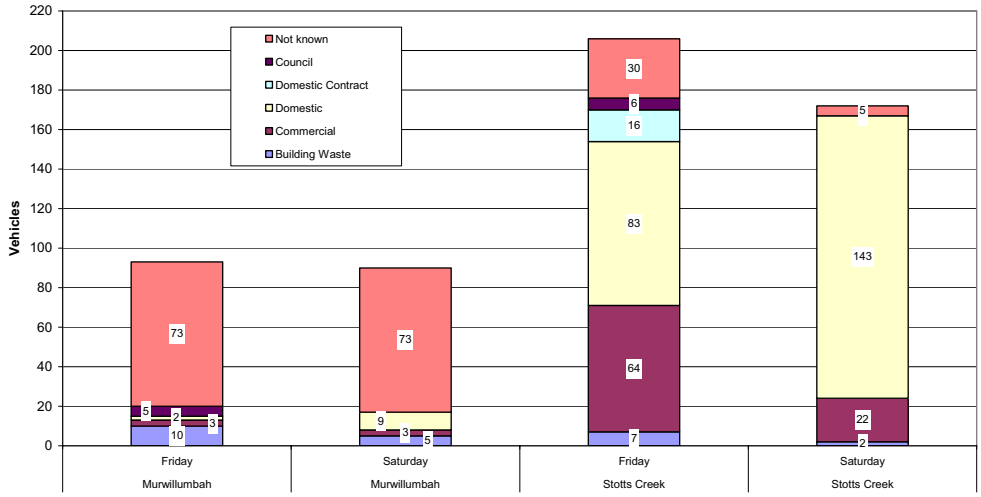
10.2.4.2 Number of vehicles by type: The chart below shows the Use patterns by type of vehicle at both landfills over both sample days. The most common type of vehicle delivering loads was utes or vans, followed by trucks and cars at Stotts Creek, while at Murwillumbah it was utes or vans, followed by cars with small trailers and then cars (without trailers).

Chart 20 - Number of Vehicles by Type



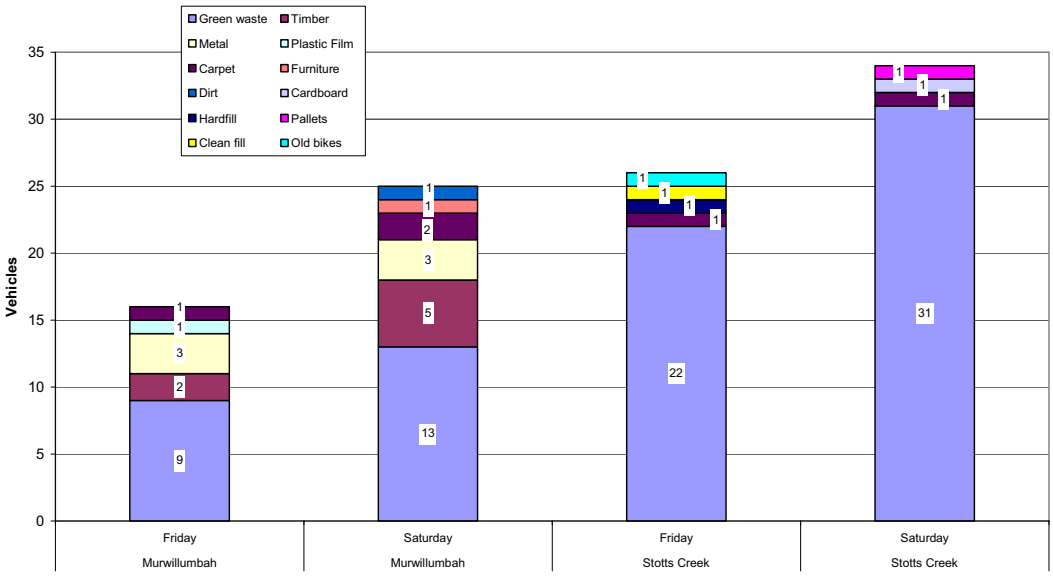
10.2.4.3 Number of Vehicles by Waste Source: The chart below shows the source of waste at both landfills over both sample days. The most common type of waste delivered at Stotts Creek was domestic waste. At Murwillumbah it was not possible to determine the source of waste in most cases.

Chart 21 - Number of Vehicles by Waste Source



10.2.4.4 Number of Vehicles by Waste Type: The chart below shows the type of waste delivered at both landfills over both sample days. The most common type of waste delivered at both sites was green waste.

Chart 22 - Number of Vehicles by Waste Type



10.2.5 Council Observations

Tweed Council undertook a comprehensive survey of vehicles entering the Murwillumbah Landfill between Friday December 8 and Monday December 11, 2006 and at Stotts Creek Landfill between Monday December 4 and Sunday December 10. The data provided is shown in the tables below.

Table 43 - Murwillumbah Landfill

Waste Type	Fri 8/12	Sat 9/12	Sun 10/12	Mon 11/12
Domestic waste mixed - car /trailer / utility	12	20	29	18
Domestic green - car / trailer / utility	9	9	29	9
Recyclables	4	5	2	1
Tip shop	30	50	45	39
Commercial waste	1			
Builders	2			
Mixed waste	1			
Mixed green & general	1			
Large truck more than 5 tonne – Green	2 mixed			

Table 44 - Stotts Creek Landfill

Waste Type	Mon 4/12	Tues 5/12	Wed 6/12	Thur 7/12	Fri 8/12	Sat 9/12	Sun 10/12
Domestic green waste							
Car / station wagon	7	8	6	2	6	2	4
Utility / small trailer	23	11	23	13	21	23	19
Large trailer 1 x 2 x 1.8m	1	7	7	6	7	4	5
Recyclables Sorted Waste							
Car / station wagon	9	7	5	6	5	5	6
Utility / small trailer	9	7	2	6	3	6	3
Large trailer 1 x 2 x 1.8m	2	2	2	4	6	1	2
Mixed Waste							
Car / station wagon	16	25	13	13	23	18	36
Utility / small trailer	21	15	23	18	28	33	52
Large trailer 1 x 2 x 1.8m	10	13	11	6	7	8	11
Commercial Waste							
Mixed waste / tonne	14	3	5	6		1	
Green waste / tonne	10		14	4	4	1	
Builders' tubble / tonne	6	1	10	4	4	5	
Builders waste within TSC / tonne	12	19	15	19	6		3
Builders waste outside TSC / tonne					15	3	
Contaminated waste asbestos / tonne	1	1	1		1		
Tyres		2					
Car Bodies		**1**					
Clean fill / tonne	**4**	**13**	**10**	**10**	**30**	**1**	
Byron waste / tonne	**1**		**1**				
Tip shop	**39**	**37**	**30**	**32**	**34**	**29**	**34**

10.2.5.1 APC Observations Compared with Data Supplied by Council and Contractor

In this section we compare the three sets of data from APC, Council and Solo. The APC and solo data relate to the same period of time Friday November 24 and Saturday November 25, 2006 whereas Council data relates to a slightly different period i.e. early December, 2006.

10.2.5.2 Stotts Creek

A summary of the key findings is shown graphically in the following charts which show the number of several different types of vehicles recorded entering the Stotts Creek Landfill on Friday November 24 and Saturday November 25, 2006 by APC and Solo. Council data relates to a different time frame 8 – 9th December 2006.

Chart 24 - Vehicles Entering Stotts Creek Landfill – APC Survey Results v Solo Figures v Council

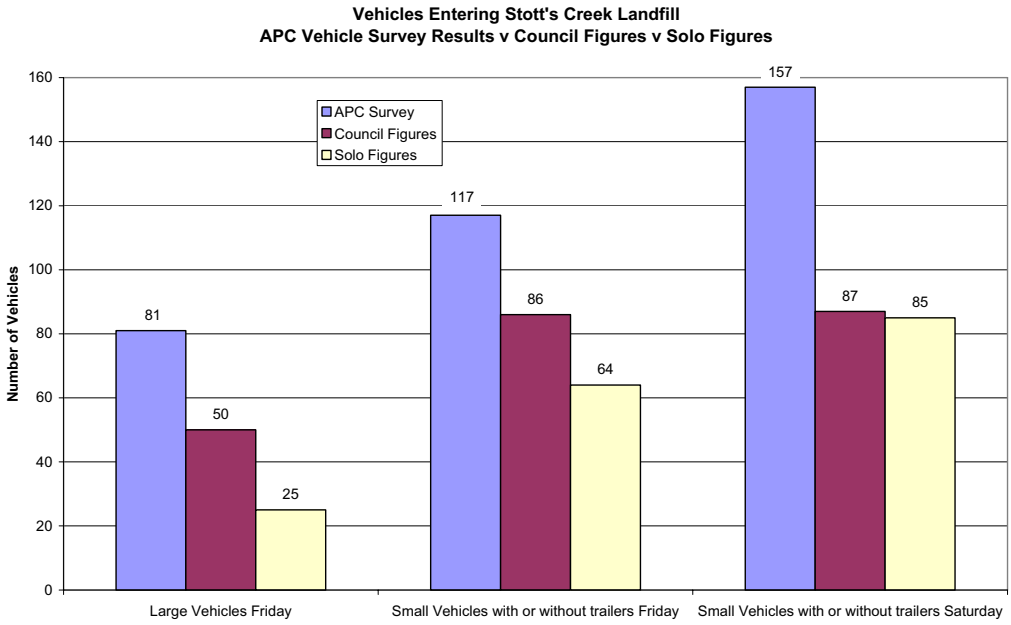


Chart 25 - Vehicles Entering Stotts Creek Landfill – APC Survey Results v Solo v Council

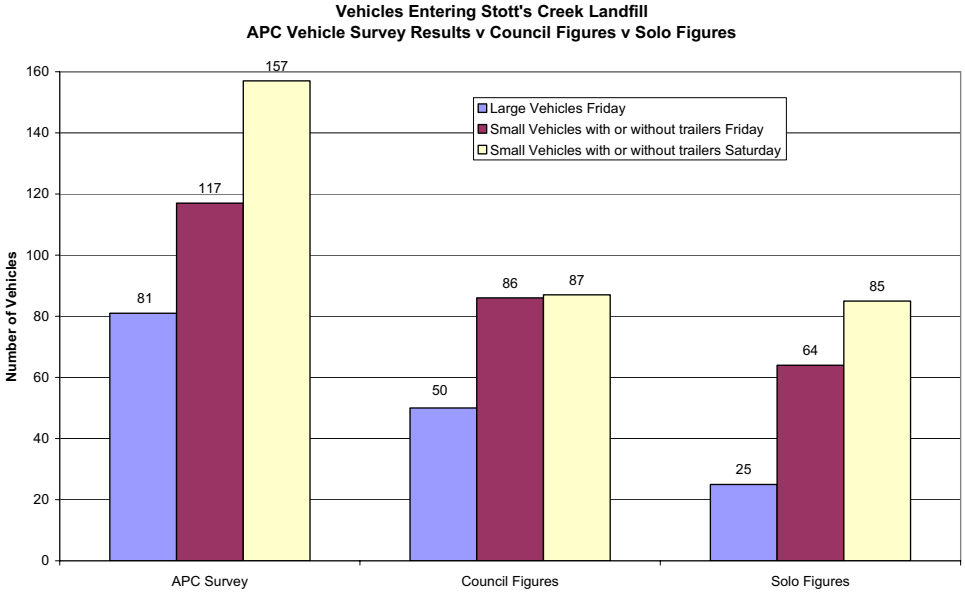
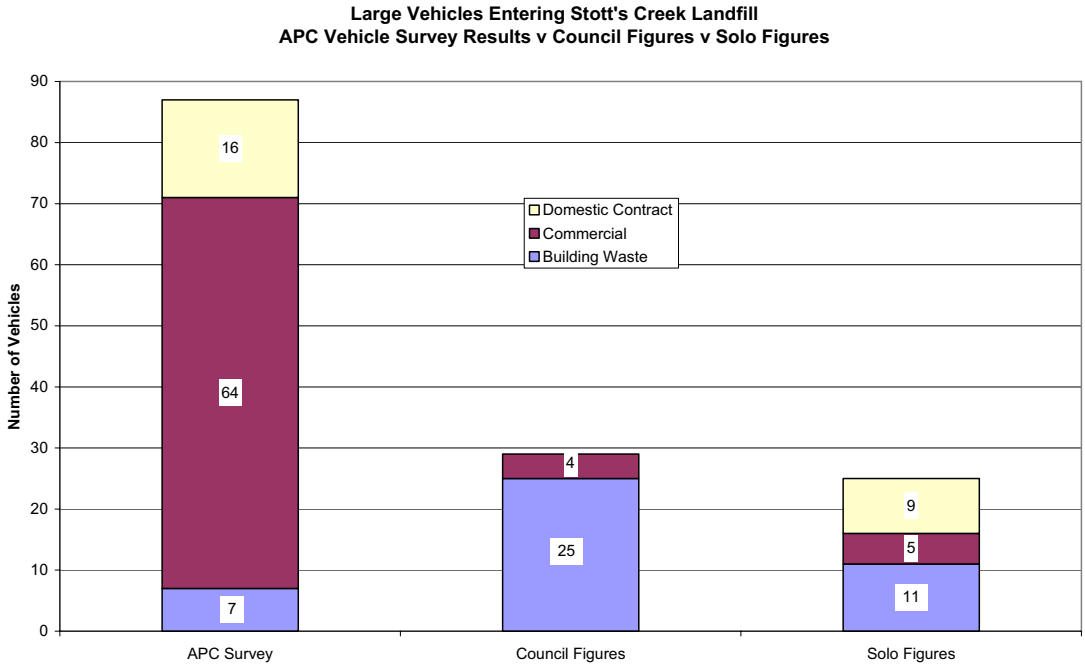


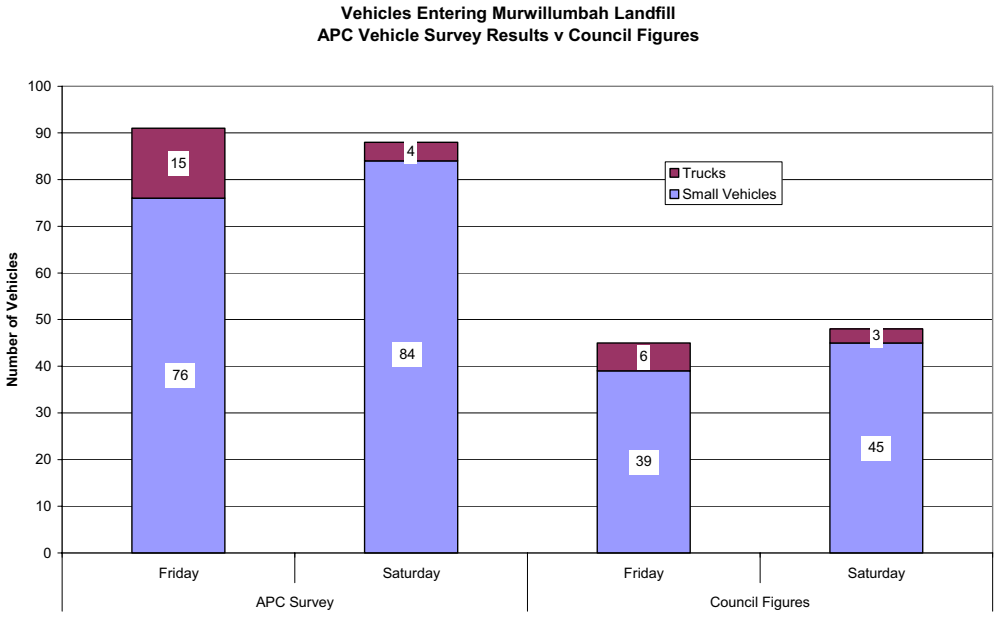
Chart 26 - Large Vehicles Entering Stotts Creek Landfill – APC Survey Results v Solo v Council



10.2.5.3 Murwillumbah Landfill

The charts below shows the number of small vehicles and trucks recorded entering the Murwillumbah Landfill by APC on Friday November 24 and Saturday November 25, 2006 and by Council on Friday December 8 and Saturday 9th, 2006. A summary of the key findings is provided below and shown graphically in the following charts:

Chart 27 - Vehicles Entering Murwillumbah Landfill – APC Survey Results v Council Figures



APC's figures show significantly greater numbers of small vehicles in particular entering the landfill on both days, compared to those recorded by Council. It is possible that these vehicles were dropping off recyclables or visiting the tip shop, activities for which vehicles are not recorded by Council.

10.3. Key Findings

Stotts Creek
APC's and Council's Stotts Creek surveys show some inconsistencies. The total number of vehicles recorded by APC was 206 on Friday and 172 on Saturday. Council recorded 200 on Friday and 140 on Saturday. APC recorded 87 small vehicles on Friday and 112 on Saturday. Council recorded 86 and 87. When small vehicles with trailers were included, the total number of small vehicles with or without trailers recorded by APC was 117 on Friday and 157 on Saturday. Council recorded 106 and 100. APC recorded 22 vehicles on Friday and 31 on Saturday delivering green waste. Council recorded 34 and 29. APC recorded 46 large commercial vehicles on Friday and four on Saturday while Council recorded 30 on Friday and ten on Saturday.

At Stotts Creek the proportions of all vehicles entering the landfill to visit the tip shop were relatively low ranging from 16.9% on Wednesday to a high of 21.6% on Tuesday. The proportion of small vehicles visiting the tip shop was slightly higher ranging from 33.2% on Thursday to 44.1% on Sunday. These figures are similar to those found by APC during audits of other regional landfill and a transfer stations. For example, at Shoalhaven Council where similar facilities and population base are similiar for comparison purposes of 745 vehicles entering Nowra Landfill over five days, 22% (215 vehicles) were recorded as only going to the tip shop while at Ulladulla Transfer Station of the 167 vehicles arriving over one day 37% (98 vehicles) were recorded as going only to the tip shop.

Murwillumbah Landfill Findings

Some of the Murwillumbah survey results are also similar. APC recorded 76 small vehicles with our without trailers entering on Friday and 82 on Saturday. Council recorded 55 and 84. APC recorded nine vehicles delivering green waste on Friday and 13 on Saturday. Council recorded nine on both days.

There were however some unusual results for the Murwillumbah survey. The survey data shows that of the total number of vehicles entering the Murwillumbah Landfill each day (53 on Friday, 75 on Saturday, 76 on Sunday and 58 on Monday), most were attending the tip shop. If the few commercial, building, mixed waste and large trucks which entered on Friday are ignored, the proportion of vehicles going to the tip shop is quite large; Friday 74%, Saturday 73%, Sunday 62% and Monday 69%.

This appears to be an unusual result when compared with the prior data supplied for the activities of the 24th - 25th November. That data showed that of the 76 small vehicles entering on the Friday and 82 on the Saturday, vehicles entering the site and not issued with a ticket therefore assumed to be visiting the tip shop numbered 37 on both days. Therefore the proportion of vehicles visiting the tip shop was 49% and 45% respectively for both days. This is significantly lower then the survey data referred to above.

10.2.5.5 Landfill Revenues

Council provided information relative to the APC survey period for both landfills in relation to the number and value of transactions. These are summarised below:

Table 45 - Stotts Creek Landfill Transactions

Transaction value ($)	24/11		25/11	
	Number	Total $	Number	Total $
$7	21	$140	23	$161
$10	9	$90	9	$90
$11	54	$594	79	$869
$17	8	$153	14	$238
$20	5	$100	1	20
$21	1	$21	0	0
$26	1	$26	2	52
Total	**101**	**$1124**	**130**	**$1430**

Source: Email Adam Faulkner 29/11/06

Table 46 - Murwillumbah Landfill Transactions

	24 November		25 November	
Transaction value ($)	**Number**	**Total**	**Number**	**Total**
$7 minimum charge	39	$273	45	$315
Volume charges	6	$308	3	$302
Total	**45**	**$581**	**48**	**$617**

Source: Adam Faulkner 29/11/06

11. STRATEGIC OPTIONS BY MATERIAL

The aim of this section of the report is to provide clear guidelines on preferred options and to discuss the rationale and budgetary implications. There are a number of possible options in relation to collection, processing and disposal. The overall Strategy objective is to increase resource recovery and in so doing, to improve the current diversion rate of waste from landfill.

Each of the options has been considered in relation to the economic cost of service provision, in addition to the environmental and social benefits achieved by its implementation. In addition, the consultants, in making the recommendations contained in this section, have done so mindful of the following principles:

1. Ecological Sustainable Development (ESD – local government and government agencies are required by legislation to have regard to the principles of ESD in exercising their functions. Sustainability or ESD is generally acknowledged by the definition used by the OECD which is: using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased.

The effects of decisions that we make today have far-reaching impacts on future environments and society. Decisions are based only on short-term economic advantages, then we can perpetuate the thinking that has so far delivered a degraded environment. The sustainability provides its framework for evaluating options based on environmental, economic and social benefits and costs. Waste management Decisions should not be short-term commercial outcomes, or local expediency, but rather about responsible management of materials and resources to retain and conserve their value for secondary uses, which results in the conservation of natural resources for current and future generations.

2. Compliance with the Waste Management Hierarchy – the waste management hierarchy is a nationally and internationally accepted philosophy for prioritising and guiding efforts to manage waste. It is the foundation upon which NSW State Waste Strategy has been developed. The waste management hierarchy establishes approaches to waste management according to their importance and preference in descending order.

3. Compliance with State Waste Strategy – the strategy contains goals, targets and milestones to guide the community to fulfilling the strategy objective. For municipal waste the targets are from a baseline of 26% diversion in 2003 to a target of 66% diversion by 2014.

4. Risk-free options – councils are typically risk-averse and do not operate on a commercial basis motivated by profit, but rather providing value-for-money services to the communities they serve.

5. Waste is not a core business – increasingly councils are contracting out service provision to the private sector, which can undertake services more cost-effectively and efficiently with economies of scale not available to local councils. Waste management is their core and often sole business interest and focus.

6. Growing and ageing population – the area is growing at an annual rate of 4%, projected to continue for the foreseeable future as the population seeks lifestyle changes. As the population retires, its service needs, mobility and level of disposal income all reduce.

7. Social equity – whether people choose to live in an urban, semi-rural or rural area, there are community expectations that basic services will be delivered.

8. Timeframe – for planning, amortisation of plant and equipment, it is important to take a medium-term view. Waste management, like society generally, is evolving at an exceedingly faster pace and it is not possible to 'crystal ball' what new and emerging technologies may be commercialised and in production beyond this timeframe.

9. Best practice – significant research has been undertaken to determine the methods to achieve the optimum outcomes in relation to productivity, efficiency and resource recovery. It is important to ensure that these findings are considered.

10. Demonstrate leadership – local government needs to lead the community by setting good examples and providing services which will enable the community to achieve the council objectives.

The following options are based on the results of background research, waste audits, market research and consultation with the key stakeholder groups. Available technologies and options have been researched and budgetary constraints taken into account, along with an evaluation of the social, environmental and economic imperatives.

To enable ease of implementation, the options have been listed by material type and based on the waste management hierarchy, with the focus on avoidance, reuse and recycling prior to disposal.

The NSW *Waste Avoidance and Resource Recovery Act 2001* refers to the following waste hierarchy:

1. 'avoidance of unnecessary resource consumption,
2. resource recovery (including re-use, reprocessing, recycling and energy recovery),
3. disposal'.

A short discussion relating to future collection systems handling of key waste materials and recommended actions is provided in this section. A summary table has been provided at the end of this section.

11.1 Agricultural Chemical Containers

Council participates in the DrumMUSTER Program whereby plastic containers and drums must be triple-rinsed and free from liquid residual prior to being stored in a wire cage at the Stotts Creek Waste Depot. Since the program began in 2000 12,864 containers have been returned, which is an estimated return rate of 36% based on estimated drum sales. With the increasing sub-division development occurring within the shire, the number of farmers is slowly decreasing, however, the number of users of this program is increasing.

We understand that previous collections have been over a two-day period, whereas the most recent collection in December 2006 was for four hours on one day only. Council promoted this event prominently in the *Tweed Link* newsletter.

DrumMUSTER undertakes a community education program with the farming and agricultural community through the retail outlets from which product is purchased, to encourage the correct disposal of these containers. Colin Hoey, the DrumMUSTER Regional Consultant, advises that the greatest return rates from drums and containers are in areas where drums are accepted at any time. This requires trained staff to inspect and record drum deliveries. This staff training takes approximately three hours and is provided free of charge by DrumMUSTER. Council could assist to improve return rates by increasing the opportunities for when returns are being accepted, by requiring Solo to have more staff trained in the receipt of these materials

Recommendations:

2. ***That Council request the waste contractor to have trained staff available at all times to receive and process DrumMUSTER containers.***

3. ***That the contractor uses the service of the free DrumMUSTER training program.***

4. ***That Council continue to support the efforts of DrumMUSTER through community education and promotion of either continuous receipt of containers or one-off collection programs***

11.2 Asbestos

Asbestos dust contains tiny, almost indestructible fibres which can cause damage when breathed into the lungs. The most dangerous fibres are those which are almost invisible to the naked eye but which can penetrate the lungs the furthest. Health risks associated with breathing in the fibres include: asbestosis, lung cancer, mesothelioma and other forms of cancer. Unfortunately, asbestos-related diseases do not often present symptoms until between 20 and 40 years after the first exposure.

A large number of products made from asbestos cement are still found in buildings, including flat fibro, corrugated or compressed asbestos cement roof sheeting and asbestos cement pipes used for water, drainage or flues. While these products are maintained in good order they present no significant health risks, however, safety precautions must be taken when renovating or demolishing a building that contains

asbestos cement material or when disturbing any product containing asbestos in a way that is likely to generate dust.

The Australian Work Cover Authority has issued Health and Safety Notes in relation to working with asbestos. Asbestos, once removed in accordance with the safe working methods described, should be double-wrapped in heavy-duty plastic, taped in accordance with state regulations and buried at the landfill.

Recommendation:

5. Council continue to promote that asbestos should be removed, handled and stored in accordance with the Work Cover Regulation.

11.3 Batteries

The contents of batteries are poisonous and can leach into the environment if not correctly stored and disposed of. Lead acid batteries should be stored in a covered bunded area which is provided adjacent to the transfer station area at the Stotts Creek waste depot.

Recommendation:

6. That all batteries received at all waste depots be correctly stored

11.4 Building Materials

Building materials, generated through construction and demolition activities, include a range of items such as masonry, bricks, tiles and concrete, are inert and do not contain substances which could create long-term environmental hazards to the groundwater. Frequently these materials are mixed with other waste streams and not separated. Currently these materials have a differential fee to encourage separation. Clean fill is received free and used as cover material.

Table 47 - Building Waste Fees

Category	Cost
Builders water sorted (with permit)	$15/ t
Builders waste unsorted (with permit)	$32 / t
Builders waste unsorted (without permit)	$65 / t

11.5 Gas Bottles

Gas bottles and cylinders present a considerable OH&S risk to the waste and recycling industry, due to the potential for explosion if the pressure vessel is ruptured. There is currently no dedicated program to collect, safely DECommission and dispose of old, outdated or damaged bottles and cylinders.

Elgas has established a successful gas bottle exchange program 'Swap 'n Go' initiative which operates at many service stations.

End-of-life, apparently empty, gas bottles particularly BBQ gas bottles, will always have enough residual propane, LPG or butane to be dangerous in a scrap yard or landfill. These bottles need to be completely purged with an inert gas and the cylinder punctured to be no longer considered dangerous.

These bottles, while metal, cannot be added to the metal stockpile, due to the risk of explosion upon baling and processing and should not be included in either the waste or recycling bins for collection, due to the risk of explosion.

Council has a role to educate the community and raise awareness about correct disposal procedures and promote the recovery program at the Stotts Creek Landfill and necessary to maximise the safe recovery of these potential 'bombs'.

Recommendation:

7. ***That Council include the correct disposal of gas cylinders and bottles in future community educational material and promote the drop-off of these materials at each waste disposal facility.***

11.6 Household Furniture, Bric-a-Brac

Households update and replace household items including furniture, books, clothing and bric-a-brac frequently prior to the items being past their useful life, with many items still fully functional. Currently, some items are sold to second-hand shops or handed down to family and friends or donated to charities.

Scavenging at tips has been a culture at landfills and a favourite pastime for many decades, however, with increased insurance premiums and associated risks, scavenging has become more organised, with the development of 'reuse enterprises', 'revolve', 'tip shops' or 'drop and swap' centres where materials are rescued both prior to dumping and retrieved during and after dumping. Communities, with increasing information and education, are changing the culture, and making old things new again has brought an added new dimension to the possibilities associated with these operations. The concept requires little technology or equipment, but to be truly successful and, in the long term, profitable, requires the operation to be run as a small business. Their presence at disposal facilities is now becoming mainstream.

Tweed Council, in the current contract for the management of the Stotts Creek Waste Depot required the contractor to establish a reuse or tip shop in a new building designed and built for this purpose. The contractor has subcontracted the operation of the tip shop, known as Flanagahan's Tip Shop, which appears to be well patronised.

The subcontractor gains materials from either scavenging through material deposited at the transfer station or by material being directly delivered.

At Murwillumbah depot a similar operation exists, however, this is operating out of shipping containers and appears to be a more makeshift arrangement, with no permanent secure on-site storage shed provided by Council.

These initiatives put into practice the saying 'one man's trash is another's treasure'.

Recommendation:

8. That Council continue to support the operation of reuse facilities at all waste disposal facilities.

11.7 Household Hazardous

Households collect a range of hazardous substances. Many properties, domestic garages and sheds contain chemical cocktails of out-of-date, unwanted and often unknown pots and bottles of chemicals, herbicides, pesticides and other substances which are all potentially detrimental to the environment if not properly controlled and disposed of correctly**.** Some chemicals, in the presence of others, can create explosions and other volatile reactions.

Council continues to participate in the Household Hazardous Collection Program co-ordinated by the NEWF, whereby householders are notified and can deliver unwanted chemicals including herbicides, pesticides, batteries and oils for free. Trained and skilled contractors receive, assess and pack for transport and destruction the range of products surrendered over a period of time. The service was last offered on 24 June 2006 at the Stotts Creek Landfill where a total of 68 people presented 2,201 kg of material for assessment and correct disposal. The next scheduled collection is on 3 March 2007.

The DECC landfill licence does not allow for the receipt and storage of hazardous chemicals in the area. However, clean-outs of garages, sheds and deceased estates do not always coincide with the bi-annual collection program.

Purpose-built fully enclosed and ventilated storage sheds are available for containing chemicals prior to their assessment by experts. A modular four-compartment relocatable hazardous goods storage unit is available from Dangerous Goods Storage Systems Pty Ltd in Young NSW for $6,500 (not including GST or transport). The diagram and picture shows the proposed unit.

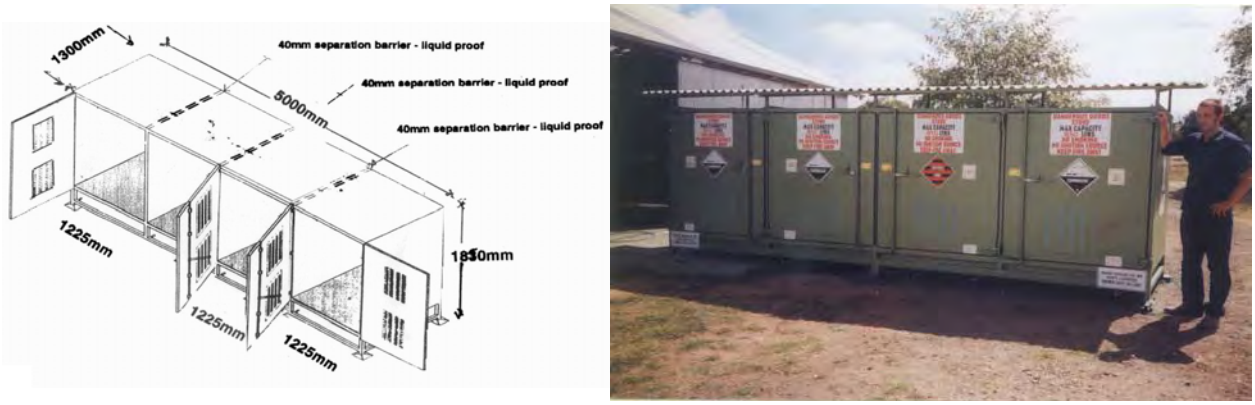


Figure 21 - Proposed hazardous goods storage unit

The installation of a chemical storage shed would require approval from the DECC, modification to the licence conditions and possible modification to the LEMP to reflect this addition. In addition the contract staff would need to be trained on the identification and correct storage of chemicals. Coffs Harbour and a number of other regional waste facilities have provided such facilities as a service to the community and to provide an outlet for these types of materials rather than their being placed in domestic waste bins with unknown consequences.

Recommendations:

9. Council ensures the community is informed about household hazardous collection programs.

11.8 Recyclables

Council currently receives recyclables free of charge at all waste facilities. Bulk bins are provided at all waste depots for the excess recyclables. This material is then transferred to the local MRF for processing, baling and on-selling to local or export markets. Scrap metal is also accepted free and recycled at all waste depots.

Recommendation:

10. That Council continue to promote the current practice of source-separation and free delivery of recyclables at all waste facilities.

12 PROPOSED WASTE MANAGEMENT SYSTEMS

The aim of this section of the report is to provide clear guidelines on the rationale of the preferred options and to discuss budgetary implications of future service options. Based on the waste audit results and interviews with key stakeholders, it has been identified that there are a number of possible future service options that Council should consider in the quest to increase the diversion rate of waste to landfill, in addition to improving resource recovery from the waste streams it manages.

Each of these options will need to be considered in terms of the economic cost of service provision, in addition to the environmental benefit achieved by its implementation. Simply swapping one collection system for another without looking at opportunities to manage all elements would be a gross underestimation of the opportunity available. While addressing all issues may see an increase in immediate expenditure, they should be viewed as opportunity costs with long-term payback, not as the additional costs of implementing a new system. Any changes need to underpin, reinforce and support waste avoidance and minimisation in a community.

The aim of the Waste Management Plan is to adopt current best-practice principles in relation to the current and future management of solid waste in Tweed Shire.

12.1 Current Performance

The New South Wales Department of Environment and Conservation's *2006 updated* report on the 2003 *Waste Avoidance and Resource Recovery Strategy* states that the waste diversion targets set in 2003 remain in place and unchanged. Principally the key target for local government is to divert 66% of municipal waste from landfill by 2014.

The 2005 Waste Characterisation Report co-ordinated by the North East Waste Forum indicates that on average each week Tweed Shire residents place 17.1 kg of mixed waste and recyclables at the kerbside for collection. This material comprises:

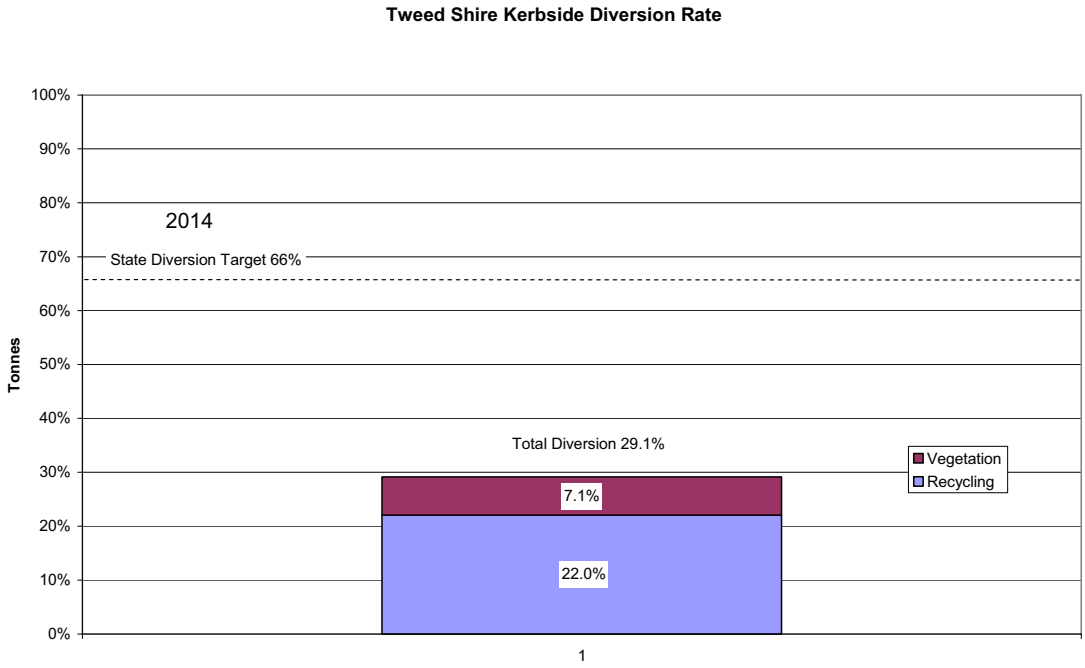
Table 48 - Tweed Shire Waste Stream

Waste type	Percentage of Total Waste Stream	Weight (kg)
Recyclables	42%	7.3
Garden and organics	34%	5.9
Residual	24%	4.2

To achieve the DECC targets by 2014, Council will have to achieve a diversion of approximately 11.2 kg per week from its current waste generation. Based on this study, Council was achieving a diversion rate of 27% through the kerbside recycling program.

However, based on actual Council data for all services for the 2005–06 financial year, Council achieved a domestic diversion rate of 29.1%, which is shown in the chart below.

Chart 28 - Tweed Shire Kerbside Diversion Rate



Clearly Council's current waste management system will require a substantial re-design if the State waste target of 66% by 2014 is to be met.

12.2 Recycling

Recycling programs have been supported by some local government councils for over 20 years. Initially collection vehicles carrying out kerbside recycling collections were divided into various compartments and households were provided with bags, crates or used cardboard boxes, however, due to concerns with OH&S related to manual handling, the 240-litre mobile garbage bins have become the standard receptacle. Typically all materials are commonly mixed together and termed 'commingled'.

12.2.1 Current System Performance

Council introduced a divided bin for garbage and recycling collection. The 70% side was for waste and the 30% side for recycling. Based on the findings of a community survey of over 1,200 residents, Council responded to the feedback that the recycling side was insufficient and in the most recent contract that commenced in 2004, had the contractor to modify all bins to a 50:50 division.

Council reports that the actual weekly generation and domestic waste in 2005 was 17.39 kilograms, of which 3.89 kg were recyclables. The 2005 regional waste audit concluded that the average household generated 17.1 kg of waste of which 5.4 kg were recyclables. Contamination of the recyclables currently being collected has been identified as ranging from 15% as reported in the Regional Waste Characterisation Study 2005 to 18% reported by Solo (Council's contractor) in its own September 2006 audit of the system.

Typically the most voluminous wastes are packaging, in particular soft drink, plastic milk and juice bottles and cardboard products. The narrow compartment of the

divided bin makes cardboard recycling a challenge for many residents and results in many air voids being created the narrow space when larger items are placed in it. Due to the items' shape, the voids are not filled, thus leaving further limited available storage capacity. It is considered that while theoretically 120-litres of bin space are available in the split bin, due to container shapes and air voids the reality is that usually less than 80-litres of space are in fact available for product recovery.

Information provided to Council by its MRF contractor reports that the current recovery of materials from its recycling system can be estimated as per the following table.

Table 49 - Current Recycling Stream Composition – Tweed and NSW Average

Material Stream	Commingled System	
	Industry Average %	Tweed %
Paper and Cardboard	57	49.5
Glass	25	5.2
PET	2	1.04
HDPE	2	1.04
Mixed Plastics	1	.99
Steel	1.4	1.58
Aluminium	0.6	0.4
Waste	11	40.25*
Total	**100**	**100**

* Includes 21% of Glass fines identified as currently going to landfill

On the basis of this information it can be concluded that of the current 3.89 kg of recyclables recovered weekly, only 2.32 kg are, in fact, being recovered for reuse. It is confirmed from assessment of Council's own reports that, on average, 1.57 kilograms of materials collected per household are, in fact, returned to landfill, either through being contaminated or in the form of glass fines..

12.2.2 Reference Documents

In reviewing the options available to Council to improve its existing waste management service, APC has reviewed a number of relevant research reports and guidance documents.

12.2.2.1 Good Practice Performance Measures for Kerbside Recycling Systems – NSW Department of Environment and Conservation

This report has established a set of good-practice measures against which to assess kerbside recycling systems. The following table from this report provides a summary of these measures, along with suggested targets for each measure.

Table 50 - Comparison with DECC Performance Standards

Performance Measure	Unit	Description	NSW DECC		Tweed	
			Baseline	Target	Actual *	Post MRF *
Household net yield	kg/hh/wk	Total kerbside recyclables collected per household, excluding gross contamination	>4	>5.5	4.0	2.4
Per capita net yield	kg/pp/wk	Quantity of kerbside recyclables collected per person, excluding gross contamination	>1.5	>2.1	1.7	1.0
Net diversion rate	%	Total proportion of domestic waste diverted to the recycling stream	19%	>29%	22%	13%
Contamination rate	%	Contaminants placed in recycling bins by householders	N/A	<3.5%	18%	

Source: Solo reported annual tonnages

While the Tweed Recycling system performs relatively well in terms of yield and diversion, when contamination and post processing is considered the system is underperforming.

12.2.2.2 Getting More from Our Recycling Systems. Assessment of Domestic Waste and Recycling System – NSW Department of Environment and Conservation

This report contains an assessment of domestic waste and recycling systems to determine the relative performance of different kerbside collection configurations. The latest available recycling and waste generation information was collated from a number of councils. In this study, six domestic waste management collection scenarios were considered. The following table sets out these scenarios:

Table 51 - Collection System Configurations Assessed

Scenario	Domestic Garbage		Kerbside Recyclables		
	Receptacle	Frequency	Receptacle	Frequency	Materials Collected
Baseline	120-L bin	Weekly		Fortnightly	Commingled containers and paper/cardboard
Scenario A	240-L bin	Weekly	–	–	–
Scenario B	120-L bin	Weekly	120-L bin	Fortnightly	Paper/cardboard
			120-L bin	Fortnightly	Commingled containers
Scenario C	120-L bin	Weekly	240-L bin	Fortnightly	Commingled Containers no paper
Scenario D	240-L bin split	Weekly	240-L bin split	Fortnightly	Commingled containers and paper/cardboard
Scenario E	120-L bin	Weekly	Crate	Weekly	Commingled containers
			Crate	Weekly	Paper/cardboard

Recyclables diversion was ranked highest in the following systems:

1. 2 x 120-litre bin collected in alternate weeks for commingled containers and paper and cardboard with a 120-litre garbage bin
2. 1 x 240-litre bin fully commingled recycling service collected fortnightly 120-litre garbage bin ?service collected fortnightly
3. 1 x 240-litre bin divided garbage and recycling system (current system)

12.2.2.3 Glass Compaction Study, APC 2005

The NSW Jurisdictional Recycling Group sought to determine whether a relationship existed between the load density of kerbside material and the proportion of glass broken in loads. The aim of the project was to establish an optimum load density to protect the integrity of recyclable commodities from breakage during kerbside collection, while providing a cost-effective service to the community.

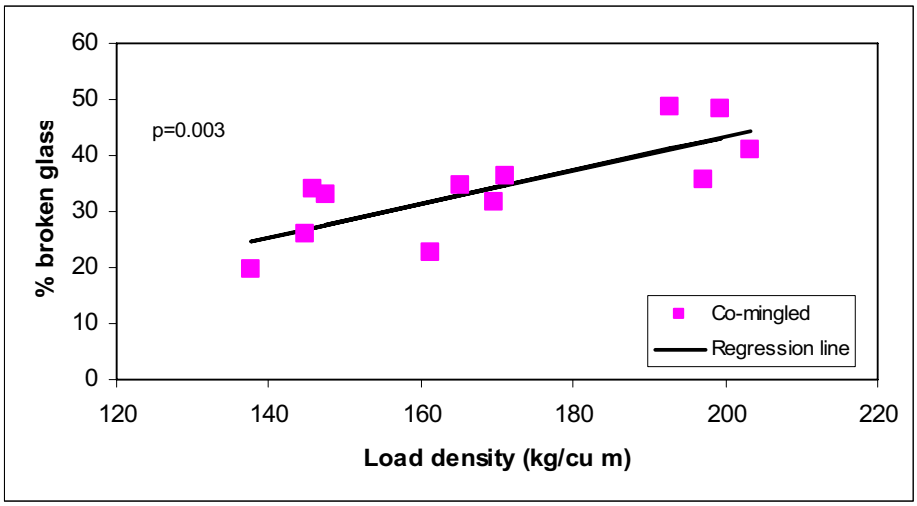
It should be noted that this study was conducted in Sydney where typically glass containers represent 25% of the product mix. A controlled trial with scientific parameters was developed, and took place using four of the latest model collection vehicles, including side- and rear-loaders. As a result of this study,[13] it is now possible to predict with confidence the proportion of broken glass that can occur in recycling loads from fully commingled kerbside collections using side-loading vehicles with known load densities.

The following formula can be used to predict the proportion of broken glass at any compaction setting:

Percentage broken glass = 19.4 + 2.9% for every 10 kg/m^3 over 120 kg/m^3

This is graphically represented in the following chart:

Chart 29 - Percentage of Broken Glass v Load Density – Commingled Loads Only



12.2.3 Market Research Results

The following is a summary of the key findings from the survey conducted of 213 residents in relation to current and future waste management needs.

12.2.3.1 Current divided bin – in relation to the current divided bin, 37% indicated the recycling side was full to overflowing while 28% indicated that both sides of the bin were overflowing. When asked what people did with any excess recyclables the majority placed it in the rubbish bin, kept it until the next collection, used the neighbour's bin or took it to work.

[13] APrince Consulting, Glass Compaction Study, 2005.

When asked to indicate what material was placed in front or rear of the bin 8% failed to recall or indicated the wrong material. When asked if recycling was placed in plastic bags prior to being placed in the recycling bin 3% indicated that was their common practice. The most commonly recycled materials were paper/cardboard and glass containers.

12.2.3.2 Excess recyclables – 22% of respondents indicated that they had surplus recyclables that would not fit in the bin. When asked what they did, most, 43%, kept them until the next collection while 27% admitted to putting them in the rubbish side, 8% used a neighbour's bin or took them to the waste depots, while 6% took them to work.

12.2.3.3 Recycling container – the majority of the residents (59%) support Council introducing a dedicated kerbside recycling container. When the analysis was undertaken based on household size, households with 1–2 people were fairly equally represented with 47% supportive and 49% opposed to its introduction. However, in families with three or more people, the results were very clear with 82% in support and only 18% in disagreement. The key reasons given to support the introduction of a dedicated bin were:

- one divided bin is not big enough
- need more space
- encourages more people to recycle
- a number of other quoted councils use a two-bin system
- it would be easier.

12.2.4 Potential Recycling Performance

Yield rates of recycling bins from participating residents have a fundamental impact on both recovery volumes as well as operational logistics. Industry standards suggest a figure of 70% is the benchmark to aim for of product to be recovered of the total available tonnages. It is anticipated that 75% of all available properties will use the service which takes into account unoccupied or holiday lettings. The 2001 ABS Census data quoted 8.2% of properties unoccupied in Tweed Shire.

Using these principles and the waste audit data composition, Council could expect to recover around 5.11 kg from an available 7.3 kg of material per week or 10.22 kg on a fortnightly basis. A single bin should also dramatically reduce contamination levels from the current 15–18% to a more reasonable level of lesss then 5%.

This would increase the current 4 kg collected per week or 6,063 tonnes recovered, by an additional 2 kg per fortnight, equating to 3,282 tonnes or a total of 9,345 tonnes per year.

While the main intention of introducing a new system is to maximise waste diversion, recycling significantly assists with greenhouse gas abatement as every tonne of paper landfilled generates 2.1 tonnes of CO_2 equivalent gas during the decomposition process.[14] Council's opportunity to divert these items from the residual waste stream

[14] BRBA December 2006.

will be considerably enhanced through a redesign of the collection system for both the garbage and recycling, thus directly assisting with reducing greenhouse gas emissions from its waste.

12.2.5 Costs

12.2.5.1 Retrofitting Bins

12.2.5.1.1 Remove Divider – to remove the divider may cost between $8–$10 per bin. When Council calls its new tender, it should seek a price of divider removal and a price for a new 240-litre bin. The age of many of the existing bins is anticipated to be at least 10 years. Maintenance costs from wear and tear significantly increase after seven years, as warranties on performance have expired and effects from weekly mechanical collection impacts, and ultra-violet sun rays impact on the HDPE plastic.

12.2.5.1.2 New Lid – it is strongly recommended that the new collection contract requires new lids be retrofitted to the existing bin. Lids cost approximately $11 each and retrofitting approximately $5. Until all councils adopt the standard lid colours, Australian communication programs cannot be effectively implemented. More information about colour-coding of lids is provided in Section 13.5, Domestic Waste service.

12.2.5.2 New Bins – the cost of introducing the new recycling service requires either the provision of a new 240-litre bin for recycling or removal of the divider as described above.

12.2.5.3 Bin Cost Summary – Council may choose to either pay this cost directly as a one-off cost from its reserve funds or to include the provision for it in any future new contract. The provision of a new recycling bin on a five-year contract would cost about 35 cents per tenement per week (excluding interest). This cost to residents can be reduced if the contract term is carried over a longer period, allowing for the recovery of capital to be extended.

Table 52 - Cost Elements Summary

Expense Element	Estimated Cost per Unit (ex GST)	Distribution Cost (E recording)	Estimated Numbers for Replacement	Cost of Changeover
Remove divider	$10	N/A	34,000 *	$340,000
Provide new lid	$11	$5		$
Purchase new				
140-litre waste, red lid	$37.50	$5.25		$ 1,453,520
240-litre garbage bin yellow lid	$40.23			$1,546,320

* Base 31,500 garbage services + 8% population growth in 2 years for commencement in 2009.

12.2.5.4 Collection fees – servicing a total of 31,500 bins on a fortnightly basis over a five-year contract period based on current market rates, the indicative rate for 240-litre fortnightly service in a rural and urban area like Tweed is in the vicinity of $1.25 per household.

Table 53 - Cost Elements – Service

Expense Element	Estimated Cost per household /Service	Estimated Numbers for Replacement	Cost per Year/ household
Recycling	$1.25 *	34,000	$32.50
Garbage with bin	$1.95 *		$50.70

* fortnightly collection

12.2.6 Regional Co-operation

A unique regional opportunity has been identified through stakeholders' engagement: that Tweed Council could consider co-tendering its new service in 2009 with Gold Coast City Council (GCCC). The GCCC waste collection and recycling contracts expire at the same time as Tweed Shire's. By co-tendering but applying separate council contracts, Tweed Shire would stand to gain a substantial advantage over its own ability to secure a decent contract price for the new service. This opportunity also enables it to align the new recycling collection system with the fully commingled system currently in place in the GCCC and confirmed as remaining so in any new contract term. It also provides opportunities for jointly letting recycling processing contracts, and in managing broad community education of the systems.

Recommendations:

11. That Council should introduce a new fully commingled recycling service in a 240-litre bin collected fortnightly to all of its residents at the end of current contract in 2009

12.3 Green Organics Collection

The NSW Government, in the 1990s, threatened to ban garden waste landfill in the metropolitan area of Sydney and the Extended Regulated Area of Wollongong, Newcastle and the Central Coast of NSW in an effort to reduce the environmental impacts that organics material creates when it breaks down and forms leachate and generates greenhouse gases in landfill.

This proposal created a momentum for councils to seriously address the organics fraction of the waste stream which previously had been dealt with by councils with tokenistic annual or bi-annual clean-ups. Some councils moved to more frequent kerbside bulk collections, that is, monthly, while other councils moved to introduce a containerised service in a 240-litre bins on monthly fortnightly or weekly collection cycles.

If Tweed Council is to achieve the state targets applied to it, then increasing organic recovery from the waste stream will need to be a priority.

12.3.1 Current System Performance

Council currently offers its non-rural residents an optional fortnightly kerbside organics service. During the last financial year, of the total 22,340 properties, only

5,600 services or 25% contracted to use the service. Council charges participating residents an annual service fee of $35 per year for the service. However, Council is required to pay the contractor based on a minimum take-up rate of 30% of households. The figure is also further subsidised by Council, as the current contractor charges $38 per year or $1.46 per fortnight.

Last financial year Council recovered 2,109 tonnes of organics or an equivalent 14.4 kg per bin per service. These organics were stockpiled, shredded and processed by the contractor at the Stotts Creek landfill and the product outputs used on site in rehabilitation, sold to the community or manufactured into high-grade soil products.

The 2005 Regional Waste Characterisation Study found that the average household bin contained 18% of garden organics and 6% other organics material excluding food which represented 27% of the total.

12.3.2 Market Research Results

The following is a summary of the key findings from the survey conducted of 213 residents in relation to current and future waste management needs.

12.3.2.1 Garden Organics Bin – of those surveyed, 28% already had a garden organics bin. Interestingly, 47% of people claimed not to know that the service was available**.**

When asked if the service should become a standard service, only 42% of all respondents supported the concept. However, when the results were analysed by type of dwelling and location, 50% of single households in townships supported the introduction while 41% opposed it.

Those living on acreage mulched their garden waste while those in units, high-rise developments and villas contracted commercial garden care services, which removed the garden waste from the premises.

12.3.3 Potential Service Performance

If 23,340 premises are potentially available, of which 5,600 currently use the service, a further 17,740 premises would be eligible for a compulsory service, while an optional service could be extended to medium-density and multiple-occupancy residential buildings.

If Council chose to introduce a standard fortnightly garden organics service to all of its non rural residents and assuming a participation rate of 75% the average number of services to be provided could increase by over 10,000 to 16,755 properties. Assuming the current average of 14.4 kg remains the same, annual diversion estimates could be expected to increase from the current 2,109 tonnes to 6,273 tonnes.

Council would need to consider operational costs as well as market development strategies for this additional material. Currently the collected garden wastes are the contractors responsibility to process and market the product, with no return or responsibility by Council.

12.3.3.1 Costs of New Bins – the cost of introducing an extended garden collection program requires the provision of a new 240-litre bin. Council may choose to either pay this cost directly as a one-off cost from current reserve funds, or to include the provision in any future new contract. The provision of a new recycling bin in a five-year contract would cost about 35 cents per tenement per week (excluding interest).

Table 54 - Cost Elements Summary

Expense Element	Estimated Cost per Unit (ex GST)	Distribution Cost (E recording)	Estimated Numbers	Cost of Changeover
Purchase new				
240 – litre garbage bin lime lid	$40.23	$5.25	17,740	$806,815

* Base 31,500 garbage services + 8% population growth in 2 years for commencement in 2009.

12.3.3.2 Collection Fees – servicing a total of 23,340 bins on a fortnightly basis over a five-year contract period, based on current market rates, the indicative rate for a 240-litre fortnightly service in a rural and urban area like Tweed is expected to be in the vicinity of $1.25 per household. If the bin were to be provided by the contractor and not purchased by Council, the service cost could be around $1.95 at the commencement of the contract.

Table 55 - Cost Elements – Service

Expense Element	Estimated Cost per hh /Service	Estimated Numbers	Cost per Year/hh
Garden waste – no bin	**$1.25 ***	17,740 **	$32.50
Garden waste with bin	**$1.95 ***		$50.70

*fortnightly collection
** Maximum 23,340 possible – 5600 existing services.

12.3.4 Regional Co-operation

Gold Coast City Council currently does not offer a garden waste service, however, is considering this option for its next contract. The GCCC waste collection and recycling contracts expire at the same time as Tweed Shire's. By co-tendering but applying separate council contracts, Tweed Shire would stand to gain a substantial advantage over its own ability to secure a decent contract price for the new service. This opportunity also enables it to potentially align the processing or the collected materials.

Recommendations:

12. That Council should introduce a garden service in a 240-litre bin collected fortnightly to all single residential dwellings in townships at the end of current contract in 2009.

13. That Council offers an optional garden waste service to all medium-density and multiple occupancy residential buildings 2009

12.4 Food Waste Collection

The 2005 regional waste audit determined that almost 27% of the current waste bin contents was food waste, which equates to 5,000 tonnes per year. Organic waste (food and green waste) makes up 47% of the domestic waste stream and contributes to leachate generation which can contaminate groundwater and generates methane, a greenhouse gas, when buried in landfill**.**

The market research conducted in conjunction with this project found that 65% of residents placed food waste in the garbage bins while 20% composted, 1% worm-farmed, 5% fed to poultry and 6% undertook other activities including feeding food scraps to animals.

Council currently promotes composting and worm-farming and has a number of brochures available to instruct residents on options and correct methods. In addition, Council provides information on where to purchase worms. Council sells compost bins and worm farms at less then cost price ranging from $20–$35 for compost bins and $45 for worm farms. The program could be run in conjunction with various campuses of the school, the many progress associations, service groups and hardware outlets.

Given that the majority of homes place food scraps in the waste bins, even with the options available for Council to meet the NSW State Waste Strategy target of 66% diversion from landfill for municipal waste will require the inclusion of source-separated food waste in future collection programs.

Where garden waste services are already containerised using a wheelie bin, the opportunity is available for Council to incorporate food waste if a composting facility is licensed to accept this component. Typically, odour and vermin issues are the key concern for regulators. The collection of food organics in combination with green organics from kerbside is the next logical step towards increased diversion of organics from landfill. A range of new and innovative collection programs have been and are being trialled across the nation, including:

12.4.1 Case Studies

12.4.1.1 Willoughby City Council (NSW) – undertook a Non-Fatty Food Waste Collection Trial in 1998, with funding from the NSW EPA. The trial of approximately 400 households encouraged householders to separate non-fatty food into the existing 240-litre kerbside garden waste bin, which was collected weekly. The study demonstrated the critical role that a kitchen waste container plays in promoting correct source-separation of food waste at the point of generation. A range of qualitative and quantitative research methods were employed, including waste characterisation studies and household surveys, to endeavour to match behaviour and attitudes with results. The results indicated that the domestic garbage bins only decreased in weight by 0.33 kg per bin and, on inspection, 17% of the bins contained food residues. However, the feedback surveys indicated 74% of residents took part in the project. The study found no significant odour or contamination detected in the loads.

12.4.1.2 Lismore City Council (NSW) – introduced a weekly collection of a 140-litre bin for organic materials including food scraps, garden waste, paper and cardboard. This service is offered in conjunction with a fortnightly collection of the residual waste stream and recyclable material on alternate weeks. The collected material is currently processed at a vermiculture facility located at the waste disposal facility. The plant is the largest enclosed vermicast facility in the Southern Hemisphere and is currently processing approximately 7,000 tonnes per year, with a capacity of up to 30,000 tonnes for all organics.

12.4.1.3 Hastings Council (NSW) –.introduced in 2001 a three-bin kerbside collection program for its 23,000 domestic premises. An 80-litre or 120-litre weekly garbage bin, a 240-litre recycling and 240-litre organics bin are collected in alternate weeks. Councils encouraged premises to separate food and vegetable waste into their organics bin by providing a 2.5 litre kitchen tidy.

Figure 22 – Kitchen Tidy Bin

All kerbside-collected organics are delivered to the Organics Resource Recovery Facility (ORRF) operated by Rethmann Australia, where bio-solids are added in a tunnel composting system and the resultant high-quality compost demand exceeds supply.

Council, in 2003, conducted a trial seeking to increase the amount of food and garden waste source-separated from residential premises by conducting a trial of 1,261 premises over a five-month period in four trial areas:

- Trial Area 1 – was a control with a normal fortnightly green waste service.
- Trial Area 2 – 240-litre Cleanaway Bio Bin insert bin, fortnightly collection.
- Trial Area 3 – weekly collection of the organics bin.
- Trial Area 4 – fortnightly collection with compostable paper bags or cornstarch bags

Pre-and post-trial surveys, focus groups and waste audits were conducted to monitor and measure the trial's performance. The weekly collection area increased recovery by 33%, while the compostable bag area had higher average bin weights. Contamination, at 2.2%, was highest in the compostable bag area, principally due to two households in one week significantly contaminating the bin. From the surveys the compostable bag area had the highest increase in participation and the largest amount of diversion of fruit and vegetable scraps. Eighty-three per cent supported the use of a paper bag compared to 63% for cornstarch bags.

A combination of weekly collection and the use of a compostable bag would be the optimum system to capture organics from domestic premises. The current cost of this service to the community is $0.71cents per pickup by 26,000 households and $59 / tonne for processing. The contractor was required to provide $100,000 for the purchase and distribution of bio bins and bags.

12.4.1.4 Coffs Coast Regional Waste Services (NSW) – will shortly be introducing an organics bin for food and garden waste, collected weekly, and a residuals bin collected fortnightly. The residuals bin will be collected in the alternate weeks to the fortnightly recycling bin collection. All collected organics will be processed through a $15 million Resource Recovery Park featuring autoclave technology, which is currently being commissioned. Council has decided to provide a kitchen tidy and request householders to wrap scraps in newspaper prior to placing it in the bin.

12.4.1.5 City of Burnside (SA) –.the City services 18,000 households and concluded a six-month food collection trial on 11th April 2006 with 1,775 properties or 10% of the population.[15] Food waste was placed in the garden organics bin collected fortnightly over summer months.

Each household received a bio-basket with a roll of 100 compostable bags specifically screen-printed with instructions and a letter introducing the program, calendar and sticker for the garden organics bin. This initial delivery was followed up two weeks later by a letter.

The trial was conducted for six months and the number of bags provided was based on an estimated bag change every two or three days. In reality, approximately 2% of the households used bags daily and requested additional supplies.

The 6.6-litre basket is a one-off purchase of $4.00 and the roll of 100 cornstarch bags was imported from Norway at a cost of $10 per household per year. The bins with a bag liner were assembled and distributed by the contractor East Waste.

Regular random monthly waste audits of the garbage and garden organics bin to determine composition, contamination and yield were undertaken. A telephone survey was conducted of 317 households, revealing overwhelming support for the project.

The garden organics bins with the compostable bags were collected and transported to Jeffries for open windrowing. Jeffries' EPA licence allowed the company to participate in trials. In many cases the compostable bags had already started to deteriorate within one week and were not evident after turning the windrow at Jeffries.

Burnside is currently diverting 56% of all waste from landfill and the trial increased diversion by a further 8.6% or 2.57 kg per fortnight to 65%. Support for this project both financially and in kind came from ZWSA, East Waste and Jeffries.

Council decided not to proceed with full implementation following the trial due to the cost of the bio-bags.

[15] Burnside Council, Burnside Bio-organics Trial: Diverting Food Waste from Landfill.

12.4.2 Processing Options

If a collection of food waste were undertaken, then the organics fraction would need to be processed into a beneficial product for community use. A range of processing options are available, including vermiculture and composting methods, while some councils are engaging Alternate Waste Technologies (AWT) processes to recover the organic fraction from the residual waste stream. Typically, AWT processes require greater quantities of material than are available within the Tweed Shire for processing, given the high capital costs and minimum throughput required for cost-effective operation.

Tweed Shire Council would need to consider entering into a regional approach with a neighbouring council such as Gold Coast for a suitable facility to be built. AWT options are discussed in section 13 in relation to residuals processing.

12.4.3.1. Vermiculture

Vermiculture is the breaking-down of organic material through the action of bacteria and earthworms. As with composting, conditions within the waste have to be controlled to ensure optimum oxygen and moisture levels. Commercial systems employ raised beds housed in a purpose-built enclosure.

As with composting, training and support are required to ensure biomass materials are blended correctly and bed conditions are controlled to prevent anaerobic conditions from forming. Should suboptimal conditions persist, there is a danger that the worm population will be destroyed, in which case fresh worms would be needed to re-establish the process. During this re-establishment period, a contingency operation would be required to manage the accumulated biomass waste.

Various techniques are available, such as sophisticated, fully automated continuous flow principles using automated in-vessel systems wherein material is spread on top of the beds typically to a depth of approximately 40 cm; the system produces vermicast which is harvested from beneath. Alternatively, a windrow system uses worm stock and bedding that is supplied based on the waste, type, volume and space available.

A critical component of vermiculture is the carbon–nitrogen ratio, which normally needs to be at 25:1. Carbon can be obtained from paper and cardboard, sawdust and manure while nitrogen is predominantly generated from food. Material needs to be blended prior to application, either manually or in hammer-mill type equipment. Typically, worms should be able to process the food stock within 24 hours.

Vermiculture relies on a skilled operator, given the worms require an exact moisture content in their food and are sensitive to heat, cold and light. Worms prefer a non-fatty food diet.

Lismore Council has contracted Tryton, which uses vermiculture, to process the organics fraction, however, claims the system is very costly and is underperforming. Given this local and current experience, it does not appear to be an appropriate solution for the Tweed Shire.

12.4.4 Costs

12.4.4.1 Kitchen Bin

While no collection bin is required due to the inclusion of food waste with the garden waste stream the provision of a kitchen bin is strongly recommended, to encourage maximum participation and diversion from landfill of food scraps. A number of council have used plastic bench-top tidy bins, buckets and Bio bins with cornstarch compostable bags or paper bags.

The selection of the type of container will have a significant impact of use and success of the system, as has been shown in the trials and programs described above and also a cost impact on service delivery.

From the Hastings surveys the compostable bag area had the highest increase in participation and the largest amount of diversion of fruit and vegetable scraps, with 83% supporting the use of a paper bag compared to 63% for cornstarch bags. However, the paper bags were more expensive then the cornstarch bags.

Burnside in SA, Christchurch in New Zealand and Hastings and Kogarah Councils in NSW have provided each household with a 6.6-litre bio-basket with a roll of 100 compostable bags specifically screen-printed with instructions. The basket was a one-off purchase of $4.00 and the roll of 100 cornstarch bags cost of $10 per household per year. Unfortunately the bags are imported from Norway, however, they are cheaper than locally produced bags at this time. The bins with a bag liner were assembled and distributed by the contractor.

Willow Ware manufactures a small kitchen bench-top bin which in the quantities required, would cost $3.44 excluding GST.

Table 56 - Food Waste Bin Costs Summary

Expense Element	Estimated Cost per Unit (ex GST)	Distribution Cost (E recording)	Estimated Numbers for Replacement	Cost of Changeover
Bio-bin	$4.40	Contractor	23,340	$102,696
Bags (4/week/per year)	$11.00			$256,740
Ongoing bags per year				$256,740
6-litre kitchen tidy	$3.78			$88,225

Recommendations:

14. Council should continue to monitor developments by other local governments which have introduced or are proposing to introduce organic waste collection programs, in particular, Coffs Coast and Hastings Councils, to learn from their experiences. Council should also assess new and emerging technologies and processes which have applicability for the area.

12.5 Domestic Waste

On the basis we estimate that Council should be able to achieve an increase in the recovery rate of recyclables from the current baseline of 4.1 kg to at least 5.11 kg a week with the introduction of a new fully commingled service. The remaining

residual garbage to be disposed of is then estimated to be 12 kg if the audit data base is used.

As a component of the garbage stream, based on the 2005 regional audit, 18% is garden waste and other organic material, excluding food waste. If the majority of this was diverted through the garden waste service a further reduction of 2 kg per week could be achieved, with the general waste bin containing approximately 10 kg per week.

The anticipated collection per year could be as low as 16,414 tonnes per year, excluding population growth, instead of the current 21,089 tonnes, however, it must be remembered that frequently when councils have changed over services, the available space has then been filled by users of the systems with other materials that previously may not have fitted.

Council could justify providing a 140-litre bin as standard and offer a 80-litre and 240-litre at a differential rate to cater for smaller and larger families similar to that offered by Byron Bay Council to its residents.

12.5.1 Byron Bay Case Study

Byron Bay Council offered a differential charge for the waste service based on bin size when it commissioned its new collection contract, with the following results of user types:

Table 57 - Byron Bay Council – Bin Use by Size

Bin size	Households
80-litre,	7 %
140-litre	82%
240-litre	11%

12.5.2 Garbage Bin Colours

Australian Standard 4123 Mobile Waste Container stipulates bin design, dimensions, performance requirements, testing, health and safety, environmental considerations and bin colours. Councils should adhere to these bin colours for national consistency and ease of understanding for an increasingly transient population. All bins are recommended to have a dark green or black body colour with the coloured lids, as specified in the table below.

Figure 23 –Bins with coloured lids

Table 58 - Recommended Bin Colours

Bin Types	Bin Lid Colour
Garbage	Red
Recycling – fully commingled or containers only	Yellow
Recycling paper only	Blue
Garden organics	Bright green or lime

12.5.3 Costs

12.5.3.1 New bins – the cost of introducing the new recycling service requires either the provision of a new standard 140-litre bin for waste with the option of 80-litre of 240-litre for smaller and larger families. Council may choose to either pay this cost directly as a one-off cost from its reserve funds or to include the provision for it in any future new contract. The provision of a new bin on a five-year contract would cost about 35 cents per tenement per week (excluding interest). This cost to residents can be reduced if the contract term is carried over a longer period, allowing for the recovery of capital to be extended.

Table 59 - Cost Elements Summary

Expense Element	Estimated Cost per Unit (ex GST)	Distribution Cost (E recording)	Estimated Numbers for Replacement	Cost of Changeover
140-litre waste, red lid	$37.50	$5.25	34,000*	$ 1,453,520

* Base 31,500 garbage services + 8% population growth in 2 years for commencement in 2009

12.5.3.2 Collection fees – servicing a total of 31,500 bins on a weekly basis over a five-year contract period based on current market rates, the indicative rate is likely to be around $1.00 per service. Recently Pine Rivers and Caloundra tenders were contracted for $0.89 cents per collection. Collection rates are totally dependent on service numbers, contract terms and requirements and the industry's competitive position at any given time. The numbers set out in the table below should be viewed as indicative only.

Table 60 - Cost Elements - Service

Expense Element	Estimated Cost per hh/Service	Estimated Numbers for Replacement	Cost per Year/hh
Garbage – no bin	**$1.00**	34,000 *	$52.00
Garbage with bin	**$1.35**		$70.20

Recommendations:

15. That Tweed Council offer residents a 140-litre bin as the standard service with the option of a differential service rate for an 80-litre or 240-litre in the interests of social equity. The price differential for these service options will be assessed once the tender for domestic waste management services is completed.

16. That new lids in accordance with the Australian Standard 4123 Mobile Waste Container be provided to all existing and new domestic waste, recycling and garden organics bins as part of the collection contract.

12.6 *Bi-annual Household Clean-up Service*

This collection system is common to assist the community in disposing of large bulky items that do not fit in the normal garbage bin, and to assist those people who do not have ready access to a trailer or vehicle to personally take items to a waste depot. Currently the clean-up service is offered twice per year, in May and November, and the service accepts and rejects the following materials:

Table 61 - Household Clean-up Service

Accept ✓	Reject ✘
Furniture	Builders rubble and household renovations
Floor Coverings	Green waste
Whitegoods	Fencing material
Mattresses	Car parts and tyres
	Paint
	Oil
	Gas bottles
	Asbestos

Council asks for the materials to be presented in three separate for piles for:

1. Recyclable materials – whitegoods
2. Reusable material – furniture in reasonable condition
3. Waste

however only one collection vehicle now undertakes the collection with all inert material diverted at the landfill. The maximum length of any item is 1.8 m and the weight limit means that an item is able to be lifted by two people. The maximum amount is 1 m^3 per household.

The majority of urban residents (63%) supported the bi-annual bulky household clean-up service, with the majority of residents indicating that they use the service twice per year. However, comments made included that it was too restrictive and people wanted to place out vegetation, building materials, batteries and paint tins for collection.

Many councils include bulky garden waste services which require the resident to bundle or tie branches and prunings, or place items out in cardboard boxes. Plastic bags are not permitted, as they contaminate the composting process.

Recommendation:

17. That Council introduce dedicated collections for specific materials, that is, metals / white goods and general waste once per year.

12.7 Recycling Processing – MRF

When the recyclables are collected in a commingled form they are mixed together in the collection vehicle and have no economic value until they are sorted into their respective material types. Sorting of collected recyclables occurs at a Materials Recovery Facility (MRF).

MRFs can be a simple design of a single-line conveyor belt, whereby material is fed onto a moving conveyor with people stationed at various intervals along the line picking off particular items and placing them into bulk bins. The contents of these bins are then emptied into balers for economies of transport. However, glass needs to be maintained as whole as possible for sorting at a beneficiation plant, where the glass is processed to a furnace-ready stage. Any waste or rubbish in the recycling bin is termed contamination and must be disposed of to landfill.

Anecdotally, Council advises that three to four truck loads of waste material are disposed of at the landfill from the MRF daily, with glass fines comprising up to 40% of this material.

Council's existing MRF, located at the Stotts Creek waste depot facility, will, at the expiry of the current contract in 2009, be more than 15 years old and will revert to Council. It has been identified that it is not viable to modernise or rebuild, as technical advances in MRF design and automation have overtaken this aged plant's ability for it to be modernised. Thus a total new facility will have to be considered post the 2009 term, for local processing to continue.

The costs of constructing and operating a MRF are totally determined by the product throughput. All MRF designs have a core of basic equipment required, the size of which is dependent upon volume. Regardless of the quantity to be processed, a base capital cost for infrastructure is required and the greater the throughput the more cost-effective processing operations become and the sustainability of the business is assured, thus risk is mitigated long term for Council.

Where high volumes of recyclables are sorted, the sophistication of a MRF's design increases, with the aid of trommels, eddy currents, air blowers, magnetic heads and multiple conveyors, optical sorting equipment and balers. The objective of the operator is to reduce processing costs by increasing operational efficiency. MRFs, like

landfills to operate, require a charge to be applied to all users, recognised as a gate fee per tonne to process the material. Typical gate fees range between $35–$85 per tonne in Queensland and New South Wales.

It is apparent that, based on anticipated recovery levels, Tweed Shire Council is likely to generate approximately 520 tonnes of recyclables per month, or about 6,299 tonnes per year.

Recycling industry benchmarks[16] put the standard operating size and expected annual product throughput for the design, building, operating and maintaining of a stand–alone, financially successful commingled recyclables Materials Recycling Facility (MRF) at approximately 8,000 tonnes per year.

Critical to the financial viability of the operation are the processing fees applicable to it, as well as the product mix and yield recovery of each plant. Generally 150 tonnes per week throughput is satisfactory for a small stand alone MRF operated on a single shift basis.[17] However, the larger the plant, the greater the technology that can be applied cost effectively to capture products including glass fines, which are currently lost from the current system.

The financial model of an operation, however, is heavily dependent on the expected EBIT required by an operator for its investment over the length of the contract term. It is unlikely that Tweed Shire's quantity in its own right could justify the investment of building a new MRF.

While MRFs have been built and do operate below this threshold they are predominantly labour-intensive, using manual handling methods to sort the products. A new MRF builder, Brittos Engineering, has been identified and has entered the market in NSW, building small-scale rural MRFs for around $300,000–$500,000. Some of this equipment is designed to be used by disability industries employing 5–7 staff, while other plant is designed to be used by able-bodied people, employing just 3–4 people. The company has designed, installed and commissioned MRFs at Gunnedah, Inverell, Glen Innes and Tamworth and is currently building a plant for Armidale. It is also in discussions with a number of central west councils and recycling companies.

Whatever the MRF system used, quality is paramount and all sorted product must meet specific industries' quality standards. Industry specifications for all kerbside-collected and sorted materials are downloadable from the website of the Australian Council of Recyclers: www.acor.org.au.

12.7.1 Glass Breakage

Glass containers are the second highest recovered material by residents in their recycling programs, after paper and cardboard. Glass is then taken to MRFs for sorting and is sold for use in the re-manufacture into glass containers.

[16] CQLGA EOI Regional MRF, November 2006.
[17] Confirmation – Australian Bale Press Company and Recycling Design Technologies, November 2006.

The glass manufacturers that buy the recovered glass specify that glass must be separated by colour – clear, green and brown – be a minimum of 50 mm in diameter and comply with extremely stringent specifications in relation to the presence of ceramic, stones etc. Glass is currently manually sorted, however, technology is now available and has been incorporated into a number of larger and newer MRFs to recover glass down to 6 mm in diameter.

It has been identified that Council's current MRF recovers less than 24% of all glass from the current commingled system with the remaining amount being classed as glass fines[18] which equates to 1,350 tonnes per year and is currently being landfilled locally.

The quantity of glass fines could be as a result of a number of factors or combination of factors including:

- **Lightweighting of glass** – glass bottles have been light-weighted over the years and require care during the collection and sorting process to minimise breakage.

- **Over-compaction during the collection cycle** – while it is highly desirable to compact garbage to gain as large a payload as possible, to apply the same load densities to recyclable items which contain glass is detrimental to the quality of glass and other recyclable materials. When glass breaks, the fragments can become embedded in the paper products at high densities.

From a previously described Glass Compaction Study, it has been determined that a relationship does exist between compaction and breakage, with the minimum breakage being 20% at 120 kg/m^3 increasing at the rate of 2.9% for every additional 10 kg/m^3 compaction.

There must be a balance between operational efficiency and glass breakage. It is generally agreed that compaction setting should not exceed 160–180 kg/m^3, this generating between 30–36% breakage.

12.7.2 Case Study – Ballina Shire

Ballina Council, which generates approximately 4,500 tonnes per year, was faced with a similar situation and recently sought quotations to upgrade its MRF facility, which were between $950,000–$1,050,000, excluding the existing cardboard baler and using Council's existing shed and hardstand. The processing costs were then around $200 per tonne. If Byron joined the project with an additional 4,000 tonnes (that is, the 8,000-tonne threshold) the gate fee would drop to $83 per tonne. It was only when the quantity of material to be processed increased to 15,000 tonnes that the gate fee reduced to $25 per tonne.

Ballina Council decided that the most effective options for it was to bulk-transport recyclables to Visy's Carrara MRF where the gate fee is $15 per tonne, plus transport from Ballina in 140-m^3 walking-floor trailers at $30 per tonne, based on 18-tonne loads. The total cost for transport and processing was therefore $45 per tonne.

[18] Solo Resource Recovery MRF data, Jan. – Sept. 2006.

12.7.3 Regional Co-operation

Based on the fact that Tweeds tonnages at best would provide the marginal tonnages required for building a stand-alone modern facility, Council could consider aligning future processing with that of the Gold Coast City Council.

Gold Coast City Council, in its last collection tender, specified that there was to be 100% glass recovery. To win the contract, Cleanaway teamed up with Australian Glass Technologies (AGT), which has pioneered technology and applications for glass fines.

AGT currently processes between 10,000–12,000 tonnes per year of glass fines into new products at a plant located adjacent to the Gold Coast City Council's Materials Recovery Facility. As a result, the compaction setting on the collection vehicles was irrelevant, as all glass was being recovered. The MRF was owned by Cleanaway and has since been purchased by Visy. It is located at Carrara.

The refined glass is suitable for use in a various applications including abrasives, concrete, brick-making and water filtration, and is sold both nationally and internationally.

Currently AGT is not able to receive material from other suppliers due to the only infeed to the existing operation being through the MRF. It has, however, visited the Tweed Shire MRF recently, and is familiar with the quantity and type of glass fines generated.

Fortuitously both the Gold Coast and Tweed Council Kerbside Collection Contracts expire at the same time and through aligning Tweed with a larger council, Tweed will benefit, as greater economies of scale should translate to a reduction in processing costs, and a greater level of recovery would be achieved.

Should Council co-tender the collection and processing of recyclables with Gold Coast City Council, access to this glass fines processing facility may be available.

Recommendations:

18. Should Council maintain its own MRF, then the future collection contract should specify a maximum compaction for the collection of recycling at 180 kg/m^3 and in accordance with best practice.

19. That Council enter into discussions with third parties in relation to the acceptance of Tweed Shire Council recyclables.

12.8 Organics Processing

Council has introduced a voluntary 240-litre garden organics service with a fortnightly collection frequency for a cost of $35 per year. Currently approximately 25% of residents in townships and non-rural areas have taken up the service. Council is currently collecting 2,109 tonnes of garden organics, and a further 2,000 tonnes are self-hauled.

Kerbside-collected garden waste is delivered to Stotts Creek waste depot, where it is stockpiled, shredded and composted on a bunded pad. Recently, Solo Resource Recovery commenced a soil-conditioning trial using septic tank pump-out waste and similar residuals injected into the green organics. However, the DECC, in a recent communication dated 8 September 2006, stated that such an activity had not been approved, although correspondence had been received in relation to conducting a soil-conditioning trial. The DECC's key concerns are in relation to leachate generated from the area potentially contributing to existing groundwater contamination problems at the site. This compost is sold to the public at $15 per trailer load or made into a number of premium blends and sold to the public or commercial users.

During the recent market research, 58% of respondents indicated that they were not aware that mulch was available for sale from the facility. Only one negative comment was made in relation to the quality.

Garden waste delivered at Murwillumbah waste depot is shredded and placed in windrows. Over the past twelve months approximately 700 tonnes of vegetation have been delivered for chipping. The chipped material is not screened and is provided free to residents. During the market research, many residents noted the poor quality, and the presence of weeds and plastics in the finished product. During the recent survey, 62% of respondents indicated that they were not aware that Council provided free mulch. Most of the Murwillumbah material is used for on-site rehabilitation of the landfill's batters and other landscaping works as a part of the rehabilitation program.

For good compost the correct carbon–nitrogen balance is required for structure, and to provide aeration to the windrow. Windrows should be turned at least weekly for a minimum of 12 weeks to ensure all materials are exposed to at least 55^{o}C for three consecutive days. A moisture content of between 40–60% should be maintained and the temperature monitored using digital probe thermometers. The goal of any process should be to comply with AS4454 for compost and soil conditioners; assessment is undertaken by independent laboratory analysis. Once pasteurised, the material should then be screened.

Composting is usually carried out in either open windrows or within an enclosed vessel.

12.8.1 Open Windrows

This is a simple 'low-tech' option, requiring the least capital cost, but requiring attention to ensure the compost pile is properly turned at regular intervals. Purpose-designed windrow turners are available, however, a front-end loader would suffice in relatively small operations.

12.8.2 In-vessel Systems

Enclosed composting units, while having a higher capital cost compared to open windrow systems, have a smaller footprint, increased consistency of product quality, more controlled environmental impacts and shorter composting times. Many enclosed processes are modular, therefore controlling capital cost outlays and providing flexibility for future expansion.

Numerous proprietary designs for commercial composting systems are available. An important factor in system selection is to consider the level of technical support available. Correct operation will require training to ensure adequate bed porosity and moisture levels are maintained, and that the materials to be processed are blended in the correct proportions. The system has the benefit of total leachate control.

Examples of enclosed composting units include Hot Rot composting systems and Vertical Composting Units (VCU). Indicative pricing for these units ranges from $30–$70 per tonne (including amortised capital and operating costs). The compost product would be suitably stabilised.

12.8.3 Case Study – Hastings Council

Hastings Council has contracted Remondis, which designed, built and operate the Organics Resource Recovery Facility (ORRF). The facility receives 8,000 tonnes of food and garden waste collected from the weekly garden organics service which has a very low contamination rate of just 1%. In addition, 3,000 tonnes of self-hauled garden waste and 6,000 tonnes of bio-solids were received.

All material is placed on a concrete floor, inspected to remove any obvious contamination that would impact on the process, for example, rope. The materials are shredded and then mixed in a ratio of 2:1 garden waste to bio-solids to ensure the correct carbon–nitrogen mix is achieved. The mixed material is then loaded into a tunnel composting system with forced aeration, computer-controlled with probes to provide accurate information of the conditions of the composting product, that is, moisture and temperature are monitored. No leachate is produced outside the system and any is recovered and re-circulated though the system to increase the moisture content.

After 30 days the material is placed in a covered maturation areas for three weeks prior to screening into various sizes and being wind-sifted to remove any light impurities. The product has been classified as AA grade and the demand for the resultant high-quality compost exceeds supply. The gate fee for such a process would be required to be around $80 per tonne and construction would be the range of $6 million dollars. Any contractor would require a 15- to 20-year contract.

12.9 Public-place Waste Management

Tweed Council currently provides 240-litre litter bins in strategic locations throughout the Shire, catering for waste generated by people when outdoors. Bins are provided in parks, ovals and reserves, key tourist destinations and along footpaths in townships. While the majority of these bins are used by visitors, they are also used by residents. Currently the bins are typically 240-litre in capacity and light blue in colour.

12.9.1 Background to Public-place Recycling

With the success of kerbside recycling, the community also expects to be able to recycle at work and in public places. Various state governments have funded investigations into away-from-home recycling programs. A simple but versatile

system of colour-coded bins and labels was developed to differentiate between garbage and recyclable materials by the NSW government in the early 1990s.

The NSW Government Recycling Advisory Unit tested different systems in different public places in 1991 and found that:

1. There was widespread public support for recycling in public places
2. People who recycle in public places would separate their waste
3. Colour-coded bins had a high recognition and a low contamination rate
4. Black bins with commingled recyclables had a very high contamination rate and low recognition rate
5. People at leisure were more likely to recycle than people in a hurry
6. Awareness of recycling as a concept was high and the attitude to it extremely positive. The level of public knowledge about recycling processes was very low.
7. Some people used the recycling bins in public places as a drop-in centre, bringing recyclables from their home, office, restaurants or shops.

The study developed a set of guidelines for establishing recycling in public places, including:

1. Clear labelling on the bin front, bin lid and overhead signs are essential to minimise contamination
2. Litter bins incorporated in the recycling centre and placed at the each end of a row of recycling bins result in lower contamination
3. Multiple stand-alone bins in the general vicinity of recycling bins dramatically lower the quantities of recyclables retrieved at the recycling centre
4. Re-positioning and reducing the number of litter bins does not result in significant increases in littering
5. Public awareness campaigns are essential to avoid the dumping of garbage in recycling bins and scavenging
6. In the absence of clear signs overhead, people will look in the bins, and, if there is contamination, further contamination is highly likely.

12.9.2 Public-place Waste Management Guidelines, Resource NSW

The guidelines set out the critical elements for establishing a successful public place system. In summary these are:

- The bins are conveniently located
- They are clearly marked with labels on the front, side and tops of the bins
- There are overhead signs so that people can see where the bins are, even if there is a crowd
- There are arrows pointing from the signs down to the bins
- The overhead signs should be visible and readable from a distance and be double-sided where appropriate
- The signs and labels should communicate by colours, symbols and words
- In certain areas signage should be multi-lingual
- The bins are colour-coded with one colour for each material
- The lids on the recycling bins are closed and locked
- There are holes in the lids to admit the correct recyclables

- The litter bin lids are open
- There is no recycling bin without a litter bin on either side
- The bins are side-by-side, not back-to-back.

Contamination rates will decrease if:

- Bins are emptied regularly – not allowed to fill up or overflow
- Litter bins have no lids or have their lids open.

The diagram below shows an ideal recycling station with all its features.

A summary of the Guidelines is provided below.

Figure 24 – Ideal Public Place Bin Configuration

Step 1 – Waste Audit – determine what is the composition of the typical litter bin. Typically, experience has shown that where paper and cardboard are included in recycling programs, high levels of contamination result, mainly from food, therefore, a containers-only collection program is recommended.

Step 2 – Developing Your System – the waste audit will reveal the maximum diversion rates achievable based on introducing a containers-only recycling bin adjacent to the existing litter bins in lieu of the current stand-alone garbage or litter bin, to mirror the domestic program.

The blue litter bins should be replaced with green bins with red lids (consistent with the Australian standard) and recycling bins should have green bodies with yellow lids.

Step 3 – Signage and Labels

It is important that public place bins are set up to follow these standards:

- Clear signage and stickers should be provided on a backing board
- There should be arrows pointing from the signs down to the bins
- Signage should be visible and readable from a distance and be double-sided where appropriate
- Stickers should be provided on the front body and bin lid
- The signs and labels should communicate by colours, symbols and words.

Samples of bin stickers developed in NSW are provided below:

Market research could be conducted to determine a suitable slogan. In a similar project recently conducted by the consultants, 'Recycle, It's Vital' was the most popular.

Step 4 – Bins
It is important that public place bins are set up to follow these standards:

- The bins are conveniently located
- They are colour-coded in accordance with the Australian Standard AS4123 Mobile Waste Container for commingled container collection, that is, yellow lid for recycling and red lid for garbage.
- The lids on the recycling bins are closed and locked, and holes are provided in the lids to admit the correct recyclables
- There is no recycling bin without a litter bin
- Where multiple bins are provided, the recycling bin should be in the middle of the litter bins to reduce contamination
- The bins are placed side-by-side, not back-to-back.

While aesthetics are important, it is also important to consider how the bins are emptied and serviced, and they must be time-efficient for servicing.

Step 5 – Promoting the Recycling System

- Implementing a recycling system is a promotional tool which shows that Tweed cares about the environment. Council could include information about the system in tourism brochures and community newsletters.

Step 6 – Servicing
All bins should be emptied frequently enough to avoid overflowing. The frequency of the collection will be dependent upon seasonality.

Step 7 – Monitoring
The new waste management system is not 'set-and-forget'. Waste audits and visual inspections of bin contents should be undertaken to monitor performance. It is suggested that a trial be conducted for a period of three months to determine success and a waste audit be carried out to accurately measure contamination levels. Regular inspections of various sites should be ongoing.

12.9.3 Current Applications of Public-place Recycling

A whole range of different bin types and stands are suitable for use in public places. Most public places require simply a bin frame to contain the bins. However, recycling stations require that a bin stand be provided so that clear overhead signs can be affixed. Below are some examples of different public-place recycling stations, each designed for their own specific conditions.

Figure 26 - Centennial Park, Sydney

Figure 27 - Royal Botanic Gardens, Sydney

Centennial Park and the Royal Botanic Gardens were two of the first NSW State government agencies to implement public place recycling in the early 1990s, with bins in timber enclosures.

Figure 28 - Rottnest Island WA

Rottnest Island WA – recently commissioned new recycling stands manufactured from recycled plastics. This picture was taken prior to the overhead sign being installed. The stands are flat-packed for easy of transport and assembly and are reasonably priced and come in 2-, 4-, 6- or 8-width stations.

12.9.3.1 Case Study – Warringah Council

Warringah is a coastal Council with beaches and other heavily used public places, especially during the weekends. Two grassed picnic areas near the beach at Dee Why and Collaroy were chosen for a trial. The main criteria used for bin site selection was that they should be placed where people are ready to dispose of waste. This included the entrances and exits to the areas, near picnic tables, near toilets and next to natural walkways.

Figure 29 - Message incorporated into picnic furniture

Figure 30 - Public-place bins at Dee Why Beach

Bin Design – The design of the bin stations complied with the Guidelines for Public Place Recycling. The enclosures were of a galvanised steel frame with powder-coated panels, with one panel hinged to open and allow access to the bin inside for emptying and having a lock to prevent

unauthorised access. Bin stations included two garbage bins with a recycling bin between. Signage was provided on the bin and overhead.

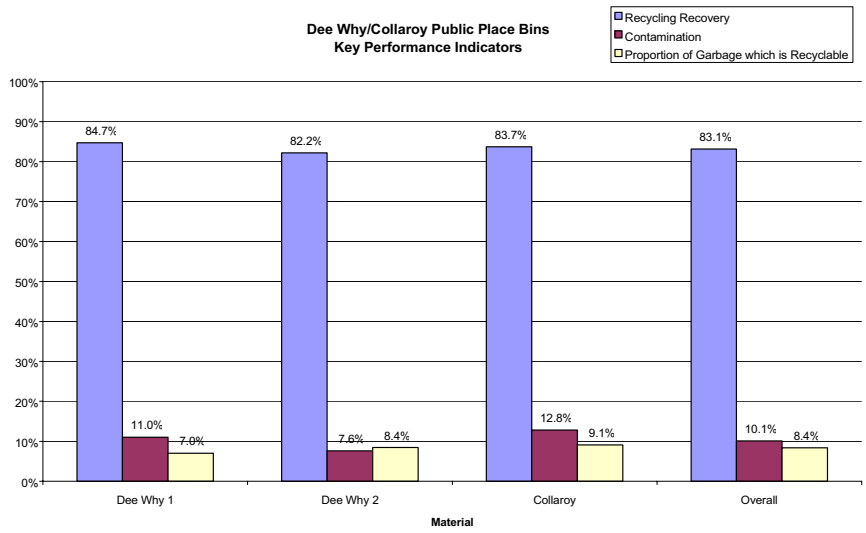
Bin Installation – where bin stations were installed, all litter bins were removed.

Education – small signs were placed on the picnic tables in the areas, reminding patrons to separate their recycling from other garbage.

Servicing – Collex Waste Management, Council's residential garbage contractor, serviced the recycling bins.

Key Performance Indicators – diversion rates, recovery, contamination and the proportion of garbage which was recyclable were four key performance indicators used to assess the performance of a waste management system.

Chart 30 - Dee Why/Collaroy Public Place Bins - KPIs



A recovery rate of 83.1% is an excellent result.

Recommendations:

20. That a two-bin system – garbage and 'containers only' or alternate litter bin system be trialled in key strategic areas.

21. That a performance review of the system be undertaken three months after the system is introduced.

22. Recycling stations should be provided in strategic visitor locations to reduce the incidence of visitors using private or commercial bins.

23. That the existing blue litter bins should be replaced with green bins with red lids for rubbish and yellow lids for recycling.

12.10 Commercial, Construction and Demolition Waste

Collection of commercial and industrial (C&I) as well as construction and demolition (C&D) wastes within the region is performed by private sector operators under direct contracts with the waste generators.

The selection of receptacle size and type, frequency of services and provision of recycling services and costs are negotiated on individual needs.

Critical to the commercial viability of each service offered is consideration of the amount, type of waste to be collected, distance to the disposal location for the collected wastes and disposal fees applicable at waste depot.

Tweed Shire is serviced by a number of large private sector operators that service and unlike the Gold Coast, which operates its own commercial waste collection service (under contract) in direct competition with the private sector, Council has no direct responsibility in this area apart from servicing its rate-based customers with its divided bin weekly option, which only 270 premises use.

From analysis of Council's internal data, a traffic management study and inspection at both Stotts Creek and Murwillumbah facilities, it is evident that the quantities of waste being generated from both of these sectors is rising rapidly, spurred by the growth in the area.

Without controls being put in place and a focus on more effectively managing these waste streams, Council's landfill asset is at great risk of being compromised, in, to the extent that valuable airspace will be lost through the lack of regard by the private sector towards more effectively managing its environmental impacts in the region.

The most effective mechanism to control or influence the private waste collection service providers is to adopt a clearly defined strategy that is multi-faceted and targeted at both the point of generation as well as disposal.

The introduction of a strong education program to more effectively handle and reduce waste being produced, disposed, combined with differential pricing policies for sorted and unsorted loads delivered to its landfill acts as a strong financial incentive and is a key driver for change.

By implementing a tiered pricing strategy targeted towards loads with no recyclable materials contained, separated dry wastes only and encouraging a strong diversion focus across these streams, Council will drive a change in the collection sector and enact a change in community culture.

If Council were to introduce substantial differential disposal fees for various types of waste streams then it is feasible to expect that the commercial service providers would start to introduce separate 'wet' and 'dry' runs to mitigate these economic impacts on their operations and customers. They would be forced on pure economic grounds, if not environmental responsibility, to enact change at the point of generation with their customers, not, as is currently the case, enforce the impacts at the point of disposal and thereby transfer the problem to Council.

Until such time as Council acts to differentiate itself and to drive change, there is no incentive for action by the community or service-providers to alter their habits, as the

incentive to do nothing is more attractive that doing something new. Council must send a price signal to the market and, y, in addition to preserving the community's long-term asset, a substantial change its pricing signals and charges for waste disposal is recommended.

This course of action is fully justified and would assist Council in its ongoing negotiations with the DECC regarding groundwater. It would also be seen as a proactive action by Council in attempting to redefine and mitigate its environmental impacts at landfills.

12.10.1 Case Study: Kangaroo Island SA

Kangaroo Island was faced with a landfill crisis and implemented a price differential to encourage all sectors of the community to separate loads. Below is a copy of its current fees and charges.

Table 62 - Kangaroo Island Landfill Fees and Charges

Domestic Vehicle Type	Sorted	Unsorted
Car	$5	$25
Single axle, van, car type ute	$10	$50
Double axle trailer, tray-top ute	$15	$75
Double axle trailer with cage	$20	$100
Commercial Vehicle Type		
Any load minimum	$10/t	$50/$m^3$ or 150/t

That council should use its planning and regulatory powers when assessing and conditioning Development and Building Applications to ensure that:

- suitable space should be provided in garbage storage areas for both waste and recycling receptacles
- That during construction, all waste generated from the development should be source-separated
- That once the building is occupied, adequate waste and recycling receptacles are provided.

Recommendations:

24. That Council develop a Waste Not DCP and place a notation or condition on all Development Approvals requiring the source separation and containerisation of all waste on building sites to minimise waste generation and prevent unintended pollution.

25. That source-separation of loads prior to delivery is desirable due to the differential pricing policy to be applied to mixed loads at Stotts Creek and Murwillumbah landfills.

26. That Council undertakes a community education and industry information campaign to promote source-separation of all loads delivered to the Stotts Creek landfill.

27. That Council directly approaches the significant users of its landfills on a personal basis to inform and educate them regarding the role of source-

separation and of Council's intention to introduce a substantial change to the future fee structures and charges for disposal of waste.

28. That Council resolves to introduce differential landfill fees for sorted and unsorted loads and offer a significant price variation to create the necessary motivation for source-separation within the community.

29. That council introduces a significant differential pricing policy to encourage source – separation by waste generators of building materials.

12.11 Education and Communication

A continuing challenge for any council, let alone one with a highly transient tourist population, is to how to communicate to its community and visitors about the waste management system to ensure that the correct items are placed in the correct receptacle. There is an added challenge when visitors are staying in self-contained accommodation, in that they are indistinguishable from residents.

Councils rely almost exclusively on printed resources to communicate to their residents and visitors about recycling and waste services, using a range of resources including:

- Bin stickers
- Brochures
- Letters
- Calendars
- Fridge magnets.

Figure 31 – Education Materials

The type of collection system selected, the resources developed and the method of delivery of these will all have a substantial impact on the results achieved in terms of diversion from landfill and the contamination levels achieved.

Councils need to appreciate that different people, due to their age, background and education, receive, process and respond to information in different ways. Visitors, particularly from non-English-speaking countries or with low language skills, rely heavily on the use of visual images and graphics to convey messages.

Many of our methods of depicting information are ambiguous and open to interpretation, leading to the potential for undesirable actions and outcomes. It is therefore imperative to use clear, unambiguous images and words to convey the correct message. What is apparent to people involved in the resource recovery and waste management fields in terms of images, graphics and words, is not always clearly understood by many sections of our diverse community.

Contamination in recycling programs is a community-wide problem caused by apathy, lack of information, knowledge, skills or interest. Contamination has a financial implication as items placed in the recycling section which are not recyclables fill up space in the collection vehicle, cost the processor without any return and further cost

to discard to landfill. It appears that the average contamination rate of Tweed is between 15–18% which is extremely high, and reveals that the community is not using the system correctly. In addition, all the resources that could have been recycled but are in the garbage stream are lost and buried in landfill forever. The regional audit showed 23% of recyclables were present in the garbage stream.

Many councils, in their quest to identify and manage contamination at its source, have used a variety of communication methods including:

- Leaflets, brochures, calendar fridge magnets
- Bin stickers
- School education programs
- Media advertisements – newsprint and radio
- Video surveillance cameras in the collection vehicle hoppers
- Bin auditors who routinely inspect bins prior to collections.

Typically, rural councils are resource-poor and do not have a dedicated person within council to undertake these specialised activities. Tweed Shire has outsourced the provision and budget for education to the contractor with mixed results. We understand there has been a high turnover of staff, long gaps with no staff available and staff appointed with little or no experience in the field and seeking guidance and direction from Council rather than their employer.

The role of the Waste Education Officer was to develop and execute public awareness and comprehensive community communication programs within a budget of $20,000 per annum.

Council needs to review all options to ensure that a quality service is available in a timely manner in regards to education. The options available include:

1. The contract should clearly specify what services are required from the contractor
2. Council consider employing a suitability qualified person part- or full-time
3. Council outsource the education component separately.

Residents and visitors alike need to know what is expected from them, why they need to modify their behaviour and implications of the changes, both on a broad community and on a local household and individual level. The community education and communication programs need to encourage the community to participate in waste avoidance, reuse and recycling initiatives as part of the waste minimisation and management programs.

A specific education program is needed for the community – urban, rural and visitors. Real-estate agents, holiday-home owners and the tourist sector generally will need to be informed about and engaged in the new program to ensure that visitors are correctly informed about the waste management system in the Tweed. Should Council and Gold Coast City Council decide on the same system, communication will be easier, as the boundary between the two council areas is seamless to the visitor.

Council has the following schools and libraries in the area:

Schools:

- community run and numerous private facilities for pre-school age children.
- 35 primary schools
- 9 high schools
- three TAFE centres located at Tweed Heads, Murwillumbah and Kingscliff.
- university campuses located at Tweed Heads

Libraries: Tweed Heads, Kingscliff, Murwillumbah.

Council should clearly specify what services are required, including:

1. Development of a slogan and logo for the new waste program
2. Communicate the changes and options available in the new service
3. Explain to the community the reason and rationale behind the new program
4. Explain the reason for a potential increase new waste management charges
5. Develop and deliver innovative community education and communication programs on waste minimisation and management programs.

Council is extremely fortunate to have available the weekly community *Tweed Link* newsletter and some of the key messages the education program needs to deliver prior to the new kerbside service being introduced include:

- Council provides an optional garden waste service, as a significant number of residents were unaware of this in the community survey
- Free mulch is available at the Murwillumbah waste depot
- Mulch and soil conditioners are available for sale at Stotts Creek facility
- Council should continue to promote the sale of compost bins and worm farms
- Household Hazardous collection days
- The range of materials that can be recycled in the domestic bin and at the waste depots
- The new landfill pricing structure, aimed at encouraging greater source-separation.

The current contract requires the provision of $130,000 to be committed to a waste education centre to be constructed on a site approved by Council. We understand that a decision on a suitable site has been protracted but is likely to be resolved in the near future. This will offer an excellent resource and could be a demonstration site for other environmental initiatives, including water and energy savings and no-dig gardens.

Recommendations:

30. That the current education and communication program delivered by the contractor be reviewed to assess and evaluate the effectiveness and value for money prior to developing the new contract specification.

31. Given the high proportion of visitors to the area, that the use of graphic images supported by the English words must be incorporated into all communication modes.

32. That Council must commit sufficient and ongoing budgetary resources to continue the education of both residents and visitors.

33. That the waste depots should be renamed as Resource Recovery Centres.

34. That Council ensure that the new waste education centre is a demonstration site for green building and sustainable living and be called The Sustainable Living Centre.

13 WASTE DISPOSAL OPTIONS & ALTERNATE WASTE TECHNOLOGY

Tweed Council currently operates two landfills – the first being an inert landfill at Murwillumbah on a site close to town that has been used for approximately 50 years. This site is an operating quarry, however, the DECC, which ,in recent correspondence, has mentioned the need for post-closure plans. This site could be closed or made into a transfer station.

The larger landfill site is located some 13 km east of Murwillumbah at Stotts Creek, which has both a putrescible and an insert landfill cell and is operating in an old quarry site. Currently a private quarrying operation is operating adjacent to the current site. Based on the available projections, the current putrescible landfill cell is due to fill by 2010 and the inert cell is due to fill between 2016–2026.

The current licence for the putrescible waste allows for 55,000 tonnes per year, while the inert cell is licensed for just 15,000 tonnes per year, plus a further 3,500 tonnes at the Murwillumbah site. Therefore, the combined landfill licences for Tweed Shire allow for 73,500 tonnes per year. Records for Stotts facility for the 2005–06 financial year reveal that just over 39,000 tonnes of putrescible materials and 25,000 tonnes of inert material were delivered, making a total of 64,000 tonnes. In addition, about 6,000 tonnes of garden waste were delivered for processing at Stotts Creek facility

Council has acquired land nearby but not immediately adjacent to the exiting Stotts Creek site, and has undertaken preliminary assessment to determine the suitability of the site as a future landfill to service the area.

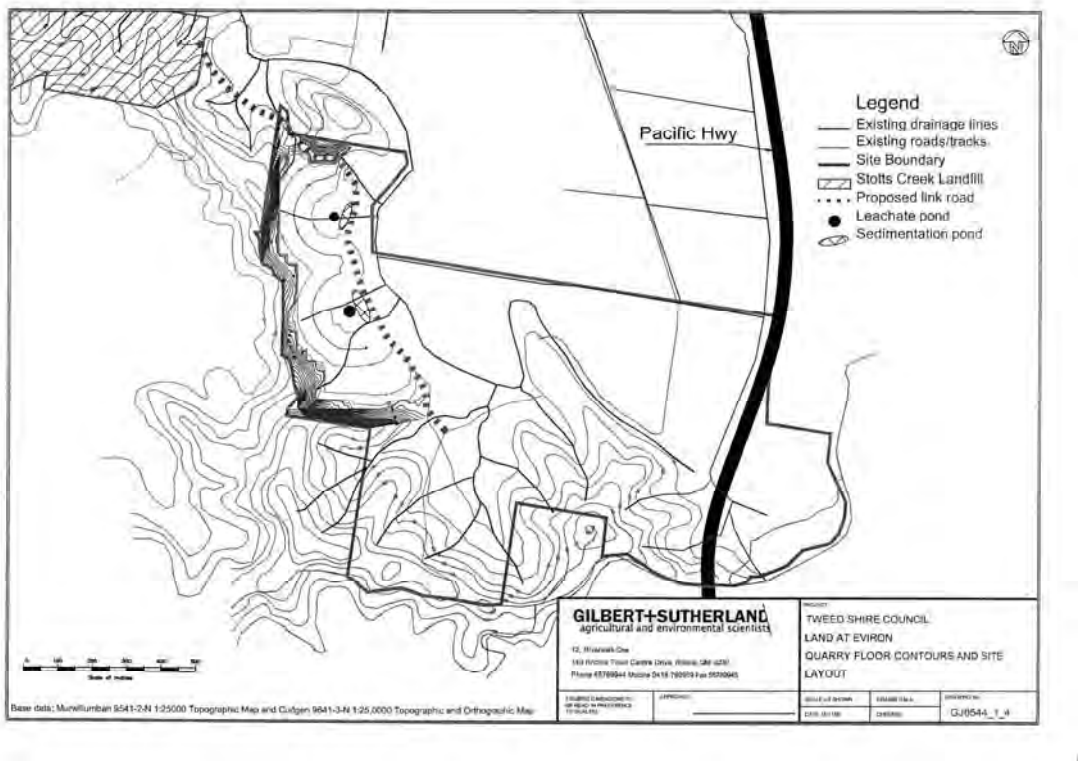
Given the unknown infrastructure costs an alternative approach, which may be more cost-efficient in the short term, subject to fuel price increases, is to export the waste from the Shire into South East Queensland, given the excellent road network and cheap landfill disposal rates available, due to an abundance of landfill capacity.

It would be prudent of Council to undertake a cost–benefit analysis to compare the cost of transporting waste to Queensland with landfilling locally, once detailed financially modeling of the final design has been determined.

This section discusses both of these options.

13.1 New Landfill at Environ

Council owns a site comprising 157 hectares where the cemetery, Botanic Gardens and farming land are located, and where Council is proposing to construct a new landfill site and quarry operation, at Eviron. Refer to the site map below:



Council has recently commissioned Gilbert+Sutherland, Agricultural and Environmental Scientists, to undertake a site investigation to determine the following:

- investigate and determine the commercial quantities of hard rock gravel available at the site
- determine whether the sources of landfill liner or covered material were present
- propose locations on the site for suitable future landfill development
- propose leachate capture areas for the site
- prepare a detailed service water management program
- identify the preferred location for internal roads networks
- identify the preferred location of the link road, between the new site and the existing landfill
- consider land-use constraints imposed by the Tweed Botanical Gardens Master Plan
- consider provisions contained in the Quirks Quarry Management Plan.
- Acid Sulphate Soil Investigation
- the establishment of a groundwater bore network
- preparation of a site management plan.

The company prepared 27 bore holes and eight groundwater wells and undertook rock core samples at three locations.

The report recommends that the landfill activities occur in the north and west valleys. The proposed Link Road, with a moderate incline, would provide access for quarrying and landfilling activities from the current to the future site and would also form a

Q100 Flood Immunity Bund to prevent floodwaters entering and impacting on either quarrying or landfill activities.

The north valley has an estimated 1,800,000 m^3 of material suitable for quarrying, while the west valley has 2,800,000 m^3. The materials found would be suitable for aggregates, concrete, road base and road sub-base.

The DECC requires any new landfill cell to be lined with a synthetic or natural clay liner to minimise the risk of adverse environmental impacts, that is, contamination of groundwater and surface water, and control landfill gas. A high plasticity clay was found on the site which may be suitable to use as the landfill cap or liner, as the testing showed a permeability of $10^{-6m/s}$ while the Environmental Guidelines for Solid Waste Landfills[19] requires $10^{-9m/s}$.

The current design allows for quarrying and landfilling activities to occur concurrently on the site. It is proposed that landfilling activities will follow the quarrying in the north and the west valleys and, as recommended by this report, that the quarrying activities occur in the north valley first.

Two central leachate collection ponds are proposed with leachate collection lines located at 50-metre spacings. A sedimentation pond will be located adjacent to the Link Road to collect runoff from the roadways, active quarry areas and landfill areas. Refer to the diagram below for more detail.

The sedimentation ponds for the northern area would require a surface area of 1,850 m^3 to a depth of 2.7 metres, while the southern amphitheatre would have a surface area of 2,980 m^3 and 2.6 metres in depth. It is suggested that these ponds, once quarrying and landfill operations cease, could be rehabilitated and form water features as part of the Tweed Botanical Gardens.

If the new cell is not constructed for several years, it is likely that the current design documentation may need to be reviewed and updated.

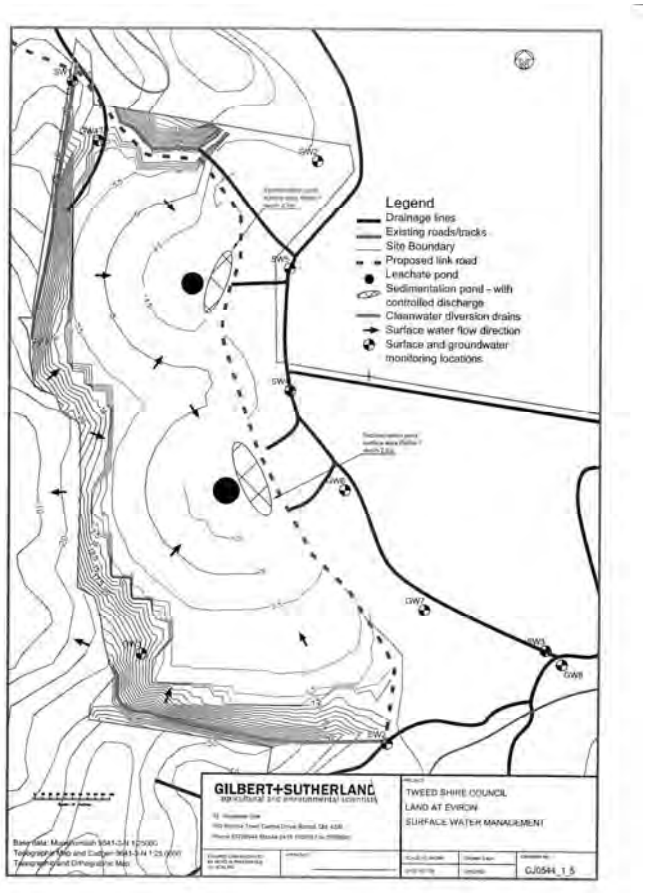


Figure 33 - Surface Water Management

[19] NSW EPA (1996) Environmental Guidelines; Solid Waste Landfills.nsw.epa.

13.2 Alternative Opportunities – Export to Existing Landfills

In preparing this report, the consultants met with representatives of both Thiess Services and Veolia Environmental Services (formerly Collex). Both companies own and operate large fully engineered landfills in the South East corner of Queensland and both can provide transport and disposal solutions.

Thiess operates a fully engineered landfill at Swanbank near Ipswich in South East Queensland with a 40-year capacity, and can offer a long-term contract for transport and disposal at around $55 per tonne, based on gate fee of $25–$30 per tonne, plus transport at $25 per tonne.

Veolia Environmental Services operates, in partnership with JJ Richards, the Ti-Tree Bio-energy Landfill Facility at Willowbank, located west of Ipswich. Veolia indicated that transport in 110-m^3 walking-floor transfer trailers would cost around $35 per tonne plus a gate fee of $25, and the company is willing to commit to a long-term contract.

Recommendation

35 That concurrently with developing plans for the local landfill, Council reviews other long-term disposal options for the Shire's waste as identified in the Strategy having regard to transport and disposal costs, method and number of vehicle movements to accurately assess traffic impact.

13.3 Alternative Opportunities – Export to New Landfill

In addition to exploring disposal options and the associated costs with both Thiess and Veolia Environmental for Tweed's residual waste streams, Council should approach Gold Coast City Council and explore the options in relation to the joint development of the Reedy Creek site or long-term use of the facility.

13.4 Alternative Waste Technologies Options and Opportunities

13.4.1 Background

In 1999 the Alternative Waste Management Technologies and Practices Inquiry was commissioned to inform decisions about future waste management infrastructure and practices in New South Wales. Its primary aim was to demystify waste management issues and inform Government, business and citizens about how improved practices and technologies might contribute to sustainable waste management.[20] Since the report's publication in 2000, it has assisted in facilitating debate about alternate ways of managing solid waste in Australia in the future.

The inquiry received more then 80 submissions from all sectors of the industry and found that an abundant array of technologies exist to increase recycling and to gain value from various parts of the waste stream, however no one technology offers a complete solution, rather, each system forms part of an integrated management system.[21]

[20] Report of the Alternative Waste Management Practices Inquiry, April 2000.
[21] Report of the Alternative Waste Management Practices Inquiry, April 2000.

Alternative Waste Technologies are categorised as follows;

1. Mechanical Separation Technologies – typically, materials sorting and waste separation processing.
2. Biological Treatment Technologies – typically open windrow composting, vermiculture, enclosed composting, anaerobic decomposition and fermentation.
3. Thermal Technologies – typically incineration, pyrolysis/gasification and plasma destruction
4. Landfill Technologies – typically conventional wet or dry landfills, bioreactors.

All four technologies are operating in Australia, however, Thermal Technologies are only applied to material specific streams such as those in disposing of hazardous wastes or organic only wastes, that is, using green waste or sugar-cane wastes to create steam generation for on-site power generation processes. There have been several attempts to commercialise thermal technologies for the processing of mixed residual waste in Australia, Brightstar's SWERF in NSW and the TEST incineration plant in Tasmania being the most notable.

Both projects were terminated due to high cost, technical or community-related issues. Thermal processing of bagasse (a by-product from the sugar-making process), and also the processing of single-type organic wastes such as timber or green organics in co-firing boiler applications is occurring in limited applications, that is, Visy's Tumut Paper Mill, however, these are still emerging technologies in Australia and not considered applicable for general mixed waste stream materials at this stage.

13.5 Mechanical Separation Technologies

13.5.1 Materials Recycling Facilities (MRFs)

Typically these technologies focus on various means of mechanical sorting of materials and are commonly referred to as Materials Recycling or Recovery Facilities. The facilities typically separate commingled dry recyclables by the use of mechanical sorting techniques. MRFs may be constructed using high or low technology, depending upon throughput, investments and sophistication of the plant and equipment.

MRFs typically employ a system of conveyors which carry the recyclables over sorting screens and trommels, inclined tables and air classifiers that divide the components by heavy and light fractions. The recyclables then pass over magnetic and eddy current separators and may also incorporate advanced optical recognition equipment which separate out different types of plastics or glass by polymer or colour. There will also typically be a significant component of manual sorting. Balers are used to compress the recyclate for transport to secondary reuse markets, either locally or overseas.

There will always be some materials referred to as contamination, which are disposed of to landfill as waste from the process.

13.5.2 Wet or Dirty Materials Recovery Facilities

Wet or Dirty Materials Recovery Facilities (W/DMRF) are fully enclosed facilities that combine a number of screening and sorting techniques to divide residual municipal and commercial wastes into the recoverable and non-recoverable components. These facilities may act as a pre-sort for an organics or other downstream treatment process.

A W/DMRF employs conveyor systems, bag splitters, screens or trommels that divide the waste into different size fractions with magnets, and eddy current separators recovering the metals. Handpicking or other sorting techniques such as air classifiers divide the waste stream although the trend is towards mechanisation of the entire process to eliminate human contact with waste, that is, the BaxVis plant in Melbourne.

The process does not recover recyclates of the same quality as produced from a dry MRF due to the contamination from putrescible and other organic wastes, and markets offer heavily discounted values on the purchase price of the commodity from these facilities.

Dirty MRFs will typically recover around 10–15% of material as recyclables and the remainder would either require further processing or disposal to landfill.

13.6 Mechanical Biological Treatment Technologies

The Mechanical Biological Treatment (MBT) concept for waste processing evolved in Germany as a response to a strong desire to reduce the quantity of biodegradable waste sent to landfill, and to increase the potential recovery of resources.

MBT inherently incorporates two core stages: mechanical treatment and biological treatment. The different elements of the process can be configured in various ways to meet a wide range of specific objectives:

- to maximise resource recovery
- to produce a compost
- to produce a soil conditioner
- to produce a bio-stabilised material for landfilling
- to produce a bio-gas for heat and/or power generation
- to produce a good quality solid fuel.

MBT processes mixed household waste and other organic waste streams by mechanically removing some parts of the waste and by biologically treating others, so that the residual fraction is smaller, more stable and more suitable for a number of uses.[22] It typically involves one of the two types of waste processing of the organic streams, being either aerobic decomposition or anaerobic decomposition. The choice

[22] Juniper Consultancy Services Ltd 2005.

of the biological element is intrinsically linked to the desired output of the MBT process itself.[23] The process can involve some or all of the following elements:

Table 63 - MBT Process Summary

Process	Possible Process Elements						
Mechanical	Trommel	Screen (static or vibrating)	Magnets	Eddy current	Hand-picking	Air classification	Infrared/optical sorters
Biological	Open windrow composting	In-hall composting	Tunnel composting	In-vessel composting	Anaerobic digestion	Percolation	Bio-drying

13.6.1 Aerobic Decomposition

Aerobic decomposition involves the decomposition of organics by microbial activity under aerobic (in the presence of oxygen) conditions to produce stable organic materials while maintaining core plant nutrients in its outputs. Typically this type of process is used in composting and other similar organic production. The quality of the output is totally dependent on the quality of the feedstock. The process produces a moderately high-quality soil conditioner or mulch which has a variety of market uses.[24] Pre-treatment or sorting of the feedstock is an important component of the process. Typically used in composting in open windrows, aerated static piles, that is, Cleanaway's Gore process, and drum systems, that is, Bedminster and Dano and Conporec processes.

13.6.2 Anaerobic Decomposition

Anaerobic DEComposition (in the absence of oxygen) involves microbial activity being used in a reactor. This process is well established in the water industry to stabilise bio-solids as a part of the processing phase. Methane rich gas is produced suitable for use in energy generation. Input preparation or source-separation is required to ensure that waste is free of non-organic contamination.[25]

Anaerobic processes are usually very sensitive to exposure from contaminants and wastes such as those generated by residual battery and other toxic materials. These wastes significantly hamper real anaerobic processes due to the impact these toxins have on microbial colonies.

Contamination by inorganic materials or the levels of these in input feedstocks directly affect the quality of the processed outputs. A digestate sludge is produced which is suitable for enriching compost materials. Typically the outputs are used for soil enhancement and other fertiliser applications, thus it is critical that any anaerobic processes have reliable pre-sort and treatment processes in place.[26]

13.7 Landfill Technologies

Three are three options for landfilling of wastes:

[23] Juniper Consultancy Services Ltd 2005.
[24] Maunsell AECOM SEQROC Report 2002.
[25] Report of the Alternative Waste Management Practices Inquiry, April 2000.
[26] Maunsell AECOM SEQROC Report, 2002.

1. conventional wet landfill
2. conventional dry facility
3. bio-reactor

13.7.1 Wet Landfill

This is a mature technology that is used to facilitate waste decomposition in a controlled way. As the process of bio-degradation takes place, methane and carbon dioxide are released, and at most facilities across Australia this is captured by way of landfill gas extraction and the gas used for energy generation. Where gas production is not of either the correct calorific value and/or volume for power generation, it is flared on-site to mitigate harmful greenhouse gas resulting from the release of raw gas itself.

13.7.2 Dry landfill

These are found typically in low precipitation climates, where rainfall is low and thus the wastes disposed are not heavily impacted upon by moisture, or they are facilities that are engineered to accept low putrescible or inert (usually less than 5% moisture by volume) wastes, typically construction and demolition wastes and selected commercial and industrial wastes and totally inert materials.

13.7.3 Bio-reactor

This has been developed by Veolia in France; these landfills are engineered to accelerate the rate of decomposition and thus increase gas generation. These landfills accept all waste streams and particularly attract sludges, municipal and other high organic specific streams. They accelerate decomposition by circulating microbial-rich leachate and in some cases particularly liquid sewerage wastes. The process aims to improve gas and power generation and reduces the time to stabilise the resource. This technology is now established as a viable alternative to traditional landfill management and usually substantially lower gate fees are charged than for MBT processes, for example, Ti-Tree Bio-Energy Landfill Facility at Willowbank, located west of Ipswich.

13.8. AWT in Australia

Pivotal to all AWT processes and opportunities are several core underlying principles. These are that all AWT options require:

- significant investment decisions
- available feedstock ,
- local markets and application of outputs

Current technology options fall into two categories:

1. commercially proven and operating businesses.
2. technologies still under development

13.8.1 Commercialised Technologies

13.8.1.1. Global Renewables Ltd.

Global Renewables has commercialised the UR-3R process at Eastern Creek in Sydney's west. The UR-3R process integrates four technologies, being;

- An advanced dirty MRF
- ISKA percolation from Italy
- Composting halls
- On-site power generation.

Figure 34 - UR-3R Facility

The facility is designed to process MSW collected from kerbside refuse bins, recover some recyclables and reprocess the organics into compost. The bio-gas generated during the anaerobic bio-digestation phase is captured and used to fuel on-site power generators. All surplus energy is exported and sold into the grid as green power.

The facility charges a gate fee for all refuse delivered to it, currently set at $130.00 per tonne of refuse. Its design was to process up to 175,000 tonnes of refuse per year and it is currently operating at its limit.

13.8.1.2 Tryton Vermiculture

Located at Lismore City Council's Wyrallah Road Landfill, the Tryton Group operates one of the largest worm farms in the world processing organic waste streams into a range of value-added fertilisers and bio-organic soil enhancers.

The Tryon facility was built in 2001 and is designed to process mixed organic streams including food wastes, which are fed into a process using more than 100 tonnes of worms (representing approximately 21 million). The plant has the capability of processing 4,000 tonnes of kerbside collected organics and 3,000 tonnes of self-hauled shredded green wastes per year.

The company markets a range of organic products under the Virotec brand. Organic liquid and solid fertilisers as well as soil enhancers are sold to commercial growers of macadamia nuts, soy beans and bananas, as well as for general application in the agricultural sector.

The most significant hurdle the operators have had to overcome in developing the technology has been in gaining strong commercial sales for the outputs. Gate fees are estimated at $45.00 per tonne for the kerbside organics and $40.00 for the shredded green waste. Residual wastes are disposed of at $85.00 per tonne. Tryton has been unable to secure further contracts with regard to the vermiculture process, outside the 20-year agreement with Lismore.

13.8.1.3 SITA/CEC Group (ex Bedminster Operations)

In August 2006, Sita Environmental Solutions and the CEC Group based in Cairns formed a joint venture and purchased the assets of the Bedminster facility from Cairns City Council. The joint venture has invested more than $15 million in rebuilding the plant and has now redesigned and rebuilt the front end and vessel units. As a result of its success in recommissioning the plant, the joint venture has now purchased all of the Australian Bedminster technology and its troubled operations and will be remarketing the concept under the new MBT process.

On current design criteria, the process requires a minimum of 60,000 tonnes of both domestic and commercial and industrial wastes with a gate fee of at least $85 per tonne to be successful. The outputs of the plant are both recyclables from the front end as well as compost and soil conditioners from the organics. It requires some residues being returned to landfill.

Figure 35 - Bedminster Facility

Other processes using the same technology are located at Port Stephens in NSW and Canning Vale in Perth. The Perth was closed by the regulator in December 2006 due to odour issues.

13.8.1.4 Remondis Residuals Processing

Hastings Council has contracted Remondis to design, build and operate the Organics Resource Recovery Facility (ORRF) for a 20-year contract. The facility includes two key components:

Figure 36 - ORRF

1. In-vessel Composting Facility – processes 17,000 tonnes of food, garden waste from domestic premises and 3,000 tonnes of self-hauled garden waste and 6,000 tonnes of bio-solids received.

2. Residuals Processing Plant – processing 20,000 tones of mixed household waste from the kerbside collection program. The material is tipped onto the floor where it is screened, and any contaminants likely to impede the process are removed. The material is shredded and screened, metals are removed by magnetic head and eddy current and account for approximately 5% of inputs and organics between 10–20%. The material is then placed on an aerated floor for drying and stabilisation. The processed materials are then suitable as either cover material at landfill disposal to a Class 1 landfill. No greenhouse gas is generated and only minor leachate. The gate price for this process is between $40–50 per tonne.

13.8.1.5 Ti-Tree Gully Bio-reactor Landfill

Developed by two of Australia's major waste management companies, Veolia Environmental Services (formerly Collex) and JJ Richards, in 2004, the Ti Tree BioEnergy facility located west of Ipswich is the latest in new developments in landfill disposal.

The fully engineered and environmentally contained facility is located in a disused mine. The facility uses a process of recirculating leachate to feed the microbial colonies it inoculates the leachate with. By pumping this into a network of pipes positioned in the waste, it rapidly starts the decomposition process, stabilises the waste and increases methane generation. The gas is captured and currently flared, and once the facility reaches commercial gas production, it will be used for energy production and sale to the grid.

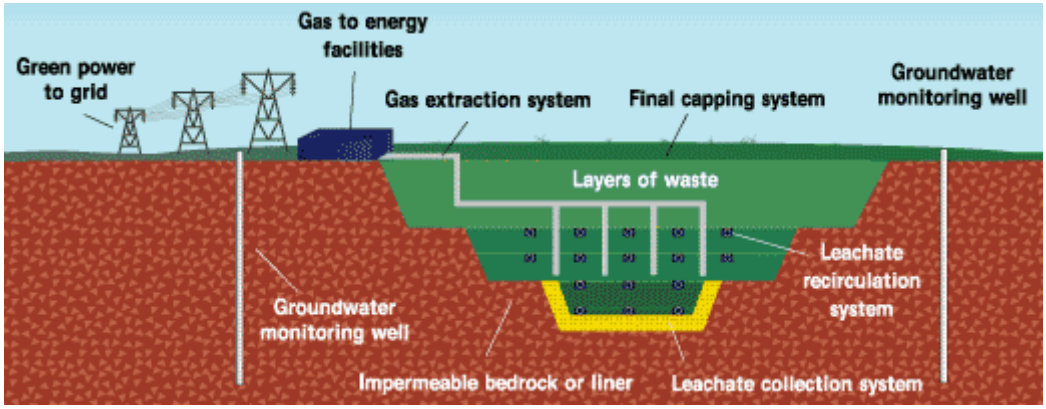


Figure 37 - How the Bioreactor Works

The current capacity is designed to accept 400,000 tonnes per year of waste, from the South Eastern Corner of Queensland, with an operating life in excess of 35 years. Gate fees applicable to using this facility have been advised as being $25 per tonne.[27]

13.8.2 Commercially Unproven Technologies

13.8.2.1 AnaeCo Limited (ex Organic Resource Technologies)

The company has patented the DICOM MBT process, being a hybrid biological system that integrates both an aerobic and anaerobic in-vessel solid waste process. It has evolved from previous MBT processes, but has been developed by Australian expertise using Australian waste to achieve its technical capability.

This is a significant breakthrough, as all current MBT processes operating in Australia have originated from either Europe or Canada and there are differences in Australia's waste composition from those countries, so current operating facilities have undergone fundamental change, to become operational.

Australia's first DICOM plant is expected to be processing 50,000 tonnes of domestic waste by the end of 2007, in Perth. The facility has been designed to be located at an

[27] C Hines, Veolia, confirmation e-mail advice, November 2006.

existing transfer station located in the centre of the metropolitan area. Estimated gate fees have been set at $60–$70, inclusive of residual material disposal costs.[28]

13.8.2.2 Biomass Solutions

The Coffs Coast region, comprising Coffs Harbour, Bellingen, and Nambucca Heads Councils, has entered into a 20-year $125 million contract with Biomass Solutions (Coffs Harbour) Pty Ltd to develop an AWT MBT process operation at the Coffs Harbour England Road Landfill and Transfer Station site. The objective is to achieve a waste diversion target of 85% reduction to landfill over the project term. The site includes:

- Enclosed LMC composting and agitation bays for the compost from the kerbside organics fraction including vegetation and food waste
- Mixed residual waste processing system using autoclave technology, that produces a refuse derived fuel for use by local sugar mills
- Traditional MRF for processing commingled recyclables.

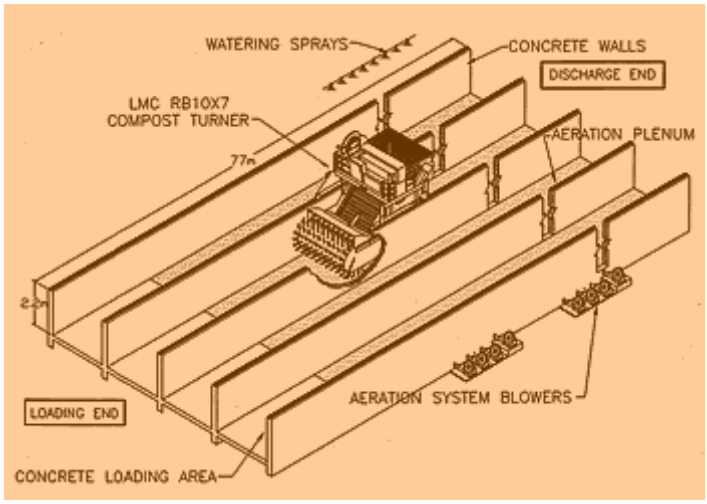


Figure 38 - LMC System

LCM composting reactors are long concrete channels or bays with an aerated floor with a blower per zone that is controlled based on temperature readings from sensors for each zone in the bays. Rails on top of the walls are for the compost turner to run along to mix, aerate and move the compost mix towards the discharge end with each pass.

Typically, the compost turning machine makes one pass per day through each bay. This creates loading space at the feed end of the channels for additional feedstock. Finished compost is discharged out the end of the bays with each pass.

The facility will start processing 56,000 tonnes per year in year one, increasing to 90,000 tonnes in year 20. Domestic waste management charges will be increased in 2007 from the 2004 base year when the contract was awarded by 15%, from $242 to $284 per household, inclusive of new bins, collection and disposal, plus two bulk collections annually. Indicative gate fees for disposal by 2007–08 for general refuse will be $90.00 per tonne and $66.00 per tonne for organics.

13.8.2.3 WSN – Ecolibrium Technology

WSN Environmental Solutions (formerly Waste Services New South Wales) was awarded a 15-year contract to convert the Jacks Gully Waste and Recycling Centre into the Macarthur Resource Recovery Park, a fully integrated waste processing facility, capable of handling all waste streams collected by Camden, Campbelltown,

[28] M Gravett AnaeCo, DECCember 2006.

Wollondilly and Wingecarribee Councils. In December 2005, WSN was awarded the contract based on using the Ecolibrium Mixed Waste Processing Facility and the Ecolibrium Organics Facility. The Facility includes:

- Mixed Waste Facility (using the Arrow Technology from Israel) designed to process up to 90,000 tonnes of household waste per year
- fully enclosed tunnel composting system – 30,000 tonnes per year
- Materials Recycling Facility – 30,000 tonnes
- resident drop-off centre for small quantities of putrescible and green waste, recyclables and domestic hazardous materials
- landfill for non-putrescible waste.[29]

Gate fees are estimated to be > $120.00 per tonne.

[29] WSN, DECCember 2006.

14. COMMUNITY CONSULTATION

Community consultation is imperative as part of the development of any strategic document which will involve the community and require a modification or possible change of behaviour. Any community consultation program should aim to meet the following objectives:

- Maximise community awareness of the process
- Educate the community about the issues
- Advise the community on the outcomes of the consultation process.

Successful public consultation provides the participants with the necessary facts and information to make informed decisions. When selling the benefits of any new approach it is important to frame the possible options and relative costs of any new service against the broader social, economic and environmental benefits that can be realised. It is important to move beyond the narrow focus of fees and charges to successfully capture the hearts and minds of the community.

A community consultation program was developed in partnership with council staff. Council is to consider the findings of this report of the feedback received which is deemed to reflect the opinions of the community in regard to the draft Waste Strategy.

Based on this report Council staff and their consultants will then discuss and determine any changes or amendments to the draft Domestic Waste Management Strategy so that it can be approved by Council.

This section contains the findings of the community consultation program and stakeholder feedback.

14.1 Method

It was agreed between the consultants and Council officers that the community should be consulted as widely as possible using a combination of methods to determine community opinion. A multi-pronged consultation program was developed which offered a variety of forums and venues to engage with and to capture the widest range of responses from the community as possible. These elements included:

1. Promotion of the Draft Waste Strategy in the Tweed Link publication which is delivered to all residents each week.
2. Preparation of a community consultation document summarising the eleven key recommendations was made available upon request
3. The Executive Summary of the draft Waste Strategy was made available upon request from Council offices Council's website contained items 2 – 3 above
4. The Tweed Link advertisement and editorial seeking feedback on strategy
5. An opportunity to meet or talk with the consultants was provided the week of 5th March
6. An personal invitation was extended to every Progress Association to meet with the consultants and council staff or for them to attend a meeting

7. A meeting was held with representatives of one progress Association while presentations were made to three Associations
8. A briefing was offered and provided to the current waste management contractor, Solo Resource Recovery, as a key stakeholders

Below is a summary of the Community Consultation Methods.

14.1.1 Summary Document

The three page summary document or overview was developed by the consultants, approved by Council and both printed and posted on Council's web site. The document included key findings including market research and waste audit results and listed eleven key recommendations. A copy is provided at *Appendix 5.*

14.1.2 Executive Summary from Waste Strategy

Due to the complexity of the strategy, length of report and the "commercial in-confidence" information obtained Council and the consultants determined that the Executive Summary would be available upon request from Council Offices and posted on the web site. This eight page summary sought to explore the issues in greater detail then the summary document. A copy of this document is provided in *Appendix 6.*

14.1.3 Notification to the community

The Tweed Link was used as the method to reach the community given it is delivered to every household every week. Advertisements were place in edition 504 and 505 seeking feedback on the strategy recommendations. A copy of both advertisements is provided in *Appendix* 7.

14.1.4 Progress Association Meetings

Council forwarded correspondence by letter, fax or email to all Progress Associations offering them the opportunity for Council staff and the consultants to attend and present at a meeting or to meet with the Executive or their members at a mutually convenient time. A copy of the letter is provided in *Appendix 8.*

Three Associations took up this opportunity:

- Monday 5th March - Kingscliff Ratepayers and Progress Association Inc.
- Tuesday 6th March Uki District and Resident Association - 9 Attendees
- Monday 19th March Murwillumbah Ratepayers and Residents Association Representatives

A summary of those meeting and the issues raised are provided below.

The meetings on the 5 and 6th March, 2007 were facilitated by Anne Prince who summarised the background, methodology and key recommendations of the draft Waste Management Strategy. The forums were interactive and attended by Council Officer's Ian Percy or Adam Faulkner to hear the issues, concerns and opinions of the community at all meetings.

14.1.4.1 Kingscliff Ratepayers and Progress Association Inc.

Monday 5th March, 2007, 8.15 pm Kingscliff Public School Library. Presentation by Anne Prince and Adam Faulkner-18 people attended this meeting. Extract of meeting minutes below:

Waste Management Strategy: Presentation by Anne Prince – Director APC and Adam Faulkner, TSC. Anne distributed the market research summary and spoke to the document. Discussion included the following questions:

- *Will there be a loss of jobs?*
- *Will there be any relocation of staff?*
- *Can some of the waste be used a gully fill?*
- *What volume could be sent to Queensland?*
- *Is it possible to have extra bins for holiday periods especially in the tourist areas?*
- *The sugar mill is using co-generation. Can the waste be used as well?*
- *What rewards could be possible for those who "recycle right" or for minimum waste?*
- *Is it possible to have a 4 bin system as is used in other parts of the world*
- *e.g.plastic, cans, paper, rubbish at all the public areas.*
- *It is not necessary to "hide" the bins – celebrate them.*
- *Schools need the 4 bin system and tangible returns for successful sorting.*
- *Is the Ipswich Road site up to the task?*
- *We need to keep the re-cycle shop.*
- *Re: the twice yearly council pick-up: Will it continue? Has consideration been given to allowing people to request a skip instead? How will computer waste be dealt with?*

Standing orders resumed: Further statement: The current council kerbside pick-ups had support as, although unsightly, it allowed a lot of local recycling to occur prior to the pick-up and that activity was seen a positive.

*The meeting felt that the presentation was very informative and appreciated the opportunity to have Anne and Adam as guest speaker*s.

14.1.4.2 Uki District and Resident Association

Tuesday 6th March, 2007 -7.30 Pm at Uki Community Hall. A Presentation by Anne Prince and Ian Percy was made to the 9 committee representatives. Key Issues discussed:

- opportunities for schools to recycle
- the type of plastics which are able to be recycled
- whether containers needed to be washed prior to placed in bins
- the separation of hard waste for bulky waste collections
- Could a transfer station be built at Murwillumbah landfill if it is closed

14.1.4.3 Murwillumbah Ratepayers and Residents Association Representatives

19th March, 2007. Meeting attended by Adam Faulkner who addressed the recommendations and answered questions for approximately one hour. Residents raised many issues including:

- 240L fortnightly recycling is same yield as current arrangement of 120L weekly. Mr Faulkner responded by saying that the advantages in the system were the decreases observed in contamination, due to the shape and size of 240L allows for increased volumes of product to be diverted from waste etc.
- Council should be composting food scraps i.e. Tryton worm farm, Regenisis, household worm farms. The response was that Council have identified this requires further investigation in the strategy, and that the Tryton worm farm is experiencing problems and that Council has had talks with Regenisis. In the interim of any decision being made, Council offer cost price worm farms/compost bins to residents interested in taking up the option.
- David Stratton from Regenisis was invited to address group by the Secretary, and spoke of their commercial food scrap collection program in Byron Bay, he appreciated Council's efforts in trying to amend the Stotts licence to allow composting to occur on site and noted that the NSW DEC were stalling progress not Council
- Mr Ken Forster of Solo Resource Recovery was present at the meeting and advised that tendering with Gold Coast will encourage multi-nationals companies to tender and service performance will decrease, they are unlikely to travel out to Tyalgum to collect missed service, and that TSC may be bullied by big brother (GCCC), Tweed should keep waste in its own backyard as it may be $26 per tonne at Ipswich today but increases can occur overnight. Council discussed these points generally with the group and advised that the contract expiry timing merely provides an opportunity to engage in talks with GCCC.
- Pollution and pressure on road network from hauling to QLD. Council discussed better environmental outcomes were achievable from world-class landfills across the Qld border.

14.1.5 Stakeholder Engagement

A meeting was arranged by Council with the current waste management contractor – Solo Resource Recovery to meet with council and the consultants prior to the commencement of the community consultation program. The purpose of this meeting was to discuss directly and gauge feedback on the reasoning and rationale behind the Consultants recommendations and to enter into meaningful discussions. This meeting was held on Friday the 2nd March at Council offices with Adam Faulkner and Ian Percy present along with the principle consultants Anne Prince and Rick Ralph.

14.1.6 Community Interaction

14.1.6.1 Phone Calls - Five phone calls were received by Council and two phone calls were received by the consultant who advised the callers that all comments should be in writing. Callers included:

- Mr Warren James – 07 55 999 659 – indicated that he had spoken to Geneieve Slattery on a number of occasions in 2006 and also had written a letter to the paper regarding Solo trucks mixing recyclables with waste. He was pleased that council had listened to his outcry and were now taking professional action.
- David Stratton – Regensis 0427 665 393 –left a message and the consultants have been unsuccessful in making contact

14.1.6.2 Caldera Environment Centre - The consultant delivered a community consultation brochure to the Centre

14.1.6.3 Resident Interaction - As the consultant stayed in the area she met with several local residents who sought info on whether long life milk containers were recyclable, recycling of batteries, bin allocation on MO's and recycling opportunities at schools.

14.2 Community Feedback

Written responses were requested from the community to allow Council and the consultants to consider their views in refining the draft Waste Strategy. Potential respondents were requested to submit comments by Friday 30th March, 2007 by post, fax or email. A summary of all responses is provided on the following pages.

14.2.1 Community Submission Summary

In total nineteen email responses and four letters, two from community members and two from Progress Associations were received. The full text of the email responses is provided in *Appendix 9* and a copy of the letters is provided in A*ppendix 10.* A summary of the community feedback is provided below:

14.2.1.1 Uki Village and District Residents Association - 30th March, 2007

- Commend Council on the key recommendations
- The proposed community education program is essential
- Need incentives to encourage residents to reduce waste
- Demand for organic material and compost locally
- Council should exploit to have organic waste processed locally prior to entering into agreements with Gold Coast

14.2.1.2 Peter Harding at Pottsville - 30th March, 2007 via Diane Rowles

- Shire wide education program should be undertaken prior to new multi bin system

14.2.1.3 Sandra Grayson - 29th March, 2007

- Need education and enforcement to reduce contamination
- Seeks to have uncovered crate style containers
- Offer free or cheap worm farms
- Education of school age children is imperative
- School visits to recycling depots should be organised

14.2.1.4 Julia Newsome - Banora Point 21st March, 2007

- Supports fortnightly recycling collection
- Weekly collection of rubbish OK

- Needs optional additional garden organics bins
- Would rather no change to current bins or collection

14.2.1.5 Thali Bower/Williams - 19th March, 2007

- If goal is to reduce waste by 66% how will 280 litres of rubbish and 240 litres of recycling achieve the goal.
- More space available the more people find something to put in it
- Need to supply 66% of recycling capacity and 34% rubbish capacity
- Rubbish / recycling bin picked up fortnightly at a lower cost than a weekly rubbish / recycling bin – differentiate by colour
- Need to reward correct activity and provide incentives
- Garden organics bin should be "optional"
- Town residents should be encouraged to compost
- Consider having a bi-annual chipper service to process cuttings and prunings on site and leave with residents
- Bi-annual bulky waste collection should be once per year

14.2.1.6 Kelly Tyrrell - Tweed Heads - 7th March

- Weekly recycling

14.2.1.7 Michael Dodd - 7th March, 2007

- Don't wait for to current contract to expire 2009, void contract or re-negotiate
- Need a 240 litre waste and separate recycling bin

14.2.1.8 Megan Hancock - Southern Cross University - 8th March, 2007

- Strategy is excellent – long overdue, completely support

14.2.1.9 Ian and Les Brookes - Banora Point - 8th March, 2007

- Support recommendations – 1, 2, 3, 9, and 11 i.e. separate recycling bins, 140 litre rubbish bin, garden waste bin, differential landfill charges and exploring other landfill options.

14.2.1.10 Wendy Fulford - 9th March, 2007

- Green waste should be collected every week
- Problems accessing document on Tweedlink website

14.2.1.11 Barbara Deece - Banora Point - 9th March, 2007

- Divided bin is hopeless
- Recommendations for waste collection and disposal vast improvement
- Three bin system worked well in suburb in Sydney

14.2.1.12 Rob and Julie Watkins - 13th March, 2007

- Gosford Council offer urban residents with a garden organics bin, 3 bulk collections per year, must be booked in advance, must not be placed out until day prior to the collection or issued a $200 on-the-spot fine.
- Love their green waste bins and a wait with relish for their recycling bins
- More education required.

14.2.1.13 Bronwyn Trathen – Murwillumbah – 14th March, 2007

- Clean Ups **-i**nstead of two per year, rate payers should be given 2 vouchers to take their own rubbish to the tip

14.2.1.14 Jaatro Skam – Mount Burrell - 15th March, 2007

- This couple come from the Netherlands set up a Used Battery Recovery Program that spread to all supermarkets - a battery bin was provided near the retail point and old batteries taken back, stored, emptied into a special drum for collection. Tweed should lead the way in used batteries.

14.2.1.15 Margaret Poole – Tweed Heads South - 14th March, 2007

- Wants two bins – rubbish and recycling
- Most people mix up material in both sides

14.2.1.16 Jan Bidstrup - 15th March, 2007

- Wants dedicated rubbish and recycling bins, used this system in Townsville and worked well
- Current system useless as recycling compartment not large enough

14.2.1.17 Lorraine Atkinson - Banora Point - Wednesday 14th March, 2007

- Education is vital. Seen Ads on Gold Coast TV re how to separate and recycle correctly.
- Need to sticker bins where lids aren't closed correctly
- Need education about take the plastic lids off and squash plastic bottles
- Passionate about "responsible recycling"
- Happy with the current arrangements with the bin size and green bins fortnightly

14.2.1.18 Gordon Davidson – Friday 16th March, 2007

- He would like division : rubbish 70% and recycling 30%
- They put rubbish in the recycling because they don't have enough room and wants a twice per week pick up

14.2.1.19 Neville Chivers – Kingscliff

- Would like to know what extra costs to rate payers these recommendations would occur.
- He is happy to stay with the status Quo
- Does not want a garden waste bin - considers it an imposition to pay for services, not required as one size does not fit all
- Extra services should only be offered to those who register and pay for it

14.2.1.20 Richard Hann – Murwillumbah

- Satisfied with the one divided bin and has no need for a garden waste bin.
- Objects to having three bins and the additional cost
- Considers the community consultation process flawed based on the 215 resident surveys
- Principal of user pays and choice have been abandon
- Residents should be able to elect what division they seek in their bins and garbage trucks adapted to suit

- Garden waste bins are not large enough for trees and shrubs, only the small leaf litter, all of which can be composted as can food waste
- New garden waste service unnecessary
- Criticism of the quality of the council's mulch
- Residents will use the new garden waste bins as a defacto garbage bin
- Greatest public cooperation will be achieved if residents are offered the flexibility in service delivery
- Council should keep resources and expertise in the Tweed and the Gold Coast option is undesirable
- Trucking waste to Ipswich should be an option of last resort.
- The NSW Government needs to pursue measures to reduce the waste entering households
- Murwillumbah landfill should be made into a transfer station
- There should be additional collection points around the Shire particularly for bulky waste and the current bulky household waste collection is good but should be expanded to include bulk garden waste

14.2.1.21 Banora Point and District Residents Association

- They oppose the amalgamation with Gold Coast for the purpose of waste disposal as they will only be a minor partner and could in future become a dumping ground for the regions waste due to our smaller population and undeveloped land - Tweed should remain independent
- They oppose the increase in the number of bins and believe that the current divided bin is sufficient
- The green waste bin is a good initiative, those that want it, have it.
- Potential problems is storage of extra bins
- They oppose the extra charges for different size bins for recycling or general waste
- The present system is satisfactory
- Bi-annual clean ups – dissatisfaction with the length time between when householders place the material on the kerb and when it is collected, becomes unsightly and dangerous, suggest an on-request system at a small cost as was the previous council system.

14.2.1.22 Murwillumbah Ratepayers and Residents Association

- Supports separate bins for recycling and rubbish
- Does not support the co-tendering with Gold Coast Council for a waste management contract as a larger council will call the shots, we need to keep control of our own waste and two councils in different states will have two different sets of state laws, service levels may deteriorate with a multi national waste operator, the shire is rapidly growing, 10,000 households in the next 10 years and Gold Coast have a totally different philosophy and approach to waste management than Tweed
- Rule out transport organic waste to Ipswich and recycle to Carrara given the potential greenhouse gas emissions.
- Local composting has been brushed aside as too difficult and too expensive.
- Regenisis Organic Farm are in discussion with Solo Resource Recovery regarding a commercial collection of food waste for composting at Stotts Creek and they are

confident that the EPA requirements can be met. To set up at Stotts Creek Regenisis would need 8 acres of land and capital investment
- Targets will only be met if organic waste is reduced from landfill as it represents 50%.
- Weeds can be turned into compost with weed seed kill during process
- Seek to encourage households to continue to compost their own waste, by providing affordable compost bins and worm farms and should provide a Bokoshi Bin as an option
- Suggest offering vouchers to householders to defray the cost of more expensive options

14.3 Feedback Summary

The table below summaries the community views relating to these key recommendations

Table 64 - Recommendations and Community Views

No.	Recommendation	Support	Oppose
	Rubbish, Recycling and Garden Waste Service		
1	**Recycling bin -** introduce a separate 240-litre bin collected fortnightly	Support x 8	• Want crate style containers to discourage contamination • Weekly recycling
2	**Rubbish bin -** "user pays" service, 140 litre bin is the standard service, 240 litre larger	• Support x 6	• Keep existing
3	**Garden waste bin -** 240-litre bin, fortnight collection, for single residential dwellings	• Need optional additional bins available	• Collection weekly • Does not require service • No need • Only those who need it pay for it • Encourage home composting
4	**Garden waste bin -** optional for medium-density and multiple-occupancy residential buildings	• Support x 4	
5	**Bulky household waste collection** – continue current	• Support • Include bulky garden waste	• 1 per year • Provide 2 vouchers for free tipping • Reintroduce on call at cost service
	Contracts		
6	**Collection Contract -** consider co-tendering with Gold Coast City Council		• GGCC has different philosophy, bigger, 2 sets state laws, service level will decrease, GGCC poor track record
7	**Sorting recyclables** - consider co-tendering with Gold Coast City Council		• Impact on GGH from truck movements
8	**Process organics** -investigate options locally and with Gold Coast City Council.		• Process locally x 2
	Landfill Charges		
9	**Introduce substantial differential landfill fees -**	• Support	

	sorted and unsorted loads		
	Education and Promotion		
10	Community wide education and information campaign	• Education prior to system introduction • Education and enforcement • Children a priority with depot visits • More education required • Vital	
	Landfill Options		
11	Council close the Murwillumbah operation. Centralize all activities at Stotts Creek. Council investigate South East Queensland's options	Support	• Murwillumbah landfill should be converted to Transfer Station. • Need to keep landfill and resources in Tweed and maintain independence • Waste to Qld should be option of last

14.3.1 Other community comments and suggestions

14.3.1.1 Status quo

- Stay with current bins and collection days x 2
- Quite happy with current arrangements for bin size and with green bin
- Wants to maintain status quo

14.3.1.2 Organics management

- Offer free or very cheap worm farms
- Provide vouchers to offset cost of Bokashi Bin
- Bi-annual chipper service for pruning and branches and leave wood chips for gardens
- Gosford Council offer three bulky garden organics services pa, must book in advance, only place on footpath day prior or $200 on spot fine
- Don't require green bin and would consider imposition to pay for services not required as one size does not fit all
- Why should residents who compost be compelled to use or pay for an unnecessary service
- Critical of council mulch quality
- Expect high levels of contamination in the garden waste service if rubbish bins too small

14.3.1.3 Smaller rubbish bins

- Have 66% recycle space and 34% rubbish space or won't meet target
- Bigger the bin human nature is we fill it
- Need or provide incentives – weekly collection more expensive then fortnightly collection
- Providing 280 litre rubbish and 240 litre recycling per fortnight won't meet targets

14.3.2.4 Bigger rubbish bins

- Go back to 70% rubbish and 30% recycling, not enough space for rubbish, put in recycling side

14.3.2.5 Contract

- Don't wait till 2009 – void the contract and renegotiate

14.3.2.6 Support

- Excellent strategy, long overdue , completely support
- Supports 3 bins system , vast improvement, worked well in Sydney

14.3.2.7 Batteries

- Council should establish a system for battery recovery at point of sale checkouts - lead the way

14.3.2.8 Education

- Gold Coast Council have TV ads on "how to" recycle
- Need to sticker bins if rubbish bin lids not closed prior to collection
- Need to educate to remove lids and squash plastic containers

14.3.2.9 Other

- Flawed community consult program
- Principle of "user pays" abandoned
- Public cooperation will be greatest if flexibility is offered

14.4 Stakeholder Feedback

Solo Resource Recovery submitted a detailed letter in response to our meeting and the consultation documents and Executive Summary. Where the community responded principally to the 11 key recommendations provided in the consult document Solo have responded to the more detailed Executive Summary and the entire recommendations. A summary of their views are expressed below and a full copy of their letter is provided at *Appendix 11* .

14.4.1 Letter received from Solo Resource Recovery 21st March, 2007

- Concerned regarding the survey findings and the accuracy and representation of these findings to that of the wider community. Example provided that whilst - the community advised many had full to overflowing bins, this is not the experience of the contractor
- While there is high support for a dedicated 240 litre bin a different result may have been achieved if the cost of the supplying service of the bin was provided.
- Solo support the three bin system proposed on the following basis:
  - the recycling service be extended to all tenements including seek C & I on a at-least fortnightly basis
  - the green organic service is extended to all residential tenements with the option service to the C & I tenements on a fortnightly basis.
  - that the garbage service be extended to all tenements including C & I on a weekly basis
  - that whilst council may propose separate MGB's for each waste stream, they should allow alternative options that meet the above criteria that may involve

the use of more fewer bins that provide other advantages of council in relation to reduced costs or other benefits.

Specific concerns and comments

1. Tender preparation period of 24 months

- Solo have interpreted that the tenders would close 24 months prior to commencement (*it is intended that work on the contract should commence with a six month period from awarding the contract to contract commencement.)*

2. Regional collection contract with Gold Coast

- The Tweed Council Contractor is large enough in its own right to achieve the critical mass and economies of scale required.
- That a contract with Gold Coast, but separate contract could result in a loss of control, reduction in service levels.
- The critical number to achieve an economy of scale is 20,000 tenements or greater. Tweed is currently 33,400 and rapid population growth is expected to continue
- The major cost components of a contract are collection and bin supply with one vehicle servicing 4,000 urban tenements. There is no reduction in the cost per service based on number of tenements. The only potential savings are in administration costs which accounts for 10% of the total collection contract value
- Large contracts attract industrial disputes and result in poorer service levels.
- Combining of contracts will potentially reduce the number of tenderers submitting tenders due to the capital intensive nature and larger contractors are out of the financial reach of smaller contractors, large multi national companies, majority of which are foreign owned will be the most likely tenderers.

3. MRF processing

- The draft strategy indicates several errors of fact regarding the Visy Carrara MRF. It is not the only MRF in Australia that has a glass refining operation attached, as Earth Care in Somersby processes material from Lake Macquarie, Cessnock, Maitland and Gosford and commenced operations five years prior to Visy Carrara.
- Not all glass fines are recovered from the Carrara MRF and thousands of tonnes are actually stockpiled at the Gold Coast Molendinar Landfill
- Glass fines processing technology is still in the developmental stages and there is no simplistic solutions
- Council should treat with caution the low indicative processing fees quoted by Visy at $10 - $15 per tonne as these are supported by record high paper prices which are currently double the average and can't be sustained in the longer term
- Visy are a dominate player in the recycling industry and have a track record of dishonouring written agreements when and as industry conditions change. For example Visy gave one months notice that glass fines would reduce from $30 – 0 for glass fines income.
- Concern over recommendation 16 relying on Visy and the MRF at Carerra
- Re compaction settings – should council maintain its own MRF that the collection contractor should specify maximum compaction setting of 180 kg/m^3, Solo, based on their experience as a MRF operator and collection contractor believe the maximum compaction should be 200 kg/m^3. Lower than this will increase

collection costs particularly in rural areas. There is negligible impact on the glass from increasing compaction from 180 to 200.

4. Landfill Options

- Council would lose its independence if it was to proceed into developing a regional landfill with Gold Coast City Council at Reidy Creek.
- Gold Coast Council prematurely closed a landfill at Molendinar due to poor town planning and the landfill site has not reached capacity and as a result a cost increase has been placed on all ratepayers as putrescible waste had to be transported to Staplyton.
- In relation to converting the MRF at Stotts Creek to transfer station, it is recommended that it be incorporated into the collection contract to maximise efficiency as a collection processing and disposal facility and allow tenderers to submit holistic and innovative proposals for all facets from collection to disposal
- If council enters into a disposal contract prior to the collection tender process it could restrict the options available to council and evaluating collection tenders.

5. Recycling Service

- The proposed recycling service should be extended to all C & I tenements who produce domestic recycled at offices and workshops and will simplify the recycling message to the entire population whether at home or work using the same system.
- One bin shared between two units is adequate.

6. Public Place Recycling

- Experience in other areas has shown in popular holiday coastal destinations, contamination of recyclables was very high.
- A comprehensive education program may mitigate this; however contamination rates are likely to be very high.

7. **Garden Waste Service**

- Proposed service to single dwellings and an optional service to medium density and MUD's Solo recommend recycling of garden organics to all residential tenements with the optional service to commercial and industrial. Experience shows one between three to be adequate for organics for MUD's.
- According to other councils where it has been delivered to all residential areas is experienced extremely effective in terms of reductions in waste to landfill.
- It provides economy to scale in relation to truck logistics, collection productivities and ensures the cost to council is on a per service basis is kept to a minimum.

9. Optional Garbage Bin Size

- Proposed service to offer a 140 litre as a standard with a 240 litre or 80 litre option experience shows that 140 litre bin with a 240 litre garden organics and 240 litres recycling bin are adequate.
- It is recommended that in lieu of a 240 litre bin for larger households that a second 140 litre be provided at a second garbage rate.
- Introducing additional bins sizes as to bin stock, administration change over and potential loss of collection vehicles, economies to scale and productivity.

In summary

- Little will be gained from joining forces with Gold Coast given Tweeds, low waste management costs and charges, the quality of service delivered to the ratepayers, the technological advancement introduced and the political instability of Gold Coast Council. Any tenderer would focus, because of the population balance on Gold Coast at the expensive to Tweed.
- Council should also ensure that it can seek alternate collection systems and proposals from tenderers.
- Council should not lock itself into waste, recycling or organics processing contracts prior to the collection contract, but rather combine processing options with the collection tender and seek innovative and cost effective proposals.

14.5 Issues For Consideration

14.5.1 Community Issues

The following concerns and opinions expressed by the community members are in the opinion of the consultants worthy of further consideration in the preparation of the final document include:

- Collection Contract - not in favour of co-tendering with Gold Coast City Council for collection or disposal options due to concerns relating to different council philosophies, experience, size , population base, state laws and service levels may decrease
- Close Murwillumbah – one submission suggested converting to transfer station
- Bulky garden waste service to be one of the bulky waste collections
- Bulky waste collection on footpath too long can only place on footpath the weekend prior to collection week or consider $200 on spot fine
- Need for incentives
- Need to tackle organics to achieve targets and process and keep compost locally

14.5.2 Stakeholder Issues

The following issues expressed by the stakeholder are in the opinion of the consultants worthy of consideration and inclusion in the final Waste Strategy.

- Reconsideration of co-tendering with Gold Coast Council
- Any extra bins should be of the 140 litre size not a 240 litre bin option to reduce bin stock, cost and administration
- Seek alternate system options from tenderers and not be overly prescriptive but specify outcomes desired at least cost
- Consider the timing of entering into processing and disposal contracts before collection contract awarded
- Provide waste and recycling and services to all tenements including the commercial and industrial sector.
- Provide garden waste service to all tenements with an option for the commercial and industrial sector.

14.5.3 Community perceptions to be managed

- The strategy did not propose to transport organic waste to Qld but to continue to process and make recovered product available to the local community
- Queensland's landfill option will create added greenhouse gas with transport – this will be offset by the methane gas capture at the landfill site
- Some residents consider it an imposition to pay for services not required – the new services should be provided within the existing budgetary framework. Garden waste bins may cost $35 per year which translates to 67cents per week.

14.6 Conclusion

The draft domestic waste management strategy was prepared based on detailed quantitative and qualitative research, analysis and assessment as to how waste arising from the community should be managed including collection, treatment and disposal. The draft waste strategy contained 47 recommendations.

While the program yielded a disappointing result in terms of the number of community responses the quality of the feedback was very high and mostly well considered reflecting an informed and caring community.

Based on the community consultation feedback Council staff and the consultants made a number of changes to the recommendations of the draft Domestic Waste Management Strategy including: removing 10 recommendations associated with co-tendering with Gold Coast City Council, seeking DECC approval for processing food waste during trials, the provision of a chemical storage cabinet and training of staff to receive and process chemicals. A further 11 recommendations were modified. The final number of recommendations is now 35.

15. STRATEGIC FRAMEWORK

Regional areas face their own unique waste avoidance and resource recovery challenges, governed by population distribution, geographic area and distances required to aggregate materials to reach markets.

By taking a regional approach rather than a council-specific approach and looking at regional co-operation for greater resource recovery, better use of regional infrastructure and sharing service delivery will enable a more cost-effective service to be provided to the community which Council serves.

Extensive research has been undertaken to determine the most appropriate integrated waste management system for Tweed Shire, based on the waste stream characteristics, quantities and budgetary constraints. This section contains the strategic framework for implementing and delivery of the proposed waste management strategy including key performance indicators, implementation program and budget for resourcing the strategy.

15.1 Strategic Framework

Vision: ***Working towards Zero Waste***

Mission: ***Manage waste in a sustainable way for the benefit of current and future generations***

Goal: ***Maximise resource recovery and minimise waste generation, treatment and disposal through the use of economic instruments and community education in accordance with best- practice principles and demonstrating compliance with:***

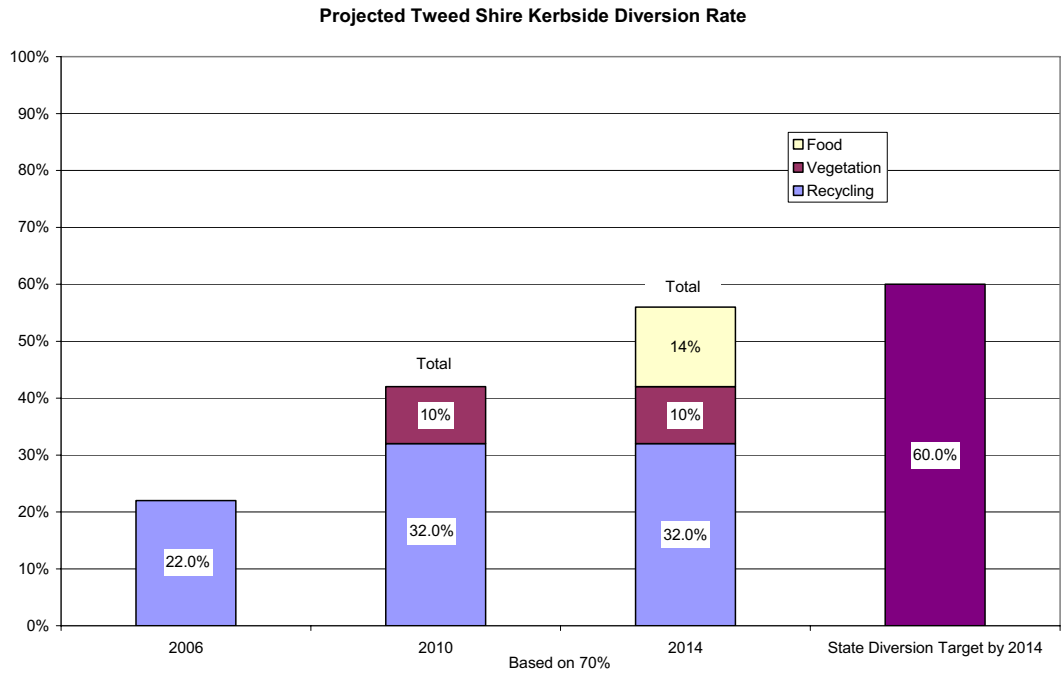
- ***Ecological sustainability***
- ***The waste management hierarchy***
- ***The need for continuous improvement,***
- ***The need for leadership and innovation***
- ***Transparency of pricing policies***
- ***Social equity***
- ***Compliance with statutory obligations***
- ***Benchmarking progress.***

15.2 System Performance Indicators

The achievement of the waste targets will require continuous improvement, and progress is not likely to be linear.

Targets: From a baseline of 27% diversion from landfill in 2006 we seek, through the continued efforts of the community and Council, to reach 42% by December 2010 and aim for 56% by 2014. Targets should be set and reviewed every two years based on agreed key performance indicators.

Chart 31 - Projected Tweed Shire Kerbside Diversion Rate



Regular audits should be conducted and compared in the same climatic season, using the same method to enable trends to be assessed and direct comparisons made between audits. The audits should be conducted for all waste streams.

15.3 Recommendations

Outlined below are the 35 recommendations in the order as they appear within this report which does not necessarily reflect their priority.

1. ***That Council continue to monitor the activities of the South East Queensland Waste and Recycling Network Group and the NEWF. It would appear that Tweed Shire has more in common with the Queensland group and its activity better reflects the immediate and long-term needs of Council.***

2. ***That Council request the waste contractor to have trained staff available at all times to receive and process DrumMUSTER containers.***

3. ***That the contractor uses the service of the free DrumMUSTER training program.***

4. ***That Council continue to support the efforts of DrumMUSTER through community education and promotion of either continuous receipt of containers or one-off collection programs.***

5. ***Council continue to promote that asbestos should be removed, handled and stored in accordance with the Work Cover Regulation.***

6. ***That all batteries received at all waste depots be correctly stored.***

7. ***That Council include the correct disposal of gas cylinders and bottles in future community educational material and promote the drop-off of these materials at each waste disposal facility.***

8. ***That Council continue to support the operation of reuse facilities at all waste disposal facilities.***

9. ***Council ensures the community is informed about household hazardous collection programs.***

10. ***That Council continue to promote the current practice of source-separation and free delivery of recyclables at all waste facilities.***

11. ***That Council should introduce a new fully commingled recycling service in a 240-litre bin collected fortnightly to all of its residents.***

12. ***That Council should introduce a garden service in a 240-litre bin collected fortnightly to all single residential dwellings in townships.***

13. ***That Council offers an optional garden waste service to all medium-density and multiple-occupancy residential buildings.***

14. ***That Tweed Council offer residents a 140-litre bin as the standard service with the option of a differential service rate for an 80-litre or 240-litre in the interests of social equity. The price differential for these service options will be assessed once the tender for domestic waste management services is completed.***

15. ***That new lids in accordance with the Australian Standard 4123 Mobile Waste Container be provided to all existing and new domestic waste, recycling and garden organics bins as part of the collection contract.***

16. ***Council should continue to monitor developments by other local governments which have introduced or are proposing to introduce organic waste collection programs, in particular, Coffs Coast and Hastings Councils, to learn from their experiences. Council should also assess new and emerging technologies and processes which have applicability for the area.***

17. ***That Council introduce dedicated collections for specific materials, that is, metals / whitegoods and continue with the bi-annual household cleanup service.***

18. ***Should Council maintain its own MRF, then the future collection contract should specify a maximum compaction for the collection of recycling at 180 kg/m^3 and in accordance with best practice.***

19. ***That Council enter into discussions with third parties in relation to the acceptance of Tweed Shire Council recyclables.***

20. ***That a two-bin system – garbage and 'containers only' or alternate litter bin system be trialed in key strategic areas.***

21. That a performance review of the system be undertaken three months after the system is introduced.

22. Recycling stations should be provided in strategic visitor locations to reduce the incidence of visitors using private or commercial bins.

23. That the existing blue litter bins should be replaced with green bins with red lids for rubbish and yellow lids for recycling.

24. That Council develop a Waste Not DCP and place a notation or condition on all Development Approvals requiring the source separation and containerisation of all waste on building sites to minimise waste generation and prevent unintended pollution.

25. That source-separation of loads prior to delivery is desirable due to the differential pricing policy to be applied to mixed loads at Stotts Creek and Murwillumbah landfills.

26. That Council undertakes a community education and industry information campaign to promote source-separation of all loads delivered to the Stotts Creek landfill.

27. That Council directly approaches the significant users of its landfills on a personal basis to inform and educate them regarding the role of source-separation and of Council's intention to introduce a substantial change to the future fee structure and charges for disposal of waste.

28. That Council resolves to introduce differential landfill fees for sorted and unsorted loads and offer a significant price variation to create the necessary motivation for source-separation within the community.

29. That council introduces a significant differential pricing policy to encourage source – separation by waste generators of building materials.

30. That the current education and communication program delivered by the contractor be reviewed to assess and evaluate the effectiveness and value for money prior to developing the new contract specification.

31. Given the high proportion of visitors to the area, that the use of graphic images supported by the English words must be incorporated into all communication modes

32. That Council must commit sufficient and ongoing budgetary resources to continue the education of both residents and visitors.

33. That the waste depots should be renamed as Resource Recovery Centres.

34. That Council ensure that the new waste education centre is a demonstration site for green building and sustainable living and be called The Sustainable Living Centre.

35. That concurrently with developing plans for the local landfill, Council reviews other long-term disposal options for the Shire's waste as identified in the Strategy having regard to transport and disposal costs, method and number of vehicle.

15.4 Action Plan and Timeline

To implement the Waste Management Plan and recommendations outlined above, the following key actions are required**.** It should be noted that this Action Plan is not exhaustive and the timelines provided are indicative only. Many items will be worked on over a period of time, and many rely on others and are inter-related. The purpose of the table is to consolidate the actions, given the further research and review of the indicative costings proposed in this study.

To prepare for the new contract for services, the NSW DECC has developed a Model Waste and Recycling Collection Contract toolkit with the intention of helping councils to develop quality contract documents that will assist in delivering an efficient and effective waste and resource recovery collection system. The Model Contract is a comprehensive tendering package comprising the following sections:

Section A	Information for Tenderers
Section B	Conditions of Tendering
Section C	Conditions of Contract
Section D	Specification
Section E	Sample Advertisement
Section F	Tender Return Schedules
Section G	Attachments

A User Guide has been prepared to provide additional information for councils and highlight key issues and decisions that are required to be made when customising the Model Contract documents for a particular application. The benefits of using the Model Waste and Recycling Collection Contract include:

- Improved quality of documents
- Time and money saved on preparation costs for tenders and contracts.
- A greater focus on the results and outcomes sought to be achieved
- Reduced time spent on contract administration through adoption of consistent approaches.

The Model contract clearly articulates the steps and length of time required to develop, prepare and award a new collection contract. It recommends a period of 24 months be allowed. Council should use the above documentation to develop new contract documentation and tender for services based on the outcomes of this Strategy**.** However, prior to this, Council should hold discussions with Gold Coast City Council regarding co-tendering for the collection and possible processing options.

Table 65 - NSW DECC Model Contract Management Timeline

Activity	Time
Consultation and Planning	9 months
Prepare Tender Documents	3 months
Tendering	4 months
New Service Commissioning	8 months
Total	**24 months**

16. CONCLUSION

Unlike many other councils throughout NSW, Tweed Shire finds itself in a very sound financial position in relation to waste management, with over $6 million currently in the reserve fund and a modest domestic waste management charge of $189 per year.

Council is facing a number of challenges in the future to achieve the state government waste strategy target of 60% diversion by the year 2014, as current diversion is 22%. The current collection contract expires in November 2009 and therefore this strategy is timely to provide guidance to Council on the type of services which could be offered in the future.

To meet both community needs and state government obligations, it is strongly recommended that Council introduce a separate waste and recycling collection program. The waste collection service should offer the residents the option of garbage bin size with a corresponding differential charge. This allows smaller and single-person households to pay a minimal fee for a 80-litre bin, whilst those with larger families pay for either the standard 140-litre or larger 240-litre bin.

The introduction of a 240-litre bin for recyclables collected fortnightly and the option of a fortnightly garden organic service for single residential premises in townships will greatly enhance the current diversion rate from landfill.

Many councils, nationally, are pioneering the co-collection of garden waste and food waste. It is strongly recommended that Council keeps a watching brief on the developments that are occurring in relation to this organics collection program and makes provision in the collection contract to include the collection of food in the organics bin when processing capacity is available.

Council is in the fortunate position of having Gold Coast City Council to its north, and a relatively seamless council boundary between Tweed Heads and Coolangatta. Gold Coast City Council's current collection contract for domestic waste also expires in 2009. This is a unique opportunity for Tweed Shire to enter into discussions with Gold Coast regarding the letting of a sub-regional collection contract for domestic collection and the processing of recyclables.

The recyclables collected for Council's kerbside program should be processed at the Visy Facility located at Carrara, which also has adjacent to it a glass refining processing facility. By processing all kerbside collected recyclables at this facility, almost 100% of the material placed in the bin will recovered, whereas currently less than 60% of the material is currently recovered, due to the high levels of contamination from garbage in the divided bin system and the generation of glass fines during the collection and MRFing stages.

The opportunity is also available to explore processing of the entire organics stream. The increasingly stringent requirement imposed by the regulators requires significant capital investment and infrastructure, which requires throughput to reduce the processing costs to a level that is sustainable and cost-effective for the community to

bear. Tweed Council, by aligning with Gold Coast City Council, would benefit financially given the economy of scale which Tweed Shire cannot achieve alone.

Due to the geographic location of Tweed and the abundance of landfill space in South East Queensland, Council also has the opportunity to benefit from low landfill gate prices of between $25–$30 per tonne at existing fully engineered landfills or bio-reactors. It is proposed that the existing Materials Recovery Facility at Stotts Creek be converted to a transfer station, and that the waste generated from the council area be potentially hauled to a landfill located in South East Queensland for a total cost of around $50 per tonne.

The Department of Environment and Conservation has expressed areas of concerns about leachate generation and groundwater contamination at both Murwillumbah and Stotts Creek Landfills. It is strongly recommended that the Council close Murwillumbah landfill and centralise all activities at Stotts Creek, which is centrally located in the council area.

We believe that the research undertaken and the recommendations in this report provide clear direction to Council as to what is the most socially responsible, economic viable and environmentally sustainable outcome to meet both the community's needs and state government's expectations in relation to waste management for Tweed Shire Council.

APPENDIX 1 – SOCIO-DEMOGRAPHICS TWEED SHIRE

Demographic and Social Indicators for Tweed Shire

1. Population (all people)

	Number
Males	35,943
Females	37,878
People	73,821

Source: ABS Census 2001

2. Age and gender (all people excluding overseas visitors)

	Males	Females	People	Percentage
0–4	2,129	2,017	4,146	5.6%
5–9	2,573	2,357	4,930	6.7%
10–14	2,655	2,547	5,202	7.0%
15–19	2,371	2,123	4,494	6.1%
20–24	1,387	1,280	2,667	3.6%
25–29	1,472	1,636	3,108	4.2%
30–34	1,780	2,042	3,822	5.2%
35–39	2,243	2,517	4,760	6.4%
40–44	2,586	2,905	5,491	7.4%
45–49	2,392	2,598	4,990	6.8%
50–54	2,401	2,344	4,745	6.4%
55–59	2,002	2,229	4,231	5.7%
60–64	2,046	2,298	4,344	5.9%
65+	7,906	8,985	16,891	23.0%
Total	35,943	37,878	73,821	100.0%
Median age	42	44	43	

3. Individual weekly income (people aged 15 and over)

	Males	Females	People	Percentage
Up to $79	1,923	2,769	4,692	7.8%
$80–$199	6,139	7,540	13,679	22.8%
$200–$299	4,605	6,877	11,482	19.1%
$300–$399	2,892	3,850	6,742	11.2%
$400–$499	2,503	2,719	5,222	8.7%
$500–$599	2,471	1,738	4,209	7.0%
$600–$699	1,651	1,002	2,653	4.4%
$700–$799	1,234	626	1,860	3.1%
$800–$999	1,437	698	2,135	3.6%
$1,000–$1,499	1,356	599	1,955	3.3%
$1,500 or more	498	161	659	1.1%
Not stated	1,875	2,374	4,249	7.1%
Overseas visitors	197	251	448	0.8%
Total	28,781	31,204	59,985	100.0%
Median individual weekly income	$324	$258	$281	

4. Family type (all families)

	Number	Percentage
Couple family with children	7,163	35.8%
Couple family without children	9,129	45.6%
One parent family	3,503	17.5%
Other family	234	1.1%
Total	20,029	100.0%

5. Dwelling structure (all private dwellings)

	H'hlds	People	Pers/H'hld
Separate house	19,107	51,551	2.7
Semi-detached, townhouse etc	4,599	9,153	1.99
Flat, unit or apartment	3,857	6,573	1.7
Other dwelling	2,611	4,519	1.73
Not stated	109	228	2.09
Unoccupied private dwellings	2,691	–	–
Total	32,974	72,024	2.18

6. Dwelling nature of occupancy (all households, i.e., occupied private dwellings)

	Number	Percentage
Fully owned	14,560	48.1%
Being purchased	5,701	18.8%
Rented from housing authority	786	2.6%
Rented: private/other	7,217	23.8%
Other occupancy type	835	2.8%
Occupancy type not Stated	1,187	3.9%
Total	30,286	100.0%

7. Labour Force Status (people aged 15 and over)

	Males	**Females**	**People**
Employed	12,847	11,033	23,880
Unemployed	2,124	1,330	3,454
Not in the labour force	12,551	17,129	29,680
Labour force status not stated	1,064	1,463	2,527
Total	28,586	30,955	59,541
Unemployment rate	14.2%	10.8%	12.6%
Participation rate	54.4%	41.9%	47.9%

8. Number of vehicles (all households)

	Number	Percentage
None	3,210	10.6%
One	14,933	49.3%
Two	8,043	26.6%
Three or more	2,337	7.7%
Not Stated	1,760	5.8%
Total	30,283	100.0%
Average vehicles	1.6	

9. Household income (all households)

	Number	Percentage
Negative/Nil income	167	0.6%
$1–$199	1,407	4.9%
$200–$299	3,405	12.0%
$300–$399	4,065	14.3%
$400–$499	3,371	11.8%
$500–$599	1,975	6.9%
$600–$699	2,159	7.6%
$700–$799	1,357	4.8%
$800–$999	2,362	8.3%
$1,000–$1,199	1,707	6.0%
$1,200–$1,499	1,500	5.3%
$1,500–$1,999	1,236	4.3%
$2,000 or more	679	2.4%
Partial income stated(b)	1,787	6.3%
All incomes not stated(c)	1,310	4.5%
Total	28,487	100.0%
Median household income	$514	

10. Comparison of Tweed LGA and NSW total for key demographic and social indicators

Indicator	Tweed LGA	NSW
Population	73,821	6,311,168
Households	30,286	2,343,677
Median age	43	35
Median weekly individual income	$281	$387
% of households in separate houses	63.1%	70.3%
% unoccupied dwellings	8.2%	8.9%
People per household	2.18	2.39
% of households owned or purchasing	66.9%	64.4%
% of households rented from housing authority	2.6%	4.9%
Unemployment rate	12.6%	7.2%
Average vehicles per household	1.6	1.8
Median weekly household income	$514	$829

APPENDIX 2

URBAN RESIDENT SURVEY

Tweed Resident Survey – Urban

Hello, I'm conducting a survey on behalf of the Tweed Shire Council. Do you have a couple of minutes to answer some questions? Council will be using these results to develop a new waste plan for the community.

Q1. Do you live in an area with a kerbside garbage collection service? *Circle correct one* **Yes / No**
If yes, continue, if no, go to rural survey.

Q2. How often do you put your rubbish bin out for collection?

☐	Weekly
☐	Fortnightly
☐	Monthly
☐	Other

NB some high-rise units have a bulk bin

Q3 Does your rubbish bin have a divider? *Circle correct one* **Yes / No**
If NO, did it have a divider? Yes / No

Other _____

Q4. Can you tell me what goes in which side of the rubbish bin?

Front when facing the bin: rubbish / recycling *Circle correct one.*

Back when facing the bin: rubbish / recycling *Circle correct one.*

Q5. On average, how full is your rubbish side each time you put it out?

☐	< 25%
☐	25–50%
☐	50–75%
☐	75–100%
☐	> 100%

Q6. On average, how full is your recycling side each time you put it out?

☐	< 25%
☐	25–50%
☐	50–75%
☐	75–100%
☐	> 100%

Q7. Does your rubbish or recycling side fill up first? *Tick one only.*

Rubbish	☐
Recycling	☐
About the same	☐

Q8. Do you put your rubbish/recycling in plastic bags before putting them in the bin. *Tick if yes only.*

	Yes	No
Rubbish	☐	☐
Recycling	☐	☐

Q9. Which materials do you separate for recycling?

☐ Glass bottles

- [ ] Aluminium cans
- [ ] Metal food cans
- [ ] Plastic drink containers
- [ ] Detergent and shampoo containers
- [ ] Paper/cardboard
- [ ] Milk cartons
- [ ] Other: specify

Q10. What do you do with any excess recyclables ?

- [ ] Stotts Creek waste depot
- [ ] Murwillumbah waste depot
- [ ] Tyalgum transfer station
- [ ] Rubbish bin
- [ ] Other: specify

_____

Q11. Do you think Council should introduce a separate bin just for recycling collected every fortnight?

- [ ] Yes
- [ ] No

Q11a. Why _____

Q11b. Would you be willing to pay additional charges for this service ?

Q12. Do you have a wheelie bin for garden waste collected fortnightly?

- [ ] Yes
- [ ] No

Q12a. If no, did you know Council provides this service for an additional cost of $35 per year (some rural areas excluded)?

- [ ] Yes
- [ ] No

Q13. Do you think Council should introduce this service as a standard service for every property?

- [ ] Yes
- [ ] No

Q14 What do you do with leaves, prunings & grass clippings?

- [ ] Garden waste wheelie bin
- [ ] Take to waste depot [ ] Stotts Creek [ ] Murwillumbah [ ] Tyalgum
- [ ] Compost/mulch
- [ ] Burn
- [ ] Other

Q15. Do you use Council's bulky household clean-up service?

- [ ] Yes
- [ ] No

Q15a. If yes, how often?

☐	1 per year
☐	2 per year

Q16. Do you visit the waste depots or transfer station *Circle one* **Yes / No** ***(go to Q22)***

If yes, which one? – *tick box*

☐	Stotts Creek waste depot
☐	Murwillumbah waste depot
☐	Tyalgum transfer station
☐	Other_____

Q17. If yes, how frequently

	Stotts Creek,		**Murwillumbah ,**		**Tyalgum**
☐	Weekly	☐	Weekly	☐	Weekly
☐	Fortnightly	☐	Fortnightly	☐	Fortnightly
☐	Monthly	☐	Monthly	☐	Monthly
☐	Six times per year	☐	Six times per year	☐	Six times per year
☐	4 times per year	☐	4 times per year	☐	4 times per year
☐	3 times per year	☐	3 times per year	☐	3 times per year
☐	Twice per year	☐	Twice per year	☐	Twice per year
☐	Once per year	☐	Once per year	☐	Once per year

Q18. What size load do you normally deliver ?

	Stotts Creek		**Murwillumbah**		**Tyalgum**
☐	Car, station wagon	☐	Car, station wagon	☐	Car, station wagon
☐	Ute	☐	Ute	☐	Ute
☐	Small trailer	☐	Small trailer	☐	Small trailer
☐	Large trailer	☐	Large trailer	☐	Large trailer
☐	Truck	☐	Truck	☐	Truck

Q19. What type of materials do you take to the waste depot ?

	Stotts Creek		**Murwillumbah**		**Tyalgum**
☐	Household waste	☐	Household waste	☐	Household waste
☐	Metals/whitegoods	☐	Metals/whitegoods	☐	Metals/whitegoods
☐	Garden waste	☐	Garden waste	☐	Garden waste
☐	Wood and timber	☐	Wood and timber	☐	Wood and timber
☐	Building material	☐	Building material	☐	Building material
☐	Furniture/mattresses	☐	Furniture/mattresses	☐	Furniture/mattresses
☐	Paper/cardboard	☐	Paper/cardboard	☐	Paper/cardboard
☐	Glass bottles	☐	Glass bottles	☐	Glass bottles
☐	Plastic bottles	☐	Plastic bottles	☐	Plastic bottles
☐	Aluminium cans	☐	Aluminium cans	☐	Aluminium cans
☐	Car batteries	☐	Car batteries	☐	Car batteries
☐	Motor oil	☐	Motor oil	☐	Motor oil
☐	Tyres	☐	Tyres	☐	Tyres
☐	Reuse shop	☐	Reuse shop	☐	Reuse shop
☐	Other	☐	Other	☐	Other

If answered *Murwillumbah* to Q17, ask:

Q20. If Council were to close Murwillumbah landfill, would you travel to Stotts Creek Landfill which is open 7 days per week?

Circle **Yes / No**

Q21 Do you think the current opening hours at Stotts Creek Landfill Mon–Fri 7 a.m. – 4 p.m. , Sat–Sun, public holidays 10 a.m. – 4 p.m. are adequate ? *Circle* **Yes / No**

Q21a. If NO, what should they be ? _____

Q22. What do you do with any food waste?

☐	Garbage bin	☐	Chooks
☐	Compost bins	☐	Other
☐	Worm farm	☐	

Q23. Are you aware that Council provides FREE mulch at the Murwillumbah depot ?
Circle **Yes / No**

Q23a Are you aware that Council provides mulch at Stotts Creek Landfill for $15/trailer load?
Circle **Yes / No**

Q24. Do you have any suggestions on how waste management could be improved in Tweed?
Write in answers.

_____

_____

_____

_____

_____

Finally, just some questions about yourself …

Q25. How many people in your household? _____

Q26. What type of home do you live in?

☐	Single house in township	☐	Home Unit *see below*
☐	Single house on rural land	☐	How many in complex?
☐	Villa, townhouse	☐	Caravan park
☐		☐	Other

Q27. In what age range do you fall?
Tick box

☐	16–24	☐	45–54
☐	25–34	☐	55+
☐	35–44	☐	

Q28. Gender/Tick box Male ☐
Female ☐

Thank you for participating.

APPENDIX 3

RURAL RESIDENT SURVEY

Tweed Council Resident Survey – Rural

Hello, I'm conducting a survey on behalf of your local council. Do you have a couple of minutes to answer some questions? The Council will be using the results of the survey in developing a new waste strategy.

Q1. Do you live in an area with a garbage collection service *Circle correct one* **Yes / No**
If yes (urban) and if no (rural).

Q2. Please indicate how you dispose of your general household waste? (*tick one or more)*

- ☐ Burn it – go to Q3
- ☐ Bury it – go to Q3
- ☐ Take to landfill/transfer station – go to Q4
- ☐ Compost – go to Q4
- ☐ Other – go to Q4

Q3. How often would you burn or bury your waste? (*tick one*)

- ☐ Weekly
- ☐ Fortnightly
- ☐ Monthly
- ☐ Other – please specify:

Q4. Do you visit the waste depots or transfer station *Circle one* **Yes / No *(Go to Q10)***
If yes, which one? – *tick box(es)*

- ☐ Stotts Creek Landfill
- ☐ Murwillumbah Landfill
- ☐ Tyalgum Transfer Station
- ☐ Other_____

Q5. How frequently – *tick box*

Stotts Creek,	**Murwillumbah,**	**Tyalgum**
☐ Weekly	☐ Weekly	☐ Weekly
☐ Fortnightly	☐ Fortnightly	☐ Fortnightly
☐ Monthly	☐ Monthly	☐ Monthly
☐ Six times per year	☐ Six times per year	☐ Six times per year
☐ 4 times per year	☐ 4 times per year	☐ 4 times per year
☐ 3 times per year	☐ 3 times per year	☐ 3 times per year
☐ Twice per year	☐ Twice per year	☐ Twice per year
☐ Once per year	☐ Once per year	☐ Once per year

Q6. What size load do you normally deliver? – *tick box*

Stotts Creek	**Murwillumbah**	**Tyalgum**
☐ Car, station wagon	☐ Car, station wagon	☐ Car, station wagon
☐ Ute	☐ Ute	☐ Ute
☐ Small trailer	☐ Small trailer	☐ Small trailer
☐ Large trailer	☐ Large trailer	☐ Large trailer
☐ Truck	☐ Truck	☐ Truck

Q7. What type of materials do you take to the waste depot ? – *tick box*

	Stotts Creek		**Murwillumbah**		**Tyalgum**
☐	Household waste	☐	Household waste	☐	Household waste
☐	Metals/whitegoods	☐	Metals/whitegoods	☐	Metals/whitegoods
☐	Garden waste	☐	Garden waste	☐	Garden waste
☐	Wood and timber	☐	Wood and timber	☐	Wood and timber
☐	Building material	☐	Building material	☐	Building material
☐	Furniture/mattresses	☐	Furniture/mattresses	☐	Furniture/mattresses
☐	Paper/cardboard	☐	Paper/cardboard	☐	Paper/cardboard
☐	Glass bottles	☐	Glass bottles	☐	Glass bottles
☐	Plastic bottles	☐	Plastic bottles	☐	Plastic bottles
☐	Aluminium cans	☐	Aluminium cans	☐	Aluminium cans
☐	Car batteries	☐	Car batteries	☐	Car batteries
☐	Motor oil	☐	Motor oil	☐	Motor oil
☐	Tyres	☐	Tyres	☐	Tyres
☐	Reuse shop	☐	Reuse shop	☐	Reuse shop
☐	Other	☐	Other	☐	Other

Q8 If council were to close Murwillumbah landfill would you travel to Stotts Creek Landfill which is open 7 days per week?
Circle **Yes / No**

Q9 Do you think the current opening hrs at Stotts Creek Landfill Mon – Fri 7am – 4pm, Sat – Sun, public holiday 10 a.m. – 4 p.m. are adequate? ***Circle*** **Yes / No**

Q9a. If NO what should they be ? _____

Q10. Do you separate any materials for recycling? *Circle one* **Yes / No** ***If no, go to Q13***

Q11. What materials do you separate for recycling ? (*tick all that apply*)

☐ Glass/bottles
☐ Aluminium cans
☐ Plastic drink containers
☐ Metal food cans
☐ Paper/cardboard/milk cartons
☐ Other *(please list)*_____

Q12. What do you do with your separated recyclables? (*tick all that apply*)

☐ Landfill
☐ Transfer station
☐ Other _____

Q13. What do you do with any garden waste like leaves, prunings & grass clippings?

☐ Take to waste depot ☐ Stotts Creek ☐ Murwillumbah ☐ Tyalgum
☐ Compost/mulch
☐ Burn
☐ Other

Q14. What do you do with any food waste? (*tick all that apply*)

- ☐ Compost
- ☐ Worm farm
- ☐ Chooks & pigs
- ☐ Other

Q15. Are you aware that Council provides FREE Mulch at the Murwillumbah depot?
Circle **Yes / No**

Q15a. Are you aware that Council provides mulch at Stotts Creek Landfill for $15/trailer load?
Circle **Yes / No**

Q16. Do you have any suggestions on how waste management could be improved in Tweed?
Write in answers.

Finally, just some questions about yourself …

Q17. How many people in your household? _____

Q18. What type of home do you live in?

- ☐ Single house on rural land
- ☐ Caravan park
- ☐ Other

Q19. in what age range do you fall? *Tick box*

- ☐ 16–24
- ☐ 25–34
- ☐ 35–44
- ☐ 45–54
- ☐ 55+

Q20. Gender/Tick box Male ☐ Female ☐

Thank you for participating.

APPENDIX 4

TWEED COUNCIL VISITOR SURVEY

Tweed Council Visitor Survey

Hello, I'm conducting a survey on behalf of the Tweed Shire Council. Do you have a couple of minutes to answer some questions. Council will be using these results to develop a new waste plan for the community.

Screening question – Are you a visitor/resident/holiday-home owner?
If not visitor, use resident survey form.

Q1. As a visitor, are you on: *Tick box*

☐ Self-drive
☐ Tour

☐ Day visitor – *go to Q6*
☐ Overnight – *go to Q3*

Q2. What type of accommodation are you staying in? *(tick all that apply)*

☐ Hotel/motel/resort
☐ Self contained cottage/house
☐ Self contained unit
☐ Hosted accommodation – farmstay, bed and breakfast
☐ Backpacker hostel
☐ Camp or caravan
☐ Family/friends – e.g,. residential or holiday home
☐ Other _____

Q3. At your accommodation what did you do with the rubbish generated during your stay?

☐ Bin inside accommodation – go to Q9
☐ Bin outside accommodation refer to *Q6–Q8*
☐ Litter bin in public area – go to Q9
☐ Other _____

Q4 Did your rubbish bin have a divider in the middle? *Circle one* **Yes / No**

Q4a If yes, had you seen this type of bin before? *Circle one* **Yes / No**

Q4b If yes, where? _____

Q5. Did you find the bin easy to understand regarding the two compartments? *Circle one*
Yes / No

Q6. Can you recall what goes in which side of the rubbish bin?

Front when facing the bin: rubbish / recycling *Circle one.*

Back when facing the bin: rubbish / recycling *Circle one.*

Q7. Did your rubbish or recycling side fill up first? *Tick one only.*

☐ Rubbish
☐ Recycling
☐ Neither
☐ About the same

Q8 Did you put your rubbish/recycling in plastic bags before putting them in the bin?

Tick if yes only.

	Yes	No
Rubbish		
Recycling		

Q9. Where did you typically consume food?

	Accommodation	Restaurant/Café	Outdoors/parks
Breakfast			
Lunch			
Dinner			

Q10. Did you separate any recyclable items such as bottles, cans and paper from your general rubbish? *Tick box.*

☐ Yes
☐ No *go to Q10*

Q11. What did you do with the recyclables generated during your stay?

_____

Q12. Did you actively look for a place to recycle your bottles/cans/plastic?

☐ Yes
☐ No

Q13. Did you find any, and if so, where?
Tick box and write in

☐ Did not find any
☐ Found some at _____

Q14. Have you seen or used a public litter bin while in the area ?

☐ Used Where?_____
☐ Seen
☐ Not used or seen

Q15. Would you have expected recycling facilities to be available?

☐ Yes
☐ No

Q16. Do you have any suggestions on how waste management could be improved?
Write in answers.

_____

_____

_____

_____

_____

Finally, just some questions about yourself …

Q17. How many people are there in your party? *Write in number* ☐

Q18. How many nights did you stay in the Tweed area? *Write in number* ☐

Q19. In what age range do you fall?

Tick box

	16–24
	25–34
	35–44
	45–54
	55+

Q20. Where do you normally live?

	Postcode if in Australia
	Country name if not Australia

Q21. Gender/Tick box

Male	
Female	

APPENDIX 4

Tweed Link Promotion

Postage Paid

THE TWEED TWEED SHIRE COUNCIL

Tweed Link

A TWEED SHIRE COUNCIL PUBLICATION ISSUE 491 NOVEMBER 21, 2006 ISSN 1327-8630

Setting a 20-year vision for Murwillumbah

THE Tweed community is invited to participate in the Murwillumbah Town Centre Project, a planning and development process designed to set the course for the town over the next 20 years.

Brisbane-based design consultancy firm Architectus recently won the tender to undertake the project, which is scheduled for completion by May next year.

The project is made up of three components: a Scoping Study, the Murwillumbah Locality Plan and a Masterplan for Knox Park.

The Scoping Study will identify issues and recommendations that will go into a new Development Control Plan (DCP) for the greater area of Murwillumbah - that is, within a five-kilometre radius of the CBD.

Council's landscape architect Leigh Abernethy said the Locality Plan would concentrate on the CBD area - including the business area in South Murwillumbah - to set a vision for the next 20 years.

Issues to be considered in the Locality Plan include: analysing traffic and parking, urban design, land use, pedestrian networks, economic development, open space and heritage.

"The scope of the Locality Plan will include integrating existing projects such as Proudfoots Lane, Wollumbin Street and the swimming pool upgrade and multi-storey carpark project," Ms Abernethy said.

"We're combining our existing capital works projects with our strategic vision," she said.

Meanwhile, the future uses, potential problems and development of Murwillumbah's Knox Park will be studied in the development of the Knox Park Masterplan.

"The Town Centre project will involve quite an intensive consultation process, with many opportunities for people to become involved in the process," Ms Abernethy said.

What direction should Murwillumbah take over the next 20 years? Residents are invited to have their say.

Four public workshop sessions are planned in the new year, as well as a comprehensive survey.

Any individual who would like to contribute to one or all of the planning component stages is asked to nominate themselves for a community committee by calling Ruth Hussey on (02) 6670 2503 or by email to rhussey@tweed.nsw.gov.au by December 4.

Relevant community and business groups will be sent invitations to participate in a separate formal steering committee.

"We'd especially like to hear from young people and school students who'd like to get involved," Ms Abernethy said.

Have your say on waste

RESIDENTS will be able to have their say about the current and future waste management programs offered by Council over the coming weeks.

Council's Waste Management Coordinator Ian Percy said the current waste management program was being reviewed and a plan was being prepared to cater for the future needs of the area.

"It is imperative that we match the community's expectations with service delivery at a price the community is prepared to pay," Mr Percy said.

Council has appointed APC Environmental Management to review the program, and the company will be conducting telephone surveys over the next couple of weeks and face-to-face interviews at key shopping centres on Saturday, 25 November. Visitors to the Tweed will also be interviewed about the provision of litter bins and recycling opportunities.

APC director Anne Prince said her company would contact 200 residents by phone to gauge their opinions on waste.

"We know there has been a big increase in telemarketing in recent years but the researchers will clearly identify themselves as calling on behalf of Council regarding the development of a waste management plan," Ms Prince said.

A draft Waste Management Plan will be submitted to Council for consideration early next year, with detailed community consultation during February and March next year. A final report will be presented to Council at the end of March 2007.

Building better roads

FOUR local roads will be upgraded following an allocation of funds from the Roads to Recovery Supplementary Program, a grant from the Federal Government.

The road surface on Tyalgum Road (2.4 kilometres from Tyalgum) will be rehabilitated for 0.8 kilometres at an estimated cost of $185,000.

At Bilambil Road, Terranora, the road will be upgraded along a one-kilometre stretch from Gladioli Avenue to Naponyah Road, at an estimated cost of $275,000.

At Pottsville, improvements will be made from Phillip Street west for 0.4 kilometres, estimated to cost $190,000.

Another $378,110 of grant funds will be used for the road widening and strengthening of Wardrop Valley Road in South Murwillumbah to the new industrial precinct, with co-funding from developer contributions. This will be along the 0.75-kilometre section from Lundberg Drive to the Pistol Club.

These four roads were selected on the basis of surface deterioration and maintenance demands.

APPENDIX 5

Community Consultation Handout

Tweed Council's Waste Management Strategy
Community Consultation

The State Government has set an ambitious target for Councils statewide to divert 66% of all waste arising from households from landfill by 2014. Our Council area currently generates 23,394 tonnes of rubbish which is landfilled. We are recycling 6,560 tonnes of recyclables and 2,109 tonnes of garden waste which is made into mulch locally. Our current diversion rate from landfill is just 27% well short of the 66% target which is just 8 years away.

Council's Waste Management Contract commenced in 2004 and expires at the end of November 2009. This contract includes the collection of rubbish, recyclables, garden waste and public litter bins and the day to day operation of the Stotts Creek Landfill.

Council has engaged experienced waste management consultants to research, review, recommend and guide the future direction for waste management in the Tweed given our growing population and increasing waste quantities.

This document provides a summary of the key research findings and recommendations contained in the draft Waste Strategy which is detailed below:

Market Research

Telephone and face to face interviews were conducted with 215 randomly selected residents to ascertain the communities views on the current and future waste service. In total 116 suggestions for improvements were made. The key outcomes were as follows:

- 36% stated the rubbish side of the waste bin was overflowing each collection
- 37% stated the recycling side of the waste bin was overflowing each collection
- 59% supported introducing a separate container just for recycling collected fortnightly
- 50% of dwellings in townships supported the introduction of a garden organics bins collected fortnightly.

Waste Audit

A random sample of household rubbish and recycling bins were collected and sorted in 2005 as part of a regional project with neighbouring NSW councils to determine the type and quantity of material generated on a weekly basis. The study found that:

- 23% of the rubbish bin contained recyclables which could have been separated
- 48% of the rubbish bin was organic garden and food waste
- The recycling bin contained 15% of material that was not recyclable

In total 71% of the rubbish bin could be recovered and the state government targets achieved. However, new and improved systems and infrastructure would be required.

Key Recommendations

Rubbish, Recycling and Garden Waste Service

1. **Recycling bin** - Council should introduce a separate 240-litre bin collected fortnightly for all recyclables including paper, cardboard, alunimium cans, glass bottles and jars, plastic containers, steel cans and liquidpaperboard cartons.

2. **Rubbish bin** - Council should introduce a "user pays" service for waste based on the size of the bin each family needs. A 140 litre bin is the standard service option, however with a larger bin option at a higher fee i.e. 240 litre.

3. **Garden waste bin** – households - Council should introduce a garden service in a separate 240-litre bin collected on the alternate fortnight to the recycling bin to all single residential dwellings in an agreed service area.

4. **Garden waste bin** – units and villas - Council should offer an optional garden waste service to all medium-density and multiple-occupancy residential buildings

5. **Bulky household waste collection** – Council maintain the current biannual collection service.

Contracts

6. **Contract for collection** - Tweed Council and Gold Coast City Council both have collection contracts that expire in 2009. We suggest that Council enters into discussions with Gold Coast to consider co-tendering for the next collection contract given the economies of scale that may result in an optimal cost structure. The contract should include all rubbish, recycling, garden waste, public litter bins and bulky household collection program

7. **Contract for sorting recyclables** - Council should consider tendering with Gold Coast City Council for the processing of recyclables post collection.

8. **Contract for processing garden waste** – Council should investigate options for the processing of organics (garden waste and food waste) both on its own and in conjunction with neighbouring Gold Coast City Council.

Landfill Charges

9. Council should introduce differential landfill fees for delivered sorted and unsorted loads at a significant price variation to create the incentives necessary to encourage source-separation or beneficial reuse.

Education and Promotion

10. That Council undertakes a community wide education and information campaign to promote source-separation of all loads delivered to the waste depots.

Landfill Options

11. Council's Stotts Creek household waste landfill will be filled by 2010. Council is currently seeking to develop a new landfill adjacent to the current site. It is suggested that Council close the Murwillumbah operation and centralize all activities at Stotts Creek, which is centrally located in the Council area. In addition Council should investigate options for the transport and disposal of the Shires waste into South East Queensland's world-class fully engineered landfills given the abundance of landfill space. This appears to be a more economically viable alternative rather than develop a new local landfill for the foreseeable future.

For Further Information

A more detailed Executive Summary of the Waste Strategy is available from Council by contacting (02) 6670 2677 or on the council web site www.tweed.nsw.gov.au/Events/WhatsOnCommunity.aspx

Meet the Consultants

We encourage you to read the documents, and to meet with the consultants who are available from March 5 – 12th to discuss issues, concerns or for you to seek clarification on matters that might affect you, your household or business. Contact Anne Prince directly on 0425 251 271 to arrange a time

Have your Say

All comments will be considered and incorporated into a report for Council to consider before the draft Strategy is formally endorsed by Council. Submit your comments, views, opinions and feedback on the draft Strategy by **4:00pm Friday 30th March, 2007.**

Please mark correspondence as Feedback on Waste Strategy.

FEEDBACK

Feedback options include:

- Post: Feedback on Waste Strategy, Tweed Shire Council, PO Box 816, Murwillumbah NSW 2484
- Fax: Feedback on Waste Strategy, (02) 6670 2590
- Email: waste@tweed.nsw.gov.au

APPENDIX 6

DRAFT REPORT
EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Tweed Shire Council (TSC) appointed APrince Consulting (APC) to prepare a Waste Management Strategy for the council area. APC has previous experience in developing waste plans for similar coastal areas which are experiencing substantial population growth, balancing equitable service delivery for rural and urban areas and meeting the expectations of the 'sea and tree changers' as well as those of long-term residents.

The Tweed area is a popular island holiday destination for visitors from NSW, other Australian states and overseas. It has over 30 kilometres of coastline which attracts visitors all year round but particularly in the summer school-holiday period, a time which places strain on resources and services. The region is also one of the State's fastest growing areas with increasing numbers of 'sea and tree changers' and retirees choosing to live permanently in the area. The airport at Coolangatta also allows professional people to base themselves in the area and still have easy access to the capital cities.

Tweed Shire Council and the Department of Environment and Conservation's National Parks and Wildlife Branch control and manage the land assets of the area, including the 19 National Parks, five of which are World Heritage areas.

The recommendations in this Waste Strategy are based on sound quantitative and qualitative research. A review of previous studies, reports and correspondence on waste management relating to the past and current systems were made available to the consultants for review and provided invaluable background information. In addition, the consultants undertook:

- Extensive stakeholder consultation
- Market research to determine the current attitudes, views, opinions and behaviour of local residents and visitors
- Detailed analysis of historical and current data to determine usage patterns at waste disposal facilities
- Exploration of a range of options for the collection, treatment and disposal of the various waste streams generated.

There are a number of factors that influence waste generation and therefore hinder our efforts towards waste avoidance; these include:

- Economic activity and consumption – as people achieve higher social economic status or as positive economic conditions occur, there is a higher level of consumption of goods and services, leading to more waste.
- Population – an increase in waste generated has been shown to have proportional links to population increases.

Tweed Shire is currently experiencing and is expected to continue to experience both of these conditions.

Council currently contracts out the collection of household waste, recycling and optional green waste services and public litter bins, and provides a bi-annual bulky household waste collection. The contractor also undertakes the day-to-day management of the Stotts Creek Landfill and all activities on that site, including the operation of the current putrescible and inert landfill cell and composting operations. The contractor sub-contracts the operations of the tip shop and Materials Recovery Facility.

The current Waste Management Services Contract commenced in 2004 and expires on 30th November 2009, and Council is seeking guidance and direction on the provisions which should be contained in the new contract. The NSW DEC has developed a Model Waste and Recycling Collection Contract, which specifies that a period of 24 months should be allowed from the commencement of the preparation of the tender documents to the service implementation.

Council introduced a divided 240-litre garbage and recycling service for which the divider was originally positioned for a 70:30 division with 70% of the space for garbage and 30% for recycling. A community survey in 2003 clearly indicated that there was insufficient room for recyclables with the current configuration and, as a result, Council required the new contractor to reposition the divider to a 50:50 position.

Council provides domestic waste services to 31,566 premises. In 2005–06 Council collected 23,394 tonnes of domestic waste, 6,560 tonnes of recyclables and 2,109 tonnes of garden waste representing a diversion rate of 27%.

The current waste management program has been audited as part of a North East Waste Forum waste characterisation project, and it was found that, on average, 15% of the recycling stream contained material unsuitable for recycling which is termed contamination. This is consistent with an annual audit conducted in September 2006 by the contractor, which found 17.9% contamination.

Based on data provided by the contractor for the performance of the Materials Recovery Facility (MRF), where all kerbside-collected recyclables are sorted using a mix of mechanical and manual methods, only 60% of what the householder places in the recycling section of the bin is recovered. The remaining 40% is lost as glass fines and contamination, therefore just 2.5 kg per household are recovered.

The NSW State Waste Strategy has set a target of 66% diversion for municipal waste by 2014. The regional audit found that currently the garbage bin comprises 48% organic material and a further 23% consists of undiverted recyclables. Up to 70% of the Tweed Shire garbage stream can be classified as potentially recoverable resources, leaving a residual waste of 30%, or 3.5 kg per household per week. Clearly, Council has to address the organics stream and improve its current performance and be aligned to the state target.

Results from neighbouring Councils Clarence and Lismore indicate that it is possible to reduce the quantity of garden organics in the garbage stream by up to 80%, and food organics by up to 50%.

As part of this project a community survey was undertaken, in which 215 residents were randomly selected and interviewed. The key results reveal that 36% of people indicated the rubbish side of their domestic waste bin was full to overflowing each collection, while 37% indicated the recycling side was full to overflowing and 28% indicated that both sides of the bin were overflowing. When asked what people did with any excess recyclables, the majority placed it in the rubbish bin, kept it until the next collection, used the neighbour's bin or took it to work.

When asked if Council should introduce a dedicated kerbside recycling container the majority of the residents, 59%, supported this outcome. When the analysis was undertaken based on household size, households with 1–2 people were fairly equally represented, with 47% supportive and 49% opposed to its introduction. However, in families with three or more people, the results were very clear, with 82% in support and only 18% in disagreement. Clearly Council has a mandate to introduce a separate recycling bin.

Council provides a voluntary user-pays garden organics service in a 240-litre bin on a fortnightly collection schedule. Currently 25% of households have signed up for the service. During the survey, 47% of respondents indicated they did not know about the service. When asked if this should become a standard service, overall 42% supported this. However, when the results were analysed by type of dwelling and location, 50% of single households in townships supported the introduction, while those living on acreage mulched their garden waste, and medium-density dwellings tended to contract garden services.

Council offers free mulch at Murwillumbah depot, however, 62% of survey respondents said they did not know about this option while 58% did not know mulch was offered for sale at Stotts Creek. Several comments were made about the poor quality of the mulch, particularly at the Murwillumbah depot.

In total, 116 suggestions for improvements to the waste management programs were offered by the survey participants, with the key common emerging themes relating to the need for greater recycling and waste capacity, the need for a three-bin system, the quality of the mulch and the need for continued education of the community.

The consultants recommend that Council enter into discussions with Gold Coast City Council, as its domestic contract expires in a similar time frame. The option of a regional collection contract should be fully explored, as it is considered that Tweed Council would benefit from the economies of scale achieved by joining with a larger council, particularly when the boundary between the two councils is indistinguishable at Tweeds Heads and Coolangatta. Council should offer a standard 240-litre commingled recycling service fortnightly, a user-pays garbage service based on the size of the bin, with 80-litre, 140-litre and 240-litre options and a compulsory garden waste service for all single residential premises in townships, and an optional service for multi-unit dwellings.

Currently, Council will retain ownership of the MRF at Stotts Creek at the expiration of the contract in 2009, however, the plant is old and antiquated, and will require a significant and costly upgrade. Based on Ballina Council's investigations, Tweed Council may need to spend $1 million to upgrade the current facility to process the 6,500 tonnes collected per year, with a processing cost of up to $200 per tonne.

Visy Recycling purchased the Cleanaway MRF at Carrara, which currently processes all Gold Coast, Beaudesert, Ballina and Lismore Councils' dry recyclables. This plant is currently the only one in Australia that has a glass refining operation attached, so that all glass placed in the bin by the householder is either recovered for reuse in glass manufacture or is processed and used in a variety of other applications. It is recommended that Tweed Council enter into discussion with Gold Coast City Council to co-tender both the collection and processing of kerbside-collected recyclables and discuss processing options directly with Visy, which is indicating a processing cost of $15 per tonne up to 6,000 tonnes and $10 per tonne between 6,000–10,000 tonnes per year plus transport. Tweed Council could not compete with the Visy costs and this option will remove the need to undertake the $1 million dollar upgrade of the current facility.

The Stotts Creek landfill current putrescible cell is nearing capacity and is expected to fill by 2010. Council has acquired a nearly site for future landfill and quarrying activities and is proceeding with site investigation and designs. The site development and operating costs are unknown at the time of writing this report, however, we have determined that Council has a number of other options available in addition to developing the proposed new site, including:

- entering into discussions with Gold Coast City Council regarding jointly developing a regional landfill at Reedy Creek
- Council could export waste from the area at a cost of $50 per tonne which removes the necessity of Council developing its own landfill for the foreseeable future. Both companies below offer long-term contracts and can provide disposal for $25–$30 per tonne and transport for $25 per tonne:
    - Veolia Environmental Services (formerly Collex), in partnership with JJ Richards, has constructed the Ti-Tree Bio-energy Landfill Facility at Willowbank, located west of Ipswich, where the bio-reactor rapidly breaks down waste by re-circulating leachate, and gas produced is used in renewable power generation.
    - Thiess Services operates a secure fully engineered landfill at Swanbank near Ipswich.

The current MRF at Stotts Creek could be converted to a transfer station for loading directly into 100-m^3 walking-floor transfer trailers.

Council also owns and operates a transfer station at Tyalgum and a landfill at Murwillumbah. The NSW Department of Environment and Conservation (formerly the NSW EPA) is concerned about ground waste contamination at both landfill sites. In recent communication the DEC is suggesting Council establish post-closure plans for the Murwillumbah site. The DEC is particularly concerned about the green waste processing operations exacerbating leachate issues. It is suggested that Council close the Murwillumbah operation and centralise all activities at Stotts Creek, which is centrally located in the council area.

Council recovers its operating costs for waste management through the Domestic Waste Management Charge applied to the council rates which for the 2006–07 financial year is set at $189. Council, through careful planning and good financial management, has a reserve fund of over six million dollars to allow for expected

future changes in both the domestic service and also the need to establish a new local landfill before the end of this decade. Therefore, there are adequate funds to explore and implement the 47 recommendations contained within this report.

We believe that the approach recommended in this report provides Tweed Shire Council with the most socially responsible, economically viable and environmentally sustainable outcome to achieve both community expectations and that of the state government.

Outlined below are the 47 recommendations in the order as they appear within this report which does not necessarily reflect their priority.

1. ***That Council continue to monitor the activities of the South East Queensland Waste and Recycling Network Group and the NEWF. It would appear that Tweed Shire has more in common with the Queensland group and its activity better reflects the immediate and long-term needs of Council.***

2. ***That Council request the waste contractor to have trained staff available at all times to receive and process DrumMUSTER containers.***

3. ***That the contractor uses the service of the free DrumMUSTER training program.***

4. ***That Council continue to support the efforts of DrumMUSTER through community education and promotion of either continuous receipt of containers or one-off collection programs.***

5. ***Council continue to promote that asbestos should be removed, handled and stored in accordance with the Work Cover Regulation.***

6. ***That all batteries received at all waste depots be correctly stored.***

7. ***That Council introduces a significant differential pricing policy to encourage source-separation by waste generators of building materials.***

8. ***That Council include the correct disposal of gas cylinders and bottles in future community educational material and promote the drop-off of these materials at each waste disposal facility.***

9. ***That Council continue to support the operation of reuse shops at all waste disposal facilities.***

10. ***Council ensures the community is informed about household hazardous collection programs.***

11. ***Council should consider purchase of a chemical storage cabinet and offer to receive and store chemicals from the public prior to scheduled collection programs.***

12. ***That approval be requested from the DEC and the LEMP modified to allow for the installation of a chemical storage unit at the Stotts Creek facility.***

13. ***That Council require the existing and future contractors to train an adequate number of staff so that a staff member can be available at all times to receive and process chemicals and paints.***

14. ***That Council continue to promote the current practice of source-separation and free delivery of recyclables at all waste facilities.***

15. ***That Council should introduce a new fully commingled recycling service in a 240-litre bin collected fortnightly to all of its residents.***

16. ***That Council enters into discussions with Gold Coast City Council in relation to it co-tendering the waste and recycling collection contracts on a sub-regional basis when they are due in 2009.***

17. ***That Council should introduce a garden service in a 240-litre bin collected fortnightly to all single residential dwellings in townships.***

18. ***That Council offers an optional garden waste service to all medium-density and multiple-occupancy residential buildings.***

19. ***That Council enters into discussions with Gold Coast City Council in relation to co-tendering for the collection of the garden waste, commencing in 2009.***

20. ***Council should investigate options for a processing the entire organics stream both independently and in conjunction with neighbouring Gold Coast City Council.***

21. ***Council should continue to monitor developments by other local governments which have introduced or are proposing to introduce organic waste collection programs, in particular, Coffs Coast and Hastings Councils, to learn from their experiences.***

22. ***Council should seek approval from the DEC to conduct a food waste collection trial, using both qualitative and quantitative research methods to measure the impacts, community willingness to participate, use of food waste receptacles and costs to process this material at the Stotts Creek organics processing area.***

23. ***That Tweed Council offer residents a 140-litre bin as the standard service with the option of a differential service rate for an 80-litre or 240-litre in the interests of social equity.***

24. ***That new lids in accordance with the Australian Standard 4123 Mobile Waste Container be provided to all existing and new domestic waste, recycling and garden organics bins as part of the collection contract.***

25. ***That Council introduce dedicated collections for specific materials, that is, metals/whitegoods and general waste once per year.***

26. ***Should Council maintain its own MRF, then the future collection contract should specify a maximum compaction for the collection of recycling at 180 kg/m^3.***

27. ***That Council enter into discussion with Gold Coast City Council in relation to co-tendering the processing of its kerbside-collected recyclables.***

28. ***That Council enter into discussions with Visy in relation to the acceptance of Tweed Shire Council recyclables at the Carrara MRF.***

29. ***Council should seek approval from the DEC to co-process food and garden waste at the Stotts Creek site.***

30. ***Should the DEC refuse co-composting of food and garden waste, Council should consider including, in the forthcoming tender documentation, outsourcing the construction and operation of a in-vessel composting system at the Stotts Creek Waste Depot for all organic material.***

31. ***That a two-bin system – garbage and 'containers only' – litter bin system be trialled in key strategic areas.***

32. ***That a performance review of the system be undertaken three months after the system is introduced, by way of a waste audit.***

33. ***If the trial is successful, that a complete evaluation of the current location of all litter bins be undertaken, with the view of consolidating and rationalising individual bin locations into central recycling stations offering both waste and recycling opportunities to the public. Recycling stations should be provided in strategic visitor locations to reduce the incidence of visitors using private or commercial bins.***

34. ***That the existing blue litter bins should be replaced with green bins with red lids for rubbish and yellow lids for recycling.***

35. ***That Council place a notation or condition on all Building Application approvals requiring the containerisation of all waste on building sites to prevent unintended pollution.***

36. ***That source-separation of loads prior to delivery is desirable due to the differential pricing policy to be applied to mixed loads at Stotts Creek and Murwillumbah landfills.***

37. ***That Council undertakes a community education and industry information campaign to promote source-separation of all loads delivered to the Stotts Creek landfill.***

38. ***That Council directly approaches the significant users of its landfills on a personal basis to inform and educate them regarding the role of source-separation and of Council's intention to introduce a substantial change to the future fee structure and charges for disposal of waste.***

39. ***That Council resolves to introduce differential landfill fees for sorted and unsorted loads and offer a significant price variation to create the necessary motivation for source-separation within the community.***

40. ***That prior to the next contract being prepared, a full review of the current education and communication program be undertaken as part of the contract to assess and evaluate the effectiveness of the education program and value for money. This review should not be carried out by the contractor or Council, but by a third party.***

41. ***Given the high proportion of visitors to the area, that the use of graphic images supported by the English words must be incorporated into all communication modes***

42. ***That Council must commit sufficient and ongoing budgetary resources to continue the education of both residents and visitors.***

43. ***That the waste depots should be renamed as Resource Recovery Centres.***

44. ***That Council ensure that the new waste education centre is a demonstration site for green building and sustainable living and be called The Sustainable Living Centre.***

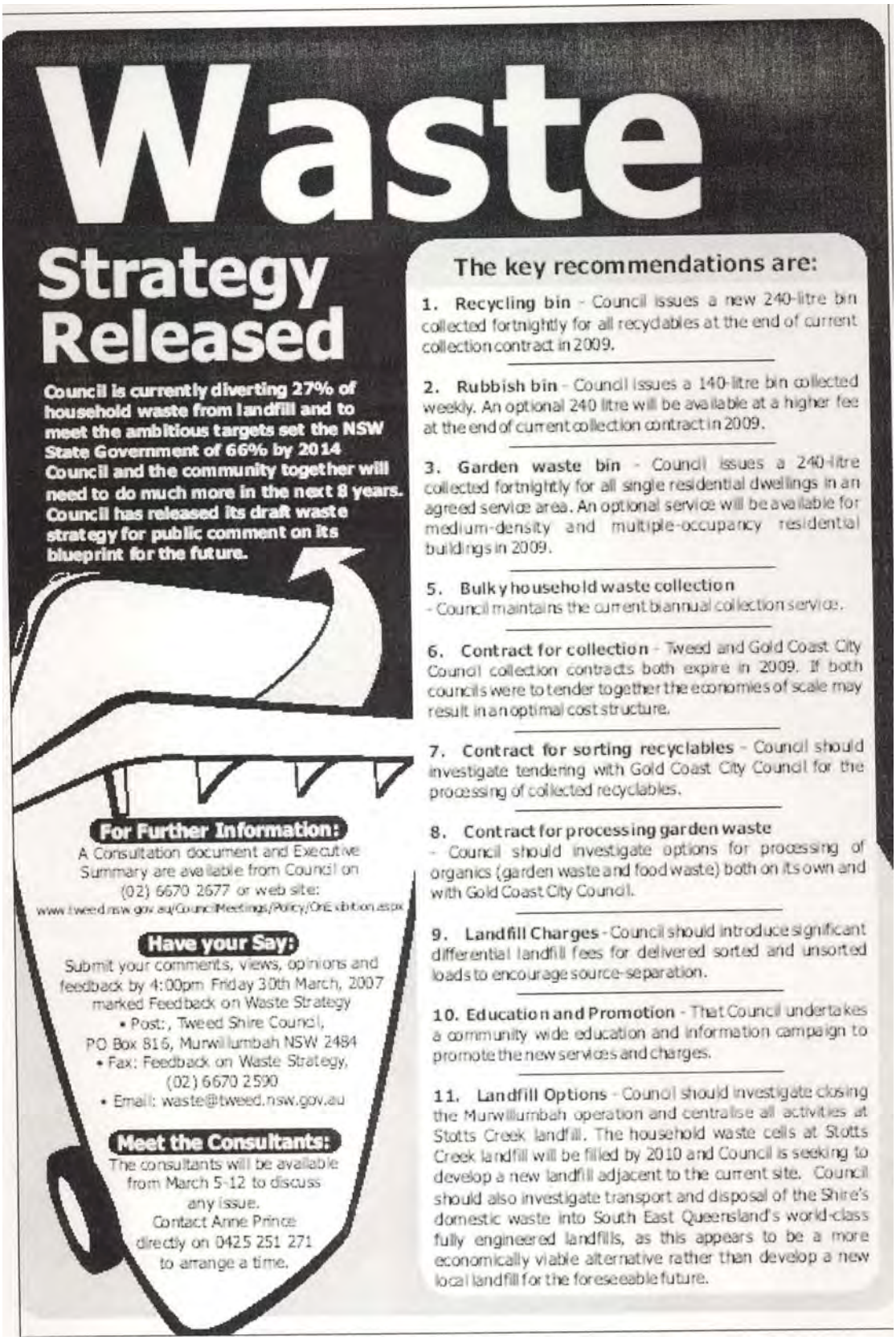
45. ***That concurrently with developing plans for the local landfill, Council seeks an expression of interest from companies that can offer long-term disposal for the Shire's waste. Such a proposal should provide transport and disposal costs based on current fuel pricing and detail the method and number of trips to accurately assess traffic impact.***

46. ***That Council formally commence discussions with the Gold Coast City Council regarding joint venture opportunities to develop the Reedy Creek Waste Facility.***

47. ***That Council, prior to developing its new 2009 collection tenders, in conjunction with the Gold Coast City Council, formally seek through an expression of interest process from interested parties, the establishment of a long-term viable processing alternative for the region's organics and residuals waste, inclusive of pricing, market sustainability and, market developments, with a list of preferred sites for establishing such a facility within the region***

APPENDIX 7

TWEEDLINK ARTICLES


Waste
Strategy Released
Council is currently diverting 27% of household waste from landfill and to meet the ambitious targets set the NSW State Government of 66% by 2014 Council and the community together will need to do much more in the next 8 years. Council has released its draft waste strategy for public comment on its blueprint for the future.
For Further Information:
A Consultation document and Executive Summary are available from Council on (02) 6670 2677 or web site:
www.tweed.nsw.gov.au/CouncilMeetings/Policy/OnExhibition.aspx
Have your Say:
Submit your comments, views, opinions and feedback by 4:00pm Friday 30th March, 2007 marked Feedback on Waste Strategy
• Post:, Tweed Shire Council, PO Box 816, Murwillumbah NSW 2484
• Fax: Feedback on Waste Strategy, (02) 6670 2590
• Email: waste@tweed.nsw.gov.au
Meet the Consultants:
The consultants will be available from March 5-12 to discuss any issue. Contact Anne Prince directly on 0425 251 271 to arrange a time.
The key recommendations are:
1. Recycling bin - Council issues a new 240-litre bin collected fortnightly for all recyclables at the end of current collection contract in 2009.
2. Rubbish bin - Council issues a 140-litre bin collected weekly. An optional 240 litre will be available at a higher fee at the end of current collection contract in 2009.
3. Garden waste bin - Council issues a 240-litre collected fortnightly for all single residential dwellings in an agreed service area. An optional service will be available for medium-density and multiple-occupancy residential buildings in 2009.
5. Bulky household waste collection - Council maintains the current biannual collection service.
6. Contract for collection - Tweed and Gold Coast City Council collection contracts both expire in 2009. If both councils were to tender together the economies of scale may result in an optimal cost structure.
7. Contract for sorting recyclables - Council should investigate tendering with Gold Coast City Council for the processing of collected recyclables.
8. Contract for processing garden waste - Council should investigate options for processing of organics (garden waste and food waste) both on its own and with Gold Coast City Council.
9. Landfill Charges - Council should introduce significant differential landfill fees for delivered sorted and unsorted loads to encourage source-separation.
10. Education and Promotion - That Council undertakes a community wide education and information campaign to promote the new services and charges.
11. Landfill Options - Council should investigate closing the Murwillumbah operation and centralise all activities at Stotts Creek landfill. The household waste cells at Stotts Creek landfill will be filled by 2010 and Council is seeking to develop a new landfill adjacent to the current site. Council should also investigate transport and disposal of the Shire's domestic waste into South East Queensland's world-class fully engineered landfills, as this appears to be a more economically viable alternative rather than develop a new local landfill for the foreseeable future.

PUBLIC NOTICES

Waste Strategy Feedback Required

Last week Council announced the key recommendations from the new draft Waste Strategy. Some of the recommendations can be acted on effective July 1, 2007 while the majority will occur in 2009 when the current contract expires. This will include new collection bins and service options.

For Further Information:
A Consultation document and Executive Summary are available from Council on (02) 6670 2677 or web site:
www.tweed.nsw.gov.au/CouncilMeetings/Policy/OnExibition.aspx

Have your say:

Submit your comments, views, opinions and feedback by 4pm Friday 30 March, 2007 marked Feedback on Waste Strategy

Post: Tweed Shire Council, PO Box 816, Murwillumbah NSW 2484

Fax: Feedback on Waste Strategy, (02) 6670 2590

Email: waste@tweed.nsw.gov.au

ISSUE 505

APPENDIX 8

LETTER TO PROGRESS ASSOCIATIONS

Council letterhead

Re: Community Consultation on Draft Waste Management Strategy

Tweed Council appointed APC Environmental Management in late 2006 to review council's current waste management program and to develop a new Waste Management Strategy.

As part of the development of this strategy, the consultants have undertaken stakeholder and community consultation to determine the needs and priorities of residents in the area. The Draft Report has now been submitted to Council who are currently considering its recommendations.

We are offering Resident Groups, Progress Associations and Chambers of Commerce the opportunity to meet with the consultants to discuss the proposed recommendations contained within the Draft Strategy. The Consultants accompanied by Council staff will be available to attend meetings scheduled from Monday 5th March – Friday 9th March. However, if your scheduled meeting does not occur during this time, the consultants will be available to meet with you or a representative of your committee or any interested members at a mutually convenient time between Friday 2nd March and Saturday 10th March, 2007.

A summary of the report will be posted on Council's website and will be forwarded to you upon request. Council is encouraging the community to review the document and submit comments in writing by letter, fax or email by Friday 23rd March, 2007.

Should you wish to meet the consultant, please contact Anne Prince, Director of APC Environmental Management on 0425 251 271.

Yours sincerely,

Ian Percy
Waste Management Coordinator

APPENDIX 9

E-MAIL FEEDBACK

-----Original Message-----
From: Barry Longland [mailto:barrylongland@hotmail.com]
Sent: Friday, 30 March 2007 4:13 PM
To: Waste Waste
Cc: philipcarr@westnet.com.au
Subject: Waste Strategy

General Manager
Tweed Shire Council

On behalf of the Uki Village & Districts Residents Association I want to commend Council on the key recommendations of the draft Waste Strategy. The strategy was explained to us by your Mr Percy and Ms Anne Prince at our March meeting.

Generally, the recommendations were welcomed by the members of the Association, in particular those measures that provide incentives for residents to reduce the amounts going to landfill. The proposed community education program was also seen as essential to changing attitudes about individual responsibility for waste management.

There has been some ongoing discussion within the Association about the control of garden/green waste within the strategy. It is understood that, within our region, there is considerable unmet demand for organic waste that can be converted into saleable compost material. If this is the case, we think that Council should exploit the potential to have that waste processed locally before entering into arrangements for its transportation into the Gold Coast or beyond (recommendation 8).

Yours faithfully

Barry Longland
President, Uki Village & Districts Residents Association

-----Original Message-----
From: Dianne Rowles
Sent: Friday, 30 March 2007 11:55 AM
To: Adam Faulkner
Subject: COMMENTS - DRAFT WASTE MANAGEMENT PLAN
Mr Peter Harding 6676 3084 - 76 Overall Drive Pottsville.

Proposal is on the right track.
He used to live in the Hawkesbury Shire. They had multi bin system operating there. he Council had a a4 card printed with the "do's & dont's" of the multi bin system. It emphasised not to contaminate the various bins with the wrong stuff. This card was to be left permanently at the residence for the next owner/tennant to read. Mr Harding stresses that forward planning for an shire wide education programme before this multi bin system comes into effect will be necessary.

Regards
Dianne

From: Sandra Grayson [mailto:sandyg1@tadaust.org.au]
Sent: Thursday, 29 March 2007 12:27 PM

To: Waste Waste
Subject: feedback on waste strategy

Sirs,
I note with concern, but no surprise, that 15% of recyclable materials are contaminated. This would indicate that an important strategy would be education and enforcement. Undoubtably a separate bin for recyclable would assist, but I believe this needs to be an uncovered crate-style container, thus discouraging thoughtless individuals from dumping garbage in them.
I live on my own and have no need of a garbage service. I compost all my food waste, and weekly place recyclable plastics, tins, bottles and newspapers and half a small bag of garbage in my neighbour's bin - with his permission of course.
I firmly believe that with thought, even a family could compact their true garbage to two (environmentally friendly) plastic bags each week - I used to when I lived in a household of four adults.
Perhaps a solution could be to offer a free - or very cheap - worm farm to those households who would use one.
As with most things, the younger a person is educated, the better. School visits to the recycling depot could be organised and the children taught about the importance of recycling on a local and global level. They could be encouraged to take charge of their family's recycling, perhaps, and the school could continue to foster their interest with regular prizes and projects on the subject.

Yours sincerely,
Sandra Grayson

From: julia newsome [mailto:petrie@qldnet.com.au]
Sent: Wednesday, 21 March 2007 6:42 PM
To: Waste Waste
Subject: Feedback on Waste Strategy

I have feedback only on the first three points which appeared in the 'Tweed Link.'

1. Fortnightly recycling bin would be OK with me. However my daughter [whose house this is] fully intends to resume residing here. In all the years she lived here she found the current bin barely enough for a week. I'm blessed if I can fathom how she could find so much rubbish/recycling in only seven days.

2. Weekly collection of rubbish quite acceptable. Was it this bin which would be replaced with a smaller one? If so, much the same as paragraph 1 regarding my daughter. I have serious doubts she could cope with a smaller rubbish bin. At present I am putting out the rubbish/recycling bin fortnightly, the same weeks the two green organics bins are emptied.

3. As my daughter, on my prompting, successfully applied for a second green organics bin I cannot see that 1 bin would suit at this address. Every fortnight both bins go out and, while not always packed solid, there is still too much garden litter in each to think one bin would be adequate.

To sum up: I would rather there not be any change to the current bins or collection days.

Yours faithfully,
[Mrs.] J. Newsome
1 Elsie Street Phone [07] 5524 3865
BANORA POINT 2486
-----Original Message-----
From: thali@bigpond.net.au [mailto:thali@bigpond.net.au]
Sent: Monday, 19 March 2007 11:15 AM

To: Waste Waste
Subject: Feedback on New Waste Strategy.

Greetings,

I have some questions and feedback regarding the recommendations for the Waste Strategy for the Shire:

If the goal is to reduce waste by 66%, how is offering 280lt of rubbish collection and 240 lt of recycle per fortnight going to move towards this goal? It seems a step backwards from the current 240L (50-50% split bin, implying 240 lt rubbish and 240L recycle per fortnight, please correct me if I am wrong...) And in fact offering residents the ability to increase their rubbish collection capacity to 240L per week is bizarre!

From what I have humbly observed of human nature, people only change their habits if they are forced to or if there is a significant financial incentive to do so (rewards work, just ask any parent!) and they will generally expand to fill the available space (certainly works with spending of incomes). For example, if you build more roads, more people will use cars. If you encourage the building of energy inefficient bigger houses, people will use more energy and buy more consumables to fill the house. Because they can!

Likewise if you provide the option to householders of bigger bins for more rubbish, there will be no incentive to think about packaging when items are bought or indeed their role in cutting down their consumption to help the planet. They will fill them and if more bin space is offered, even if it means paying for it, they will fill those too!

Can the council please put all considerations aside other that our planet's desperate need to reduce consumption, and do for instance the following:

Supply bins that for instance have 66% recycle, 34% rubbish which makes it clear to everyone that we have a target to meet, together.

Rewards work! (just look at the Coles dockets success!) So how about providing incentive for those of us who do the right thing (a carrot on a stick). For instance, giving households the option of a blue recycle/rubbish bin (picked up fortnightly) at a substantially reduced cost to say a green recycle/rubbish bin (picked up weekly). So the more you waste, the more you pay. The less in the bin, the greater saving on collection charges, the more incentive to compost paper and scraps at home, on site, saving all that wasteful petrol to have it leave the property and then sorted and then transferred to goodness knows where to have it recycled. It makes common sense right? (note - perhaps not for the collection company in terms of the most profitable configuration of services for their bottom line, but then we're all realising its time to reprioritise profits against looking after the planet, aren't we?)

I am hoping also the garden waste bin is an optional household collection as many of us out bush simply utilise our green waste on the property (and townies should be encouraged to do likewise by composting or chipping to mulch garden beds) Instead of collection of cuttings and prunings can you have a bi annual bring a chipper around and chip on site straight onto gardens. Saves all that petrol on transporting to tip, householder then coming to tip to recollect.

I also think and have always thought the bi annual bulk waste collection is a little indulgent and a waste of resources. One collection per year is enough.

Overall I'm a little bemused that you are not asking householders to take more individual personal responsibility for their own waste by providing incentives to change behaviour,

rather than accommodating the same behaviour (and indeed encouraging more wasteful behaviour) by suggesting more services. The collection company may benefit in terms of greater charges, but I doubt the earth will.

Yours in good faith,
Thali Bower-Williams

-----Original Message-----
From: ktyr [mailto:ktyr1302@bigpond.net.au]
Sent: Wednesday, 7 March 2007 11:39 AM
To: Waste Waste
Subject: waste strategy

Try weekly for recyclables.I can't put all the recyclables in each week as it is - no room! so ends up in rubbish.

Otherwise - good on you!

Kelly Tyrrell, 20 Norman St., Tweed Heads.

-----Original Message-----
From: michael_dodd@dreamworld.com.au
Sent: Wednesday, 7 March 2007 4:22 PM
To: Waste Waste
Subject: new bin service

to wait until the current agreement expires in 2009 is not necessary - in today's commercial world if there are pressures on the service standards now you can viod the contract or renegotiate.

We live in the tweed shire, have a family of 2 adults and 2 babies and find it extremely difficult to fit all our waste (general + recycles) all in one split 240 litre bin - the issue isn't only general waste as we also fill the recycle section easily each week. When you have 2 babies and are going through over 100 nappies per week we really need a 240 litre general waste bin and a separate recycle bin - like most other councils in NSW regional towns. I would like to see this issue resolved sonner than 2009 as the cost/time of going to the rubbish dumop each week is not available.

MD

-----Original Message-----
From: m.hancock.11@scu.edu.au
Sent: Thursday, 8 March 2007 2:04 PM
To: Waste Waste
Subject: waste strategy

The draft waste strategy is an excellent waste reduction scheme and i hope it is introduced and rolled out as soon as possible. We are all aware the strategy is long overdue for the Tweed region and I completely support the initiative.
Regards,
Megan Hancock, Southern Cross University
From: Liz & Ian Brookes [mailto:brookes@norex.com.au]
Sent: Thursday, 8 March 2007 4:39 PM
To: Waste Waste
Subject: Feedback on Waste Strategy

Waste Recycling Recommendations:

- We fully agree with items 1, 2, 3, 5, 9 and 11.
- Other issues are Council's normal responsibilities
- Recommendation 4 is a mystery!

Liz and Ian Brookes
19 Grassmere Ct
Banora Point.

-----Original Message-----
From: Wendy Fulford [mailto:wendybird@bigpond.com]
Sent: Friday, 9 March 2007 5:28 AM
To: Waste Waste
Subject: Waste Strategy

Re: Waste Strategy:

Has council given any thought to having a green waste collected every week instead of fortnightly ?

I have been trying to access the Consultation document and Executive Summary on Waste Strategy on the web site which was given in the latest Tweed Link. All I get is a message tell me that this document is not available on the web site?

Wendy Fulford

-----Original Message-----
From: Barbara Deece [mailto:bsdeece@iprimus.com.au]
Sent: Friday, 9 March 2007 12:00 PM
To: Waste Waste
Subject: WASTE STRATEGY RELEASED

The recommendations for waste collection and disposal are a vast improvement on the current arrangements
The divided bins are hopeless.... paper and cardboard cant sit flat and take up much more space

The 3 bin system worked very well in the council area in which I lived in Sydney.... I was able to recycle much more than I can here with the present system.
Bring it on!

Barbara Deece
Banora Point, NSW 2486
bsdeece@iprimus.com.au

From: rob & julie watkins [mailto:rjwatkins@aapt.net.au]
Sent: Tuesday, 13 March 2007 2:27 PM
To: Waste Waste
Subject: waste suggestion

Dear Sir/Madame,

Whilst in Gosford recently we found a notice for the Gosford Shire council waste collections and thought they had some very good ideas that might help us here on the Tweed.

1) Urban properties (with a garden organics bin) can also have three bulk garden organics services per year.

2) You must book in advance

3) Your bulk material must not be placed out for collection more than a day before your service or you could recieve an on-the-spot fine of $200.

We love the green waste bins and would relish the delivery of recycling bins also.

We believe more education should be carried out to Householders in regard to the proper way to recycle houshold waste.

Thank you for your time and the oportunity to have our say.

Regards
Rob and Julie Watkins

-----Original Message-----
> From: Dianne Rowles
> Sent: Wednesday, 14 March 2007 12:49 PM
> To: Adam Faulkner
> Subject: Draft Waste Management Study
>
> Bronwyn Trathen 1/44 Brisbane Street Mbah suggested that instead of or as well as 2 x Council Clean Ups a year, ratepayers were given 2 vouchers to have a clean up themselves and take rubbish to tip. Previous council area she resided in had this system running.
>
> Dianne

-----Original Message-----
From: jaap roskam [mailto:jaaproskam@bataviaphotos.com]
Sent: Thursday, 15 March 2007 7:11 PM
To: Waste Waste
Subject: Waste strategy

Re: your call for feedback in the Tweed Link weekly news letter.

To whom it may concern

We , my wife and I life since 1996 in Australia , we came from the Netherlands. Over there we lived in the most progressive town for garbage recycling of the country. Many recycling ideas were born in our town 'Baarn'. Situated about 35 km SE from Amsterdam.

In the 1980's and 1990's we had a photo studio and a photo one hour service. We also sold batteries. One day I came with the idea to trade old batteries in for new ones. So people could get 10-20 cents rebate for their old batteries when they bought new ones. We are talking about normal camera and other related batteries. Just the ones you can buy in super markets and petrol stations etc. etc.
The reason was to keep batteries out of the general waste cycle and make people aware that batteries are a time bomb in the waste depot.

Anyway, what happened exceeded our expectations: Greenpeace heard about it , they arranged a press release, that ignited radio and newspaper interviews and we were temporarily famous and could not buy enough batteries from our supplier. The idea was seeded and other shops took over. So the marketing advantage was diluted. But what stayed was that people realized that batteries are very dangerous chemical waste.

The council picked up the idea and distributed to EVERY retail point were batteries were sold a special battery-bin. Those battery bins were emptied once a week in a special drum on the rubbish truck. Then the batteries were stored in those drums. Eventually the council had a whole 'battery' of full battery drums. Lucky enough more councils started to pick up the idea and then a battery recycling company stood up. They devised a system to extract the metals and chemicals .

Nowadays (almost 25 years later) the battery-bins have been replaced by real fancy ones in every shop all over the country. No one will ever throw the batteries in the waste. It is so easy : when people go to buy new batteries they take the old ones and at the check-out they dump them in the bin. It is even so that if the bin is full that the customers get upset if there is no room for their old batteries.

So my challenge to you : Let the Tweed make headlines by introducing this good system into Australia. Start collecting used batteries at every sales checkout were batteries are sold and worry about the final storage / recycling of the batteries later. That solution will come. !!!

Best regards:
Jaap Roskam
273 Mount Burrell Road
Mount Burrell 2484

-----Original Message-----
From: magp [mailto:magp@aapt.net.au]
Sent: Wednesday, 14 March 2007 10:31 AM
To: Waste Waste
Subject: Waste Strategy

Hi,
I would like to have 2 bins ,one especially for recycling as at the moment I recycle everything but I know a lot of people just throw anything in both sides of the split bin and it all gets mixed together,sometimes I wounder if it is worth the effort with the split bin,I keep my hopes up that it does
Margaret Poole
2/26 Shallow Bay Drive
Tweed Heads South

From: Jan Bidstrup [mailto:jan.bidstrup@bigpond.com]
Sent: Thursday, 15 March 2007 11:29 AM
To: Waste Waste
Subject: feedback on waste strategy

I would like to have 1 dedicated rubbish bin and 1 recycling bin. Having used this combination before(in Townsville) I found it worked well ,with rubbish emptied weekly and recycling every other week.The system in place at present is useless for a family of 2 adults and 3 young adolescents because the separator limits the amount in each chamber as it is unable to 'settle'. If recycling is to be encouraged,a system needs to be in place that allows this to happen 100%. I find if we recycle everything during 1 week at our address,the

compartment is full after a few days.I look forward to having the above system,the sooner the better.

Yours sincerely
Jan Bidstrup

Original Message-----
From: Lorraine Atkinson [mailto:lorri48@bigpond.net.au]
Sent: Wednesday, 14 March 2007 8:38 AM
To: Waste Waste
Subject: Feedback on Waste Stategy

I believe Item 10 to be vital to the further success of the recycling program.

As I walk around many of the streets in Banora Point I am constantly amazed & disgusted with the apparant lack of responsible recycling that occurs. For many I am sure no amount of education will alter their bad habits. For the rest of us, we could all benefit from increased education as to the correct methods when disposing of our garage. I have seen adds on Gold Coast TV which demonstrate the correct way to sort & dispose.

A close neighbour of mine will often have his lid not closed due to extra garbage protruding out, I'm sure he is unaware of the consequences this causes as the contractor explained to me one time when mine partly tipped over the road, as it was being collected. This person is a reasonable thinking person& wouldn't realise the design of the truck dictates that our bins are closed on pick up. My suggestion is for a flyer taped to our bins, not to be confused with "junk mail" followed by a sticker that is permantly on the bin to remind us or visitors of correct "best practices".

How many people know that there is no market for plastic lids eg off soft drink bottles or lids off beer stubbies? That message has never been sent to the public, that lids be removed, seperated from the bottle & the bottle quashed to avoid in some households the lid not able to be closed.
It may be evident that I am passionate about responsible recycling. Our household is quite happy with the current arrangement with the bin the size it is along with the "green bin" fortnightly.
Regards
Lorraine Atkinson
14 Bosun Blvd
Banora Point

-----Original Message-----
From: gordon davidson [mailto:gorxlu@yahoo.com]
Sent: Friday, 16 March 2007 10:46 AM
To: Waste Waste
Subject: Waste Bins

To Tweed Council,
I would like to see the present Bins go BACK to the way they were before the last change of divisions. Since bins werechanged to smaller rubbish area and bigger recycleing, I have had to place rubbish in the recycleing area because there not enough room in the rubbish area. I would like to see the present bins rubbish area made bigger and the recycleing area made slightly smaller and maybe picked up twice per week rather than one pick up a week this way residents would not have overflowing bins etc.
Gordon T Davidson.
PS: I struggle every week to make room for all my rubbish

APPENDIX 10

FEEDBACK LETTERS

NEVILLE CHIVERS
57 VULCAN STREET
KINGSCLIFF. 2487
TEL 66742095

RE WASTE STRATEGY
AS PROPOSED FOR COMMENT
IN TWEED LINK 6.3.07

DEAR SIR OR MADAM,

THE FIRST THING THAT SHOULD BE EXPLAINED IS WHAT THE EXTRA COSTS TO RATEPAYERS THESE RECOMMENDATIONS WOULD INCUR.

PERSONALLY I AM HAPPY WITH THE STATUS QUO, AS WE ARE 2 PERSONS AT THIS ADDRESS WHO WOULD RARELY NEED A RECYCLING CAPACITY LARGER THAN WE NOW USE. WE CERTAINLY DON'T REQUIRE A GARDEN WASTE BIN AS WE MULCH ALL OUR KITCHEN SCRAPS AND SHRUB PRUNEING.

I WOULD CONSIDER IT AN IMPOSITION TO PAY FOR SERVICES I DO NOT REQUIRE AS ONE SIZE DOES NOT FIT ALL!

EXTRA SERVICE SHOULD ONLY BE OFFERED TO THOSE WHO REGISTER AND PAY FOR IT.

YOURS FAITHFULLY Neville Chivers.

To:
Tweed Shire Council.

Copies to:
Murwillumbah Ratepayers and Residents Association
Tweed District Residents & Ratepayers Assoc.
Cabarita Beach/Bogangar Resident's Association Inc.

From:
Richard Hann
15 George Street
Murwillumbah
Email - richardhann2@hotmail.com

28th March 2007

Waste Strategy - an objection

This is an objection in response to the Waste Strategy key recommendations as presented in the Tweed Link 6th March 2007, and Council documents Draft Waste Management Strategy *Executive Summary* and *Community Consultation*.

I am satisfied with the current 'one divided bin' for our household, and have no problem with a system which is efficient and cost effective.
I have absolutely no need for a garden waste bin and object to the proposal that I be required to accommodate three bins next to my house, and also object to the additional cost that would result.

It appears Council has a predetermined position to introduce a three bin system and has made use of a flawed community consultation process.

On the basis of a survey poll of 215 residents showing 59% in favour, Council claims to have a clear mandate *(page 3 Executive Summary)*.
It seems the positive responses of 21 residents (10% of 215 surveyed) are good enough for Council.

However, we know polls are not reliable, that results will depend on how a question is asked, that a respondent who is unsure may provide the reply the interviewer wants to hear, or respondents can mislead, and so on.
Indeed not even our Commonwealth Government would claim a mandate based on a survey.

Presently 25% of households make use of the garden waste bin service. When these 25% are subtracted from the residents surveyed *(because they would know of the service)* there remain 75% of residents that do not make use of a garden waste bin, and accordingly 72% claimed not to know of the existence of the service.
With an uptake rate of 25% there are green lid bins in almost every urban street of the shire. Is it extremely unlikely that such a large proportion of residents have never noticed or speculated on the purpose of their neighbour's extra bin.
It is difficult to believe in the accuracy or the intention of Council's *(or Council's consultants)* survey.

The principle of user-pays and choice appears to have been abandoned by Council in its waste management strategy.

During 2005 divided bins were changed from the 30/70 to a 50/50 divide. It is very probable that this change was not entirely popular, or practical, for many households and the volume of contaminants entering the recycling section increased as a result.

It would be reasonably simple to adapt garbage trucks to handle variably divided bins, and allow residents to decide what is most suitable for their needs. With divided bins, for example, being either 30/70, 40/60, 50/50. 60/40 or 70/30.
The exercising of a choice could assist in involving unmotivated residents.

For what purpose is a garden waste bin service?
Clearly the garden waste bin is not large enough for real-garden-excess such as tree/shrub pruning or palm fronds. What can be accommodated in the garden waste bin are smaller green leaf type items, which, of course, can also be easily composted away within household gardens.

Many residents recognise organic material as a resource and retain it in their gardens. Why should residents who compost within their gardens be compelled into an unnecessary service?

It appears that volume of waste food entering landfill is significant, and reducing landfill is the agenda *(an agenda which is Sydney-centric, and a chase for 'ambitious targets')*.
With the expectation of a separate food waste collection service proving unpopular for domestic use, and food waste receptacles are not introduced, food wastes would be placed in the proposed garden waste bin.
Would food waste be thrown in loose or is it likely that a significant amount would be wrapped, or in containers?
Households with gardens have the capacity to compost food waste, and many do. For medium-density residences the disposal of food waste is more problematic.
Yet, Council wants to require households with gardens to have a bin for organic waste, while for medium-density properties the service is to be optional!

There is already criticism about the quality of council mulch, a mulch which is presumably in part, derived from the optional garden waste service.

It seems reasonable to predict that a compulsory 'garden waste bin' will result in very high levels of non-organic contamination entering the system.

If Council's survey is to be believed, about 36% of the rubbish side of divided bins are overflowing. It seems inevitable there will be households with excess rubbish, and an under-utilised garden waste bin, that will not pay a higher fee to receive a second, or larger, rubbish bin.

The efficiency of a recycling system depends on the level of public cooperation.

In addition to the objections presented it is the contention of this submission that public cooperation will be best achieved when residents receive services that provide choice with flexibility and helpful information.

While the Sydney area may indeed have a severe shortage of landfill sites, it is contended that Tweed Shire Council should not be overly influenced by such external factors in its waste management strategy.

Similarly, to attach the Tweed's waste management to the much larger Gold Coast system, although an obviously attractive soft opportunity, would be undesirable for choice, future options and the retention of resources and expertise within Tweed Shire.

The prospect of Tweed's non-recoverable waste being trucked to landfill near Ipswich seems environmentally illogical, and should be considered only as an option of last resort.

It is also suggested that the NSW Government needs to pursue measures to reduce the amount of waste entering households.

Conceivably a levy on packaging could both reduce and fund the transport *(by rail)* of landfill to distant sites. Or the problem of hundreds of tons of unsolicited mail and ad/news/print could be addressed
(elsewhere?).

The closure of the Murwillumbah landfill may be necessary, however it should remain open as a collection depot. Indeed Council should consider establishing additional collection points around the Shire, particularly for bulky garden waste.
The biannual collection of bulky household waste is a good service and needs to be continued, or even expanded to include bulky garden waste.

Yours sincerely

Richard Hann

BANORA POINT & DISTRICT RESIDENTS ASSOCIATION INC

Registered No Y1827609

Correspondence to the Secretary
PO Box 936
Banora Point 2486

President
Rod Bates
Tel 5524 2761

Secretary
Fran Beisler
Tel 5524 2080

Treasurer
Warren Shardlow
Tel 5523 1357

GARBAGE - WASTE MINIMISATION & WASTE MNGMT

WASTE DATA REPORTING PROJECT

TWEED SHIRE COUNCIL
FILE No ...
Doc No ...
REC'D - 5 APR 2007
ASSIGNED TO PERCY, I
HARD COPY ☐ IMAGE ☑

Council Ref – Waste Management

The General Manager
Tweed Shire Council
PO Box 816
Murwillumbah NSW 2484

Dear Sir
Community Consultation on Waste Management Strategy.

Following our phone conversations with members of Mr Ian Percy's Dept., & our letter requesting extra time to reply, the Banora Point Association would like you to take into consideration the following points:

- We oppose any suggestion that we amalgamate with the Gold Coast for the purposes of waste disposal. We feel that any financial gains would be only short term & in the longer term may be detrimental to our region. We would be the very junior partner in this arrangement & could in the future become the dumping ground for the region given our greater area of undeveloped land & our smaller population. Apart from that we wish the Tweed to remain independent so that any decisions made are done so by our own Council.
- We oppose any increase in the number of bins & feel that the system of the divided bin we use at the moment is sufficient.
- We congratulate the Council on the introduction of the green waste bin but are satisfied that those people who want one will request it. Members who do not use a green waste bin did not want to have one as a matter of course. The storage problem associated with extra bins was an important factor in these considerations.
- We oppose any extra charges for different sized bins for recycling or general garbage but are quite happy for those who wish to have a green waste bin to pay for it.
- It was unanimously decided that the present system is quite satisfactory.

On the matter of the **bi-annual cleanups**, many members expressed dissatisfaction with the length of time between notification & the actual removal of the rubbish. Some streets were described as "dumps" for a period of several weeks. Vandals throwing items all over the road & pathways made the streets unsightly & sometimes dangerous. Long term residents described the previous system of Council collecting bulky goods on request at a small cost. This was felt to be a better system. We feel that the Council should give serious consideration to the reintroduction of this system.
We appreciate the opportunity to have input regarding these processes.

Yours Faithfully

Fran Beisler, Secretary.

1

MURWILLUMBAH RATEPAYERS AND RESIDENTS ASSOCIATION INC. WASTE DATA REPORTING PROJECT
GARBAGE - WASTE MINIMISATION + WASTE MMENT

26/03/2007

The General Manager,
Tweed Shire Council,
PO Box 816,
Murwillumbah 2484
NSW.

Draft Waste Management Strategy

Dear Sir,

After listening to the proposals put forward at two community consultation meetings with

- Ian Percy – Waste Management Coordinator –TSC
- Anne Prince- Director, APC Environmental Management
- Adam Faulkner- Waste management Officer TSC

our members and our committee have obtained further information and opinions from a number of sources namely-

- Lesley Trott – Waste Management spokesperson, Lismore City Council NSW
- Ian Barnes - Waste Management Services spokesman, City of Whitehorse, Victoria.
- Bionatural Sales and Service, Vermont, Victoria- suppliers of Bokashi bio-fermentation systems
- David Stratton – Manager of Organic Recycling, Regenesis, Myocum, NSW.
- Ken Forster, retired Manager Health and Building Services TSC

1) The members came to the conclusion that the proposed collection of the different types of household rubbish in separate bins is an improvement on the existing split bin system and in line with what many other Councils are doing.
2) However the proposal to co-tender with Gold Coast Council for a new mega waste management contract appears to have many negative aspects and should be reassessed

.

Our objections to the idea of partnering with the Gold Coast are.

- We shouldn't tie ourselves to a larger Council who will call the shots

2

- We should keep control of our own waste within the Shire as there are complications with 2 sets of state laws.
- We will have little control over escalating costs
- If you get tied up with a multinational waste operator the level of service goes down. We have much more control over our own service.
- We are a growing Shire and expect to have another 10,000 households at least in another 10 years, so we have the capability to handle our own waste
- There is no advantage in combining with the Gold Coast Council ; their track record is not good in several areas and they have a totally different approach to waste management
- It is foolish to say that transporting organic waste to Ipswich and recyclables to Carrarra is cheaper when you haven't considered the environmental cost of the transport. The exhaust emissions from dozens of trucks doing a weekly round trip of nearly 300 km, as well as the deposits of rubber and oil on the roads are significant. Treating our own waste locally would slash these very real costs by 1/10 We are supposed to be trying to reduce greenhouse gases these days.

3) We also consider that the issue of composting our own organic waste here on the Tweed has been brushed aside as being too difficult and potentially too expensive without any serious efforts investigate how these difficulties could be overcome.

David Stratton the" Compost Manager" at Regenesis Organic Farm, Myocum spoke to us about the possibilities of large scale composting. The farm collects organic waste from businesses in Byron Bay and converts it into high grade compost on the farm. This operation has EPA approval. David has been negotiating with Solo Waste on a proposal to combine and provide a larger composting service to TSC. Solo Waste is keen to be involved. Council has at this stage rejected the idea. David is confident that EPA requirements at Stotts Creek can be met and commercial organic waste has little contamination from non compostibles. David's arguments are below

- NSW Government has set a goal that the amount of waste going to landfill be reduced by 66% by 2014.
- By composting all organic waste we can reduce the amount of waste going to landfill by 50%. It is the only strategy that enables a council to achieve a large part of their target. They can create a product from local waste which is distributed locally

- Waste recycling is essential for soil health (the Chinese have been doing it for thousands of years).
- Composting organic waste creates an income stream instead of incurring transport costs to distant landfill.
- Water weeds and rampant environmental weeds can be turned into high grade compost and all seeds are killed in the high heat generated during the process.
- A pilot scheme is feasible.
- It can extend the life of our tip.
- At present Regenesis can produce 400 cubic metres /week from business waste.
- They would be able to set up at Stotts Creek –need 8 acres plus some capital investment

4) Finally we wish you to continue to encourage households to compost their own waste by providing affordable compost bins and worm farms, but also to extend the choice to Bokashi fermentation bins. Many people find them easier to use than the worms and compost bins. Both of those need fine tuning to work really well. Also quality Bokashi bins can be kept indoors and will also ferment meat and oils. The City of Whitehorse has been offering vouchers to households to help defray the cost of this more expensive alternative.

We hope that this submission is helpful in stimulating you to look at a wider set of possibilities.

Yours Faithfully

(Louise O'Shea)

MRRA
PO Box 651
Murwillumbah
NSW 2484,

APPENDIX 11

STAKEHOLDER SUBMISSION

21 March 2006

Anne Prince Consulting
PO Box 54
TERRY HILLS NSW 2084

Solo Resource Recovery

10-12 Chinderah Bay Drive
Chinderah NSW 2487
P.O. Box 1427
Kingscliff NSW 2487
AUSTRALIA.

Services: 02 6676 7647
Admin: 02 6674 7656
Fax: 02 6674 7657
Email: solorr@solo.com.au
Web: www.solo.com.au

Dear Anne,

RE: Tweed Council Draft Waste Management Strategy

Thank you for our meeting on 2 March 2007 and a copy of the Draft Waste Management Strategy. We offer the following information in response which may assist in the development of the final strategy.

Executive Summary

The following comments are specific to the Draft Executive Summary.

Tender Preparation Period

In relation to the NSW DEC's suggestion that a period of 24 months be allowed for tender preparation and service implementation, we respectfully suggest Council be mindful of the potential cost premium tenderers are likely to include in their tender prices if the service commencement date is more than 9-12 months from the tender close date. This is likely to arise as a result of the uncertainty and risk surrounding the inevitable increase in costs between the tender close date and service commencement date and the potential for circumstances to change over a 24 month period eg. significant reduction in paper prices or increase in landfill charges which generally increase at a rate much faster than CPI.

Presumably the waste management contract will include a rise and fall provision to adjust the tender prices for any cost increases/decreases from the tender close date. This provision is normally sufficient if the tender period is kept to a 9-12 month period. A longer tender period of up to 2 years I believe is unnecessary in terms of time required by the successful tenderer to prepare for contract commencement and would require a broader rise and fall provision in the tender specification to compensate for all cost increases over and above standard CPI or equivalent movements.

Any removal of uncertainty in the tender and contract process will ensure tenderers prices and therefore Council's costs are kept to an absolute minimum from the outset and the best way to achieve this is to keep the commencement date as close as practically possible to the tender close date.

Community Survey / Separate 240L Recycling MGB

In relation to the survey findings, I don't think some of these results accurately reflect the facts or the wider population but I guess this can occur with any random and small survey.

For example, bin inspections we have carried out over many years indicate the percentage of Residents with an overflowing bin problem to be significantly less than one third. This in itself is not a particularly significant finding but it does indicate that survey results to other questions may also be exaggerated or not representative of the wider population.

In relation to the high percentage of Residents in favour of a dedicated 240L Recycling MGB, a different result may have been received if Residents were aware of the significant increase in cost associated with the supply and service of an additional bin.

In addition, there may be a misconception among many Residents that a separate 240L MGB for Recycling means additional storage space. Whilst being a larger and dedicated bin, the fact the bin would be collected fortnightly means the recycling capacity is 120 litres per week ie. the same Recycling capacity as per Council's current collection system.

The three (3) bin system proposed in the Draft is becoming increasingly popular among many Councils and whilst we broadly support this initiative, we believe the main thrust of Council's strategy should be:

- A Recycling service is extended to all Tenements including Commercial and Industrial in a MGB for automated collection on at least a fortnightly basis.
- A Green Organics service is extended to all Residential Tenements and an option service to Commercial and Industrial Tenements in a MGB for automated collection on at least a fortnightly basis.
- A Garbage service is extended to all Tenements including Commercial and Industrial in a MGB for automated collection on a weekly basis.
- Whilst Council may propose separate MGB's for each waste stream, Council should allow tenderers to submit alternative options that meet the above criteria that may involve the use of more or fewer bins that provide other advantages to Council in relation to reduced costs or other benefits.

Regional Collection Contract with Gold Coast

Please refer to our comments in response to Draft Recommendation 16.

Proposed MRF Strategy

- The Stotts Creek MRF is twelve (12) years old and will be 15 years old by contract end.

- Notwithstanding its age, the MRF is currently fully operational and successfully processing and selling all marketable Recyclables.

- The current contractor is obligated and committed to ensure the MRF is fully operational at contract end.

- The treatment of glass fines is an Industry wide issue with technology and markets/outlets still being developed.

- The Draft Executive Summary inadvertently includes several errors of fact in relation to the Visy Carrara (Gold Coast) MRF. Visy's Recycling plant at Carrara (Gold Coast) is not the only MRF in Australia that has a glass refining operations attached. EarthCare

operate a MRF in Somesby (NSW) which includes a glass refining operation and processes recyclables from the City of Gosford and Solo Resource Recovery collected recyclables from the Cities of Lake Macquarie, Cessnock and Maitland. The EarthCare glass refining operation commenced approximately 5 years prior to the Visy Carrara MRF.

- Cleanaway and/or Visy's claim that all glass fines from the Carrara MRF are recovered for reuse or other applications is incorrect. In fact the glass fines processing system at the Carrara MRF has not been fully functional since its inception. Thousands of tonnes of glass is stockpiled at Gold Coast Council's Molendinar landfill and has been for years. Cleanaway won the current recycling contract (now three years old) largely on the predication it would introduce advanced technology to process and market all glass fines. To their credit Cleanaway invested significant capital into the project but failed to deliver on its promise to Council. The stockpile continues to grow on a daily basis. The degree of the failure of the Carrara MRF can be measured by the fact Cleanaway recently assigned the sorting component of the contract to Visy and elected to pay another contractor, JJ Richards to take over the collection component for the remaining two (2) years of the contract.

- To further demonstrate the Industry wide problem with glass fines, we have a close association with another waste company that purchased two (2) state of the art MRF's including the latest glass fines processing technology twelve months ago for two (2) NSW Regional Councils of similar size to Tweed Shire. Both have failed to deliver in relation to the processing of glass fines into a marketable or usable product. The evidence appears clear in that glass fines processing technology is still in its development stage and there are no simple or quick solutions.

- We respectfully suggest Council treat with caution low indicative processing prices apparently sourced from Visy. The $10-$15/tonne indicative processing price in the Draft is at best based on record high paper prices (double the average) being paid by countries such as China and Indonesia. These record prices can not continue forever and will eventually fluctuate up and down in a cyclical manner as they have consistently for the past 50 years.

- We, like most other participants in the Recycling Industry have had extensive dealings with Visy Recycling over many years and whilst the purpose of this information is not to criticise opponents, the reality is being such a dominant player in the Recycling Industry, they have a track record of dishonouring written agreements particularly when Industry conditions change as they do regularly in relation to Recycling Markets.

- In Victoria, Visy to their credit have invested millions of dollars in high technology glass fines sorting equipment called the Binder system but with only moderate success. Due to the practical difficulties associated with processing this material into a reusable or marketable product and the enormous volumes involved, Visy have tens of thousands of tonnes stockpiled at its facility that it has no use for and prior to Christmas 2006, gave all producers of glass fines and MRF operators in Victoria one months notice that effective from 1 January 2007, the price paid for glass fines would reduce from $30/tonne to $0/tonne.

- The purpose of this report is not to criticise competitors particularly given companies like Visy have contributed an enormous amount to the Industry over many years. However as detailed in our comments in response to Draft Recommendation 16, we believe it would be a mistake for Council to rely exclusively on Visy Recycling and/or its MRF at Carrara for the reasons outlined.

Stotts Creek Landfill

In relation to the proposal to enter into discussions with Gold Coast Council to develop a regional landfill at Reedy Creek, we believe Tweed Council would lose its independence under this proposal and the potential consequences associated with that. Tweed Council has an enviable track record particularly compared to other northern NSW Councils and the Gold Coast Council in relation to planning for its landfill requirements.

Some years ago, Gold Coast Council was forced to prematurely close its major landfill at Molendinar due to poor planning, well before it reached its designed capacity. This has resulted in an enormous cost increase to all Gold Coast Ratepayers for many years as all collected putrescible waste has to be transported further north to its secondary landfill at Staplyton.

In relation to use of alternate landfills west of Brisbane, the use of the MRF at Stotts Creek as a transfer station and disposal generally, we recommend these issues be incorporated in the collection tender to maximise efficiencies between collection, processing and disposal and allow tenders to submit holistic and innovative proposals incorporating all facets of waste management from collection through to disposal.

If Council locks itself into disposal contracts prior to the collection tender process, we believe it would restrict the options available to Council when evaluating collection tenders.

Draft Recommendation 15

We suggest the proposed Recycling Service be extended to all tenements in the Shire including all Commercial and Industrial tenements. All Commercial and Industrial tenements produce domestic recyclables from their offices and workshop lunchrooms etc. Providing the Recycling service to all occupied buildings in the Shire will:

- Maximise recycling yields;
- Reduce waste to landfill;
- Allow for a simple and consistent recycling message to be promoted throughout the Shire as the entire population at home and work will use the same Recycling collection system.

In relation to multi-unit dwellings, it has been our experience 1 bin shared between 2 units to be a well received policy from unit occupiers as it provides sufficient Recycling bin capacity and therefore maximises recycling yields whilst still allowing the Council to maintain a simple Rating policy by rating each unit for a recycling service.

Draft Recommendation 16

We believe the Tweed Council contract is large enough in its own right to achieve critical mass and economies of scale, as it has done so in the past and that any contract let with the Gold Coast Council, albeit separate to the Gold Coast contract, is likely to result in a loss of control to the Tweed Council and a reduction of service levels given the geographic location of Tweed to the Gold Coast and its comparatively small size.

Tweed Council has developed a self sufficient culture and has always retained control of its own destiny particularly in relation to waste management. Not having to rely on others has led to disciplined management practises by Council over many years leading to the provision of high quality services to Ratepayers at comparatively low cost notwithstanding the Council geographic area is extremely large and scattered including a large rural area and number of

villages, mountainous and unsealed roads. Through this self dependency and good management, the Council has planned well ahead in relation to its long term landfill requirements including accumulating land for future landfill and buffers whilst accumulating significant financial reserves in the process.

It would be fair to say Tweed's track record to date in many areas including Waste Management is the
envy of most other non-metropolitan Councils in NSW.

In relation to economies of scale, in our experience of tendering for Local Government waste management contracts, we have found the critical mass for Council's like Tweed, which are comprised of a relatively large and scattered rural area, to be approximately 20,000 tenements and greater.

Tweed is currently comprised of more than 33,400 tenements and therefore well exceeds the number of tenements we believe are required to achieve critical mass and economies of scale.

For the past 20 years Tweed has been one of the fastest growing Shires in NSW. This pattern of high growth over many years is set to increase dramatically again as it did in the early 90's with massive residential developments in Kings Forest and Cobaki Lakes (approximately 11,000 tenements) set to come on over the forthcoming years. Therefore the current economies of scale Tweed enjoys is set to continue.

When it is considered the major cost component of any waste management collection service is the collection and bin supply component, generally 90%+ and the fact the nature of the Waste Industry is that one collection vehicle generally services approximately 4000 urban tenements (much lower in rural areas) per week, then there is no reduction in the cost of collection on a per service basis whether a Council area is comprised of 4,000 or 100,000 tenements as the collection costs are the same per service.

The only potential cost saving for larger contracts is in relation to Administration/Management cost which generally only accounts for approximately 10% of the total collection and bin supply cost and only a small portion of the 10% is subject to economies of scale benefits as the administration/management costs also move in line pro rata to the increase in the number of tenements being serviced eg. more tenements means more phone calls, missed services, new service bin deliveries, bin repairs, vehicle accidents, drivers, workshop and driver facilities therefore additional call centre, driver foreman, mechanics and administration/management staff are required.

In our 75 years experience, any small potential administration cost saving with a large contract is outweighed by additional costs and practical issues associated with large contracts eg. public relations and associated advertising costs, industrial disputes given large contracts attract militant trade union activities often holding Councils and Contractors to ransom as is the case in the City of Brisbane, poor service levels particularly given the enormity and composition of the geographical area of the Tweed and Gold Coast. This is a real practical issue because even if the contracts for the two Council areas are individually let, the Contractor will manage them as one and the quality of service to the Tweed will be, by sheer numbers and location, the poorer of the two particularly in the Murwillumbah and Coastal areas and the southern villages.

Combining the Councils in the one tender process is also likely to reduce the number of tenderers submitting bids. This is due to the capital intensive nature of the Waste Industry and the fact large contracts are usually out of the financial reach of smaller waste Contractors.

It is likely under a combined tender process, the only tenderers would be large multinational companies the majority of which are foreign owned and have contributed little to the Australian Waste Industry over the years by way of new technology or service levels.

In summary, any proposal for Tweed to join with the Gold Coast Council in a joint tender process by inference suggests Tweed Ratepayers have been paying a premium for their waste management services in the past or have missed out on receiving technological improvements in the Waste Industry or high quality services. A study of Tweed Council's waste management history will indicate the contrary.

In relation to waste management charges to Ratepayers, Tweed Council is generally below the NSW State average waste management charge. A comparison of current Tweed and Gold Coast waste management expenditure budgets reveal Gold Coast charge their Residents 41% higher than Tweed Council notwithstanding Tweed provide its Ratepayers with a bi-annual Clean-Up campaign.

Some of Tweed Council's achievements include :

- One of the first Council's in Australia to adopt the now widely accepted Mobile Garbage Bin (MGB) and one of the first Council's to adopt the automated collection of the MGB and pass the economic benefits of such technology back to the Ratepayers.

- One of the first Council's in Australia to adopt the automated collection of Recyclables in an MGB including a divided MGB and to build a Materials Recovery Facility (MRF) to process the collected Recyclables.

- Tweed Council is one of a minority of Council's to provide a bi-annual Clean-up campaign.

- Tweed Council was the first Council in Australia to introduce a Utility Packer, a collection vehicle capable of collecting sanitary pans (from rural villages), automated collection of MGB's and bulk bin collection for rural commercial and industrial Ratepayers.

- Tweed Council is the only non-metropolitan Council in Australia to have a reputed manufacturer of waste collection bodies and associated equipment located within its boundaries over a period spanning more than 50 years. This has facilitated Tweed Council to implement new collection and recyclables processing technology before any other Council.

The Gold Coast City Council has lagged Tweed Shire Council in all these areas.

The fact Tweed Shire Council has succeeded in the above achievements, established comparative high quality infrastructure at the Stotts Creek Waste Management Facility and associated MRF, planned and provided for its future landfill and buffer requirements, provided a personalised high quality automated waste, recycling and organics collection service to its Ratepayers including to those located in remote and mountainous rural areas, at Rates consistently below that of the NSW State Average and accumulated over the same period significant financial reserves in the millions, I believe best sums up the need or lack thereof to join forces with the Gold Coast City Council, a Council with a track record of political instability and lack of investment in key infrastructure ie. Water storage.

Draft Recommendation 17 & 18

Similar to the Recycling Service, we recommend a fortnightly Green Organics service be extended to all Residential tenements in the Shire and an optional service to Commercial and Industrial tenements. Providing a fortnightly Organics service to all Residential buildings in the Shire will:

- Maximise organics yields;
- Reduce waste to landfill;
- Increase the economies of scale of the Organics service by extending the service to all Residents and therefore minimise the cost to the Community on a per service basis.

In relation to multi-unit dwellings, it has been our experience 1 bin shared between 3 units to be a well received policy from unit occupiers as it provides sufficient Organics bin capacity and therefore maximises organics yields whilst still allowing the Council to maintain a simple Rating policy by rating each unit for a organics service.

Our experience with other Councils that have extended a Green Organics service to all Residential Ratepayers, as against an optional service, is that the service is very popular with Residents given the tangibility of receiving a separate 240L Organics MGB and extremely effective in terms of waste reduction to landfill. As mentioned, extending the service to all Residents provides for economies of scale in relation to truck logistics and collection productivity thus ensuring the cost to Council on a per service basis is kept to a minimum.

Draft Recommendation 19 & 20

Refer comments in Draft Recommendation 16.

Draft Recommendation 23

Our experience has been a 140L MGB serviced weekly is sufficient capacity for householder's waste needs if all householders are provided with a minimum of 120L per week of Recycling capacity and a 240L MGB for organics collected fortnightly. Hence the need for an optional 240L MGB is abated.

In the unlikely event additional waste capacity is required, we recommend the householder have the option to take up a second 140L MGB and pay a second garbage rate. This is the current system in place with the divided 240L MGB's and the current take up is extremely low.

Introducing multiple sized garbage bins adds what we believe to be unnecessary costs to the service eg. additional bin stocks, higher administration/bin changeover costs and potential loss of collection vehicle economies of scale and productivity.

Draft Recommendation 26

Having experience as an operator of Materials Recovery Facilities in addition to being a collection contractor and manufacturer of recycling bodies, we recommend a maximum compaction limit of 200 kg/m^3.

A compaction ratio lower than this will result in significantly higher collection costs to Council particularly given the large rural areas in Tweed Shire where larger (6x4) vehicles are likely to be required. If collection vehicles are not permitted to collect a full legal payload by weight, then as mentioned the cost of collection to Council will increase significantly.

These comments are made in light of the fact significant technological improvements have been made over recent years in relation to sorting technology and also the collection bodies where the 'compaction effect' has been significantly reduced.

In our opinion, the additional impact on glass by increasing the compaction ratio from 180 to 200 kg/m3 is negligible.

Draft Recommendation 27

Refer comments in Draft Recommendation 16.

Draft Recommendations 28, 29 & 30

Our experience over a ten (10) year period in another Council area of similar size and make-up to Tweed ie. popular holiday coastal destination was high contamination of recyclables to the point the Council withdrew the recycling receptacles.

The majority of public place litter bins are in parks and main streets used by holiday makers and unfortunately but understandably the majority of holiday makers appear to have little interest in separating their recyclables from garbage. The biggest problem is actually ensuring the rubbish makes its way into a bin and not on the ground or around the bin.

Notwithstanding the challenges, with the aid of a comprehensive education campaign incorporating letting agents, tourist authorities and hotel/apartment and caravan park proprietors, this initiative may succeed albeit contamination rates are likely to be high.

Draft Recommendations 42, 43, & 44

Refer comments in Draft Recommendation 16.

In summary, Tweed Shire Council has demonstrated over a long period of time that its best interests are served by retaining control of its own destiny in relation to all facets of waste management ie. collection, processing, disposal and education.

The quality of service the Council has provided to Ratepayers, the high level of technological advancement in waste management practises it has introduced particularly when compared to the Gold Coast, and the low waste management cost and charges to Ratepayers notwithstanding the large rural areas in Tweed Shire, are all testimony to the fact there appears to be little to be gained to Tweed Council by joining forces with neighbouring Councils, particularly a much larger and politically unstable Council like the Gold Coast.

Due to the lopsided number of tenements between the two Councils, the massive task of managing the Gold Coast's holiday boom periods and high rise units, and the comparative remote location of Tweed Shire, any successful contractor would have little choice but to focus its attention on the Gold Coast at the expense of the Tweed Shire.

Our final recommendation is in relation to the generally prescriptive nature of the proposed collection system in the Draft Waste Management Strategy and in relation to the process of handling the Shire's waste, recyclables and organics materials.

In relation to the collection system, we respectfully suggest the Waste Management Strategy also provide for Council to consider alternate collection systems and proposals from tenderers. Historically, the Australian Waste Industry has generally been very innovative so placing the onus on prospective tenderers or at least allowing prospective tenderers to submit alternate and/or lower cost collection and processing systems and bin configurations, may be advantageous to the Tweed Shire Council as it has been in the past.

In relation to the processing of the Shire's waste, recyclables and organics, we recommend the Council not lock itself into such contracts prior to the collection tender, but combine the processing options with the collection tender. This way, the onus is placed on tenderers to submit innovative and holistic proposals encompassing collection, disposal and processing components as Council is best served if all these components are integrated to minimise waste to landfill and minimise the total cost of waste management to Council.

In addition, combining all components with the collection tender will reduce Council's tender and evaluation costs and ensure any innovative and/or cost effective waste handling and processing systems are not locked out.

Thank you for the opportunity to provide feedback to the Draft Waste Management Strategy.

I am available to discuss any queries you may have or provide further information.

Yours faithfully,
Solo Resource Recovery

Robert Richards
Director