

Nottingham City Council

# A Waste-Less Nottingham

Waste Strategy 2010-2030

December 2010



Nottingham  
City Council



## Contents

Page

Foreword – Cllr Katrina Bull, Portfolio Holder for Environment and Climate Change..	4
Executive Summary .....	6
Introduction .....	14
Municipal Waste Services, 2000 – 2010 .....	18
Where have we come from? .....	18
How is the service delivered now? .....	19
What is in your bin? .....	22
Achieving Sustainable Waste Management .....	23
Vision & Objectives of the Municipal Waste Management Strategy .....	29
Waste Prevention .....	31
Reuse .....	35
Recycling & Composting .....	37
Energy Recovery .....	44
Disposal .....	47
Leading from the Front – What will the Council be doing? .....	49
Education & Communications .....	50
Where will the Strategy take us? .....	53
Monitoring & Review of the Strategy .....	54
Glossary of Terms & Abbreviations .....	56
Action Plan for Nottingham’s Municipal Waste Management Strategy .....	60

## Foreword – Councillor Katrina Bull, Portfolio Holder for Environment and Climate Change

At present we are consuming resources at an unsustainable rate. If everyone in the world lived in the same manner as we do in the UK (e.g. used the same amount of energy, goods and other resources) then we would need three planets to provide these resources. This is clearly not a sustainable position, and here lies the challenge. The Waste Strategy for England 2007 (the National Waste Strategy), highlighted this issue and the concept of 'One Planet Living', the aim of consuming resources at a rate that is deliverable over the long term. This is a challenge for us in Nottingham as well as the rest of the developed world and is recognised in our Sustainable Community Strategy (the Nottingham Plan) which states the importance of "living within our environmental limits". We need to ensure that the resources we do consume, through purchasing or our other day to day activities are managed well. We are adapting to meet this issue, but there remains a major challenge to create a service based around *resources* rather than *wastes*, that is affordable, accessible, protects public health and the environment.

All of these issues must be considered in the light of carbon emissions. The Nottingham Plan commits us "to move Nottingham into a lower carbon future". If we manage our resources as a Council and as a city in a realistic and fair way, this should enable us to reduce our carbon emissions. This Waste Strategy sets out the carbon implications of our proposed waste activities, with the potential for the reduction of thousands of tonnes of carbon dioxide (CO<sub>2</sub>) each year through managing our resources more sustainably.

After receiving many responses to the draft strategy during the consultation period, we have reinforced our original commitment to using our management of waste to help cut our carbon emissions as a city. This represents a change in traditional thinking about delivering waste management services and we believe is an important step forward, moving beyond the challenges of the National Waste Strategy. It also cements the position of Nottingham in providing strategic leadership as regards carbon and energy management. We have to cut our carbon emissions, and we will. More than that, we will

ensure that all parts of the council through the Sustainable Community Strategy are also thinking "does this help reduce carbon emissions?" when they plan local services.

We should recognise how much has already been achieved in our City, through both the services implemented by the Council and, more crucially, the willingness of the residents of Nottingham to participate in these services. A great deal of resource has been saved through recycling schemes over the last ten years, and the household recycling rate of Nottingham has increased from ~5% to ~36% recycling over this period. This is a major achievement, and has reduced our carbon footprint substantially. For the two-thirds of municipal waste streams currently not reused, recycled or composted, energy is recovered from most of this material at the Nottingham Energy from Waste plant which also provides



local heat through the District Heating network. The relationship between waste management and energy generation is long established in the city and we seek to break new ground in this Strategy by procuring a new energy recovery capacity extracting biogas from organic wastes from the city through a process known as Anaerobic Digestion. This Strategy has been developed in parallel with the Nottingham Energy Strategy and the two elements support one another.

This Strategy sets out the vision for the service over the next twenty years, and includes initiatives to recycle the majority of our wastes and also to tackle overall waste generation. This is a challenge not only to retailers and producers of goods - for example to reduce excess packaging and generate lower environmental impact products, but also for our purchasing behaviour and consumer activity. How can we help our residents ask questions about how much they are consuming? This has to be the most difficult to answer. However, the Council will provide support to reduce waste in the first place and reuse unwanted goods and also to provide a key role in education to raise awareness of environmental issues including managing resources to ensure we all behave responsibly and sustainably.



The responses we received to the public consultation undertaken to produce this final strategy were encouraging. We have learned that there is a keen interest in developing sustainable waste management services both from individual citizens, community groups and businesses too. Many of the ideas which came forward as a consequence of the consultation have been incorporated into the action plans of this final strategy as we now turn our focus to delivering a better future for Nottingham. We recognise that delivering this strategy is better achieved when all of our stakeholders work together in partnership. In this way we can develop a framework which enables everybody to play their part in contributing to a sustainable future. I would personally urge you all to take an active role in helping us to deliver our vision by trying to reduce, reuse and recycle as much as possible.

Councillor Katrina Bull  
Portfolio Holder for Environment and Climate Change  
Nottingham City Council

## Executive Summary

This Municipal Waste Management Strategy (MWMS) seeks to develop a 'waste – less' society for the City of Nottingham. What do we mean by this? Here are five key actions this Strategy aims to deliver over the period it covers (2010 – 2030) to provide an illustration of what we see as a 'waste – less' society:-

- To produce the lowest amount of household waste per person of any core<sup>1</sup> City in England
- To increase the amount of reuse and recycling from just over a third of our waste at present to the majority of household waste (55%+)
- To transform the management of trade waste and other (non household) wastes by providing new services and infrastructure to reduce, recycle and recover energy
- To save an additional 3 - 6000 tonnes of carbon dioxide<sup>2</sup> per year by recovering resources and energy from waste, helping to combat climate change - making the carbon savings by the waste management service around 16 -19,000 tonnes of CO<sub>2</sub> / year, this is 25 – 30% of the City Council emissions, e.g. from heating buildings, vehicle usage, street lighting etc.
- To recover around 47 million kilowatt hours of energy from waste using the Energy from Waste plant at Eastcroft with associated District Heating and electricity generation scheme, and by also processing food and other organic waste in a technology known as Anaerobic Digestion. This also contributes to the Sustainable Energy Strategy targets.

### What do these numbers mean?

47 million kilowatt hours is about the same total amount of energy as every household in Nottingham using their (efficient!) fridge freezer & washing machine in normal usage for a year ... as well as boiling the kettle once a day for a nice cup of tea!

16,000 tonnes of Carbon Dioxide is about the same amount as would be released if a person from every house in Nottingham drove a small car 10 miles per week for a year

<sup>1</sup> The Core cities are: Nottingham, Liverpool, Manchester, Birmingham, Leeds, Sheffield, Newcastle, Bristol

<sup>2</sup> Or carbon dioxide equivalents, where other greenhouse gases are generated

## What is a Municipal Waste Management Strategy?

This Municipal Waste Management Strategy sets out the aims and intentions for delivery of the waste management service provided by the City Council. This includes the collection, recycling, treatment and disposal of wastes from households, some commercial premises (known as trade waste), and other council supporting services to reduce the amount of waste we generate. The combination of both household waste and other wastes collected by the City Council is known as 'Municipal Waste'. The Strategy covers the period 2010 – 2030.

We have broadened the remit of a Municipal Waste Management Strategy and linked opportunities and initiatives for managing other waste streams and wider environmental agendas (climate change, energy and sustainability) in accordance with best practice in waste management.

### Why do we need a waste management strategy?

The delivery of the waste management service is an area that requires forward planning to ensure that the collection, recycling and disposal services not only meet the latest standards and policies but also meet the aspirations and needs of the residents. We therefore need to carefully consider what we want the service to look like in the medium and long term so that we can plan and deliver the services needed. For example one of the services within this Strategy is to develop a capacity to digest food waste in order to recover compost and a useful biogas. However this technology (known as Anaerobic Digestion) usually takes 3 – 4 years from the decision to procure a facility or service, to when it becomes operational. Therefore if we decided to procure this service now (2010/11), the food waste collection and treatment service is unlikely to actually be in place until 2014 at the earliest (unless there is spare merchant capacity available at an affordable cost in the interim).



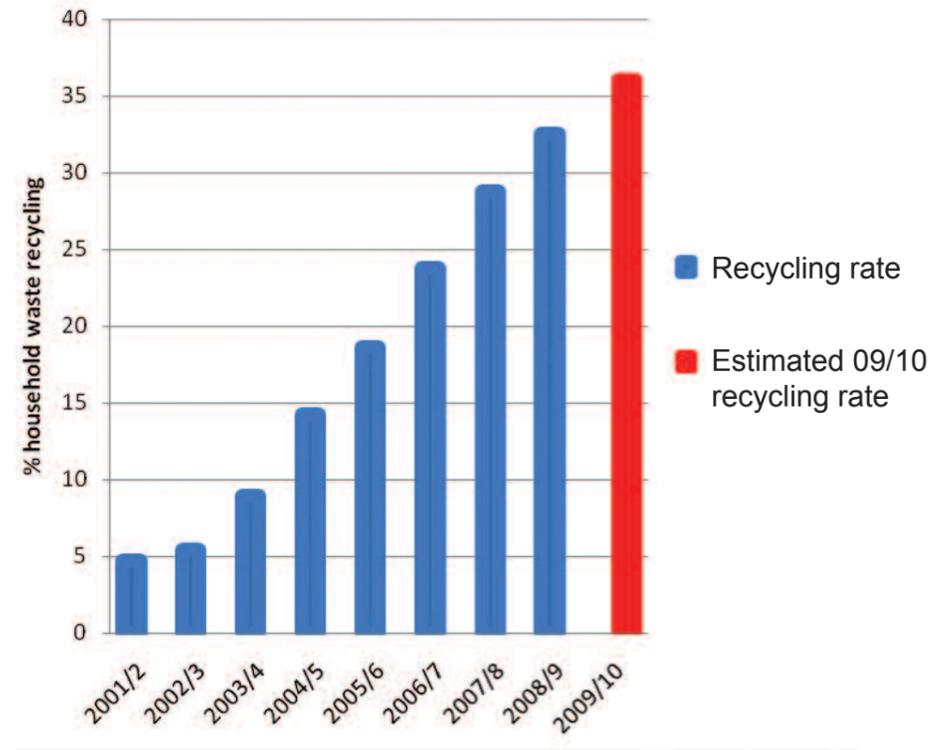
The Municipal Waste Management Strategy development process was designed to consider the type of service we would like to see, and set out our vision and actions for the service up to 2030.

The vision of the service is:

*The Municipal Waste Management Strategy aims to deliver a service driven by the need to conserve resources and reduce carbon emissions. The municipal waste management service will be flexible and innovative as regards new technologies, high quality, accessible to all and delivered in a cost effective manner. The Council will lead by example and strive to work in partnership with the community and other stakeholders to: firstly reduce the amount of waste that is generated; secondly to recover materials for recycling; and finally to treat waste through energy and resource recovery techniques to support the energy needs of residents and businesses in the City. The amount of waste landfilled will be minimised with the ultimate aim of 'zero waste' to landfill. The Municipal Waste Management Strategy is integrated with the Nottingham Sustainable Energy Strategy, Carbon Management Plan and Nottingham Plan.*

## Where have we come from?

Nottingham has substantially improved its environmental performance over the last decade as shown in the graph of household waste recycling rates, below. Recycling saves finite (limited) resources and helps reduce damaging carbon emissions that contribute to climate change. Just over a third of Nottingham's household waste is now recycled. However there remain further challenges for the service.



HOUSEHOLD WASTE RECYCLING RATES IN NOTTINGHAM 2001/2 – 2009/10

## Challenges and Solutions

There are many challenges facing the delivery of the municipal waste management service and we will explain the key issues in this summary document. However one challenge sits above all the others in our view, and that is the threat of climate change. The City Council and its stakeholders have acknowledged the importance of this issue and placed carbon performance as the prime environmental criteria in choosing between waste management options making this a truly 'carbon led' Strategy.

Tackling climate change must also be set in the context of the obligations and responsibilities of the City Council as a Waste Collection and Disposal Authority and the main challenges and solutions for the service are set out below. It should be noted however that this is a twenty year strategy and there will be other changes during that period that we cannot predict at this stage. It is for this reason that the Strategy is designed to have some flexibility and there will be a review at five year intervals of the strategy or where fundamental changes take place.

## The challenge to reduce waste

Nottingham already performs well compared to many other areas of the UK as regards producing less household waste per person than the average local authority area. A challenge of the strategy is to continue this high performance and seek to be the best core city in England by producing less household waste per person than any of the other seven core cities<sup>3</sup>. We aim to achieve this by providing improved information and services on how to reduce wastes through waste prevention initiatives or by reusing items to avoid them becoming wastes.

An appraisal of waste prevention and reuse options<sup>4</sup>, using criteria developed in consultation with our officers, Councillors and other stakeholders, concluded that the following measures be adopted:-

- To improve information on prevention and reuse, so that opportunities to reduce or reuse goods and waste are fully realised.
- A high profile food waste prevention campaign will be launched, aligned with the national 'Love Food, Hate Waste' message and materials. The aim of this campaign would be to influence purchasing and cooking behaviours and reduce the environmental impacts of unnecessary food being purchased and food waste requiring disposal. This will be linked to the home composting promotion (below).
- The current practice of providing subsidised home composting units to householders will be continued and reinvigorated as part of the new food waste promotional campaign including supporting information and advice on good home composting practice.
- The 'Freecycle' and other similar reuse or 'exchange' networks will be promoted by the Council to raise awareness and participation in these schemes to encourage the reuse of unwanted goods from households and businesses, thereby avoiding disposal.
- The Council will be proactive in engaging with the business community of Nottingham as regards prevention & reuse opportunities and utilise the customer base of the trade waste collection as a route to engagement.
- The Council will provide leadership and resource to support the delivery of reuse activities in the City through partnerships with the third sector (e.g. charities, not for profit organisations, etc). This is an area that we believe can be enhanced, providing jobs, training and refurbished goods back into the Community for the benefit of the environment and Nottingham as a whole.
- The Council will seek to encourage reuse and reduction activities through incentives or other measures where viable.

<sup>3</sup> The Core cities are: Nottingham, Liverpool, Manchester, Birmingham, Leeds, Sheffield, Newcastle, Bristol

<sup>4</sup> Options Appraisal report supporting the Municipal Waste Management Strategy, available from [www.nottinghamcity.gov.uk](http://www.nottinghamcity.gov.uk)

## The challenge to recycle more

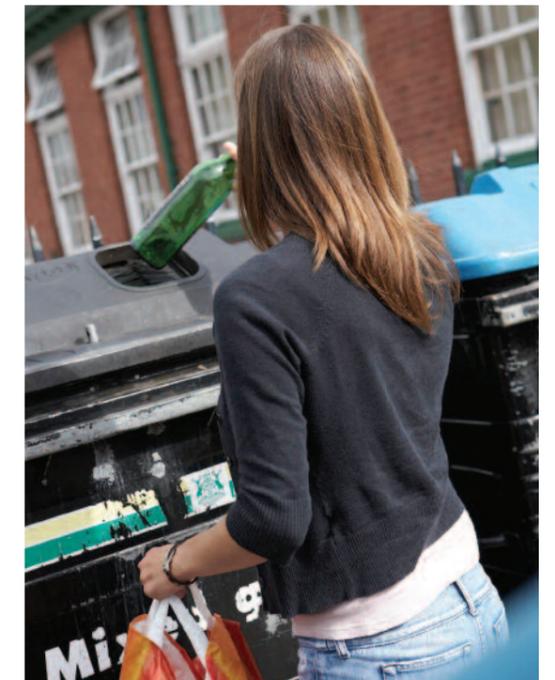
One of the key challenges for this Municipal Waste Management Strategy is to deliver a minimum of 50% recycling target of household waste by 2020, and to exceed this level where we can. At present Nottingham recycles around ~36% of its household waste. The MWMS explores options therefore for moving from 36% to over 50% recycling, and concludes that a combination of approaches will be required:-

- To provide comprehensive information on recycling to residents to ensure that recycling opportunities are well understood and utilised.
- To maximise the use of the current kerbside recycling collection system through good communications / door knocking techniques and targeting lower performing areas. The use of incentive schemes and other mechanisms will be explored to encourage high participation across the recycling system.
- To expand recycling kerbside collections to all households capable of receiving the collection. Further development of kerbside recycling services will be introduced where affordable and where resources/collection systems allow, utilising the current capacity available based on a three-bin collection scheme.
- To explore and develop a compost 'give away' scheme for free collection of compost generated by the garden waste collection scheme.
- To review the performance and benefits of the Bring sites / Mini Recycling Centres to ensure that the collection system complements the enhanced kerbside service, remains an efficient service and that households not covered by the kerbside collection system can have a comprehensive alternative recycling system available to them.
- To introduce on-street recycling (litter bins for recycling) at key locations in the City.
- It is noted that the Redfield Road Household Waste Recycling Centre (HWRC) already performs to best practice levels of recycling (>80%), and therefore no initiatives are planned for this facility. However there is likely to be a need for a second Household Waste Recycling Centre in the City and options are being explored at present for this facility. A new facility (and any contract let for its operation) should optimise both recycling and reuse of waste that is taken to the site. There may be potential for use by non household users at designated times if appropriate.
- The trade waste collection system currently serves around 4,000 customers and handles around 17,000 tonnes of waste per annum. Only a fraction of this is recycled, although the bulk (~75%) is sent for energy recovery at the Eastcroft site / Enviroenergy heat station. This strategy seeks to transform the trade waste service where economically feasible to become a 'recycling led' service seeking to emulate the household collection service in the range of recyclables collected and its environmental performance.



- To develop a food waste collection and recycling service to householders and trade customers and to engage with other commercial organic waste producers in the city to seek to provide a large enough waste stream for a cost effective organic waste treatment plant for Nottingham.
- To procure Anaerobic Digestion<sup>5</sup> capacity to treat either a mix of garden / food wastes (first preference) or separate food wastes only. This technology will produce a useable 'compost' output<sup>6</sup> and also derive a biogas which can be used to recover energy. This approach has strong carbon (climate change) and energy security benefits. The business case for different collection and treatment options will be explored to achieve the optimum environmental, economic and practical solution.
- Where biogas is generated through Anaerobic Digestion the most efficient viable energy recovery process will be utilised.
- The appraisal of different recycling options which was undertaken also explored alternative collection methods for dry recyclate from the kerbside. The preferred option is to seek to optimise the existing system, predominantly on the grounds of lower cost and practical deliverability of an alternative collection system including its public acceptability and operational challenges.
- The Council will develop and maintain an active dialogue with both the third sector and the private sector recycling contractors as regards exploring markets and opportunities for adding further materials to the kerbside and / or bring site services, and to seek local markets for recyclates where possible. Additional materials should be added to the recycling collection service where viable to maximise environmental performance. However this should be balanced by affordability and only where sustainable markets are identified. This aspect will be subject to periodic review and reporting, in liaison with relevant Government bodies such as the Waste & Resources Action Programme.

This strategy aspires to reach a 55% recycling rate for household waste by 2025, but acknowledges that this level of recycling will be in part dependent on the market for recycled material and there is significant uncertainty over the regulations and markets, notably towards the latter period of this MWMS. However we believe we will deliver a minimum of 50% recycling by 2020 and aim to push the boundaries in this area to deliver 55% rate or indeed a higher recycling performance wherever viable.



<sup>5</sup> Anaerobic Digestion is the treatment of organic wastes in sealed vessels where bacteria digest the waste releasing biogas (mostly methane and carbon dioxide), this can be combusted for green energy generation

<sup>6</sup> This may be used on land or dried for use as a fuel where appropriate

## The challenge of managing the waste left over

Nottingham already landfills far less waste than most authorities in England. The initiatives explained in this Strategy will mean that Nottingham will also create far lower amounts of residual waste than the target set by Government. We believe in a 'waste – less' society and seek to reduce the amount of residual household waste per person to ~222kg by 2020, compared to the national target of 250kg per person. We also seek to go further and reduce this to below 200kg per person by the end of the Strategy period.



The management of residual (or 'wheeled bin') waste from households mostly takes place at the Eastcroft Energy from Waste plant. This facility burns the waste and uses the heat to generate steam which is sent to the Enviroenergy combined heat and power (CHP) plant, where the steam drives turbines for electricity generation and to provide heat for the District Heating network. Enviroenergy is an 'arms length' local authority company and receives government incentives for the generation of this low carbon energy and the electricity contributes to national renewable energy targets. The contract for sending waste to this facility runs out in 2030, and therefore towards the end of this Strategy period there will be a need to consider a procurement strategy for replacing this residual waste treatment capacity. This strategy does not seek to identify a technology for residual waste treatment as there will be at least two strategy reviews prior to the procurement phase. However a high level assessment of environmental impacts of different treatment options was conducted for the purposes of the Environmental Report which accompanies this strategy.

The contribution of energy recovery is a key component of this strategy and supports delivery of targets within the Nottingham Energy Strategy. In addition there is the potential for other initiatives within the Energy Strategy (e.g. biomass combustion) to link with waste management operations to gain economies of scale or be co-located on sites identified for future waste infrastructure development.

Nottingham also recycles some residual waste from both household and non household sources at the Wastecycle residual waste Materials Recycling Facility at the Colwick Industrial Estate. This facility handles some of the more difficult municipal waste streams such as street cleansing wastes, bulky waste, transfer station wastes and Household Waste Recycling Centre residual wastes, and makes a significant contribution to the City's recycling rate adding around 4%.

A smaller proportion of residual household and non household wastes (15 – 25%, depending on which specific waste stream) is sent to landfill. This strategy intends to reduce this fraction, and seeks to divert as much waste as possible with the aspiration of delivering zero waste to landfill, as this is the most damaging form of waste management. The Strategy will put in place measures designed to help achieve this aim, notably:-

- Waste prevention measures – to reduce overall waste arisings.
- Reuse initiatives to extract often difficult to manage wastes from the waste stream (e.g. bulky goods) that are often inappropriate for recycling or energy recovery, and therefore could otherwise end up in landfill.

- Innovate and continue to deliver best practice in extracting more recyclate from the household and trade waste streams to reduce overall levels of residual waste.
- Work with residual waste treatment partners (e.g. Wastecycle, Waste Recycling Group) to seek alternative treatment measures to recover materials or energy from residual waste and avoid landfill.
- Work with Waste Recycling Group to recycle<sup>7</sup> bottom ash from the Eastcroft plant to provide a useful secondary aggregate and to avoid landfill disposal of this material. This process will also extract additional metals from the ash for recycling and could contribute to over 2,000 tonnes of CO<sub>2</sub> emissions by recycling the non ferrous element in particular.
- Ensure sufficient reuse, recycling, and residual waste treatment capacity is available throughout the Strategy period and beyond to prevent landfill becoming the default option for wastes.
- Continue to deliver education and raise awareness of environmental issues to encourage more sustainable waste management and reduce levels of residual waste to a minimum.



## The challenge for us all

A key aspect of this MWMS is a need to engage with the community (businesses, schools, charities, residents) to seek to manage wastes more sustainably. In broad terms this means to generate less waste and recover as much of the waste that is generated so we can recycle the materials to conserve our resources and reduce our impact on climate change. The explanation of why there is a need to participate in such waste management services is a key role of the Council. The aim of our education programme is to raise awareness and to stimulate sustained changes in behaviour, leading to improved management of our resources. We want to deliver the best carbon performance we can and this means the Council and its partners providing both accessible and comprehensive services, and residents using the systems do so to their full potential.

## The challenge for the Council

We have also identified a need to ensure our own staff and activities adhere to the objectives of this Strategy and will set in place initiatives and targets to reduce Council wastes and seek to recycle wastes where they do arise.

The Council will also implement the range of actions identified in the Municipal Waste Management Strategy. An action plan with key activities, roles and responsibilities supports the objectives and targets within this Strategy<sup>8</sup>.

<sup>7</sup> This would not qualify as 'recycling' due to the definitions applied in the National Indicators.

<sup>8</sup> Action Plan for the Municipal Waste Management Strategy is included at the end of this document.

## Introduction

This is the Municipal Waste Management Strategy (MWMS), developed by Nottingham City Council. It was supported by a public consultation and covers the period 2010 – 2030.

## What waste is generated in Nottingham?

Waste is usually defined by its source, for example waste from domestic properties is termed 'household waste' and that arising from businesses would be 'commercial' or 'industrial' waste. In some instances the nature of the waste may define its handling, an example being 'clinical' waste (in that it arises from a hospital or other source linked to medical / human hygiene waste), which requires special treatment.

In Nottingham we generate around 118,000 tonnes of household waste a year, and the City Council collects and manages this waste in addition to another ~40,000 tonnes of non household waste, mostly from the commercial sector. Collectively, all the waste managed by the City Council is termed "Municipal Waste".

The following diagram illustrates the main sources of waste in the East Midlands, including approximate proportions of the waste.

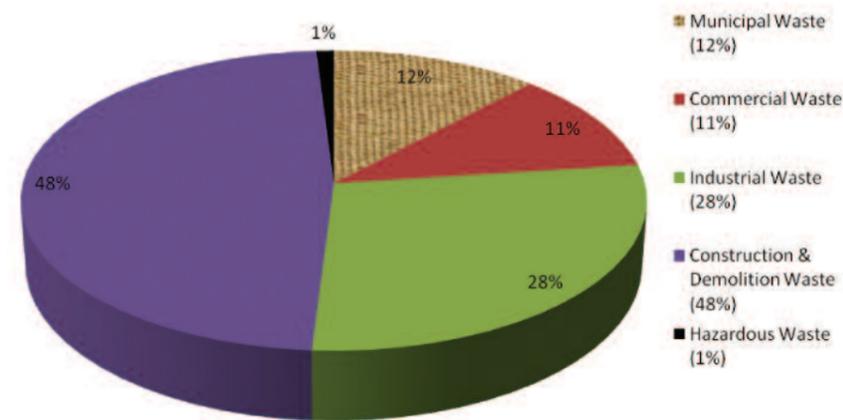


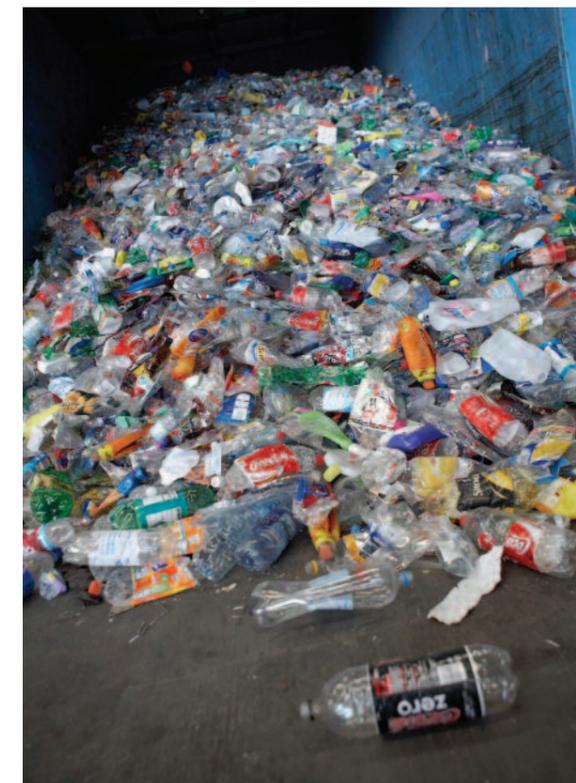
FIGURE 1 PROPORTION OF DIFFERENT WASTE TYPES IN THE EAST MIDLANDS

It can be seen from Figure 1 that Construction & Demolition wastes and Commercial & Industrial waste comprise the majority of waste arisings, and that this is usually managed via individual contracts between the producer (the business) and a private waste contractor. The private waste contractor will collect and may also treat / dispose of the waste. There is a more restricted role that the Council can play for these waste streams as they are not under its control; however this Strategy seeks to use the Council's influence to try and improve the management of these wastes (which are mostly landfilled at present) in addition to those for which the Council has direct control. This is a theme running through this Strategy, and is consistent with emerging Government policy in this area.

After these waste streams, municipal waste is the predominant remaining waste stream in the City and it is the duty of the Council to collect / manage / dispose of this waste via public sector contracts (e.g. those let by the Council). The Council operates its own collection service which provides all the household waste collections for the City including schools, as well as undertaking collection and disposal functions for other council departments and collecting and disposing of trade waste from businesses within the city that choose the council as their service provider in this regard.

## Why do we need a Municipal Waste Management Strategy?

We all generate waste that requires dealing with and we cannot continue consuming resources at the rates we currently are. Managing our wastes can be costly in both financial and environmental terms. Increasingly we are trying to reduce the amount of waste generated to reduce these financial and environmental burdens. Wastes are mostly



derived from finite (limited) resources. We are also placing more and more emphasis on using the waste that is generated as a resource that can be utilised, for example by recycling, composting and recovering energy from the waste. These approaches require investment in new initiatives, collection systems and treatment facilities, which can take a long time to implement and need careful consideration in order to be successfully delivered as part of an integrated service. Furthermore, there is an increasing amount of environmental legislation designed to reduce our impact on the environment and encourage a more sustainable<sup>9</sup> way of living (see the 'Achieving Sustainable Waste Management' section of this Strategy). The Municipal Waste Management Strategy (MWMS) seeks to provide a structured and coordinated implementation plan for the delivery of the service to respond to each of these challenges.

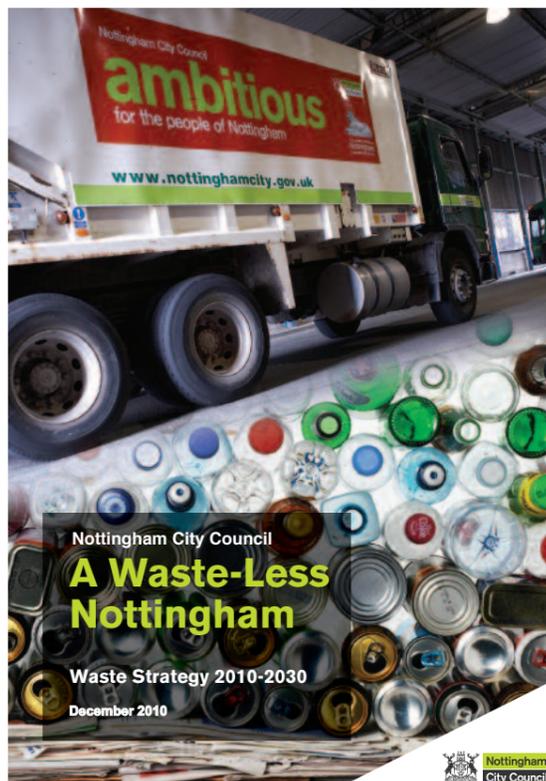
A Municipal Waste Management Strategy provides the vision, objectives, policies and targets to be delivered by the waste management service. These aspects guide the planning, budgeting and delivery of services for the management of our waste over the strategy period.

<sup>9</sup> Sustainable Development is an important principle of UK policy meaning 'meeting our own needs without compromising the ability of future generations to meet their needs'. This principle is directly relevant to waste management in a number of regards including recycling to conserve the planets resources and reducing waste and carbon emissions from waste management to lessen environmental impacts.

There are a wide range of functions involved in the delivery of the municipal waste management service including communications and education initiatives on how we can reduce waste, as well as the infrastructure and operations needed to deliver efficient and effective collection, recycling, waste treatment and disposal functions. These aspects are described in the following sections of the Strategy. A diagram illustrating the documents that support the Municipal Waste Strategy for Nottingham is included as Figure 2.

### How has the Strategy been developed?

A Municipal Waste Management Strategy is a document that requires extensive consultation and consideration prior to finalisation and implementation. An important element that supports this process is known as Strategic Environmental Assessment (SEA). An SEA is a statutory requirement for strategies that can have a significant impact on the environment (e.g. a MWMS) and this is explained in legislation<sup>10</sup>. The SEA is a process whereby objectives, targets and options within the Municipal Waste Management Strategy are assessed against a set of criteria known as Sustainability Criteria. This process is explained in detail in the Environmental Report, however in summary it involves defining key environmental, social and economic criteria relevant to Nottingham, by considering the general context of the City and local, regional and national policy and legislation. These criteria are consulted upon with key bodies (The Environment Agency, English Heritage & Natural England) and form the basis for appraising the objectives, targets and options for delivery of the Municipal Waste Management Strategy. This Strategic Environmental Assessment is recorded in the Environmental Report.



Additional analysis to support decision making for the Municipal Waste Management service is recorded in the Options Appraisal document. The Options Appraisal specifically considers each option for the delivery of the service against decision making criteria agreed at a Stakeholder Workshop. The Options Appraisal focuses on alternative delivery options and scores them, to enable a judgement to be made as to the priorities for the municipal waste management service over the short, medium and long term. It considers cost and affordability as well as environmental and quality issues. The detail of this aspect is included in the Options Appraisal report and the findings of the SEA and Options Appraisal process are supporting documents to this Strategy.



FIGURE 2 DOCUMENTS COMPRISING THE MUNICIPAL WASTE MANAGEMENT STRATEGY FOR NOTTINGHAM



<sup>10</sup>The Environmental Assessment of Programmes & Plans Regs, 2004

## Municipal Waste Services, 2000 – 2010

### Where have we come from?

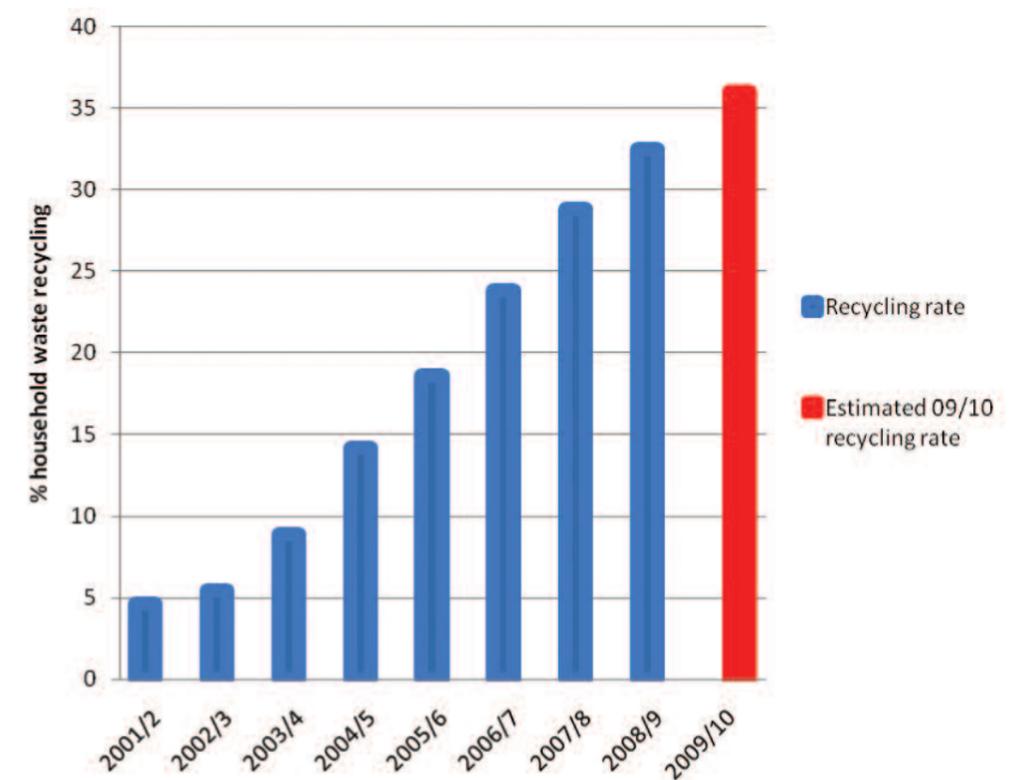
This Strategy sets out the intentions for the Municipal Waste Management service for the next twenty years. However it is important to understand where the service has come from and how it has developed to date. This enables the context of the service to be understood and also recognises the numerous achievements already delivered in the City.

Ten years ago the recycling service primarily comprised of Mini Recycling Centres, such as bottle banks and paper banks, located at strategic sites around the City to enable householders to recycle certain materials. It was also supported through some recycling at the Household Waste Recycling Centre (HWRC). Table 1 shows the recycling collection arrangements in 2009, and since then glass has also been added to the commingled collection system across the city.

Collection Type	Number of households served	Frequency	Description
Commingled dry recyclate only	77,630 (59%)	Fortnightly	Collection in wheeled bins (mostly 240 litre capacity, some 140 litre, some bags, some communal 1,100 litre containers at flats) collecting paper, card, plastic bottles, tubs, cans & tins.
Commingled dry recyclate with glass insert	26,653 (20%)	Fortnightly	As above, but with an insert box fitted inside the wheeled bin for deposit of glass. Collected in split bodied Refuse Collection Vehicles. Predominantly inner city areas.
Paper collection	10,237 (8%)	Fortnightly	A blue bag collection for paper, magazines and other paper grades (not card). Includes some communal 1,100 litre containers at flats.
No kerbside dry recyclate collection	16,751 (13%)	-	These properties are partly served by bring sites. This is consistent with the proportion of housing where direct kerbside collection is prohibitive (e.g. flats, multi-occupancy). Further initiatives being explored for such properties.
Garden waste collection	103,134 (79%)	Fortnightly	Households offered collection of garden waste in 240 litre wheeled bins mostly, (some 140l).
Food waste collection	21,530 (16%)	Weekly	Food waste collection in small (23 litre) food scraps bin. Householders also provided with 5 litre kitchen caddy and roll of 100 degradable liners. Predominantly in inner city areas.

**TABLE 1 RECYCLING COLLECTION ARRANGEMENTS IN 2009**

As illustrated by Figure 3, since 2001 the recycling service has undergone a series of improvements to raise the recycling rate from around 5% up to ~36%. This has been delivered predominantly through bringing separate recyclables collections to the household, and also by achieving best practice levels of recycling from the HWRC at Redfield Road and through the residual waste Materials Recovery Facility.



**FIGURE 3 RECYCLING PERFORMANCE IN NOTTINGHAM OVER THE LAST DECADE**

Nottingham City Council has consistently been a high performer in the diversion of waste away from landfill since the development of the Eastcroft Energy from Waste plant in the early 1970's. Even today the top quartile performance for landfill for municipal waste is over 40%, but in Nottingham we landfill less than 20%. The Eastcroft plant incinerates the residual municipal waste and uses the heat generated to drive steam turbines for the recovery of electricity and provide heat to the District Heating network via the Enviroenergy London Road Combined Heat & Power (CHP) plant. Using this approach has meant that landfill space has been conserved and a substantial quantity of low carbon energy has been recovered over this period from Nottingham's residual municipal waste. This approach has also meant that Nottingham has emitted far less greenhouse gas emissions over the last thirty five years than most other equivalent areas, for which landfill (a notable contributor to climate change through methane emissions) was, and is, the most common residual waste management option.

Nottingham City Council has also developed a successful trade waste collection service, providing waste collection and disposal services to around 4,000 business premises in the City.

### How is the service delivered now?

#### Household Waste

Nottingham has been proactive in developing wheeled bin collection systems across the city for household waste, with fortnightly collections based around three streams:

- garden waste
- a multi-material recycling collection
- residual waste (refuse)

Where households cannot accommodate three wheeled bins (or indeed any wheeled bins) then alternative arrangements are made using communal bins, bags or sacks or bring recycling sites etc.

The commingled recycling collections now (2010) include glass, serving ~79% of households. The trial food waste collections (table 1) have helped inform our decisions in the MWMS as regards collection and treatment of food waste.

The City Council also delivers services to prevent waste arising for collection in the first place, through home composting initiatives and education / communication campaigns highlighting more sustainable lifestyles and purchasing practices. The City also supports the use of real nappies to prevent the amount of waste generated in the City.

There is some reuse activity in Nottingham as the bulky waste collection, operated by the City Council, has a service where items of furniture that are considered reusable by the householder are referred to a community group 'Family First' for collection and distribution to households in need of these items. The City Council is also working with Family First exploring the potential of reusing the larger waste electrical goods.

Nottingham is distinguished in terms of its residual waste management infrastructure with a central Energy from Waste plant with an extensive District Heating system, recovering energy from residual waste and providing heat to residents and businesses. Despite being a plant originally commissioned in the early 1970's, (and with most components replaced over the last five years) this is a model considered as good practice today. The facility also represents a very low cost residual waste treatment solution and an effective mechanism for minimising landfill. The City is high performing in both of these regards and in the top quarter of all the authorities in the UK for low disposal costs and low levels of waste to landfill.

Nottingham also utilises a Materials Recovery Facility (MRF) to sort its commingled recyclables and a residual waste MRF that sorts other fractions of the City's household and non household waste (e.g. skip wastes, Household Waste Recycling Centre residual waste etc.). Both of these facilities are located on the Colwick Industrial Estate and are owned and operated by Wastecycle with waste supplied under contract with the City Council.

The other elements of the recycling service are the bring sites and the Household Waste Recycling Centres (HWRC) at Redfield Road.

The Redfield Road HWRC site is operated by Wastecycle. The site achieves very high levels of recycling, over 80% of the waste throughput, which may be considered best practice levels of performance". Until 2010 the City Council also had a financial arrangement with the County Council for use of the Calverton HWRC. However this has now ceased and it is likely that a site for a second HWRC will need to be identified within

" 60% recycling rate is a benchmark for 'good practice' in Household Waste Recycling Centre performance

the City. The City Council will explore potential sites for a second Household Waste Recycling Centre as an action of this strategy.

The bring sites and mini recycling centres have historically collected around 3,000 tonnes of recycle from across the City, although we anticipate this to reduce as the commingled kerbside collection becomes more comprehensive.



The management of the collected household waste is summarised by Figure 4, which indicates how the relative proportions of the waste are dealt with. This Strategy sets out measures we consider appropriate to reduce residual waste and encourage more environmentally sustainable alternatives.

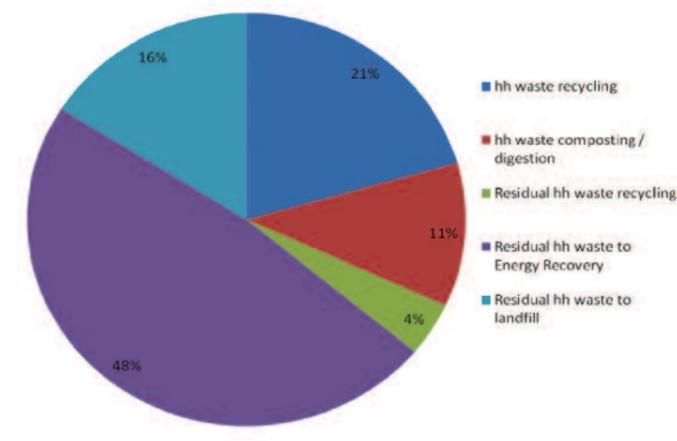


FIGURE 4 TYPICAL HOUSEHOLD WASTE MANAGEMENT IN NOTTINGHAM

## Trade Waste

There is a trade waste collection service delivered by the City Council. This serves over 4,000 businesses and premises in the city and is managed by the Commercial Waste team. This team also operates a skip hire service.

The trade waste collection uses containers ranging from 100 litre sacks to 1100 litre Eurobins, with the waste either sent to Eastcroft Energy from Waste plant, the Dorket Head landfill site, or in some cases via the Wastecycle residual waste Materials Recycling Facility.

## What is in your bin?

The varied nature of municipal waste is one of the challenges of managing the waste stream in a manner that is environmentally and economically acceptable. Figure 5 illustrates the typical composition of municipal waste in the UK<sup>12</sup>, i.e. what each of us produces as an average household.

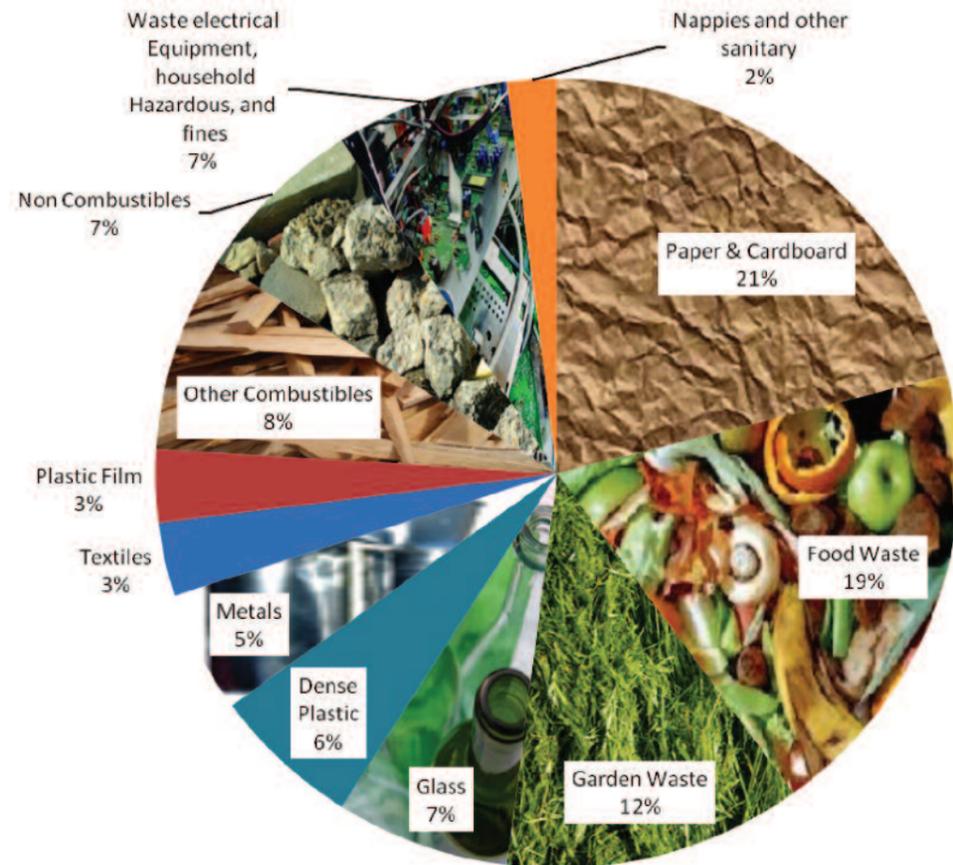


FIGURE 5 MUNICIPAL WASTE COMPOSITION

<sup>12</sup> Data from the National Estimate of Municipal Waste Management Composition, WRAP, 2006

## Achieving Sustainable Waste Management



The last ten years have seen the service delivered to householders in Nottingham change from a service that only provided collection of residual household waste, to a service that promotes recycling of a wide range of materials. This has substantially improved the environmental performance of the service.

EU and UK legislation is continuing to drive towards yet higher environmental standards and practices. There is an increasing amount of legislation focussed on the management of our wastes notably to encourage improved use of resources to reduce the amount of waste and its harmfulness.

Some guiding principles and policies that may be considered as drivers for the Sustainable Management of waste are described in this section. These influences

have guided the development of the vision, objectives, targets and actions within this Municipal Waste Management Strategy.

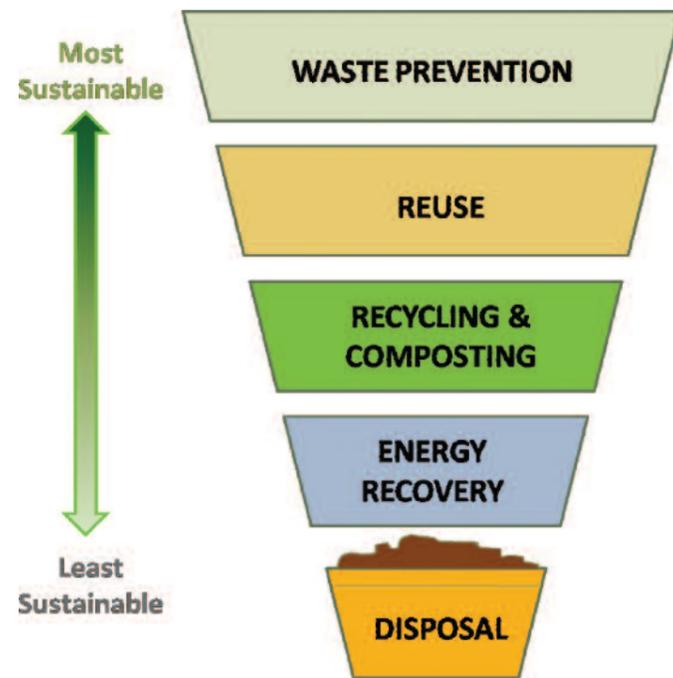
### Waste Strategy for England 2007

The National Waste Strategy was published in 2007, and this contains most of the key principles listed in this section of the Nottingham MWMS. Waste Strategy for England 2007 (also known as WS2007) sets out national targets for recycling of household waste including a target of 40% recycling by 2010, 45% by 2015 and 50% by 2020. While the City performs well in comparison with other similar cities, it is likely to fall short of the national 2010 recycling target. This strategy aims to deliver both the 2015 and 2020 recycling targets, as discussed in the Recycling & Composting section of this document and to expand high recycling performance to non household waste streams.

WS2007 also includes targets for recovery, a term meaning recycling / composting and also including energy recovery from wastes and these targets are set at a national level for 53% by 2010, 67% by 2015 and 75% by 2020. Nottingham already achieves its 2020 target for recovery. The National Waste Strategy is currently (2010) undergoing a review with a revised strategy likely in 2011.

### The Waste Hierarchy

A guiding principle of UK and EU waste management is the Waste Hierarchy. This is shown in Figure 6.



**FIGURE 6 THE WASTE HIERARCHY**

The waste hierarchy is a guide to the most environmentally acceptable waste management approach set down in order of preference. It is only a general guide and whilst it does not always apply for specific waste streams, it remains a useful tool at a strategic level. The most sustainable waste management option is not to generate waste in the first place (prevention). This is an aspect promoted by WS2007 and legislation<sup>13</sup> giving powers to local authorities to promote measures to reduce household waste arisings.

After prevention, 'reuse' is considered the next most preferable option. This means reusing a material or item that would otherwise have become waste, for example reusing a carrier bag or refilling a bottle.

If an item is to be discarded, then recycling or composting (depending on the nature of the material) is the next most sustainable approach, and this has been encouraged through the setting of recycling targets at a national level (and locally in the past) by Government.

After recycling and composting services are in place extraction of energy from waste is preferable to disposal. This is termed Energy Recovery and can be achieved through burning the waste to generate electricity and / or heat recovery (this has taken place at the Eastcroft Energy from Waste plant for over 35 years) or through other thermal or biological techniques. This supports other City Council ambitions around energy security, fuel poverty and the challenge of peak oil.

<sup>13</sup> Waste Minimisation Act 1998

The least preferable option in the waste hierarchy is disposal with no materials or energy recovered. Disposal through landfilling wastes has been the traditional waste management option for municipal waste in the UK, and remains the most prevalent to date, although this is changing. Nottingham has been one of the exceptions, and has used the Eastcroft Energy from Waste plant since the 1970s for the bulk of its municipal waste, yielding a useful return in heat and electricity. The Government introduced a tax on landfilling in 1997 (the Landfill tax) to apply a disincentive to this form of waste disposal, making alternative waste treatment options which are higher up the waste hierarchy more economically viable. This increases year on year to drive wastes into more sustainable treatment options.

This Strategy considers each level of the hierarchy as a separate section, and explains the actions that will be delivered at each level.

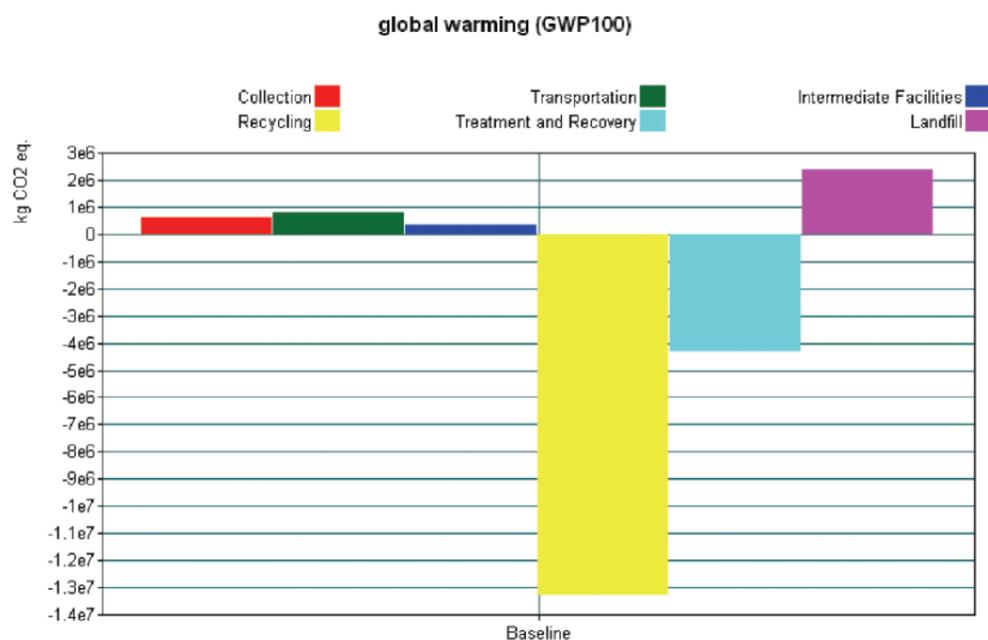
### Managing Carbon

A fundamental challenge facing the world is the dangerous threat of climate change. Climate change occurs because of changes in the amounts of greenhouse gases (Carbon Dioxide, Methane, and others) in the atmosphere. The increase of greenhouse gases<sup>14</sup> has been observed through sampling and testing and it is widely accepted that this has contributed to a 0.6°C<sup>15</sup> rise in temperature over the last century. The ten warmest years of the last century were recorded in its last fifteen years. Nottingham is known for taking a lead in climate change issues and in particular has led the local authority action in this area through an initiative known as the Nottingham Declaration. We believe this strategy takes this lead a step further with carbon performance being the prime criteria in choosing between waste management options making it a truly 'carbon led' Strategy.

Waste management has a role to play in mitigating the emissions of carbon (or greenhouse gases) through application of the waste hierarchy. Landfilling of wastes is a major contributor to methane emissions in the atmosphere, and the most significant negative impact from waste management activity. Conversely prevention, reuse, recycling and energy recovery can all have a role in reducing carbon emissions. Prevention will always be the highest performing in this regard (per tonne of diversion) and the extent to which the other waste management options can contribute to managing carbon emissions will depend on the type of waste and the waste management option being utilised. This can be a difficult area to quantify, but tools are available to assess impacts in this area, known as Life Cycle Assessment (LCA) tools. In the development of the Nottingham Municipal Waste Management Strategy we have used the Government recognised LCA tool for this area, known as WRATE (Waste and Resources Assessment Tool for the Environment). This tool shows the approximate carbon balance of the current household waste collection system (the Baseline) as illustrated in Figure 7.

<sup>14</sup> Greenhouse gases are usually measured in Carbon Dioxide (CO<sub>2</sub>) equivalents, and hence we often talk about managing 'carbon', although the actual aspect being discussed may be methane (CH<sub>4</sub>) or some other greenhouse gas.

<sup>15</sup> Climate Change & Waste Management: The link, Defra 2007



**FIGURE 7 INDICATIVE CARBON BALANCE<sup>16</sup> OF THE NOTTINGHAM HOUSEHOLD WASTE COLLECTION, RECYCLING & DISPOSAL SYSTEM**

The Municipal Waste Management Strategy identifies the carbon implications of its proposed actions and aims for substantial reductions in carbon emitted throughout the period to 2030.

### Resource Management

A broader environmental theme of the National Waste Strategy and encompassed in this MWMS is a need to manage our resources more sustainably, a concept also known as Sustainable Production & Consumption. Consuming less and recovering more non renewable materials and energy is a central element of Sustainable Consumption and Production, which can also be considered as using resources more wisely and living in a more sustainable manner.

A measure of resource use in our daily lives is to consider the amount of natural resources we consume compared to the global resource of those materials in or on the Earth. If every country in the world lived in the manner that we do in the UK (i.e. the amount of materials / products / services and energy we utilise in day to day living) we would need three planets to provide our resources. This is clearly not a sustainable position. To reduce this impact to a sustainable rate of consumption and production is a concept known as 'One Planet Living' and the aim is to consume at a rate at which we can all coexist and not deplete the Earth of resources at an unsustainable rate.

<sup>16</sup> A negative score means carbon is avoided or 'saved' for example by recycling a material saves energy from extracting and processing raw materials. Treatment & Recovery is the carbon saved predominantly by Eastcroft

### The Landfill Directive

Part of the Government and EU response to managing the contribution of waste management to climate change was to introduce the Directive on the Landfilling of Waste (the 'Landfill Directive') as implemented into UK legislation. This sets targets for reducing the amount of biodegradable municipal waste (BMW) going into landfill as this is responsible for the damaging methane emissions that form the greatest climate change impact from waste operations. Nottingham, because of its limited use of landfill as a waste management option, is well in advance of these targets and can potentially benefit from trading Government permits (known as Landfill Allowances) in this area. The Government is currently considering a review of this scheme and bringing more waste under the definition of municipal waste. The outcome of this review is unknown at present although it may influence some of the proposed targets within this Strategy, although is unlikely to affect the initiatives and actions proposed.

### Aligning Energy and Waste Management Policies

The management of resources and carbon discussed previously have a link to energy policy and strategy. This link has been well established in terms of waste management operations in Nottingham for decades, through the recovery of energy by EnviroEnergy, a local authority company that recovers both electricity and heat from the steam provided by the Eastcroft Energy from Waste plant. The District Heating network is shortly to be expanded and provides a solid link between waste management and energy use in the City. The Nottingham Energy Strategy (2010) seeks to develop this link further and assumes an expansion of the District Heating network supplied by steam generated by increasing the capacity of Eastcroft Energy from Waste plant through a third line extension<sup>17</sup>. It also assumes further energy recovery from utilising waste as a resource through technologies such as Anaerobic Digestion. This is an approach also recommended by the analysis in this strategy as explained in the 'Recycling & Composting' section.

At a national level there has also been an increasing drive to marry waste and energy policy to ensure a cohesive approach is taken for the benefit of the environment and for reasons of energy security. Recent developments with renewable energy incentives<sup>18</sup> have focussed on waste operations to help promote new and more efficient energy recovery from waste. Nottingham has led on low carbon and renewable energy developments at a local authority level. The Nottingham MWMS, as set out in the objectives, considers energy, carbon and waste to be key elements to be managed by this service and we believe we are continuing to lead the way amongst local authorities in making these linkages.



<sup>17</sup> Waste Recycling Group were granted planning permission for an additional 100,000 tonnes of Energy from Waste capacity at the Eastcroft site in 2009.

<sup>18</sup> The Renewable Heat Incentive, Feed in Tariffs & Renewable Obligation Order as amended, 2006

## Improving Efficiency in Service Delivery

Over the last four years national Government has been driving a programme of improving efficiency in the delivery of all local services, seeking year on year improvements and establishing support programmes to promote best practice in service delivery. This is a particularly difficult area for waste management services due to the increasing demands and targets on the service meaning higher performance is also required, notably in areas such as recycling. Key mechanisms to improve the efficiency of local services include partnering with other sectors, benefitting from economies of scale, improving logistics and planning and using procurement wisely to benefit from the market. Good practice in this area is adopted in the policies and procurements identified within this strategy and all options are assessed for indicative cost impacts to ensure initiatives and services are affordable and deliverable within the timescales identified in the Action Plan.

## Regional Self Sufficiency & Proximity Principle

The principle of regional self sufficiency is to manage the waste arising in a region within the same region, thereby reducing travel impacts and establishing the link between waste producers and the infrastructure required to manage that waste. This is also linked to the proximity principle which states that waste should be managed close to its source of origin. Whilst this strategy does not define the location of sites for waste management infrastructure (that is included in the Local Development Framework Waste Core Strategy), these factors are implicit in the options selected and approach taken for this strategy, where the management of the whole municipal waste stream including non municipal wastes is considered. The City Council has a strategic relationship with Nottinghamshire County Council on waste management issues including planning, and there are agreements between the City and County Councils as regards input of waste into the Eastcroft facility for example. The County Council and other local authority partners were also stakeholders involved in the consultation for this Strategy.

## Waste Strategy & the Planning Process

The Joint Waste Core Strategy for Nottingham City and Nottinghamshire County is currently being developed. This will consider the amount of waste arising from all waste streams, including municipal, construction & demolition and commercial & industrial wastes, and the capacity of waste facilities required to treat these wastes. It will take account of the principle that each Waste Planning Authority (WPA) should manage an equivalent tonnage of waste to that arising in its area, whilst recognising the importance of sharing of facilities and movement of waste streams within the sub-region. The Municipal Waste Management Strategy has been developed in consultation with the Planning team to ensure consistency with the emerging Waste Core Strategy. This approach is consistent with Government guidance and good practice in this area.

## Looking forward to 2030

There are many important considerations for setting the Vision and Objectives of a Municipal Waste Management Strategy. This and preceding sections of the Strategy have discussed the national, regional and local drivers and the local context of the current waste management service. These aspects set the scene for defining the Vision and Objectives of the Strategy.

## Vision & Objectives of the Municipal Waste Management Strategy

The vision of the Municipal Waste Management Strategy defines the intended 'direction of travel' for the waste management service. It provides an aim for the Strategy.

### Vision

*The Municipal Waste Management Strategy aims to deliver a service driven by the need to conserve resources and reduce carbon emissions. The municipal waste management service will be flexible and innovative as regards new technologies, high quality, accessible to all and delivered in a cost effective manner. The Council will lead by example and strive to work in partnership with the community and other stakeholders to: firstly reduce the amount of waste that is generated; secondly to recover materials for recycling; and finally to treat waste through energy and resource recovery techniques to support the energy needs of residents and businesses in the City. The amount of waste landfilled will be minimised with the ultimate aim of 'zero waste' to landfill. The Municipal Waste Management Strategy is integrated with the Nottingham Sustainable Energy Strategy, Carbon Management Plan and Nottingham Plan.*

### Objectives

The following objectives provide the areas of focus for delivery of the vision:

1. Manage wastes as resources, using the waste hierarchy as a guide: to prevent wastes arising in the first instance; then reuse; then recycle / compost; then recover energy, and; finally to dispose of waste as a last resort.
2. To reduce the amount of waste landfilled, working towards zero waste to landfill.
3. Calculate and consider the carbon emissions in making decisions around waste management services, and therefore minimise the impact on climate change. Continually seek to reduce carbon emissions to improve performance and contribute to the City and Council ambitions on carbon emissions.
4. The Council should 'lead from the front' and improve the environmental performance of activities within Council buildings and via services it provides, including the management of waste and resources.
5. Deliver high quality, customer focussed waste management services that are accessible and inclusive.
6. Actively engage in partnerships with the community sector, private sector or other public sector bodies to deliver the aims and objectives of this Strategy and expand the resource and expertise available to the service.
7. Consult and engage with the residents and the customers of the municipal waste management service to seek views, promote environmental awareness and improve participation in waste reduction, re-use and recycling schemes.

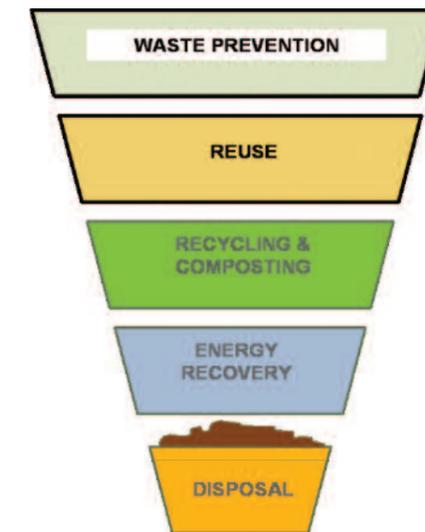
8. Where activity does not undermine more sustainable and affordable waste treatment, recover energy from waste to contribute to meeting City and Council carbon reduction and local energy generation targets; to utilise this energy to support the development and expansion of district heating and local energy schemes.
9. Ensure that options facilitate / integrate the management of commercial, industrial and other wastes where it is environmentally, socially and economically feasible to do so.
10. Seek efficiencies and economies of scale through partnering and procurement to retain a cost effective service.
11. Utilise and improve existing infrastructure where it can contribute to sustainable waste management and innovate in the development of new infrastructure where required.
12. Develop local solutions wherever practicable to minimise transport impacts.
13. The value of secondary raw materials / energy should be used locally where practicable.



14. Monitor, review and publish performance and retain flexibility to adapt the services in the light of changing markets, technology and regulations, where appropriate to do so.

15. Align the Municipal Waste Management Strategy with other relevant strategies and plans (including Carbon, Energy, Sustainable Community Strategy and Spatial plans) in accordance with good practice in delivering sustainable waste management.

The following sections of this document explore each level of the waste hierarchy (Figure 6) in turn and explain the actions and targets for delivering service improvements in line with the Strategy Vision and Objectives.



## Waste Prevention

Waste Prevention is a concept designed to reduce the amount of waste we generate. This may be achieved through a variety of activities such as registering for 'no junk mail' listings, or changing purchasing behaviour to reduce the amount of waste arising from unwanted packaging or food.

In Nottingham the latest set of data (2008/9) demonstrates that each of us generated, on average, ~414kg of household waste for that year.

Figure 8, illustrates how well we have performed relative to the other seven core cities in England by this measure.

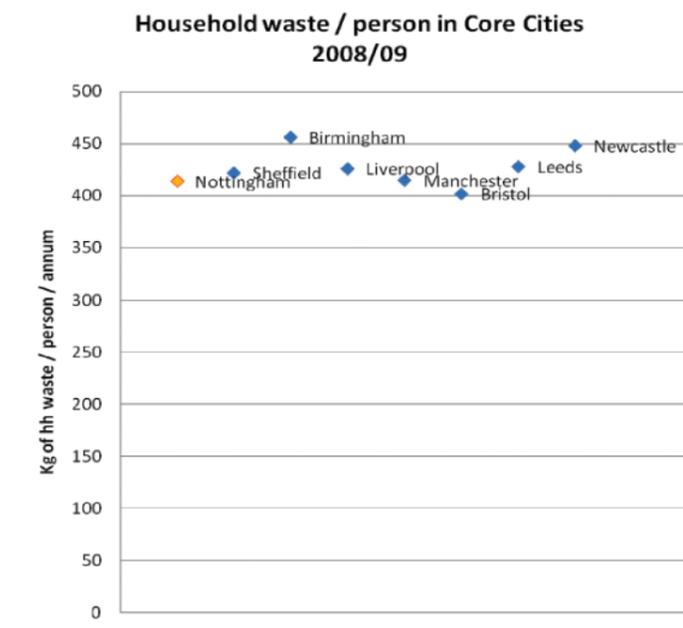


FIGURE 8 KG OF HOUSEHOLD WASTE PER PERSON FOR NOTTINGHAM & OTHER CORE CITIES

It can be seen that compared to the core cities, the amount of household waste generated per person in Nottingham is low (a good environmental outcome), and second only to Bristol in generating a low amount of waste. We need to build on this strong position and through this strategy propose to become the leading Core City with regards to minimising waste generation.

This is consistent with the first objective of this strategy, to promote the top end of the waste hierarchy and also the objective of minimising carbon impacts.

A detailed appraisal of Waste Prevention options was undertaken as part of the development process for the strategy. The preferred options<sup>19</sup> that resulted from the appraisal are included within this strategy. For further information on the appraisal, which options were considered and the process describing how we reached these preferred options refer to the Options Appraisal report, which accompanies this Strategy, and is available from [www.nottinghamcity.gov.uk](http://www.nottinghamcity.gov.uk).

The appraisal concluded that the areas of focus for waste prevention should, in the first instance, concentrate on reducing the amount of organic waste entering the household waste stream. This should be delivered by continuing to actively promote home composting and also through adopting a high profile “food waste prevention” campaign.

## Actions on Waste Prevention

The following actions are included within this Strategy to reduce waste arisings in the City.

1. A Government funded body known as the Waste & Resources Action Programme (or WRAP) coordinate and support a national campaign known as ‘Love Food, Hate Waste’. This campaign is designed to promote purchasing practices and cooking behaviours that will reduce the amount of food waste arising for disposal. Nottingham City Council will seek to implement this campaign in a high profile manner in 2011 to help reduce the amount of food waste arising for disposal. A successful campaign, based on previous case studies, should prevent around 4,000 tonnes of food waste arising over the period of the strategy<sup>20</sup>. This will also save on the wider environmental impacts of food production, processing and transport.
2. Nottingham City Council will continue to offer subsidised home composters, digesters and wormeries to residents and schools in the City and reinvigorate a promotional campaign to increase take up. For every additional 1,000 households which purchase and use home composters, over 2,000 tonnes of garden waste<sup>21</sup>, vegetable peelings, tea bags etc. could be diverted from the waste stream. In addition, home composting also provides a useful and nutritious compost for the gardener. The City Council will seek to partner with community groups or other third sector organisations to provide support to householders on how to make good quality compost and help encourage continued home composting practice.

<sup>19</sup> These were also considered against Sustainability criteria as part of the Strategic Environmental Assessment (SEA) process, reported in the Environment Report

<sup>20</sup> Assuming cooking / purchasing practices are maintained over the strategy period

<sup>21</sup> Over a ten year period, applying recommended rates in decline of usage

3. The City Council website is already an example of good practice as regards waste prevention and other waste management information, and so the profile of the web resource should be raised, and content refreshed where necessary.
4. The City Council will increase its resource allocated to providing waste prevention and other waste management information to non household waste producers and make linkages with relevant organisations and partners<sup>22</sup> to support the non household sector in improving waste management performance. In addition the City Council will explore food waste prevention options with food producers and retailers in the City to facilitate use of ‘fit for purpose’ but not ‘fit for sale’ foodstuffs.
5. The City Council will proactively engage with producers over areas where waste may be prevented and also liaise with trading standards officers as regards over-packaging practices. We will also lobby Government on issues relating to waste prevention and take a lead role in supporting national / regional campaigns at a local level.
6. The City Council is proactive in engaging with schools including support of education around food waste prevention. The council will continue to promote education in this area, giving talks that include waste prevention and link to wider campaigns and messages including: climate change, resource and energy management. The provision of free home composters to schools and wider waste management services will also be promoted. Engagement activities will also include interactive and ‘take home’ projects to also bring the messages to parents. Competitions and other incentives will be explored to help promote the waste prevention message. This activity is linked to other waste management activities in schools as explained in the ‘Reuse’, ‘Recycling & Composting’ and ‘Education & Communications’ sections of this Strategy.

## Waste Prevention Targets

Nottingham City Council will apply the initiatives explained in this Strategy and as detailed in the supporting Action Plan, and utilise its influence to seek to deliver the following household waste arisings targets (these figures include all the waste generated by the household, including ‘wheeled bin’ waste, recycling and garden waste put into the kerbside garden waste collection):-

- To reduce the amount of household waste generated to 400<sup>23</sup> kg / person / year by 2020
- To reduce the amount of household waste generated to 390 kg / person / year by 2025

## Measuring & Monitoring Waste Prevention

Attainment of these targets will be a factor of both the initiatives implemented by the Municipal Waste Management Strategy and wider influences such as the state of the economy and the move by supermarkets and government / EU policies on waste producers to reduce packaging. A greater environmental awareness of the public through environmental education in schools and the effect of national campaigns are envisaged to also have a positive impact on achieving these targets.

<sup>22</sup> For example CBI environment groups, National Industrial Symbiosis Programme, WRAP, waste exchanges

<sup>23</sup> A ‘normal’ level of generation is ~ 426kg of household waste per person per year in the City, current levels of ~414kg are likely to be depressed as a result of the economic downturn and so are not used as a basis for setting targets, hence the initial rise in household and municipal waste shown in Figure 9.

Waste prevention is an activity that is difficult to measure with accuracy, due to the variety of factors influencing waste arisings and therefore the limited manner in which the Council can influence overall arisings. The City Council recognises this challenge, but also is aware of the importance of reducing waste in order to improve environmental performance. The Council will also use its influence as one of the Core Cities group and through the Local Government Association to help encourage more sustainable waste management. This Strategy and its Action Plan will assess the degree of success of waste prevention initiatives implemented and if these activities are making insufficient progress towards the targets identified above, will develop further appropriate new initiatives to seek to deliver the waste prevention targets.

Figure 9 shows a projection of the anticipated growth of household and municipal waste in Nottingham for the period of this Strategy, assuming delivery of these waste prevention targets.

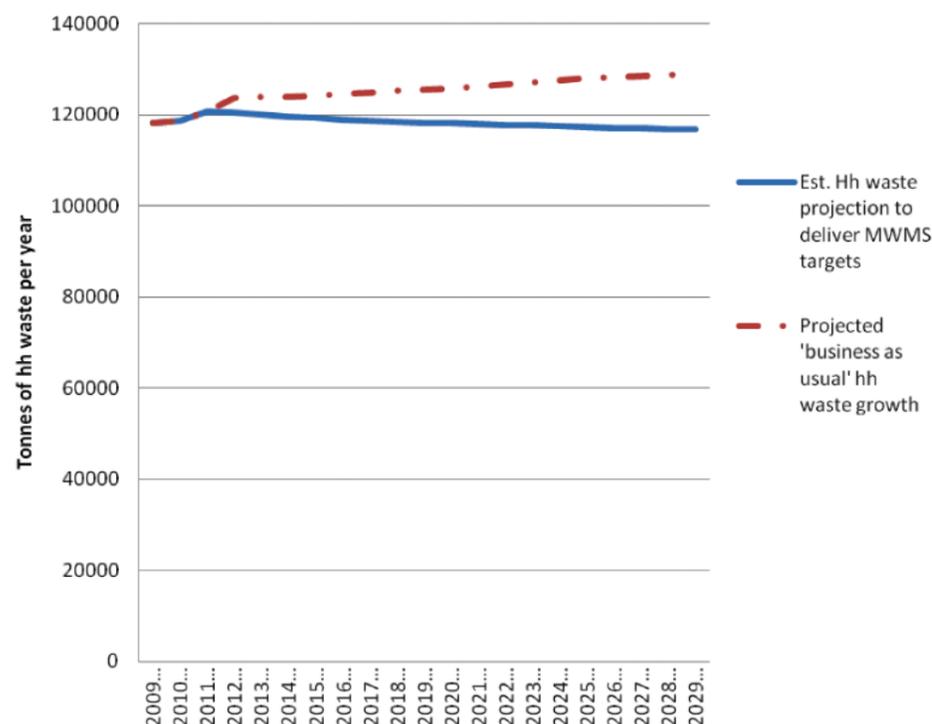


FIGURE 9 ESTIMATED PROFILE OF HOUSEHOLD WASTE ARISING 2010 – 2030

**Carbon Saving:**  
By focussing on these waste prevention initiatives, around 650 tonnes of CO<sub>2</sub> equivalent will be saved per annum.



## Reuse

Reuse is a concept describing where goods that we purchase, are used again, and therefore do not arise as waste (until they reach the end of their usable life). Examples include reusable shopping bags, giving unwanted goods to other parties that would have a use for the items, or refurbishing unwanted goods for resale.

Whilst there is some reuse activity taking place across the City via the Council referring users of the bulky waste service to the charity 'Family First', the Council has had limited direct involvement in reuse activity to date. This Strategy seeks to raise the profile of reuse and facilitate greater refurbishment and supply of used goods back into the community.

An appraisal of Reuse options was undertaken as part of the development process for the strategy. The preferred options<sup>24</sup> that resulted from the appraisal are included within this strategy. For further information on the appraisal, which options were considered and the process describing how we reached these preferred options refer to the Options Appraisal report, which accompanies this MWMS, and is available from [www.nottinghamcity.gov.uk](http://www.nottinghamcity.gov.uk).

The appraisal concluded that the areas of focus for reuse should, in the first instance, concentrate on working with third sector (charities / not for profit organisations etc) to help facilitate greater opportunities for reuse.

## Actions on Reuse

The following actions are included in this Strategy to encourage greater reuse activity in the City.

1. The City Council will provide a lead in co-ordinating and promoting reuse activity across Nottingham. This will involve a dedicated reuse & prevention coordinator in the Council with a role to engage with the third sector and to determine areas of support the Council can provide to facilitate greater amounts of refurbishment and reuse. Goods extracted from the waste stream for the purpose of reuse should contribute to other Council priorities such as supporting low income households. Anticipated areas of support include:-

<sup>24</sup> These were also considered against Sustainability criteria as part of the Strategic Environmental Assessment (SEA) process, reported in the Environment Report

- a. Identifying areas of potential improvement.
  - b. Providing support in developing the business case for reuse / refurbishment activity.
  - c. Providing resource to overcome blockages in the business case or to improve environmental and economic sustainability (e.g. provision of supporting services, free removal of unwanted goods, issuing reuse credit payments, enabling joint bids for external funding).
  - d. Facilitating reuse through provision of supporting infrastructure, for example an area for deposit of reusable items, an area for sorting reusables from waste etc.
  - e. Promoting reuse activities.
2. Another initiative that scored highly in the appraisal of reuse options, was the promotion of the Freecycle/Freegle (or similar) services. These are internet based<sup>25</sup> non profit networks of individuals who can advertise items that they no longer want for free collection by an individual that may be seeking such an item. It also allows requests for items that are wanted to be placed on the network. There is a Nottingham branch of Freecycle that tends to advertise around 1500 – 2500 items per month. The City Council will seek to raise the profile of the Nottingham Freecycle/Freegle networks through its waste management campaign activity and via the City Council website to facilitate further item reuse through this route. This may be considered a low cost method of furthering the objectives of this Strategy, which also supports a local community based service.
  3. The City Council will proactively engage with producers over areas where waste may be reused and also lobby Government on issues relating to reuse (e.g. deposit / return schemes) and take a lead role in supporting national / regional campaigns at a local level.
  4. The City Council is proactive in engaging with schools including support of education around reuse activities. The council will continue to promote education in this area, giving talks that include reuse and link to wider campaigns and messages including: climate change, resource and energy management. The encouragement of school swap days and wider waste management services will also be promoted. Engagement activities will also include interactive and ‘take home’ projects to also bring the messages to parents. Competitions and other incentives will be explored to help promote the waste reuse message. This activity is linked to other waste management activities in schools as explained in the ‘Prevention’, ‘Recycling & Composting’ and ‘Education & Communications’ sections of this Strategy.

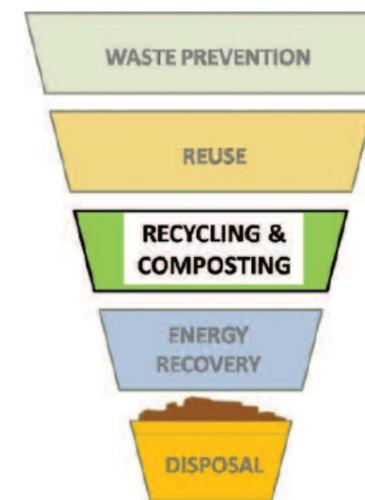
## Measuring & Monitoring Reuse

It is essential that the City Council demonstrates real and measurable success on reuse activity. Some reuse activities will fall under the Council control and therefore be readily measurable (e.g. bulky waste reuse). However others will fall outside of direct Council control (e.g. Freecycle/Freegle). The Council reports reuse as part of its national indicator (NI192), which records the percentage of household waste reused, recycled or composted each year, but will also separately identify the reuse component of this activity where practicable.

### Carbon Saving:

By focussing on these reuse initiatives, around 400 tonnes of CO<sub>2</sub> equivalent will be saved per annum.

<sup>25</sup> <http://groups.freecycle.org/FreecycleNottingham/posts/all>



## Recycling & Composting

Recycling is the process of recovering unwanted materials (such as paper, metals, plastic, glass) and reprocessing them into useful secondary materials that may then be made into new products. Using recycled material usually involves much less energy (and saves in carbon emissions) for making new products compared to extracting and using virgin materials.

Composting is the process where organic waste such as garden waste (grass cuttings, hedge trimmings etc) may be collected and processed at a composting plant. The composting process involves degrading the organic waste, in the presence of air, by the natural action of microbes, to produce a humus (known as compost) that may be applied to land. Food waste may also be composted at specialised facilities. An alternative treatment process for organic waste (such as garden or food waste) is known as Anaerobic Digestion and this technology is described under ‘Actions on Recycling / Composting’ later in this section.

In considering recycling activities, it is normal to consider the ‘recycling rate’ of the service. This tends to refer to the amount of household waste both composted / digested and recycled, relative to the total amount of household waste arising. Hence recycling and composting / digestion are usually addressed together in a waste strategy, despite being distinct processes in their own right.

As described previously (and illustrated in Figure 3) Nottingham has notably increased its recycling performance over the last ten years, and has recently improved the kerbside recycling service through the addition of glass to all households on the commingled collection system. This is anticipated to raise performance by 1 – 2% recycling rate when fully implemented. The national recycling target for household waste is set at 50% by 2020, and whilst this is not necessarily the level required at a local level<sup>26</sup>, we believe that we should deliver the national targets and seek to go further over the course of this strategy reinforcing Nottingham’s position of environmental leadership among the cities of the UK. Therefore the options considered are designed to raise the recycling rate from current levels to 50%+.

<sup>26</sup> Previous national targets have been apportioned differently depending on the ability of the authority to deliver the target, urban areas being less able to deliver the highest recycling rates relative to rural areas, as the latter support high performance with larger quantities of available green waste.

A detailed appraisal of Recycling & Composting options was undertaken as part of the development process for the strategy. The preferred options that resulted from the appraisal are included within this strategy<sup>27</sup>. For further information on the appraisal, which options were considered and the process describing how we reached these preferred options refer to the Options Appraisal report, which accompanies this Strategy, and is available from [www.nottinghamcity.gov.uk](http://www.nottinghamcity.gov.uk).

The appraisal concluded that a range of recycling and composting / digestion techniques would be required to deliver very high recycling rates, and that the focus should cover both household and non household waste streams.

## Actions on Recycling / Composting

The following actions are included in this Strategy to encourage greater recycling and composting of waste arising within the City.

1. **Improving the performance of the current kerbside recycling system.** Getting the most out of the current kerbside recycling collection system is one of the most cost effective options for improving recycling performance. This will be an initial priority for the Strategy across 2010 – 2012 and delivered through providing information to residents on how to use the collection service and the reasons for recycling more materials. Door knocking and providing information to low performing areas would be designed to optimise performance. Reaching a 'critical mass' of participation will encourage more households that would otherwise not have participated to also engage in the collection system. This is particularly important in areas with transient populations (e.g. student areas). It is anticipated that 1-2% can be added to the recycling rate through this approach. Improving the participation in the recycling service may be supported by incentive schemes or other mechanisms. A further action of this Strategy (and added in response to the public consultation), will be to explore such schemes and develop any that are appropriate to Nottingham.
2. **To explore and develop a compost 'give away' scheme** for free collection of compost generated by the garden waste collection scheme.
3. **Expanding the comprehensive kerbside recycling service.** The existing kerbside collection of glass, cans, paper, plastic bottles and card will be extended to all households that can accept the service. Further development of kerbside recycling services will be introduced where affordable and where resources/collection systems allow. This will enable greater access and participation for the service and deliver improved recycling performance.
4. **Developing Bring sites.** The bring site service, as described previously is likely to have a reduced role in light of the expanding kerbside collection service. However provision of bring sites at existing or new locations can fulfill an important addition to the overall service by providing collection capacity for materials not covered by the collection service (e.g. textiles, tetrapaks, aluminium foil and different types of plastics). Consideration of plastics recycling in particular has a strong carbon benefit. Furthermore, bring sites or

<sup>27</sup> These were also considered against Sustainability criteria as part of the Strategic Environmental Assessment (SEA) process, reported in the Environment Report

mini recycling centres can be targeted in areas that cannot receive the kerbside collection because of housing type (e.g. flats, multi-occupancy properties). The City Council will apply good practice methods<sup>28</sup> to provide recycling services to these types of properties in accordance with specialist guidance. We will review the location, usage and coverage of Bring Sites across the city in 2011, in partnership with third sector organisations (that also provide a range of bring banks across the City) with the aim of:-

- a. supporting the existing kerbside collection system.
- b. enhancing the range of recyclables collected.
- c. increasing service provision to those not on the kerbside collection service.
- d. gaining efficiencies where the enhanced kerbside recycling service has supplanted the need for bring sites.

5. **Introducing On Street Recycling.** We will explore the development of on street recycling litter bins<sup>29</sup> at strategic sites, in accordance with the Government code and guidance<sup>30</sup> and consistent with the National Waste Strategy. The Council will, in 2010-11, implement 'on street' recycling bins as appropriate in the City in response to an appraisal of suitable sites.
6. **Introducing a collection of food waste from the household.** In order to reach the mid 40's % or higher recycling rate, food waste will need to be separated at the household and sent for specialist treatment (either composting or Anaerobic Digestion). We have been trialling food waste collections to around 16% of households in the City in anticipation of introducing a food waste service across Nottingham. The highest ranked option according to the options appraisal and the most effective at saving carbon emissions of all the recycling options is to collect food waste commingled with green waste in the wheeled bin<sup>31</sup>, on a weekly basis, and to treat this waste in an Anaerobic Digestion (AD) facility. This type of facility, as the name suggests, digests the waste in the absence of air, in sealed vessels usually at around 35 – 45oC. The action of bacteria reduces the organic waste to a sludge type output which may be composted and applied to land<sup>32</sup>, or utilised as a fuel in combined heat and power schemes. The digestion process generates a biogas which may be either cleaned and injected into the gas grid, utilised as a vehicle fuel or combusted to generate electricity and heat (potentially to support a District Heating network). AD is relatively new to the UK as regards waste management, although has been used in continental Europe for many years, and indeed has been used in the UK sewage and agricultural sectors for decades. The current separate food waste collection system has also been successfully delivered to households and has other benefits (e.g. yielding a higher recycling rate) and this remains a further option for delivery if the business case for separate food waste collections is preferred. There is a close relationship between the collection & treatment options for Anaerobic Digestion, and all options should be explored when determining the business case to

<sup>28</sup> The Waste & Resources Action Programme (WRAP) have guidance and good practice case studies on estates, high rise and multiple occupancy recycling schemes and communications materials. [www.wrap.org.uk](http://www.wrap.org.uk)

<sup>29</sup> Segregated or separate bins for recycling materials on the high street (e.g. paper bins or can bins)

<sup>30</sup> Defra, 2008.

<sup>31</sup> From properties with gardens and therefore a green waste collection, for those properties without gardens a separate food waste collection would be appropriate

<sup>32</sup> Assuming it meets appropriate environmental criteria, or alternatively may be dried and burned in permitted facilities for further energy recovery

derive the optimum environmental<sup>33</sup>, economic and operational solution. The options of food waste collection / treatment modelled in the MWMS Options Appraisal indicated an increased cost to the council taxpayer at a rate of between £6 and £8 per household. Costs may be lowered through economies of scale and in implementing this option we would seek to partner with businesses and waste producers to send their organic wastes into the Anaerobic Digestion plant thereby reducing unit costs and yielding a greater carbon benefit overall. The Council has begun exploring options and strategic partnerships for implementing an anaerobic digestion process, potentially in combination with a biomass combustion process. Both of these aspects are explored in the Nottingham Energy Strategy (2010), and the Council is investigating the business cases for different organic waste collection and treatment options. We will seek to commence appropriate procurement options for this service during 2010/11, with a view to providing the collection and treatment service from 2014.

**7. Transforming the trade waste collection service.** The City Council collects waste (known as trade waste) from around 4,000 businesses / premises within the City. The Council will transform the basis on which the trade waste collection operates, to incentivise recycling and improve the carbon performance and recycling rate of the service. The organic fraction of trade waste, from appropriate businesses, will be collected separately to add feedstock to the Anaerobic Digestion process in the medium term (~2014). The trade waste collection service should seek to be 'recycling led' in the same manner that the household waste collection service is developing. It is recognised that the starting point for the trade service as regards recycling is low, and therefore a considerable amount of progress needs to be made before similar levels of recycling can be delivered to match household recycling performance. In addition some premises may have insufficient capacity for multiples of container types. It is for this reason that whilst the same targets are proposed for both the household and trade waste recycling systems (see 'Recycling Targets' subsection), there is a lag effect for delivery of the trade waste targets. The City Council will seek to innovate where collection systems present problems for trade waste customers (e.g. small and medium sized enterprises) and will explore alternative collection methods (e.g. trade waste bring banks) where such sites are more appropriate. Additional resources will be allocated in support of these developments in liaison with the trade waste collection team.

**8. Addition of further recyclables to the collection.**

The options appraisal considered adding further materials to the recycling collection system (notably textiles, aluminium foil, plastic film and 'other' plastics). The addition of these materials was also popular in the consultation responses. This collection option is projected to add a further 1 – 1.5% to the recycling rate and also has the second most beneficial carbon impact of all the kerbside recycling options assessed. It is estimated to be cost neutral, assuming that the decision to add further recyclables to existing collections is taken when stable, mature markets are established<sup>34</sup>. The weaknesses of this option include the potential effects on those organisations that currently collect, for example, textiles from the household (charity collections), and the increased rejection rate from the Materials Recycling Facilities in needing to handle 'difficult' to sort recyclate such as textiles / plastic film, some of which have more

volatile markets. It is recommended that the situation with recyclate markets and potential third party collection partners be considered on an annual basis including consultation with the Government recycling market development organisation (WRAP), recycling contractors and third sector organisations (e.g. charities) in order that decisions can be made. Where sustainable and economically viable markets are identified, then additional materials should be added to the commingled service or alternative / supplementary collections may be facilitated if this is more economical.

- 9. **Recycling Education.** The City Council is proactive in engaging with schools including support of education around recycling and composting. The council will continue to promote education in this area, running award schemes and giving talks that include recycling, composting and the link to wider campaigns and messages including: climate change, sustainability and energy management. Engagement activities will also include interactive 'take home' projects to also bring the messages to parents. Competitions and other incentives will be explored to help promote the recycling message. The provision of recycling services to schools and wider waste management services will also be promoted. This activity is linked to other waste management activities in schools as explained in the 'Waste Prevention', 'Reuse' and 'Education & Communications' sections of this Strategy.
- 10. **Reducing the Carbon impact of Collection & Transport.** Recycling is a fuel intensive process and although the vehicle movements contribute a relatively small amount to the overall carbon balance of the system (see Figure 7), this impact would be reduced notably by the use of non-fossil fuels (e.g. biofuels) in collection vehicles. The relative cost / benefits of the use of biofuels should be explored and could potentially save ~400 tonnes of CO<sub>2</sub> per annum. Distance to recyclate reprocessors / markets should be recorded and checked on a regular basis to seek to promote local markets where practicable.
- 11. **Recycling of Residual Waste.** The residual waste MRF operated by Wastecycle already operates at high recycling levels (between 20 – 60%) dependent on the waste stream going through the plant - e.g. rubble wastes are easier to recycle than mixed wastes etc. The process is continually being optimised to extract further recyclate or fuel fractions from the waste and this is an area where continual improvement should be sought to reduce residual waste to landfill and contribute to the objectives of this Strategy.
- 12. **Changing the kerbside recycling collection system.** A further aspect appraised within this strategy is the potential for an alternative household recycling collection arrangement. The present (commingled, fortnightly wheeled bin, with the recyclate sorted at the Wastecycle MRF) system was compared (using the appraisal criteria identified) against the main alternative method of collection which requires provision of collection boxes to all households in which recyclates is placed for collection. The content of these boxes is then sorted at the kerbside by collection crews, with recyclables placed into different compartments on specialist vehicles. This approach provides some quality control and also obviates the need for a sorting plant or Materials Recycling Facility. This type of collection is known as Kerbside Sort (KS) and both a weekly recyclate collection and a fortnightly collection were considered.



<sup>33</sup> This should include high energy recovery efficiency and low impact, sympathetically designed buildings

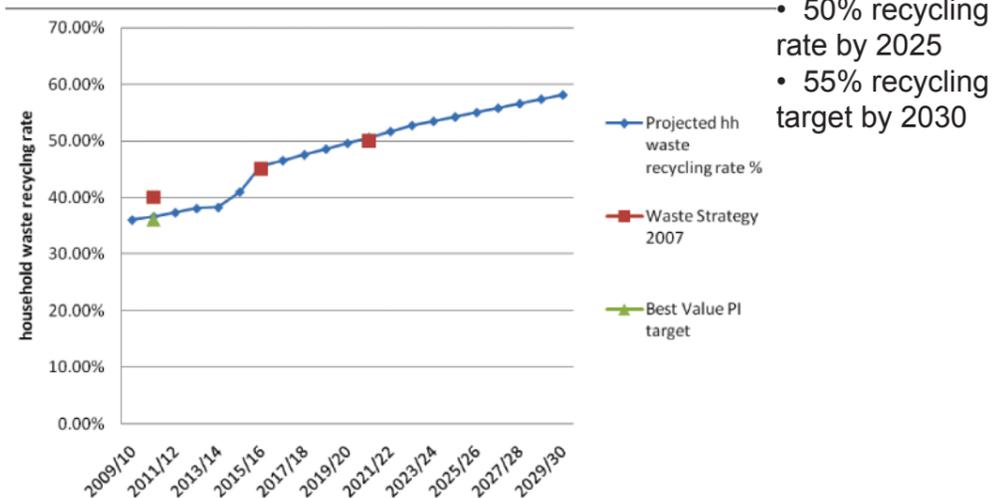
<sup>34</sup> Assuming the recyclables are added to the existing collection system.

The option of a weekly Kerbside Sort collection scored substantially higher in the Environment / Quality appraisal than the baseline service and yielded a good carbon return and the highest projected recycling rate of any option, excluding those with an organic waste collection element (~39%). The reason for this is that weekly collections have been shown to exhibit higher yields of recyclate than those with a fortnightly frequency and there is also less contamination of the recyclables, as boxes may be inspected prior to sorting of recyclate onto the vehicles. When compared to an optimised commingled collection however the differences between the two systems were marginal, with the commingled option slightly out-performing the kerbside sort option in terms of the Environment / Quality Appraisal. This was because an established commingled collection system is thought to be easier to understand and use by the householder. Additionally, the costs of delivering a weekly KS service are estimated to be notably higher than the commingled collection system with an increase of +£4 / household<sup>35</sup>. These costs do not include the extra costs of managing the transfer of collection systems from one vehicle and receptacle type to another. A disadvantage of the KS system, as derived from the modelling, is the larger number of vehicles required (25, versus 10 for commingled), and the potential for congestion and increased local air pollution as a result of idling vehicles whilst sorting recyclables at the kerbside, on a weekly basis. The current collection system has recently been re-launched (2010) with the addition of glass to the collection system. Taking these factors into account, it is considered appropriate to maintain and improve the current recycling collection system rather than replace with a new system.

## Recycling & Composting Targets

Nottingham City Council will seek to deliver the following targets through the actions identified in this MWMS:-

- Household waste recycling targets:
  - 50% recycling by 2020
  - 55% recycling target by 2025
- Trade waste recycling targets:



**FIGURE 10 PROJECTED HOUSEHOLD WASTE RECYCLING RATES FOR THE STRATEGY PERIOD**

<sup>35</sup> It should be noted that the vehicle costs and purchase of boxes are amortized over a period of five years in these cost assessments. Communications costs or contractual are not included.

Figure 10 projects levels of recycling to be delivered in Nottingham through the measures identified in this Strategy and continued improvements in education and environmental awareness. It also compares performance relative to local and national recycling targets.

It can be seen from Figure 10 that the initial National Waste Strategy target of 40% recycling by 2010 is unlikely to be delivered in Nottingham. However the extensive recycling measures identified in this strategy seek to deliver the medium and long term national targets and improve further in the latter period of the Strategy. Moreover Nottingham is also improving the management of non household waste as part of its actions within this strategy which is an area encouraged by Government, but with limited national targets.

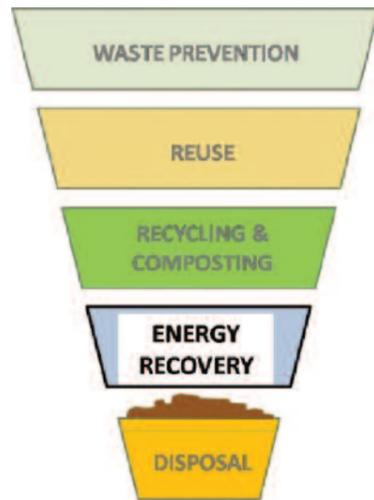
## Measuring & Monitoring Recycling & Composting

The Council reports recycling and composting as part of its national indicator (NI192), which records the percentage of household waste reused, recycled or composted each year. We will also report the level of trade waste recycling to ensure progress towards the respective trade waste targets.

Each year the City Council will liaise with the Waste Resources Action Programme (or any replacement Government Recycling / Market Development programme) to identify the state of the markets for recyclables not currently collected by the Council. Where sustainable, economically viable markets are identified these materials will be added to the collection system, either through direct provision by the Council or in partnership with private / third sector organisations.



**Carbon Saving:**  
By 2016 the recycling and composting actions are anticipated to reduce carbon emissions by ~3000 tonnes of CO<sub>2</sub> per annum, and improving performance year on year thereafter



## Energy Recovery

The current residual waste treatment process for municipal waste from Nottingham is the Eastcroft Energy from Waste plant.

Energy from Waste (EfW) is a treatment where municipal waste is combusted at high temperatures and uses the heat generated to drive steam turbines to generate electricity and provide heat for the District Heating system. This is partly 'renewable energy' and counts towards Government green energy targets.

Nottingham is currently well positioned with regard to energy recovery of municipal waste, as the majority of its residual 'wheeled bin' waste is sent to the Eastcroft Energy from Waste plant. Figure 11 illustrates the effect that increasing recycling performance has on decreasing energy recovery (predominantly because less waste is processed through the Energy from Waste plant). The left hand bar represents the baseline (current) household waste management system. The only high performing recycling system that also generates a greater amount of energy than the baseline is the commingled organics option (garden waste and food waste) sent to an anaerobic digestion system (the 3rd last bar from the right). This approach was described in the 'Recycling & Composting' section and is a system that the Strategy seeks to implement.

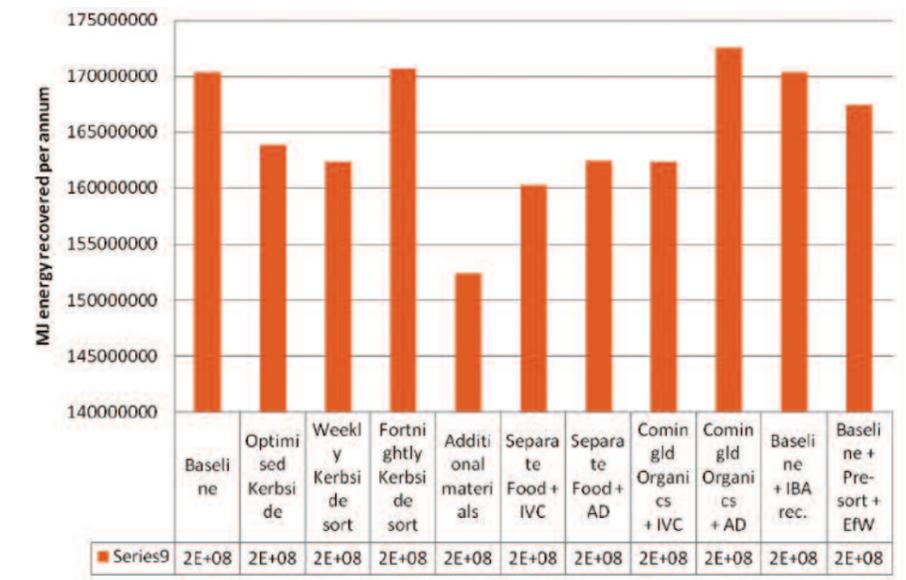
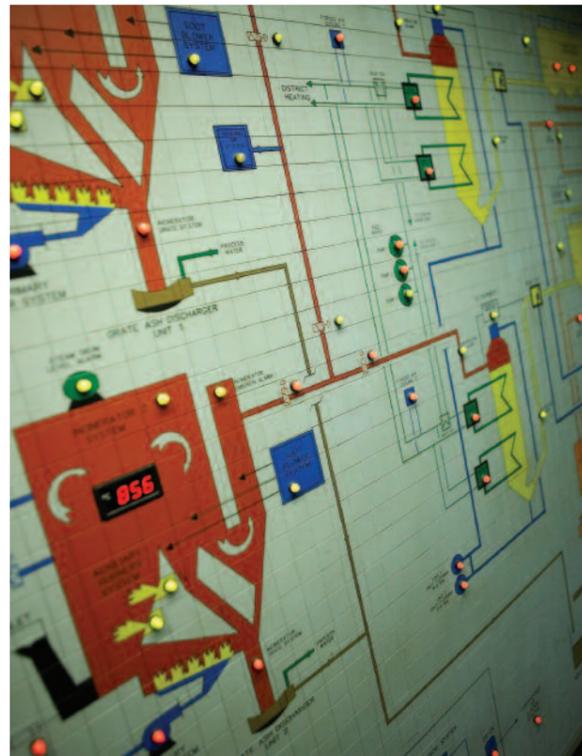


FIGURE 11<sup>36</sup> MEGA JOULES OF ENERGY RECOVERED PER ANNUM OF DIFFERENT STRATEGY OPTIONS

The direct link between the waste management system and energy recovery is evident in the City District Heating system which relies on steam from Eastcroft EfW plant in order to operate. We are unusual, if not unique in England as regards owning an energy company 'Enviroenergy', which runs the Combined Heat and Power (CHP) plant at London Road. This plant supplies the District Heating network and generates low carbon electricity. Government incentives for green energy are encouraging further development in this area which Nottingham is well placed to deliver. The District Heating network is undergoing expansion in the Southside area of the City and has the potential to expand further if the ambitions of the Nottingham Energy Strategy are to be achieved. In order to increase the range and extent of the District Heating system it will be necessary to boost the provision of steam available. This may be delivered through the proposed third line expansion of the EfW plant at Eastcroft and / or augmented by other energy recovery methods such as biomass combustion, gasification or anaerobic digestion. These alternative technologies will require additional waste or other feedstocks (such as energy crops or wood waste) to be processed into the City in order to provide sufficient fuel for these processes. At this stage each of these alternative options would be subject to planning and permitting considerations and are only likely to be delivered in the medium term where appropriate locations are available and where they are affordable. However as energy needs and the costs of obtaining energy may well increase over time, the ability to generate both electricity and heat within the City is likely to continue to provide a useful asset, in addition to improving our carbon performance.

During the consideration of options within the Strategy a scenario was modelled where the bottom ash (the remaining residue after incineration, known as IBA) from the Eastcroft plant was sent for specialist recycling, rather than the current practice of use on<sup>37</sup> and deposit into landfill. This option was found to yield significant carbon benefits, predominantly due to the extraction and recycling of metals from the ash. Figure 12 illustrates the carbon benefit of ash recycling on the second bar from the right<sup>38</sup>. It should be noted that in this graph the greater the negative score, the more carbon is avoided, or 'saved'.

<sup>36</sup> Note that the scale for this graph does not begin at zero, to illustrate the differences between the options, which in the balance of the entire system are relatively subtle.

<sup>37</sup> The ash is currently used to construct temporary roads on a landfill site

<sup>38</sup> As compared to the baseline (current) situation on the extreme left

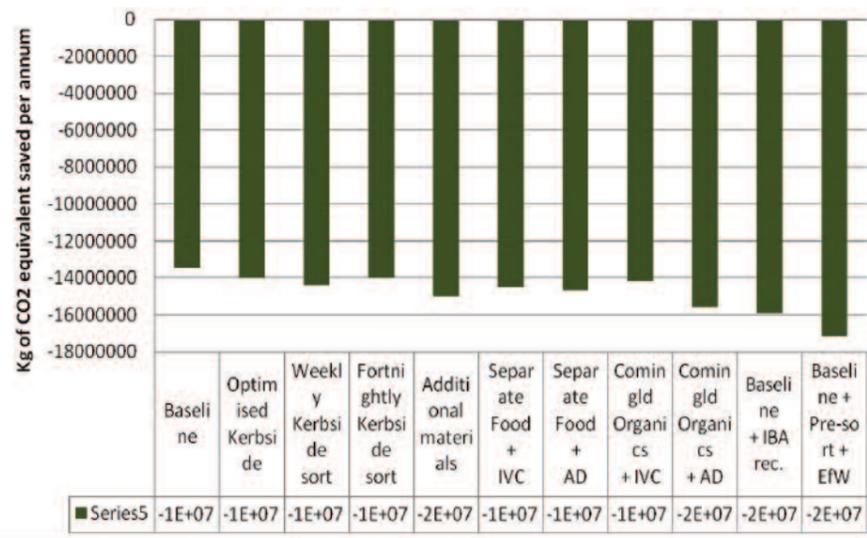


FIGURE 12 KG OF CO<sub>2</sub> EQUIVALENT SAVED THROUGH NOTTINGHAM WASTE MANAGEMENT SCENARIOS

Towards the end of this Strategy period (around the mid 2020's) the City Council will need to consider its options as regards replacing the residual waste treatment contract with Waste Recycling Group (which runs out in 2030). The Council is working with WRG to review the contract and align to new strategic priorities in advance of this end date and in light of the ambitions of the Nottingham Sustainable Energy Strategy, carbon reduction commitments and the objectives of this MWMS.

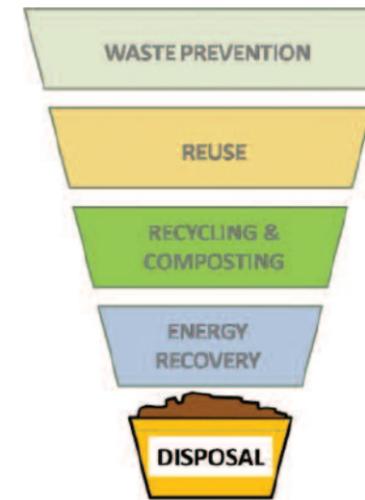
This Strategy has considered the environmental implications of other alternative residual waste treatment technologies at a high level, assuming that they will still need to provide sufficient steam to supply the District Heating network. This restricts the choice of options to thermal based technologies, and there are definite carbon benefits indicated by the model in pre-sorting the residual waste (for example through a mechanical recycling extraction system) prior to thermal treatment at the plant. This is shown in Figure 12, final bar on the right. There would be significant additional costs however attached to pre-sorting and a marginal reduction in energy recovery (Figure 11, final bar on the right), and these considerations should be evaluated in more detail in the 2020 review of the Municipal Waste Management Strategy in light of prevailing market conditions.

### Measuring & Monitoring Energy Recovery

The Council reports quantities of waste that are sent to Energy Recovery each year. This will include both Energy from Waste, refuse derived fuels created from municipal waste streams by Wastecycle, and other relevant technologies accepting municipal waste such as Anaerobic Digestion.

#### Carbon Saving:

The recycling of bottom ash (and associated metals) is anticipated to reduce carbon emissions by ~2,000 tonnes of CO<sub>2</sub> per annum. Further substantial savings may be delivered through expansion of the District Heating system although this is outside the remit of this Strategy.



### Disposal

Disposal is the least preferable option in the waste hierarchy and it usually refers to the practice of landfilling.

The disposal of waste to Landfill is considered to be the least environmentally acceptable method of managing wastes and as such is in the lowest order of the waste hierarchy. At present Nottingham is one of the best performing authorities in the UK for avoiding landfill, sending only around 19% of waste to landfill compared to the national figure of 50%.<sup>39</sup>

This Strategy has a key objective of moving the management of waste up the waste hierarchy and therefore reducing the amount of residual waste remaining for treatment or disposal. The initiatives outlined in the preceding sections of this MWMS, combine to reduce the amount of residual waste to levels significantly below (better than) national targets. This is why the Strategy is entitled “A ‘waste – less’ Nottingham” as we seek to lead the way in generating the minimum amount of residual waste. Figure 13 demonstrates projected performance relative to the national target.

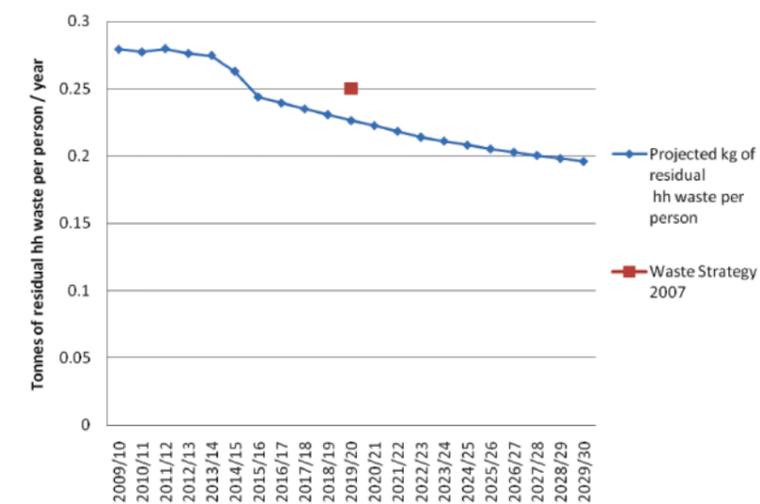


FIGURE 13 KG OF RESIDUAL HOUSEHOLD WASTE PER PERSON PER ANNUM

<sup>39</sup> Defra Municipal Waste Management Statistics 2008/9

The concept of zero waste to landfill is an ambition that has been adopted in this Strategy in order to encourage constant review of how we manage our wastes and to seek to drive waste up the hierarchy of options. Key measures within this strategy designed to help deliver the long term objective of zero waste to landfill include:

- Waste prevention measures – to reduce overall waste arisings.
- Re-use initiatives to extract often difficult to manage wastes from the waste stream (e.g. bulky goods) that are often inappropriate for recycling or energy recovery, and therefore could otherwise end up in landfill.
- To innovate and continue to deliver best practice in extracting more recyclate from the household and trade waste streams to reduce overall levels of residual waste.
- Work with residual waste treatment partners (e.g. Wastecycle, Waste Recycling Group) to seek alternative treatment measures to recover materials or energy from residual waste and avoid landfill.
- Work with WRG to recycle bottom ash from the Eastcroft plant to provide a useful secondary aggregate and to avoid landfill disposal of this material.
- Ensure sufficient reuse, recycling, and residual waste treatment capacity is available throughout the Strategy period and beyond to prevent landfill becoming the default option for wastes.
- Continue to deliver education and raise awareness of environmental issues to encourage sustained behavioural change to deliver more sustainable waste management and reduce levels of residual waste to a minimum.

There is a further incentive for diversion of waste from landfill in the form of the Landfill Allowance Trading Scheme (LATS). This is a mechanism developed by Government to reduce the amount of biodegradable municipal waste (BMW) going to landfill. This mechanism annually imposes a reducing amount of landfill permits to each authority, through to 2020. Each permit allows deposit of one tonne of BMW into landfill. If the amount of landfilling exceeds the number of permits the authority is allocated, then the authority will need to buy the required number of permits from another authority which enjoys excess permits because of their sustainable waste management practices<sup>40</sup>, provided that there is a demand. Conversely those authorities that landfill less than they are permitted can sell their allowances. Nottingham is in a strong LATS position throughout the Strategy period and anticipates to be able to sell excess allowances (albeit their value is very low at present, but potentially likely to increase as allocations of permits become stricter). This scheme may be reviewed however and therefore the Council will consider any implications of this review if it occurs.

The impact of the measures outlined in this strategy will dramatically reduce the amount of both household and municipal (including trade and non household wastes) left over for residual waste treatment and disposal. This is illustrated by the purple section of Figure 14.

<sup>40</sup> Or risk facing a Government fine of £150 / tonne

## Monitoring & Measuring Disposal

The Council reports tonnages of municipal waste to landfill as part of its national reporting requirements.

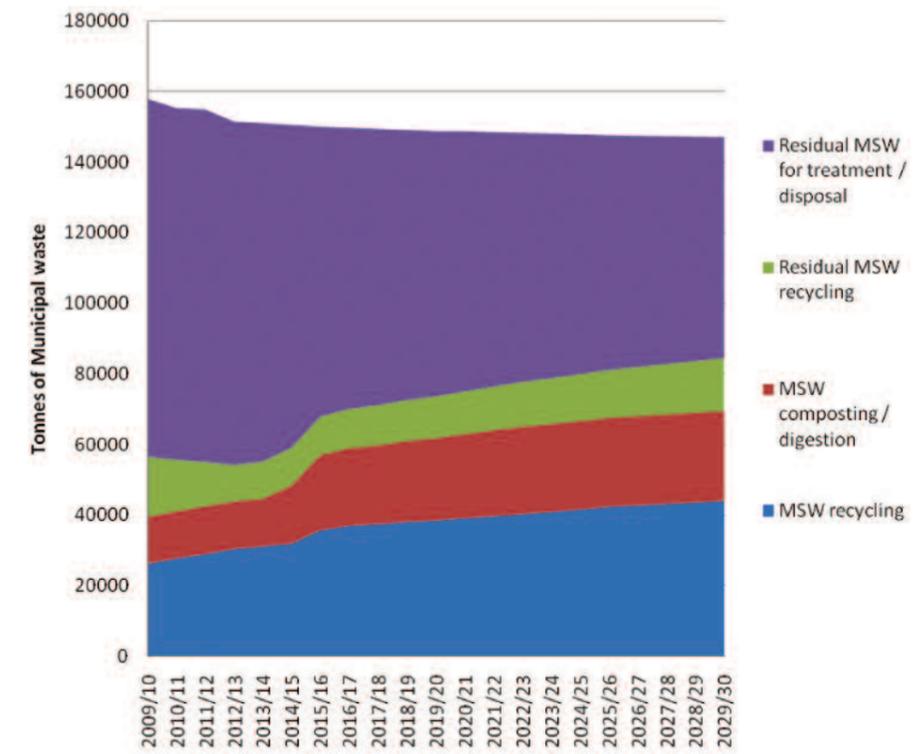


FIGURE 14 MUNICIPAL WASTE (MSW) MANAGEMENT FOR THE PERIOD 2010 – 2030

### Carbon Saving:

Reducing landfill, particularly of biodegradable materials, will almost always result in improved carbon performance. The extent to which this improvement equates to tonnes of CO<sub>2</sub> diverted will depend on the residual waste management approach utilised to replace the landfill. The CO<sub>2</sub> savings of this activity have been partly identified in the previous sections of this MWMS (i.e. through prevention, reuse, recycling and energy recovery)

## Leading from the Front – What will the Council be doing?

Nottingham City Council has identified a need to improve its own environmental performance. It has made this one of the key objectives of this Municipal Waste Management Strategy and seeks to develop sustainable waste management practices throughout its offices, depots and public buildings in the delivery of services and those of its strategic partners.

The City Council Environmental Policy (2009) includes a commitment to establish an Environmental Management Scheme and “to progressively reduce – reuse – recycle our waste”.

The City Council therefore commits to undertake the following actions as regards its own waste:-

1. The City Council will develop in house Waste Prevention & Reuse initiatives and seek to deliver against its Environmental Policy through setting in place sustainable procurement guidelines, green office practices, auditing and setting targets. This may be delivered through an Environmental Management system or similarly structured management system.
2. The City Council will implement recycling collection schemes at all key office, public building and depot locations to ensure that waste that does arise will be appropriately segregated and recycled.
3. The City Council as part of its sustainable procurement activity will seek to buy recycled goods wherever practicable.
4. The City Council will audit waste arisings and set waste reduction targets and targets for recycling, to demonstrate that the Council is also furthering the objectives of this Strategy through its in-house activities.
5. The City Council will establish a Climate Change Panel, linked to waste, energy and sustainability issues.

## Council Targets

In addition to the other reporting mechanisms the Council has set some targets for its in-house practices, specifically:-

- The Council will recycle / compost 50% of its 'in-house' waste by 2020.
- The Council will reduce its waste generation by a defined amount, determined after audit of the Council's waste arisings.

## Monitoring & Measuring In-House Environmental Performance

The Council will audit waste arisings and management in 2011 and set short, medium and long term targets around waste generation and recycling. These will be reported annually as tonnes of waste arising and % recycling rate.

## Education & Communications

The success of this strategy will depend on engaging residents with information and encouraging participation in new initiatives and practices to help improve the management of our wastes. The Council has a Sustainability and Climate Change team that support this agenda and are also linked to delivery of key aspects of the Nottingham Energy Strategy.

Education and engagement will involve the Council providing services that are inclusive, accessible, easy to use and supported by clear communications that explain the 'why' as well as the 'how' to use the services. The former aspect will include the link to climate

change and carbon benefits of improved waste management. Where these carbon benefits can be quantified they should be displayed and publicised alongside other (tonnage based) information on the services. The communications materials will take account of the language diversity in some areas of the City.

The appraisal of options that has informed this strategy included four key actions for which communications are a central element:-

1. Optimisation of the current kerbside recyclables collection (see the Recycling & Composting section).
2. Launching a high profile Nottingham 'Love Food, Hate Waste' Campaign of food waste prevention, combined with promotion and use of home composters (see Waste Prevention section).
3. Developing & implementing a food waste collection system (potentially commingled with green waste) across the City.
4. Linking communications to broader sustainability, carbon and resource management messages.



Whitegate Primary School, Clifton

The communications aspects required for the different initiatives is likely to utilise various techniques as explained below. However key aims of the campaigns are likely to include:-

- Informing the public about how to recycle smartly.
- Securing the public's help in recognising what can be recycled and to encourage separation of recyclable materials from residual waste streams.
- Acceptance that Waste Prevention, Reuse, Bulky waste initiatives, Bring sites and the Household Waste Recycling Centre are important supporting elements of the service.
- Explaining the benefits of recycling and the potential for action, including the concepts of Act Local: Think Global.
- Winning over those less likely to recycle and reinforce behavioural change.

This MWMS identifies that a cost effective method of increasing recycling towards 40% is to build upon the initial communications activity for the commingled collection with supporting communication activity to enhance the performance of the system. This is likely to involve face to face support to householders that are not fully participating in the new scheme in order to explain the benefits of the service and to maximise the amount of recycling that is collected through the system. This will require resource from the waste management budget, supported by expertise from the Communications department of the Council to establish a strategy for engaging with householders. Such an initiative could take place potentially through partnerships with the third sector (e.g. community groups

and the use of volunteers – ‘Recycling Champions’). The collection operatives will also provide an important contact point for residents and therefore relevant campaigns should be developed in conjunction with appropriate training delivered to collection crews to ensure an effective and cohesive message is conveyed through the service.

It is recommended that the communications activity should be planned during 2010/11 and implemented in 2011/12. During the planning stage, intelligence should be gathered on the strengths and weaknesses of the recycling collection system in terms of system performance. This will help identify the areas of focus for the communications activity, for example it may be appropriate to provide further information to householders on which materials should be recycled and which should not be (e.g. clear guidance on which plastics can / cannot be placed into the recycling bin). Alternatively if some recyclable materials are not being captured, or if contamination of recycling loads is found to be a problem, alternative messages can be devised. Different issues will require different approaches, messages and resources in terms of effective communications activity.

The campaign to tackle food wastes can be developed from experience in Sneinton and other areas where similar campaigns have been conducted (e.g. Kent Waste Partnership, Sandwell MBC, City of York Council & Cumbria County Council). There is considerable support available from the Waste & Resources Action Programme (WRAP) for the ‘Love Food, Hate Waste’ campaign and there may also be funding from WRAP for communications activities. The campaign will also be linked to home composting promotion and the two aspects, supported by the communications methods identified, delivered through a dedicated communications strategy. Examples of successful methods employed in other areas to raise awareness of these issues include:-

- Road shows to promote the messages within the campaign.
- Links with local and celebrity chefs to promote recipes for use of left overs.
- Competitions and links with local radio stations to promote the message.
- Dedicated website for Nottingham residents with news on the campaign, materials and useful links<sup>41</sup>.
- Gaining additional support / resource through other campaigns can also add to the strength of the campaign (e.g. links with the healthy eating agenda).

The implementation of a food waste collection system in the medium term will require reinforced communications activity and a wider public engagement campaign.

## Education & Schools Activity

As explained under preceding sections of this Strategy, the City Council is proactive in engaging with pupils on recycling and resource management topics and delivers numerous presentations and activities on these issues. This is an important element of engaging with the community and educating a new generation on environmental awareness, personal responsibility and teaching that small individual actions can lead to collective environmental benefit.

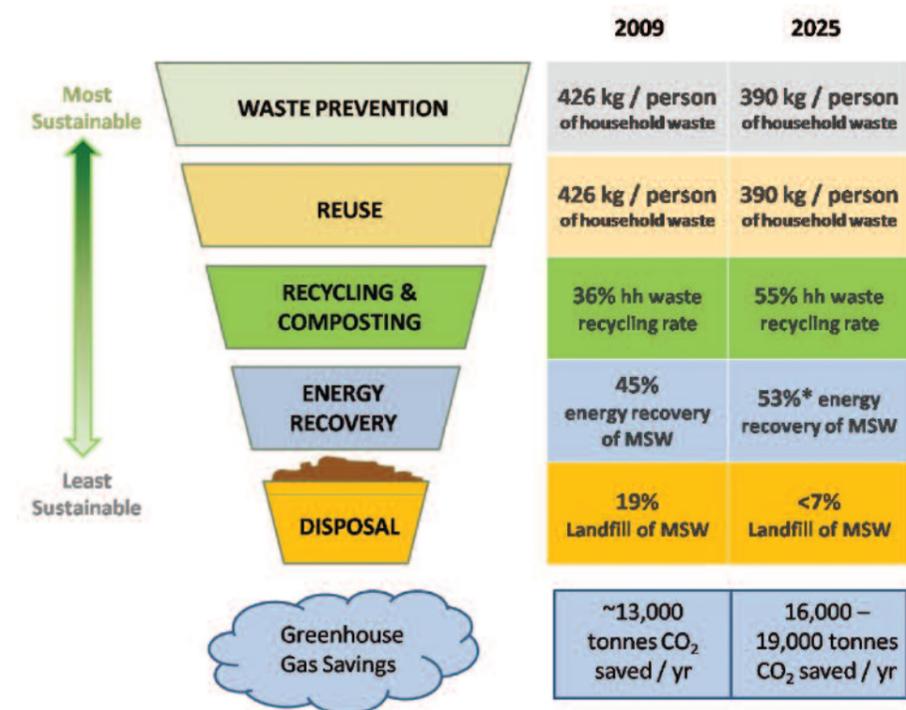
The current programme of engaging with schools and taking the role as a community leader in the management of municipal waste should be maintained for the duration of the

<sup>41</sup> This can be provided via WRAP

Strategy with a target of at least 30 school visits per year to be delivered by dedicated and trained council staff. The presentations should deal with the services available both in school (as explained in previous sections of this Strategy) and in the wider community, and should also make the link with sustainability, climate change and energy. Street cleansing issues such as littering should also continue to be addressed including reference to enforcement issues as necessary.

## Where will the Strategy take us?

This Municipal Waste Management Strategy is founded on the principles of saving carbon and developing a more sustainable waste management service. This means reducing the impacts on the environment and implementing changes that maintain an efficient and accessible service for householders. The important driver of moving waste up the hierarchy, away from disposal and to more beneficial use of resources is also a central theme of this strategy. Figure 15 illustrates where this strategy takes us, from a 2009 baseline<sup>42</sup>, to 2025, in the context of the waste hierarchy. It should be noted that the targets reported at the top end of the hierarchy (prevention, reuse, recycling) are reported at a national level as household waste targets, whereas those at the base of the hierarchy as municipal waste targets (i.e. they include some non household waste also collected by the authority).



**FIGURE 15 CURRENT & PROJECTED PERFORMANCE AGAINST THE WASTE HIERARCHY**

\* Energy Recovery also includes Anaerobic Digestion in the 2025 column, which also counts as Recycling, hence the high energy recovery and recycling rate.

<sup>42</sup> A 'normal' level of generation is ~ 426kg of household waste per person per year in the City, the actual 2008/9 levels of ~414kg are likely to be depressed as a result of the economic downturn and so are not used as a basis for setting targets

## Monitoring & Review of the Strategy

The Municipal Waste Management Strategy will be reviewed every 5 years or where a substantial change in legislation, policy or other circumstance warrants a review outside of that timescale. The Strategy is supported by an Action Plan which includes short, medium and long term actions and identifies responsibilities to support the delivery of the Strategy. An Action Plan is also available at [www.nottinghamcity.gov.uk](http://www.nottinghamcity.gov.uk).

Interim and long term targets form a major component of the Strategy and these will be monitored and reported on an annual basis to determine overall performance against key strategy areas.



Haydn Primary School, Sherwood

## Glossary of Terms & Abbreviations

**Anaerobic Digestion (AD)** – degrading organic wastes in a sealed vessel in the absence of oxygen to derive a combustible biogas and leave a solid and / or liquid digestate, which may, under certain limitations, be applied to land.

**Best Value** – places a duty on local authorities to deliver services (including waste collection and waste disposal management) to clear standards – covering both cost and quality – by the most effective, economic and efficient means available

**Carbon Dioxide (CO<sub>2</sub>)** – the most common ‘greenhouse gas’ – a contributor to climate change. The impact on climate change of a process is usually measured as Carbon Dioxide equivalents, in order to provide a common unit of measurement

**Civic Amenity site** – see Household Waste Recycling Centre

**Commercial waste** – waste arising from premises which are used wholly or mainly for trade, business, sport, recreation or entertainment, excluding municipal and industrial waste

**Commingled collection** – a kerbside collection system whereby two or more recyclables or other waste streams are collected together and placed in a mixed form into a collection vehicle. Where recyclables are collected in this manner there is usually a requirement for a sorting facility (Materials Recycling Facility) in order to separate the materials for onward sale for reprocessing

**Community sector** – including charities, campaign organisations and not-for-profit companies

**Composting** – an aerobic, biological process in which organic wastes, such as garden and kitchen waste are degraded to form a compost that may usually be beneficially applied to land

**DEFRA** – Department for the Environment, Food and Rural Affairs

**EU Directive** – a European Community legal instruction, which is binding on all Member States, but must be implemented through the legislation of national governments within a prescribed timescale

**Energy from waste (EfW)** – a term including a variety of technologies, although most energy recovery is through incineration with electricity generation taking place via the heat generated by the combustion (using a steam circuit)

**Garden waste** – Vegetation and plant matter from household gardens, local authority parks and gardens and commercial landscaped gardens

**Green waste** – see also Garden waste

**Home composting** – compost can be made at home using a traditional compost heap, a purpose designed container, or a wormery

**Household waste** – this includes waste from household collection rounds, waste from services such as street sweepings, bulky waste collection, litter collection, hazardous household waste collection and separate garden waste collection, waste from civic amenity sites and wastes separately collected for recycling or composting through bring or drop-off schemes, kerbside schemes and at civic amenity sites

**Household Waste Recycling Centre (HWRC)** – also known as a ‘Civic Amenity site’ under regulations. A site at which householders can deposit household waste free of charge, usually combined with recycling facilities.

**Industrial waste** – waste from any factory and from any premises occupied by an industry (excluding mines and quarries)

**Kerbside collection** – any regular collection of recyclables from premises, including collections from commercial or industrial premises as well as from households. Excludes collection services delivered on demand

**Kerbside Sort** – A recycling collection system, usually using boxes rather than bins therefore enabling collection crew to sort the recyclables at the kerbside into a compartmentalised or caged vehicle.

**Landfill Allowance Trading Scheme (LATS)** - a mechanism developed by Government to reduce the amount of biodegradable municipal waste (BMW) going to landfill. This mechanism imposes a reducing amount of landfill permits to each local authority, up to 2020. These permits are tradable and each allow deposit of one tonne of BMW into landfill. There are penalties for failing to satisfy obligations.

**Landfill sites** – are areas of land in which waste is deposited. Landfill sites are often located in disused quarries or mines. In areas where there are limited, or no ready-made voids, the practice of landraising is sometimes carried out, where some or all of the waste is deposited above ground, and the landscape is contoured

**Materials Recycling Facility (MRF)** – also known as a Materials Recovery Facility, they sort mixed recyclables (such as from a commingled collection) into their component waste types and bulk them for onward sale for reprocessing. There are also residual waste MRFs as described below.

**Metropolitan Authority** – a classification of some, predominantly urban, local authorities

**Mini Recycling Centre (MRC)** – A localised collection point for deposit of recyclates, e.g. glass, paper and cans. These are usually in the form of one or more banks for each material.

**Municipal waste** – this includes household waste and any other wastes collected by a Waste Collection Authority, or its agents, or managed by the Waste Disposal Authority such as municipal parks and gardens waste, beach cleansing waste, commercial or industrial waste collected by the Council, and waste resulting from the clearance of fly-tipped materials

**Municipal Waste Management Strategy (MWMS)** – The document setting out the vision, objectives, targets, policies and actions for the management of municipal waste arising in a local authority area.

**On-Street Recycling** – Provision of ‘litter bin’ style recycling receptacles for the types of materials occurring in urban retail or commuter type environments.

**Prevention** – Changing living practices or behaviours to avoid the generation of waste that would have otherwise occurred (e.g. using Real Nappies as opposed to disposables or registering to avoid receiving Junk Mail).

**Producer responsibility** – is about producers and others involved in the distribution and sale of goods taking greater responsibility for those goods at the end of the product’s life

**Recovery** – a term that means where energy or material value is derived from waste, for example through recovering energy by combusting waste and generating electricity from the heat.

**Recycling** – involves the reprocessing of wastes, either into the same product or a different one. Many non-hazardous industrial wastes such as paper, glass, cardboard, plastics and scrap metals can be recycled. Hazardous wastes, such as solvents can also be recycled by specialist companies, or by in-house equipment

**Residual Waste Materials Recycling Facilities** – These facilities are designed to sort mixed residual waste (e.g. wheeled bin waste) in order to separate usable or recyclable fractions. The type of recyclables extracted are usually metals and a glass / aggregate fraction. They may also prepare a fuel type fraction from the lighter more combustible components of the waste.

**Reuse** – can be practised by the commercial sector with the use of products designed to be used a number of times, such as reusable packaging. Householders can purchase products that use refillable containers, or re-use plastic bags. The processes contribute to sustainable development and can save raw materials, energy and transport costs

**Strategic Environmental Assessment (SEA)** – The process by which programmes and plans are appraised as to their impact on the environment, in the context of guiding policy and legislation, and with mitigations proposed for any impacts.

**Sustainable development** – development which is sustainable is that which can meet the needs of the present without compromising the ability of future generations to meet their own needs.

**Sustainable waste management** – means using material resources efficiently, to cut down on the amount of waste we produce. And where waste is generated, dealing with it in a way that actively contributes to the economic, social and environmental goals of sustainable development

**Treatment** – involves the chemical or biological processing of certain types of waste for the purposes of rendering them harmless, reducing volumes before landfilling, or recycling certain wastes

**Unitary Authority** – a local authority which has the responsibilities of both Waste Collection and Waste Disposal Authorities

**Waste** – is the wide ranging term encompassing most unwanted materials and is defined by the Environmental Protection Act 1990. Waste includes any scrap material, effluent or unwanted surplus substance or article for which the owner intends to discard

**Waste arisings** – the amount of waste generated in a locality over a given period of time

**Waste Hierarchy** – suggests that: the most effective environmental solution may often be to avoid waste generation – prevention; where further prevention is not practicable, products and materials can sometimes be used again, either for the same or a different purpose – reuse; failing that, value should be recovered from waste, through recycling, composting or energy recovery from waste; only if none of the above offer an appropriate solution should waste be disposed of

**Waste streams** – Waste generated from different sources

## Action Plan for Nottingham's Municipal Waste Management Strategy

### Waste Prevention & Reuse Actions & Targets

Approach	Action	Responsibility	Timescale
<b>Facilitating Prevention &amp; Reuse</b>	Nottingham City Council (NCC) to subscribe to the low cost home composter scheme/s to ensure good value units (including digesters and wormeries) are available to householders.	Waste & Energy Strategy Manager (W&ESM)	2010 - ongoing
	Nottingham City Council to resource a Waste Prevention & Reuse Coordinator (WPRC) to co-ordinate Waste Prevention & Reuse initiatives.	W&ESM	Q1, 2011/12, ongoing
	Nottingham City Council to resource a Non Household Waste Coordinator (NHWC) to co-ordinate all activities associated with non household waste.	Trade Waste Manager	Q1, 2011/12, ongoing
	Nottingham City Council to continue to encourage and provide free uptake of home composters at schools & support reuse activities (e.g. SWAP days) at schools. Seek to engage with partners for competition incentives. Deliver education activities including those described in MWMS.	Sustainability Education Officer	2010 - ongoing
	Nottingham City Council to engage & maintain a dialogue with third sector groups in the City to explore and develop opportunities for partnerships concerning the reuse of goods. Active facilitation & support & funds provided by NCC to help establish, promote and improve reuse activities across the City.	WPRC / Waste Section	Start Q1, 2011/12 - ongoing
	Nottingham City Council will plan a communications campaign, centred on 'Love Food, Hate Waste', but with a linked promotion of subsidised home composters. NCC to seek the support of WRAP to add value and expertise to the planning and resource available. The plan should include appropriate monitoring and evaluation methods	WPRC / Waste Section	Start Q1, 2011/12
	NCC to populate the Council website with additional information on non household waste management, with a contact point for non household waste queries.	NHWC	2011/12
	NCC to explore non household food (e.g. Fareshare) and other waste prevention and reuse initiatives for commercial / trade / industrial wastes.	NHWC	2011/12 - ongoing

Approach	Action	Responsibility	Timescale
	NCC to contact the Nottingham branch of Freecycle / equivalent networks, and use existing media channels (e.g. the Arrow magazine), the website and promotional literature at events to raise their profile and encourage usage	WPRC	Q3, 2011/12
	Nottingham City Council to seek to partner with a third sector organisation to provide home composting support to households 'Master Composter scheme' and 'Master Recycler', with training provided by the Waste section of NCC, supported by WRAP	WPRC + Waste Section + WRAP support	Start Q2, 2011/12 ongoing
	NCC to lobby business / Government / other stakeholders as regards waste prevention (e.g. around packaging) to seek partnership solutions and alternative measures to reduce waste.	Neighbourhood Services Management Team	Q3 2011/12, onwards
	Nottingham City Council to launch and run a dedicated campaign centred around 'Love Food, Hate Waste' to promote food waste prevention, linked to a home composter promotion. The campaign should include:- <ul style="list-style-type: none"> <li>A Nottingham Love Food Hate Waste website (WRAP)</li> <li>Promotional Literature including recipes</li> <li>Promotional events</li> <li>Local Radio coverage</li> <li>Master home composter scheme</li> </ul>	Coordinated by WPRC, supported by WRAP & NCC Comms & Waste Section	Q3, 2011 / 12 – Q3, 2012/13
	2nd Food Waste prevention campaign (excludes home composting element)	Coordinated by WPRC, supported by WRAP & NCC Comms & Waste Section	2013/14
	Home composting Promotion	WPRC	2014/15
	3rd Food Waste prevention campaign (excludes home composting element)	Coordinated by WPRC, supported by WRAP & NCC Comms & Waste Section	2015/16
	Nottingham City Council to review prevention & reuse performance and action plan	W&ESM	Annually & Major review in 2015

Approach	Action	Responsibility	Timescale
<b>Setting Targets, Monitoring and Evaluation</b>	Nottingham City Council to assess success of waste prevention & reuse initiatives to date and develop appropriate new initiatives in the light of priorities and proximity to waste prevention target (see below)	W&ESM	2012/13
	Nottingham City Council to utilise its influence to seek to deliver the following household waste arisings targets:- <ul style="list-style-type: none"> <li>To reduce the amount of household waste arisings to 400 kg / person / year by 2020</li> <li>To reduce the amount of household waste arisings to 390 kg / person / year by 2025</li> </ul>	WPRC / Head of Sustainability & Climate Change	2019/20 2024/25
	Annual Indicators to be reported: <ul style="list-style-type: none"> <li>NI 192 (percentage of household waste recycled/composted/reused)</li> <li>Tonnage of waste reused</li> <li>Kg of household waste per person per annum</li> </ul>	Head of Sustainability & Climate Change	Annually

## Recycling & Composting Actions & Targets

Approach	Action	Responsibility	Timescale
<b>Facilitating Recycling &amp; Composting</b>	Nottingham City Council (NCC) to expand the kerbside recycling collection (of cans, paper, card, glass, plastic) to all households capable of receiving the collection. Further development of kerbside recycling services will be introduced where affordable and where resources/collection systems allow.	W&ESM	Ongoing
	NCC to undertake site feasibility assessment and determine business case for second HWRC. Commence delivery of HWRC.	W&ESM	Start Q4, 2010/11, ongoing
	NCC to continue to work in accordance with the Student Strategy and to promote recycling in liaison with landlords and student bodies.	Waste section & Student Strategy Manager	Ongoing
	NCC to continue to encourage schools to participate and take up recycling schemes. Seek to engage with partners for competition incentives. Deliver educational activities including those described in the MWMS.	Sustainability Education Officer & Waste section	Ongoing
	NCC to seek to identify potential opportunities to expand the range of recyclate types collected via the kerbside collection or through recycling centres / bring banks, and therefore to retain a proactive dialogue with: <ul style="list-style-type: none"> <li>the MRF contractor as regards innovation and markets for dry recyclate</li> <li>WRAP as regards secondary materials markets</li> <li>The third sector as regards potential partnering over collections</li> </ul>	W&ESM	Start Q4, 2010/11, ongoing
	NCC to develop a recycling directory or similar method of conveying recycling information.	Waste section	2010/11 Ongoing
	NCC to participate in the approval of site waste management plans (SWMPs)	Waste section	Ongoing
	NCC to develop a compost give away scheme for the benefit of residents.	Waste section	2011/12
	NCC to explore recycling incentive schemes and other methods (including mandatory recycling) to increase participation and awareness.	Waste section	2011/12 Ongoing
	NCC to evaluate the kerbside recycling system. To identify areas of improvement (e.g. capture rates, participation and contamination)	W&ESM	Start Q2, 2011/12

Approach	Action	Responsibility	Timescale
	NCC to develop a campaign plan to improve areas of weakness in the kerbside recycling collection, anticipated to include elements such as:- <ul style="list-style-type: none"> <li>Monitoring and evaluation methods</li> <li>Door knocking activities</li> <li>Stickers / leaflets</li> </ul>	W&ESM , supported by Comms department	Start Q3, 2011/12 ongoing
	Deliver recycling campaign to optimise the performance of the kerbside collection	W&ESM supported by Comms department	Start Q3, 2011/12, ongoing
	NCC to develop business case for organic waste collection & treatment. The business case / procurement plan should also include third party wastes where economies may be realised. Anaerobic Digestion based systems should be preferred.	W&ESM	2010 / 11 onwards
	NCC to review the tonnages captured via mini recycling centres / bring sites and plan a strategic review of the locations, materials and capacity of:- <ul style="list-style-type: none"> <li>Mini recycling centres</li> <li>Bring sites</li> <li>On street recycling bins</li> </ul> with consideration of the following principles to guide planning:- <ul style="list-style-type: none"> <li>maximising accessibility by residents and visitors to recycling services (i.e. a focus on areas not served by kerbside collections)</li> <li>increasing the range of materials available for recycling by the public</li> <li>increasing recycling tonnages</li> <li>increasing carbon benefit</li> <li>enhancing the efficiency of the recycling service as a whole</li> <li>supporting a cleaner, greener City</li> </ul>	W&ESM	2011/12
	Incentivise and develop business plan for trade waste recycling service	Trade waste team & NHWC	2011/12
	Launch Trade Waste Recycling system	Trade waste team & NHWC	2011/12
	Install On street Recycling	W&ESM	2011/12
	Refresh Kerbside recycling campaign	W&ESM	2013/14
	Implement Organics waste Collection to correlate with AD Treatment service [subject to business case]	W&ESM	2014/15
	Review bring banks / On Street Recycling	W&ESM	2014/15
	Nottingham City Council to review recycling performance and action plan	Head of Sustainability & Climate Change	Annually with a major review in 2015

Approach	Action	Responsibility	Timescale
<b>Setting Targets, Monitoring and Evaluation</b>	Nottingham City Council will seek to deliver the following targets through the actions identified in this MWMS:- <ul style="list-style-type: none"> <li>50% Household Waste Recycling Rate by 2020</li> </ul>	Head of Sustainability & Climate Change	2019/20
	<ul style="list-style-type: none"> <li>55% Household Waste Recycling Rate by 2025</li> </ul>	Head of Sustainability & Climate Change	2024/25
	<ul style="list-style-type: none"> <li>50% trade waste recycling rates by 2025</li> </ul>	Trade waste manager	2024/25
	<ul style="list-style-type: none"> <li>55% trade waste recycling rate by 2030</li> </ul>	Trade waste manager	2029/30
	Annual Indicators to be reported: <ul style="list-style-type: none"> <li>NI 192 (percentage of household waste recycled/composted/reused)</li> <li>% of trade waste recycled / composted</li> </ul>	Head of Sustainability & Climate Change	Annually Annually

Treatment, Recovery & Disposal Actions & Targets

Approach	Action	Responsibility	Timescale
<b>Facilitating Treatment, Recovery &amp; Disposal</b>	Nottingham City Council to introduce Recycling of Incinerator Bottom Ash (including non ferrous metals)	Waste / Procurement team	Ongoing
	Commence Assessment of Procurement options for residual waste treatment capacity	Waste / Procurement team	2020
	Commence Procurement of residual waste treatment capacity in the light of assessment.	Waste / Procurement team	2024 - 2028
<b>Setting Targets, Monitoring and Evaluation</b>	Nottingham City Council will apply the actions of this MWMS, available technology and procurement to seek to reduce the amount of household waste sent to landfill to a minimum and deliver a residual household waste performance:-	Head of Sustainability & Climate Change	2010, ongoing
	<ul style="list-style-type: none"> <li>of 222kg / person / annum by 2020</li> <li>falling to below 200kg / person / annum by 2030</li> </ul>	Head of Sustainability & Climate Change	2019/20 2029/30
	Annual Indicators to be reported: <ul style="list-style-type: none"> <li>Tonnage of residual household waste per person</li> <li>Tonnage of residual waste per household</li> <li>Tonnage of household &amp; municipal waste sent to landfill</li> <li>Percentage of MSW sent to landfill</li> </ul>	Head of Sustainability & Climate Change	Annually

In House Waste Management Actions & Targets

Approach	Purpose	Action
<b>Measuring Current Performance</b>	Conducting a waste audit of the main Council offices / premises to establish a baseline of waste arisings and obtain / use appropriate data to estimate waste composition	Nottingham City Council <sup>1</sup> to identify a post / team with responsibility for in-house waste management and the resource to undertake the in-house audit in Q1, 2011/12.
<b>Facilitating improvement</b>	<p>Nottingham City Council will identify separate recycling collections from the council premises, and establish in-house collection systems.</p> <p>NCC post responsible for developing the in-house initiatives to work with communications team and Sustainable Development department of the Council to prepare good office practice communications materials to seek to reduce, reuse and recycle where practicable.</p>	NCC to develop collection systems, procure in-house containers and develop in-house communications materials for sustainable waste management, including prevention, reuse and use of the recycling collection systems during Q1 of 2011/12, with a view to implementing the systems by Q4 in 2011/12 across all key sites.
<b>Setting Targets, Monitoring and Evaluation</b>	<p>Annually audit waste arisings and recycling performance. A target of 50% recycling of Council waste should be delivered by 2020 (in common with the household waste targets).</p> <p>Beyond attainment of this target further recycling targets should be implemented.</p>	<p>Nottingham City Council post, to manage and facilitate the waste audit and publicise progress in terms of waste targets on an annual basis, reported in September of each year based on the previous financial year performance.</p> <p>Standard metrics should be applied to derive the carbon benefits of the improved waste management practice.</p> <p>The Head of Sustainability &amp; Climate Change should be responsible for setting future recycling targets and facilitating delivery of those targets, in liaison with the Sustainable Development team and the Council waste post responsible for developing internal waste management improvements.</p>

<sup>1</sup> The Sustainable Development team and Waste Management team are the key resources for advancing these actions



Printed on 100% post-consumer recycled paper