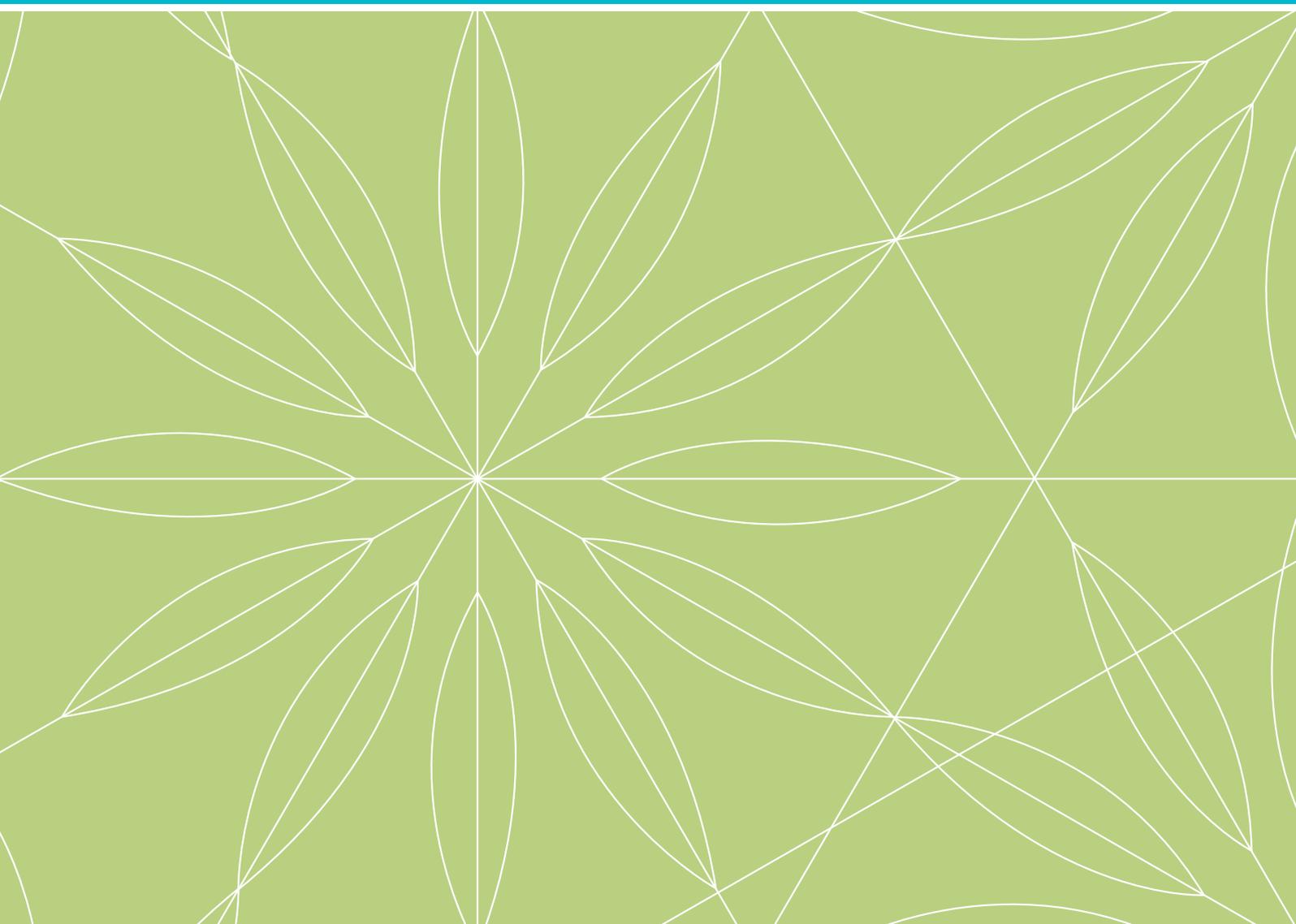


Reducing Contamination of Dry Recyclables and Garden Organics at the Kerbside

The NSW experience



Department of **Environment & Climate Change** NSW



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Section 1: Learning from the Experience of Others

Introduction

Contamination in dry-recyclables and garden organics affects contractors, councils and processors. Increased contamination also leads to increased processing costs and a reduction in product quality and available markets. 'What can I do to reduce contamination rates?' is a common question from all stakeholders. 'What is everyone else doing and is it working?'

The first intervention point in the recycling loop is the householder and their bins at the kerbside. Contamination can occur at other points too, such as when using collection vehicles haven't been cleaned properly or at a transfer station where site management plays an important role (for example Occupational Health and Safety, on-site litter management, costs to remove contamination, etc.). This report looks at the strategies that have been implemented by councils and contractors around Australia to reduce contamination of recyclables and organics in domestic resource recovery systems at the kerbside.

Findings

The existing strategies for tackling contamination of recyclables and organics at the kerbside fall into four categories; system enhancements, education, enforcement and rewards. The strategies are evidence-based to demonstrate what councils have found that works and what doesn't.

Reducing Contamination through System Enhancements:

Making Changes to the Way You Carry Out Your Service

Service Standardisation

Standard collection services and mobile bin colours across council boundaries will improve understanding and the correct use of resource recovery services by residents. The NSW preferred minimum service levels for kerbside resource recovery and residual waste collection services from single unit dwellings are outlined in the *Preferred Resource Recovery Practices by Local Councils*¹ guide by the Department of Environment and Climate Change NSW (DECC), that also includes the mobile bin colours in the Australian Standard for Mobile Waste Containers, AS4123. The Standard includes mobile bin design, dimensions, performance requirements, testing, colours, health and safety and environmental requirements.

The DECC's *Model Waste and Recycling Collection Contract*² is an excellent vehicle for standardising structural elements of waste management services and is one type of systemic method for managing contamination. The Model Contract contains sections that deal directly with contamination management, such as the General Specifications on Quality Management, Procedures for Contamination in Recycling and Organics — minimum requirements, Guidelines for a Contamination Management Strategy, Community Education, Reporting Requirements, Review and Maintenance of Records, and lastly, Kerbside Audits.

1 *Preferred Resource Recovery Practices by Local Councils*, DECC March 2006, www.environment.nsw.gov.au

2 *Model Waste and Recycling Collection Contract*, DECC May 2005, www.environment.nsw.gov.au

The *Service Development Timeline*³ is an interactive software program that will lead you through the process of developing a new waste management service — helping you calculate the dates of when you need to be doing specific tasks, to make sure that the process of making decisions about a new service is both robust and well informed and that the scheduled start date of your new service occurs as planned.

Uniform data and audit methodology

The recycling industry measures contamination either by weight or volume, making it difficult to compare different operators' documentation about contamination levels. Any effective contamination measurement system faces the challenge of acknowledging the more difficult contaminants, e.g. sharps such as needles — a small object in mass and volume that is not reflective of the time and costs associated with its removal and danger to workers' health.

DECC has set good practice performance outcomes for dry recyclables and garden organics collected from Single Unit Dwellings. Contamination of dry recyclables should be below 3.5% and below 1% contamination for garden organics. Contamination Rate is measured as percentage by weight.

Contamination measurement needs to be done using a statistically valid auditing methodology. Ideally, kerbside audits should be undertaken at least every two years at about the same time of the year. The kerbside audit should be undertaken at a time considered to be representative, avoiding school holidays and special events. Audits can also be carried out at a Materials Recovery Facility (MRF).

To measure the effectiveness of changes to collection systems it is recommended that audits be undertaken approximately six months prior to the collection service change and six to twelve months after the implementation of the new service. The audit samples should be a random stratified sample of at least 260 households.⁴

For more information about auditing methodology for domestic waste and recycling please email DECC's

data team: wastedata@environment.nsw.gov.au

Monitoring contamination is an important part of any campaign. Waste and Resources Action Plan UK provides support for UK local authorities (councils) to help them meet their waste reduction targets. Their *Good Practice Guide to Monitoring and Evaluation*⁵ is a useful tool to help monitor contamination and meet targets. Many of these resources can be used in the Australian context.

Consistent Terminology

Using consistent and common terminology plays an important role in reducing contamination in source separated recycling systems. The terminology used, whether in campaigns or by staff, creates perceptions amongst waste generators and these perceptions influence their attitudes and values towards resource recovery initiatives and responsible waste disposal behaviour.

The use of common and consistent terminology:

- Supports the shift from waste management towards resource management, with an emphasis on manufacture of products rather than receiving 'waste'.
- Resolves a range of identified barriers to the development of markets for recycled organics products, particularly in agricultural markets.
- Facilitates comprehension by stakeholders across Australia and enables better comparison between reports and organisations.
- Enables cataloguing of information by subject keywords.

The Recycled Organics Unit at the University of NSW has developed a suite of standard terminology⁶ for the Recycled Organics sector. Terminology in this industry has changed over time: 'garden waste' became 'green waste', then 'green organics' and finally 'garden organics'. This demonstrates a shift away from the word green as a result of some residents thinking that anything coloured green, i.e. green carpet, could be disposed of in the 'green waste' bin. It is also a shift away from the concept of waste when promoting

3 *Service Development Timeline*, DECC, www.environment.nsw.gov.au

4 *Kerbside Waste Audit Guidelines*, DECC, www.environment.nsw.gov.au

5 Waste Resources Action Plan UK, www.wrap.org.uk/local_authorities

6 www.recycledorganics.com/dictionary/index.htm

re-use and recycling. Nationally the preferred term appears to be 'garden organics'.

Care should also be taken to ensure consistency with terms such as 'user pays' or 'full council service' systems as well, as they can create confusion. Is the council providing a particular service, e.g. a mulching service provided on an 'as needs' basis for residents by the council, as part of the Domestic Waste Management Charge or is an additional fee payable for a specific service.

User Pays Services

Several councils in NSW currently have a fee structure for residual waste bins where the larger the bin required the more residents pay for their Domestic Waste Management Charge. Residents pay less for smaller bins — a financial incentive to reduce the amount of waste generated by a household, hopefully encouraging sustainable practices in the process.

'User pays' organics schemes, which collect garden organics only from residents who make a contribution towards the collection costs, may have the advantage of increasing the quality of the material collected. However, they also severely limit the quantity of material collected. As an interim step, they enable councils to introduce collections without a general increase in the Domestic Waste Management Charge, and promote high quality collections. The maximum participation rate for user-pays organics collections is likely to be around 30%.⁷

An example of this is in Adelaide, where some councils in the metropolitan area have a 'User Pays'

collection service for garden organics; the resident only receives the bin and collection service if they have paid for it separately to their domestic waste charge. This type of service has typically delivered 2% lower contamination than the SA average, but the total volume collected is a lot lower. It is assumed that most households that don't use the organics collection are placing their garden organics into the garbage bin. Full details can be reviewed in the Green Organics Contamination Report⁸.

Local Changes to Bin Configuration

Where contamination of dry recyclables is high in specific locations, a change in the size and configuration of the recycling bins can yield improvements. For example, 'split' recycling bins (paper and cardboard on one side and mixed containers on the other), can lead to high levels of cross contamination, particularly in bins from Multi-Unit Dwellings (MUDs). The problem tends to be worse in areas that experience a high turn over of residents. Replacing split recycling bins with either fully co-mingled recycling bins (bins containing both paper and containers) or individual bins for paper/cardboard and for containers has been shown to deliver improved results both in terms of yield and contamination rates.

The *Assessment of Domestic Waste and Recycling Systems Report*⁹ reviews the performance of the four common kerbside bin configurations for recycling systems, including average contamination levels.

7 South Australia Environment Protection Authority Green Organics Contamination Report

8 www.epa.sa.gov.au

9 *Assessment of Domestic Waste and Recycling Systems*, DECC, www.environment.nsw.gov.au

Reducing Contamination through Education

An education program or strategy is essential when the contamination is being caused by residents' lack of knowledge, awareness or commitment. A waste education strategy includes several important elements: planning, content, method of delivery, trial run, updates if necessary, delivery and evaluation (all designed at the beginning of the campaign!). These principles form an action learning process for staff as well.

The *What we need is a community education project*¹⁰ guide provides background information about community education, a step-by-step guide to planning a community education project, sample community education projects and a summary of useful community education methods.

The following experiences exemplify planning, implementation and integration of education strategies with other waste strategies and can be reviewed in Section 2:

- Cooma-Monaro Council ran a successful trial of a Bio Bin¹¹ with the education component structured as if it was a new service being implemented.
- Wingecarribee Shire Council has carried out several education campaigns using the *Murphy campaign kit*¹²
- Campbelltown City Council's implemented a contamination management strategy¹³
- Lismore City Council uses a carrot and stick approach¹⁴
- The City to Soil¹⁵ project demonstrates Queanbeyan City Council and DECC working together to Close the Loop.

10 www.environment.nsw.gov.au/community/edproject/index.htm

11 See Section 2: The NSW Experience or www.environment.nsw.gov.au

12 See Section 2: The NSW Experience or www.environment.nsw.gov.au

13 www.environment.nsw.gov.au

14 See Section 2: The NSW Experience or www.environment.nsw.gov.au

15 www.environment.nsw.gov.au

Planning

Planning is a critical element of a successful education campaign. The more time and effort spent planning before you launch the more successful and less stressful your campaign is likely to be! Poor implementation of your new education strategy associated with a new service can result in high contamination of the recycling streams and can be hard to address after the service has commenced. Effective collaboration between the local council, processor and the community will ensure that the key challenges of changing to more efficient collection systems are resolved to the benefit of all stakeholders. Using the guide mentioned above, *What we need is a community education project* can help deal with the task of putting together your program.

The UK Recycle Now Partners website has comprehensive information for local authorities.¹⁶ Their guides cover all aspects of planning, running and evaluating your recycling communications campaign, from getting stakeholders on board, to developing targets, monitoring your campaign and using appropriate communications channels. There is also a chapter on tailoring a campaign to operational issues. Some NSW regional councils have already discovered this website and are using components that are applicable to them and their neighbours.

Content

In your education campaign, the content (information products and services) could take many forms, such as:

- DECC's *Environmental Benefits of Recycling Calculator*¹⁷ can be used to demonstrate to many different groups such as children, adults and business partners, how great recycling is for the environment, i.e. greenhouse gases, water and energy saved, and reducing our contribution to climate change.
- Publications such as pamphlets, brochures, posters and an information pack.

16 www.recyclenowpartners.org.uk/using_recycle_now/planning/for_local_authorities/index.html

17 www.environment.nsw.gov.au

- Fact sheets from the *National Packaging Covenant's Recycling has Real Returns Pack*¹⁸ and the *Murphy Contamination Education guide*¹⁹ contain information on what can be recycled, what it means to contaminate and what happens to our recycling after it leaves the kerb.
- PR material: bags, stickers, other give-aways.
- Telephone information services and hotlines, including training council's front-line staff.
- Flyers inserted in council's rates notices.
- Council website — Resource Recovery page: most local councils have a web page devoted to explaining the correct ways to use their recycling system. Integrating information about contamination with other areas of the council website will mean that the message is likely to reach more people, as anecdotal evidence from councils and communities indicates that only people who are actively interested in finding out what they can recycle will make the effort to search their council's website for further information.
- On-line databases, such as Planet Ark's Recycling Near You,²⁰ can provide excellent information for the community about recycling.
- Case studies of current practice in your area, e.g. a school using a worm farm.
- Resources tailored for the school curriculum, such as Bankstown and Lane Cove Councils' games for kids.²¹
- Council's State of the Environment report can be used for promotion of your activities in the Waste Chapter.
- Information packs for tenanted premises.²²
- Labels and bin stickers with a clear and concise message: research shows that this reaches more people in NSW than inserts in rates notices.
- Council envelopes printed with waste minimisation and recycling messages.
- Signage for bin bay areas of MUDs.
- Canvas bags printed with recycling information for MUD residents; help remove one of the major barriers to recycling in MUDs of carrying the recycling downstairs. Visy Recycling and 6 councils in Inner Sydney ran a campaign where residents could write in to get a canvas recycling bag. The bags were big enough to hold lots of recyclables, printed with educational messages and washable/reusable. 6000 bags were produced and given away.
- Press releases in the local media, Mayoral column and advertising, however it is challenging to evaluate the impact of this on contamination rates. Both the Murphy education program and Campbelltown City Council funded cinema advertising. Cinema-goers had good recall of the advertisement, however it is almost impossible to evaluate whether this caused any behaviour change.
- Information about specific contaminants, such as sharps. NSW Health has developed a comprehensive guide *Community Sharps Management Guidelines for NSW Councils*²³ and has a grants program to help councils implement programs to manage sharps. Resources have already been developed and are available in several languages on their website. Information such as posters, brochures and a pharmacy disposal brochure are available to download from their website too. There is also the Community Sharps website for further information.²⁴

Method of Delivery

The **method of delivery** (communications and social marketing) of your education campaign could include:

- Collection vehicle design competition²⁵
- Media liaison (press releases and interviews)
- Advertising/marketing

18 email sustainability@environment.nsw.gov.au for more information

19 www.environment.nsw.gov.au/education/spd_lgov_murphy.htm

20 www.recyclingnearyou.com.au

21 www.lanecove.nsw.gov.au

22 Hurstville City Council case study at www.environment.nsw.gov.au/education/spd_edu_education.htm

23 www.health.nsw.gov.au/pubs/2004/pdf/sharps.pdf

24 www.communitysharps.org.au

25 www.environment.nsw.gov.au/education/spd_edu_education.htm, Kogarah Council case study

- Public education campaigns using television, print and radio
- Environmental performances (music, dance, drama and debates), particularly shows with audience participation.
- Non English Speaking Background (NESB) community program,²⁶ including appropriate multi-lingual information.²⁷

Face-to-face education (also a method of delivery) in your education campaign could involve:

- TAFE and University partnerships
- Displays at fairs and festivals, shopping centres and council buildings.
- Real estate agents' breakfast to launch or refresh a program for tenants.
- School visits program.²⁸
- Keep Australia Beautiful's Waste Watchers' Program for Kindergarten to Year 6.²⁹
- Presentations to community groups and sporting clubs.
- Short courses such as at The Watershed³⁰ and Earth Works.
- Public relations activities; events, displays, exhibitions, lectures, community forums.
- Community education courses, like those developed by the Southern Waste Strategy Authority in Tasmania.³¹
- Developing environmental management or cleaner production³² systems for organisations.
- Extension programs for the passionate people in your community, like Willoughby, Lane Cove and North Sydney Councils' Footprints.³³
- Business visits. Contamination rates of recycling from the Gosford CBD were over 25%. A 'Good Recycling' handout sheet for

businesses was developed and each business was visited. Staff in the businesses did not know what could be recycled and passing pedestrians were using the recycle bins for general waste both before and after bins had been emptied. After the program of visits, contamination rates from the Gosford CBD were reduced to acceptable levels.

Your program could integrate education and communication methods through a range of approaches: thinking systematically, developing critical thinking, participatory processes and linking education to other tools for achieving sustainability. More information can be found in the Useful Methods section of the *What we need is a community education project*.³⁴

Evaluation

Evaluation is a vital part of any campaign, particularly campaigns that tackle contamination of recyclables. For example, money spent on advertising has limited value unless the impact is measurable. Evaluation and research are used to assess and report on the impact of educational and other strategies used. Evaluation can be your most powerful tool for justifying a position to council or the community or when applying for funding, whether internal or external. Monitoring forms part of your evaluation framework and can be used to measure changes in the type and quantity of your waste of concern or community behaviour.

The guide *What we need is a community education project* has some valuable introductory information on monitoring and evaluation³⁵.

The publication *Does your project make a difference? A guide to evaluating environmental education projects and programs* is a practical guide to assist with designing, planning, implementing and reporting environmental education programs and projects. It is available in hard copy from DECC's Information Line on 131 555.

26 www.environment.nsw.gov.au/education/spd_edu_education.htm

27 www.environment.nsw.gov.au/education/communities.htm

28 www.environment.nsw.gov.au/education/spd_edu_education.htm, Lismore City Council case study

29 www.kabnsw.org.au/prog_waste.html

30 www.cityofsydney.nsw.gov.au

31 www.southernwaste.com.au

32 www.environment.nsw.gov.au

33 www.northsydney.nsw.gov.au/footprints

34 www.environment.nsw.gov.au/community/edproject/section4.01.htm

35 www.environment.nsw.gov.au/community/edproject/section+2.10.htm

The document is designed for all those who are delivering education about waste and sustainability issues. Its aim is to help you to plan and conduct more appropriate evaluation of your work. Whether it is used for the evaluation of specific projects, or for whole programs, it is intended to provide guidance and assistance in a practical and useful manner. It is important to question assumptions about how well your program is working. By developing an outcomes hierarchy, building an evaluation strategy around it and planning for evaluation from the beginning, you can have the confidence to make practical decisions about adjustments to the program or project, substantiate your reports and to assist in future funding bids.

Reducing Contamination through Enforcement: Letting the Community Know When Contamination is a Problem

The effectiveness of enforcement strategies depends on household type and council resources. Experience shows that enforcement strategies targeted at individual households can be effective in reducing contamination.

Council feedback indicates that enforcement strategies have not been as effective in MUDs. This seems to be because of the level of anonymity that residents have when using communal bins. MUDs are likely to need specifically tailored education and enforcement strategies. Councils could try developing partnerships with strata management and encouraging a recycling champion for each block of flats.

Contamination Policy and Procedures Program

A policy that outlines the procedures for dealing with contamination at the kerbside can be much easier to enforce when it has been adopted by council. It is important that procedures for audits and repeat offenders are strictly adhered to to ensure a consistent approach. Procedures to tackle each occurrence of contamination should be clearly documented.

The following steps are examples of procedures followed by councils:

- Audit bin contents at the kerb, by either the truck driver using a camera in the hopper or a dedicated bin inspector. For cameras to be fully effective, as many householders as possible must be made aware that cameras have been fitted to trucks.
- Notify the customer of the problem on the day that contamination occurred, by either a bin sticker or notice in the letterbox. Outline options to resident, such as collection once the resident removes contamination or has paid a disposal fee for separate garbage collection.
- Keep a record of addresses with bins that are too highly contaminated to be collected.

Maintaining a database of the addresses, including a description of the severity of the incident can help manage the situation and track multiple occurrences.

- Post a letter to the offending householder. Usually, the letter tells the householder of the problem, and informs them that follow up inspection(s) will be made. One council in Sydney has trialled using this letter to invite residents to an education forum however the response is usually to deny that they have caused the contamination.
- If householders are found to offend at follow-up inspections, send another letter, warning them that further inspections will be made and that they risk suspension of service and possible permanent withdrawal of service.
- Door knock to talk with the resident face to face. Bin inspectors carrying out door visits to households can help as it demonstrates that contamination can be traced to particular houses.
- Some councils have a clause in their policy stating that ongoing contamination occurrences could result in the temporary suspension of the householder's collection service, and the householder having to apply in writing to have their service returned.

There are a number of variations of this type of strategy currently being run by councils and collection contractors; the process is known as the 'Three Strikes and You're Out' system. Anecdotally, staff who use this strategy say that they are unlikely to get agreement from councillors to take away residents' recycling bins. The system needs to be well resourced to ensure that it can deal effectively with the range of offenders and record keeping. Careful investigation can yield important information, i.e. repeat offenders could be NESB households who have not received information in their language. There is some debate whether punitive responses such as 'Three Strikes and You're Out' are effective at modifying behaviour. It has strong potential to displace the problem rather than solve the problem. Most contractors and council prefer the 'carrot' approach, with the emphasis on education, including a good schools program in the hope that students re-educate their parents. Even with a regime of bin stickers for contaminated bins, some councils still

have high contamination rates and so discontinue their bin inspection regime. There are anecdotal stories of residents waiting for bin inspectors to pass their house before putting their bin out for collection, or hiding the contamination rather than disposing of it properly.

Contract clauses that relate to Contamination Management Strategies and Procedures can be found in the DECC's *Model Waste and Recycling Collection Contract*. The contract can be used to specify the response timeframes for both the council and the contractor.

Sustainability Victoria³⁶ and Compost Victoria recommend that key procedures should be considered prior to commencement of a service to ensure that collected organics are efficiently processed. Effective procedures used by Victorian local councils include the use of highly visible residential bin auditors, bright coloured stickers identifying offending bins, and disposal charges for contaminated bins. Ensure procedures are implemented from day one.

In Section 2: The NSW Experience, there is further information on councils that have implemented strategies using enforcement:

- Hunter Resource Recovery carried out a Kerbside Audit and Stickers Blitz
- Campbelltown City Council used motorcycle-based bin inspectors
- Blacktown City Council's Dry Recyclables Trial Contamination Management Program
- Lismore Council's carrot and stick approach is an excellent example of an integrated contamination management program where both education and enforcement strategies are used to great effect.

³⁶ Guidelines for sustainable separation and processing of bin collected organics; written by Organic Recyclers; www.organicrecyclers.com.au

Reducing Contamination through Reward-based Strategies:

Thanking the Community and Stakeholders for Their Hard Work

Driver Rewards

Rewarding drivers for loads of recycling that have low levels of contamination works well in keeping contamination to a minimum in Sutherland Shire Council.³⁷ Cameras on the hopper of the truck show the contamination as it enters the truck from the bin, becoming part of the load. Drivers, such as those employed at Sutherland Shire Council, get to know their routes well and are therefore aware of the areas where contamination is likely to be present in bins. Quite often the drivers will get out of the truck and check the bins before emptying them. The drivers are paid a bonus for loads with low levels of contamination so it is in their interests to be proactive. Because the gate fees at the processing facility are lower for low contamination loads, it is financially viable for the council to reward drivers.

Stickers

Where a recycling bin is inspected and found to be uncontaminated, a sticker congratulating the householder is placed on the bin and often has a logo such as a smiley face or big tick. Householders view the smiley face or tick as a goal to be achieved in every collection. This strategy normally forms part of a broader campaign and has not been evaluated for its stand-alone impact.

Give-aways

Households can be offered gifts as a reward for good recycling habits. The good habits could be:

- Bottles and jars washed out and lids removed
- Aluminium cans emptied and squashed
- Cardboard boxes flattened and cleaned
- No recyclables found in garbage collection from same address
- No contamination of recycling bin.

37 See Section 2: The NSW Experience for Sutherland Shire Council's implementation

Collection truck drivers or bin inspectors may carry out visual inspections of bins in order to reward residents for good recycling behaviour.

Marrickville Council residents who had good recycling habits over the whole assessment period during the Good Recycling Initiative³⁸ were given a No 1 Recycler Mug and a Congratulations card.

Bankstown City Council has given away movie tickets to its residents who are great recyclers.

Competitions

A number of councils have run competitions about recycling for their residents, some measuring behaviour and others measuring knowledge. Some of the rewards were big incentives to change behaviour:

- Campbelltown, Camden and Wingecarribee Councils offered a weekend stay at a local resort.
- Marrickville Council offered vouchers for a local restaurant and nurseries.
- Lismore City Council has an Ambassador Competition called 'Do the right bin and win'.³⁹ Residents with contamination free bins are rewarded with a \$60 gift voucher and other prizes, which raises the awareness of good organics bin use.
- The City to Soil project shows how DECC and Queanbeyan Council used the offer of a \$50 hamper of produce to help 'Close the Loop' and keep contamination levels low.⁴⁰

38 http://www.environment.nsw.gov.au/education/spd_edu_education.htm

39 See Section 2: The NSW Experience for Lismore City Council's carrot and stick approach

40 See Section 2: The NSW Experience or www.environment.nsw.gov.au for information about The City to Soil project

Section 2: NSW Experiences of Implementing Strategies to Reduce Contamination

Introduction

This section contains records of interviews and information provided voluntarily by councils around NSW, and describes the strategies that they have tried to reduce their contamination rates. The strategies are not directly comparable as they all have different study parameters.

DECC gratefully acknowledges the help and assistance of the following people for provision of information in this report:

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Lismore City Council

Ken Silich, Manager Resource and Waste Services,
Cooma-Monaro Council

Roger Lewis, Company Manager,
Hunter Resource Recovery

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Sutherland Shire Council

Miles Lochhead, Resource Recovery Centre Manager,
Wingecarribee Shire Council

Melinda Anderson, Waste Education Officer,
Newcastle City Council

Paul Macdonald, Manager Waste and Recycling,
Campbelltown City Council

Queanbeyan City Council and the City to Soil Pilot Project

Council background:

- Population approx. 35,000
- Area 52.2km²
- 14% NESB
- 3 bin system: 240L co-mingled recycling, 240L garden organics and 140L garbage
- Free garden organics drop off at Council's processing facility

What were you trying to achieve?

- To find a use for the soft, high nitrogen garden organics, such as lawn clippings and leaves, as it is not suitable for mulching (the woody garden organics is readily sold or used by the Council). The garden organics collection service has high participation rates with low levels of contamination.



Organics from local households increased grape yield.



Loading compost for delivery to the vineyard.

- To demonstrate that by using a rewards system for residents it is possible to achieve a high quality product with consistently low contamination.
- To show the compost produced using this system is of a high value to the agricultural sector.
- To demonstrate the economic viability of a system that collects garden organics, produces compost and delivers it to the agricultural sector.
- Residents who won a hamper after entering the draw for those with no contamination were publicised in the local paper and project newsletter.
- The garden organics were composted to produce a soil conditioner. This was applied to grapevines of a vineyard and tested for composition.

What did you do?

- The 'City to Soil' project focussed on using the existing garden organics collection system as its basis. Collection of garden organics and the rewards system ran for the first 6 months of the 16 month trial. The trial covered a cross section of the community and collected from about 600 households.
- Council's collection contractor used a rear loading truck with two additional staff, instead of a side loading truck (one person operation), to remove contamination by hand.
- Each bin in the trial area was bar-coded — the extra staff scanned the barcodes and inspected bin contents as they were emptied.
- A newsletter and promotional information were produced and distributed to trial participants several times during the trial.

What information did you collect?

- Participation rates.
- Contamination percentages and types.
- Bin contents. 'Good' bin details were placed into a fortnightly draw for a hamper of fresh local produce.
- Analysis of the composted product for composition.
- The finished product made from the garden organics bin contents was analysed and applied to a trial area of grape vines on a local farm. A soil scientist from Australian National University oversaw soils testing; changes in the soil around the crops, yield and crop growth were measured.

What did you achieve?

The rewards system had a positive effect on participation and desired behaviour. The possibility of winning a prize for doing the right thing ensured that residents were very careful with what they put into their bins, and also put their bins out on the appropriate days.

The product made from the householders' garden organics had a beneficial effect on grape crops, soil structure and productivity in the region. It can be produced and delivered for a reasonable cost.

What was good about your project?

The council felt that the project was both successful and innovative — it 'closed the loop' by finding a use for a formerly underused product; the soft garden organics from residents became a great soil conditioner for the degraded soils of the region.

All of the stakeholders involved enjoyed being part of the positive re-enforcement approach, i.e. rewards for good behaviour!

The project was recognised for its innovation by being short-listed as a finalist in the 2005 Banksia Environmental Awards.

Papers on the project have been presented to the Australian National Committee on Irrigation and Drainage and the National Action Plan for Salinity and Water Quality.

The project is continuing because of its success during this demonstration phase. A business model for farmers is being developed to demonstrate the multiple benefits of collecting garden organics straight from households.

Were there any aspects of your approach that were not successful? Why not?

- Checking bin contents, reading of barcodes and removing contamination is done by hand, which is labour intensive. Finding another way of doing this would make this approach more practical.
- Prize giving may not be sustainable but there are other rewards that could be provided on an ongoing basis — the reward does not have to be enormous to have an impact on behaviour. The hampers provided as prizes were valued at about \$50 each.
- The major drawback to citywide implementation on a more permanent level is that a different type of vehicle is required to that used by most urban Councils for kerbside collection and that it requires three staff, instead of one. It is not currently known how to make this aspect of the project more efficient/economical.

This may be a difficult approach to attempt without already having a garden organics collection system in place.

If you would like more information on this case study, the final report is available in the Organics Publications section of the DECC website: www.environment.nsw.gov.au



Cleanaway staff conducting a visual contamination audit

Blacktown Dry-Recyclables Trial Contamination Management Program

Council background:

- Population approx. 280,000
- Area 246.9km²
- 28.8% NESB
- Weekly 140L or 240L garbage collection
- Fortnightly 240L co-mingled recycling collection service

What were you trying to achieve?

- To trial various methods of contamination management.
- To reduce contamination levels of 10–15% by weight (visual assessments and operational feedback. Some areas are believed to have even higher contamination levels than this.) The main contaminant is plastic bags (with

recyclables inside), followed by garden and food organics, building waste and bulky goods.

What did you do?

- A Joint Contamination Management Strategy was developed between Cleanaway and Blacktown City Council to improve the quality of recyclables by identifying and responding to incidents of contamination in household recycling bins.
- Trial contamination management processes were put in place to gather data and to assist in designing a best practice method of contamination reduction.
- The trials will form part of a larger program that may involve contamination audits and direct communication with residents.
- To date three trials have been undertaken and further trials are underway. Each trial had distinct outcomes and achievements, building on the findings of the previous trial.

Timeframe		Trial 1 Sept–Nov 2004	Trial 2 Nov 2004–Jan 2005	Trial 3 Mar–Jun 2005
Methodology		Approx. 100 bins audited per fortnight Contaminated bins stickered Residents mailed Resident visited after 3 offences 4 fortnights/cycles	100 bins audited per fortnight Mapping used to audit same bins each cycle Contaminated bins stickered 4 fortnights/cycles	100 bins audited per fortnight Recycling information sticker placed on all bins in trial Mapping Contaminated bins stickered 6 fortnights/cycles
Households contaminated:	Once	684	474	391
	Twice	86	100	104
	3 times	8	11	20
	4 times	6	4	3
	5–6 times	Not applicable	Not applicable	0
Bins contaminated:	Pre-trial			10.2%
	Cycle 1		17.4%	18.1%
	Cycle 4		9.4% (69.8% first time offenders)	
	Cycle 6			7.4% (54% first time offenders)
	Post-trial		6.2%	

What was good about your project?

- The direct audit and communication process effectively targets the offending residents.
- Observing that people are not contaminating their recycling every collection. This is a finding that we hope to investigate further in the future, possibly through focus groups so that education campaigns can effectively address the contamination issues.

Were there any aspects of your approach that were not successful? Why not?

Most of the lessons learnt were learnt in the first cycle, enabling a process of continuous improvement. It is important to have one person auditing and to audit the same bins each cycle of a trial. Record keeping is also very important! Documenting the number of bins audited enables a contamination rate to be established.

It appeared that a number of residents were not being reached by the program, as demonstrated by the number of first time offenders in the fourth cycle of Trials 2 and 3.

Given the large number of households in the Blacktown City Council area, the next steps in broadening the contamination program will need to:

- Establish the reasons why contamination is occurring
- Identify and prioritise contamination hotspots
- Revisit areas targeted in the trials to establish long term behaviours
- Determine the resources required to maintain/expand the program.



Lismore City Council staff carrying out an audit.

Lismore City Council — A ‘Carrot and Stick’ Approach to Contamination Management

Council background:

- Population 43,386
- Area 1,267 km²
- 3.5% NESB
- Weekly 240L organics collection service for residents; food, garden organics, soiled paper and cardboard — collected and delivered to the vermiculture (worm farm) facility for processing
- Fortnightly 240L dry-recyclables service for urban areas introduced July 2006
- Fortnightly 140L waste service (240L service available for an extra fee)
- Recycling drop-off centres for glass, steel, plastics 1, 2 and 5

What were you trying to achieve?

- To reduce contamination levels in the organics stream to as low a rate as possible
- To divert as much organic material as possible from the waste stream for recovery and re-use

What did you do?

- A comprehensive, multi-faceted strategy was implemented to manage organics contamination. Most elements of the ongoing strategy have operated for at least 4 years, and are subject to constant review and enhancement.
- Contamination rates, organics diversion percentages levels etc. are closely monitored on an ongoing basis, to set priorities for continuous improvement of an education-based approach to successful organics recovery.

- Educational support is offered to different sectors of the community, for example school children have the Resources on Tour Program and adults have the Ambassador Competition and Rejection Stickers Strategy.
- The Ambassador Competition was developed: 'Do The Right Bin & Win' to raise awareness of good organics bin use through rewarding people with contamination-free bins. Streets are randomly selected from each waste collection district and winners are rewarded with a \$60 gift voucher and other prizes.
- The Annual Bin Runner Program was developed: every organics bin in every collection area is inspected for contamination during this one-off yearly program. Contaminated bins receive a rejection sticker and a request to the householder to remove the contaminant before the bin is collected. 250 rejection stickers were issued during the 2004 program. The education program then assists households to overcome problems with separating their waste.
- Rejection stickers issued at the kerbside for organics bins containing contamination. During 2004/5 over 500 stickers were issued, and over 20 services were withdrawn after receiving 4 rejection stickers. Approximately 100 home visits were carried out to offer residents help and find solutions. During 2003/4 the Rejection Stickers Strategy was enhanced, with the introduction of a new driver load inspection procedure, adding another dimension to the quality control strategy to maintain acceptable organics standards.
- Power pole were painted in Lismore to promote organics separation.
- Displays are exhibited at local shows to promote organics separation and demonstrate why contamination management is important.
- An open day was held at an organics resource recovery facility to help residents understand the importance of good separation of organics to the economic viability of the end product.

- Educational advertising of organics was displayed on all organics trucks.
- Colour CCTV on the lift arms of trucks monitored contamination levels and look for contamination in bins.
- A generic image was developed, Lizzie the worm, that can be readily identified with the service and the 'spirit' of organics recovery.

What information did you collect?

- A comprehensive database of organic resource quality and contamination information has been developed.
- A quarterly statistics report also gives up to date information on rejection stickers issued and home support visits undertaken (available on the website).
- Lismore City Council monitors the effectiveness of waste education programs through monitoring changes in per capita tonnages to landfill, organics and recycling diversion rates and contamination levels.

What did you achieve?

- Consistently good diversion rates and low contamination levels. Weighbridge records and annual auditing reports show that in the domestic waste stream, around 60% of what was once waste is diverted to organics recovery and turned into a useful product.
- Contamination levels are stabilised at around 1.5% (domestic) and around 3% (non-domestic).

What was good about your project?

The diversity of approaches adopted, provided something for all residents in the community.

Were there any aspects of your approach that were not successful? Why not?

Too much was expected of business customers with the weekly organics service and fortnightly waste service. The theory was that environmental health issues from food retail premises could be managed if all food waste was diverted to the weekly organics bin. This was unrealistic for some businesses that were unable to wash out food packaging to a high enough standard to prevent it smelling in the fortnightly collected waste bin. As a result of feedback from businesses, a weekly waste service with weekly organics service will be offered to all business customers.

The on-going challenge is finding a balance between waste avoidance education and operational procedures that monitor and manage contamination on a day-to-day basis (such as screening and rejecting contaminated bins).

There is no formula to demonstrate that waste education programs meet desired outcomes in a timely, cost effective manner for the whole community, whilst maintaining a focus on priority areas. It is often difficult to measure the outcomes of waste education programs, as changes in community behaviour often translates indirectly, is long term in nature, or is the impetus for other positive environmental behavioural change.

Newcastle City Council — Kerbside Recycling Promotion

Council background

- Population approx. 137,000
- Area 182.6km²
- 6.8% NESB
- Fortnightly 240L co-mingled recycling collection service

What were you trying to achieve?

- To reinforce the message about what can be recycled in Newcastle
- To demonstrate what household recyclables are turned in to
- To encourage the purchase of products in either recyclable or recycled packaging
- To promote the existing recycling service. The current kerbside recycling service was introduced November 2000; 4 years since any large promotion.

What did you do?

Preparation of the program commenced early 2004 and was delivered September–October 2004 and focussed on dry recyclables.

The campaign was delivered through the use of:

- Brochures to every household
- Print media campaign over 6 weeks
- TV commercial
- Billboard adverts
- Promotional bin stickers and items such as temporary tattoos, shopping list notepads

What information did you collect?

- Tonnages of dry recyclables recycled by Newcastle residents
- Where recyclables go for reprocessing and what they get turned in to
- Contamination rate of dry recyclables (5-8%)

What did you achieve?

The campaign achieved a greater awareness and acceptance of the benefits of recycling within the local community.

What was good about your project?

The project was thoroughly planned and delivered, although it was not evaluated. The Council felt that the use of 'everyday faces' in the advertisements and the look of the campaign were innovative.

Were there any aspects of your approach that were not successful? Why not?

- Billboard adverts did not seem to be worth the money, though this was not evaluated
- Bin stickers seemed to confuse people
- No formal evaluation was carried out

Campbelltown City Council Recyclables and Garden Organics Service

Council background:

- Population approx. 150,000
- Area 312km²
- 15% NESB
- Co-mingled 240L recycling bin and 240L garden organics bin collected on alternate fortnights (changed from a split recycling bin with the start of a new contract in April 2006)

What were you trying to achieve?

A reduction in levels of contamination in Dry Recyclables and Garden Organics.

What did you do?

- A contract was developed to ensure collection drivers fill in a form to collect details when they see contamination from recyclables and garden organics bins in the hopper (all collection vehicles are fitted with CCTV systems with cameras focused on the hoppers). The form requires date, address, bin-type, and contamination type (10 categories coded by number, eg. 1-Plastic Bags, 2-Nappies, 3-General Rubbish, etc). A standard warning letter is generated by council, advising the resident that whilst the bin was emptied this time, repeated incidents

may lead to further action and possible removal of the bin. Educational information is also included with the letter.

- A report is generated that identifies residents who have contaminated bins more than three times in one year. On the fourth instance, they are sent another warning letter and educational information, and may also receive a visit from our Waste Education Officer. The severity of action will escalate with the number of contamination incidents, with bin removal as an option for chronic re-offenders.
- Implemented a motorcycle-based audit program: two audit officers, one employed by council to inspect recycling bins and the other by the garden organics processor to monitor garden organics bins. Contaminated bins are stickered by our motorcycle-based inspectors. The resident then has to ring in to book another collection once they have removed the contamination.
- Better contamination data was required so a rigorous audit was carried out at the organics processing centre by council and the processor.
- All recycling programs are promoted using local papers, street sign advertising and brochures are mailed out to households.

What information did you collect?

- Contamination rates
- Repeat Offenders Database set up and administered by council



The Campbelltown City Council driver fills in the contamination incident form after spotting it on his CCTV.

What did you achieve?

- A higher profile for recycling; residents know council takes the issue seriously
- Reduced the average contamination rate of garden organics; it was 3% before the program, it is now 0.6%

What was good about your project?

- Drivers keeping records of contamination incidents is a successful way to monitor contamination and is now an accepted work practice but there are no statistics that show if it has reduced contamination levels.
- The motorcycle program is the most successful project because residents see the officers patrolling the streets, although some residents are now waiting for them to pass before putting their bins out. Being seen to be actively targeting contamination is very important.

Were there any aspects of your approach that were not successful? Why not?

- We don't have a lot of data. We need to get more information from processing contractors on specific contamination rates and types, as we would like to target specific contaminants.
- Contamination rates for dry recyclables are still not provided by the processor.
- Council has not approved the removal of bins from the premises of repeat offenders at this stage.

Cooma-Monaro Council Bio Bin Trial

Council background

- Population 9,300: Cooma 8,000, Berridale 1,300
- Area 4,881km²
- 8.3% NESB
- Cooma has a domestic garbage collection service and has drop-off facilities for recyclables at Cooma Landfill
- Berridale has a fortnightly kerbside recycling collection service as well as drop-off facilities at the Berridale Transfer Station

What were you trying to achieve?

- Trial fortnightly garden and food organics collection service using existing plant and staff
- Trial kerbside recycling collection service in Cooma

What did you do?

- Two trials were conducted: Aug–Dec 2004 in Berridale, March–May 2005 in Cooma
- 100 bins were delivered to residential premises such as houses, flats and townhouses, which involved a good cross-section of the community
- Purchase of these bins was funded by an 'Our Environment It's a Living Thing' Grant
- Newsletters and collection calendars were posted to residents involved
- Residents with trial bins were surveyed both pre and post trial
- Face to face education was undertaken by door knocking
- An information kit for householders was developed and distributed to explain council's goals and it included a pamphlet 'What goes in my Bio Bin?'

Minimal contamination in the Cooma organics collection.



What information did you collect?

- Presentation statistics (69% Cooma, 72% Berridale) during the trial
- Participation rates (97% Cooma, 96% Berridale) during the trial
- Contamination rates (almost non-existent in Cooma, 0.03% Berridale)
- Audit of organics and dry recyclables streams for tonnage and composition data (Bio Bin 3–12% food/kitchen scraps; low levels as many residents have chickens or compost)
- Surveyed residents' attitudes before and after the trial

What did you achieve?

Minimal contamination because of comprehensive education (98% of residents involved in the trial felt they received enough education material pre-trial) and staff checking material when emptying crates and bins into the rear of collection vehicles. Contaminants were left in residents' container recycling crates so that they could see that the item was not acceptable and then dispose of it appropriately. The project achieved the support of the majority of the community.

What was good about your project?

- Contamination rates in both dry-recyclables and organics were kept to a minimum. Council does not have access to a Materials Recovery Facility for dry recyclables, therefore kerbside collection and sorting is necessary. Low contamination rates therefore create less work for the staff doing the kerbside sort.
- The community in Cooma is enthusiastic about the introduction of a recycling and organics kerbside collection service; 68% rated the trial as better than the existing collection service.
- The majority of participants said that a fortnightly residual waste service using a 120L bin would be sufficient for their waste needs if they had a Bio Bin.
- There was an average household reduction of 31.8% of waste going to landfill, with the Cooma trial having 52 households reducing their volume of domestic waste by 41-60%.
- Face-to-face education was very successful.

Were there any aspects of your approach that were not successful? Why not?

- Staff distributing and providing information need to be extensively trained to ensure that all information is consistent
- As we have been through an extensive drought period some of the organic results fluctuated with rain
- Collection of containers at end of the trial needs to be well co-ordinated
- Residents do not want to pay more for a permanent service like this



Textiles contaminating the recyclables stream.

Hunter Resource Recovery Kerbside Audit and Stickers Blitz

Councils' background:

- Three councils formed a not for profit public company, Hunter Resource Recovery, in 1996, developing a joint recycling contract.
- Combined population of 3 councils 295,933.
- Total area of Cessnock, Lake Macquarie and Maitland City Councils 3,001km².
- Average 3% NESB across the 3 councils.
- 240L split recycling bin collected fortnightly.

What were you trying to achieve?

- Reduce contamination rates: the post sort contamination rate of 1.5% in June 2004 increased to 3.5% of total weight of collected product in February 2005.

- There was a clear need to determine the nature of contamination and identify the cause of the increase if possible.

What did you do?

- 8500 recycling bins were visually audited at the kerbside over a four-week period from May to June 2005.
- Contaminated Bins were tagged with a sticker explaining the reason for non-collection and stated that the recycling bin would only being emptied in the following collection period after the contaminants were removed.
- Follow-up audits were carried out the following fortnight to assess whether the residents had responded to the non-conformance card.

What information did you collect?

- The type of contamination; plastic bags, bubble wrap and newspapers wrapped in plastic or in plastic bags being the most common.
- The level and rate of contamination per suburb; of the 8500 bins audited, only six were classed as seriously contaminated. The proportion of bins contaminated per suburb ranged from 1% to 50% of bins.
- Geographic and social distribution of contaminated bins; more affluent areas recorded a higher number of contaminated bins than Public Housing areas. The evidence would show that all areas surveyed have a non-conformance rate.
- Monitored collection contractor behaviour: more bins had been tagged for contamination in Public Housing areas than any other, at a rate of 60 to 1. This was in conflict with the audit results (as above), requiring consultation with the contractor.

What did you achieve?

- The policy of bins not being emptied until the following collection period and then only after the contaminant is removed significantly altered the community attitude. The suburb that recorded a 50% non-conformance rate dropped to just 4% on the second audit and of these only 0.3% were re-offenders. The remaining 3.7% were new offenders.
- Raised residents' awareness that the contents of recycling bins are checked prior to or during collection — residents are now far less likely to contaminate the bin.
- Lower rates of non-conformance were recorded at the processing facility for trucks from all collection zones in July and early August 2005, e.g. West Wallsend in Lake Macquarie City Council dropped from 26 to 7% and Aberglasslyn in Maitland City Council dropped from 14 to 2%.

What was good about your project?

- Because contamination is taken seriously by the company, undertaking an audit and agreeing on the methodology with the processor was very important.
- Cleaner product results in our sorting contractor's ability to sell the collected material whilst reducing sorting costs; success being measured by comparing total product recovered versus total tonnes sold. The sale of the product is subject to the quality being offered.
- Results of the audit have allowed us to tailor generic community education programs to actual issues. We can target locations that recorded high levels of contamination and concentrate our efforts and limited funding.

Were there any aspects of your approach that were not successful? Why not?

Not really! It was considered so successful that it will be repeated annually.

Some councils and contractors fail to adequately appraise the education component of the recycling contract, however this is the cornerstone of any successful recycling service. Sorting can only extract some contamination and has the potential to undermine the quality of the product to be sold and its recycling worth during the process.



Sutherland Shire Council staff struggling to deal with a 90 kg palm stump that a resident had managed to get into their garden organics bin.

Sutherland's Comprehensive Approach to Contamination Management

Council background

- Population 214,784 (second largest in NSW)
- Area 370 km²
- 8.8% NESB
- 3 bin system: 120L garbage bin collected weekly, 240L garden organics bin and 240L co-mingled recycling bin collected fortnightly. Larger Multi Unit Dwellings' recycling bins are collected weekly.
- A second garden organics and/or recycling bin is available free to residents if there is no contamination issues reported for that property.
- A third garden organics bin is offered free where it is necessary for a property to clear undergrowth in fire prone areas.

What were you trying to achieve?

- Zero waste to landfill within 10 years
- Contamination rate of less than 2%

What did you do?

- Council prepared a Bin Contamination Policy, for both garden organics and dry-recyclables.
- Colour CCTV cameras were installed on the hopper and TV screens in the driver cabin of collection vehicles .
- Drivers fill in contamination record sheets and place contaminated bin stickers on bins as required.
- The record sheet generates a letter from council to the resident.
- Driver incentives are offered: \$50 per day for achieving a contamination rate of less than 2%. The loads are checked at the processing facility for the rate of contamination and if the load is good the drivers are paid a bonus.

Drivers get to know the 'hot-spots' and often get out of the vehicle to check bins before emptying them.

- Education booklets for residents are produced every year.
- Advertising features are periodically commissioned in the local paper.
- A 'repeat offender' database has been set up to run reports showing which residents have received letters and how many they have received.
- A permanent sharps collection service has been set up at four community centres. Residents simply take their used sharps, in an appropriate container, to one of the participating community centres and place their container into the needle collection bins, following safety procedures.

What information did you collect?

- Repeat offenders
- Contamination rates

What did you achieve?

- Awareness amongst residents for the need to place correct recycling products in the correct bins and the knowledge that if the load is contaminated it goes to landfill.

- In the Southern Sydney Region of Councils' (SSROC) Regional Waste Audit of March 2005, Sutherland's diversion rate was amongst the highest ever found by the auditors: 56.1% diverted from landfill. The Recovery Rate of 91.7% is outstanding.
- Cost savings because of a reduction in the number of contaminated load penalties.
- A low 3% contamination rate in dry-recyclables.
- Less than 0.1% contamination rate in garden organics.

What was good about your project?

- An extensive education program was developed including advertising in the local paper, letterbox drops and shopping centre promotions.
- A database to capture repeat offenders set up.
- The Bin Contamination Policy applied to the collection of recyclables for any recurring contamination issue.

Were there any aspects of your approach that were not successful? Why not?

The trial that was carried out at the beginning of the new service could have been better designed.

Wingecarribee Shire Council's Strategies to Help Their MRF

Council background

- Population 43,950
- Area 2700km²
- 5.3% NESB
- Weekly collection of 80L garbage bin with the option of a fortnightly collection (20% of residents chose this), with option to pay more to have the bin emptied several times per week.
- Fortnightly collection of co-mingled 240L recycling bin and separate 60L crate for glass.

What were you trying to achieve?

- A reduction in contamination of kerbside recycling: contamination rates had risen to 14%
- A Plastic Bag Free Shire: plastic bags were 48% of the contamination found in recycling bins

What did you do?

- Council re-ran a campaign similar to the Murphy education campaign that was previously run in 2002, including a competition for residents, education to the public through a booklet and an intensive media campaign - newspaper, council newsletter, council staff bulletin and local radio.
- Recorded messages about recycling were put on all Resource Recovery Centre (RRC) phone lines as well as on the collection contractor's phones.
- Leaflets and posters were distributed at RRC, council and all council facilities.
- An article was included in the monthly council newsletter, 'Wingecarribee Today'.
- Real Estate Agents were visited to encourage them to stock leaflets to give to tenants and new residents.

- Letters were sent to schools offering an information session to Year 8 students with a take home assignment on recycling.
- A comprehension based competition with prize was undertaken using recycling protocol information as its base.
- Notices were letterbox dropped or placed in the local newsletter for the relevant community, announcing the campaign and publishing results of the audit.
- A media article was published on the audit in the villages.
- Recycling Championships were held for streets in villages.
- A post-campaign audit was undertaken.
- Warning notices were issued; an important part of the education process as they provide the resident with reasons for the possibility of their bin not being emptied. Rejection notices are issued after three warnings. A letter explaining the reasons for rejection, with an accompanying booklet, was sent to the resident explaining the required protocols.

What information did you collect?

- Recycling rejection rates due to contamination

What did you achieve?

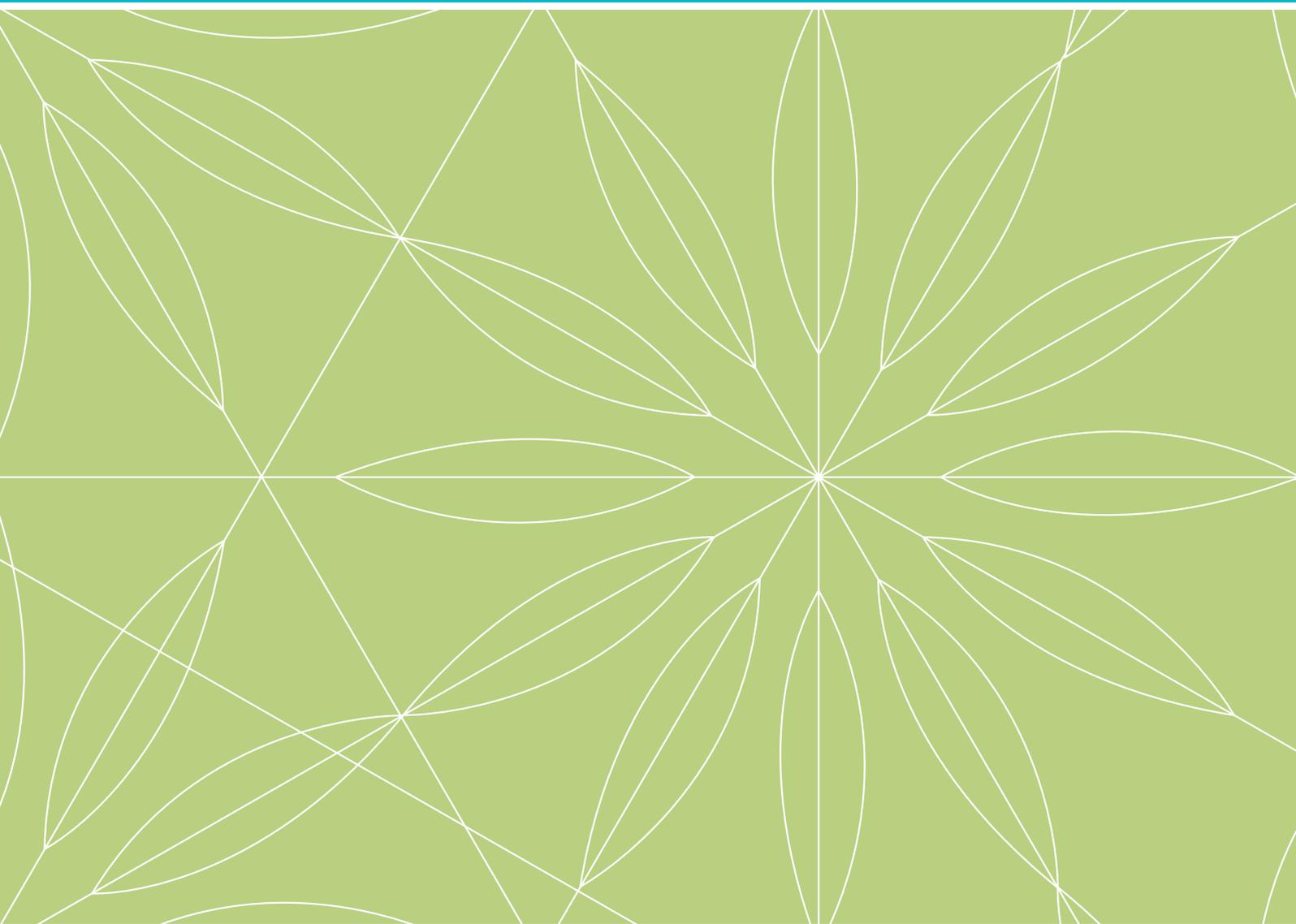
The profile of recycling in Wingecarribee was raised; residents now have a far greater understanding of the recycling process and its importance.

What was good about your project?

- The warning notices and rejection letters always decrease the contamination rate

Were there any aspects of your approach that were not successful? Why not?

- Rental property residents would not necessarily receive an information pack of waste and recycling protocols.
- Residents who buy existing homes also may not receive an information pack, as the RRC is only notified of new waste and recycling services or changes to an existing service.
- Warning notices are not recorded. If a dispute arises with a resident who claims they have not been warned previously, we have no record of previous warnings that have been issued and what they were issued for. This makes the issuing of rejection letters complicated.
- Real Estate Agents are reluctant to stockpile information from Council and only a few keep waste and recycling information.



Department of **Environment & Climate Change** NSW

