

Implementation of best practice for the kerbside collection of biodegradable municipal waste

Tonbridge and Malling Borough Council: A Case Study in Best Practice

Report for:

**Tonbridge and Malling Borough Council
&
WREN**



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Tonbridge & Malling Borough Council
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EXECUTIVE SUMMARY

This report:

- Identifies and summarises 'best practice' associated with the implementation of recycling and composting collection services.
- Assesses how Tonbridge and Malling Borough Council (TMBC) have applied best practice to the implementation of their alternate weekly collection service (AWC).
- Identifies the outcomes of using best practice and compares this with other local authorities in Kent.
- Details the performance of the AWC service operated by TMBC over the first five years following implementation.

In July 2000 TMBC introduced a pilot AWC service for the garden, dry recyclable and residual waste streams. This service replaced a weekly collection of residual waste and a fortnightly collection of dry recyclables (papers and cans) with no garden waste collection. Following a successful evaluation of the pilot the AWC service has been gradually phased in across the borough. In September 2005, 18,000 properties (almost 40% of the borough) were provided with the service with further expansion planned to at least 30,000 properties (Section 1).

The Organic Resource Agency (ORA) has carried out an assessment of available Best Practice literature and has identified 62 distinct actions considered as best practice when implementing a recyclable collection service. TMBC have carried out 59 of these actions. Following best practice has assisted TMBC in successfully implementing and expanding the collection service (Section 2).

ORA have carried out four waste audits to quantify the effect of AWC. The waste audits have demonstrated that in areas with AWC:

- There is a 34% reduction in residual waste collected for disposal to landfill.
- 65% of the total dry recyclable waste (paper and cans) available for collection is being source segregated.
- 55% of the total waste collected from households is either composted or recycled.

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1 INTRODUCTION

1.1 Background

The environmental problems associated with unsustainable waste disposal practices have resulted in greater pressure on local authorities across the UK to increase their waste recycling rates and to divert biodegradable municipal waste (BMW) away from landfill. Each local authority has a requirement to demonstrate achievement against Statutory Performance Standards. In terms of waste disposal this is measured by Best Value Performance Indicators (BVPI's) for the percentage of household waste sent for recycling and composting. In addition, waste disposal authorities have a duty under the Waste and Emissions Trading Act 2003 to divert BMW going to landfill through the Landfill Allowance Trading Scheme (LATS).

TMBC covers an area in the west of Kent of 240 square kilometres. The borough has a population of 108,800 in 46,106 households and includes a number of diverse urban and rural settlements with the largest urban area being Tonbridge with a population of 35,000. The proportion of the population from ethnic groups other than 'white British' is 4.1% compared to a UK average of 13% (2001 census). TMBC operate in partnership with Kent County Council and other district councils in Kent to achieve increased rates of recycling and composting. TMBC's policy is detailed in the Joint Kent Household Waste Strategy¹ and addresses the principles in the waste hierarchy of reduction, reuse and recycling.

In July 2000 TMBC introduced a pilot scheme for organic waste collection and began to gradually introduce the practice of alternate week collection (AWC) for both the segregated and residual waste streams. The service was introduced with the aims of:

- Maximising the recycling rate by source-segregating compostable and recyclable material. Card was included in the green waste collection to remove another material from the residual waste, to increase participation in the service during the winter months, and to improve the quality of the compost produced.

¹ A full copy of the strategy is available on line at www.kent.gov.uk/sp/wasteforum/home.htm

- Optimising collection costs by using the same refuse collection vehicle (RCV) for residual and compostable waste.
- Minimising transport distance for both the raw material for composting and the finished product by locating the composting facilities on local farms capable of using all the compost produced.
- Providing a long term sustainable end market for the compost by using it cost effectively in the production of food in Kent.

The service was to include collection of residual waste in the first week and dry recyclables, garden and card waste in the second week. This routine replaced one which had been running for a number of years where residual waste was collected weekly and dry recyclables were collected fortnightly with no separate collection of garden or card waste. The initial pilot scheme was introduced to 1,000 households in the Larkfield area with garden waste, kitchen waste (uncooked fruit and vegetables) and cardboard being collected in new 240 litre green lidded wheeled bins. Dry recyclables were collected in 55 litre green boxes, known as the Green Box Scheme. The reasons for the selection of AWC rather than weekly collection and for trialling in a pilot area were:

- The introduction of garden waste collection while continuing to collect residual waste on a weekly basis is often seen by a householder as an additional disposal route. This results in an increase in the total waste collected, as householders dispose of garden waste which would otherwise have been composted or simply left in-situ in the garden. AWC of compostable and residual waste requires a degree of 'bin space economy' by the householder.
- AWC was new to TMBC and other local authorities in the UK in 2000 and there was no indication of how the practice would be received by residents. A pilot would be the best way for the council to learn how to promote and administer the scheme.
- The cost of changing to AWC can have a substantial impact on budgets as new bins are required, separate disposal arrangements must be made and changes in vehicle type may also be necessary.

During the pilot scheme the compostable waste was taken to an organic farm in Kent with considerable experience in the composting of kerbside collected garden waste. The method of composting used was 'open windrow' whereby green waste is heaped in a long row, is regularly turned for aeration (either manually or mechanically) and is left to break down in the presence of oxygen and bacteria which utilise nitrogen and carbon as their primary food source. The main by-products of the process are carbon dioxide and water vapour along with the composted green waste. The composting site operated under a waste management licence exemption from the Environment Agency (EA) and used all of the compost produced on its own land. The farm also provided food to local people by the direct selling and delivery of fruit and vegetables via a "box scheme", thus providing a practical example of sustainable resource use by maintaining the nutrient cycle between the farm and consumers.

Following a successful evaluation of the pilot scheme it was proposed to increase the separate collection of organic waste to cover wider areas. However, implementation of the Animal By-Products Regulations (ABPR) in October 2002 as a result of the outbreak of foot and mouth disease in the UK limited the choice of available composting facilities to treat the waste. The regulations determined that kitchen waste which may include meat products must be treated as Category 3 Catering Waste and could not be treated in an open windrow system as previously used. Treatment must be enclosed in a specially designed facility approved by the EA and the Department for Environment, Food and Rural Affairs (DEFRA) through the State Veterinary Service (SVS). At the time there were concerns as to whether cardboard would be acceptable for treatment with garden waste. The impact of these amendments along with delays in confirmation of the changes resulted in prevention of service expansion for some time, along with the removal of kitchen waste as a permitted material in the green wheeled bin.

In September 2004 the AWC service was expanded to a further 5,000 properties across the borough including West Malling, Hadlow and Ditton which were audited in July 2003 and August 2005. In April 2005, the service was further expanded by 6,000 properties. Extension of the service to a further 6,000 properties in September 2005 brought the total number of households with the AWC service to 18,000 (equivalent to 40 % of the borough). TMBC plan to expand the service to 24,000 properties in

spring 2006, and 30,000 properties by September 2006. Further expansion has not been approved but it is estimated that it is possible to expand to around 40,000 properties.

In areas provided with AWC, recycling and composting performance has been improved to 51.8%, residual waste has been reduced by 34% and public satisfaction with the service is 90%. The success of the scheme has been recognized by the Office of the Deputy Prime Minister (ODPM) in their guide '*Organisational Development Resource Document for Local Government*'² with particular focus on the communication and community engagement associated with the service.

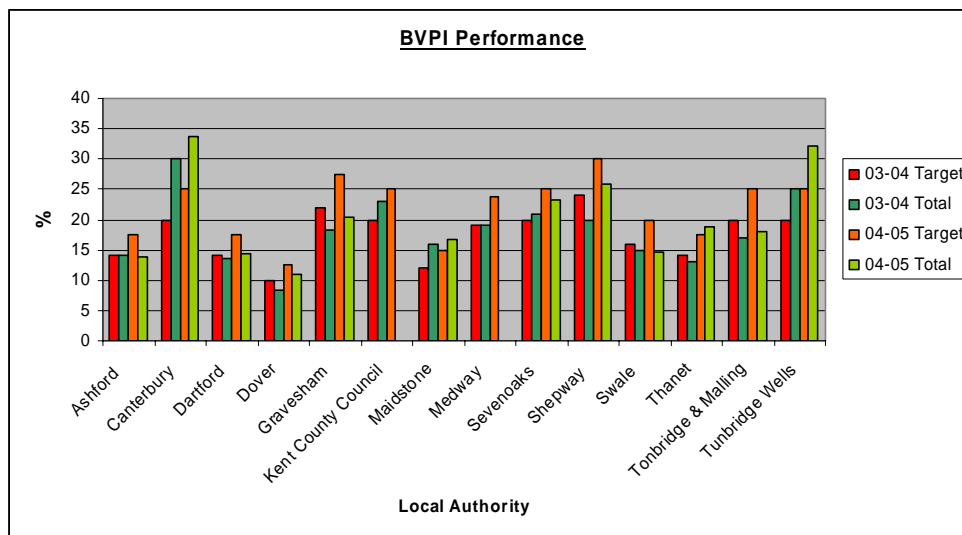
A number of other authorities in Kent have either implemented AWC or are considering it for residual waste and recyclables including garden waste, indicating that this method of collection is considered to be best practice and achieve good results. Of the eleven other waste collection authorities in Kent, seven currently collect dry recyclables and compostable waste on an alternate weekly basis whilst four collect residual waste every fortnight. In addition, four authorities are considering changing the frequency of their compostable waste collection to alternate weekly, three are considering changing their dry recyclable collection to fortnightly and five are considering reducing the frequency of collection for their residual waste.

The main barriers against implementation of AWC have been identified by the local authorities as being negative public perception of a reduction in service and of increased vermin, flies and odours associated with storage of waste at the household for two weeks. In addition, some authorities state that there would be a lack of political support for the introduction of AWC, largely due to the concerns of the public. However, TMBC have demonstrated that by encouraging member support, consulting stakeholders, assessing all options at the planning stage and introducing AWC in a phased approach, excellent results can be achieved in terms of waste minimisation, diversion of BMW from landfill, and participation rates.

² Full report available on line at: www.odpm.gov.uk/embedded_object.asp?id=1161293

It is interesting to note that the other Kent authorities that have implemented AWC for all waste streams have demonstrated the best performance against BVPI targets. Canterbury City Council exceeded their 2003-2004 BVPI recycling target of 30% to achieve a performance of 33.70% whilst Tunbridge Wells exceeded their target of 20% by 4.55%. The performance of each authority against targets for recycling and composting (BVPI 82a and 82b combined) for 2003-2004 and 2004-2005 (where available) are shown in Figure 1. It should be noted that figures for 2004-2005 have been provided by TMBC and have not been externally verified. There are no statutory performance targets for 2004-2005. To give an indication of the performance required in 2004-2005 if targets are to be achieved in 2005-2006 a 'mid point' target has been included in the graph.

Figure 1: Local authority BVPI recycling and composting performance



1.2 Objective

As part of the assessment of the success of the AWC service, TMBC were keen to ensure that all actions taken, from planning of the service through to post implementation monitoring, were representative of 'best practice' and that all steps had been taken to ensure that the service would provide the best results possible. This report identifies and summarises 'best practice' associated with the implementation of recycling and composting collection services and assesses how TMBC have applied best practice to the implementation of their AWC service. It identifies the outcomes achieved by using best practice and compares this with the experiences and performance of other local authorities in Kent. Through the results provided by four

waste audits the report details the performance of the AWC service operated by TMBC during the first five years following its implementation.

The effect of the changes to the collection service in terms of diversion of BMW from landfill, and performance against BVPI and LATS diversion targets has also been measured. The full results of the waste audits were produced by ORA for TMBC and a summary of the results with comparisons over time is provided in Appendix 1. The results are referred to in the report (Section 3) to demonstrate achievements in increased recycling and composting, and waste reduction.

1.3 Methodology

1.3.1 Best Practice Review

In order to assess the degree to which best practice principles had been applied by TMBC during the implementation of the collection service, ORA carried out a comprehensive review of the various best practice guides as referenced in Appendix 2. The guides were chosen due to their production by reputable organisations and in some cases, reference to performance of other local authorities in the UK. This should not be considered as an exhaustive list of guides available, but ORA feel that the material gives a good representation of best practice in relation to recyclable collection services. In order to summarise the information each guide was reviewed, the principles of best practice were identified and categorised, and the actions taken by TMBC against each category were assessed.

A total of sixty two actions considered to be best practice applicable to TMBC were identified from the guides. It has been demonstrated that TMBC have addressed fifty nine of these actions. The full list of recommended actions to achieve best practice, and actions implemented by TMBC can be seen in Appendix 2.

1.3.2 County Wide Review

In addition to the review of TMBC, information was also requested from the eleven other waste collection authorities in Kent (Ashford, Canterbury, Dartford, Dover, Gravesham, Maidstone, Sevenoaks, Shepway, Swale, Thanet, and Tunbridge Wells)

and the neighbouring unitary authority of Medway Council. The waste management policy for these authorities is detailed in the Joint Kent Household Waste Strategy³.

Each authority was asked to complete a questionnaire regarding best practice implementation in their area, which summarised the categories determined in the best practice review. They were asked about the frequency of collection services, the performance of services, whether best practice had been implemented and the perceived success factors and barriers to success. The full results of this analysis are provided in Appendix 3.

1.3.3 Waste Audits

In order to quantify the effects of the AWC service a series of waste audits were carried out by ORA. It is important that during changes to kerbside collection routines, both the effects of change and the effects of ‘no change’ are monitored. The ideal method of quantifying changes resulting from new service is to conduct an audit on the area *before* the pilot scheme starts, on the trial area *after* a suitable period of operation on the new service, and with a *control* on a different yet demographically similar area of ‘no change’ that has not been included in the pilot scheme. The objectives of the audits were:

- to provide baseline data against which to measure changes resulting from the introduction of source segregated AWC of green waste, dry recyclables and residual waste.
- to measure the activity in unchanged areas not having green waste collection or AWC but likely to receive this service in the near future.
- to assess the waste disposal activity in the original pilot area of Larkfield over a longer period of time.
- To identify areas where significant improvements could be made to the performance of the scheme.

³ A full copy of the strategy is available on line at www.kent.gov.uk/sp/wasteforum/home.htm

Each waste audit involved the collection of waste from approximately 50 participating households per day in a particular area. Collections were made of residual waste, green waste and dry recyclables. The waste was then assessed by visual inspection, manual and mechanical sorting, and weighing to determine the quantity of each material present. To avoid the effects of seasonality the audits were conducted at the same time of the year. The pattern of project implementation audited by ORA is shown in Table 1 and the methodology used during the waste audits is demonstrated by Figure 2.

Table 1: Audit Programme

AUDIT	DATE	Tonbridge	E Malling	Larkfield	W Malling	Hadlow	Ditton	Wrotham	S Tonbridge
1	Jul-00	residual recyclables	residual recyclables	residual recyclables					
2	Aug-01	residual recyclables	residual recyclables	residual recyclables green					
3	Aug-03			residual recyclables green	residual recyclables	residual recyclables	residual recyclables	residual recyclables	
4	Jul-05			residual recyclables green	residual recyclables green	residual recyclables green	residual recyclables green	residual recyclables	residual recyclables
		weekly collection							
		fortnightly collection							
		recyclables - not audited							

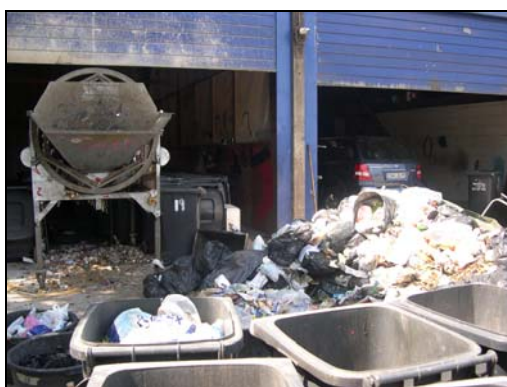


Figure 2: Collected waste ready for sorting, and waste passing through the trommel screen for sorting into categories.

2 IMPLEMENTATION OF BEST PRACTICE

This section of the report details all actions identified as best practice in clearly defined categories. It includes an assessment of the actions taken by TMBC and the other authorities in Kent.

2.1 Planning

2.1.2 Best Practicable Environmental Option

It is recommended that the **Best Practicable Environmental Option (BPEO) process is used when considering the relative merits of any waste management system**. Identification of BPEO involves an assessment of the costs and benefits of alternative courses of action and is defined by the Royal Commission on Environmental Pollution as:

"the outcome of a systematic consultative and decision making procedure which emphasises the protection and conservation of the environment across land, air and water. The BPEO procedure establishes for a given set of objectives, the option that provides the most benefits or the least damage to the environment, as a whole, at acceptable cost, in the long term as well as in the short term".

TMBC have integrated the principles of BPEO into all stages of planning for their recyclable collection services. In 2000, when the introduction of source-segregated green waste collection was under consideration, TMBC produced a report for the Environmental Health Committee⁴ evaluating all options for collection and disposal of green waste and providing an implementation strategy. The report identified home composting as the most sustainable means of dealing with green waste, but acknowledged that the take up rate would be restricted and that this means of disposal is unlikely to have enough of an impact on diversion of BMW to meet government targets. Options for the collection of biodegradable waste were analysed including community schemes, free weekly or fortnightly collection, chargeable weekly or fortnightly collection, and free AWC. Each option was considered in terms of:

⁴ Full Report: 'Environmental Health Committee Report of Director of Health and Housing – 3rd April 2000' available from TMBC on request.

- financial impact (including vehicles and other resources necessary)
- environmental factors (including diversion from landfill, transport and air pollution)
- potential effectiveness (including coverage and take up rate).

As a result of this analysis TMBC determined that AWC would offer the most significant savings in revenue, the least environmental impact in terms of air pollution and road congestion, and the best results in terms of coverage, diversion of BMW and recycling and composting performance. However, it was also noted that the public may be opposed to the changes to their waste collection service and as such an initial pilot was proposed to demonstrate effectiveness and provide the opportunity to change the service following the trial period dependant upon public response.

2.1.2 Proximity Principle

Best practice should include **consideration of the ‘proximity principle’**. This refers to the minimisation of transport distances and therefore economic and environmental cost, by situating waste management facilities close to the source of the waste. When considering options for the treatment of waste generated in the borough, TMBC applied the principles of BPEO and the proximity principle. In the report to the Environmental Health Committee TMBC acknowledge the proposed energy from waste (EfW) incinerator to be built within the borough at Allington, yet note that in environmental terms it is preferable to consider composting of suitable waste prior to incineration or landfill. Options for treatment of compostable waste were analysed including on-farm and centralised facilities. At the time it was deemed that on-farm treatment of waste would be the preferred option whereby green waste would be delivered to local farms for composting and the end product would be used as a soil improver on the farm itself. The farms would be located close to the source of the waste and the end user would be an integral part of the treatment process. This is a clear example of application of the proximity principle and consideration of the BPEO. Since the introduction of the service in 2000, changes to the ABPR have impacted on the types of waste suitable for treatment at on-farm sites. As such, with the support of Kent County Council and technical assistance from ORA, TMBC have reviewed the options available and plans have been made to provide an in vessel composting (IVC) facility within the borough by the end of 2006.

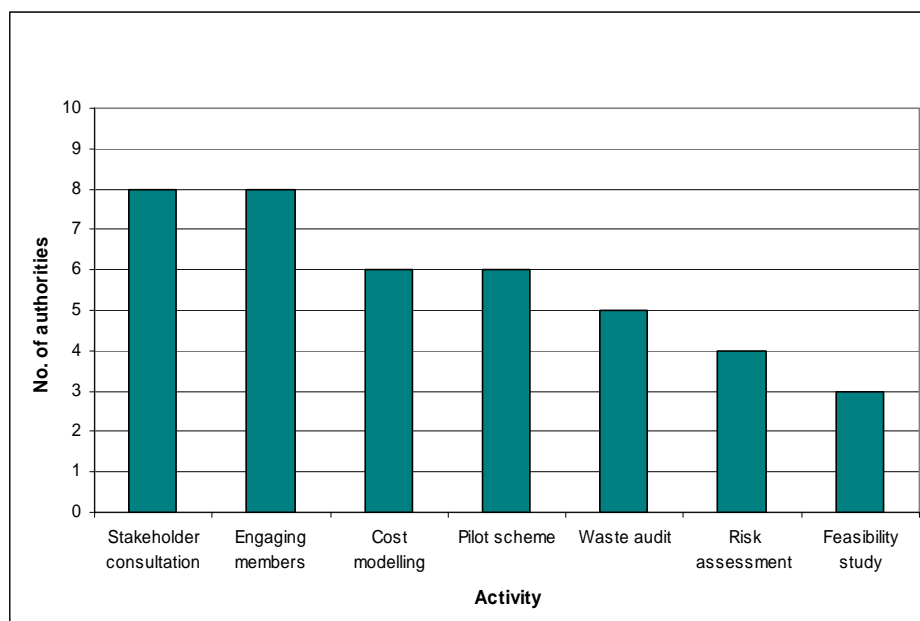
2.1.3 Stakeholder Consultation and Feasibility

When planning a waste collection system it is best practice to consult all stakeholders as early in the process as possible and to ensure full member support for the service. TMBC gained member support through committee reports whilst residents were consulted via public meetings and through distribution of leaflets.

It is recommended best practice that an assessment is made of the suitability of favoured collection methods through a feasibility study, waste audit, cost modelling and the introduction of the system through a pilot scheme. TMBC carried out all of these activities above following approval of their proposed AWC collection service.

The responses provided by the other authorities in Kent indicate that the majority of authorities in the area also consider stakeholder consultation and gaining member support to be a critical part of the planning stage with eight out of the ten respondents carrying out these activities. Cost modelling, pilot schemes and waste audits were also frequently used by the other authorities. Interestingly, only three out of ten authorities carried out a full feasibility study. This may be due to the costs associated with such a study, or due to the fact that the feasibility of a service had already been assessed and demonstrated through other methods such as cost modelling or trial schemes. Figure 3 demonstrates the types of planning activities carried out by authorities in Kent:

Figure 3: Planning Activities



2.1.4 Area Specific Factors

Best practice guidance recommends that **consideration is given to all factors which may impact on the success of the collection service such as the area specific characteristics and socio-demographic factors**. This may include:

- type of housing
- narrow streets
- areas of high transient population such as students or tourists.

TMBC have considered these issues and have addressed them individually. The borough does not have any transient population areas so this issue did not require consideration. Narrow streets of Victorian housing necessitated the purchase of a dedicated vehicle which is smaller than conventional vehicles and can achieve better access. It is recommended that local authorities consider the time of year appropriate for the introduction of any new service in order to minimise public opposition. This is particularly true in the case of AWC of biodegradable waste where there may be perceived issues regarding odour, vermin and flies. TMBC considered this factor and decided that when introducing new areas to AWC the service would commence in spring when volumes of green waste are likely to be increasing or autumn when adequate staff resources were available following the previous phased introduction, and when residents had got used to their new collection service. TMBC decided against expansion of the service during the summer months as this was thought to be the most difficult time for introduction of AWC due to the increased likelihood of complaints.

2.2 Waste minimisation

In line with the waste hierarchy which places waste minimisation as highest priority, it is considered best practice for local authorities to **encourage waste reduction at source** (i.e. within the household) through the promotion of home composting and waste reduction. The ‘War on Waste’ campaign⁵ is a borough wide initiative driven by the Kent Waste Forum specifically focusing on waste reduction. It advises

⁵ More information can be found online at <http://www.kent.gov.uk/sp/waronwaste/home.html>

residents to think before they buy and where possible to buy products made from recycled or recyclable materials. It addresses reuse of waste by promoting re-usable products and considering whether a product can be repaired rather than thrown away. Recycling and composting are also addressed.

TMBC has considered waste minimisation through the following actions:

- subsidising compost bins available to all residents since the start of the service. A total of 10,090 bins have been provided covering over 9% of the total population.
- encouraging residents to register with the Mailing Preference Service thereby reducing the amount of direct or 'junk' mail received by the household and subsequently disposed of either as residual or recyclable waste.
- encouraging residents to dispose of materials which are not included in the kerbside collection service such as glass, unwanted shoes or clothing at household waste recycling centre's (HWRC's) and bring sites where they are sent for reuse or recycling.
- promoting Oxfam banks for the collection of unwanted books, CD's and tapes which are reused through sale in their shops.

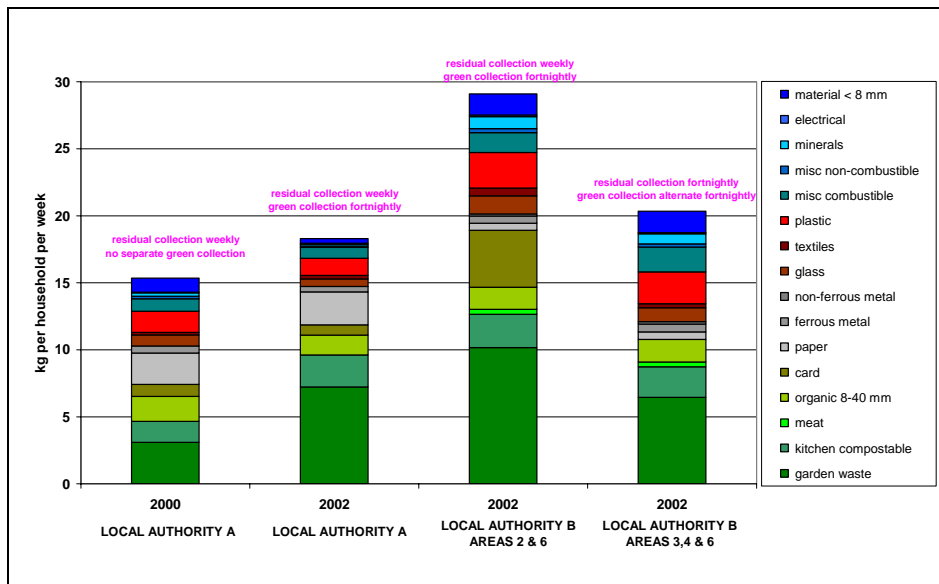
All of these actions are taken to encourage the minimisation of waste generated by households at source which is best practice in any waste management strategy.

In addition, TMBC anticipated that the introduction of AWC as opposed to weekly collection would encourage the householder to address waste minimisation at source. Householders tend to utilise as much collection capacity as the authority will provide, particularly when collection is via wheeled bins. If an additional collection of garden waste is provided alongside continued weekly collection of residual waste it is commonly found that total waste arisings (including residual, compostable and recyclable waste) increase as householders dispose of garden waste which would otherwise have been composted or simply left in-situ in the garden.

AWC places limitations on the capacity available to the householder meaning that they are more likely to separate recyclable and compostable material in order to save space in the residual bin, which may result in a reduction in total waste arisings.

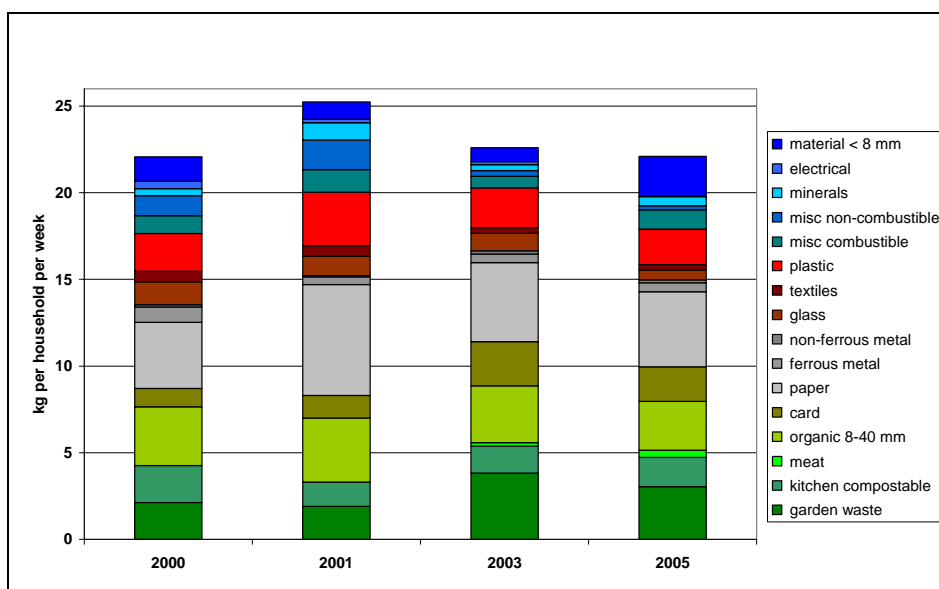
The difference between areas implementing weekly collections as opposed to AWC can be seen in two other local authorities audited by ORA and demonstrated in Figure 4. The results for Local Authority A show that when a fortnightly collection of garden waste is introduced with a weekly collection of residual waste, overall waste arisings increase due to the higher volume of garden waste being collected. However, the results for Local Authority B demonstrate that when an alternate week collection of garden waste is introduced alongside a reduced frequency of residual waste collection to fortnightly, overall waste arisings decrease due to the limited total bin capacity available to the householder.

Figure 4: Effect of collection frequency on total waste



The results demonstrated by the four waste audits indicate a general reduction in total waste generated in those areas provided with AWC. The results for Larkfield only are provided in Figure 5.

Figure 5: Total residual waste collected in Larkfield



Larkfield showed an increase in green waste and residual waste after the first year, but the subsequent two audits have confirmed that the total green waste and residual waste has ultimately been reduced through AWC. Ditton and Hadlow also show a small reduction after two years. Only West Malling shows an increase in total green and residual waste two years after the introduction of AWC (see Figure 8 in Appendix 1). Most importantly the effect of introducing AWC has been to reduce the weight of residual waste collected by 34%.

2.3 Communication

The success of any kerbside recyclable collection service is heavily dependent upon the effectiveness of communication with the residents in the area. It is considered best practice that **engagement with residents is carried out early in the process** to ensure understanding and gain support. **Communication material should be available to all sectors of the intended audience** and in different formats on request. **Adequate resources within the council should be made available** to communicate effectively with residents, especially at the implementation stage of any new service. It is recommended that a **dedicated helpline or call centre be provided** to residents affected by changes to their waste collection. Different methods of communication include door-stepping or road shows, promotion of the service to school children via

visits to waste management sites and the provision of information on an up-to-date website.

TMBC have used a variety of the methods described above including public meetings a dedicated helpline and website, and various information leaflets. All information is available in different formats and includes a video made available to residents prior to the implementation of the service in their area. Information is available in Braille and a variety of other languages. At each stage of implementation TMBC invited the local media to discuss the service with their Director of Environmental Health. This proved an effective means of pre-empting adverse publicity, answering questions and providing detailed information through a widely available and well recognised source.

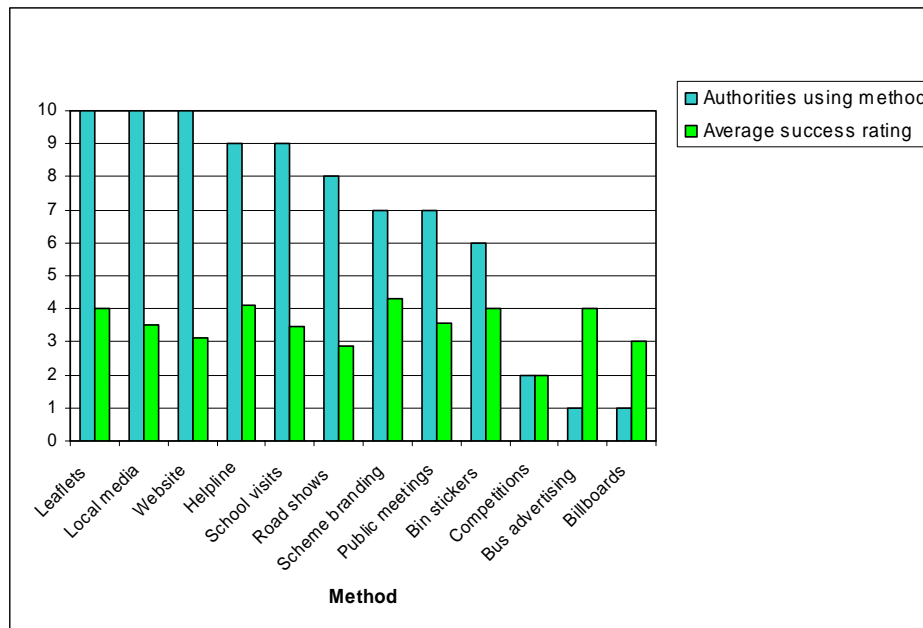
It is suggested that new collection services are branded in an appropriate manner. The logo can then be used on all communication material associated with the service allowing instant recognition by the public and continuity throughout the service. TMBC have branded all their literature for the green waste collection service with four colour images showing the types of waste which can be collected. They consider this to be an effective way of enhancing communication material and providing information.

The positive way in which TMBC have approached public liaison and communication of the AWC service has been recognised by the ODPM in their *Organisational Development Resource Document for Local Government*⁶ which provides advice on implementing changes to achieve improvements in effectiveness. The report puts the success of the garden waste collection service down to *an inclusive approach to problem solving and encouraging discussion*. It states that *the scheme was well communicated to the community with TMBC seeking feedback and feeding changes back to the public*. It considers that the scheme was *an environmental success and readily accepted by the public*. *It engaged the community over a three-month period, with a clear game plan and timely communications*.

⁶ Full document available online at: www.odpm.gov.uk/embedded_object.asp?id=1161293

The results from other authorities in Kent indicate that a wide variety of methods of communication have been deployed to promote recycling services and that effectiveness is considered variable. Figure 6 indicates the number of authorities in Kent using defined types of communication, and gives an average rating of how effective the authorities felt that the method of communication was. The authorities were asked to rate the means of communication from 1 (very poor) to 5 (very good).

Figure 6: Communication methods



The most popular means of communication proved to be leaflets, web-based information, and the local media with all respondents using these methods. School visits, road shows and the use of a dedicated helpline were also very popular. This may be due to their relative simplicity and cost effectiveness. In terms of effectiveness of the means of communication, it was felt that service branding was the most successful (average rating of 4.29), followed by the helpline (average rating of 4.11), leaflets and bin stickers (average rating of 4.00). This may be due to the increased recognition of the service provided by branding and the fact that all members of the community can be reached through leafleting, bin stickers and billboards. The least effective of the communication methods was considered to be competitions, which may be due to the restricted audience of school children which are largely the target of competitions, and that whilst they have ‘pester power’ they are not the decision maker in the household when it comes to participating in recycling services provided.

It is considered best practice to continue **providing feedback** to residents throughout the duration of the service in order to provide motivational and operational information. TMBC provide continuous information to their residents through biannual newsletters which invite comment from the public and as such feedback on the service is obtained by the council.

2.4 Partnership working

Since the introduction of best value, DEFRA have encouraged **partnership working between local authorities as best practice** and as a means of:

- sharing knowledge
- demonstrating best practice
- making cost savings
- providing procurement opportunities

TMBC work with the other waste collection authorities in Kent. The objectives of the individual authorities regarding waste management are defined in the *Kent Household Waste Strategy*. Through this strategy the authorities are committed to many objectives including:

- using public funds cost effectively
- addressing the waste hierarchy
- exceeding Government targets
- exploring innovative methods for managing household waste

The development of waste treatment facilities to serve multiple authorities has been achieved, with an example being the proposed in-vessel composting (IVC) facility which is likely to treat kitchen waste, garden waste and cardboard from TMBC and Tunbridge Wells.

The strategy addresses cost-effective working through the possibility of sharing collection arrangements where practical, and of sharing the expense of increased waste management costs so that the systems used represent overall the best use of

public funds. A profit sharing agreement is in place between TMBC and Kent County Council whereby any savings generated by diversion of waste away from landfill are divided between the two authorities and can be invested back into improvement of recycling services. The partnership working between TMBC and the other authorities in Kent is a clear demonstration of best practice and quantifiable results have been realised as a result of this arrangement.

2.5 Health and safety

As with all systems of work it is best practice that **all appropriate health and safety issues are identified and that adequate training is given** to all personnel involved in the collection of waste. Areas of health and safety training which are specific to waste collection are manual handling when lifting bins or sacks, and operation of the tail lift on the refuse vehicle. TMBC have ensured that all appropriate staff have been trained in these areas.

In addition, when considering AWC it was suspected that there may be a potential health and safety issue regarding the generation of particulate matter from the loose garden material, and the potential need to provide masks for the collection staff. TMBC requested an independent review of this issue which included a risk assessment. The review concluded that there was no significant risk and as such TMBC did not take any further action. An additional issue associated with AWC was the need for collection staff to open the green waste bins and investigate whether there was any contamination. If contamination levels are minor then the contamination may be removed from the bin prior to emptying. However, if the contamination is significant then the entire bin contents will not be taken for disposal. As a result, collection staff have been issued with extra long gloves to protect their hands when carrying out this task. This is a clear demonstration of the assessment by TMBC of health and safety issues specific to the collection service in their area.

In addition to health and safety training, it is best practice to consider the waste receptacles to be used in an area and any associated health and safety issues such as maximum weight, visibility, and storage of receptacles. TMBC have addressed these issues by using accepted guidance on maximum handling weight of receptacles, by

insisting that residents keep bins inside the boundaries of their property (where this is not possible households may be exempt from the service to minimise the number of receptacles for storage), and insisting that operators return the receptacles to within the household boundary after emptying rather than being left on the public highway where they may create a hazard.

2.6 Employee education and training

In order to ensure that the effectiveness of the waste collection service is maximised, it is best practice to ensure that **all those involved in the service are educated through training and development**. This will ensure that the objectives are clearly understood along with operational practicalities.

TMBC have ensured that this is achieved through training and regular updates to collection crews along with one-to-one contact during the initial implementation stages of their schemes. Each crew member is provided with a leaflet as a reminder of the council's policy on side waste and contaminated bins. Administration staff at TMBC receive information and training on the service at each stage of implementation in an area to ensure that they are best equipped to handle queries from the public.

Council members are kept informed of the performance of the service through update reports and evaluation of the service against pre-determined criteria such as financial accountability and environmental performance.

2.7 Policies and procedures

Another means of educating employees associated with the service and the general public is through the provision of clear, detailed **policies on different aspects of collection**. It is best practice to **effectively implement procedures and review them for appropriateness** as required. TMBC have adopted this example of best practice through the provision of various procedures along with regular reviews. Documented procedures include assisted collection of waste from elderly or disabled residents, bin replacement, collection of side waste, bin overfilling, and complaints.

A procedure which TMBC have written specific to the AWC of source segregated garden waste is that of contamination in the green lidded bin. This is of particular concern as contamination can result in whole vehicle loads of garden waste being rejected by the composting facility and having to be treated at landfill sites. This could have an effect on the total amount of waste being composted and on performance against BVPI targets. To this end, TMBC have instructed their collection crews to lift the lid and inspect the contents of the bin for obvious contamination. If only a small amount of contamination is present then the crew are to remove it, empty the rest of the bin and leave the contaminating material for the resident along with an explanatory note detailing why this waste was not taken. If there is a large degree of contamination or it is difficult to remove then the bin should be left and again information provided to the resident. It is essential that waste is dealt with in a consistent manner to provide uniform messages to the householder and to maximise the success of the collection service.

2.8 Operation and management

Once a scheme is implemented it is considered best practice to **monitor its success in relation to performance objectives and to identify areas of poor performance** where improvements can be made. Best practice guidance suggests that in order to maximise the effectiveness of monitoring, **pre-defined performance objectives and parameters should be identified**. TMBC monitor their collection service in terms of diversion rate and capture rate. However, participation rate associated with the services has not been accurately measured. This is an area which TMBC should consider monitoring in order to improve the amount of data available and to address areas where improvements may be necessary.

Prior to the introduction of the green waste collection service, the Environmental Health Committee agreed on several key criteria on which the success of the service would be assessed prior to expansion. The criteria were defined as financial, environmental, operational and popularity. TMBC have provided reports demonstrating performance in these areas in order to critically analyse scheme success and to justify expansion of the service to wider areas. In addition, regular waste audits

have also been carried out prior to expansion of the AWC service in order to confirm performance and to provide base data on which to assess the success of collection in areas new to AWC.

Another means of assessing the success of a service is via **surveys of public opinion** which can be undertaken to evaluate perception of the service alongside actual performance data. TMBC carried out a survey of resident's opinions of the AWC service after the initial pilot in order to assess whether or not to proceed with expansion. The results demonstrated that 94% of residents agreed with the recycling activities undertaken by the council to meet targets, and a significant number believed that the service encouraged more recycling and composting. As a result of the positive response it was decided to progress with expansion of AWC to the wider borough. As previously mentioned, feedback from residents is also requested in the biannual newsletters which is a means by which TMBC can assess public opinion and if necessary, consider modifying the service.

Once a service is implemented, it is best practice that the **council identify strategically all the resources which may be necessary to ensure long term success**. This may include recruitment of employees, training, monitoring and IT systems. TMBC have demonstrated strategic planning through the recruitment of additional staff including a waste inspector and administration officer at the implementation stage. In addition, regular training has been provided to ensure that employees are fully equipped and qualified to maximise success of the scheme.

3 SERVICE PERFORMANCE

The performance of the AWC service in diversion of compostable and recyclable waste has been assessed by four waste audits carried out by ORA between 2001-2005, analysis of BVPI reporting data, and analysis of other monitoring information such as public satisfaction.

The composting and recycling rates for those areas receiving the AWC service are substantially increased to 51.8% when compared to the rates achieved across the borough. In 2003-2004 TMBC achieved a recycling and composting rate of 16.82% in comparison to the BVPI target of 20%. In 2004-2005 the recycling and composting rate has been increased to 18.05%. The roll out of the service by TMBC has been approached in a cautious manner in to ensure that resident satisfaction is high and that principles of best practice have been applied. Expansion was also delayed by changes to the ABPR. As an increasing number of households are provided with the AWC service BVPI performance will improve given the results demonstrated in the waste audits.

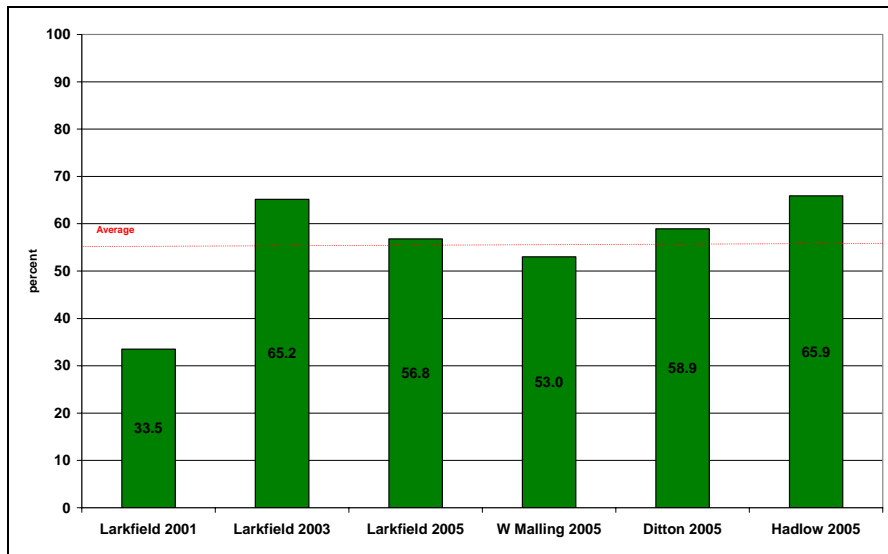
Around a quarter of the paper recycled in the borough is collected through bring sites and it is likely that even with a kerbside collection scheme for some dry recyclables, some residents will continue to use these facilities as they are able to dispose of several materials in one go.

Overall public satisfaction with the waste collection service provided by TMBC measured by BVPI 90a was shown to be 90% in 2003-2004. This is extremely high and placed TMBC in the top quartile of all councils in England. The results from the fourth waste audit are summarised below and demonstrate the key achievements of the AWC service in terms of BVPI performance targets and diversion of BMW from landfill.

3.1 Source segregated garden waste collection

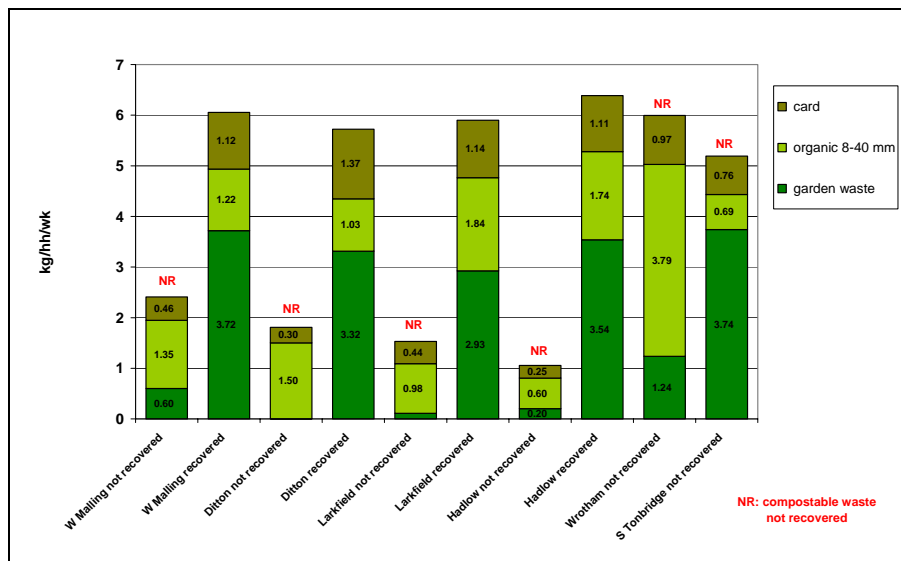
The capture rate of compostable waste in areas provided with AWC is very high at an average of 56% and is demonstrated in Figure 7.

Figure 7: Compostable Waste - % composted of total collected in AWC areas



- The average amount of garden waste captured by the separate collection is 6.5kg/hh/wk or 338 kg/hh/year.
- The results provided by the waste audits demonstrate that there is a limited amount of garden waste and card remaining in the residual stream, indicating that a high proportion of biodegradable waste is being diverted away from landfill.
- The majority of the compostable material remaining in the residual bin is kitchen waste or the smaller 8 - 40mm organic material. Figure 88 demonstrates the amount of compostable waste which is captured through source segregated collection and that which remains in the residual bin.

Figure 8: Compostable waste in residual and green bin



The average weight of garden waste remaining in the residual bin in the areas where AWC is not offered is 2.49kg per household per week. There is a much greater amount presented in the residual bins in South Tonbridge (3.74kg/hh/wk) than in Wrotham (1.24kg/hh/wk) which may be due to the more rural nature of Wrotham and the greater scope for residents to home compost due to larger gardens and more outside space.

In areas with AWC the average weight of garden waste remaining in the residual bin is 0.23kg per household per week. An effort by TMBC to increase awareness of the service and to increase the capture rate for green waste would result in increased diversion and rates of composting.

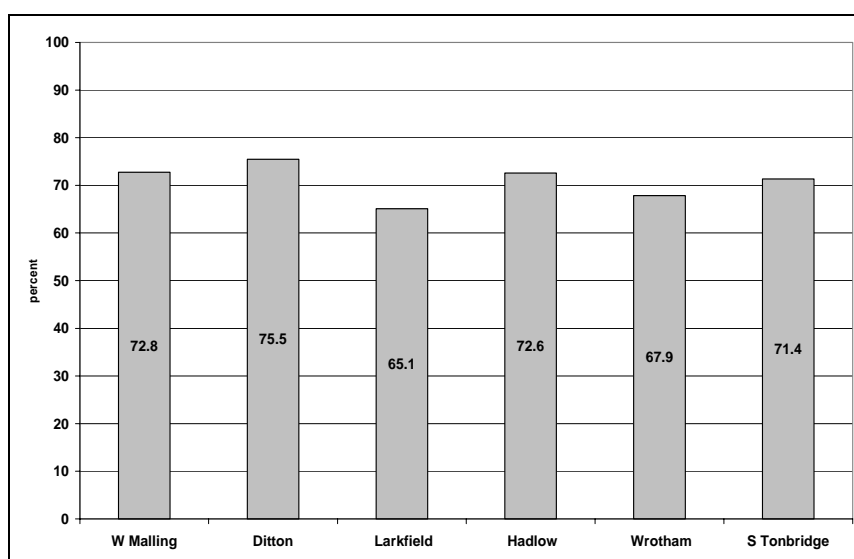
3.2 Source segregated cardboard collection

- In AWC areas where cardboard is separately collected the proportion remaining in the residual bin is, on average, 0.36kg per household per week.
- In the areas not yet provided with AWC the average amount of cardboard in the residual bin is 0.87kg per household per week.
- An effort by TMBC to increase the capture rate of cardboard collection would result in increased rates of diversion and composting.

3.3 Source segregated dry recyclable collection

The amount of targeted recyclable material captured by the kerbside collection is 71% on average, as shown in Figure 9.

Figure 9: Dry Recyclables - % recycled of total collected in AWC areas



- There is a small amount of recyclable waste remaining in the residual bin which could be segregated into the green box for collection.
- The average weight of paper and metal (ferrous and non-ferrous) remaining in the residual bin in areas with AWC is 1.60kg per household per week.
- The average weight of paper and metal remaining in the residual bin in areas not having AWC is 1.72kg per household per week.
- TMBC should attempt to capture a higher proportion of the paper and metal from the residual bin which would increase the proportion of waste being diverted from landfill. However, it is likely that there will always be a fraction of this waste in the residual bin if the collection is fortnightly as residents will dispose of a small proportion of their waste in whichever bin is removed first.

3.3 Rate of bin filling

During the most recent waste audit a record was kept of the rates of bin filling (i.e. how full the bins were in percentage terms). Where bins were overfilled or additional material was left out for collection as side waste, the fill rate was recorded as being greater than 100%. The average results from each area are demonstrated in Figure 10.

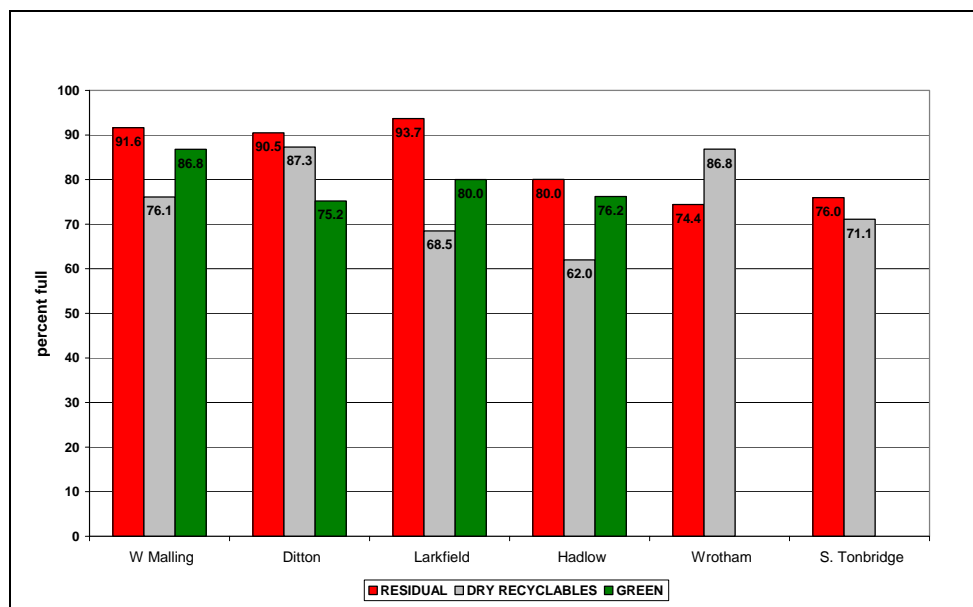


Figure 10: Bin Fill Rates

The chart demonstrates that on average the majority of the bins used, whether for residual recyclable or organic waste, are not overfilled and have spare capacity. Even with AWC the residual bin is not overfilled on average although the fill rates are

higher than those areas without AWC. The full results of the monitoring can be found in Appendix 3.

3.4 Future scenarios

A full range of possible collection scenarios with differing participation rates and capture rates have been assessed and the results are provided in Appendix 4.

3.4.1 Organic waste collection

- The total number of properties currently provided with AWC of green waste is 12,000 although this is to be increased to 18,000 by the end of 2005.
- If TMBC provided segregated collection of garden waste to all 30,000 properties they would divert almost 7,100 tonnes per year of waste to composting, based on a participation rate of 70% and an average weight of 338 kg per participating household per year.
- If TMBC provided segregated collection of garden waste to all 40,000 viable properties then they could divert an additional 10,800 tonnes per year of waste to composting, based on a participation rate of 70% and an average weight of 338 kg per participating household per year.

It should be noted that the amount of garden waste collected in new areas may not be the same due to factors such as differing housing stock, garden size, and capacity for home composting.

TMBC do not currently include kitchen waste in their green waste collection service due to the ABPR and the lack of suitable treatment facilities for this category of waste. However, if the IVC facility is available by the end of 2006 then the collection of kitchen waste would be viable.

- The average weight of kitchen waste remaining in the residual or 'black' bin is 1.46kg per household per week.
- If TMBC started a source segregated collection of kitchen waste from all 30,000 households they would see an increase in the weight of compostable waste collected of 957 tonnes per annum.

- If source segregated collection of kitchen waste was achieved for all 40,000 properties TMBC would achieve an increased weight of compostable waste collected of around 1,280 tonnes per year.

In summary, if kitchen waste was included in the source segregated organic waste collection from all 30,000 properties; the total compostable material collected and diverted from landfill would be in the region of 8,050 tonnes per year. This would increase BVPI 82b to 15.6% based on 2003-2004 data, and a participation rate of 70% with capture rate of 60%.

3.4.2 Dry recyclable collection

There are other materials in the residual waste which TMBC could collect separately and recycle including glass, some plastics and electrical equipment.

- In all audited areas the most significant material that could be recycled is glass. A proportion of the waste glass produced by households is already captured in the bring banks provided by TMBC (the total tonnage of glass collected at the bring banks is 1,750 tonnes per annum).
- However, the average amount of glass remaining in the residual bin is 0.57kg per household per week. Assuming that all of this material can be recycled, source segregated collection of glass from all properties would divert a further 670 tonnes of waste from landfill to recycling each year.
- The amount of plastic in the residual bin varies between 1.70kg and 2.48kg (average 2.06kg) per household per week. Assuming that the recyclable material within this fraction is restricted to PET, HDPE and PVC bottles, the amount of recyclable plastic material in the residual bin is 0.44kg per household per week.
- If source separated collection of the recyclables plastics was provided to all properties, TMBC would divert 517 tonnes of waste to recycling each year (based on participation rate of 70% and 70% capture rate).

In summary, if source segregated collection of recyclable plastic and glass was provided to all properties TMBC would divert a further 1,187 tonnes of waste from landfill to recycling each year. This would increase BVPI 82a to 20.8% based on 2003-2004 data.

Table 2 summarises the additional tonnages of recyclable and compostable material which could be diverted from landfill and count towards BVPI or LATS targets should TMBC expand the AWC service as detailed.

Table 2: Potential diversion from landfill through expansion of existing services

PROPERTIES	Tonnes per year diverted		Applicable for BVPI calculation		BMW Applicable for LATS calculation	
	30,000	40,000	30,000	40,000	30,000	40,000
Expansion of garden waste and cardboard collection.	7,098	9,464	✓	✓	✓	✓
Inclusion of kitchen waste in collection.	957	1275	✓	✓	✓	✓
Inclusion of plastics (PET, PVC and HDPE) and glass in collection from all properties	1,187	1,187	✓	✓	✗	✗
TOTAL TONNAGE			9,242	11,926	8,055	10,739

If TMBC expanded the AWC service for kitchen waste, garden waste and card to 30,000 approved households, they could increase their BVPI recycling performance to **34.1%** based on 2003-2004 data. This would have far exceeded the 2003-2004 target of 20% and the 2005-2006 target of 30%.

TMBC could consider the following as options for increasing BVPI performance (full details of the calculations are shown in Appendix 4). Note that total household waste tonnage for 2005-2006 has been calculated by increasing the total waste produced by each household by 1.75% per annum for the 18,000 AWC properties and 3% per annum for the remaining 28,106 non-AWC properties.

- To achieve BVPI Performance (82 a and b) of **36.8%**, TMBC could extend the collection of kitchen and card waste, and dry recyclables to all viable

households in the borough (based on 70% participation rate, 60% capture rate for organic waste and 70% capture rate for dry recyclables).

- To achieve BVPI Performance (82 a and b) of **41.6%**, TMBC could extend the collection of organic waste (including kitchen waste) and dry recyclables (including plastics and glass) to all viable households in the borough (based on 70% participation rate, 60% capture rate for organic waste and 70% capture rate for dry recyclables).
- To achieve BVPI Performance (82 a and b) of **44.0%**, TMBC could extend the collection of organic waste (including kitchen waste) and dry recyclables (including plastics and glass) to all viable households in the borough, along with a targeted campaign to capture an additional 50% of the paper remaining in the residual bin (based on 70% participation rate, 60% capture rate for organic waste and 70% capture rate for dry recyclables).

The additional tonnage of paper will also count towards LATS diversion target due to its classification as 100% biodegradable.

4 CONCLUSIONS

The conclusions from this report are:

- TMBC have applied 94% of the sixty two best practice principles identified in relation to the implementation of their AWC service.
- TMBC have achieved a 34% reduction in the weight of residual waste collected in areas provided with AWC from an average of 18.2kg per household per week to 11.9 kg per household per week.
- The increase in total waste arisings from AWC areas is only 7% (an average of 1.75% per year). This is substantially less than the national annual increase in total waste arisings of around 3%.
- Overall public satisfaction with the waste collection service (BVPI 90a) in TMBC's area was shown to be 90% in 2003-2004. This is extremely high and placed TMBC in the top quartile of all councils in England.
- The composting and recycling rates for areas having AWC are substantially increased compared to the borough as a whole, to an average of 51.8%. In 2003-2004 the borough achieved a recycling and composting rate of 16.82% in comparison to the BVPI target of 20%. In 2004-2005 the recycling and composting rate has been increased to 18.05%. As an increasing number of households are provided with the AWC service, BVPI performance will improve given the results demonstrated in the waste audits.
- In areas provided with AWC, TMBC estimate participation rates as high as 100% for the green waste collection and 80% for dry recyclable collection (compared to less than 50% for dry recyclable collection in areas with weekly collection of residual waste). This has been achieved through public consultation, phased introduction and effective communication. By limiting the frequency of collection, and therefore the weekly capacity of the residual bin

available to the resident, the inclination is to segregate more materials for recycling or composting.

- With the present levels of promotional activity, the expectation can be that 56.2% of the total compostable waste is source segregated when separate AWC is introduced. Of the compostable material remaining in the residual waste, 75% is kitchen waste and the 8 – 40mm organic fraction which is also likely to contain kitchen waste. Kitchen waste is not currently targeted by the green waste collection.
- The majority of authorities in Kent have either implemented AWC or are considering it. Of the eleven authorities responding to the questionnaire, only three stated that they do not currently offer AWC and are not considering introducing it at this stage. The main reasons against introduction of AWC in these areas are the perceived reduction in service by the residents and the costs involved with changing from existing collection services.

5 RECOMMENDATIONS

It is the opinion of ORA based on the findings in this report and the waste audit results that TMBC should undertake the following actions to achieve an even higher level of performance from their recyclable and compostable waste collection:

- Improve their post implementation monitoring by accurately measuring the participation rate associated with the services within the borough.
- Increase the capture rate of garden waste, cardboard, paper and metals from those households provided with source segregated collection as the waste audits have demonstrated that small volumes of these wastes still remain in the residual bin. This could be achieved through a targeted campaign highlighting materials that should be diverted away from the residual waste to the recycling or composting collections.
- Increase the number of households included in the service by providing a bespoke service to those households excluded for logistical reasons such as flats, sheltered accommodation or properties with limited storage space or access.
- Consider including kitchen waste in the organic waste AWC service once the in vessel composting facility is available by the end of 2006. The audit results indicate that there is scope for further diversion of BMW from landfill of 957 tonnes per annum should this waste stream be collected from 30,000 properties.
- Continue with the proposed expansion of the AWC of source segregated compostable (garden and card) waste to all 30,000 properties currently approved to achieve diversion of 7,098 tonnes of compostable waste per annum.
- Promote the performance of the TMBC alternate week collection (AWC) scheme as an excellent example of the positive results which can be obtained as a result of implementing best practice with TMBC's neighbouring authorities and other collection, unitary and disposal authorities across the UK.

APPENDICES

6 APPENDIX 1 –Comparisons of data collected in all four audits

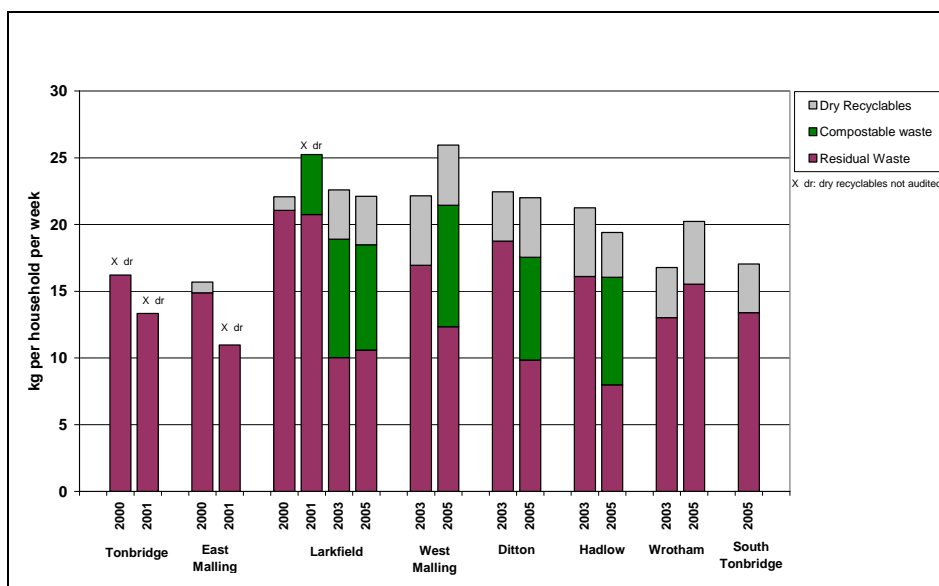
6.1 Total Waste Collected

A comparison of the total waste collected throughout the four audits from 2000-2005 for all eight areas is shown in Table 3, and graphically in Figure 11.

Table 3: Source separated waste collected (kg/hh/wk)

	kg/hh/wk			
	Residual waste	Compostable waste	Dry recyclables	Total
Tonbridge 2000	16.2		n/a	
Tonbridge 2001	13.3		n/a	
E Malling 2000	14.9		0.8	15.7
E Malling 2001	11.0		n/a	
Larkfield 2000	21.1		1.0	22.1
Larkfield 2001	20.7	4.5	n/a	
Larkfield 2003	10.0	8.9	3.7	22.6
Larkfield 2005	10.6	7.9	3.6	22.1
W Malling 2003	16.9		5.2	22.1
W Malling 2005	12.3	9.1	4.5	26.0
Ditton 2003	18.8		3.7	22.4
Ditton 2005	9.8	7.7	4.5	22.0
Hadlow 2003	16.1		5.1	21.3
Hadlow 2005	8.0	8.1	3.4	19.4
Wrotham 2003	13.0		3.8	16.8
Wrotham 2005	15.5		4.7	20.2
S Tonbridge 2005	13.4		3.6	17.0
Average without AWC	15.5		3.5	19.7
Average before AWC in AWC areas	18.2		3.8	22.0
Average with AWC	11.9	7.7	3.9	22.4

Figure 11: Total waste collected over four audits, shown by method of collection



6.1.1 Comments on total waste collected

There has to be a little speculation over some of the totals, as in 2000 and 2001 dry recyclables were not audited in all the areas. However, the effects of the introduction of AWC can clearly be seen.

The extent of the variability in the amount of residual waste collected in areas not affected by AWC is shown by the collections in Tonbridge, East Malling and Wrotham. In Tonbridge, there has been a reduction in residual waste of 18%, in East Malling a reduction of 26%, and in Wrotham an increase of 19% over the time intervals audited. The areas have demographic differences which may influence these performance differences; Tonbridge tends towards smaller terraced properties, Wrotham is a rural area, whilst the others tend towards commuter belt properties.

The areas selected for AWC (Larkfield, West Malling, Ditton and Hadlow) all had residual waste totals higher than the non AWC areas prior to AWC introduction. Figure 8 demonstrates that Larkfield showed an increase in total waste collected after the first year, but the subsequent two audits have confirmed that the total of green plus residual waste has ultimately reduced under AWC. Ditton and Hadlow also show a small reduction after two years. Only West Malling shows an increase in total green plus residual waste, two years after the introduction of AWC.

Considering the AWC areas only, the average decrease in the weight of the residual waste following AWC is 6.3kg/hh/wk, (from 18.2 to 11.9), approximately 34%.

The average weight of compostable material collected was 7.7kg/hh/wk. The increase in the total weight of compostable waste plus residual waste collected consequent on the introduction of AWC was only 1.4kg/hh/wk, $(11.9 + 7.7 - 18.2)$, approximately 7%.

The effect of introducing AWC between 2000 and 2005 has been to reduce the weight of residual waste collected by 34% and to collect 7.7kg/hh/wk of compostable material, whilst only incurring a 7% increase in total weight of material collected.

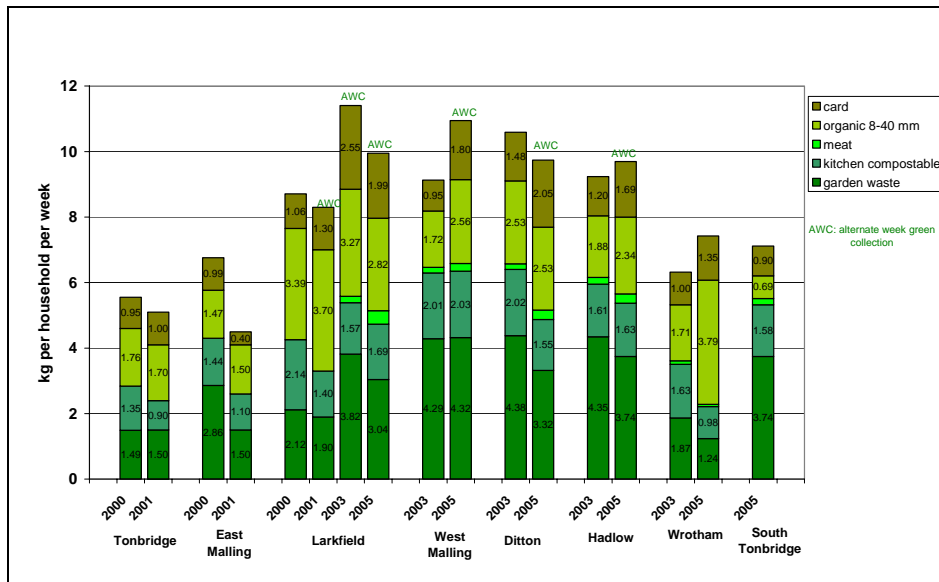
6.2 Garden waste and cardboard collected

The following table and chart show the total compostable material collected in both the residual and segregated collection scheme.

Table 4: Total compostable waste collected

	kg/hh/wk					total
	garden	kitchen	meat	organic 8-40	card	
Tonbridge 2000	1.49	1.35	0.00	1.76	0.95	5.55
Tonbridge 2001	1.50	0.90	0.00	1.70	1.00	5.10
E Malling 2000	2.86	1.44	0.00	1.47	0.99	6.76
E Malling 2001	1.50	1.10	0.00	1.50	0.40	4.50
Larkfield 2000	2.12	2.14	0.00	3.39	1.06	8.71
Larkfield 2001	1.90	1.40	0.00	3.70	1.30	8.30
Larkfield 2003	3.82	1.57	0.19	3.27	2.55	11.40
Larkfield 2005	3.04	1.69	0.41	2.82	1.99	9.95
W Malling 2003	4.29	2.01	0.18	1.72	0.95	9.13
W Malling 2005	4.32	2.03	0.23	2.56	1.80	10.95
Ditton 2003	4.38	2.02	0.17	2.53	1.48	10.59
Ditton 2005	3.32	1.55	0.29	2.53	2.05	9.74
Hadlow 2003	4.35	1.61	0.20	1.88	1.20	9.24
Hadlow 2005	3.74	1.63	0.29	2.34	1.69	9.70
Wrotham 2003	1.87	1.63	0.11	1.71	1.00	6.32
Wrotham 2005	1.24	0.98	0.07	3.79	1.35	7.43
S Tonbridge 2005	3.74	1.58	0.20	0.69	0.90	7.11
Average without AWC	2.7	1.5	0.1	2.0	1.0	7.3
Average before AWC in AWC areas	3.8	1.9	0.1	2.4	1.2	9.4
Average with AWC	3.4	1.6	0.2	2.9	1.9	10.0

Figure 12: Total compostable waste collected over four audits



At the start of the project in 2000, the green bin was the diversion mechanism for garden waste, non-meat kitchen waste and card. There was a forced change of emphasis following the introduction of the ABPR legislation in 2002 with kitchen

waste no longer being accepted in the green bin. As a result, kitchen waste should not be included in the compostable collections audited in August 2003 and July 2005.

6.2.1 Comments on green waste and cardboard collected

The changes to the garden waste components following the introduction of AWC are a reduction in garden waste arisings of 0.4kg/hh/wk. However, there is a small rise in the overall weight of compostable weight collected. Garden waste arisings have not contributed to the increase in total weight collected in the AWC areas.

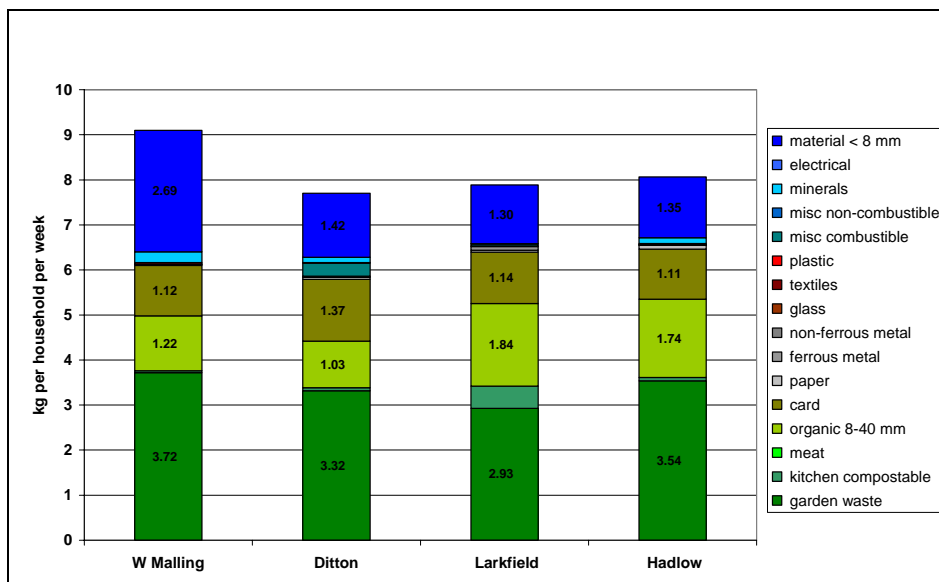
Variations in the total garden waste collected in areas with and without AWC are due to the different characteristics of the areas and may be due to the different types of housing and variation in garden size.

There has been an increase in card collected of 0.5 kg/hh/wk in the AWC areas.

6.2.2 Comments on source separated garden and cardboard waste

Figure 13 shows the amount of compostable waste presented in the source separated collection in the green lidded bin.

Figure 13: Source segregated compostable waste collected in green bin only



The total amounts being collected currently in the green bin only average 8.2kg/hh/wk which, if simply multiplied by the number of weeks in a year, would be equivalent to 426 tonnes per year per 1000 properties. However, previous work by ORA on

seasonality of green waste arisings with Suffolk Coastal District Council⁷ suggests that amounts collected in mid July will be approximately 26% above the average for the year. Applying this correction, the average annual amounts that will be expected in TMBC areas, based on collections in the 2005 audit will be 338 tonnes per annum per 1000 properties.

6.2.3 Historic review of garden waste collections

Figure 14 compares the compostable separation performance in Larkfield with that of the three areas newly introduced to AWC

Figure 14: Percentage of compostable waste being recycled -All AWC areas

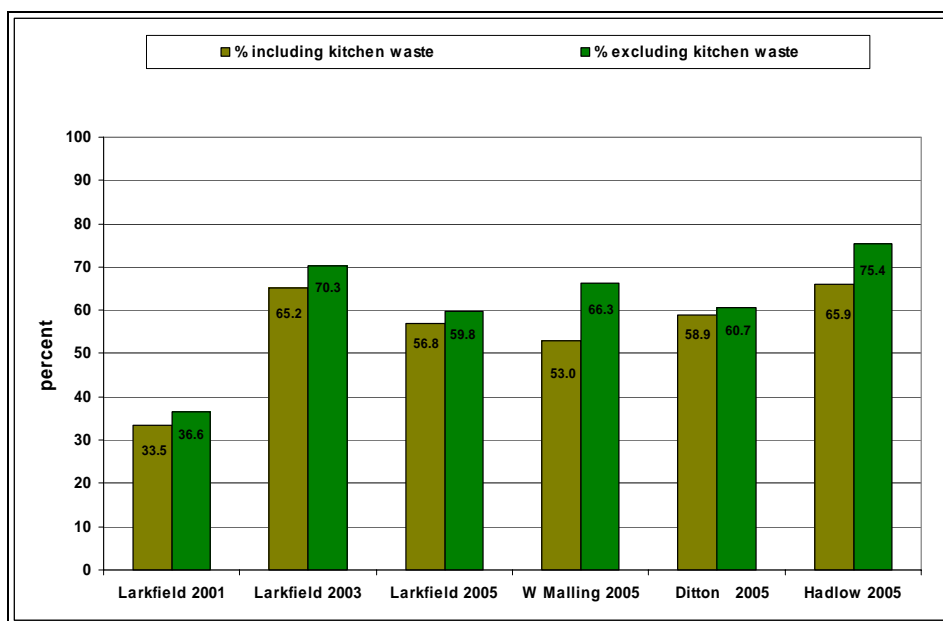


Figure 15 shows the substantial reduction in the remaining compostable waste in the residual waste following the introduction of AWC, and confirms that the majority of this is either kitchen waste or meat, which, at present under ABPR cannot be collected in the green waste bin, or the undetermined 8-40 mm fraction.

⁷ A full copy of the report 'Investigations into the kerbside collection of organic waste in Suffolk Coastal District' (July 2004) is available from ORA on request.

Figure 15: Compostable waste – material remaining in residual bin

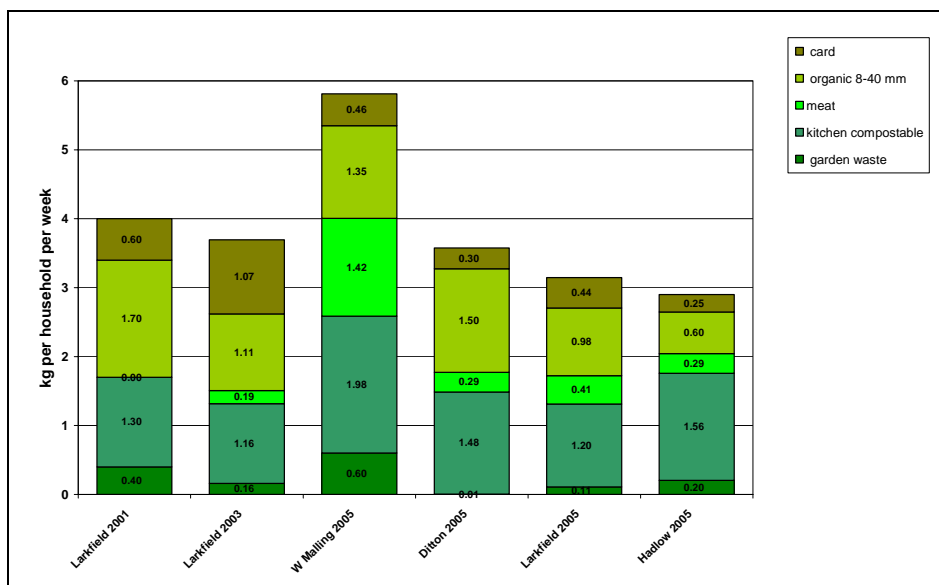


Figure 15 demonstrates that the recycling performance in Larkfield has been proven to be typical of that which can be expected in other areas new to AWC, given similar publicity and treatment. The recovery ceiling, with current levels of promotion by TMBC, appears to be about 60% of the total available. Kitchen compostable materials are included in this calculation. If the kitchen compostable materials are excluded from the calculations (as they are currently not permitted in the green bin), the recovery performance is enhanced by approximately 6%, with the average performance in the four areas audited in 2005 being 65%.

The opportunity to improve this figure would seem limited, as examination of the residual waste figures during the period of the four audits for the compostable content shows a limited amount of garden waste and card remaining in the residual stream. The majority of the material not being segregated is kitchen compostable material.

With the present levels of promotional activity, the expectation is that 60% of the total compostable waste arisings can be diverted to a green bin when separate AWC is introduced to similar new areas.

6.3 Source separated dry recyclables

A comparison of the dry recyclable weights collected throughout the four audits, over a total of eight areas is shown in Table 5:

Table 5: Source separated dry recyclables collected

	kg/hh/wk					total
	card	paper	ferrous metal	non ferrous metal	others	
Tonbridge 2000						
Tonbridge 2001						
E Malling 2000	0.01	0.78	0.02	0.00	0.00	0.81
E Malling 2001						
Larkfield 2000	0.01	0.97	0.02	0.01	0.00	1.01
Larkfield 2001						
Larkfield 2003	0.00	3.45	0.16	0.07	0.02	3.70
Larkfield 2005	0.41	2.94	0.15	0.09	0.03	3.61
W Malling 2003	0.03	5.04	0.10	0.02	0.01	5.20
W Malling 2005	0.22	4.11	0.15	0.03	0.01	4.51
Ditton 2003	0.05	3.43	0.13	0.05	0.02	3.68
Ditton 2005	0.37	3.83	0.18	0.05	0.04	4.46
Hadlow 2003	0.00	5.01	0.11	0.02	0.01	5.14
Hadlow 2005	0.33	2.77	0.21	0.04	0.01	3.35
Wrotham 2003	0.00	3.63	0.08	0.02	0.02	3.76
Wrotham 2005	0.38	4.01	0.26	0.03	0.01	4.69
S Tonbridge 2005	0.15	3.30	0.14	0.03	0.01	3.62
Average without AWC	0.08	3.27	0.11	0.02	0.01	3.49
Average before AWC in AWC areas	0.02	3.61	0.09	0.02	0.01	3.76
Average with AWC	0.27	3.42	0.17	0.06	0.02	3.93

6.3.1 Comments on dry recyclables collection

Dry recyclables were collected from households participating in the service before and after the introduction of AWC. Comparisons over the full history of the audit suffer from lack of data from 2000 and 2001, but collection rates, of mostly paper, are averaging 3.49 kg/hh/wk in areas without AWC, and 3.93 kg/hh/wk in areas with AWC, an increase of 0.54kg/hh/wk.

A more correct comparison, within the same areas before and after AWC, shows a smaller change from 3.76kg/hh/wk to 3.93kg/hh/wk, an increase of 0.17kg/hh/wk (4.5%). However, within these figures, the amount of card has increased, and the quantity of paper and metals has gone down from 3.72kg/hh/wk to 3.65kg/hh/wk (0.07kg/hh/wk, 1.8%)

The amount of card contamination in 2005 is noticeably higher than in 2003. Card is a non preferred item in the green box, it should be diverted to the green lidded bin for composting. It is understood that during a regular collection, any card presented in the

green box would be rejected at the kerbside. This was not done during the audit collections.

6.4 Larkfield: Comparison of four audits

Four separate audits have now been undertaken in Larkfield which was the pilot AWC area and which was originally audited in 2000 prior to the introduction of AWC.

July 2000: Residual waste (weekly collection) + dry recyclables

August 2001: Residual + compostable waste (AWC)

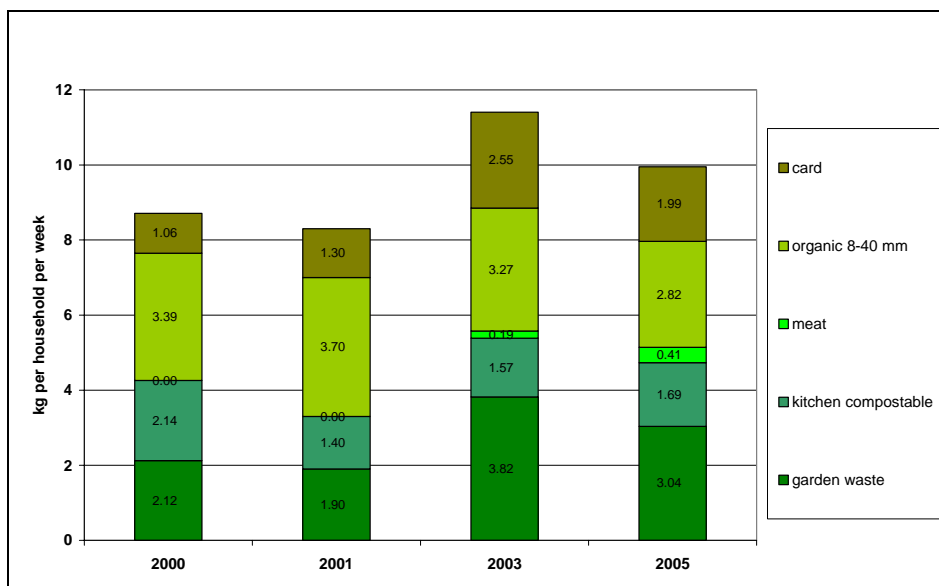
July 2003: Residual + compostable waste (AWC) + dry recyclables

July 2005: Residual + compostable waste (AWC) + dry recyclables

A comparison of the total compostable waste content of the waste in Larkfield over the four audits is shown in Figure 16. The graph shows the total compostable material collected in both the residual waste and the source segregated collections.

The amount which can be composted currently excludes kitchen food waste (including meat). The total weight excludes the fine material below 8mm which is usually insignificant, but in 2005 totalled 1.3kg/hh/wk in the green bin collection.

Figure 16: Compostable waste total weights, Larkfield



The most relevant figure is the proportion of the total compostable waste that is actually being segregated at the kerbside. Figure 17 shows the performance in

Larkfield over the four audits. The data in this chart represents all material collected in the green bin including the fine material. There appears to be a ceiling of about 60% of the total compostable material that is separable by the householder. By 2005, Larkfield has dropped back from a peak recovery in 2003.

Figure 17: % of compostable waste recycled Larkfield

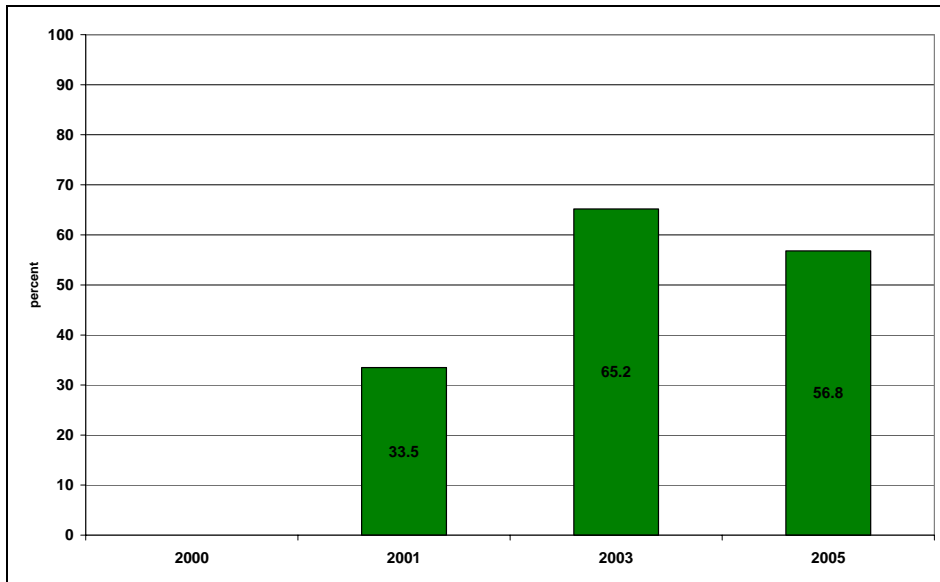
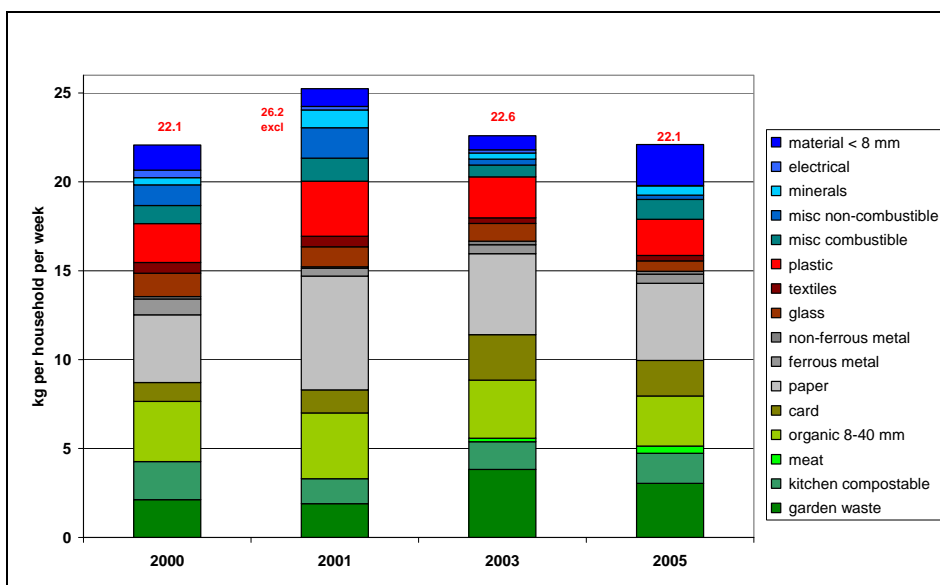


Figure 18 demonstrates the total amount of waste collected, including all collection services.

Figure 18: Total waste collected, Larkfield



The consistency of the total amounts generated is evident from the chart. The total waste collected is 22.1 kg/hh/wk in 2000. This increases to 26.2 kg/hh/wk in 2001 and

then decreases to 22.6 kg/hh/wk in 2003 and back to 22.1 kg/hh/wk in 2005. The high result in 2001 is probably influenced by the larger amount of paper collected, although no dry recyclable audit was done at this time. An increase in garden waste following AWC is evident in 2003 when the garden waste increases from 1.9 kg/hh/wk in 2001 to 3.8 kg/hh/wk. However, this decreases again to 3.0 kg/hh/wk in 2005.

7 APPENDIX 2 - Review of Best Practice Guidance

Document Reference List:

1. Chartered Institute of Wastes Management (2004). *Kerbside collection of recyclables and compostable waste*. 9 Saxon Court, St Peter's Gardens, Northampton, NN1 1SX. ISBN: 0-902944-55-X
2. Waste and Resources Action Plan (2005). *Alternate Week Collections – Guidance for Local Authorities*. The Old Academy, 21 Horsefair, Banbury, Oxon, OX16 0AH. ISBN: 1-84405-195-1
3. Department for Environment, Food and Rural Affairs (2004). *Draft Guidance for Waste Collections Authorities on the Household Waste Recycling Act 2003*. Nobel House, 17 Smith Square, London, SW1P, 3JR. <http://www.defra.gov.uk/corporate/consult/waste-collect/consultation.pdf>
4. Dr. Julia Hummel (2004). *Meeting statutory recycling targets through cost effective kerbside expansion - Step by step guide for local authorities*. Integrated Waste Systems, Open University, Walton Hall, Milton Keynes, MK7 6AA. <http://technology.open.ac.uk/iws/docs/costeffectivekerbsidereport.pdf>
5. Recycling Report (2000) - Waste Online <http://www.wasteonline.org.uk/resources/InformationSheets/WasteDisposal.pdf>
6. L. Crichton, D. Jamieson, K. Ludley, L. Pannett (2003) *Separate waste collection systems – Best practice review*. Enviro for the Scottish Executive Environment Group Research, SEPA Sponsorship and Waste Unit, Area 1-J North, Victoria Quay, Edinburgh, EH6 6QQ. <http://www.scotland.gov.uk/library5/environment/sepwaste1.pdf>
7. P. Roberts, L Glynn (2001). *Recycling in Action - Leading case studies across England and Wales*. Community Recycling Network for Friends of the Earth, 26-28 Underwood Street, London, N1 7JQ. http://www.foe.co.uk/resource/briefings/recycling_in_action.pdf
8. Directorate- General for the Environment (2000). *Success stories on composting and separate collection* - European Commission, Luxembourg: Office for Official Publications of the European Communities. ISBN 92-828-9295-6. http://europa.eu.int/comm/environment/waste/publications/pdf/compost_en.pdf

Results of Literature Review:

CATEGORY	No.	Identified e.g. of Best Practice	Doc 1	Doc 2	Doc 3	Doc 4	Doc 5	Doc 6	Doc 7	Doc 8	TMBC	Question for TMBC	Response from TMBC
Waste Minimisation	1	Increase volume of waste received at 'bring sites' through incentives to site contractors, introducing physical barriers to deter trade waste, arranging contracts for the disposal of green waste etc.					Y				Y	What methods have been used to try and increase waste deposited at bring sites? Is any data available to demonstrate increased volumes received at bring sites since the start of the campaign?	Where viable (based on suitable locations being found) we have increased the number of bring sites in areas provided with AWC. e.g. two new glass sites in East Peckham. We do not record weight data for individual sites. In AWC areas we have tended to increase the frequency of collection from glass banks.
	2	Encourage home composting to reduce waste at source.							Y		Y	Is data available on numbers of compost bins distributed and use of them by households? Is subsidised scheme to continue and if so, for how long?	Subsidised bin scheme is renewed annually. Figures provided for whole borough month by month retrospectively every 6 months. Total sales appears to have been saturated and are now levelled at around 1000 per annum.
	3	Consider end markets for the collected and recycled materials.					Y	Y		Y	Y	Have long term markets been established for the recyclables targeted by the collection service?	Yes. Compostable material markets found in partnership with Kent County Council. Locating sustainable markets was part of the tendering process for the new In-vessel composting system.
Partnership Working	4	Encourage partnership working between local authorities. Partnerships can provide opportunities for cost savings, procurement advantages, can help spread the risk and can help form a knowledge and skill 'pool'.	Y						Y		Y		
Planning	5	The waste hierarchy should be used as a guide.	Y								Y		
	6	The BPEO process should be used when considering relative merits of waste management options.									Y	Was the BPEO process used when deciding on the most appropriate waste management option for the area?	Yes. Please see Environmental Health Committee report for April 2000 (Report available on request).

CATEGORY	No.	Identified e.g. of Best Practice	Doc 1	Doc 2	Doc 3	Doc 4	Doc 5	Doc 6	Doc 7	Doc 8	TMBC	Question for TMBC	Response from TMBC
	7	The proximity principle should be considered for waste management.	Y						Y		Y	How was the proximity principle applied when considering waste management options for the area?	Requirement for local composting facility. Please see Environmental Health Committee report for April 2000 (Report available on request)
	8	Regional self sufficiency should be considered. Each region should have sufficient facilities and services to manage the waste it is expected to produce in the next 10 years (however, BEE may be to transport waste out of region for treatment at a different facility).	Y								Y	Has regional self sufficiency been considered in terms of waste management facilities and services?	Planned In-vessel composting facility is within this borough but will be used by other local authorities in West Kent.
	9	During planning stage consultation should be made with all stakeholders.		Y							Y	When planning the service were all stakeholders consulted?	Yes. Member support sought through committee reports. Public support through pilot questionnaire. Information in Advisory Board Report November 2001 (Report available on request).
	10	Consider undertaking feasibility study of all waste collection options available.	Y	Y							Y	When planning the service was a feasibility study undertaken to determine the best options for collection?	Yes. See Advisory Report April 2000 (Report available on request).
	11	Consider running pilot scheme to assess suitability.	Y	Y							Y		
	12	Investigation into waste composition, quantity and location may be done when designing and planning.	Y			Y					Y		
	13	If implementing AWC have round designs been reviewed for efficiency?		Y							Y	When implementing new collection service were existing round designs reviewed to assess suitability and implement necessary changes?	When blocks or whole streets are exempt (for example blocks of sheltered accommodation) then contractor is requested to look at changing the collection round of this "block exemption".

CATEGORY	No.	Identified e.g. of Best Practice	Doc 1	Doc 2	Doc 3	Doc 4	Doc 5	Doc 6	Doc 7	Doc 8	TMBC	Question for TMBC	Response from TMBC
	14	Ensure full member support at start of planning process.		Y							Y	Was full member support obtained before new service was implemented? If so, how was this achieved?	Thorough Advisory Board support November 2001 report (Report available on request).
	15	Consider introducing dedicated project manager and deliverable project plan to ensure implementation of service is successful.	Y	Y							Y	Has a dedicated team been introduced to ensure successful implementation of the service?	Additional inspector and admin officer brought in during phased implementation.
	16	Consideration should be given to collection of waste from residents who can't move the waste themselves.	Y								Y		
	17	The Disability Discrimination Act requires service providers to ensure that disabled people do not find it impossible/ unreasonably difficult to use the service, and the service provider should identify reasonable adjustments to the service to enable this.			Y						Y	Has consideration been given to the Disability Discrimination Act and service provision to disabled residents?	Publicity leaflets are available in larger print/ Braille and audio format. Larger residual bins can be provided under certain disability grounds.
	18	Consider area characteristics and socio-demographic factors which may affect collection round e.g. rural /urban areas, obstructions, staff numbers, travel time to disposal point etc.	Y	Y			Y				Y	Were all area characteristics and socio-demographic factors considered which may have an impact on the collection round?	Aware that some terraced Victorian properties may be considered exempt.

CATEGORY	No.	Identified e.g. of Best Practice	Doc 1	Doc 2	Doc 3	Doc 4	Doc 5	Doc 6	Doc 7	Doc 8	TMBC	Question for TMBC	Response from TMBC
	19	Consider time of year appropriate for introduction of AWC collection.		Y							Y	When implementing the service was consideration given to seasonal issues which may affect public perception of the service?	Implementation only takes place in Spring (due to increasing need for garden waste collection) and Autumn (after publicity and period of intense resource use) each year.
	20	Consider different service for areas with high transient population (e.g. students or tourists).		Y							N/A	Has consideration been given to areas with high transient populations and if so, what measures have been taken to improve or tailor the service to these areas?	No such areas within the borough. Very stable population and no student areas / blocks of high rise etc.
	21	Undertake cost modelling for service.	Y	Y							Y	Was cost modelling undertaken before the service was implemented?	Yes. For capital costs and additional operational costs due to exempt properties.
	22	Commitment should be shown to responsibilities under Sex Discrimination Act 1975, Race Relations Act 1976, Disability Discrimination Act 1995, Human Rights Act 1998 and Race Relations Act 2000.	Y								Y	Has commitment been shown to responsibilities under Sex Discrimination Act 1975, Race Relations Act 1976, Disability Discrimination Act 1995, Human Rights Act 1998 and Race Relations Act 2000? If appropriate please give examples.	Always committed to these acts but no specific relevance to AWC.

CATEGORY	No.	Identified e.g. of Best Practice	Doc 1	Doc 2	Doc 3	Doc 4	Doc 5	Doc 6	Doc 7	Doc 8	TMBC	Question for TMBC	Response from TMBC
H&S	23	Specialist training on H&S should be given to managers, supervisors and collection staff.	Y	Y	Y		Y				Y	Has specialist H&S training been given to appropriate members of staff?	All crews are trained in health and safety including operating bin lifts and manual handling. No specialist green waste training required. Specific concerns relating to H&S associated with AWC were whether there would be an increase in particulates and a need for operators to wear masks. Advice was sought from working group and waste contractor and following a risk assessment it was deemed that masks were not necessary.
	24	Participants should be encouraged to understand the correct way of dealing with their waste.	Y				Y	Y	Y		Y	Have residents been advised on the H&S issues relating to handling and dealing with their waste?	No although residual wheeled bin collections have been operating for many years.
	25	Consideration should be given to waste receptacles in terms of their max weight and manual handling issues, for operatives and the public. Guidance should be communicated.	Y	Y	Y			Y			Y	When considering the collection receptacle, was consideration given to max. weight and manual handling issues for the public and operatives? Was guidance on manual handling communicated to those affected?	Yes at time of initial wheeled bin distribution in the late 1980's.
	26	Consideration should be given to those encountering waste (e.g. on collection day clear access must be available for pedestrians and waste must be contained securely).	Y		Y						Y	On waste collection day do the operatives consider issues relating to the public encountering waste and if so, what actions are taken?	Wheeled bins are returned inside boundary of property i.e. not on public highway.

CATEGORY	No.	Identified e.g. of Best Practice	Doc 1	Doc 2	Doc 3	Doc 4	Doc 5	Doc 6	Doc 7	Doc 8	TMBC	Question for TMBC	Response from TMBC
	27	The receptacle should be considered in terms of where it is left for storage and collection and its visibility. If left on the pavement can be a health hazard for the visually impaired. Brightly coloured receptacles can help with this problem.			Y						Y	Has the waste collection receptacle been considered in terms of visibility (on collection day and when stored)?	Yes. Requirement that residents store wheeled bin within the boundary of their property. In cases where no back access is available we consider exempting the property from the service so that only one wheeled bin is stored at front of property.
	28	A risk assessment should be undertaken of the collection system including consideration of frequency of collection, materials collected, vehicles/receptacles used, housing type, access and interface with pedestrians.		Y	Y			Y			N/A	Has a risk assessment been undertaken with regard to all aspects of the waste collection system?	The contractor is responsible for risk assessment of all waste collections.
Communication	29	Consider different communication strategies for areas with low participation.		Y							N	If areas have been identified with low areas of participation, have different communication strategies been adopted for such areas? Please provide any examples.	Not as yet as all areas have followed same participation pattern. However have identified areas with higher contamination / extra residual waste and looking at options for communication.
	30	Consider early engagement and/or consultation with householders about introduction of a service.		Y	Y		Y	Y	Y	Y	Y		
	31	Section 3 of Local Government Act 1999 requires authorities to consult on variety of issues as to the way they fulfil duties to secure best value (this should involve people who use, provide or are affected by kerbside collection).	Y								Y	Has consultation been sought on the service and whether it is perceived as providing best value? If so how was this done? Are results available?	Initial Pilot questionnaire with results published in Environmental Board Report November 2001 (Report available on request)

CATEGORY	No.	Identified e.g. of Best Practice	Doc 1	Doc 2	Doc 3	Doc 4	Doc 5	Doc 6	Doc 7	Doc 8	TMBC	Question for TMBC	Response from TMBC
	32	Publicity material should be able to reach all parts of the audience and should be available in large print, Braille and other appropriate languages, and on cassette. (Census information can help identify which languages may be necessary).	Y		Y						Y		
	33	Engage local media in positive promotion of service.		Y							Y	Have the local media been engaged to promote the service in a positive manner? Has this been successful?	At each stage of implementation Local media are invited in to discuss service with Director of Environmental Health. Regular press releases provided at each stage. Copies of press articles for 2004 available.
	34	Consider logo's and branding of the service to support the communications strategy.		Y		Y					Y	Was the service branded or given a logo to increase recognition and awareness? If so can we see any examples?	Use of four colour images showing materials that can go into bin. Publicity leaflets follow this branding. Examples provided.
	35	Face to face advice and information available to householders at their doorsteps or at events in shopping centres/public meetings etc	Y	Y	Y	Y	Y	Y	Y	Y	Y	Which means of communication do you perceive as giving the best results?	Information leaflets well in advance of service.
	36	Promotion of competitions and other participatory inducement schemes.		Y	Y						N	Has the service been promoted through participatory inducement schemes and competitions?	Not the AWC. In other areas we have used competitions and prize draws to encourage greater participation of green box service.
	37	Up to date information available on local authority web-site with email contact addresses.		Y	Y			Y		Y	Y		

CATEGORY	No.	Identified e.g. of Best Practice	Doc 1	Doc 2	Doc 3	Doc 4	Doc 5	Doc 6	Doc 7	Doc 8	TMBC	Question for TMBC	Response from TMBC
	38	Adequate resources should be available to communicate effectively with residents.	Y	Y				Y	Y	Y	Y		
	39	A dedicated call centre or helpline can be effective in improving success of service. Requires regular and frequent contact between waste management service and department running call centre.	Y	Y	Y			Y		Y	Y		
	40	Feedback should be provided to residents including motivational and operational messages to ensure continual support of service.	Y	Y	Y			Y	Y	Y	Y	Has feedback been provided to residents on the success of the service and any proposed changes?	Newsletters provided twice a year.
	41	Promote education on services through targeting school and offering site visits.		Y					Y		Y		
	42	Provide information in different formats (video, CD-ROM etc) on request.									Y		
	43	Conduct surveys to gauge public opinion		Y					Y	Y	Y	Have surveys been conducted to establish public opinion and perception of the recycling services?	Initial pilot questionnaire only - used to determine whether or not to expand service. Unlikely that further surveys will be conducted. However, the biannual newsletter does invite comments from the public.
Education & Training	44	Training and development of managers, operatives and others involved should be planned from start of service and maintained throughout.	Y	Y					Y		Y	Has training and development of those involved with the service been planned for and maintained throughout?	Regular updates to collection crews. One to one contact during first month of new phase of implementation.

CATEGORY	No.	Identified e.g. of Best Practice	Doc 1	Doc 2	Doc 3	Doc 4	Doc 5	Doc 6	Doc 7	Doc 8	TMBC	Question for TMBC	Response from TMBC
	45	Training could also be given to temporary workers, voluntary organisations, recycling officers, service managers, and public and private collection operatives.	Y	Y							N/A	Has any additional training been given to temporary workers, voluntary organisations, recycling officers, service managers, and public and private collection operatives?	N/A
Policies & Procedures	46	Policies and procedures should be written in relation to service - e.g. replacement of lost/damaged containers, collection of containers in wrong place/filled with wrong materials, side bags.	Y	Y							Y	Have official policies and procedures been written with regard to the service? Please provide examples.	Policies and procedures developed over time and where appropriate agreed with councillors. A guide on contamination/additional waste etc has been produced for collection crews and admin staff.
	47	Policies should be communicated and implemented effectively, and should be ongoing.	Y								Y	Have these policies and procedures been implemented and communicated? Are the policies regularly reviewed and updated?	Reviewed at each new stage of implementation. Ongoing review regarding provision of larger bins. Leaflet given to all relevant staff. Policies given to public on information leaflets before service begins. See publicity examples.
Vehicles	48	Consideration should be given to noise and all vehicles should have EU approval and will have a maximum decibel output. The needs of the service will influence the transport type.	Y								Y	When considering collection vehicles, has the impact of noise on the residents been considered? Do collection vehicles have EU approval and a maximum decibel output?	Same vehicles used for regular refuse collection.
	49	Consideration should be given to fuel with the lowest emissions and most environmentally friendly being chosen.	Y								N	Do the collection vehicles use the most environmentally friendly fuel available?	Use of Diesel / petrol rather than other more eco-friendly alternatives.

CATEGORY	No.	Identified e.g. of Best Practice	Doc 1	Doc 2	Doc 3	Doc 4	Doc 5	Doc 6	Doc 7	Doc 8	TMBC	Question for TMBC	Response from TMBC
	50	Drivers should be trained and hold the appropriate driving licence for any vehicle over 3.5 tonne gross weight.	Y								Y	Are all collection vehicle drivers appropriately trained and in possession of the correct driving licence?	Yes.
	51	Local operational aspects should be considered including road types, manual handling etc.	Y	Y							Y	When deciding upon collection vehicles were all local aspects considered?	Narrow body vehicles available for certain rural / Victorian narrow streets.
Operation & Management	52	Minimise cost of recycling services (collection, sorting and processing) and maximise the revenue from recycled products.					Y		Y	Y	Y	How has cost minimisation for the service been addressed? How has revenue from recycled products been maximised?	External funding (WREN and DEFRA) paid for 6,000 wheeled bins and some promotional material. WREN also assisted with funding for waste audits. A profit sharing arrangement is in place with Kent County Council (the Disposal Authority) where the savings from land filling are split between the two authorities. Actual operation uses same vehicles on alternating week meaning no significant additional operating costs.
	53	Consider frequency of collection alongside local issues - e.g. storage areas available, public attitude and perception.	Y				Y	Y			Y	Were all local aspects considered when designing and implementing the service?	Yes.
	54	Information should be provided to residents putting incorrect waste in recycling bins.	Y	Y							Y	If residents are found to be putting the wrong types of waste in their recycling bins are they being provided with information to correct and overcome this? Please provide examples of stickers/tags etc.	Cards available for crew to highlight the contamination.

CATEGORY	No.	Identified e.g. of Best Practice	Doc 1	Doc 2	Doc 3	Doc 4	Doc 5	Doc 6	Doc 7	Doc 8	TMBC	Question for TMBC	Response from TMBC
	55	Monitor performance of service: participation rate, diversion rate, capture rate, tonnage of materials collected etc. Consider using standardised performance indicators.	Y	Y	Y	Y	Y		Y		Y		
	56	Monitor performance of collection operation.	Y	Y	Y	Y	Y				Y		
	57	Use the results of monitoring to plan and implement changes to increase effectiveness of collections.		Y	Y	Y					Y		
	58	Implement changes and monitor their impact.		Y		Y					Y		
	59	To maximise effectiveness of monitoring clear objectives should be defined, parameters identified, existing information analysed, accurate measurement systems introduced, systems reviewed.		Y		Y	Y				Y		
	60	Consider reducing the size of the residual bin and/or reducing it's collection to fortnightly.		Y				Y	Y		Y		
	61	Address areas having difficulties with collection (e.g. terraced housing) and offer advice/visits etc.		Y							Y	Are any households still excluded from the service?	Yes - flats, sheltered accommodation, properties with no side access.
	62	Benchmark performance using BVPI's and best value standards.	Y								Y		

CATEGORY	No.	Identified e.g. of Best Practice	Doc 1	Doc 2	Doc 3	Doc 4	Doc 5	Doc 6	Doc 7	Doc 8	TMBC	Question for TMBC	Response from TMBC
Post-implementation	63	Plans should be made for what may be needed once service has been implemented: resources, staff, training. Financial planning should be done for improved IT systems, GIS etc.	Y								Y	Has strategic planning been undertaken to consider resources required once the service has been implemented (e.g. staff, training)?	yes. Additional staff recruited. Training to all relevant staff.
	64	Communication with participants should be maintained to maintain interest and encourage new residents to take part.	Y				Y	Y	Y	Y	Y	Has communication with residents been maintained after the service was implemented in order to maintain interest and encourage new residents to join?	two newsletters per annum to all residents on AWC.
	65	Systematic replacement of containers should be considered (on average bins purchased recently should last 5-7 years).	Y								Y	Has systematic replacement of the bin been considered and included in the plans for the service?	included in ongoing capital costs.
TOTAL		65	38	37	16	8	13	13	15	10	59		

8 APPENDIX 3 - Bin Filling Rates

	density	bin volume		
	tipping weight	provided	used	filling rate
	kg/l	l/hh*week	l/hh*week	%
RESIDUAL				
W Malling	0.11	126.4	115.8	91.6
Ditton	0.09	118.8	107.5	90.5
Larkfield	0.10	118.8	111.3	93.7
Hadlow	0.09	115.6	92.5	80.0
S. Tonbridge	0.07	238.0	180.8	76.0
Wrotham	0.09	244.2	181.7	74.4
Total result	0.09	160.3	131.6	82.1
DRY RECYCLABLES				
West Malling	0.22	27.5	20.9	76.1
Ditton	0.19	27.5	24.0	87.3
Larkfield	0.19	27.5	18.8	68.5
Hadlow	0.20	27.5	17.1	62.0
S. Tonbridge	0.19	27.5	19.6	71.1
Wrotham	0.20	27.5	23.9	86.8
Total result	0.20	27.5	20.7	75.3
GREEN				
West Malling	0.09	120.0	104.2	86.8
Ditton	0.09	120.0	90.2	75.2
Larkfield	0.08	120.0	96.0	80.0
Hadlow	0.09	120.0	91.4	76.2
S. Tonbridge	0.00	0.0	0.0	0.0
Wrotham	0.00	0.0	0.0	0.0
Total result	0.09	120.0	95.5	79.6

9 APPENDIX 4 - Kent Authorities Questionnaire Results

Detail		Ashford	Canterbury	Dartford	Dover	Gravesham	Maidstone	Medway	Sevenoaks	Swale	TMBC	Tunbridge Wells	Tot. "Y"	Tot. Response
Existing AWC	Residual	N	Y	N	N	N	N	N	N	T	T	Y	4	11
	Dry Recyclables	Y	Y	N	Y	N	N	Y	N	T	T	Y	7	11
	Compostable	Y	Y	N	Y	N	N	Y	N	T	T	Y	7	11
Considering AWC	Residual	N	N	N	Y	N	Y	Y	N	Y	Y	N	5	11
	Dry Recyclables	N	N	N	N	N	Y	N	N	Y	Y	N	3	11
	Compostable	N	N	N	N	N	Y	N	N	Y	Y	Y	4	11
Planning	Stakeholder consultation	Y	Y	Y	Y	N/A	Y	Y	N/A	N	Y	Y	8	9
	Engaging members	Y	Y	Y	Y	N/A	Y	Y	N/A	N	Y	Y	8	9
	Cost modelling	N	Y	N	Y	N/A	Y	Y	N/A	N	Y	Y	6	9
	Pilot scheme	N	Y	Y	Y	N/A	Y	N	N/A	Y	Y	N	6	9
	Waste audit	N	N	N	Y	N/A	Y	Y	N/A	N	Y	Y	5	9
	Risk assessment	N	N	Y	N	N/A	Y	N	N/A	N	Y	Y	4	9
	Feasibility study	N	N	N	N	N/A	Y	N	N/A	N	Y	Y	3	9
Phased introduction of service?	Y	Y	Y	Y	Y	Y	N	N/A	N/A	Y	Y	8	10	
Residual capacity	Reduced	N	N	N	N	N	N	N	N/A	N	Y	Y	1	10
	Considering reduction	N	N	N	Y	N	N	Y	N/A	Y	N	N	3	10
Communication	Leaflets	3	5	3	4	4	4	5	N/A	3	5	4	10	10
	Local media	3	3	3	3	4	3	5	N/A	3	4	4	10	10
	Website	2	4	4	3	3	3	4	N/A	3	3	2	10	10
	Helpline	4	4	4	3	3	4	5	N/A	N	5	5	9	10
	School visits	4	4	3	N	3	3	4	N/A	4	3	3	9	10
	Road shows	2	4	3	N	3	2	N	N/A	4	3	2	8	10
	Service branding	4	5	N	N	5	4	4	N/A	4	4	Y	8	10
	Public meetings	3	4	4	N	3	N	N	N/A	4	5	2	7	10
	Bin stickers	N	4	4	N	N	5	N	N/A	3	4	4	6	10
	Competitions	N	N	2	N	2	N	N	N/A	N	N	N	2	10
Bus advertising	N	4	N	N	N	N	N	N/A	N	N	N	1	10	
Billboards	N	N	N	N	N	N	3	N/A	N	N	N	1	10	

Detail		Ashford	Canterbury	Dartford	Dover	Gravesham	Maidstone	Medway	Sevenoaks	Swale	TMBC	Tunbridge Wells	Tot. "Y"	Tot. Response
Opinion surveys	Undertaken	N	Y	Y	N/A	Y	N	N	N/A	N	Y	N	4	9
	Changes made	Y	N	Y	N/A	Y	N	N	N/A	N	N	N	3	9
	Feedback	Y	N	Y	N/A	N	N	N	N/A	Y	Y	Y	5	9
H&S	Specific to AWC?	Y	Y	N	N	N	N	N	N/A	N	Y	N	3	10
Policies	Assisted collections	Y	Y	Y	Y	Y	Y	Y	N/A	Y	Y	Y	10	10
	Implemented	Y	Y	Y	Y	Y	Y	Y	N/A	Y	Y	Y	10	10
	Reviewed	N	Y	Y	N	N	Y	Y	N/A	N	Y	N	5	10
	Complaints	Y	Y	Y	Y	Y	Y	N	N/A	Y	Y	Y	9	10
	Implemented	Y	Y	Y	Y	Y	Y	N	N/A	Y	Y	Y	9	10
	Reviewed	N	Y	Y	N	N	Y	N	N/A	N	Y	Y	5	10
	Contaminated collections	Y	Y	Y	Y	N	Y	N	N/A	Y	Y	Y	8	10
	Implemented	Y	Y	Y	Y	N	Y	N	N/A	Y	Y	Y	8	10
	Reviewed	N	Y	Y	N	N	Y	N	N/A	N	Y	N	4	10
	Side waste	Y	Y	Y	N	N	Y	N	N/A	Y	Y	Y	7	10
	Implemented	Y	Y	N	N	N	Y	N	N/A	Y	Y	Y	6	10
	Reviewed	N	Y	N	N	N	Y	N	N/A	N	Y	N	3	10
	Container replacement	Y	Y	Y	Y	N	N	N	N/A	N	Y	Y	6	10
	Implemented	Y	Y	Y	Y	N	Y	N	N/A	N	Y	Y	7	10
	Reviewed	N	Y	Y	N	N	Y	N	N/A	N	Y	Y	5	10
Performance monitoring	Participation rate	Y	N	Y	Y	Y	Y	N	N/A	Y	N	Y	7	10
	Diversion rate	Y	N	Y	Y	Y	N	N	N/A	Y	Y	Y	7	10
	Tonnage collected	Y	Y	Y	Y	Y	Y	Y	N/A	Y	Y	Y	10	10
	Waste audit	N	Y	Y	Y	Y	N	Y	N/A	Y	Y	Y	8	10
	Results used to implement changes?	N	N	Y	N	Y	Y	N	N/A	N/A	N	N	3	10
	Improved performance in areas with low participation?	Y	N	Y	Y	N	Y	Y	N/A	N/A	Y	N/A	6	9
	Ongoing monitoring and review of system?	N	Y	Y	Y	N	N	Y	N/A	N/A	Y	N/A	6	9
Total 'Y'		21	27	28	23	12	26	14	0	16	31	27		

10 APPENDIX 5 - Future BVPI Performance – Scenario Modelling

Properties with AWC	30,000		40,000			40,000	
			Variation in participation levels			Variation in capture rates	
Participation rate	70	90	70	80	90	80	80
Capture rates (organics)	60	60	60	60	60	70	80
Capture rates (Dry Recyclables)	70	70	70	70	70	70	80
TONNAGE COLLECTED (Tonnes)							
Total Household Waste (1)	51,676	51,676	51,676	51,676	51,676	51,676	51,676
Separate Compostable collections (2)	7,098	9,126	9,464	10,816	12,168	10,816	10,816
Separate Kerbside Dry Recyclables (3)	5,710	5,710	5,710	5,710	5,710	5,710	5,710
Separate Bring sites (4)	3,867	3,867	3,867	3,867	3,867	3,867	3,867
Non Recyclable Waste (5)	35,001	32,973	32,635	31,283	29,931	31,283	31,283
ADDITIONAL TONNAGES AVAILABLE FROM NON RECYCLED WASTE (Tonnes)							
Option 2: Inclusion of kitchen waste (6)	957	1,230	1,275	1,458	1,640	1,701	1,944
Option 3: Inclusion of plastic, all 46106 households (7)	517	665	517	591	665	591	675
Option 4: Inclusion of Glass (8)	670	861	670	765	861	765	875
Option 5: Capture 50% paper from residual (9)	912	1,172	1,216	1,389	1,563	1,389	1,389
RECYCLING RATE - CURRENT SERVICES (%)							
BVPI 82a	18.5	18.5	18.5	18.5	18.5	18.5	18.5
BVPI 82 b	13.7	17.7	18.3	20.9	23.5	20.9	20.9
Recycling rate	32.3	36.2	36.8	39.5	42.1	39.5	39.5
RECYCLING RATE - CHANGES TO SERVICE (%)							
Option 2	34.1	38.6	39.3	42.3	45.3	42.8	43.2
Option 2+3	35.1	39.9	40.3	43.4	46.5	43.9	44.5
Option 2+3+4	36.4	41.5	41.6	44.9	48.2	45.4	46.2
Option 2+3+4+5	38.2	43.8	44.0	47.6	51.2	48.1	48.9
Option 2+ 5	35.9	40.8	41.7	45.0	48.3	45.4	45.9

Notes

- 1: Estimated 2005/2006 Total Waste collected
- 2: Estimated at 338 tonnes per annum per 1000 hh (appendix 2.2)
- 3: Estimated at 3.66 kg/hh/wk
- 4: 2004/05 value. Assume no increase with expanding AWC
- 5: Total minus bring sites, compostable and recyclable collections

6: Assumes 1.46 kg/hh/wk

7: Assumes 0.44 kg/hh/wk all 46106 hh

8: Assumes 0.57kg hh/wk all 46106 hh

9: Assumes 1.67 kg hh/wk all 46106 hh

Assumptions based on results of waste audits undertaken by ORA