Staffordshire County Council and Stoke-on-Trent City Council
Joint Municipal Waste Management Strategy

Headline Strategy Document
(Post Consultation Draft)

November 2007
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EXECUTIVE SUMMARY

This Joint Municipal Waste Strategy sets out a vision for future sustainable waste management within Staffordshire and Stoke on Trent to the year 2020 and beyond. It has been prepared as an update to the existing waste strategy and is in line with the government's new waste strategy guidance documents. The overarching principles within this strategy are consistent with earlier work and include;

- **Increased household recycling:** Delivering on a combined household recycling and composting target of 55% (equivalent to 50% of all MSW)
- **Recovering benefit from all remaining MSW:** Sending approximately 50%[1] of all MSW for recovery
- **Zero waste to Landfill:** Minimising all forms of waste to landfill through increased recycling followed by maximum recovery of all remaining residual waste, thus placing landfill as the last and final option

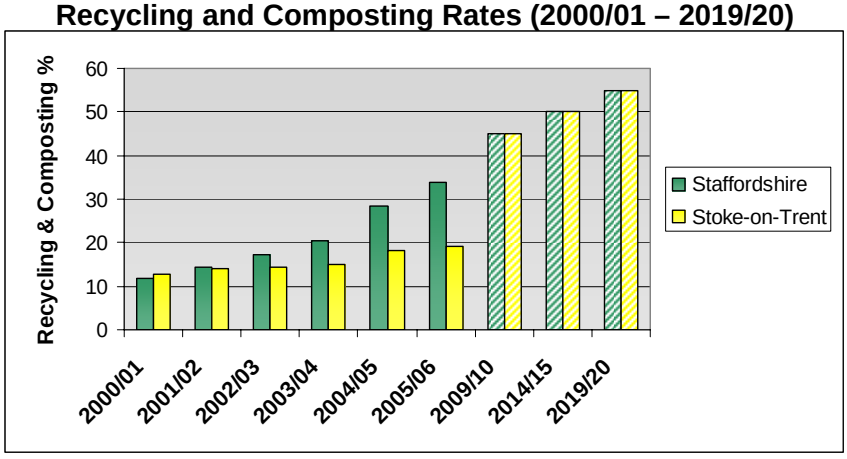
The principle driver for the targets and objectives outlined in this strategy is derived from the European Landfill Directive which places a duty on member states to decrease the quantities of biodegradable municipal waste sent to landfill.

Whilst this strategy is centered on the need to meet the Landfill Directive targets it's wider remit has the intention of;

- **Sustainability:** Achieving **sustainable management of all waste** arising in Staffordshire and Stoke-on-Trent through emphasis on the **reduction, re-use, recycling and recovery of waste**;
- **Resource management**: Wherever practicable, managing **waste as a potential resource** and as close as possible to its point of origin;
- **Working together:** Developing effective **co-operation and joint working** between local authorities, businesses and residents on the benefits of waste minimisation and increased recycling and recovery

This draft JMWMS and its supporting documents provides all necessary information on the key regional, national and European waste policy drivers, as well as the **necessary actions required to improve current recycling and composting** to meet specified targets. Where we are now and where we need to be is summarized in Figure ES1.

Figure ES1: Staffordshire and Stoke-on-Trent Actual and Target Recycling and Composting Rates (2000/01 – 2019/20)



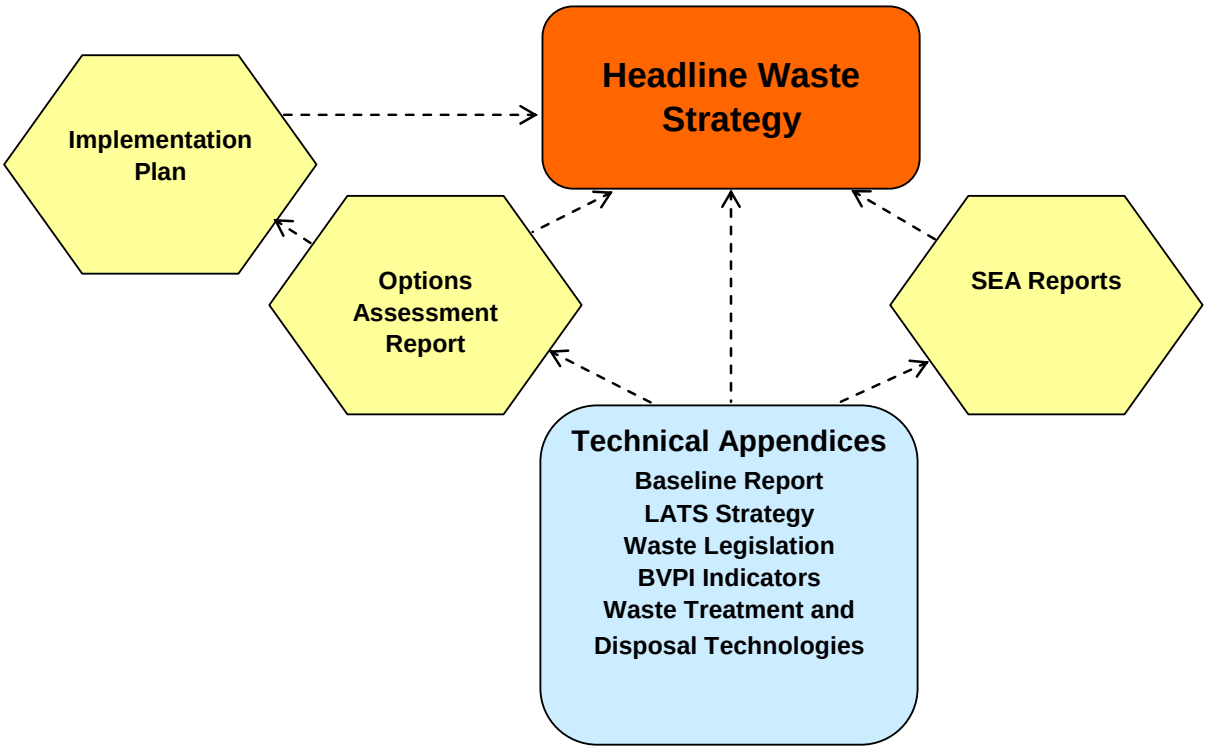
[1] 5% of the MSW total is rubble which is recycled at HWRCs, and therefore does not require further residual treatment. Government definitions exclude rubble from household waste recycling figures.

The pathway to delivering this strategy is clearly explained within this strategy and set out in an accompanying implementation plan. The plan shows that shared ownership and a coordinated approach to minimise waste arisings through effective participation can be achieved. This in turn will result in waste being managed as high up the waste hierarchy as possible which is essential to ensure delivery of this strategy. Co-ordination in this context includes the general public, businesses, waste collection authorities and waste disposal authorities.

The supporting documents to this Headline Strategy are set out in Figure ES1 and provide detailed information regarding the implementation of the strategy and the technical background. The SEA consultation document also forms part of the JWMS and has been issued as a separate document. The supporting documents are comprised as follows;

- **Implementation plan** (tool for implementation of each of the preferred waste management options);
- **Strategic Environment Assessment (SEA)**: Environment Report and Scoping Reports (tool designed to conduct a strategic environment assessment of plans and strategies developed by national, regional and local authorities)
- **Technical appendices** (provides detailed background and support to the headlined strategy document); and
- **Options assessment report** (identifies preferred waste minimization, recycling and recovery options using life-cycle analysis tools and professional judgment);

Figure ES1: Headline Waste Strategy and supporting documents for Staffordshire and Stoke-on-Trent



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1 INTRODUCTION

This document addresses the management of municipal solid waste within **Staffordshire and Stoke-on-Trent to the year 2020**. It has been prepared in partnership by Staffordshire County Council, Stoke-on-Trent City Council, and the eight Staffordshire District and Borough Councils. This Headline Strategy provides a clear description of the key targets and objectives as outlined in the Government's Guidance on Municipal Waste Management Strategies[2] and is underpinned by an implementation plan together with a more detailed Technical Appendix.

1.1 Purpose of the Strategy

In line with Government guidance this document provides a framework for strategic decisions to be taken on the **management of municipal solid waste (MSW)** in Staffordshire and Stoke-on-Trent to the year 2020. It adopts a flexible yet focussed approach, recognising the need to respond to rapid developments of new ideas and opportunities.

This Strategy has been prepared by SLR Consulting Ltd on behalf of, and in association with Staffordshire County Council (as waste disposal and planning authority), Stoke-on-Trent City Council waste collection, disposal and planning authority) and the eight Staffordshire Borough / District Councils (as waste collection authorities).

The existing Integrated Municipal Waste Management Strategy for Staffordshire and Stoke-on-Trent was produced in November 2003 and updated to 2006. That document is now superseded by this **revised Strategy 2007 to accord with new requirements set out in recent Government guidance**. The new Strategy 2007 is needed to provide the context for preparing the new long term municipal waste management contracts that are due to come into operation over the next few years. However[3] the principles set out in the original documents remain unaltered.

A recent development influencing the production of Municipal Waste Strategies is the European Directive 2001/42/EEC (**The Strategic Environmental Assessment (SEA) Directive) which requires a high level environmental assessment of how the strategy can inform and be informed by other plans and policies**, for example the regional spatial plan for the West Midlands. As part of the development of the MSW strategy an initial SEA Scoping Report has been undertaken and published as a separate document. The strategy and the accompanying SEA Environmental Report was issued for consultation at the same time.

1.2 Key Strategic UK Waste Management/Disposal Policy

The principal waste management policy document in place at the time this strategy was reviewed was the 'Waste Strategy 2000' for England and Wales (published by the DETR in May 2000). The targets set out in Waste Strategy 2000 were as follows:

- To recover 40% of MSW, including a minimum 25% recycling or composting of household waste by 2005;
- To recover 45% of MSW, including a minimum of 30% recycling or composting of household waste by 2010; and
- To recover 67% of MSW, including a minimum of 33% recycling or composting of household waste by 2015.

[2] Defra (2005); A Practice Guide for the Development of Municipal Waste Management Strategies
[3] Consultation period July to October 2007

A review of '*Waste Strategy 2000*' has been undertaken by DEFRA, with a '*Review of England's Waste Strategy. A Consultation Document*' being published in February 2006. The consultation process closed on 9 May 2006. Following a review of the consultation responses, a revised waste strategy will be developed, it is anticipated that the revised National Waste Strategy will be published in early 2007[4].

The Governments new 2007 strategy proposes that **higher levels of recycling and composting are required in order to meet the Government's obligation under the Landfill Directive**. The document also states that higher levels may well be achievable in the later years; however the modelling undertaken suggests these would incur significant costs which would not justify the improvement. The revised targets are as follows:

- To **recover 53% of MSW**, including a **minimum 40% recycling or composting** of household waste by 2010;
- To **recover 67% of MSW**, including a **minimum 45% recycling or composting** of household waste by 2015; and
- To **recover 75% of MSW**, including a **minimum 50% recycling or composting** of household waste by 2020.

Essentially, the Waste and Emissions Trading (WET) Act 2003 has been passed by Government as the principal legislative driver and delivery mechanism to meet the above national strategy aspiration. The WET Act paves the way for the development of the **Landfill Allowance Trading Scheme (LATS)** where **each disposal authority has specific year on year targets for the diversion of the biodegradable fraction of MSW away from landfill**. Failure to meet these LATS targets will result in substantial fines.

[4] Since the publication of this document the Waste Strategy 2007 document produced by Defra has been formally adopted however this does not impact on the outcome of this strategy as the work done in the Options Assessment process uses the targets as outlined in the new Waste Strategy 2007.

2 KEY NATIONAL AND EUROPEAN WASTE POLICY DRIVERS

This section briefly details key relevant policy drivers that have a direct effect on the management of waste in Staffordshire and Stoke-on-Trent. Waste Collection Authorities (WCAs) and Waste Disposal Authorities (WDAs) are affected by legislation that impacts on the way waste is managed. **European Waste Legislation and Policy adopted into UK law has a direct impact on Local Authority collection and disposal practices**. Supplementary guidance on this for those seeking further information is provided in the Technical Appendices Document (Appendix 3).

2.1 European Obligations

- **Landfill Directive (99/31/EC):** The Landfill Directive is seen as providing the principal legal framework influencing MSW management and strategy development in the UK. The most significant part of the Directive is Article 5 which proposes a strict timetable for reductions in landfilling biodegradable municipal waste. These are onerous requirements and have been the principal influence on the formulation of *'Waste Strategy 2000'* and subsequent revisions[5]. **The European Landfill Directive sets mandatory targets** which, for the UK, require the following (the targets include the 4 year derogation already granted to the UK):

  - By **2010 to reduce BMW landfilled to 75% (by weight) of that produced in 1995**;
  - By **2013 to reduce BMW landfilled to 50% (by weight) of that produced in 1995**; and,
  - By **2020 to reduce BMW landfilled to 35% (by weight) of that produced in 1995**

- **IPPC Directive (96/61/EC):** This Directive requires a range of prescribed processes (including many waste management processes) to obtain an authorisation (permit) from the licensing authorities (i.e. the Environment Agency**)** within the Member States. Without the permit, they are not allowed to operate.
- **Packaging Waste Directive (94/62/EC) as amended (04/12/EC):** This Directive sets specific targets for recovery and recycling of this waste stream, together with encouraging measures to reduce and reuse packaging. This legislation largely relates to commercial and industrial waste sectors.
- **Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC):** This Directive aims to reduce the waste arising from electrical and electronic equipment; and improve the environmental performance of all those involved in the life cycle of electrical and electronic products. Specific changes will include;

  - private householders will be able to return their WEEE to collection facilities free of charge;
  - producers (manufacturers, sellers, distributor) will be responsible for taking back and recycling electrical and electronic equipment; and
  - producers will be required to achieve a series of demanding recycling and recovery targets for different categories of appliance.

- **Batteries Directive:** This Directive aims to reduce the quantity of hazardous and non hazardous waste batteries going to landfill and increase the recovery of the materials they contain. The Directive will require a much higher proportion of spent batteries to be collected and recycled and will apply to all types of batteries irrespective of their

[5] Waste Strategy 2007

shape, weight composition or use, and therefore will have an impact on municipal waste when introduced in 2008.

- **Waste Incineration Directive (2000/76/EC):** This Directive was introduced to ensure the appropriate management of energy from waste facilities with the aim of preventing, or limiting impacts on the environment caused by the incineration and co-incineration of waste. Clearly this has influenced the development of the Stoke Energy from Waste (EfW) facility and may impact on some new treatment technologies introduced as part of the forthcoming waste contract procurement process.

2.2 National Obligations

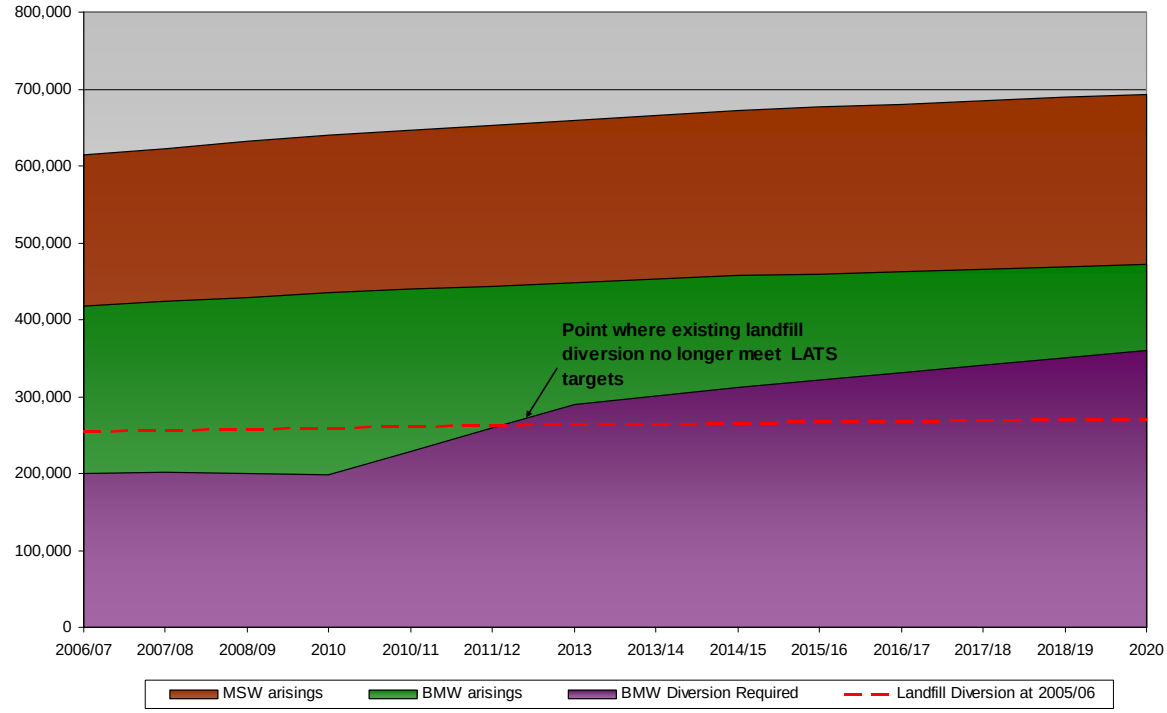
- **Waste and Emissions Trading (WET) Act 2003:** The Act implements Articles 5(1) and 5(2) of the European Landfill Directive in the UK. **This legislation lead to the introduction of waste disposal authorities trading allowances for the amount of biodegradable waste they can send to landfill each year**. The Act was the first stage of introducing the landfill allowances trading scheme (LATS), which will be the Government's key measure in meeting landfill reduction targets as required by the Landfill Directive. LATS has two primary implications to waste management in the UK:

  - ***Specific Targets***: landfill allowances have been allocated to each waste disposal authority (WDA), at a level that will enable England to meet its targets, as a contribution to the UK targets under the landfill directive; and
  - ***Trading:*** trading mechanism which allows these targets to be met in the most cost effective manner through the trading, banking and borrowing of allowances by Waste Disposal Authorities.

The **LATS scheme formally commenced on 1st April 2005 and Waste Disposal Authorities have now been allocated landfill allowances for each year up to 2020**. Waste Disposal Authorities have a number of options to achieve their landfill allowance allocation; however, **Authorities will be fined up to £150 (current level) for every tonne they landfill beyond the limit set by the allowances they hold**.

Figure 2-1 below illustrates the predicted diversion gap for Staffordshire and Stoke. Based upon waste forecasts the amount of diversion required is approximately 198,000t, 290,000t and 360,000t for the years 2010, 2013 and 2020, respectively (and shown by the purple area on the chart). Using current performance levels the amount of diversion is forecasted to be approximately 260,000t, 263,000 and 271,000t for the same key target years (and is shown by the broken red line on the chart). The point at which the amount diverted becomes less than the required diversion is in the year 2011/12 (i.e., when the red line is below the purple shaded area).

Figure 2-1: BMW Diversion for 'Do Nothing' Scenario (Business at Usual)



A detailed LATS strategy for Staffordshire and Stoke-on-Trent is presented in section 2 of the Technical Appendices.

- **Environmental Protection Act 1990:** Sets out all the duties of Waste Collection Authorities (WCAs) and Waste Disposal Authorities (WDAs) regarding waste collection of municipal waste. WCAs have a duty to collect waste from all households (and possibly some commercial properties) and WDAs have a duty to dispose of waste collected by the WCAs and to provide facilities for residents within the area to deposit waste. Unitary Authorities assume the responsibility of both the WCA and WDA.
- **Animal By-Products Order ABPR 2003:** Sets out guidance for composting and biogas treatment, under specified conditions, for catering waste and other low risk (category 3) animal by-products. **This legislation is of particular relevance to local authorities as any household kitchen waste collected will need to be treated through an in-vessel composting plant** that achieves set time and temperature criteria, and has been certified by the State Veterinary Service. Staffordshire and Stoke-on-Trent intend to provide in-vessel composting capacity for household kitchen waste by 2009/10. Green garden waste can still be composted in open-windrows.
- **Clean Neighbourhood and Environment Act 2005:** The aim of the Act is to improve the quality of the local environment and the key measures which will affect management of waste in Staffordshire and Stoke-on-Trent which include; fly-tipped waste, litter, abandoned and nuisance vehicles.
- **Household Waste Recycling Act 2003:** The Act requires all English local authorities to provide kerbside collections for all householders for a minimum of two materials by the year 2010 however, local authorities will only have to collect one dry recyclable from the kerbside if they provide a doorstep garden waste collection service.
- **The Waste Minimisation Act 1998:** encourages local authorities to promote incentives for reduction strategies for household waste.

3 PARTNERSHIPS WITHIN THE JOINT MUNICIPAL WASTE STRATEGY

3.1 Key Waste Partnership

This Waste Strategy is based on a **partnership approach** and will involve a wide range of strategic partners all offering a diverse breadth of expertise. These partners will include the WCAs, WDAs, producers and managers of non-municipal waste, other public and private sector bodies, the voluntary sector and many groups and organisations. Collectively these partners will drive the waste strategy forward.

Fundamental to the success of the waste partnership in Staffordshire and Stoke-on-Trent is the involvement of communities and stakeholders and this is achieved through public consultation as part of the revision to the Waste Strategy. Public consultation provides an opportunity for communities to participate in shaping the strategy before the final revision is published.

The key partnership within this Joint Municipal Waste Management Strategy (JMWMS) is **Staffordshire County Council, a two-tier authority comprised of a single Waste Disposal Authority (WDA), eight separate Waste Collection Authorities, and Stoke-on-Trent City Council, a Unitary Authority.**

Within a two-tier authority the WCAs are responsible for the collection of MSW, and the County Council, as the WDA, is responsible for the management and disposal of the waste. The eight WCAs within Staffordshire are;

- Cannock Chase District Council;
- East Staffordshire District Council;
- Lichfield District Council;
- Newcastle-under-Lyme Borough Council;
- South Staffordshire District Council;
- Stafford Borough Council;
- Staffordshire Moorlands District Council; and
- Tamworth Borough Council

Staffordshire County Council is the Minerals and Waste Planning Authority for Staffordshire, outside the Peak District National Park and the City of Stoke-on-Trent. It is preparing separately a Minerals Development Plan Document and a Waste Development Plan Document, comprising a Core Strategy and a Site Allocations Document.

Stoke-on-Trent City Council has been a Unitary Authority since April 1997 and is responsible for both the collection and disposal of its waste. As a Unitary Authority, Stoke-on-Trent has sole responsibility for preparing the planning policies. However, Stoke-on-Trent chose to join with Staffordshire County Council for the preparation of the replacement Structure Plan, the Minerals Local Plan and the Waste Local Plan. Stoke-on-Trent City Council has decided to prepare a joint Core Strategy for North Staffordshire with Newcastle-under-Lyme District Council but will be preparing a Joint Waste Site Allocations Development Plan Document with the County Council. These policy documents and their relevance to this Municipal Waste Strategy are discussed in more detail in Section 4.

3.2 Advantages of Waste Partnerships

There are a number of reasons why local authorities may choose to go down the joint waste partnership route;

- **better value** can sometimes be achieved through collaborative working;
- collaboration between WCAs and WDAs can often result in **optimised recycling and recovery, transfer, treatment and disposal of waste**;
- the LATS legislation only affects WDAs, however, cooperation from WCAs can enable WDAs to **manage risk** more effectively, **therefore saving tax payers money**; and
- local authorities are expected to gain from **economies of scale** and more efficient use of markets.

The decision to incorporate Stoke-on-Trent City Council is supported by an existing residual waste treatment contract (Staffordshire County Council are contracted to send a fixed tonnage of residual waste to the Stoke energy from waste facility until the year 2022) and its geographical proximity within Staffordshire County. There is therefore a **well established track record in collaborative working on waste management matters**. This strategy builds on that proven relationship.

The **benefits of a joint waste strategy approach could also possibly be realised from a waste collection perspective** as well as from the disposal aspect of operations. It is the intention of the County and City to undertake a review of the current WCA collection strategies to try and determine whether there may be opportunities in future for a joint waste collection strategy.

Crucial to the success of a Joint MWMS is WCA and **community stakeholder support of the preferred targets and objectives presented as part of the strategy** as well as identification of responsibilities in reaching those targets. In particular, the continued support from **householders participating in kerbside recyclables collections in Staffordshire and Stoke-on-Trent is key to achieving our recycling and composting targets**. Many of the responsibilities are clarified within the Waste Strategy Action Plan (see Implementation Plan section later in this strategy – Section 6). It is also important to clarify arrangements for making and formalising decisions at the outset to prevent confusion and subsequent delays to the Action Plan.

The preparation of a Joint Municipal Waste Management Strategy also requires assessment within the wider context of other national, regional and local planning documents. It is therefore important to ensure suitable **representation from all key stakeholders throughout the strategy development process**. In Staffordshire, there is currently a waste officers and a separate members group that convenes and decides upon future waste management within Staffordshire. This strategy builds upon this established and proven decision making process.

4 KEY CONTEXTUAL INFORMATION

The **Joint Municipal Waste Management Strategy is part of an integrated framework of local plans, policies and strategies** which needs to be consistent with regional and national planning policy. Therefore, it is important that the **key targets and objectives identified within this strategy are consistent with other existing and planned policies**. This section attempts to provide an overview of the UK planning framework and how it relates specifically to waste.

4.1 Regional Planning Framework including Regional Spatial Strategy (RPG 11)

Staffordshire and Stoke-on-Trent is situated within the West Midlands. The Regional Spatial Strategy (RSS) for the West Midlands was published in June 2004[6]. The waste policies in the RSS have been informed by the draft Regional Waste Strategy (RWS) which was published in November 2001.

Policy 4 (WD1) in chapter 8 of the RSS deals with waste, and aims to:

- ***recover value*** from at least 45% of municipal waste by 2010; and 67% by 2015 (in line with the current National Waste Strategy);
- ***recycle or compost*** at least 30% of household waste by 2010; and 33% by 2015; and
- to ***reduce*** the proportion of industrial and commercial waste which is disposed of to landfill to at the most 85% of 1998 levels by 2005

The West Midlands RSS also sets out waste management requirements at a sub-regional level (policies WD2 and WD3)[7], including the **need for waste management facilities and additional municipal waste management facilities required by 2021**.

Since its publication in 2004, the Secretary of State has recommended that some issues should be immediately looked at and developed further. The partial revision to the RSS is being undertaken in three phases and will support and develop the underlying strategy, rather than conducting a full review. Phase two of the revision will examine housing figures, employment, land, transport and waste. In particular, one of the objectives addressed within 'Quality of the Environment' is to *"provide sufficient opportunities to meet identified needs of the West Midlands for waste management for all streams"*[8].

The revised RSS when published will also incorporate the recommendations of the Regional Waste Strategy. The scope of the current regional waste strategy includes all controlled waste streams including commercial, industrial, construction, demolition, municipal and some agricultural wastes. It will take into account the projections for the amount and distribution of housing and employment proposed on the Revisions to the RSS. An options assessment process is included within the Regional Waste Strategy[9].

The **development of this Joint Municipal Waste Management Strategy has given consideration to both the existing and emerging Regional Waste Strategy and RSS**. This integrated approach ensures consistency with developing Local Development Documents that set out spatial planning for waste management facilities in Staffordshire and Stoke-on-Trent within a broader regional context.

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[6] West Midlands RSS http://www.wmra.gov.uk/page.asp?id=47
[7] Chapter 8 Regional Planning Guidance for the West Midlands (RPG 11) (2004)
[8] RSS the Spatial Options
[9] Phase 2 of the RSS the Spatial Options is currently out for consultation 8th January until 5th March http://www.wmra.gov.uk/page.asp?id=244

4.2 Local Planning Framework

The Staffordshire and Stoke-on-Trent Waste Local Plan (1998 – 2011), adopted in February 2003, outlines the broad land use framework for future waste management in the sub-region. The plan includes for household, commercial, industrial and construction wastes.

The purpose of the plan is to set out a **clear statement of waste planning policies that will provide a framework for the consideration of planning applications for the development of waste management facilities** or other forms of development with significant waste implications. The plan identifies the environmental and other criteria against which planning applications for waste management will be judged. The current plan supports the four main objectives outlined below:

- proposals which will not endanger human health or harm the environment in accordance with the precautionary principle;
- waste minimisation objectives;
- integrated waste management proposals; and
- proposals that will reduce the overall amount of waste being landfilled.

The Waste Local Plan is currently being updated in line with the new strategic planning requirements. This new plan document will be required to produce sites for waste management facilities within Staffordshire and Stoke-on-Trent.

Under the new plan-making system introduced by the Planning and Compulsory Purchase Act 2004 the following documents currently comprise the 'development plan' framework;

- West Midlands Regional Spatial Strategy (June 2004) (formerly known as Regional Planning Guidance (RPG11);
- Staffordshire and Stoke-on-Trent Structure Plan (1996 - 2011) adopted in May 2001;
- Stoke-on-Trent City Plan (1990 to 2001), adopted in 1993;
- The adopted Local Plans prepared by the 8 Staffordshire District Councils;
- Staffordshire and Stoke-on-Trent's Minerals Local Plan (1994 - 2006), adopted December 1999; and
- Staffordshire and Stoke-on-Trent's Waste Local Plan (1998-2011), adopted 10 February 2003

The status of Staffordshire's Local Plans and Development Documents is set out overleaf in Table 4-1.

Table 4-1: Adopted/Approved Statutory Plans

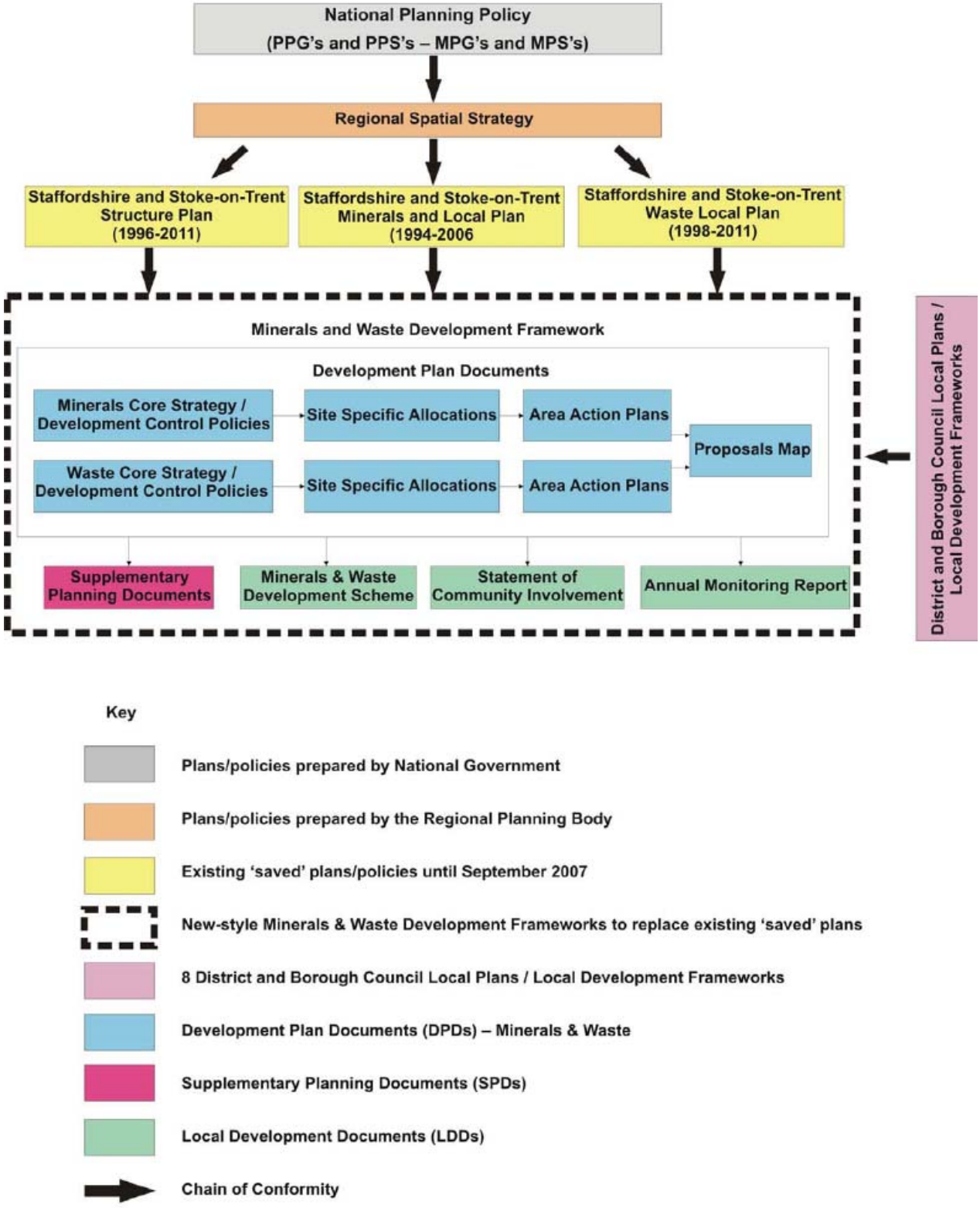
Plan Title and Plan Period	Date of Adoption/Approval
Staffordshire and Stoke-on-Trent Structure Plan 1996 – 2011	May 2001
Staffordshire and Stoke-on-Trent Minerals Local Plan 1994 - 2006	December 1999
Staffordshire and Stoke-on-Trent Waste Local Plan 1998 - 2011	February 2003
Staffordshire Moorlands Local Plan to 2001	September 1991
Newcastle-under-Lyme Local Plan to 2011	October 2003
City of Stoke-on-Trent City Plan to 2001	September 1993
Stafford Borough Local Plan to 2001	October 1998
East Staffordshire Local Plan 2001 to 2011	July 2006
South Staffordshire Local Plan 1996 to 2001	December 1996
Cannock Chase Local Plan to 2001	March 1997
Lichfield District Local Plan to 2001	June 1998
Tamworth Local Plan 2001 to 2011	July 2006

4.3 Emerging Plans

The Planning and Compulsory Purchase Act 2004 requires preparation of **Local Development Frameworks (LDFs)**. LDFs comprise Development Plan Documents (DPD's) that will replace Local Plans. As part of the preparation of an LDF, **local authorities are required to produce a Local Development Scheme (LDS), which sets out the programme for the production of the various DPDs**. The first LDSs were submitted to the Government Office for the West Midlands before 28 March 2005.

Each of the 10 Local Authorities will have to prepare their own Local Development Frameworks. Staffordshire and Stoke-on-Trent will jointly prepare a Minerals and Waste Development Framework as indicated in the diagram below (see Table 4-2).

Table 4-2: Structure of Staffordshire Minerals and Waste Development Framework (MWDF) for Staffordshire and Stoke-on-Trent



The **MSW strategy will inform, and in turn be informed by, the plan making process set out above**. Consideration has been made in the options evaluation (described in Section 5 of this strategy) to **ensure consistency of approach between the plan and strategy making process**.

5 STRATEGIC OPTIONS

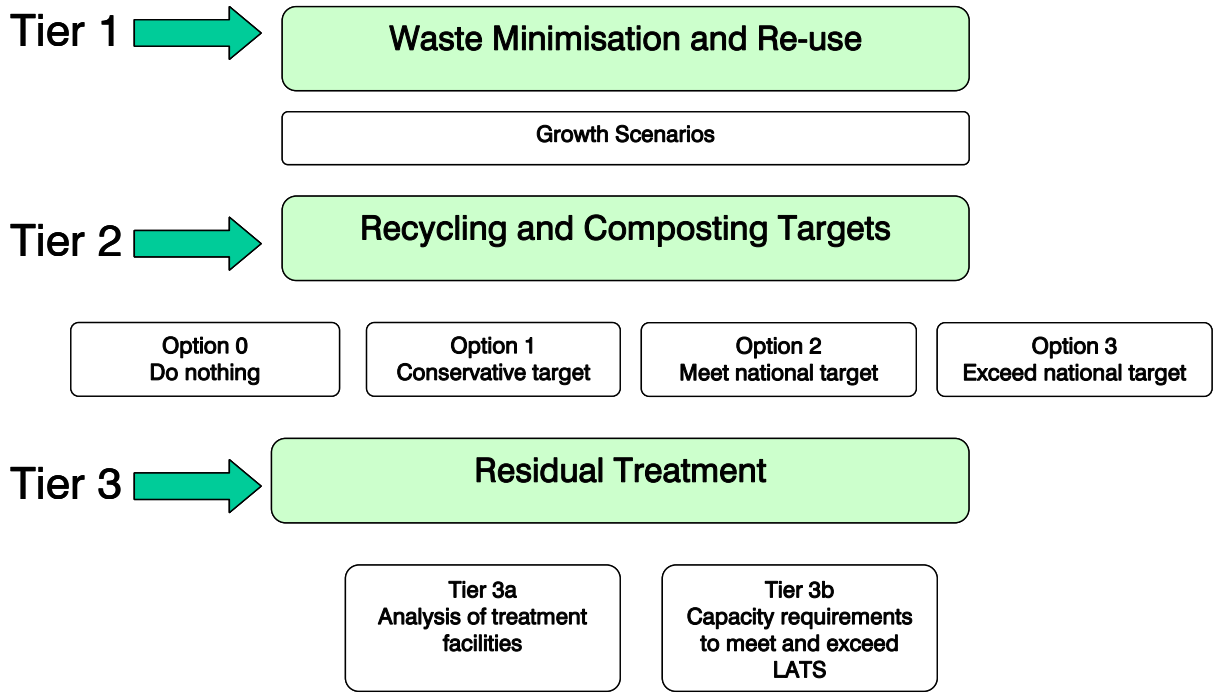
5.1 Options Assessment Process

The aim of the option selection process is to enable an **assessment of potential waste management solutions for the County and City when compared to a range of sustainability indicators**. The assessment process is designed to be auditable, consistent and robust, and, assist in the identification of a preferred waste management option(s) for all municipal wastes arising in Staffordshire and Stoke-on-Trent for the long term.

An assessment methodology following Government guidance has been applied, to provide an **assessment of a range of viable waste management options up to the year 2020**, the assessment year.

For ease of understanding the three tier options process is characterised pictorially in Figure 5-1 below and reflects the way in which the options have been developed and are derived and describes the **3 tier sequential assessment process** for assessing minimisation and re-use (tier 1), recycling and composting (tier 2) and then residual waste treatment (tier 3).

Figure 5-1: Schematic of Options Appraisal Method

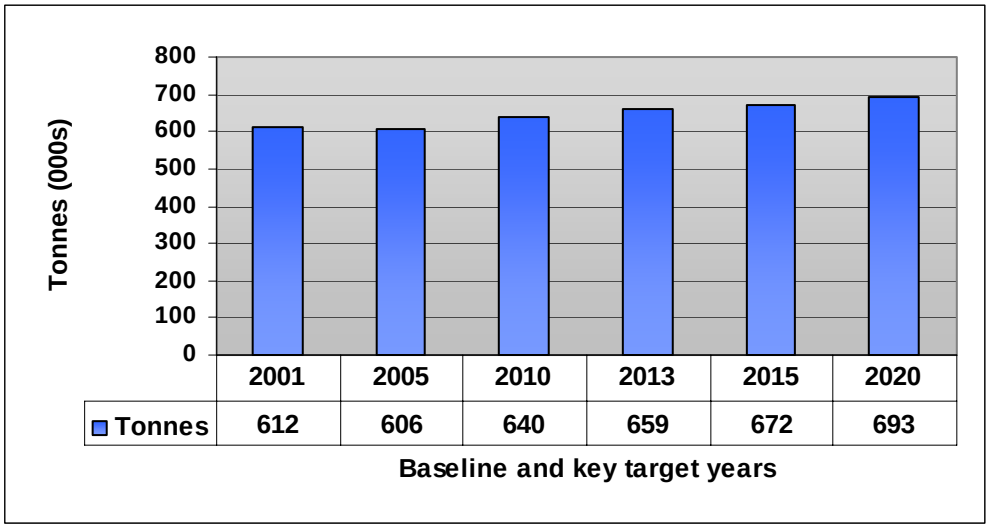


The headline results of the assessment process are summarised below, however a more detailed separate Options Assessment report has been produced and is available as part of the supporting documents for the JMWMS.

5.1.1 Tier 1 Assessment – Minimisation and Re-use

Tier 1 assesses the differing growth rates and municipal waste arisings forecasted for Staffordshire and Stoke-on-Trent up to the year 2020. The adopted MSW forecast used for the tier 2 and 3 assessment stages is summarised in Figure 5-2 and reflect how growth patterns may change over time as a result of interactions between increased waste minimisation, household forecasts and per capita waste generation changes.

Figure 5-2: Predicted tonnages at key target years for Staffordshire and Stoke-on-Trent combined



Note: 2001 tonnage figure sources from Defra all other tonnage data based upon Staffordshire and Stoke-on-Trent data

No. households ⇧ + waste / household ⇩ = waste growth < 1%

It is predicted that **overall waste production per household will reduce**[10] in future as a result of increased awareness through waste minimisation initiatives as set out in the Technical Appendices and government driven changes on behalf of commercial business organisations. Despite the predicted reduction in per household waste generation of 10kg by 2015/16, **the increase in household numbers forecasted to the year 2020 from 433,000 to 473,000 results in an overall net increase of MSW year on year of between 0% and 1%**. The forecasted MSW growth set out in Figure 5-2 above has been adopted as the basis for further options development.

5.1.2 Tier 2 Assessment – Recycling and Composting

Tier 2 assesses only the fraction of MSW that is recycled and composted. Using the adopted MSW forecast summarised in Figure 5-2, four recycling and composting options have been considered within the Tier 2 assessment stage using household waste performance targets. These four options include:

- **Option 0 –** "Stay as you are target of 31% for household waste (equivalent to 28% of MSW[11])"
- **Option 1 –** "Conservative target of 45% for household waste (equivalent to 41% of MSW)"
- **Option 2 –** "Meet proposed National target of 50% for household waste (equivalent to 46% of MSW)"
- **Option 3 –** "Exceed proposed National target 55% for household waste (equivalent to 50% of MSW)"

[10] For a more detailed explanation of predicted waste growth see Options Assessment Report
[11] See Glossary of Terms for definitions of household and MSW waste

A summary of recycling and composting tonnages achieved for the year 2020 for each option is given below in Table 5-1.

Table 5-1: Recycling and Composting Tonnage achieved for each option in the year 2020 (the assessment year)

Description	Option 0	Option 1	Option 2	Option 3
% target for household waste	31%	45%	50%	55%
Recycling	105,000	166,000	176,000	194,000
Composting	88,000	120,000	142,000	156,000
Total	**194,000**	**286,000**	**318,000**	**349,000**

Note: Figures may not add due to rounding to the nearest 100 tonnes

The assessment process identified that **Option 3 should be proposed as the adopted performance level to take forward through to the tier 3 assessment stages**. Option 3 assumes a combined **recycling and composting level of 55% of household waste**, which is **equivalent to 50% of all forecasted MSW in the year 2020**. A more detailed description of the options assessment process is available as part of a separate supporting document[12].

5.1.3 Tier 3 Assessment – Residual Treatment (using the preferred tier 2 recycling and composting option)

Tier 3 assesses only the fraction of MSW that remains following recycling and composting of 55% of household waste. This remaining fraction is known as residual MSW which is currently either sent to the existing EfW facility in Stoke-on-Trent (180,000 tonnes) or sent to landfill as indicated in the baseline option described below. Six residual treatment options have been considered using a variety of possible treatment technologies[13] which meet the objectives in the Waste Local plan of preventing harm, minimising waste, reducing landfill and being more integrated and include;

- **Baseline Option –** "180,000 tonnes to Stoke EfW and remaining residual to landfill"
- **Anaerobic Digestion (AD) –** "maintain tonnage to Stoke EfW and remaining residual to AD"
- **Autoclave Option –** "maintain tonnage to Stoke EfW and remaining residual to Autoclave"
- **Energy from Waste Option –** "maintain tonnage to Stoke EfW and remaining residual to EfW"
- **Mechanical Biological Treatment (with Bio stabilisation) –** "maintain tonnage to Stoke EfW and remaining residual to MBT (bio stabilisation)"
- **Mechanical Biological Treatment (with RDF[14]) Option –** "maintain tonnage to Stoke EfW and remaining residual to MBT (RDF)"

The table below briefly outlines the residual treatment technology types and their associated advantages and disadvantages.

[12] See Options Assessment Report
[13] A more detailed description of the residual waste treatment technologies is provided in Technical Appendix 5
[14] Refuse Derived Fuel – See glossary of terms for further details

Table 5-2: Residual Treatment Technologies Advantages and Disadvantages

Technology	Suitable collection types	Advantages	Disadvantages
Mechanical Biological Treatment, MBT	• Mixed waste collection	• ability to accept a wide variety of waste inputs • achieves a weight reduction of the biodegradable fraction of the MSW of up to 25% • ability to accept non source segregated putrescibles from the residual waste • recovery of additional material for recycling • residue stream is reduced, saving on landfill disposal costs	• no discernable track record in the UK • markets for RDF, the main output product from the process are very limited in the UK. • the quality of some of the recyclate can be unacceptable to reprocessors due to the levels of contamination.
Autoclaving	• Mixed waste collection	• maximises recovery of organic material as sterilised fibre with a range of potential markets • Sterility of product aids manual sorting and reduces H&S issues • Mobile demonstration unit available	• Not proven in the UK but working plants elsewhere. • Sterilised fibre market is immature
Anaerobic Digestion	• Source separated organic waste collections • Mixed waste collection	• Process is easily controlled • High throughput relative to area of plant footprint • Proven track record in Europe • Potential sales of energy generated from the biogas produced • Unlikely to encounter the planning resistance of incineration • High recovery rates of materials.	• Potential odours and emissions • Difficulty in maintaining biological activity under certain physical conditions • Not proven in the UK on MSW but working plants elsewhere • Waste from mixed collection rounds cannot be spread on agricultural land and can only be used in land reclamation for non agricultural after uses
Pyrolysis and Gasification	• Mixed waste collection	• Low output of hazardous emissions • Compact facilities	• Little track-record operating on MSW • May be perceived as incineration
Waste to Energy	• Mixed waste collection	• accepts a wide variety of waste inputs • proven track record over many years and in many locations • can make full use of the energy available within the waste to produce power • significant reduction in the weight of material from the original MSW going to landfill • bottom ash can be recycled in the construction industry	• public perception, and thereby political pressure, against new facilities • fly ash produced is a hazardous material, which requires specific, though manageable, treatment • recent rulings from the European courts which suggest that facilities built solely for the purpose of incinerating waste will not qualify as recovery.

5.1.4 The Overarching Strategy Framework for MSW

Results from the options assessment process undertaken shows that the higher recycling performance option conforms to the highest ranking option. The conclusion therefore at this stage, is that **high recycling should form an essential part of the overarching framework for the Staffordshire and Stoke-on-Trent Municipal Waste Management Strategy, with little or no untreated waste to landfill** and the remainder of the waste sent to a recovery process. This framework can be summarised as follows:

- **Increased household recycling:** Delivering on a combined household recycling and composting target of 55% (equivalent to 50% of all MSW)
- **Recovering benefit from all remaining MSW:** Sending approximately 50%[15] of all MSW for recovery
- **Zero waste to Landfill:** Minimising all forms of waste to landfill through increased recycling followed by maximum recovery of all remaining residual waste, thus placing landfill as the last and final option

The above strategic framework has been used to inform waste diversion requirements to meet key targets and develop the delivery mechanism as set out in the MWMS Implementation Plan, details of which are summarised below in Section 6.

[15] 5% of the MSW total is rubble which is recycled at HWRCs, and therefore does not require further residual treatment. Government definitions exclude rubble from household waste recycling figures.

6 SUMMARY IMPLEMENTATION PLAN

6.1 Introduction

The Municipal Waste Management Strategy Implementation Plan is summarised here and provides a detailed breakdown of the **steps required to deliver the strategic objectives and targets derived from the options assessment process** and adopted as part of the headline strategy framework.

The implementation plan has been developed based upon the strategic recycling and recovery targets defined by the options development process for the year 2020 described earlier in Section 5 of this strategy, and includes;

- **Increased recycling:** Delivering on a combined household recycling and composting target of 55% (equivalent to 50% of all MSW)
- **Recovering benefit from all remaining MSW:** Sending approximately 50%[16] of all MSW for recovery
- **Zero waste to Landfill:** Minimising all forms of waste to landfill through increased recycling followed by maximum recovery of all remaining residual waste, thus placing landfill as the last and final option

6.2 Summary Implementation Plan

Using the strategic framework outlined above, a summary of the key implementation milestones for Staffordshire and Stoke-on-Trent. With respect to waste collection, treatment and disposal is shown in shown in Figure 6-1below. Further details of specific performance requirements for each individual service element is given below and in a separate Implementation Plan document, and includes:

- Minimising waste and re-use (including a joint communications strategy[17])
- Increased recycling and composting – waste collection
  - Kerbside dry recyclables and household kitchen waste collection
  - Kerbside green garden waste collection
  - Household Waste Recycling Centres (HWRC's)
  - Bring banks

- Limiting landfill and recovering benefit from remaining MSW – Waste treatment & disposal
- Monitoring implementation

[16] 5% of the MSW total is rubble which is recycled at HWRCs, and therefore does not require further residual treatment. Government definitions exclude rubble from household waste recycling figures.
[17] Staffordshire and Stoke-on-Trent have been awarded £1.1 million in funding from WRAP towards a joint recycling and composting communications strategy

	2006	2009/10	2012/13	2014/15	2019/20
Household Waste[1] Recycling Centres	13 ~137ktpa	14 ~145ktpa	15 ~149ktpa	15 ~152ktpa	15 ~157ktpa
Bring Sites	254 ~13ktpa	254 ~14ktpa	254 ~14ktpa	254 ~14.5ktpa	254 ~15ktpa
Kerbside[2] Recycling Collection	95% ~53ktpa	99%[3] ~93ktpa	99% ~103ktpa	99% ~111ktpa	99% ~130ktpa
Kerbside[4] Green Waste Collection	62% ~49ktpa	62% ~56ktpa	62% ~57ktpa	62% ~58.5ktpa	62% ~60ktpa
Kerbside Kitchen Waste Collection	Trial Stage Only	50% ~27ktpa	68% ~38ktpa	68% ~46ktpa	90% ~63ktpa
Open Windrow[5] Composting	~77ktpa	~30ktpa	~31ktpa	~31.5ktpa	~32.5ktpa
In-Vessel[6] Composting	———	~83ktpa	~96ktpa	~105ktpa	~123ktpa
Materials[7] Recycling / Bulking Facility	~123ktpa	~180ktpa	~193ktpa	~203ktpa	~226tpa
Residual[8] Treatment	~180ktpa	~180ktpa	~340ktpa	~335ktpa	~313ktpa
Landfill	[9] ~230ktpa	[9] ~168ktpa	[10] ~7ktpa-65ktpa	[10] ~16.5ktpa-63ktpa	[10] ~15.6ktpa-56ktpa

KEY

- **Household Waste Recycling Centre -** Figure in circle represents number of sites. Figure below in *ktpa* represents estimated throughput for each key year.
- **Bring Site -** Figure below *kpta* represents estimated throughput for each key year.
- **Kerbside Recycling Collection -** (%) Value equals percentage of households served. Figure below *kpta* represents estimated throughput for each key year.
- **Kerbside Green Waste Collection -** (%) Value equals percentage of households served. Figure below *kpta* represents estimated throughput for each key year.
- **Kerbside Kitchen Waste Collection -** (%) Value equals percentage of households served. Figure below *kpta* represents estimated throughput for each key year.
- **Open Windrow Composting -** Figure below *kpta* represents estimated throughput for each key year.
- **In Vessel Composting -** Figure below *kpta* represents estimated throughput for each key year.
- **Materials Recycling / Bulking Facility-** Figure below *kpta* represents estimated throughput for each key year.
- **Residual Treatment -** Figure below *kpta* represents estimated throughput for each key year.
- **Landfill -** Figure below *kpta* represents estimated throughput for each key year.

1. Household Waste Recycling Centres remain proportionally constant.
2. Assumes ~ 56% diversion of dry recyclables in 2006 increasing to ~69% by 2020.
3. The Household Waste Recycling Act 2003 requires that all English local authorities collect a minimum of 2 recyclable materials from all households by 2010.
4. Assumes ~ 75% diversion of green waste from 62% of households within Staffordshire and Stoke-on-Trent (as at present).
5. Assumes only Household Waste Recycling Centre (HWRC) green waste to Open Windrow from 2009/10 due to household green waste co-collected with kitchen waste and will require treatment at in-vessel composting facility (IVC).
6. Assumes all kitchen waste and green waste collected at the kerbside will be treated in an enclosed composting facility in accordance with Animal By-Products Regulations (ABPR).
7. Includes rubble from HWRCs.
8. Assumes additional residual treatment facility is on line by 2012/13 with all non hazardous residual outputs recovered.
9. Residual waste which cannot be sent to residual treatment facility, plus secondary landfill (i.e. fly ash from residual treatment).
10. Secondary Landfill only from 2012/13. Range relates to min/max tonnage for EFW Option (i.e. fly ash) and Autoclave Option (i.e. non-recyclable rejects).

Revision	Issue Date	Issue By	Comments
0	JUL 07	GD	.

Staffordshire County Council — City of Stoke on Trent

Site

Project: JOINT WASTE MANAGEMENT STRATEGY

Figure: **Implementation Plan**

Date: JULY 2007 | Figure No.

Scale: NTS

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6.3 Minimising waste and re-use

An essential component for an implementation plan is to continue, **improve and expand upon current waste minimisation initiatives.** Across Staffordshire there are a number of initiatives currently being implemented including;

- Home composting;
- Real nappy campaign;
- Re-use schemes for furniture and electrical goods;
- Schools waste action clubs; and
- Wider educational awareness and public awareness campaigns

The level of service provided and communicated to residents across each of the administrative areas will have the potential to vary within a two-tier and unitary partnership. Staffordshire and Stoke-on-Trent received funding for the period 2006/07 from the Waste and Resources Action Programme to improve communications in respect of the kerbside recycling collection schemes and household waste and recycling centres. The basis of the funding relates to the well established benefits of integrating communications and commonality of branding at a local, regional and national level. These benefits include better public understanding and the associated behavioural change in respect of the use of recycling services, and cost savings through economies of scale that are harder to achieve with the procurement of solitary communication campaigns and marketing materials.

The waste minimisation and reuse initiatives would also benefit through further integration of communications to include the community and not-for-profit service providers, and, formalise and co-ordinate these working relationships between authorities and organisations by developing a joint waste minimisation and recycling communications strategy and branding guidelines.

This implementation element of the strategy is likely to be required between now and the year 2020, running continuously. Adequate resourcing of this element is therefore required.

6.4 Increased recycling and composting - Waste collection

6.4.1 Kerbside Dry Recyclables & Household Kitchen Waste Collections

The performance required to achieve the adopted combined recycling and composting rate is set out in Table 6-1. This combined performance is a function of the number of households covered by this service, the percentage of those householders covered participating in the scheme and the available materials captured. This performance is calculated by the overall materials diversion which can be expressed as a percentage of the total amount of material within the original waste stream.

Table 6-1: Kerbside dry recyclables and composting collections at key target years

Target Years	2009/10	2012/13	2014/15	2019/20
Kerbside recycling assumptions:				
Number of households covered by the service	99%	99%	99%	99%
Percentage of householders participating in the scheme	75%	78%	80%	83%
Available materials captured	75%	78%	80%	83%
Total diversion from kerbside recycling	**56%**	**61%**	**64%**	**69%**
Kerbside composting assumptions:				
Number of households covered by the service	50%	68%	68%	90%
Percentage of householders participating in the scheme	74%	74%	80%	80%
Available materials captured	74%	74%	80%	80%
Total diversion from kerbside composting	**27%**	**37%**	**43%**	**58%**
Total diversion rate for garden waste	**75%**	**75%**	**75%**	**75%**

Table 6-1 above clearly highlights why **WCA's (the Districts) and the WDA (plus the county and Stoke) need to work together to create an integrated strategy** as the performance of recycling and composting will impact on downstream capacity requirements for treatment and management technologies. In terms of how these recycling and composting targets transfer to collection requirements Table 6-2 below provides an example, based upon typical municipal waste compositions, of the types of materials requiring collection by WCAs in 2020 to meet the 50% MSW recycling target.

Table 6-2: Recyclables collected at the Kerbside and HWRC

Material	Kerbside		HWRC	
	Recycling	Composting	Recycling	Composting
Newspaper & Magazines	y		y	
Other recyclable paper	y		y	
Non recyclable paper				
Liquid cartons				
Board packaging	y		y	
Card and paper packaging	y		y	
Other card	y		y	
Plastic bottles	y		y	
Other dense plastic packaging	y			
Other dense plastic			y	
Plastic film	y		y	
Textiles	y		y	
Glass bottles and jars	y		y	
Other glass				
Wood			y	y
Furniture			y	
Disposable nappies				
Other Miscellaneous combustibles				
Miscellaneous non-combustibles				
Metal cans & foil	y		y	
Other non-ferrous metals				
Scrap metal/white goods			y	
Batteries			y	
Engine Oil			y	
Garden waste		y		y
Soil & other organic waste		y		
Kitchen waste		y		
Non-home compostable kitchen waste		y		
Fines				
Hazardous				
Rubble				
WEEE			y	

6.4.2 Kerbside Green Garden Waste Collection

At the baseline year (2005/06) there is a green garden waste collection services to an average 62% of all households across Staffordshire and Stoke-on-Trent. This equates to approximately 75% capture of all green garden waste in the household waste stream and this is diverted away from landfill. This performance is assumed to remain constant (i.e. to provide the same level of service) through to the year 2020 as compositional analyses suggest that this is the maximum total green garden waste divergence rate achievable and so the kerbside green garden waste collection service will remain at the current 62% of households.

Currently all green garden waste collected is composted in open windrows. However, in later target years (2009/10 and beyond) as household kitchen waste collections are introduced, Staffordshire and Stoke-on-Trent have indicated a preference for green garden and household kitchen waste to be co-collected where possible. Therefore, there will be a **requirement under the Animal By-Products Regulations[18] (ABPR) to treat all co-**

[18] Detailed information regarding waste legislation can be found in Technical Appendix 3

collected organic wastes in a State Veterinary Service (SVS) approved in-vessel composting facility. Due to the kerbside co-collection schemes being introduced by 2009/10 there will be a corresponding drop in open windrow composting requirements (as shown in Figure 6-1) as in future years only garden green waste collected at HWRC's will be treated via this process..

In vessel composting capacity requirements are forecasted to increase from none in 2006 to approximately 123,000 tonnes by the year 2020.

6.4.3 Household Waste Recycling Centres (HWRCs)

The number of HWRCs are planned to increase from 13 to 15 by 2012/13[19]. Despite the planned increase in the number of HWRCs it is assumed that the overall waste arisings will remain constant from the baseline year (2005/06) to the assessment year 2020. It is assumed that waste brought to HWRCs will only increase in proportion to the projected waste growth rate (~1%) due to the planned increased kerbside recyclables collection service. **Waste from HWRCs is comprised of dry recyclables, green garden waste, residual waste and rubble. The materials collected at HWRCs will be constantly reviewed to ensure maximum recovery of materials is achieved**. The dry recyclables are sent to a Materials Recycling/Bulking Facility (MRF) prior to onward reprocessing, the green garden waste is composted in open windrow facility[20] and most rubble is recovered.

A significant proportion of the HWRC residual waste is comprised of 'difficult wastes' such as carpets and mattresses which currently cannot be recovered and is sent to landfill, however by 2012/13 it is assumed that this waste will go through some form of pre-treatment (i.e. shredding) to enable recovery of the waste rather than landfill. The Staffordshire and Stoke-on-Trent HWRC diversion is currently calculated at 65% which is considered the maximum diversion rate for HWRCs[21]. Once different types of waste are mixed together it is often impractical or uneconomic to recycle or re-use the material other than for a low value use or to recover energy from them.

Table 6-3: HWRC Waste Tonnages 2006 to 2020

HWRC waste	MSW (tonnes)
Dry Recyclables	~27,000 – 48,000
Green Garden Waste	~28,000 – 33,000
Residual Waste	~55,000 – 44,000
Rubble	~28,000 – 32,000

It is assumed that there will be no increase in the number of materials collected in each target year.

6.4.4 Bring Sites

Bring sites generally consist of recycling receptacles where the general public can deposit recyclable materials and are often located in supermarket car parks and similar locations. Bring sites differ from Household Waste Recycling Centres in that they are not manned and are not capable of accepting bulky or residual municipal waste.

[19] Two new HWRC sites planned in Stone and Tamworth and upgrades to existing facilities in Newcastle-under-Lyme, Lichfield and Rugeley
[20] Following roll out of kitchen and green waste co-collection schemes, only HWRC source separated green waste can be composted in an open windrow. This is due to the ABPR requirements for treating kitchen waste.
[21] Excluding rubble

Bring Sites are assumed to remain constant in number and are only expected to increase at the projected waste growth rate due to increased kerbside recyclables collection service. The majority of materials collected at the bring sites are paper, textiles, glass and metal cans. It is assumed that there will be minimal change to the tonnage of materials collected in future years, however the types of materials collected may change to reflect changes in demand for materials not collected by kerbside recyclables collection schemes.

There are **currently 254 bring sites across Staffordshire collecting approximately 13,000 tonnes of recyclable material**. Due to overall increases in MSW this tonnage is forecasted to increase to around 15,000 tonnes by the year 2020.

6.5 Limiting landfill and recovering benefit from remaining MSW – Waste treatment & disposal

As part of the key objectives and targets in the Headline Strategy, Staffordshire and Stoke-on-Trent have set a target of **zero waste to primary landfill by the target year 2020**. This means that no waste will be sent as primary landfill and only pre-treated[22] wastes which cannot be recycled or recovered (e.g. hazardous waste) will be permitted to be landfilled as secondary landfill.

6.5.1 Open Windrow Composting

Currently all green garden waste collected at HWRCs and from green garden waste kerbside collection services is composted in one of the seven[23] existing open windrow facilities within Staffordshire and Stoke-on-Trent or is managed out of the City and County boundaries.

The capacity requirement for open windrow composting facilities reduces to ~30,000 tonnes per annum from the current 77,000 tonnes for the key target years. The reason for this reduction is due to Staffordshire and Stoke-on-Trent's preference to co-collect green garden and household kitchen waste resulting in the requirement to treat all co-collected organic wastes in a State Veterinary Service (SVS) approved in-vessel composting facility as directed by the Animal By-Products Regulations[24] (ABPR). In future years it has been assumed that only source segregated green garden waste collected at HWRCs will be treated an open windrow composting facility.

6.5.2 In-Vessel Composting

By the target year 2009/10 it is proposed that household kitchen waste collections will serve 50% of households within Staffordshire and Stoke-on-Trent. This figure increases to 68% by 2013/14 and to 90% by 2020. As mentioned previously, **all household kitchen waste (and other organic materials co-collected with household kitchen waste) will need to be treated within an enclosed in-vessel composting facility in accordance with the ABPR**. Therefore, the capacity requirements for in-vessel composting facilities to treat Staffordshire and Stoke-on-Trent's organic waste will be;

[22] Pre-treatment of wastes has been defined as a physical, thermal, chemical or biological process including sorting that changes the characteristics of the waste in order to reduce its volume or hazardous nature, facilitates its handling or enhances its recovery (Landfill Directive 99/31/EC)
[23] For details of existing composting facilities in Staffordshire and Stoke-on-Trent see Technical Appendix 1
[24] Detailed information regarding waste legislation can be found in Technical Appendix 3

- ~83,000tpa in 2009/10;
- ~96,000tpa in 2012/13;
- ~105,000tpa in 2014/15; and
- ~123,000tpa in 2020

Currently, within Staffordshire and Stoke-on-Trent there is only one operational in-vessel composting facility licensed to take municipal waste[25]. However, a number of planning permissions for new facilities have been granted and the County and City have agreed that **by 2010 in-vessel composting facility capacity will be made available to all Districts**.

6.5.3 Materials Recycling/Bulking Facilities

It is intended to continue the policy of using a variety of commercial contracts for the sorting, treatment and sale of dry recyclable waste. There is therefore no current intention for the County Council or the District Councils to provide specific MRF for recyclable waste arising in the County. It is anticipated that as a result of increased recycling of waste in the private sector and joint procurement of capacity by the District Councils there will be sufficient merchant facilities in the region. The anticipated capacity requirements for a MRF or bulking facility to manage Staffordshire and Stoke-on-Trent's dry recyclables for the key target years are;

- ~180,000tpa in 2009/10;
- ~193,000tpa in 2012/13;
- ~203,000tpa in 2014/15; and
- ~226,000tpa in 2019/20

Depending on the type of waste contract procured by Staffordshire and Stoke-on-Trent there may be potential revenue from sale of kerbside collected dry recyclables.

6.5.4 Residual Treatment Facility

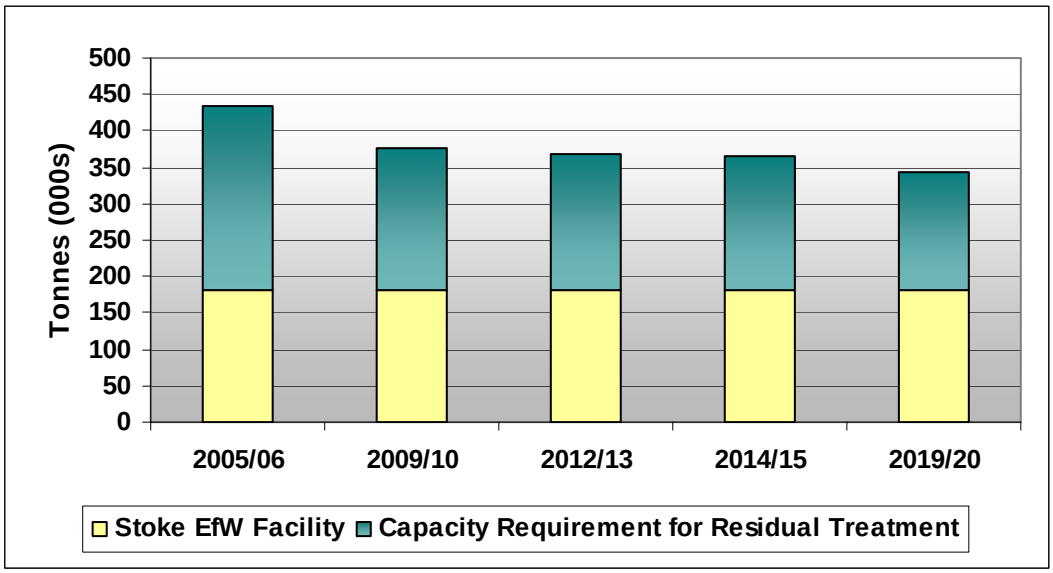
The options assessment process[26] identifies two residual treatment technologies as the preferred waste management option, Autoclave and Energy from Waste (EfW) to **manage the remaining residual waste not recycled or recovered through the Stoke energy from waste facility[27] and ensuring zero waste to primary landfill by 2020**.

Due to the extended timescales involved in the procurement process of such a large facility it has been assumed that the non-landfill residual treatment plant will not be operational until 2012/13. Until this time it is assumed that remaining residual waste will go to landfill. Once operational the MSW capacity requirements (as shown below in Figure 6-2) for a residual treatment facility in the key target years are as follows;

- ~180,000tpa until 2009/10 (Stoke EfW);
- ~340,000tpa in 2012/13 (including 180,000tpa to Stoke EfW);
- ~335,000tpa in 2014/15 (including 180,000tpa to Stoke EfW); and
- ~313,000tpa in 2019/20 (including 180,000tpa to Stoke EfW)

[25] As of January 2007. See Technical Appendix 1 for details.
[26] See Options Assessment Document
[27] Staffordshire County Council has an existing contract with Stoke EfW facility to deliver ~180,000 tonnes of residual waste per annum until 2020

Figure 6-2
MSW Capacity Requirements for the treatment of Residual Waste



Note: Capacity requirement for residual treatment falls due to increase in recycling

The strategy also assumes that all non-hazardous residual outputs from these facilities are recovered. Regardless of which technology is finally selected (be it Autoclave or EfW) there is likely to be a certain amount of hazardous or non-recoverable outputs which will require secondary landfill[28] either in dedicated cells with the necessary PPC permit for stabilised non-reactive hazardous waste or general landfill sites which will accept non-recoverable materials. Using the two technologies identified through the options assessment process a range of tonnage for these material types is given.

6.5.5 Remaining Residual Municipal Waste

Municipal waste that is not recycled or recovered[29] is currently sent to landfill. However, it is assumed that once a residual waste treatment facility becomes operational in or around 20012/13 it will significantly reduce all wastes to landfill, and in line with **Staffordshire's key headline targets there will be zero waste to primary landfill by 2020**. From 2012/13 it is assumed that only non-recyclable, non-recoverable or hazardous (i.e. fly ash or rejects) materials will be sent to an appropriately licensed landfill. The forecasted tonnage range of residual waste sent to secondary landfill[30] is set out below and varies according to the type of residual treatment technology finally adopted[31];

- ~168,000tpa in 2009/10;
- ~17,000-65,000tpa in 2012/13;
- ~17,000-63,000tpa in 2014/15; and
- ~16,000-56,000tpa in 2019/20

[28] This residual waste is not classed as primary landfill as it has been pre-treated
[29] at the Stoke-on-Trent EfW facility
[30] Secondary landfill comprises of residual waste from treatment facilities that cannot be recycled or recovered (they can also be hazardous materials)
[31] And relates to the minimum and maximum tonnage outputs from EfW (i.e. fly ash) and Autoclave (i.e. non-recyclable rejects) respectively

6.6 Monitoring Implementation

Best Value Performance Indicators (BVPIs) provide opportunity for measuring performance and improvement against key services while enabling comparisons to be made with other authorities. Although BVPI targets have not been set post 2007/08, Table 6-4 below provides an equivalent summary BVPI targets for Staffordshire and Stoke-on-Trent in order to accord with the aspirations set out in the headline strategy document.

Table 6-4: Summary BVPI performance for Headline Strategy Key Target Years

	2009/10	2012/13	2014/15	2019/20
Total household waste	586,500	604,036	615,857	635,027
Total recycling	151,028	163,232	171,982	193,699
Total composting	113,058	126,748	135,947	155,602
Recycling (%)	26%	27%	28%	31%
Composting (%)	19%	21%	22%	25%
Recycling + composting (%)	**45%**	**48%**	**50%**	**55%**
Total MSW	640,107	659,246	672,148	693,070
Household recycling as a precentage of MSW	**41%**	**44%**	**46%**	**50%**

The above specific, measurable, allocated, realistic, and timed (SMART) targets allow a mechanism for monitoring of performance against this strategy.

7 SUMMARY

The **Staffordshire and Stoke-on-Trent Joint Municipal Waste Management Strategy has been produced in accordance with Defra's MWMS Guidance**[32] as a tool for managing waste in line with local development plans and wider regional strategies. The headline strategy has been developed to provide a **clear and succinct statement of the key objectives and targets for Staffordshire and Stoke-on-Trent** with regard to the management of municipal waste. The key targets outlined within this JMWS are:

- **Increased recycling:** Delivering on a combined household recycling and composting target of 55% (equivalent to 50% of all MSW)
- **Recovering benefit from all remaining MSW:** Sending approximately 50%[33] of all MSW for recovery
- **Zero waste to Landfill:** Minimising all forms of waste to landfill through increased recycling followed by maximum recovery of all remaining residual waste, thus placing landfill as the last and final option

The supporting documents to this Headline Strategy are set out in Figure 7-1 and provide detailed information regarding the implementation of the strategy and the technical background. The SEA consultation documents also forms part of the JWMS and has been issued separately.

Figure 7-1: Headline Waste Strategy and supporting documents for Staffordshire and Stoke-on-Trent

[32] A Practice Guide for the Development of Municipal Waste Management Strategies (November 2005)

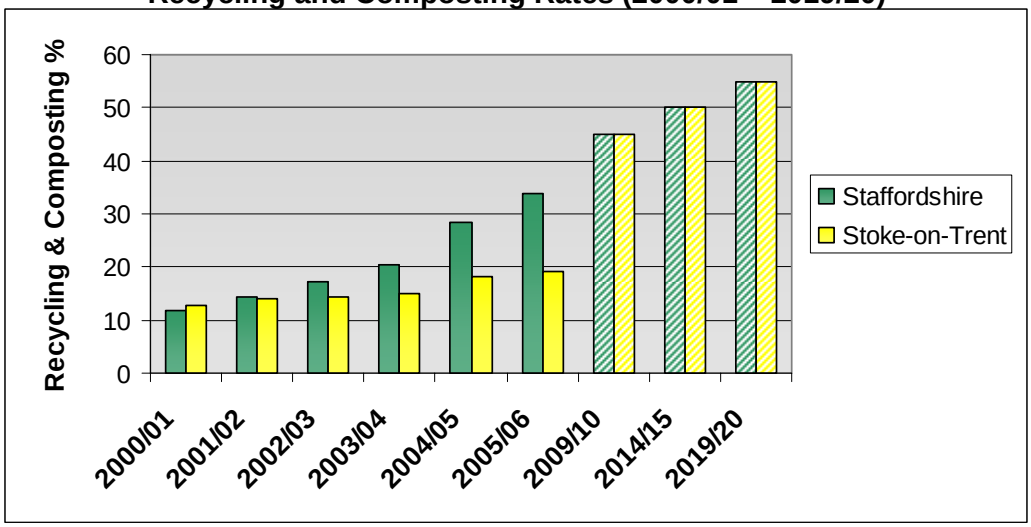
[33] 5% of the MSW total is rubble which is recycled at HWRCs, and therefore does not require further residual treatment. Government definitions exclude rubble from household waste recycling figures

Whilst this strategy is centered on the need to meet the Landfill Directive targets it's wider remit has the intention of;

- **Sustainability:** Achieving **sustainable management of all waste** arising in Staffordshire and Stoke-on-Trent through emphasis on the **reduction, re-use, recycling and recovery of waste**;
- **Resource management**: Wherever practicable, managing **waste as a potential resource** and as close to its point of origin;
- **Working together:** Developing effective **co-operation and joint working** between local authorities, businesses and residents on the benefits of waste minimisation and increased recycling and recovery

This draft JMWMS and its supporting documents provides all necessary information on the key regional, national and European waste policy drivers, as well as the **necessary actions required to improve current recycling and composting** to meet specified targets. Where we are now and where we need to be is summarized in Table 7-1.

Table 7-1: Staffordshire and Stoke-on-Trent Actual and Target Recycling and Composting Rates (2000/01 – 2019/20)



The pathway to delivering this strategy is clearly set out in an implementation plan which is summarized in the implementation plan below. The plan shows that an integrated approach is essential to ensure delivery of this strategy. Integration in this context includes the general public, businesses, waste collection authorities, waste disposal authorities.

	2006	2009/10	2012/13	2014/15	2019/20
Household Waste[1] Recycling Centres	13 ~137ktpa	14 ~145ktpa	15 ~149ktpa	15 ~152ktpa	15 ~157ktpa
Bring Sites	254 ~13ktpa	254 ~14ktpa	254 ~14ktpa	254 ~14.5ktpa	254 ~15ktpa
Kerbside[2] Recycling Collection	95% ~53ktpa	99%[3] ~93ktpa	99% ~103ktpa	99% ~111ktpa	99% ~130ktpa
Kerbside[4] Green Waste Collection	62% ~49ktpa	62% ~56ktpa	62% ~57ktpa	62% ~58.5ktpa	62% ~60ktpa
Kerbside Kitchen Waste Collection	Trial Stage Only	50% ~27ktpa	68% ~38ktpa	68% ~46ktpa	90% ~63ktpa
Open Windrow[5] Composting	~77ktpa	~30ktpa	~31ktpa	~31.5ktpa	~32.5ktpa
In-Vessel[6] Composting	———	~83ktpa	~96ktpa	~105ktpa	~123ktpa
Materials[7] Recycling / Bulking Facility	~123ktpa	~180ktpa	~193ktpa	~203ktpa	~226tpa
Residual[8] Treatment	~180ktpa	~180ktpa	~340ktpa	~335ktpa	~313ktpa
Landfill	[9] ~230ktpa	[9] ~168ktpa	[10] ~7ktpa-65ktpa	[10] ~16.5ktpa-63ktpa	[10] ~15.6ktpa-56ktpa

KEY

- **Household Waste Recycling Centre -** Figure in circle represents number of sites. Figure below in *ktpa* represents estimated throughput for each key year.
- **Bring Site -** Figure below *kpta* represents estimated throughput for each key year.
- **Kerbside Recycling Collection -** (%) Value equals percentage of households served. Figure below *kpta* represents estimated throughput for each key year.
- **Kerbside Green Waste Collection -** (%) Value equals percentage of households served. Figure below *kpta* represents estimated throughput for each key year.
- **Kerbside Kitchen Waste Collection -** (%) Value equals percentage of households served. Figure below *kpta* represents estimated throughput for each key year.
- **Open Windrow Composting -** Figure below *kpta* represents estimated throughput for each key year.
- **In Vessel Composting -** Figure below *kpta* represents estimated throughput for each key year.
- **Materials Recycling / Bulking Facility-** Figure below *kpta* represents estimated throughput for each key year.
- **Residual Treatment -** Figure below *kpta* represents estimated throughput for each key year.
- **Landfill -** Figure below *kpta* represents estimated throughput for each key year.

1. Household Waste Recycling Centres remain proportionally constant.
2. Assumes ~ 56% diversion of dry recyclables in 2006 increasing to ~69% by 2020.
3. The Household Waste Recycling Act 2003 requires that all English local authorities collect a minimum of 2 recyclable materials from all households by 2010.
4. Assumes ~ 75% diversion of green waste from 62% of households within Staffordshire and Stoke-on-Trent (as at present).
5. Assumes only Household Waste Recycling Centre (HWRC) green waste to Open Windrow from 2009/10 due to household green waste co-collected with kitchen waste and will require treatment at in-vessel composting facility (IVC).
6. Assumes all kitchen waste and green waste collected at the kerbside will be treated in an enclosed composting facility in accordance with Animal By-Products Regulations (ABPR).
7. Includes rubble from HWRCs.
8. Assumes additional residual treatment facility is on line by 2012/13 with all non hazardous residual outputs recovered.
9. Residual waste which cannot be sent to residual treatment facility, plus secondary landfill (i.e. fly ash from residual treatment).
10. Secondary Landfill only from 2012/13. Range relates to min/max tonnage for EFW Option (i.e. fly ash) and Autoclave Option (i.e. non-recyclable rejects).

Revision	Issue Date	Issue By	Comments
0	JUL 07	GD	.

Staffordshire County Council — City of Stoke on Trent

Site

Project: JOINT WASTE MANAGEMENT STRATEGY

Figure: **Implementation Plan**

Date: JULY 2007 | Figure No.

Scale: NTS

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8 GLOSSERY OF TERMS

Anaerobic digestion – a process where biodegradable material is encouraged to break down in the absence of oxygen, in an enclosed vessel. It produces carbon dioxide, methane and solids/liquors known as digestate, which can be used as fertiliser and compost.

Autoclave – is the most common form of Mechanical Heat Treatment (MHT). Autoclave uses a combination of mechanical and thermal (steam processing in a vessel under the action of pressure) processes to separate a mixed waste stream into component parts with further options of recycling and recovery. Different systems can be employed to meet various outputs, but in general the outputs will include one or more of the following: organic rich component for subsequent biological treatment (end use example – low grade soil conditioner); segregated high calorific value waste (RDF, end use example – use in process to capture energy potential); extract materials for recycling (typically glass and metals, potentially to capture plastics and 'fibrous' organic material and paper).

Biodegradable – material which is capable of being broken down by plants (including fungi), and animals (including worms and micro-organisms). In municipal solid waste, the property is generally attributed to the following fractions: paper and card, kitchen (food) and garden waste, fines and miscellaneous combustible waste.

Biological Treatment – any biological process that changes the properties of waste (e.g., anaerobic digestion, composting). Biological treatment includes land spreading activities that are licensed (See land spreading) (source EA, SWMA).

Central composting – large-scale schemes which handle garden waste and kitchen waste from households and which may also accept suitable waste from parks and gardens.

Civic amenity (CA) site – often used as a generic term for a facility provided by the local authority which receives household waste normally delivered by the public direct to sites. Wastes handled include bulky items such as furniture and "Do it yourself" (DIY) wastes, white goods, garden waste, and general household wastes as well as recyclables. Some CA sites have facilities to receive certain hazardous household wastes, e.g. Lead acid batteries and oil. The term civic amenity site originally referred to facilities established under the Civic Amenities Act 1967, which was repealed and replaced by section 2 of the Refuse Disposal (Amenity) Act 1978, which has since been repealed. The term household waste amenity site (used in Waste Management Paper 4) is a more correct term for facilities provided under the Environmental Protection Act 1990, however 'civic amenity site' is still widely used.

Composting – the controlled biological decomposition and stabilisation of organic substrates (e.g. green garden and kitchen waste), under conditions that are predominantly aerobic. It results in a final product that has sanitised and stabilised, is high in humic substances and is of such a quality that it can be used as a soil improver, as an ingredient in growing media, or blended to produce other marketable products (that meet recognised industry standards).

Compost plant – a facility for carrying out composting. Large scale schemes may handle kitchen and garden waste collected directly from households and civic amenity sites and may also accept suitable waste from municipal parks and gardens.

Controlled waste – comprises household, commercial, and industrial waste. The main exempted categories comprise of mine, quarry and farm wastes. Radioactive and explosive wastes are controlled by other legislation and procedures.

Energy from waste – includes a number of established and emerging technologies to recover energy from waste. Some of these are direct through 'mass burn' incineration (where waste is directly combusted without pre-treatment) whereas others are indirect; where the waste is processed into a fuel before energy is recovered (e.g. conversion into refuse derived fuel, or gasification or pyrolysis). Many wastes are combustible, with relatively

high calorific values – this energy can be recovered through (for instance) incineration with electricity generation.

Gasification – the heating of organic materials with air, steam or oxygen to produce gaseous fuels, ash and tar. Also see energy from waste.

Green Garden Waste – organic garden waste such as grass clippings, tree prunings', leaves etc. which can be used as composting feedstocks. Also known as 'garden waste' or 'yard waste'. They can arise from gardens, parks and landscaping activities.

Greenhouse gas – one of a number of gases (including methane and carbon dioxide) that can contribute to climate change via the 'greenhouse' effect when their atmospheric concentrations exceed certain levels.

Hazardous wastes – the most harmful wastes to people and the environment, and defined according to properties listed in Annex III to Council Directive 91/689/EEC on hazardous waste.

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

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

Household Waste Recycling Centre (HWRC) – see Civic Amenity sites

Incineration – is the controlled burning of waste, either to reduce its volume, or its toxicity. Energy recovery from incineration utilises the calorific value of the waste. Current flue-gas emission standards are very high. Ash residues still tend to be disposed of to landfill (although bottom ash can be recycled). See also energy from waste.

Inert Waste – waste which, when deposited into a waste disposal site, does not undergo any significant physical, chemical or biological transformations and which compiles with the criteria set out in Annex III of the EC Landfill Directive.

Land Recovery – the application of waste onto land for improvement. Typical examples of this include the spreading of organic wastes for agricultural benefit, use of inert waste for land reclamation or improvement, or the use of inert waste for construction purposes (as defined by the EA).

Landfill site – is defined in the Council Directive 1999/31/ec on the landfill of waste meaning "…a waste disposal site for the deposit of the waste onto or into land…". The definition includes sites where the producer of the waste is landfilling at the place of production of the waste and any site established for over a year, where waste is temporarily stored. Landfill sites are often located in disused quarries or mines. In areas where there are limited, or no ready-made voids, the practice of land raising is sometimes carried out, where some or all of the waste is deposited above ground, and the landscape is contoured.

Landfill tax – a tax intended to address the environmental costs of landfilling by encouraging the diversion of waste from landfill.

Life cycle assessment – Life Cycle Assessment (LCA) is the systematic identification and evaluation of all the environmental benefits and drawbacks that result, both directly and indirectly from a product or function throughout its entire life from extraction of raw materials to its eventual disposal and assimilation into the environment. It can make an important contribution to assessing the environmental impacts of waste management operations. It can provide part of the input into strategic decision making on the ways in which particular wastes in a given set of circumstances can be most effectively managed, in line with the

principles of Best Practicable Environmental Option, the waste hierarchy and the proximity principle.

Metals Recycling – a facility that recovers scrap metal from waste for recycling (Source EA, SWMA).

Mechanical Biological Treatment (MBT) – may be used as pre-treatment to stabilise residual wastes prior to landfilling. A combination of mechanical and biological processes are employed to achieve stabilisation of the wastes. Typical plants generate three material streams; recyclable material comprising mainly ferrous and non-ferrous metals; a bio-stabilised stream suitable for landfill cover and a residual stream that can either be landfilled or converted into a secondary fuel.

Municipal wastes – the Landfill (England and Wales) Regulations 2002 defines it as "…waste from households as well as other waste, which, because of its nature or composition, is similar to wastes from households." In Part Two of Waste Strategy 2000, municipal waste is defined as "…all waste under the control of local authorities or agents acting on their behalf" and is the definition used in the Waste Strategy for England and Wales.

Non-renewable resources – resources that cannot regenerate within human-life time, for example, fossil fuels.

Packaging Wastes – defined as 'all products made of any materials of any nature to be used for the containment, protection, handling, delivery, and presentation of goods, from raw materials to processed goods, from the producer to the user or the consumer.

Physico-chemical treatment – treating waste by one of a combination of physical (filtration, settlement etc.) and chemical (eg, neutralisation) methods to recover it and/or to produce a less harmful waste for disposal (Source EA, SWMA).

Pyrolysis – the heating of organic materials in the absence of air, causing the volatilisation of combustible gases. Also produced is a combustible char, a mixture of oils and liquid effluent.

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. Special wastes such as solvents can also be recycled by specialist companies, or by in-house equipment.

Renewable Resources – resources that will regenerate within human life scales, for example, trees.

Re-use – using a product again for the same or a different purpose. Furniture and some electrical goods are often capable of being re-used and many community and voluntary sector groups are actively involved in facilitating re-use of such items. It can be practiced by the commercial sector with the use of products designed to be used a number of times, such as re-useable 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.

Separate collection – kerbside schemes where materials for recycling are collected either by a different vehicle or at a different time to the ordinary household waste collection.

Source segregation – involves the segregation at source of waste into individual materials. In the case of household waste, this source segregated waste would include recyclable and compostable materials collected separately at the kerbside or taken to civic amenity and bring sites.

Special waste – the Special Waste Regulations 1996 (as amended) define special waste as: wastes on the Hazardous Waste List displaying hazardous properties; any other

controlled wastes displaying defined properties (e.g. irritant) and waste prescription only medicines.

Strategic Waste Management Assessment (SWMA) – produced by the Environment Agency to provide consistent, comprehensive, local information about the amounts and types of wastes produced and how they are managed.

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

Sustainable waste management – requires that waste management should be carried out in a way that does not place undue social, economic, or environmental burdens on either present or future generations and that ensures social equity, effective protection of the environment, the prudent use of natural resources and the maintenance of high and stable economic growth and employment. The aim is to de-couple waste production from economic growth.

Sustainable Waste Management Option (SWMO) – the result of a systematic process to identify the most sustainable method of waste management.

Transfer – a waste transfer station is a facility to which waste is delivered for separation or bulking up before being removed for recovery and/or disposal (source: EA, SWMA).

Treatment – physical, thermal, chemical or biological processes, including sorting, that change the characteristics of the waste in order to reduce its volume and hazardous nature, facilitate its handling or enhance recovery.

Unitary Authority – a local authority that has the responsibilities of waste planning, collection and disposal.

Unitary Development Plan – sets out land use policy for the area of the Unitary or National Park Authority, including policies for waste developments.

Waste – is defined in Council Directive 75/442/EEC on waste as meaning "…any substance or object in the categories set out in Annex I which the holder discards or intends or is required to discard." Annex I of the Directive lists 16 categories of waste, including 'agricultural, household, office, commercial and shop discards'. Waste defined by the Directive is referred to as 'Directive Waste'.

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

Waste transfer station – a site to which waste is delivered for sorting prior to transfer to another place for recycling, treatment or disposal.