

## 1. Introduction

---

- 1.1 Set out below is an extensive examination of a considerable number of options for taking forward the objectives of the strategy. Annex 4 summarises officer's recommendations in relation to these options. For the purposes of this report appendix 2 set out a costing of the recommended options.

## 2. Waste Reduction and Reuse

---

### 2.1 Waste reduction

Waste reduction can be defined as the prevention of waste at source. The term waste reduction is often used interchangeably with 'waste minimisation' and 'waste prevention'. Waste reduction is the cornerstone of an effective waste management policy. With high targets to meet, the best way of stabilising waste growth is by introducing waste reduction schemes and services. There is a range of waste reduction options available to the Council which include:

- Option 1: Production of a waste minimisation guide for businesses
- Option 2: Establishment of a waste club for businesses incorporating a waste exchange
- Option 3: Production of guide to minimisation, and the recycling services within the Borough
- Option 4: Undertaking regular waste analyses of the Council's operations and household waste
- Option 5: Investigation of changes in Council operations to reduce waste output or deal with waste at source
- Option 6: Promotion of home composting and provision of facilities for community composting
- Option 7: Supporting community sector initiatives aimed at waste minimisation
- Option 8: Introduction of a green purchasing policy throughout Council operations
- Option 9: Evaluation of incentive schemes for households and business that participate in waste minimisation initiatives
- Option 10: Evaluation of the introduction of a charge for the collection of bulky waste and green waste as a means of encouraging re-use and composting.

#### ***2.1.1 Option 1: Production of a waste minimisation guide for businesses***

A waste minimisation guide would provide advice on ways to reduce outputs as well as providing contacts with specialists in the field. The guide could be part of a general approach to businesses including establishing a waste minimisation club and a waste exchange.

Envirowise is an excellent source of information on best practice for business that can be used as the basis of a guide. Envirowise, formerly the Environmental Technology Best Practice programme (ETBPP), is run jointly by DEFRA and the DTI. It aims to promote better environmental performance in increased competitiveness by providing advice and publishing

information on best practice. Envirowise publishes a series of useful guides on waste minimisation and operates a free helpline<sup>1</sup>.

### **2.1.2 Option 2: Establishment of a waste club for businesses incorporating a waste exchange**

A waste minimisation club could be established for companies in Southwark. The club would recruit its members from local companies that are taking action (or are intending to do so) to cut costs and improve environmental performance by reducing waste. Such clubs provide a convenient forum for companies to:

- exchange ideas on waste reduction by networking with other companies
- receive training in waste minimisation methodologies
- gain access to subsidised consultancy for expert help
- stay up-to-date with new legislation.

Envirowise has provided a guide for setting up waste minimisation clubs<sup>2</sup>.

A waste exchange lists different companies' waste so that they are available for use by another company, either for sale or free collection. These exchanges deal mainly with difficult waste materials that do not have recognised markets, brokers or dealers. Waste exchanges actively promote waste reduction, pollution and virgin resource use, in addition to cutting costs within the companies using them. The Environment Agency has produced a guide to setting up waste exchanges<sup>3</sup>.

### **2.1.3 Option 3: Production of guide to minimisation, and the recycling services within the Borough**

A waste minimisation guide for households would provide details on how to minimise waste output as well as information on local and national groups operating within the field of waste minimisation, re-use and recycling. Voluntary action by households to reduce waste can have a significant impact on the household waste stream. Such actions include purchasing products that are not excessively packaged, buying only appropriate amounts of perishables and other solutions (eg using 'bags for life' for shopping; eliminating junk mail). The Rethink Rubbish Campaign has developed resource material for local authorities providing advice to householders on minimisation and recycling<sup>4</sup> (see also Overview, Section 11).

As recycling services in the Borough expand, a guide to the services provided will be an essential tool in ensuring that facilities are known to the public and are well used.

### **2.1.4 Option 4: Undertaking regular waste analyses of the Council's operations and household waste**

Waste audits provide a detailed understanding of the waste stream and are usually undertaken to account for seasonal variation in waste (eg in winter and summer). The focus of local authority

---

<sup>1</sup> Envirowise helpline number 0800 585784). Further information can be found on the Envirowise website ([www.envirowise.gov.uk](http://www.envirowise.gov.uk)).

<sup>2</sup> ETBPP, 1998. Waste minimisation clubs: setting them up for success

<sup>3</sup> Environment Agency, 1998. Waste minimisation: an environmental good practice guide for industry

<sup>4</sup> Rethink Rubbish website: [www.rethinkrubbish.org.uk](http://www.rethinkrubbish.org.uk)

audits are usually household waste but can include the analysis of other waste streams (eg CA site, bulky waste, street sweepings, flytipping, and commercial). To encourage existing participants to do more, it is necessary to determine if there are particular waste streams being omitted from the system. The audits will show the maximum achievable recycling rates and capture rates of those participating in the service. The findings of waste audits are usually supplemented by questionnaire surveys of householders and/or business to determine attitudes to waste. An attitudinal survey is aimed at the same households or businesses subject to the waste analysis and could also include consumers leaving retail stores. As Southwark's housing profile is very distinct, waste analysis needs to be designed to reflect differences in waste generation by household type. For example, households with gardens will dispose of a higher proportion of organic waste, particularly in the summer months, than those without gardens.

**2.1.5 *Option 5: Investigation of changes in Council operations to reduce waste output or deal with waste at source***

As the Council is a significant generator of waste, an audit of waste generation within Council operations and property will identify areas for improvement (eg office waste recycling systems).

**Option 6:** Promotion of home composting and provision of facilities for community composting (see Composting Strategy, Section 5, below).

**Option 7:** Supporting community sector initiatives aimed at waste minimisation (see Overview, Annex 3: Community sector).

**Option 8:** Introduction of a green purchasing policy throughout Council operations (see Section 10).

The following are economic instrument options related to differential charging of services and incentive schemes. Such incentives are intended to increase recycling via differential charging for waste generation where recycling has increased.

**Option 9:** Evaluation of incentive schemes for households and business that participate in waste minimisation initiatives.

**Option 10:** Evaluation of the introduction of a charge for the collection of bulky waste and green waste as a means of encouraging re-use and composting.

**2.2 Options appraisal - re-use**

There are many opportunities that can be exploited in the Borough for extending the life of materials or equipment through re-use. Fostering re-use will not meet recycling targets but will provide much needed benefits (eg capacity building, job creation, training schemes, and the provision of good quality equipment) to local communities. It should be remembered, though, that re-use projects only delay the point at which material enters the waste stream.

The range of materials that can be collected for re-use schemes includes furniture, white goods (fridges, cookers, washing machines), IT equipment (computers, printers and peripherals), paint, and timber.

Options for reuse include:

- assessing the opportunities for fostering community sector re-use initiatives
- diverting material suitable for re-use from bulky goods collections to a furniture store
- contracting out the bulky waste collection to a furniture store
- establishing a Re>Paint scheme.

### 2.3 Influences/issues affecting decisions

Growth rates in waste arisings and aspirational targets in Southwark were discussed in Overview (Section 5.1). Faced with the ambitious targets described, waste stabilisation is a key aim that will be achieved through a significant reduction in waste arisings.

As explained in Overview (Section 7.3) The Waste Minimisation Act 1998 enables *'local authorities to make arrangements to minimise the generation of waste in their area'*, the act also states that the authority can *'contribute towards the expense of anything.... Expedient for the purpose of minimising the quantities of controlled waste'*. This act allows Southwark Council to:

- promote non-council services that will enable residents or businesses to minimise waste output
- work with organisations that can provide services which minimise waste
- provide information on wasteful products and the available alternatives
- introduce repair and re-use schemes (eg furniture, white goods, and computers).

The re-use and recycling of electrical and electronic equipment is the subject of new legislation coming from the EU (see Overview, Annex 1: Legislation). This legislation is part of the European Commissions drive to ensure producer responsibility. It is yet to be finalised but will require free take-back of a range of products to achieve a target of 6kg per household per year. Although the manufacturers are targeted, the onus will fall on local authorities to undertake collection. This legislation represents both a threat and an opportunity.

The London Mayor clearly identifies reuse as a target - focusing on furniture and nappy washing schemes but also identifying CA site waste: wood, household items (probably white goods), building materials (brick/doors) and furniture.

### 3. Recycling banks

---

#### 3.1 Options appraisal

There are several options for implementing an efficient and well used bring system that could be considered.

- Option 1: Modular banks
- Option 2: Large wheeled bins (1100 litre capacity)
- Option 3: Small wheeled bins (360 litre capacity)
- Option 4: Sunken banks
- Option 5: Continue with existing system.

##### *3.1.1 Option 1: Modular banks*

Modular banks have been used to enable households to recycle at public bring sites since 1977. Generally, modular banks are the preferred choice in many local authority areas. Banks are generally emptied by external contractors (eg Berrymans or Aylesford Newsprint). Modular banks can also be emptied by in-house contractors so there is more control over siting, emptying and bulking up. However, overall both systems face the same advantages and disadvantages:

Southwark already owns some of the modular glass banks, it could also purchase other modular banks to collect different materials. The Direct Services Organisation (DSO) or external contractor can then service these banks and the recycled material bulked up for sale at the transfer loading station (TLS).

#### **Advantages**

- high level of capacity reduces the need for high frequency collections
- the shape of the banks is associated with recycling in the minds of the public, not waste like other bin types
- tried and tested collection system
- modular banks can be more durable than other containers
- using modular banks controlled by Southwark will enable new sites to be implemented without needing to gain a contractors approval
- most sites will not require planning permission
- sites at supermarkets generally work well and have a high yield.

#### **Disadvantages**

- vehicle access for emptying can be problematic
- can easily be vandalised without additional fixtures being installed (eg kick rails)

- a specialist vehicle is required to empty the banks as opposed to a normal refuse collection vehicle (RCV)
- unlikely to increase recycling yields significantly
- problems of placement and development of new sites will not be resolved
- reliant on contractors and their conditions for siting banks
- unlikely to provide service to all areas of Southwark.

### **3.1.2 Option 2: Install 1100 litre wheeled bin sites**

These are often referred to as mini recycling centres (MRCs). More local authorities are opting for this approach using direct service organisations or external contractors to service sites. Sites often require banks to be clamped to the ground using substantial fittings to reduce vandalism.

Mini recycling centres using 1100 litre bins would be emptied and bulked up at the current TLS at Manor Place, for sale to end markets.

Although this option does have serious implications financially, it does present a flexible solution to many of the barriers within Southwark. The sites would use lockable containers that were fixed in place to reduce vandalism and the threat of trade waste leakage. The containers can be wheeled to a collection wagon reducing the problems of vehicular access. This may allow sites to be relocated closer to community areas and increase throughput tonnage.

#### **Advantages**

- access problems would be minimised since bins could be wheeled to the collection vehicle
- this collection system provides flexibility in fleet management because most RCV's with a bin lift could be used to collect the recycle from sites. Other options require a specialist vehicle that can only be used for bring site collections.
- all sites can be branded with the corporate image
- offers a solution on estates where kerbside collections are not viable
- potential to introduce sites where modular banks cannot be installed or serviced
- yields of recycle could be increased.

#### **Disadvantages**

- experience has shown from other areas that without a great deal of promotion these sites have low yields
- the bins need to be of sturdy construction to reduce vandalism and contamination with general refuse
- sturdy fixtures are needed to reduce vandalism
- because of small capacity in comparison with modular banks, they can be problematic if sites have a high yield, requiring a high number of bins or a high frequency of lifts
- installing these sites will require permanent fittings and fixtures, which may need planning permission.

### **3.1.3 Option 3: Using small wheeled bins (360 litre)**

These facilities are generally used for low yield community sites, in areas where larger bins would prove unacceptable. As with the 1100 litre option, these sites require fixtures and fittings to reduce vandalism.

#### **Advantages**

- Access problems would be minimised since bins could be wheeled to the collection vehicle.
- This collection system provides flexibility in fleet management since most RCV's with a bin lift could be used to collect the recyclate from sites. This compares favourably with other options which require dedicated collection using a specialist vehicle.
- Smaller bins provide an option to install very localised sites to compliment kerbside.
- Community resistance to siting of such small sites may be reduced.
- All sites can be branded with the corporate image.
- Offers a solution on estates where kerbside collections are not viable.
- Potential to introduce sites where modular banks cannot be installed or serviced.

#### **Disadvantages**

- Experience has shown from other areas that, without a great deal of promotion, these sites have low yields.
- The bins need to be of sturdy construction to reduce vandalism and contamination with general refuse, this is more of a problem using smaller bins.
- Sturdy fixtures are needed to reduce vandalism.
- Operationally high yield supermarket sites cannot be serviced using such small banks.
- Installing these sites will require permanent fittings and fixtures and planning permission.
- Sites often overflow and require regular cleaning.

### **3.1.4 Option 4: Sunken banks**

This option involves installing special modular banks where the storage body is placed underground. Waste disposal to deposit recyclables is via a small chute. The banks are emptied using a specialised vehicle with operational requirements much like modular banks.

#### **Advantages**

- can be placed near multiple occupancy housing with low visual intrusion
- the radical design may encourage people to recycle more
- high level of capacity reduces the need for high frequency collections
- using modular banks controlled by Southwark will enable new sites to be implemented without needing to gain a contractors approval

- once installed they are virtually vandal proof
- no need for additional street furniture due to design reduces vandalism and bank fires
- could be a viable option in the grounds (eg car parks) of high rise flat where kerbside could not operate.

### **Disadvantages**

- very expensive option for installation - costs vary but will not be less than £15,000 per site excluding civil engineering requirements
- all sites will require planning permission and may encounter community opposition
- sunken banks have the same vehicle access problems as modular banks
- a specialist vehicle is required to empty the banks as opposed to a normal RCV
- problems of placement and development of new sites will not be resolved
- unlikely to provide a service to all areas of Southwark
- relatively new to the UK
- sunken systems are liable to contamination from misuse.

#### **3.1.5 Option 5: Continue using current bring systems**

This is an option for Southwark, but to meet targets, kerbside would need to be introduced to compensate. Thus, this course of action is not recommended unless other recycling systems are put in place. Even if kerbside is expanded, the indications are that some households will continue to use the bank system, especially if kerbside does not collect glass.

### **3.2 Influences/issues affecting decisions**

#### **3.2.1 Statutory considerations**

An effective bring site network will assist Southwark in meeting its Best Value targets

Other legislation that could have a potential impact on Southwark's bring and CA network will include:

- Landfill Directive and the need to reduce bio-degradable waste disposal
- Packaging Regulations - new targets in 2006 may provide an opportunity to support bring banks that collect packaging waste
- landfill tax is to be reviewed in 2004 and may increase dramatically increasing disposal costs
- the Mayor proposes no less than one bank per 500 households, where kerbside collections are not viable.

#### **3.2.2 Operational issues**

The system in Southwark is typical in many ways of any bring bank network, with a number of barriers that reduce effectiveness:



- acceptance by the public
- appearance and convenience of use
- awareness of nearest site
- bank density on well used sites
- cleanliness of sites
- introduction of kerbside
- vandalism
- vehicle access for emptying.

The main operational issues for the bring site system are:

### **Cleanliness**

Cleanliness issues at bring sites are a major problem, many sites have difficult vehicular access and often collection vehicles cannot gain access to empty banks when they are full. This leads to banks overflowing and sites being messy and uninviting for the community. This leads to community sites having low tonnages and opposition to any new sites.

It is recommended that the Council ensure that bring sites are regularly cleaned. There are two options listed below, but it is clear that a schedule of cleaning should be based on need rather than a regular frequency. It may be important that any cleansing of sites includes:

- cleansing of sites within 24 hours of overflow being reported
- a flexible cleaning frequency based on each sites' needs, for example high through put sites may require cleaning every day, whereas low through put sites may need cleaning once per week.

### **Material handling**

It is clear that Southwark will have to increase recycling activity to reach its targets. This is likely to mean that bring, kerbside and CA site recycling will need to be enhanced. It seems sensible that if Southwark is collecting paper through kerbside and bring systems they are transported in bulk to the same reprocessor to maximise efficiencies and any potential income. The same can be said for all other materials.

### **Vehicle access**

Vehicle access is a major problem at many sites, a large collection vehicle and static modular sites mean parked cars often block access and create problems. This in turn leads to overflowing and cleanliness issues.

### **3.2.3 Education and awareness**

This is vital in terms of sustainable waste management as a whole, a constant message challenging people's behaviour to waste needs to be delivered on a local, regional and national scale. Providing the message without infrastructure or vice versa will not deliver the required affect of moving waste away from landfill. Education and awareness can be used to encourage the use of recycling

facilities including bring and CA sites. This is often under-resourced and overlooked, however, investment in promotion, education and awareness is essential to increase participation in bring systems. In terms of operational options, costs have been introduced to promote the bring system based on per head of population in the operational options.

Any promotional campaign could fit into activities on a national scale such as National Waste Awareness Initiative (NWAI). A full promotional campaign could be supported through landfill tax credits. This would need to link into other promotional activities around waste management.

#### **3.2.4 Location and appearance**

These are vital in providing higher tonnages for the bring site system in Southwark. It is clear that a number of sites have very low community participation in that they yield very low tonnages per annum. This does not represent an efficient use of resources for Southwark or the contractors. Improving the location and appearance of sites should enhance their profile and image so increasing tonnages. Altering locations of banks is not straightforward with the current modular system, however, all options should be assessed. Signage is also important and this includes instructions to the users about how to get to the site and good practice and instructions once they reach the site.

Whatever future operational management of bring sites is chosen, all banks with low annual tonnages should be assessed. Promotion and signage may help but if these do not yield results alternative locations (or removal of banks) may be needed.

Sites need signposts, good quality information boards and furniture. Providing good signage to sites and good quality site furniture has several benefits, in raising the profile of the network and promoting good practice to users. Site furniture is also important and this can include kick rails so that if modular banks are used there is less likelihood of them being turned over. Shielding would also help reduce noise. Installing this type of site furniture means sites become more permanent and it may mean that sites need planning permission, which can cause flexibility problems. Also, this type of furniture would require the Council to own the land.

A full list of sites and facilities should be provided on the Council website and promoted in community centres etc as it is essential to promote any new sites to everyone in the community. Placing a full list of named sites on the Council's website and in doctor's surgeries etc at the same time may yield increased tonnages.

## 4. Kerbside Recycling

---

### 4.1 Options appraisal

There are several kerbside options available to local authorities:

- Option 1: Bag collection - single material
- Option 2: Bag collection - two or more materials
- Option 3: Box collection - single material
- Option 4: Box collection - multi-material (excluding glass)
- Option 5: Box collection – multi-material (including glass)
- Option 6: Wheeled bin collection – single material
- Option 7: Wheeled bin collection – multi-material
- Option 8: Survival bag.

#### 4.1.1 *Option 1: Bag collection (single material)*

Bag collections of single materials use low frequency (either fortnightly or monthly) to collect newspaper and magazines. The bags are made from durable plastic and can be reused several times. The material is collected from the doorstep and then emptied into a simple caged vehicle.

##### **Advantages**

- simple to operate
- easy to store within household
- cheap if bags are lost
- low capital cost for vehicles compared to other forms of kerbside.

##### **Disadvantages**

- only an option for newspapers and magazines
- expanding the system to cover different materials would require new vehicle(s)
- bags need constant replacement
- would not meet recycling targets.

##### **Economics**

This type of collection is cheap in the capital investment required but participation rates are usually low. Any change in material type (eg glass, metals) will incur additional investment either in a new fleet to enable segregation of material either onto the vehicle, or in a material reclamation facility (MRF).

#### **4.1.2 Option 2: Bag collection (two or more materials)**

Bag collections of paper and cans have been carried out in the UK but are not widespread. The collection method is usually exactly the same as Option 1 except that the collection operatives segregate the materials (eg the paper and cans) into a simple caged vehicle that has two compartments.

##### **Advantages**

- simple to operate
- easy to store within household
- cheap if containers are lost
- low capital cost for vehicles compared to other forms of kerbside
- can collect two materials instead of one.

##### **Disadvantages**

- expanding the system to cover different materials would require new vehicle(s)
- bags need constant replacement
- would not meet recycling targets
- contamination can be a problem as drink cans can be hidden inside newspapers.

##### **Economics**

The economics are much the same as Option 1 with the exception that a higher income can be obtained through aluminium cans, however, this is often offset by contamination of the paper fraction.

#### **4.1.3 Option 3: Box collection (single material)**

This kerbside option is widely used as it provides a flexible collection system that can be expanded to include other materials. If the box system is designed specifically for collection of a single material, simple baskets instead of the more conventional kerbside box are used and emptied into a caged vehicle in the same way as Option 1.

##### **Advantages**

- easier to see any potential contaminants
- boxes (or baskets) are usually more durable than bags.

##### **Disadvantages**

- very inflexible unless collection vehicles are designed to accommodate multi-materials at a later date

- would not meet recycling targets.

### **Economics**

This type of collection system is cheap but suffers from low participation rates. It is an expensive option for collecting one material. There is also a lack of flexibility to invest in multi-material collections at a later date that would require new vehicles.

#### **4.1.4 Option 4: Box collection, multi-material (excluding glass)**

This option uses kerbside boxes that are emptied onto a specialist vehicle with separate compartments or cages that can be unloaded and bulked up at a TLS. This option can accommodate collection of a wide variety of materials such as paper, card, steel, aluminium, plastics and textiles but requires facilities for bulking and baling (eg MRF).

### **Advantages**

- can provide flexibility in the types of material collected over time
- provides a storage option within the household that is well liked
- box containers have the lowest contamination of all containers as any unwanted material can be easily seen and left at the household
- potential for very high diversion rates for multi-materials
- can accommodate the collection of household hazardous waste such as batteries
- glass can be added later once the collection became established.

### **Disadvantages**

- expensive if a lot of boxes need replacing
- collection efficiencies are low because material must be sorted onto the vehicle
- there can be curtilage and presentation issues with kerbside boxes
- they may not be an effective solution for certain types of household (eg flats)
- excluding glass will reduce diversion rates significantly, because glass is a heavy material.

### **Economics**

Multi-material kerbside schemes that sort onto the vehicle are expensive in terms of the collection, but offer flexibility and reduce the need for investment in a MRF.

#### **4.1.5 Option 5: Box collection, multi-material (including glass)**

Uses exactly the same collection methods as Option 4, but collects either mixed or segregated glass in the cages.

### **Advantages**

- excellent diversion rates can be achieved in single occupancy households
- can provide flexibility in the types of material collected over time
- provides a storage option within household that is well liked
- box containers provide lowest contamination of all containers as any unwanted material can be easily seen and left at the household
- option to collect household hazardous waste such as batteries.

### **Disadvantages**

- expensive if a lot of boxes need replacing
- collection efficiencies are low because material must be sorted onto the vehicle
- there can be curtilage and presentation issues with kerbside boxes
- they may not be an effective solution for certain types of household (eg flats).

### **Economics**

The economics are very similar to Option 4 except higher tonnages will be collected per vehicle per day. With emerging markets for mixed and segregated glass, income from these types of collection can offset some of the costs. Participation rates are also higher than with many other types of collection.

#### **4.1.6 Option 6: Wheeled bin collection, single material**

Householders are normally supplied with a 90 or 140 litre wheeled bin, that generally collects newspapers and magazines. The frequency of collection is usually every month or six weeks. The paper is either bulked up at a TLS or transported in the RCV directly to a paper mill.

### **Advantages**

- bins contain waste better than kerbside boxes
- low frequency collections in a normal RCV's can provide flexibility in fleet management (ie one vehicle can empty several rounds)
- collection efficiencies are very high
- no need for a MRF
- may offer flexibility with estates and other bring site options
- new materials can be added but would require investment in a MRF.

### **Disadvantages**

- contamination is a problem because it is much harder to inspect the recyclate before it is loaded onto the vehicle
- low frequency collections require the householder to follow a calendar for dates, which lowers the convenience factor for householders and reduces participation and put-out rates
- will not reach recycling targets.

### **Economics**

Many authorities have struck premier deals with paper mills to ensure a good price for material over a acceptable time period (five to seven years). The collection costs are also low and this type of scheme can provide good value for money if it is integrated with bring site collections and high participation rates can be encouraged.

#### **4.1.7 *Option 7: Wheeled bin collection, multi-material***

This option is the same as Option 6 but collects multi-materials that are transferred to a MRF for separation before transport to merchants. Collection frequencies can be fortnightly or monthly depending on residual waste capacity.

### **Advantages**

- bins contain waste better than kerbside boxes
- low frequency collections in normal RCV's can provide flexibility in fleet management (ie one vehicle can empty several rounds)
- collection efficiencies are very high
- may offer flexibility with estates and other bring site options
- are flexible for introducing new materials (but would require investment in a MRF)
- high diversion rates can be achieved.

### **Disadvantages**

- would require investment in a MRF
- contamination is often a major problem
- aligning the residual and recycling collection frequencies can be difficult
- wheeled bins are kept outside the house and can reduce the convenience factor for households without supplying an internal box for storage
- many households may not have space for two wheeled bins (recyclate and residue)
- difficult to collect glass using this option.

## **Economics**

Investment in a MRF would cost several million pounds and therefore makes this option unaffordable, unless Southwark and surrounding borough's shared the investment.

### **4.1.8 Option 8: survival bag**

This system involves supplying the householder with a coloured bag that be can be used to collect multi-materials, it is then placed in the general residual waste collection system. The bags containing the recyclate are then segregated either mechanically or by hand at a TLS and sorted in a MRF.

## **Advantages**

- very cheap collection system that fits in with current residual waste collection
- could be used in flats with rubbish chutes
- simple for the householder
- can collect multi-materials.

## **Disadvantages**

- would require specialist TLS and MRF
- contamination can be a problem
- diversion rates can be lowered if bags do not “survive” collection and compaction.

## **Economics**

From a collection point of view this is a very cheap option, but it would require a MRF and this places a high investment burden on Southwark.

## **Kerbside and estates**

Kerbside collections are not usually suitable on estates, as the majority of properties are not street-based. Each estate will need to be assessed on a case-by-case basis as no solution will fit all situations (see Section 4.2.4, p25). The options to consider will include provision of near-entry containers, household collection containers (eg boxes, bags), and mini-recycling centres (see Section 3.1.2, p11).

## **4.2 Influences/issues affecting decisions**

### **4.2.1 Context**

The key external drivers behind the kerbside strategy are those imposed by European Directives and domestic government targets. There is central government support for local authorities to embark on some of the changes necessary and there are new opportunities emerging in the



community sector and the recycling industry to further build capacity to undertake the step change required.

When selecting a suitable recycling system for Southwark, methods will need to be considered by which to achieve immediate goals and be capable of attaining still higher targets within the life of the strategy. The systems adopted must not only be capable of collecting the target volumes, it must also be an acceptable enough method for the public to participate in sufficient numbers to hit those targets. Furthermore, the collected material must be presented in a useful form for the end market.

Assuming that a quality service will be delivered and that it is accompanied by adequate public information and education then we can explore the key determinants in the levels of public support both in terms of material capture and rates of participation. There are several factors at play in achieving the optimum service, some of these are unique to the local situation, many are universal. The primary considerations will necessarily be:

- access to service – opt-in or universal, direct charge or free
- frequency of collection – weekly, fortnightly, monthly or other
- range of materials – paper only or combinations of materials
- type of container provided – bags, boxes, wheeled bins or none supplied.

In short, the more accessible, frequent, useful and user-friendly the system is, then the more people will participate and the more material they will contribute. Conversely, the less easy it is for people to throw materials into the dustbin, the more they are likely to divert to the alternative systems. By restricting the size of bin or reducing the frequency of residual collection the more material will be available for recycling and composting.

Any system will comprise a combination of the above factors (eg opt-in, free, monthly, paper only service with wheeled bin or opt-in, free, fortnightly, multi-material service with box etc).

To some extent, it is possible to predict the likely outcomes of a type of service provision. For this exercise we can observe what actually happens in the field through noting published comparative data from other local authorities. It is then a question of transposing that body of knowledge to fit specific circumstances and take into account such factors as waste arisings and composition, socio-economic profile and competing systems.

In reaching conclusions on the preferred system, others in the field have been consulted and we have applied ACORN profiling to derive model figures. It is also apparent that high turnover of households further complicates the equation and note that a simple weekly service is more likely to succeed in optimising residents' participation.

Southwark Council recognises the extent of the challenge it faces. The introduction of any chosen system is unlikely to succeed without a concerted community information and education programme. There is no question that Southwark will struggle to meet the government targets without significantly raising its game. It is also very unlikely that selective paper-only collections from selected areas will serve to meet the borough-wide target of 10%, and will certainly not reach the later targets of 14% and 18%.

Thus, there are many issues that will affect the final decision of which kerbside scheme to introduce in Southwark, to implement a system that:

- will work with all the different housing stock
- fits in with other recycling activity (eg bring sites)
- has a high participation rate to help meet targets.

There are a number of more specific influences that need to be considered.

#### **4.2.2 Frequency of collection**

The frequency of collection has an important influence in the:

- cost of collection
- public interface with the collection system.

The higher the frequency of collection of recyclables the higher the costs involved, unless residual collection frequencies can be reduced. Low frequency collections tend to require complicated calendars, particularly around Christmas, which can reduce participation. Simple collection frequencies for recyclables are best. Frequency of collections will also impact on the capacity that the householder has within the container. If the frequency of collection is too low and their container is constantly overflowing it will reduce their enthusiasm for the scheme.

#### **4.2.3 Container type**

The container type influences the collection by determining:

- the emptying vehicle required
- how the scheme operates within the household.

Certain kerbside collections such as box collections can operate with smaller vehicles either 7.5 tonne trucks or even smaller electric vehicles. Whereas, wheeled bin collections require larger vehicles, which may present access and congestion problems for Southwark. Containers will also have a major impact on how the system operates within the household. If a container can be easily stored within the kitchen it reduces effort required to segregate waste and therefore could increase participation. However, if the container can only be stored outside it increases the effort needed to segregate waste, which can impact on participation rates. It is essential that whatever collection method is used, a kitchen receptacle is provided for the householder.

The container is also linked to frequency as over or under-capacity will impact on enthusiasm and participation rates for the scheme.

#### **4.2.4 Household type**

Certain kerbside systems work well with certain household types (eg wheeled bin collections in estates with large semi-detached properties). However, some kerbside systems do not work well in other areas (eg wheeled bins are unsuitable to flat-based properties). The challenge is to ensure the right type of collection system is introduced for the each type of housing. This may include bring systems on estates such as mini-recycling centres (MRC's) to compliment kerbside (see Section 3: Recycling bank strategy).

One change that will be needed before any new system is introduced is an audit of the current waste management methods on estates and options for consolidation. For example:

- who delivers the waste to the collection facility (eg cleaner, waste contractor, household) ?
- is there a waste chute?
- does the building have a caretaker?
- what are the options for change?

A number of factors will determine the likely recycling outputs by household type. The principal ones are the same as those for kerbside collection (eg convenience, motivation, refuse, waste profile).

Where estate recycling systems have been tried in Southwark they have had very limited success. The reasons for this lack of success need to be determined and options for improvement assessed. Before rolling out a programme of recycling on estates, it should be piloted on a small selection of estates where the Council can have a high level of control over how the collection operates, there is an active residents association, and/or there is a well motivated caretaker that can take ownership of the system and well motivate householders.

The ownership of the building is important as there may be resistance to change in the waste management system. The Council has control over the type of system that it provides and is entitled to ask householders to separate their waste. They can enforce householders to comply through fines but no council wanting to introduce a new system would want to use that mechanism. Where estate-based collections have been tried in other authorities, the best method has been for the householders to leave their recyclables at their door for collection. This increases the cost of collection as it slows down collection rates.

Southwark may need to reach a compromise in terms of different kerbside collection systems it can offer for the various household types and a system that is affordable.

Ealing Community Transport Recycling (ECT) currently service approximately 70,000 estate-based residencies in seven London Boroughs (Hounslow, Ealing, Brent, Barnet, Waltham Forest, Lambeth). In Lambeth they service about 330 different estate sites collecting 7500 tonnes of material.

In reality the yields vary hugely from one estate to another according to density and socio-economic standing. There may be as many as 150 properties in a single building. The highest yielding properties are those with a caretaker present or ones that are issued with 37 litre baskets. In such scenarios, residents are expected to take their recyclables in the baskets to a central point where there will be five 240 litre bins (three glass, one cans, one paper) and separate them accordingly. These will be collected between once and three times a week depending on the building type. These bins are then emptied into a compartmentalised vehicle. In such scenarios, ECT estimate that 53% capture rates can be reaped. Contamination rates are very low.

Promotion is crucial to its success. This must involve the Residents' Associations using worked and graphical examples to demonstrate what is required. For estates, full colour leaflets were used containing details of contact numbers etc. ECT has been working in Lambeth since late 1998. They initiated a marketing campaign in conjunction with Waste Watch (promotional material on bus shelters, non-participation leaflets, door knocking). The most effective method was personal contact through door knocking. This has been the experience of other authorities that have had low participation. Following visits from recycling teams, participation increased dramatically. In year one in Lambeth, this improved the yield by 15% and in year two 9%. ECT emphasised the importance of this personal contact and that it had to be a constant exercise to reinforce messages and particularly where the population was transient.

#### **4.2.5 Promotion**

Many authorities view the provision of a high quality kerbside service for recyclables as the best and only form of promotion. This has led to poor information being given out perhaps once a year to households who then lack the knowledge or motivation to either join a scheme or segregate correctly. Effective promotion is a major influence in the success of kerbside and bring recycling.

## 5. Composting

---

### 5.1 Options appraisal

With the arrival of statutory targets for recycling and composting, and the high proportion of biodegradable waste in the municipal waste stream, local authorities now have to consider options for minimising and diverting their organic waste (ie kitchen and garden). This has the particular benefit of saving on waste collection and disposal costs and improving the Council's chances of a more generous biodegradable waste landfill allowance under the forthcoming tradable permits system (see Section 8).

There are a range of composting options open to the Council. These include options to minimise the amount of organic waste entering the waste stream, and organic waste collection options to divert this waste towards composting and away from disposal. These composting options cover domestic, commercial, and street sweepings waste streams - summarised in Table 5.1, below.

#### Domestic

- Option 1: Home composting
- Option 2: Estates-based community composting
- Option 3: Kerbside collection
- Option 4: Collection of garden waste at civic amenity sites

#### Commercial

- Option 5: On-site composting of parks waste
- Option 6: Market waste composting
- Option 7: Street leaves composting.

The structure adopted for the evaluation of other waste management options in the strategy cannot be followed for composting because of the type of waste collected. Instead, the options are based on the source of waste (eg domestic), the collection methods, and the composting methods. For each option, there is an assessment of the following: the potential diversion, costs, legal issues, markets and transport issues.

Southwark Waste Management – Annex 3 - Options appraisal

*Table 5.1: Options for collection and composting*

| Origin                   | Composting option                         | Types of material  | Resources required - collection   | Resources required - composting   | Markets for compost |
|--------------------------|---|--|---|---|---------------------|
| Domestic                 | Home composting                           | <ul style="list-style-type: none"> <li>botanical household waste</li> </ul>                              | <ul style="list-style-type: none"> <li>kitchen bin</li> </ul>   | <ul style="list-style-type: none"> <li>composting bins</li> </ul>                         | home                |
|                          | Community composting                      | <ul style="list-style-type: none"> <li>botanical household waste</li> </ul>                              | <ul style="list-style-type: none"> <li>kitchen bins</li> <li>sacks</li> <li>collection bins</li> <li>educational materials</li> <li>vehicle</li> <li>staff</li> </ul> | <ul style="list-style-type: none"> <li>composting bins</li> <li>staff</li> </ul>          | local               |
|                          | In-vessel followed by open-air windrowing | <ul style="list-style-type: none"> <li>botanical household waste</li> <li>other kitchen waste</li> </ul> | <ul style="list-style-type: none"> <li>kitchen bins</li> <li>sacks</li> <li>collection bins</li> <li>educational materials</li> <li>vehicle</li> <li>staff</li> </ul> | <ul style="list-style-type: none"> <li>in-vessel unit</li> <li>windrowing site</li> </ul> | professional        |
|                          | Open-air windrow                          | <ul style="list-style-type: none"> <li>botanical household waste</li> </ul>                              | <ul style="list-style-type: none"> <li>kitchen bins</li> <li>sacks</li> <li>collection bins</li> <li>educational materials</li> <li>vehicle</li> <li>staff</li> </ul> | <ul style="list-style-type: none"> <li>windrowing site</li> <li>machinery</li> </ul>      | professional        |
| CA site                  | Open air windrow                          | <ul style="list-style-type: none"> <li>bulky garden waste</li> </ul>                                     | <ul style="list-style-type: none"> <li>collection skips</li> </ul>  | <ul style="list-style-type: none"> <li>windrowing site</li> <li>machinery</li> </ul>      | professional        |
| Market waste/parks waste | In-vessel followed by open-air windrowing | <ul style="list-style-type: none"> <li>commercial fruit &amp; vegetable waste</li> </ul>                 | <ul style="list-style-type: none"> <li>bins, vehicle &amp; staff</li> </ul>   | <ul style="list-style-type: none"> <li>in-vessel unit</li> <li>windrowing site</li> </ul> | professional        |
| Street sweepings         | Centralised composting                    | <ul style="list-style-type: none"> <li>street leaves</li> </ul>  | <ul style="list-style-type: none"> <li>bins, vehicle &amp; staff</li> </ul>   | <ul style="list-style-type: none"> <li>in-vessel unit</li> </ul>                          | professional        |

### Southwark Waste Management – Annex 3 - Options appraisal

|  |   |  |  |                   |  |
|--|---|--|--|-------------------|--|
|  | In-vessel followed by open-air windrowing |  |  | • windrowing site |  |
|--|---|--|--|-------------------|--|

Notes: 'Botanical' refers to waste of plant-origin and includes garden waste and uncooked fruit and vegetable waste  
An in-vessel process often requires a subsequent period of windrowing to improve the quality and value of the compost.

### 5.1.1 *Domestic waste*

- Option 1: Home composting

When home composting, householders either compost kitchen and garden waste in their own gardens, or reduce the amount of organic waste generated in the first place, such as by ‘grasscycling’ (leaving grass cuttings on the lawn). This reduces the amount of organic waste entering the household waste stream. Councils can support home composting by providing subsidised composting and kitchen bins and additional advice/support to householders through leaflets, telephone advice, workshops etc.

- Option 2: Estates-based community composting

This scenario follows the approach of CRISP (see Overview, Annex 3: Community sector), who have established community composting schemes on estates in Southwark. Organic waste from estate-based properties is deposited in appropriate containers that are located on-site. The material is then composted using low-tech equipment within the grounds of the estate, where the finished compost is also used. The system needs a community champion to take responsibility for the container and its use.

- Option 3: Kerbside collection

Both kitchen waste and garden waste can be collected from the kerbside through the provision of appropriately sized containers (kitchen bin and/or wheeled bin). Householders can be provided with educational materials such as leaflets, a telephone hotline, home visits etc to boost diversion and minimise contamination.

- Option 4: Collection of garden waste at civic amenity sites

Garden waste is commonly collected at separate skips at civic amenity sites. A composting contractor that shreds and composts the material services the skips. The composting might be done on a dedicated site, on a farm or next to a landfill site. Good publicity and policing at the site can ensure that householders do not contaminate the garden waste with other materials.

### 5.1.2 *Commercial waste*

- Option 5: On-site composting of parks waste

Garden waste is produced within parks and from landscape teams managing municipal land. There is often an opportunity to deal with this material on-site. This waste stream can be shredded and composted and the compost used on site.

- Option 6: Market waste composting

A feasibility study to compost market waste is currently being conducted by CRISP at Borough Market. Given the putrescible nature of organic market waste, it is likely that this material would need to be composted in an in-vessel unit.

- Option 7: Street leaves composting

Autumn leaves are collected by the highways departments of many Councils. This material is capable of being composted at existing outdoor sites, or taken to allotment sites for use by allotment holders. The material can be composted to produce a high grade leafmould compost.

There are two main composting systems for dealing with collected material, as follows:

- Centralised composting

This has been the most common composting technique across the UK, composting high volumes of material on large, outdoor concrete pads, utilising expensive shredding, turning and sieving equipment.

- In-vessel composting followed by open-air maturing

In-vessel composting units can handle particularly putrescible material, blended with bulkier material. Having passed through an in-vessel system, the semi-composted material often requires a subsequent period of maturing on an outdoor compost site to improve its quality and value.

### **5.1.3 Potential diversion, markets and transports issues**

Waste analysis work indicates that organic waste usually represents between 30-40% of the household waste stream (allowing for seasonal differences). Of this amount, around half is made up of garden waste and half of compostable kitchen waste (uncooked fruit and vegetable waste and compostable paper and card).

Markets for compost are developing, particularly with the introduction of relevant standards for compost and the burgeoning interest in gardening amongst householders.

Waste Strategy 2000 advocates consideration of the proximity principle, by which waste materials should be managed as close as possible to source as possible - this is particularly relevant to bulky materials like organic waste or compost.

#### **Home composting**

- Potential diversion: Home composting reduces the amount of waste entering the waste stream - in areas without gardens, it can target up to a quarter of the domestic waste stream; in areas with gardens, up to a third. It should be noted that home composting does not count directly to local authorities' statutory recycling targets, but will impact on the recycling rate by reducing overall waste arisings.
- Costs: The set up costs include the price of purchasing and subsidising home composting bins and kitchen bins - it should be noted that take-up will be affected by the extent to which bins are subsidised. In addition, an ongoing communications and education programme is essential to guarantee effective diversion.
- Legal issues: Home composting falls outside both the waste management licensing and planning systems. In addition, there are no restrictions on the use of compost in the context of the Animal By-Product regulations.
- Markets: There are no problems associated with markets, as householders use the compost themselves.
- Transport issues: None.

#### **Estate-based community composting**

- Potential diversion: This option can target up to 25% of the domestic waste stream in the estate-based properties in the northern and central parts of the borough. As this option involves collection from households, it is possible to measure the amount of waste diverted. As stated in DEFRA's current Waste Performance Indicators, diversion from community



composting schemes can count towards local authority recycling rates, and there are existing examples from where current practice can be drawn (eg Devon County Council).

- **Costs:** Resources required include kitchen bins, biodegradable plastic or paper sacks, educational materials and collection vehicle(s)/staff. For the composting, low-cost wooden units are commonly used, and there would also need to be an allocation of some staff time. It should be noted though that working with a community group opens up the opportunity to access broader funding such as landfill tax credits, New Opportunities Funds etc as well as some in-kind support such as volunteer time.
- **Legal issues:** Estate-based composting sites are able to operate under an exemption from waste management licensing granted by the Environment Agency. As the compost produced (as with home composting) is used at the same site as where households generated it, there should be no restrictions on the on-site use of compost in the context of the Animal By-Product regulations. Community composting sites are environmentally benign and are typically acceptable to local residents.
- **Markets:** There are no problems associated with markets, as the compost is used within the ground of the estate.
- **Transport issues:** None.

#### **Kerbside collection**

- **Potential diversion:** Currently, DEFRA advises local authorities to collect garden waste and not kitchen waste from the kerbside. There is a risk that collections can act as an incentive for householders to present garden waste for collection that would otherwise be home composted or not generated at all. It is likely that collections of kitchen waste will only resume on the condition that this material is composted in an in-vessel unit under controlled conditions.
- **Costs:** Resources required include educational materials, collection containers, collection vehicles and staff. Garden waste collections have been run as a commercial venture in the UK and many householders are prepared to pay for this service.
- **Transport issues:** There is a risk that collections of garden waste can result in volumes of material being transported that could otherwise have been dealt with in private gardens.

#### **CA site collections**

- **Potential diversion:** This option targets the garden waste stream that is best dealt with *in situ* and could generate waste unnecessarily. The location of Manor Place CA site is distant from the area of Southwark with street-based properties that have gardens. A new CA site in the borough nearer to these areas with gardens may be more appropriate.
- **Costs:** The provision of a skip and training of CA site staff to minimise contamination.
- **Markets:** CA sites can act as a good location for selling compost.
- **Transport issues:** There is a risk that material could be unnecessarily transported, unless it is specified that the skip is for bulky garden waste that could not otherwise be composted at home.

#### **On-site composting of park waste**

- Potential diversion: This technique can manage the organic waste generated from Council parks.
- Costs: Access to a shredder; low-tech composting in the park.
- Legal issues: Can operate under an exemption from waste management license as the compost is used on in the park itself.
- Markets: The compost is used in the park itself.
- Transport issues: None.

### **Markets waste**

- This technique could manage the organic waste generated from markets. As this material is predominantly fruit and vegetable waste it is likely that, once collected, it will need to be composted in an in-vessel unit (see above).

### **Street leaves**

- Potential diversion: Leaves collected by the Council.
- Costs: As leaves are already collected by the Council, this can be a very low-cost solution, particularly if the leaves are taken to allotment sites.
- Legal issues: If the material is taken to allotment sites, this can operate under an exemption from waste management licensing.
- Markets: As per centralised composting, unless the material is taken to allotments, where it can be used directly by allotment holders.
- Transport: Material will already be transported for end disposal.

### **Outdoor centralised composting**

- Potential diversion: Outdoor centralised sites can only currently deal with garden waste, and this situation is likely to continue. There are no obvious sites for such a facility in or around Southwark.
- Costs: Investment required in the site itself - concrete pads, run-off lagoons etc. Additional investment required in shredding, turning and sieving technology.
- Legal issues: Sites require a waste management license and planning permission.
- Markets: The composting industry is developing standards to boost the compost market in the DIY, landscaping, horticulture and agricultural sectors.
- Transport issues: This option involves the transport of organic waste to the composting site and the transport of compost from the site to its market.

### **In-vessel composting**

- Potential diversion: This technology is particularly suited to handling the putrescible elements of the household and commercial waste stream.

- Costs: These are relatively expensive hi-tech units; note also that semi-composted material requires maturing at an outdoor site as well.
- Legal issues: These units require a waste management license and planning permission. It is likely that DEFRA will specify that kitchen waste collected from the kerbside and other catering waste is composted in these units before the resulting compost is applied to land.
- Markets: The composting industry is developing standards to boost the compost market in the DIY, landscaping, horticulture and agricultural sectors.
- Transport issues: This option involves the transport of organic waste to the composting site and the transport of compost from the site to its market.

## 5.2 Influences/issues affecting decisions

The following issues are key to the development of a composting strategy in Southwark:

- legislation
- national and regional policy
- proportion of organic waste in the waste stream
- markets for compost
- transport and proximity principles.

In addition, there are other issues that are specific to Southwark. These are particularly related to the nature of the housing stock, where estate-based properties predominate the northern and central parts of the borough, and properties with gardens are found mainly in the south:

The nature of the housing stock has a major impact on waste composition. Although no comprehensive waste analysis has been conducted in Southwark, studies that have been undertaken suggest that the amount of garden waste is below average, particularly in the north and centre of the borough. Even here, though, kitchen waste can constitute up to a quarter of the domestic waste stream. In the southern wards, organic waste composition is nearer the national average. Community group CRISP hold the key existing composting experience in the borough, having established 16 community composting sites on estates in Southwark and Lambeth in the last two years.

The CA site at Manor Place is located in the north east of the borough, where households with gardens are not typical. It is in the southern wards where householders have gardens predominate and where home composting will focus.

In the context of Southwark Council's Green Procurement Policy (see Overview, Section 10.1), the Council constitutes a major possible market for locally produced compost, including the parks department.

### 5.2.1 *Legislative drivers*

Many of the statutory targets stemming from the Landfill Directive and the National Waste Strategy focus on organic waste. In addition, in 2001 the EU published a second draft-working document on the Biological Treatment of Biowaste. It is increasingly felt that this document could develop into a full EU Composting Directive in the next few years, with additional obligations for member states. The key points from the draft document include:

*“Member states shall encourage home composting whenever there are viable outlets for the resulting compost such as private gardens.*

*Member states shall encourage the setting up of community composting schemes.*

*The following biowastes shall be separately collected, unless they are home composted or community composted: food waste from private households, green and wood waste from private gardens...”*

In the context of statutory recycling targets introduced for local authorities following the release of Waste Strategy 2000, composting undertaken at a centralised (outdoor or in-vessel) or community site can count towards local authorities’ recycling rates.

The waste hierarchy laid out in Waste Strategy 2000 places an emphasis on waste reduction, which in the context of composting refers to home composting and other means of minimising the amount of organic (ie kitchen and garden) waste entering the waste stream.

Existing organic waste minimisation and diversion has the particular benefit of improving Councils’ chances of a more generous biodegradable waste landfill allowance under the forthcoming tradable permits system.

The GLA Municipal Waste Management Strategy puts a very strong emphasis on local authority promotion of home and community composting activities - all householders with gardens should be encouraged to compost, estates composting and markets waste collection should be encouraged and local authorities should set up central composting facilities. Indeed, the Mayor proposes that all boroughs prepare a composting feasibility study by 2003.

### **5.2.2 Legal issues**

Local authorities are currently advised by DEFRA not to collect kitchen waste from the kerbside, due to complications relating to the Animal By-Products Order following the foot and mouth outbreak. The latest indications from DEFRA are that kitchen waste will only be able to be collected from the kerbside if it is then processed in an in-vessel composting unit under controlled conditions. Both DEFRA and the EA have recently reiterated that home composting is not affected by these conditions.

- Major composting sites are commonly subject to significant scrutiny by planners and require a waste management license from the Environment Agency to operate.
- Exemptions for licensing are available for community composting sites that either compost material generated at the composting site or use the finished compost at the composting site.
- Home composting falls outside both the waste management licensing and planning systems.

## 6. Civic Amenity Sites

---

### 6.1 Options appraisal

This section should be read in conjunction with the Manor Place Report (Appendix 2). The term civic amenity (CA) site is often used interchangeably with household waste site. These sites are provided by local authorities for households to dispose of waste other than through the normal waste collection system (eg bulky waste). Sites are licensed with the Environment Agency to accept specific types of waste. The licence will be specific to the site and will identify the types of waste that can be accepted. Commercial waste will usually be excluded.

CA sites are increasingly being seen as the appropriate route for the recycling of the less obvious types of waste (eg fridges, other electrical goods, timber, organics, batteries, oil, paint etc) as well as providing facilities for the more usual recyclables (eg paper, metals etc) and general waste. Throughput at the more popular sites is high with hundreds of vehicles per day. Newer sites are designed for maximum efficiency and can achieve recycling rates of 50 - 60 %, contributing significantly to local recycling targets. By comparison, the older sites will struggle to reach recycling rates that are in double figures and the majority of the waste collected will be disposed of to landfill.

The main CA site options available to Southwark are:

- Option 1: no provision
- Option 2: continue with the present provision
- Option 3: improvement of existing provision with large number of mini-recycling centres (MRCs), mimicking a large CA site
- Option 4: refurbishment of existing site
- Option 5: multiple sites, new site(s)
- Option 6: any combination of the above.

#### **Option 1: no provision**

Many local authorities, including some London boroughs do not provide CA site facilities. In London the limitation is often pressure on land and high land values.

#### **Option 2: continue with the present provision**

Providing only one site limits usage to householders with a car and in proximity to the site. Residents elsewhere may make use of sites in other local authority areas. Some local authorities (including those in London) take measures to restrict usage to their own residents. Neighbouring boroughs to Southwark may choose to take this approach, which may result in pressure on the Council to increase its provision.

#### **Option 3: improvement of existing provision with large number of mini-recycling centres (MRCs), mimicking a large CA site**

See Section 3.1.2: Bring site strategy.

#### **Option 4: refurbishment of existing site**

The current CA site on Manor Place also acts as a TLS so is strategically important as mentioned in Appendix 2. At present, the site provides facilities for both RCV's to unload and for the public to bring waste and recyclables to the site. This is not an ideal situation operationally and there are a number of recommendations to improve the provision at the site.

The traffic flow needs to be re-designed to minimise the waiting time of RCV's and enhance safety and convenience for all users of the site. (See also Appendix 2: Manor Place report.)

#### **Option 5: multiple sites, new site(s)**

Many local authorities have found by redesigning CA sites it has lead to dramatic diversion rates of up to 75%. This would be done through the following actions:

- provide green and garden waste separation area for users
- change site layout to encourage more separation
- provide staff with training to encourage separation
- place residual rubbish skips in a less convenient location
- provide bonuses for staff/contractors to maximise recycling.

In many other areas, CA sites account for 25-30% of waste deposited by the public - however, the CA site in Southwark only accounts for only about 1.5%. This may be due to transportation and distance factors. To formulate a strategy for recycling at CA sites it may be worth carrying out research into the types and location of current users of the site. From this a strategy could be developed to assess whether:

- it is economically feasible to upgrade the current site to attract higher participation
- if a new site is needed and where
- could an alternative solution be found such as a mobile site.
- could resources be directed elsewhere to maximise recycling.

#### **Option 6: any combination of the above.**

### **6.2 Influences/issues affecting decisions**

The CA site at Manor Place is currently fulfilling its statutory functions in that it provides residents of the borough a place to dispose of their own household waste. The fact that the facility is running is an achievement in itself, given the difficult location and scant resources available to the site. However, the potential of the CA site, even in its current problematic location, is not fulfilled; as all parties are aware, there is scope for improvement.

It should be borne in mind that many WDAs & UAs in the UK have run CA sites which are not performing at their best and have managed to achieve a step-change in improved performance. We aim to show that real, substantial improvements on the ground are feasible in the short term, with much greater gains to be made in the longer term.

The immediate gains can be summarised as:

- greater usage of facility, possibly reducing bulky waste collections as a result, (though the capacity of the site in its current location will place an upper limit on this)<sup>1</sup>
- increased recycling rates
- improved site layout and appearance
- improved safety measures to protect the public and site staff.

As regards longer term gains, we can see the scope for improvement in the following comparison with an Outer London Borough (Table xx).

**Table xx: Scope for improvement**

| Disposal authority | Population <sup>2</sup> | Number of CA sites | Average annual tonnage, (all CA sites) | Recycling rate, (incl. inert) |
|--------------------|-------------------------|--------------------|--|-------------------------------|
| Southwark MBC      | 232,000                 | 1                  | 1,600                                  | 4% <sup>3</sup>               |
| Bexley             | 217,800                 | 2                  | 11,000                                 | 44%                           |

Indeed, ECT Recycling’s CA site in Barnet is aiming to exceed a 70% recycling rate in the late 2002. The Barnet site is newly constructed and in an excellent location, providing obvious advantages, which may not be available to Southwark in the short-term. However, the land constraints in Southwark could be turned to the local authority’s advantage in the sense that innovative recycling and reuse solutions and efficient use of space can be applied. This turn the Southwark’s into a model of best practice where land limitations are a serious constraint on CA site operations. Investment in the site will most probably yield considerable savings in disposal costs as more of the Borough’s waste is channelled through the CA site and high recovery rates are ensured. This would contribute significantly to the meeting of statutory recycling targets. For instance, if 15% of Southwark’s municipal household waste is channelled through CA sites<sup>4</sup> where a recovery rate of 50%<sup>5</sup> is achieved, this would contribute 7.5% towards the Borough’s overall recycling rate.

Any additional CA sites in the Borough will need to be designated in the UDP as they will require planning permission and be subject to licensing approval.

The Mayor proposes that all CA sites be redesigned as reuse and recycling centres and that usage be free of charge to residents of neighbouring boroughs. Restricting usage at CA sites is contentious. At the very least, the Council will need to prevent commercial users entering sites by installing height-limiting barriers. Limiting usage to residents by issuing permits may also be considered but has proved unpopular when adopted by other boroughs.

<sup>1</sup> It is interesting to note that many CA sites experiencing ever rising tonnage throughputs would regard low throughput as an asset. In the case of Manor Place CA site, however, we must conclude that the facility is underused.

<sup>2</sup> Source: CIPFA Waste Collection & Disposal Statistics, 1998-99

<sup>3</sup> April-Dec 2001. Gas bottles & tyres are excluded from this calculation, since their final disposal route is currently unclear. Fridges are included in the recycling figures, since much of the material will presumably be recovered in due course. Glass and paper have been excluded, but would probably have a minimal effect on the recycling rate if they were included.

<sup>4</sup> for most WDAs & UAs this figure is around 20-25%

<sup>5</sup> excluding hardcore - though the recycling of hardcore is important in reducing costs since it reduces the numerator in the equation: recycling rate = (recycled tonnage/disposed tonnage) x 100.

## 7. Disposal and Treatment

---

### 7.1 Options appraisal

Even with waste reduction and recycling systems in place, there will always be a need for some form of waste treatment and disposal. Some of the options listed below are not yet available to the Council, are too expensive to consider or not yet commercially viable. The economics will change though with increasing legislative pressure to treat and manage waste more effectively. The options appraisal covers treatment, waste as a fuel, and disposal.

#### Treatments options:

- biomechanical treatment
- fermentation
- pyrolysis
- mixed technologies

#### Waste as a fuel

- incineration with energy recovery
- refuse-derived fuel (RDF)
- anaerobic digestion

#### Disposal

- incineration without energy recovery
- landfill.

#### 7.1.1 Treatment options

##### Biomechanical waste treatment

Biomechanical waste treatment (BWT) is a generic name for a range of processes designed to recover valuable components from unsorted municipal solid waste for recycling and deliver a stabilised residue for final landfilling. Biomechanical waste treatment commonly comprises of a number of standard waste separation operations to remove recyclable materials such as glass, metals and plastics, followed by composting of the remaining organic materials. Biomechanical waste treatment does not aim to generate marketable compost since the required quality can only be achieved using source-separated organic wastes. However, it is claimed that the potential of the residue for landfill gas production is reduced by up to 90% and the quantity of residual waste disposed to landfill is reduced by 40% - 60%. In this way, the lifespan of landfills can be extended and the process would contribute to meeting the targets set under the Landfill Directive.

The system is in common usage in Austria and Germany where limits on the disposal of organic waste to landfill have been in place for some years. However, it has been reported that the process



can result in unacceptable levels of volatile organic compounds (VOCs), ammonia, methane and heavy metals being emitted into the atmosphere.

There appears to be a strong case for pre-sorting municipal solid waste prior to treatment. This would allow the removal of as much recyclable material as is economically possible, and meet the Government's waste recovery targets for 2020.

### **Advantages**

- increases recycling
- low investment required
- low emissions/odour
- produces soil conditioner using biodegradable waste
- greatly reduces volume requiring landfilling.

### **Disadvantages**

- risk of contamination affecting the viability of the end-product
- limited capacity.

### **Economics**

The economics of bio-mechanical treatment are complex and depend on the suitability for purpose of the end-product. The cost must take into account the need to remove contaminants at the front end of the process to produce a viable end-product. If this cannot be achieved, the process is likely to simply increase the final disposal costs of residual waste to landfill. Bio-mechanical treatment has a comparable cost per tonne to incineration and can be capital intensive to set up. However, there is currently a lack of economic information on this subject.

### **Fermentation**

This particular treatment is confined to agricultural wastes but can, in theory, be extended to pre-treated municipal solid waste to produce liquid fuel (ethanol and some methanol).

### **Gasification**

This is where carbon-based wastes are heated in the presence of air or steam to produce fuel-rich gases. The technology is based on the reforming process to produce town gas from coal and requires industrial scale facilities. If normal municipal waste is used as the feedstock, the fuel gas produced comprises of mixtures of carbon monoxide, carbon dioxide, hydrogen, methane, water, nitrogen and small amounts of higher hydrocarbons. However, the use of waste has received increasing attention over the last quarter century. But to date the economics have been poor, principally because the cost of producing fuel gas from gasification is not competitive with petroleum based fuel oils.

## Pyrolysis

In this treatment, organic waste is heated in the absence of air to produce a mixture of gaseous and liquid fuels and a solid inert residue (mainly carbon). Pyrolysis generally requires a consistent waste stream such as tyres or plastics to produce a usable fuel product. Currently, there is only one facility in the UK - taking tyres.

The process generally operates in the temperature range between 400°C and 800°C. The resulting characteristic gaseous or liquid fuel product depends on the actual operating temperature.

Pyrolysis has been in development since the 1970s. However, the technology has not developed quickly due to a combination of aggressive operating conditions, the limitations of ceramic plant construction materials, and cost considerations.

## Mixed technologies

In the UK, a large-scale pilot waste to energy plant, operated by Compact Power Ltd (utilising both the pyrolysis and gasification processes) is currently undergoing trials at Avonmouth, near Bristol. The first stage involves pyrolysis of waste, producing a fuel gas, a solid char and other solid residues. The solid char is gasified in a second stage process with air and steam, producing a hydrogen and carbon monoxide fuel gas. A third stage, operating at 1250°C is designed to ensure destruction of organic pollutants and particulates. The emission levels currently claimed for this process easily comply with proposed EU limits for waste incineration, including dioxins.

### Advantages

- these are forms of treatment that offer new and radical ways of dealing with waste
- pre-treatment of waste will become a legislative requirement prior to landfilling of waste, (eg Landfill Directive, Hazardous) or recycling (eg WEEE Directive, ELV Directive)
- once treated, the end product can be dealt with through established processes (eg metals recycling, composting)
- can add value by creating a feedstock for other processes
- reduces waste volumes
- can help meet recycling and recovery targets.

### Disadvantages

- needs dedicated facilities
- emerging technologies not readily available in the UK
- not been tested with large volumes of waste
- high relative costs.

### 7.1.2 *Waste as a fuel*

Energy from waste treatment (EfW) processes use the energy held in the waste to generate power and heat. In the process, they reduce both the volume and the weight of waste. energy from waste Schemes have been encouraged through the Non Fossil Fuels Obligation (NFFO) where premium price is paid for the electricity they produce.

There are four broad ways in which energy can be recovered from waste:

- incineration with energy recovery
- use as a fuel substitute (either directly or as RDF)
- materials recovery, with energy released as a by-product of the process (eg anaerobic digestion)
- waste disposal, with fuel recovered as a by-product of the process (such as landfill gas).

#### **Incineration with energy recovery**

Modern incinerators are engineered to meet stringent air emission standards. Due to its high costs, the economic viability of incineration as a waste management option for MSW relies upon the recovery of energy, usually through the generation of electricity from high temperature steam turbines. In the simplest term, incinerators transfer the heat produced from the burning of waste to water boilers to produce steam, which in turn drives generators to produce electricity. The most sophisticated are combined heat and power plants (CHP) that have been shown to increase efficiency by 20% to 60%. The plant in Lewisham, south east London (SELCHP) is one such example.

#### **Advantages**

- proven/commercially viable
- can deal with large volumes of waste
- achieves volume reduction of about 90% and pre-treatment prior to disposal
- can be used to generate heat and electricity
- replacement of fossil fuel for energy generation
- can recover metals post incineration.

#### **Disadvantages**

- the Mayor of London aims to have no new incinerators for London, depending instead on waste reduction measures
- public concern over emissions and potential health effects
- can be difficult to find suitable sites (high resistance from local population)
- very capital intensive with long pay-back periods
- ash residue requires landfill disposal

- can crowd out recycling/minimisation initiatives due to the nature of contracts
- length of contract
- risk of energy tax in the future.

### **Economics**

Energy from waste can cost between £45-100 per tonne depending on the externalities included within that cost (Beyond the Bin, Ecotec, 2000). Current incineration costs to the Council are £35/tonne which is anticipated to increase to £51/tonne (2007) and £60/tonne by 2010.

### **Refuse-derived fuel (RDF)**

Refuse derived fuel (RDF) is often used to replace traditional fuels in industrial processes or power stations. RDF is produced by processing waste into coarse or densified fractions after first mechanically removing the non-combustible materials such as glass and metals. RDF plants normally accept unsegregated municipal solid waste. The combustible fraction of this MSW is converted to dry fuel in the form of pellets, which can be used in a wide range of combustion equipment such as industrial boilers. Having undergone a preliminary liberation where bags of waste are mechanically opened, the waste then goes through a size screening, followed by magnetic separation, coarse shredding and refining separation stage. The material then undergoes a final series of processes to control the physical characteristics of the fuel for ease of combustion.

### **Advantages**

- can provide low-cost fuel
- reduces the volume of waste
- reduces emissions by pre-treating feedstock
- increases recycling.

### **Disadvantages**

- has not been tested with large volumes of waste
- the relative costs of RDF (taking into account the calorific value of RDF)
- has to be burnt in dedicated facilities due to high chloride content.

### **Economics**

The gate fee is likely to be in excess of £25 per tonne, and the costs of disposal and collection will be in addition.

## Anaerobic digestion

Anaerobic digestion is a well established technique for the treatment of waste such as sewage sludge, slurries and other wet organic wastes. This is the biological degradation of organics in the absence of oxygen producing methane gas and residue suitable for soil improver. The process produces biogas, which is typically made up of 65% methane and 35% carbon dioxide with traces of nitrogen, sulphur compounds, volatile organic compounds and ammonia. This biogas can be burnt directly in modified gas boilers or can be used to run internal combustion engines. Typically, between 40% and 60% of the organic matter present is converted to biogas.

It is possible that the process can treat the organic fraction of MSW but there are reservations about the cost and the high degree of segregation required to produce a marketable digestate.

Anaerobic digestion is generally more expensive than alternative waste management techniques such as composting. However, there many circumstances where the controls on the environment make anaerobic digestion attractive. Anaerobic digestion requires less land than windrow composting and avoids the potential odour nuisance where housing is nearby. Where the resulting product is used for agricultural or horticultural purposes, it is the London Mayor's views that it should be treated as a recycling process.

The biogas produced from anaerobic digestion needs some treatment to remove hydrogen sulphide and reduce the moisture content, before it can be burnt in boilers or engines. However, it can also be upgraded to pipeline quality, or for use in vehicle engines, by the removal of carbon dioxide and other contaminants. A longer term option for London could be to convert the gas to hydrogen for fuel cell vehicles.

In London, anaerobic digestion is used for sewage treatment, with the biogas used in small combined heat and power (CHP) plants. It is possible to supplement and enhance the feedstock with the putrescible components of municipal waste - this can increase the gas yield by a factor of six. Thames Water is currently promoting the co-digestion of sewage with municipal waste and is looking towards local authorities to help develop this source of renewable energy by supplying wastes from their areas. Anaerobic digestion may be eligible for Non Fossil Fuel Obligation awards.

### Advantages

- can reduce the volume of waste by up to 60% with only a small residue requiring landfill
- generates fuel gas/soil conditioner
- reduces environmental problems due to the contained nature of the process
- treats a large proportion of biodegradable wastes
- reduces pollution potential of the original material for landfill
- contributes to recycling targets.

### Disadvantages

- more capital intensive than aerobic composting
- requires stringent quality control
- can only handle selected waste streams (ie no plastic or wood)

- risk of contamination (may jeopardise end-product)
- requires pre-treatment of municipal waste to extract non-biodegradable fractions
- waste water can contain high concentrations of metals, dissolved nitrogen and organic matter.

### 7.1.3 *Disposal options*

#### **Incineration without energy recovery**

Incineration is an ultimate disposal process and the term incineration describes a wide range of combustion techniques with or without energy recovery. Increased restrictions on emission have meant a decline in the number of incinerators. Some incinerators do not utilise the energy produced from burning waste. These types of incinerators are appropriate for those waste that, because they are environmentally hazardous or non-biodegradable, cannot be recycled or safely deposited. The high temperatures demanded usually prevent reclamation of energy.

The advantages and disadvantages are the same as for other forms of incineration, with the additional disadvantage that there is no recovery of energy and heat. The disposal costs are high for state-of-the-art high temperature incinerators.

#### **Landfill**

Landfill involves the final disposal of waste by placing it within voids in the ground. Modern landfills are highly engineered sites that are no longer ‘holes in the ground’. The specialised construction of landfill sites involves biogas and leachate controls, liner systems, compartmentalisation and very stringent planning controls.

Nevertheless, the need to reduce the volumes of waste sent to landfill and the associated risk of pollution from these sites is one of the key pressures for changing current reliance on landfill in the UK. The Council relies heavily on landfill as a disposal option, with more than 80% of municipal waste collected disposed of to landfill. In 2010, only 79k tonnes of biodegradable waste will be allowable for landfill disposal. This will reduce to 53k tonnes in 2013 and subsequently to 35k tonnes in 2020, to comply with the Landfill Directive targets.

There will be limited landfill space in the south-east beyond 2007 and the pressure of demand on supply will inevitably lead to price increases. The demand for landfill will depend on the achievement of recycling rates and the development of incinerators.

#### **Advantages**

- inexpensive
- can accept a wide range of wastes
- will be best be the best practicable environmental option (BPEO) for some waste
- largely meets “proximity principle” requirements
- proven technology.

## **Disadvantages**

- limited capacity left in UK, especially in the south east
- potential for material recovery is very limited
- potential for significant environmental externalities
- unsustainable in the long-term.

## **Economics**

The present cost of landfill disposal is £21 per tonne (excluding landfill tax). This is comparatively cheap when compared with other disposal authorities. The costs of both landfill disposal and landfill tax are expected to rise as an incentive to use other forms of disposal.

## **7.2 Influences/issues affecting decisions**

### **7.2.1 Legislation**

One of the main influences on waste management decision-making is legislative. Changes in European legislation, in particular, are aimed at reducing the hazardousness of waste, along with improving recycling performance. With national legislation and the UK National Waste Strategy, these legislative influences translate into targets that local authorities have to meet. Meeting these targets will demand new waste treatment and disposal methods.

### **7.2.2 Planning issues**

Waste planning authorities are responsible for ensuring that an adequate planning framework exists. Any new waste management facility will be subject to planning approval and will need to be consistent with the UDP and SPGs. Planning approval will take into account general principles of environmental protection and consideration of impact on amenity in specific waste planning applications. Planning policy guidance on waste management in England is set out in *Planning and Waste Management* (PPG10). Amongst other things, it provides general advice for site selection and matters, which need to be taken into account when preparing waste development plans and considering planning applications for waste management facilities.

Southwark Council, as a waste planning authority, is required to take account of national and regional planning guidance.

### **Regional planning guidance**

This is covered under Planning Guidance Note 11 *Regional Planning Guidance* (PPG11). Regional Technical Advisory Bodies (RTABs) advise the Regional Planning Bodies and provide specialist advice on options and strategies for dealing with the waste that will need to be managed within each region.

### **7.2.3 The Mayor's Draft Municipal Waste Management Strategy**

The following issues have been extracted from the above document that are influential on the disposal routes that Southwark may wish to consider.

## Incineration

There is a clear presumption against any large scale mass burn incineration. The Mayor will also ensure that waste is subject to pre-treatment to remove as much recyclable material as possible before the residue is incinerated.

## Strategic waste planning in London

There is an absence of a strategic land use plan for waste. The need for effective London-wide guidance is particularly apparent for those boroughs that are part of the four joint statutory waste disposal authorities, since there is no direct mechanism for ensuring that the boroughs within them are taking responsibility for identifying suitable sites.

### 7.2.4 *Waste disposal and collection contracts*

Waste collection contracts at the moment are for between 5 and 10 years and waste disposal contracts usually for a minimum period of 15 years. The Mayor proposes that waste authorities use model conditions in drawing up new waste and associated contracts. It is suggested that waste disposal and associated contracts be reviewed every five years.

London's capacity for final disposal is limited. Of the 38 licensed sites there are only 2 currently accepting municipal solid waste (Rainham and Beddington Farm in Croydon). The majority of London's landfill capacity is at Rainham and this site could be full in as little as five years. London has capacity to landfill biodegradable waste for an estimated 10.6 years at current throughput levels to sites. In 1999/2000, London exported around 60% of its municipal waste for landfill to counties in the east and south east of England. The Environment Agency estimate that there is at present capacity for five years in the eastern region and just seven years in the south eastern region, at current total throughput levels. Even as far as Oxfordshire, the landfill life expectancy is less than 13 years.

The counties that have taken London's waste in the past need the remaining capacity for their own waste, as well as to move away from landfill disposal, and are resisting the continued disposal of London's waste in their areas. It is clear that the Landfill Directive, national, regional and local policy and physical capacity around London means that the continuing landfill of London's waste is not sustainable.

Any disposal option will have to have due consideration to the best practical environmental option (BPEO).

As well as a presumption against any increase in large-scale mass burn, municipal waste incineration in proposed new contracts, the Mayor will seek to ensure that:

- state of the art emission limiting equipment is used to reduce any potential health impacts
- there are no long-term contracts and no guaranteed minimum tonnage contracts for incineration, to ensure flexibility is maintained in order to allow movement up the waste hierarchy
- combined heat and power technologies are used
- waste is subjected to pre-treatment to remove as much recyclable materials as is practicable before the residue is incinerated.