JMWMS Supplementary Report Six: Waste Arising Study

recycle for Merseyside

Supplementary Report 6: Waste Arisings Study

The Merseyside Waste Partnership recognises the need for sustained action on municipal waste management in order to deliver its obligations, targets and aspirations. With the current update of the Joint Municipal Waste Management Strategy, and alignment of Halton's Aspirations and Guidance document in recognition of the formal partnership arrangements, it is appropriate to investigate the historical trends in household and municipal waste to inform future projections. A better understanding of the amounts of waste generated in each of the Partner authorities is also important for the long-term procurement exercise currently being initiated by the Partnership.

BeEnvironmental were commissioned to undertake a study of waste arisings across the partnership.

6.1 Aim of the Study

This study comprises an analysis of the available data with regard to municipal and household waste arisings for the following authorities:-

- Knowsley Council
- City of Liverpool
- Sefton Council
- St Helens Council
- Wirral Council
- Halton Borough Council
- Merseyside Waste Disposal Authority

The study considers historical trends and future projections for each of the Partners. The analysis is set at a strategic level and whilst taking account of key variables it does not attempt to quantify specific factors of influence.

6.2 Methodology

The initial phase of the study entailed collation of available data on waste arisings for each Partner authority. Once the data was compiled, it was analysed for clear errors in submissions or where data appears to have been misclassified.

The data was then analysed for trends in waste growth/reduction. The analysis considered recent trends and those over the longer term, including the household and non-household elements, where the data was available, and the 'total' arisings, i.e. considering the Household Waste Recycling Centre data combined with Districts collection data. It is not intended that a rigorous analysis of the data against service provision / local / national issues is undertaken in this work, however comment is made on the likely factors accounting for trends in the data. These comments are based on key developments, additional exploratory analysis of the datasets and the experience of the consultants.

The analysis provided a best estimate of the trends with the available data and considered forward projections that are proposed. This work is of relevance to both the Municipal Waste Management Strategy Updates and the Waste Prevention Strategies being developed by the Partners and BeEnvironmental. This represents a supplementary research report to these documents.

6.3 Data Sources

Three key datasets were used for the purposes of this study.:-

- Merseyside Waste Disposal Authority provided four years of waste arisings data for all the Partner authorities, with the exception of Halton Borough Council, there is also three years of HWRC data separately identified for each District[1]
- Halton Borough Council provided six years of waste arisings data
- Defra municipal waste management statistics were provided by a Government statistician[2] for the period 1995/6 – 2005/6[3] for all the Partner authorities, with the exception of Halton Borough Council

The analysis was also supported by information provided by the Partners in terms of their current and anticipated service delivery changes, as part of a related study[4].

6.4 Historical Analysis

Merseyside Waste Disposal Authority (MWDA)

The data on the MWDA arisings is provided by the MWDA dataset. This considers the household waste arisings presented at the HWRCs only. An overview of the total arisings for the Partnership is considered later in the report.

The Defra data could not be used to derive HWRC arisings because the recycling tonnages for the District collections and the HWRCs are combined in this dataset. Figure 6.1 clearly illustrated the tonnage of household waste collected at the HWRCs.

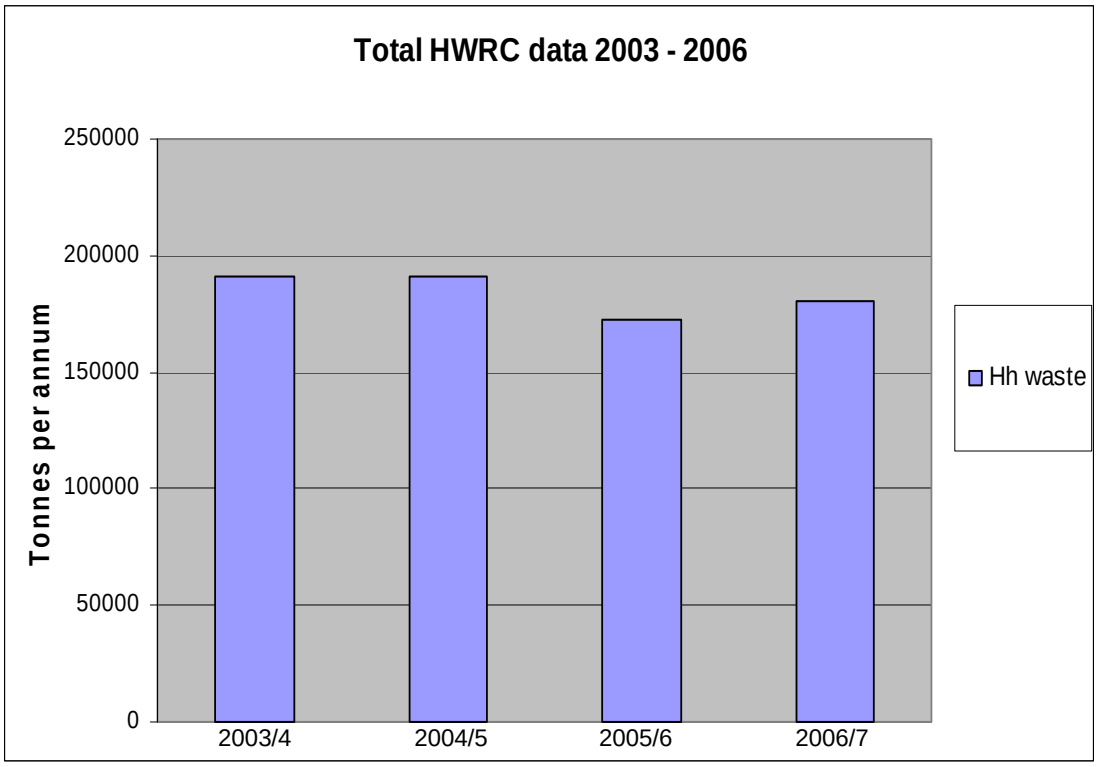
The data shows a slight increase of +0.2% arisings at HWRCs in 2004/5, followed by a sharp decrease in 2005/6 of -9.8%. The provisional 06/07 data however shows a +4.7% increase. The decrease in 05/06 is important and reflects in most of the District data. A variety of factors could account for this including local direct effects (e.g changes to services / operations) and wider indirect effects (e.g. national waste minimisation initiatives, reporting methodology, weather implications, and the arisings gap could be exacerbated by the lack of an additional bank holiday in 05/06 - no Easter, as opposed to two Easters in 04/05 - and associated DIY and other wastes etc).

A key factor likely to make a more significant contribution to any decrease in HWRCs arisings will be the changing collection infrastructure provided by the Districts. It is likely that the District collections are diverting some waste from the HWRCs, through new or expanded collection systems. This is illustrated when we consider the HWRC arisings together with the District collected wastes, in the following sections of this report. The diverted waste may be garden waste, recyclables and larger items which may have previously been taken to HWRCs but now can be deposited into larger capacity wheeled bins (e.g. where wheeled bins have been introduced to replace sack collections, or new recyclate containers increases the overall capacity available to the householder). The levels of garden waste separately recorded in the HWRC

[1] It should be noted that no attempt has been made in this study to marry usage of HWRCs with location of users. The data assumes that HWRCs in a District are only used by those within that District, this is an area of potential error in some circumstances.
[2] Dr Julian Parfitt, WRAP
[3] This data has been refined and some errors corrected since the original submissions
[4] Merseyside District Council Action Plan Review, BeEnvironmental, July 2007

data shows an annual increase, however this could be a 'masking effect' of better segregation practices at HWRCs with the contractors incentivised to increase recycling and composting.

Figure 6.1: Household Waste Collected at the HWRCs



Better enforcement of HWRCs to divert non-household waste from entering the sites can also be a factor in any decline. Enforcement at HWRCs is at a relatively low level at present and as such it is likely that there may be a substantial proportion (of the order of 10 – 25%) of non household waste entering the HWRCs. This is a factor to be considered in future profiling of waste growth (see section 6.2).

Consideration of the weather as a factor for increases / decreases in waste arisings is a problematic area as it relates to the influence on growing conditions (and hence green waste arisings) and weight of waste (wet waste will weigh more on weighbridges and hence influence the statistics).

Weather can also influence consumer behaviour and impact on District collected waste (e.g. more barbeques, cans, bottles in good summers, etc). There was a greater quantity of rainfall and sun in 04/05 than 05/06 which may be a contributory factor to the raise and subsequent fall, however the magnitude appears insufficient to have anything other than a minor implication (see p.11).

The development of alternate week collections (AWC) may give rise to some additional movement of waste to the HWRCs from the Districts. Investigation of the Wirral data suggests some movement in 06/07 from the usual District collections to the HWRC may have taken place. It is unclear at present whether this is likely to be a short term effect or a more prolonged change of behaviour.

The trend of an increase in 04/05 followed by a significant decrease in 05/06 is borne out by the Defra data which shows a notable fall in residual waste from HWRC sites from 2004/5 – 2005/6 (a 14% reduction).

It is likely that the overall reduction in HWRC wastes, falling on average by 1.6% per year over the last four years, is primarily a consequence of Districts extracting more materials from the household directly though expanded collection systems (with either increased capacity and or green waste collections). This trend is complicated by external influences (weather, enforcement, significant events etc), the increased efficiency of separation at HWRCs and the potential 'push – back' of materials into HWRCs through Alternate Week Collection capacity limitations.

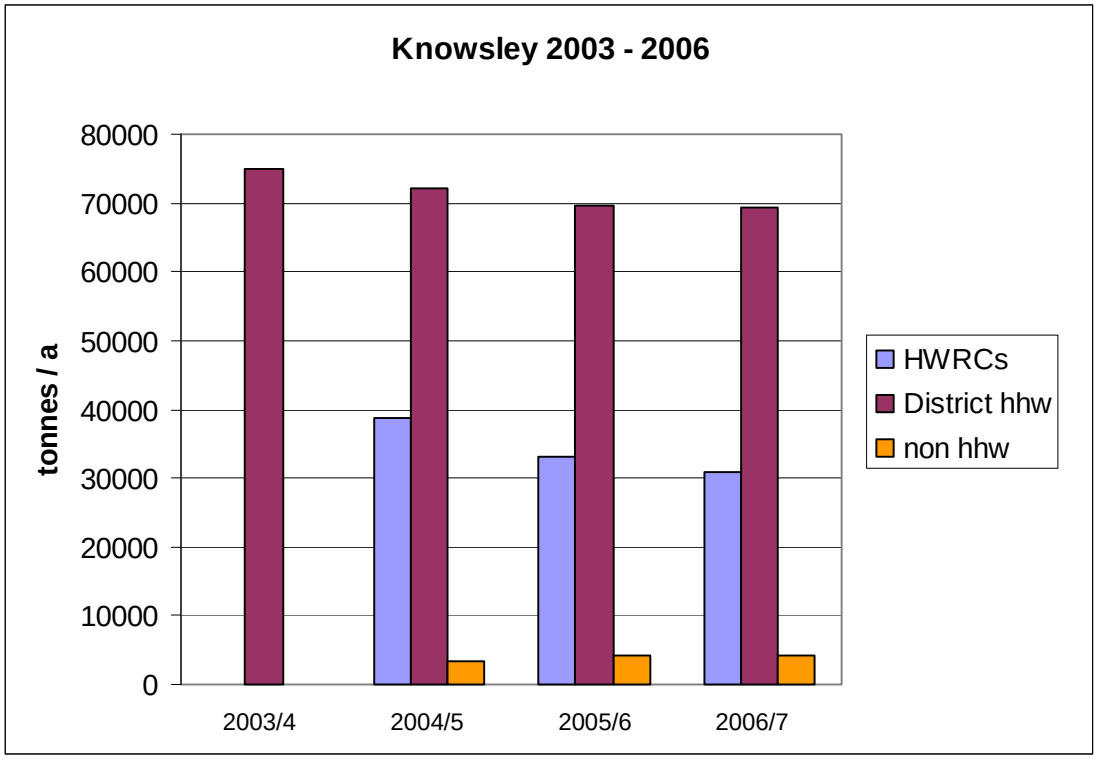
Knowsley

In order to estimate the growth in household and municipal waste in Knowsley, two datasets were used: the MWDA data for 2003/4 – 2006/7 and the Defra data.

MWDA data

The MWDA dataset separately records waste collected by Knowsley District and (for 04/05 – 06/07) waste deposited at HWRCs within the District. The data is illustrated in Figure 6.2.

Figure 6.2: Household & Non Household Waste Arising in Knowsley



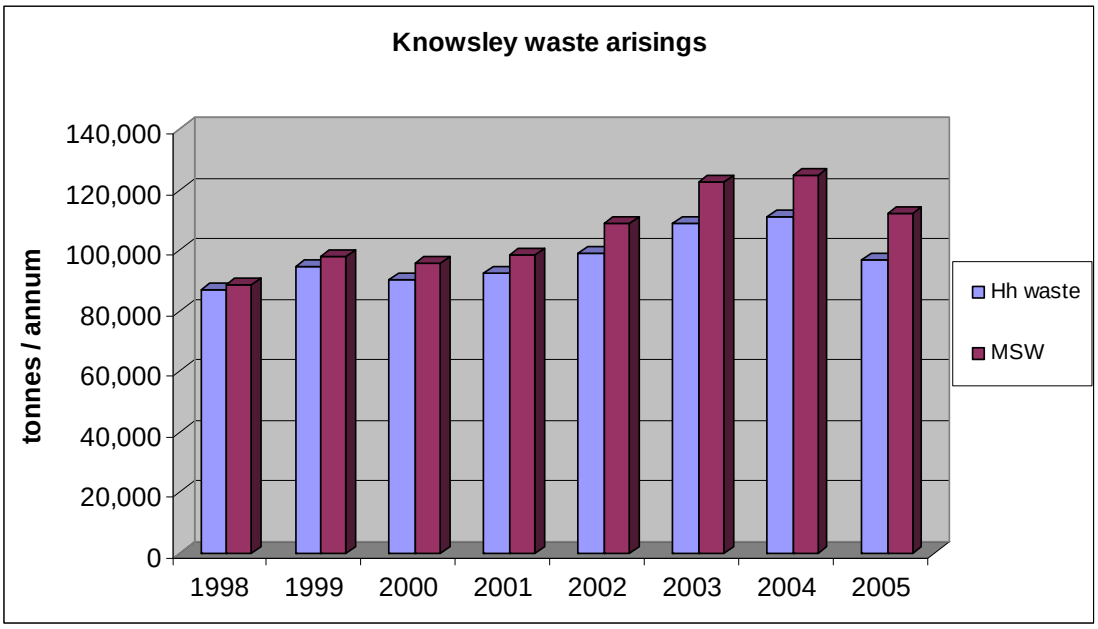
This dataset shows a substantial annual decline in District collected household waste averaging at -3.6% pa over the period 2003/4 – 2006/7. The tonnage of non household waste increases over this period from an unreported baseline in 2003/4 to over 4000 tonnes in 06/07. The variation from 04/05 – 06/07 is levels of flytipped waste, as trade waste is reported as a constant figure, although there may be some errors introduced here. The District MSW arisings therefore exhibit less of a reduction than household waste over this period at -0.7% pa on average however the reporting discrepancy should be noted.

The Household Waste Recycling Centre data was not available for 03/04, but showed a significant decrease from 04/05 to 06/07, at -10.6% pa on average, largely attributable to a substantial reduction in residual waste for disposal. There was an increase however in garden waste deposited at the HWRC during this period. This does not necessarily mean more garden waste entering the sites, but is likely to be a factor of improved separation. Indeed, with increased kerbside collection of green waste (a five fold increase in the period 2003/4 – 2006/7) the overall tonnage of this material entering the HWRCs is likely to have fallen.

Defra Data

The Defra data for Knowsley covers the period 1995/6 – 2005/6 and combines the arisings collected by the District together with the tonnage data and estimates / projections of the waste entering the HWRC within the District. The first three years of Defra data yielded apparent data anomalies and have been excluded. Figure 6.3 illustrates this dataset from 1998/99 – 2005/6.

Figure 6.3: Household & MSW Data for Knowsley



This data shows a general increase to 2004/5 (although there are established weaknesses with the 04/05 national dataset citing a general overestimation[5]), declining substantially in 2005/6, predominantly due to the decline in HWRC waste (as observed in both datasets). There is a notable peak in 1999/2000 which is observed in most partner authorities and may be exacerbated by additional waste generated as a result of millennium occasions and events. The second notable, and more significant peak is in 2003/4 and 2004/5. The increase can be partly explained by the roll out of a garden waste collection to 30,000 properties in 2003/4, the increased level maintained in 2004/5, perhaps exacerbated by other external factors (as discussed elsewhere).

The overall increasing trend observed may be due to one or more of the following factors:-

[5] Dr Julian Parfitt

- Increasing capacity provided to householders (in terms of bin capacity) allowing deposit of wastes which otherwise may not have entered the waste stream being added (e.g. garden wastes). This can also divert some waste from the HWRCs to the District collections
- Economic growth. There is a relationship between GDP and waste generation, and indeed expendable income and waste generation
- Addition of garden waste management collection services. The effect is most marked where kerbside collections are introduced
- Socio-demographic factors. Although the population has been declining (very slightly, predicted at -0.09% per year from 2004 – 2029), there is an increasing proportion of persons living on their own. There is a relationship between the amount of waste generated per person and the number of persons per household (as individuals living alone tend to generate more waste than an individual in a household with several persons). Another socio-demographic factor is increasing numbers of people working from home and transfer of business waste therefore into the household stream
- Non household waste entering the household waste stream through illegal transfer of, for example, commercial waste, to avoid the increasing cost of disposal
- Changes to reporting practices
- Rainfall / growing conditions

The reductions observed may be due to one of more of the following factors:-

- Successful waste minimisation / reuse activity
- Expansion / promotion of home composting
- Successful enforcement diverting non-household waste from the household waste stream (e.g. at HWRCs)
- Reducing capacity for household waste (thereby promoting diversion, one route of which may be management of garden waste at home)
- Economic growth. There is a relationship between GDP and waste generation, and indeed expendable income and waste generation
- Changes to reporting practices
- External factors such as:-
    - Events / holidays (having two Easters and therefore additional festivity and bank holiday related wastes in 2004/5 and none in 2005/6)
    - rainfall / growing conditions (impacting on green waste arisings and weight of waste), there was around 100mm less rainfall[6] in the NW of England in 2005/6 than 2004/5, although this may be a factor (e.g in growth of additional green waste / additional weight of waste, it appears a relatively minor difference and historically there are much more significant high rainfall years
    - the impact of national waste awareness campaigns

It is observed that the HWRC household waste reductions in Knowsley are greater than the reductions observed in the District collections for the period for which data is available (04/05 – 06/07). Key factors therefore may be: improved enforcement activity (which would tally with the increase in non household waste arising over this period); improved / expanded home composting or other factors influencing green waste (e.g. climate, plus diversion of garden waste into District collections); some

[6] Met Office data http://www.metoffice.gov.uk/climate/uk/, summed monthly averages for NW, accessed 14/06/07

bulkier wastes being diverted from HWRCs into the District collections through use of wheeled bins; external influences such as events, holiday periods and climate.

Non household waste exhibits a growing element of the municipal waste stream in both datasets. This may be due to increased flytipping, trade waste etc.

The trends generated by the Defra dataset are summarised in Table 6.1.

Table 6.1: MSW & Household Waste Trends for Knowsley

	7 years (98/99 – 05/06)	5 years (00/01 – 05/06)	3 years (02/03 – 05/06)
Household Waste, pa	+1.87%	+1.7%	-0.24%
MSW, pa	+4.78%	+3.58%	+1.33%

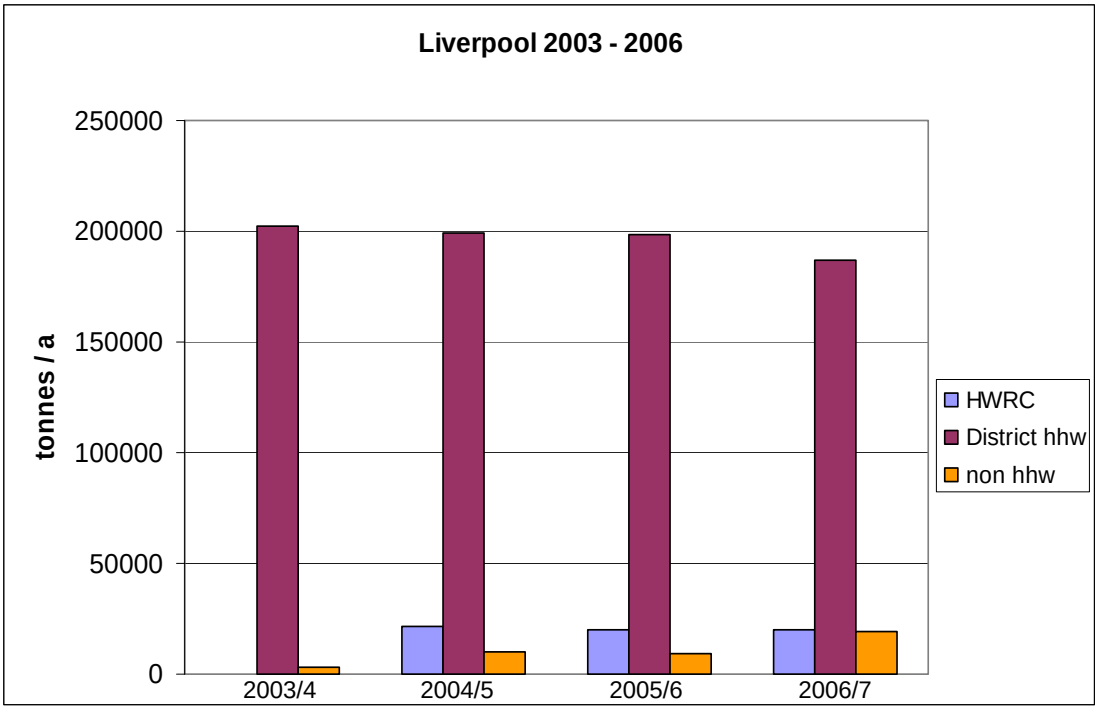
Liverpool

In order to estimate the growth in household and municipal waste in Liverpool, two datasets were used: the MWDA data for 2003/4 – 2006/7 and the Defra data.

MWDA data

The MWDA dataset separately records waste collected by Liverpool City and (for 04/05, 05/06 & 06/07) waste deposited at HWRCs within the District. The data is illustrated in Figure 6.4.

Figure 6.4: Household & Non Household Waste Arising in Liverpool

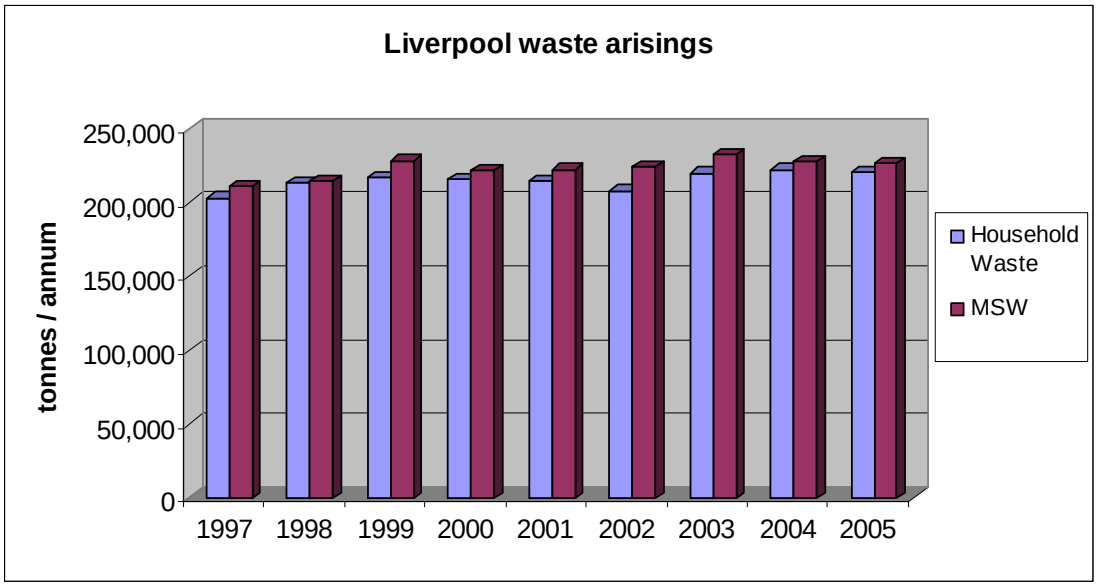


Liverpool shows a slight declining household waste profile collected by the District over the three years 03/04 – 05/06, with a significant decline in 06/07, by -6% (around -11.5k tonnes). There is also a notable decline in HWRC deposited household waste by -3.6% pa. Non household waste exhibits a significant rise in 06/07, attributable to an increase in Flytipping in that year of an additional +10.3k tonnes over the previous year (more than doubled). This suggests that a large proportion of the reduction in collected household waste may have been recorded as flytipped waste in this year, either as a result of changed data recording practices or the impact of increased enforcement / flytipping activity. The average household waste growth over this dataset is -2.6% pa. The increase in non household waste however means the average MSW growth rate over the same period is +0.15% pa.

Defra Data

The Defra data for Liverpool covers the period 1995/6 – 2005/6 and combines the arisings collected by the District together with the tonnage data and estimates / projections of the waste entering the HWRC within the District. There is an apparent error in some data returns and so the first 2 years are excluded from Figure 6.5

Figure 6.5: Household & MSW Arisings in Liverpool



The Defra dataset shows a slight increase in household and municipal waste across the period, with two returns (97/98 & 02/03) reporting lower arisings. These influence the trends in Table 6.2. Two aspects which are less pronounced in the Liverpool data, (but present nonetheless) than the other Districts is a smaller peak around the Millennium, and a smaller decline in arisings observed in 05/06 (proportionately). The less pronounced fall in arisings in 05/06 relative to other authorities may be attributed to the fall being primarily related to a reduction in HWRC arisings in other authorities and Liverpool having a low reliance (proportionately) on HWRC for collection of wastes. In addition, there was a roll-out of green waste collections to 80,000 households in 05/06 which is likely to add waste to the total arisings potentially displacing any fall which may have otherwise been experienced.

The general increase of around 1% per annum for the period 97/98 – 05/06 may be attributed to one or more of the following factors:-

- Increasing capacity provided to householders (in terms of bin capacity) allowing deposit of wastes which otherwise may not have entered the waste stream being added (e.g. garden wastes). This can also divert some waste from the HWRCs to the District collections
- Economic growth. There is a relationship between GDP and waste generation, and indeed expendable income and waste generation
- Addition of garden waste management collection services. The effect is most marked where kerbside collections are introduced although separation of garden waste at HWRCs may have an impact on overall arisings
- Socio-demographic factors. The population has been increasing and is predicted to grow at 0.25% per year from 2004 – 2029. There are an increasing proportion of persons living on their own. There is a relationship between the amount of waste generated per person and the number of persons per household (as individuals living alone tend to generate more waste than an individual in a household with several persons). Another socio-demographic factor is increasing numbers of people working from home and transfer of business waste therefore into the household stream
- Non household waste entering the household waste stream through illegal transfer of for example commercial waste, to avoid the increasing cost of disposal
- Changes to reporting practices
- Rainfall / growing conditions

The trends generated by the Defra dataset are summarised in Table 6.2 below.

Table 6.2: Household Waste & MSW Trends in Liverpool

	8 years (97/98 – 05/06	5 years (00/01 – 05/06)	3 years (02/03 – 05/06)
Household Waste, pa	+1.06%	+0.5%	+1.9%
MSW, pa	+1.1%	+0.4%	+0.5%

Sefton
In order to estimate the growth in household and municipal waste in Sefton, two datasets were used: the MWDA data for 2003/4 – 2006/7 and the Defra data.

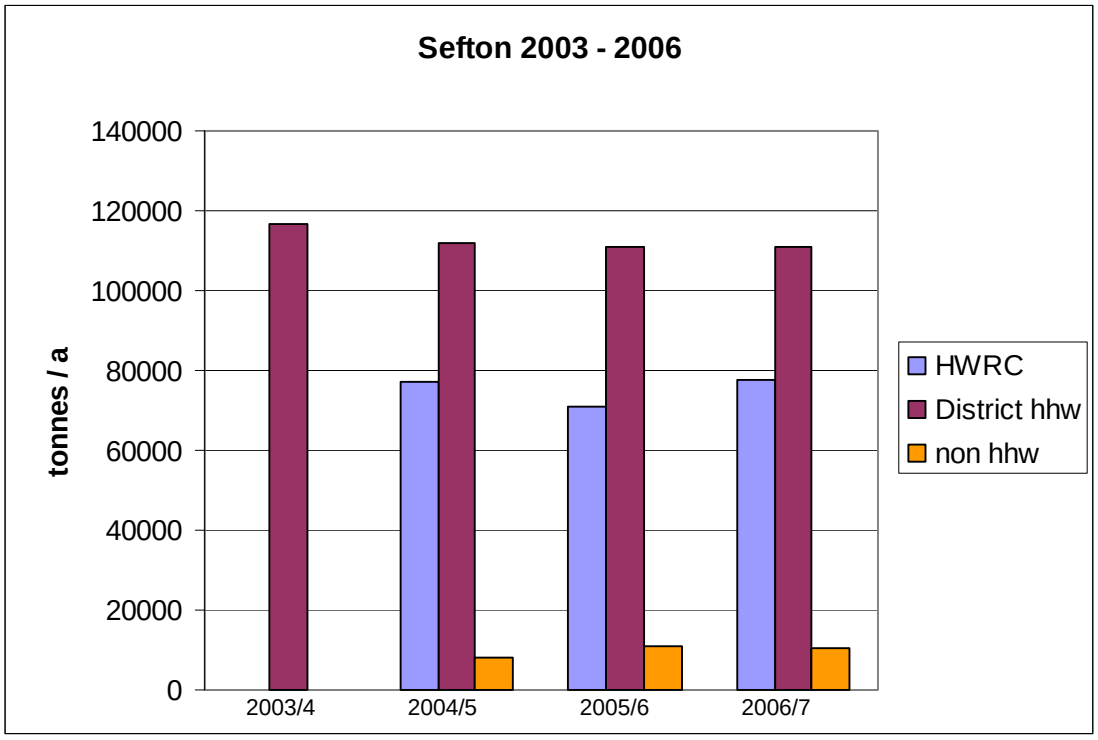
MWDA data
The MWDA dataset separately records waste collected by Sefton District and (for 04/05, 05/06 & 06/07) waste deposited at HWRCs within the District. The data is illustrated in Figure 6.6.

The graph illustrates that a large proportion of the waste generated in Sefton is deposited at HWRCs (equivalent to ~70% of that collected directly from the household), notably higher than in any other District. There is no data recorded on non household waste for 03/04, but the amount increases from 04/05 – 05/06, attributable to an increase in flytipped waste and slightly reduces in 06/07. The trade waste collected was recorded as static at 5000 tonnes for each year. This may

introduce a potential error in the data. The HWRC arisings exhibit a significant fall from 04/05 – 05/06, but recover to similar (04/05) levels in 06/07.

Levels of household waste collected by the District fell by -1.7% pa on average over this 4 year period, however the rise in non household waste meant that the MSW growth increased by +2% pa on average over the same period. The lack of specific data in 03/04 however may have skewed this result, so if we consider only 04/05 – 06/07 then a -0.5% pa average decrease in household waste and a +0.6% pa average increase in MSW is observed.

Figure 6.6: Household & Non Household Waste Arising in Sefton



Defra Data

The Defra data for Sefton covers the period 1995/6 – 2005/6 and combines the arisings collected by the District together with the tonnage data and estimates / projections of the waste entering the HWRC within the District. The first three years of data have been excluded due to apparent anomalies with the returns. Figure 6.7 illustrates this dataset.

The Defra dataset exhibits the same trends as the other Districts in terms of a peak around the millennium and the 04/05 peak and notable fall in 05/06. There is a significant increase spanning 2001/2 – 2004/5 which is likely to be a factor of a service delivery change (e.g. introduction of wheeled bins or other additional capacity and / or green waste collections).

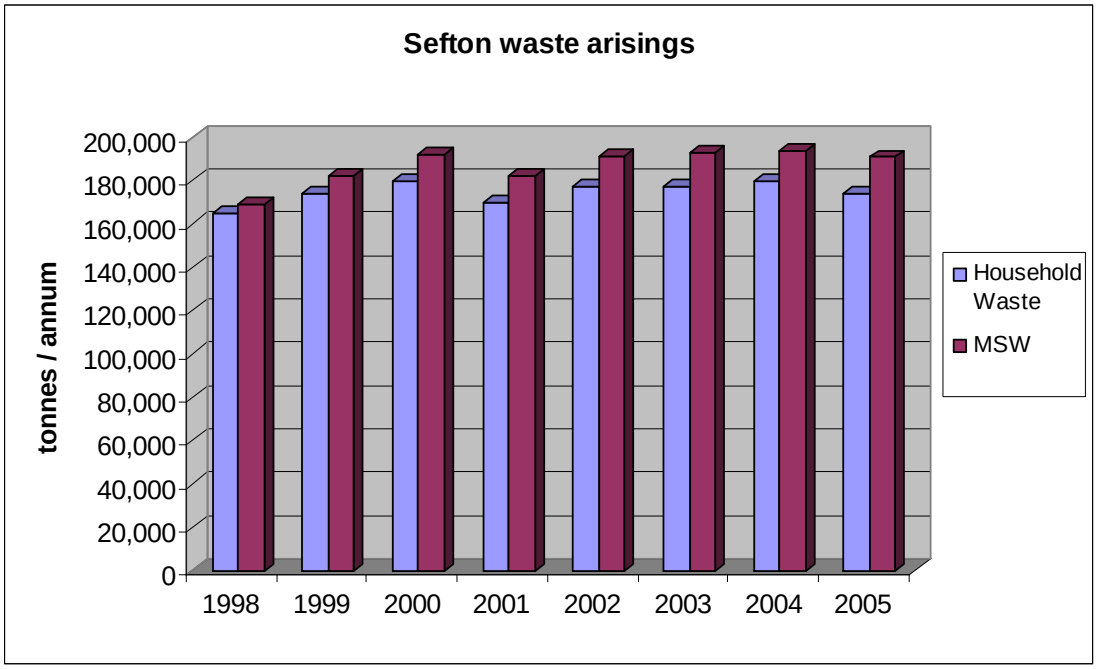
The overall increasing trend observed may be due to one or more of the following factors:-

- Increasing capacity provided to householders (in terms of bin capacity) allowing deposit of wastes which otherwise may not have entered the waste

stream being added (e.g. garden wastes). This can also divert some waste from the HWRCs to the District collections

- Economic growth. There is a relationship between GDP and waste generation, and indeed expendable income and waste generation
- Addition of garden waste management collection services. The effect is most marked where kerbside collections are introduced
- Socio-demographic factors. The population has been slightly growing and housing stock has also increased. In addition there is an increasing proportion of persons living on their own. There is a relationship between the amount of waste generated per person and the number of persons per household (as individuals living alone tend to generate more waste than an individual in a household with several persons). Another socio-demographic factor is increasing numbers of people working from home and transfer of business waste therefore into the household stream
- Non household waste entering the household waste stream through illegal transfer of for example commercial waste, to avoid the increasing cost of disposal
- Changes to reporting practices
- Rainfall / growing conditions

Figure 6.7: Household & MSW Arisings in Sefton



The reductions observed may be due to one of more of the following factors:-

- Successful waste minimisation / reuse activity
- Expansion / promotion of home composting
- Successful enforcement diverting non-household waste from the household waste stream (e.g. at HWRCs)
- Reducing capacity for household waste (thereby promoting diversion, one route of which may be management of garden waste at home)
- Economic growth. There is a relationship between GDP and waste generation, and indeed expendable income and waste generation
- Changes to reporting practices

- External factors such as:
    - Events / holidays (having two Easters and therefore additional festivity and bank holiday related wastes in 2004/5 and none in 2005/6)
    - rainfall / growing conditions (impacting on green waste arisings and weight of waste), there was around 100mm less rainfall[7] in the NW of England in 2005/6 than 2004/5, although this may be a factor (e.g in growth of additional green waste / additional weight of waste, it appears a relatively minor difference and historically there are much more significant high rainfall years
    - the impact of national waste awareness campaigns

The trends generated by the Defra dataset are summarised in table 6.3 below.

Table 6.3 Household & MSW Trends in Sefton

	7 years (98/99–05/06	5 years (00/01 – 05/06)	3 years (02/03 – 05/06)
Household Waste, pa	+0.8%	-0.06%	-0.6%
MSW, pa	+1.8%	-0.07%	-0.23%

St Helens

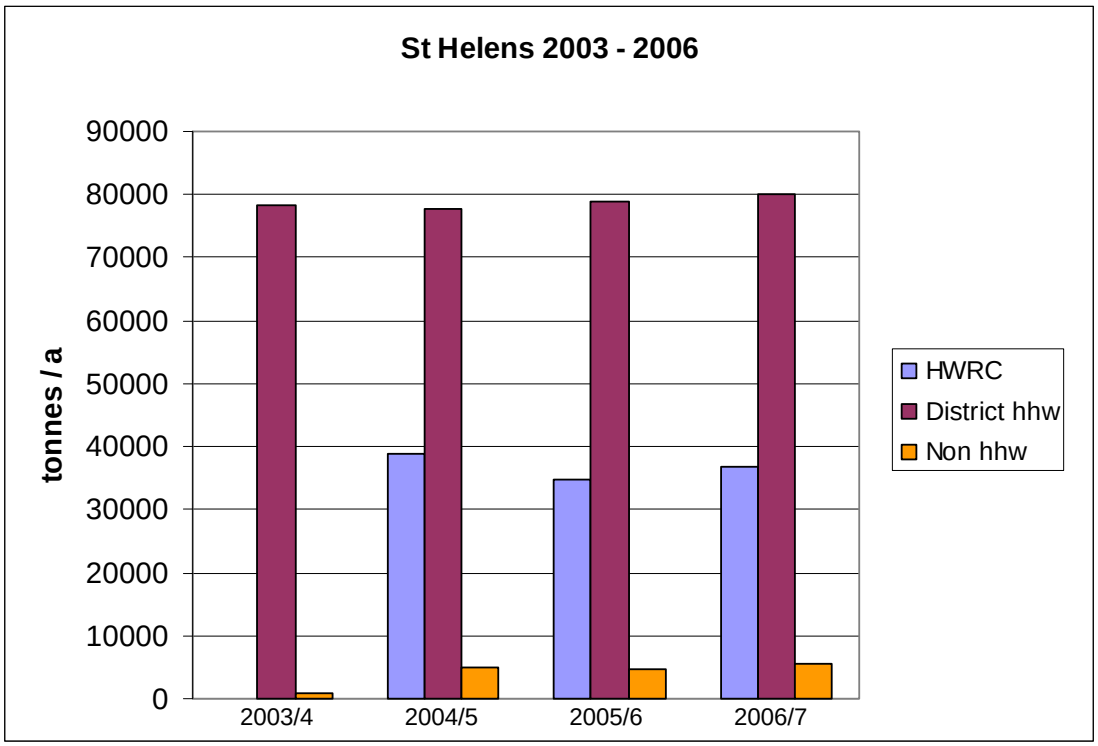
In order to estimate the growth in household and municipal waste in St Helens, two datasets were used: the MWDA data for 2003/4 – 2006/7 and the Defra data.

MWDA data

The MWDA dataset separately records waste collected by St Helens District and (for 04/05, 05/06 & 06/07) waste deposited at HWRCs within the District. The data is illustrated in Figure 6.8.

[7] Met Office data http://www.metoffice.gov.uk/climate/uk/, summed monthly averages for NW, accessed 14/06/07

Figure 6.8: Household & Non Household Waste Arising in St Helens

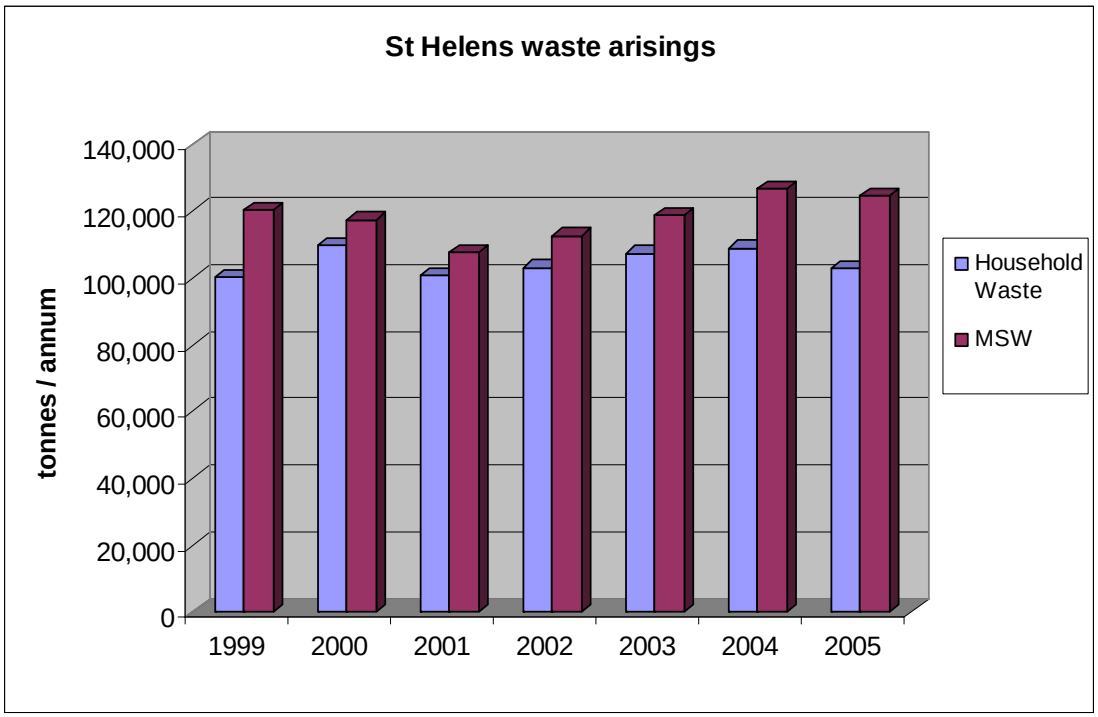


The MWDA dataset illustrates a significant fall in household waste entering the HWRCs from 04/05 – 05/06, which is consistent with the other Authorities in the partnership and a 'rebound' effect in 06/07. The amount of household waste collected by the District has increased across this period by an average of +0.75% pa. There appears to be limited reporting of non household waste in 03/04, however since then non household waste has increased largely due to increasing levels of trade waste collected. This reflects in MSW arisings which have increased over the period 04/05 – 06/07 by +1.7% pa on average.

Defra Data

The Defra data for St Helens covers the period 1995/6 – 2005/6 and combines the arisings collected by the District together with the tonnage data and estimates / projections of the waste entering the HWRC within the District. There were apparent data errors in the first three years data so these have been excluded from Figure 6.9.

Figure 6.9: Household & MSW Arisings in St Helens



The data illustrates a peak around the millennium and a second peak around 2003/4 and 2004/5 (consistent with a peak in the MWDA data for 04/05) followed by a decline in 05/06. A notable point in both datasets is the increasing tonnage of non-household waste which is dominating the growth of MSW.

Increases in waste arisings observed may be due to one or more of the following factors:-

- Increasing capacity provided to householders (in terms of bin capacity) allowing deposit of wastes which otherwise may not have entered the waste stream being added (e.g. garden wastes). This can also divert some waste from the HWRCs to the District collections
- Economic growth. There is a relationship between GDP and waste generation, and indeed expendable income and waste generation
- Addition of garden waste management collection services. The effect is most marked where kerbside collections are introduced
- Socio-demographic factors. The population has been fairly static and housing stock has also increased slightly. In addition there are an increasing proportion of persons living on their own. There is a relationship between the amount of waste generated per person and the number of persons per household (as individuals living alone tend to generate more waste than an individual in a household with several persons). Another socio-demographic factor is increasing numbers of people working from home and transfer of business waste therefore into the household stream
- Non household waste entering the household waste stream through illegal transfer of for example commercial waste, to avoid the increasing cost of disposal
- Changes to reporting practices
- Rainfall / growing conditions

The reductions observed may be due to one of more of the following factors:-

- Successful waste minimisation / reuse activity
- Expansion / promotion of home composting
- Successful enforcement diverting non-household waste from the household waste stream (e.g. at HWRCs)
- Reducing capacity for household waste (thereby promoting diversion, one route of which may be management of garden waste at home)
- Economic growth. There is a relationship between GDP and waste generation, and indeed expendable income and waste generation
- Changes to reporting practices
- External factors such as:-
    - Events / holidays (having two Easters and therefore additional festivity and bank holiday related wastes in 2004/5 and none in 2005/6)
    - rainfall / growing conditions (impacting on green waste arisings and weight of waste), there was around 100mm less rainfall[8] in the NW of England in 2005/6 than 2004/5, although this may be a factor (e.g in growth of additional green waste / additional weight of waste, it appears a relatively minor difference and historically there are much more significant high rainfall years
    - the impact of national waste awareness campaigns

The trends generated by the Defra dataset are summarised in table 6.4 below.

Table 6.4: Trends in Household Waste & MSW in St Helens

	6 years (99/00 – 05/06)	3 years (02/03 – 05/06)
Household Waste, pa	+0.6%	-0.01%
MSW, pa	+0.71%	+3.45%

Wirral

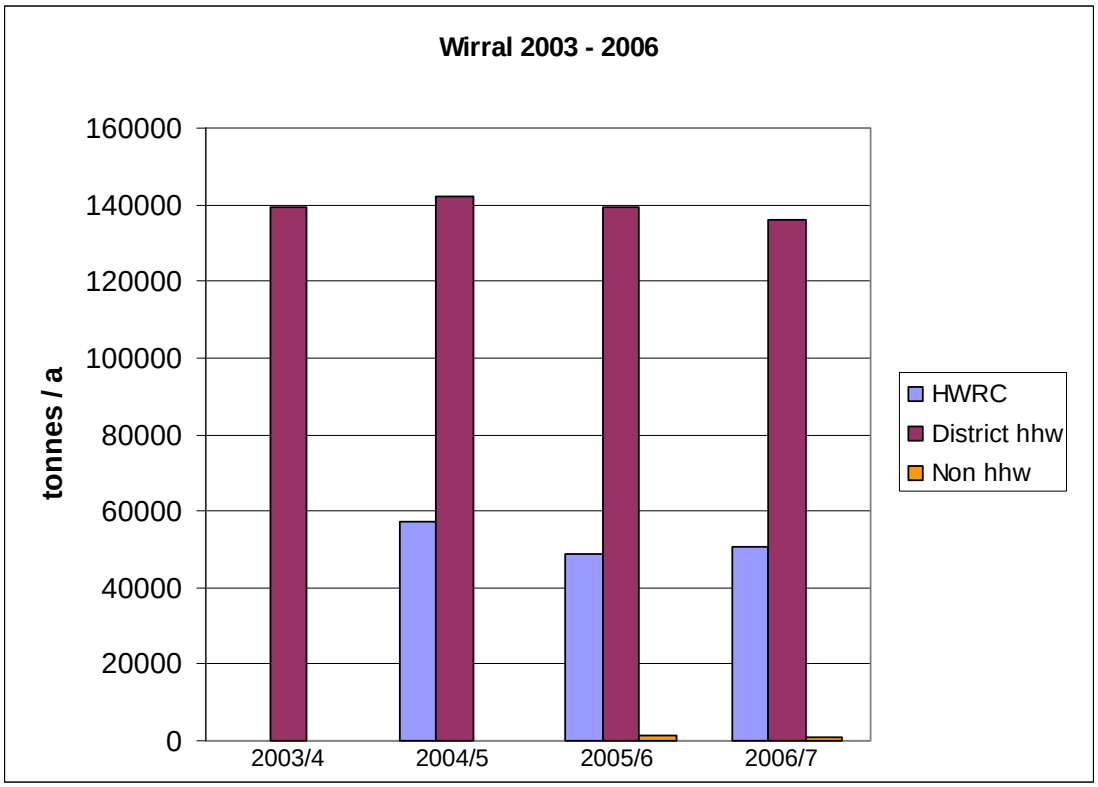
In order to estimate the growth in household and municipal waste in Wirral, two datasets were used: the MWDA data for 2003/4 – 2006/7 and the Defra data.

MWDA data

The MWDA dataset separately records waste collected by Wirral District and (for 04/05, 05/06 & 06/07) waste deposited at HWRCs within the District. The data is illustrated in Figure 6.10.

Figure 6.10: Household & Non Household Waste Arising in Wirral

[8] Met Office data http://www.metoffice.gov.uk/climate/uk/, summed monthly averages for NW, accessed 14/06/07



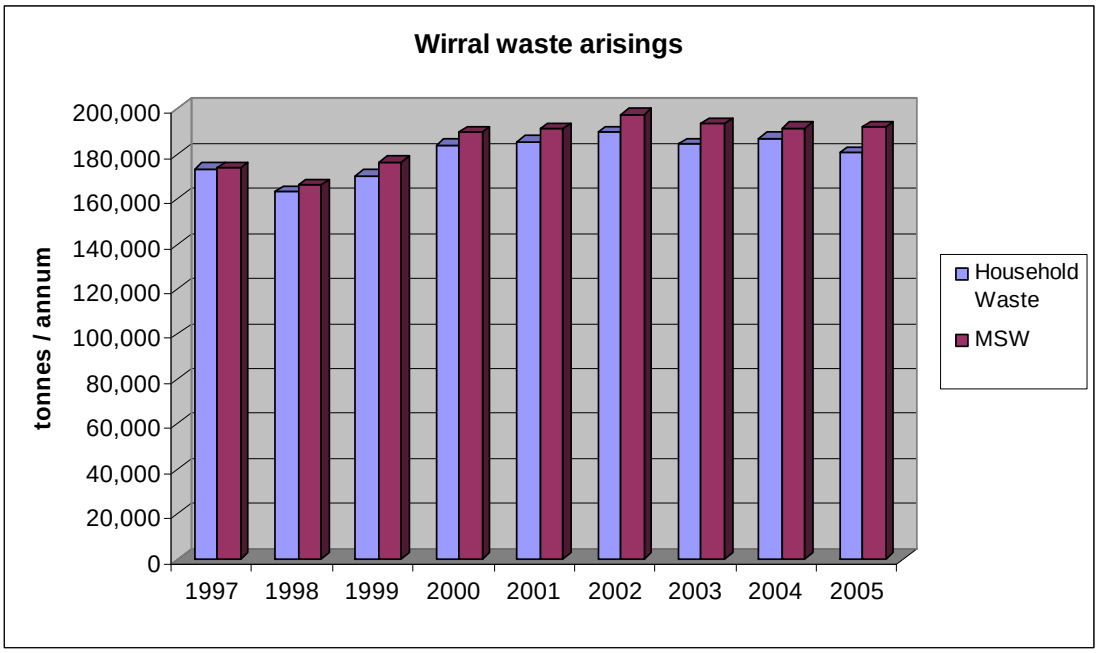
The profile for Wirral shows a general decline in District household waste, with the exception of 04/05. The average rate of growth across these years has been -0.7% pa. The levels of waste entering HWRCs has also fallen over this period, declining on average by -5.3% pa. There is a low level of non household waste recorded in Wirral, this is primarily due to the lack of trade waste collected by the authority. The levels of MSW have largely followed the household waste trend due to the predominance of this waste stream in the municipal waste, declining at a rate of -0.5% pa on average.

Wirral have recently introduced alternate weekly collections (AWC) of residual household waste and this may be a contributory factor to the fall in District collected waste and rise in HWRC wastes for 06/07 (i.e. a push back from the more restricted collection system into the HWRC route). A more detailed investigation would be required to make firmer conclusions in this area however.

Defra Data

The Defra data for Wirral covers the period 1995/6 – 2005/6 and combines the arisings collected by the District together with the tonnage data and estimates / projections of the waste entering the HWRC within the District. The first two years data have been excluded due to apparent anomalies, Figure 6.11 illustrates this dataset.

Figure 6.11 MSW and Household Waste Arisings in Wirral



The Defra data for Wirral follows a similar pattern to most other Districts although the first major increase takes place slightly later than other Districts from 2000/01 – 2002/03, but the same pattern of growth in 04/05 and decline in 05/06 is followed.

Increases in waste arisings observed may be due to one or more of the following factors:-

- Increasing capacity provided to householders (in terms of bin capacity) allowing deposit of wastes which otherwise may not have entered the waste stream being added (e.g. garden wastes). This can also divert some waste from the HWRCs to the District collections
- Economic growth. There is a relationship between GDP and waste generation, and indeed expendable income and waste generation
- Addition of garden waste management collection services. The effect is most marked where kerbside collections are introduced
- Socio-demographic factors. The population has been fairly static and housing stock has also increased slightly. In addition there are an increasing proportion of persons living on their own. There is a relationship between the amount of waste generated per person and the number of persons per household (as individuals living alone tend to generate more waste than an individual in a household with several persons). Another socio-demographic factor is increasing numbers of people working from home and transfer of business waste therefore into the household stream
- Non household waste entering the household waste stream through illegal transfer of for example commercial waste, to avoid the increasing cost of disposal
- Changes to reporting practices
- Rainfall / growing conditions

The reductions observed may be due to one of more of the following factors:-

- Successful waste minimisation / reuse activity

- Expansion / promotion of home composting
- Successful enforcement diverting non-household waste from the household waste stream (e.g. at HWRCs)
- Reducing capacity for household waste (e.g. through AWC, thereby promoting diversion, one route of which may be management of garden waste at home)
- Economic growth. There is a relationship between GDP and waste generation, and indeed expendable income and waste generation
- Changes to reporting practices
- External factors such as:-
    - Events / holidays (having two Easters and therefore additional festivity and bank holiday related wastes in 2004/5 and none in 2005/6)
    - rainfall / growing conditions (impacting on green waste arisings and weight of waste), there was around 100mm less rainfall[9] in the NW of England in 2005/6 than 2004/5, although this may be a factor (e.g in growth of additional green waste / additional weight of waste, it appears a relatively minor difference and historically there are much more significant high rainfall years
    - the impact of national waste awareness campaigns

The trends generated by the Defra dataset are summarised in table 6.5 below.

Table 6.5: Household Waste & MSW in Wirral

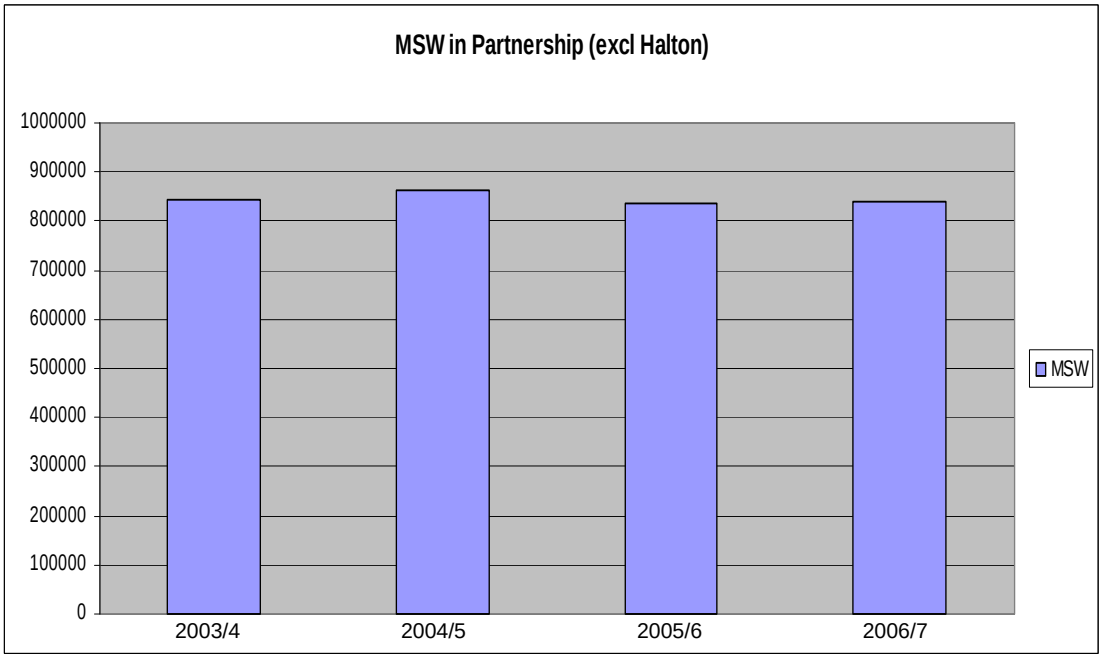
	8 years (97/98 – 05/06	5 years (00/01 – 05/06)	3 years (02/03 – 05/06)
Household Waste, pa	+0.6%	-0.4%	-1.68%
MSW, pa	+1.31%	+0.24%	-0.99%

Merseyside Overview

The Districts and MWDA combined generate a MSW growth profile as shown in Figure 6.12. The trend from this is a relatively static growth over the period of +0.17% pa on average. A variety of factors could contribute to this growth as discussed in the preceding analysis.

[9] Met Office data http://www.metoffice.gov.uk/climate/uk/, summed monthly averages for NW, accessed 14/06/07

Figure 6.12: Merseyside MSW Arisings

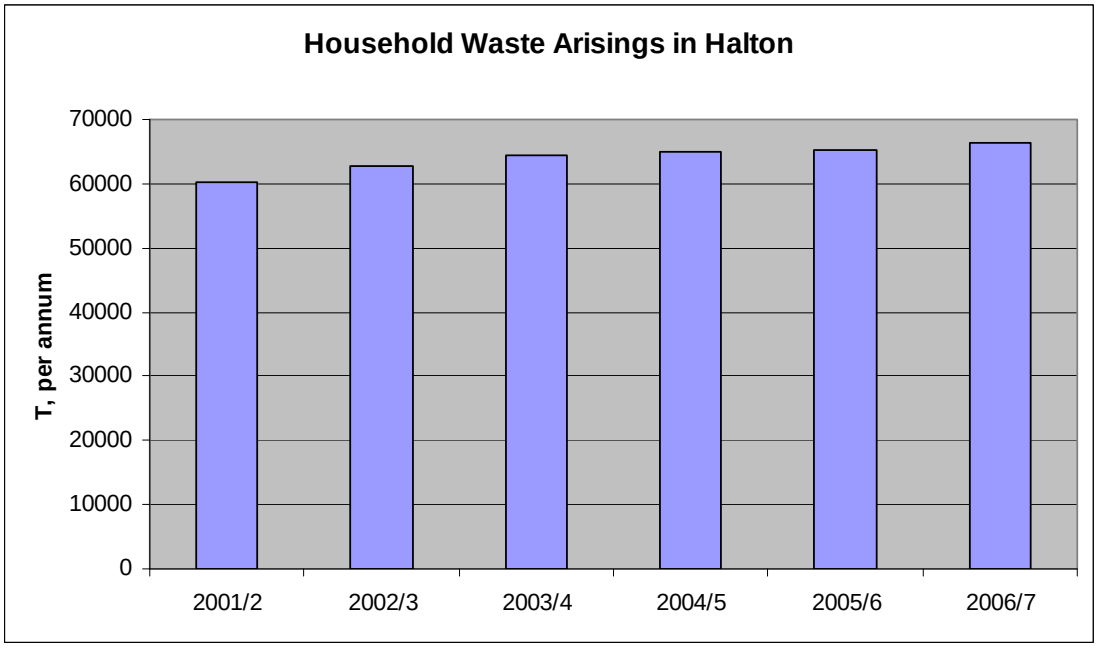


Halton

The dataset for Halton ranged from 2001/2 – 2006/7 and, as a unitary authority, comprises both kerbside collected wastes and wastes arising from Household Waste Recycling Centre, of which there are two in Halton.

The data is illustrated by Figure 6.13.

Figure 6.13: Household Arisings in Halton



The data illustrates a +1.9% per annum growth over the last five years, falling to a +1% growth over the last three years. The higher rate of growth historically is likely to

have been influenced by the roll-out of a green waste collection system from 2003 - 2004. The growth of household waste has continued year on year, however the least level of growth (+0.3%) was shown in 05/06, reflective of the different trend shown in Merseyside authorities for this year. Consideration of the MSW growth rate (excluding trade waste due to limited historical data), shows the same level of growth to household waste +1.9% pa on average over the period 01/02 – 06/07.

6.5 Estimated Forward Projections

Overview
This section considers strategic forward projections for each District, for Merseyside and for Halton, taking account of key parameters for waste growth.

MWDA - HWRCs
The potential influences on Household Waste Recycling Centre (HWRC) wastes may be summarised as:-

1. Pull from HWRC by District Green Waste Collections
2. Pull from HWRC by additional District Collection Capacity
3. Additional housing / population using HWRCs
4. Additional HWRCs being developed
5. Changing patterns of consumption / expenditure
6. Enforcement activity at HWRC excluding non household wastes
7. Events or celebrations (e.g. City of Culture)
8. External factors (e.g. the weather)
9. Waste Minimisation
10. Household waste flow into HWRCs from District collections with strong capacity limits and enforcement (e.g. AWC)

Each of the criteria above are considered below:-

As green waste collections are almost at capacity it is unlikely that there will be any major additional diversion from HWRCs through this route, going forward. Similarly, most Districts will be at or near maximum container capacity, and may well provide capacity limitation through better enforcement of side waste, and or introduction of AWC. Therefore it is unlikely that there will be significant additional diversion from HWRC via this route in the future.

The impact of additional housing, population and the effects of additional HWRCs are variables for which further work could be undertaken to determine the impacts on household waste flows. At this stage housing and population were considered in forward projections of Districts household waste arising however the interaction with HWRCs is more subtle and complex and would require detailed modelling to estimate the likely impact.

Another area of uncertainty in forward projections for any household waste arisings (HWRC or District collected) are future levels and patterns of consumption from individuals. This area is notoriously difficult to predict and so has not been considered in this report.

A key influence which will have a major effect on HWRC arisings is the introduction of a permit scheme to reduce or prevent non household waste entering HWRCs.

Research[10] has shown that around 13% non household (commercial) waste is often illegally deposited at HWRCs, however this figure can be much higher, >20%. Therefore an effective deterrent to this waste entering HWRCs will have a dramatic and sustained impact on the arisings flowing through HWRCs and also the total tonnage of MSW handled by the Partnership.

The date for implementation of a trade waste control and the detail of the approach is unavailable at the time of this report, however it is likely to deliver such a significant impact that research should be undertaken to estimate the effect across the Partnership as it will set a new baseline for forward projection. There may be an indirect impact on District collections through a clamp down on trade wastes entering HWRCs, to a minor extent, diverted via domestic collections (e.g. trades persons asking clients to put their waste into their wheeled bin capacity etc.).

Another area of uncertainty with regard to forward projections is the impact of events (such as the City of Culture) and climatic effects. The effect of events on HWRC wastes are likely to be less than the impact on District collected wastes in most instances. The weather impact cannot be effectively predicted with any degree of accuracy over the next twenty year period.

It is considered that Waste Minimisation activity promoted by the Partnership will have a greater impact on District collected wastes than HWRCs. The reason for this is that the prime types of waste targeted by waste minimisation campaigns are: junk mail, nappies, smart shopping, reuse days, home composting etc and these waste streams would (alternatively) normally enter the District collections.

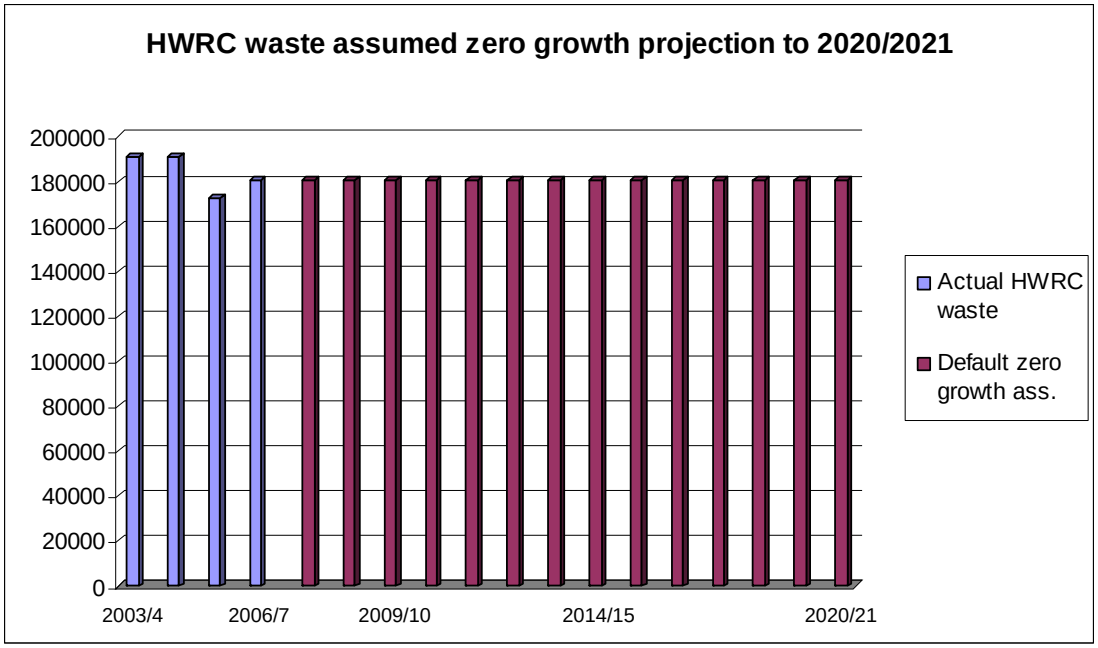
The last point relating to AWC push back into HWRCs may prove to be minor and / or short term, however there is little evidence to draw conclusions at this early stage of implementation, and it may become more significant if other Districts adopt AWC.

Concluding comment:-
Additional work should be undertaken to estimate the effects of the trade waste enforcement approach to be used, including LATS implications. The impact of new HWRCs and population patterns will significantly affect waste flows and also requires modelling. These two effects will be so important that they will outweigh the impacts of the other aspects discussed (for example trade waste enforcement could make as much as >20% reduction in waste entering HWRCs).

The magnitude of these variables is such that no account has been taken of their potential implications without further study. An assumption, for purposes of establishing a projection for the Joint Municipal Waste Management Strategy of zero growth in HWRC waste has been made. This projection is therefore used in the absence of further key data required in order to make a more informed estimate. Figure 6.14 illustrates the projection.

[10] Network Recycling, 2004

Figure 6.14: HWRC Arisings Projection Assuming Zero Growth



Knowsley

Knowsley has a population of 150459, this is predicted to be declining by around -0.2% pa to 2010, and by around -0.1% to 2015, and static thereafter. The number of households is however predicted to increase by +0.6%pa, which will largely be accounted for by more people living in smaller sized households. This factor is considered to be largely neutral in terms of future waste growth.

Knowsley operates a weekly refuse collection service and has a 95% coverage of a green waste collection service. The overall waste and recycling capacity equivalent available to households is ~300 litres per week, which is relatively low. There are no plans to adopt alternate week collections at this stage. These factors are considered to be neutral or have limited impact on future arisings.

All Merseyside authorities undertake some waste minimisation activity, however it is relatively low key and typically relates to the WRAP Home Composting scheme and in some cases promoting the Mail Preference Service and education initiatives. It is anticipated that waste minimisation will increase in importance, as indicated by the recent Waste Strategy 2007 and as a measure to reduce exposure to the Landfill Allowance Trading Scheme (LATS). Therefore waste minimisation activity will be considered as a factor which will mitigate waste growth in the medium to long term.

The observed rate of MSW waste growth (reduction) in Knowsley is around -0.7% pa growth over the last four years.

Other factors which may have a positive (an increase) impact on waste growth would be: increased prosperity; consumer purchasing habits; changing work habits (e.g. increasing numbers of persons working from home etc); other trade waste flowing into domestic waste. Prosperity and disposable income, consumer habits are problematic to estimate and are excluded, the other issues may have a minor impact on future waste growth.

Other factors which may have a negative (a decrease) impact on waste growth would be: variable charging; reduced prosperity; changing consumer purchasing habits; reduced capacity of containers available to households; reduction in trade waste services. Prosperity and disposable income, consumer habits are problematic to estimate and are excluded, the other issues are not being considered by the District at present and are therefore considered neutral. There will be increasing pressure however to reduce trade waste levels as LATS costs are felt by the Partnership in the medium term. This will require modelling to determine the impact.

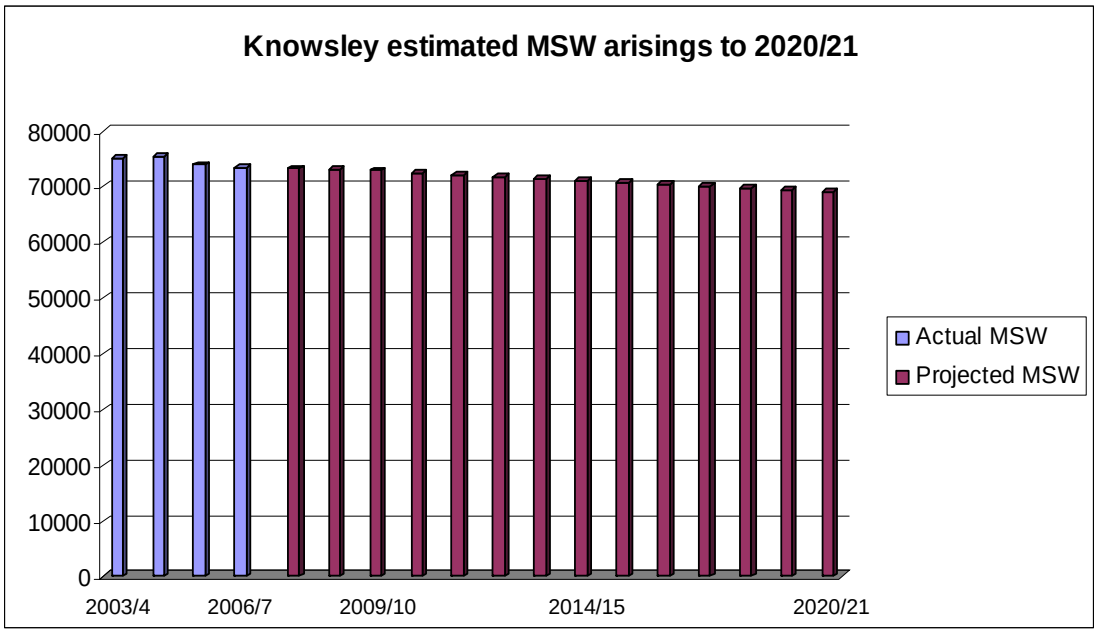
Taking account of these factors a considered forward estimate of MSW growth for Knowsley is summarised in table 6.6 below:

Table 6.6: MSW Projections for Knowsley

	Present – 2009/10	2010/11 – 2014/15	2015/6 +
Annual % MSW Growth rate	-0.25%	-0.5%	-0.75%

These rates are illustrated with the current MSW tonnages in Figure 6.15.

Figure 6.15: MSW Projections for Knowsley



Liverpool

Liverpool has a population of 439473, this is predicted to be increasing by around +0.2% per annum to 2020. This is the largest growth in population across Merseyside and follows the general trend in population increase across the North West Region.

The number of households is also predicted to increase by +1% pa, which is a significant factor contributed to by smaller household sizes and the increasing population. This factor is considered to be making an ongoing and notable contribution to increasing MSW arisings in the Authority.

Liverpool operates a weekly refuse collection service and has a maximum coverage of a green waste collection service. The overall waste and recycling capacity

equivalent available to some (over 50%) households is ~480 litres per week, which is very high. There are no plans to adopt alternate week collections at this stage. These factors are in place and not anticipated to change and therefore considered to be neutral or have limited impact on future arisings.

All Merseyside authorities undertake some waste minimisation activity, however it is relatively low key and typically relates to the WRAP Home Composting scheme and in some cases promoting the Mail Preference Service and education initiatives. It is anticipated that waste minimisation will increase in importance, as indicated by the recent Waste Strategy 2007 and as a measure to reduce exposure to the Landfill Allowance Trading Scheme (LATS). Therefore waste minimisation activity will be considered as a factor which will mitigate waste growth in the medium to long term.

The observed rate of MSW waste growth in Liverpool is relatively static (+0.15% pa on average) over the last four years.

Other factors which may have a positive (an increase) impact on waste growth would be: increased prosperity; consumer purchasing habits; changing work habits (e.g. increasing numbers of persons working from home etc); other trade waste flowing into domestic waste (particularly considering the volume available to the householder). Prosperity and disposable income, consumer habits are problematic to estimate and are excluded, the other issues may have a minor impact on future waste growth increases.

Other factors which may have a negative (a decrease) impact on waste growth would be: variable charging; reduced prosperity; reduction in trade waste services; changing consumer purchasing habits; reduced capacity of containers available to households. Prosperity and disposable income, consumer habits are problematic to estimate and are excluded, the other issues are not being considered by the District at present and are therefore considered neutral. There will be increasing pressure however to reduce trade waste levels as LATS costs are felt by the Partnership in the medium term. This will require modelling to determine the impact.

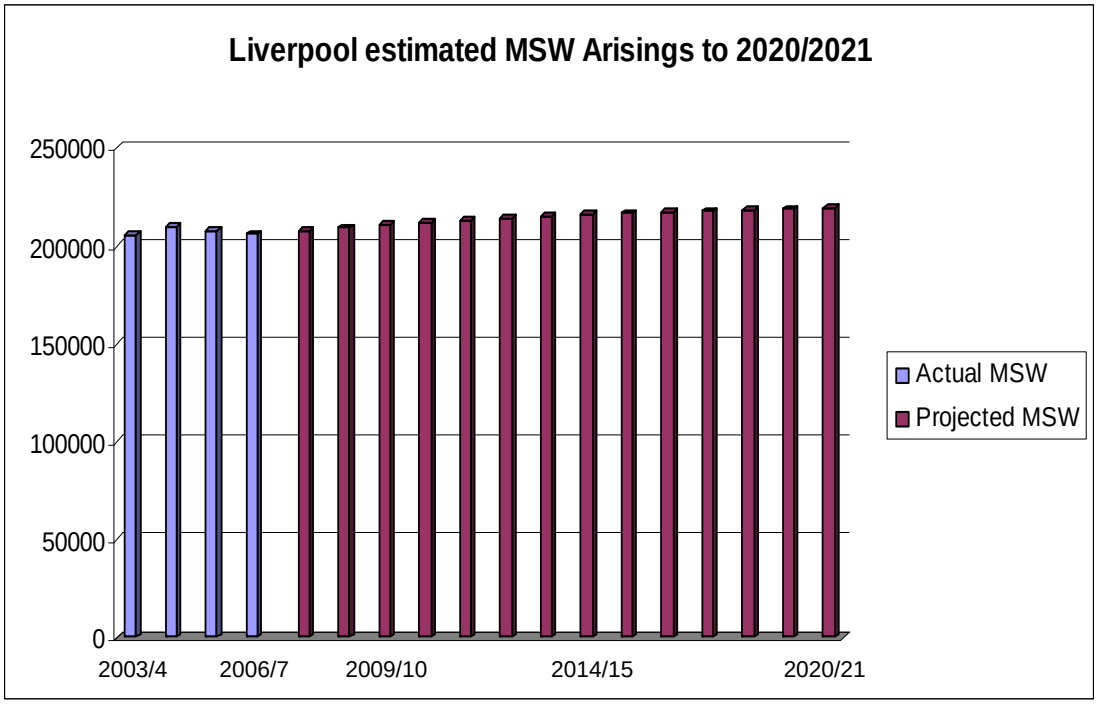
Taking account of these factors a considered forward estimate of MSW growth for Liverpool is summarised in table 6.7 below.

Table 6.7: MSW Projections for Liverpool

	Present – 2009/10	2010/11 – 2014/15	2015/6 +
Annual % MSW Growth rate	+0.75%	+0.5%	+0.25%

These rates are illustrated with the current MSW tonnages in Figure 6.16.

Figure 6.16: MSW Projections for Liverpool



Sefton

Sefton is a large metropolitan district council with a population of 282958, this is predicted to remain relatively stable (increasing by around +0.07% from 2013). The number of households is however predicted to increase by +0.6%pa, which will largely be accounted for by more people living in smaller sized households. This factor is considered likely to contribute to a slight increase in terms of waste growth.

Sefton operates a fortnightly refuse collection (AWC) service and has an expanding coverage of a green waste collection service. This expansion from 80,000 households to 100,000 households will yield an initial increase in arisings.

The overall waste and recycling capacity equivalent available to households has been mitigated by the AWC, although is still relatively high where householders have opted for a kitchen waste collection. The AWC factor is considered to have an impact on arisings in the short term, contributing a reduction.

There would also be anticipated to be a displacement effect in 07/08 from District collections as a consequence of the AWC introduction. WRAP guidance[11] cites an example where up to a third of the reduction in District arisings may be displaced to HWRCs, and there is also some evidence of this from the Wirral data.

All Merseyside authorities undertake some waste minimisation activity, however it is relatively low key and typically relates to the WRAP Home Composting scheme and in some cases promoting the Mail Preference Service and education initiatives. It is anticipated that waste minimisation will increase in importance, as indicated by the recent Waste Strategy 2007 and as a measure to reduce exposure to the Landfill Allowance Trading Scheme (LATS). Therefore waste minimisation activity will be considered as a factor which will mitigate waste growth in the medium to long term.

[11] Alternate Weekly Collections Guidance, Waste & Resources Action Programme, July 2007

The observed rate of MSW waste growth in Sefton is around +0.6% pa growth over the last three years and declining.

Other factors which may have a positive (an increase) impact on waste growth would be: increased prosperity; consumer purchasing habits; changing work habits (e.g. increasing numbers of persons working from home etc); other trade waste flowing into domestic waste. Prosperity and disposable income, consumer habits are problematic to estimate and are excluded, the other issues may have a minor impact on future waste growth.

Other factors which may have a negative (a decrease) impact on waste growth would be: variable charging; reduced prosperity; reducing trade waste levels; changing consumer purchasing habits; reduced capacity of containers available to households. Prosperity and disposable income, consumer habits are problematic to estimate and are excluded, the other issues are not being considered further by the District at present and are therefore considered neutral. There will be increasing pressure however to reduce trade waste levels as LATS costs are felt by the Partnership in the medium term. This will require modelling to determine the impact.

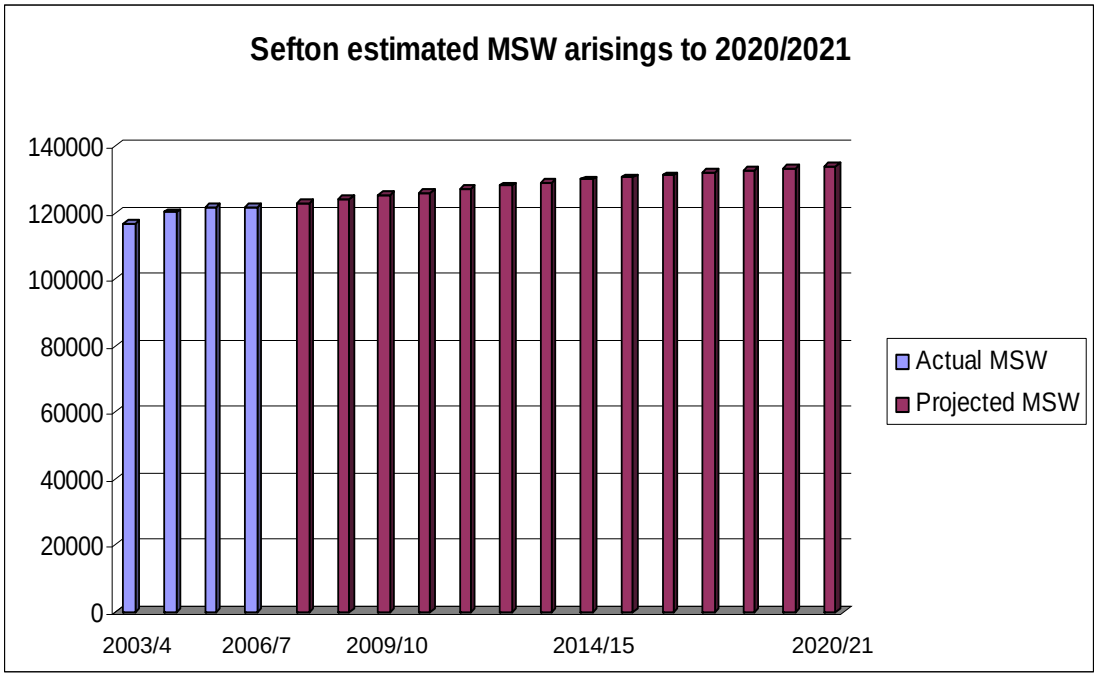
Taking account of these factors a considered forward estimate of MSW growth for Sefton is summarised in table 6.8 below.

Table 6.8: MSW Projections for Sefton

	Present – 2009/10	2010/11 – 2014/15	2015/6 +
Annual % MSW Growth rate	+1%	+0.75%	+0.5%

These rates are illustrated with the current MSW tonnages in Figure 6.17.

Figure 6.17: MSW Projections for Sefton



St Helens

St Helens has a population of 176843, this is predicted to slightly decline (-0.15%) by 2010, remain stable and then increase slightly >2015, back to original levels by 2020.

The number of households is however predicted to increase by +0.6%pa, which will largely be accounted for by more people living in smaller sized households. This factor is considered to be largely neutral in terms of waste growth.

St Helens operates a weekly refuse collection service and has a full coverage of a green waste collection service. The overall waste and recycling capacity equivalent available to households is ~420 litres per week, which is relatively high, with a slight increase planned in 07/08. There are no plans to adopt alternate week collections at this stage. These factors are considered to be neutral or have limited impact on future arisings.

All Merseyside authorities undertake some waste minimisation activity, however it is relatively low key and typically relates to the WRAP Home Composting scheme and in some cases promoting the Mail Preference Service and education initiatives. It is anticipated that waste minimisation will increase in importance, as indicated by the recent Waste Strategy 2007 and as a measure to reduce exposure to the Landfill Allowance Trading Scheme (LATS). Therefore waste minimisation activity will be considered as a factor which will mitigate waste growth in the medium to long term.

The observed rate of MSW waste growth in St Helens is around +1.7% pa growth over the last three years.

Other factors which may have a positive (an increase) impact on waste growth would be: increased prosperity; consumer purchasing habits; changing work habits (e.g. increasing numbers of persons working from home etc); other trade waste flowing into domestic waste. Prosperity and disposable income, consumer habits are problematic to estimate and are excluded, the other issues may have a minor impact on future waste growth increases.

Other factors which may have a negative (a decrease) impact on waste growth would be: variable charging; reduced prosperity; reducing trade waste levels; changing consumer purchasing habits; reduced capacity of containers available to households. Prosperity and disposable income, consumer habits are problematic to estimate and are excluded, the other issues are not being considered by the District at present and are therefore considered neutral. There will be increasing pressure however to reduce trade waste levels as LATS costs are felt by the Partnership in the medium term. This will require modelling to determine the impact.

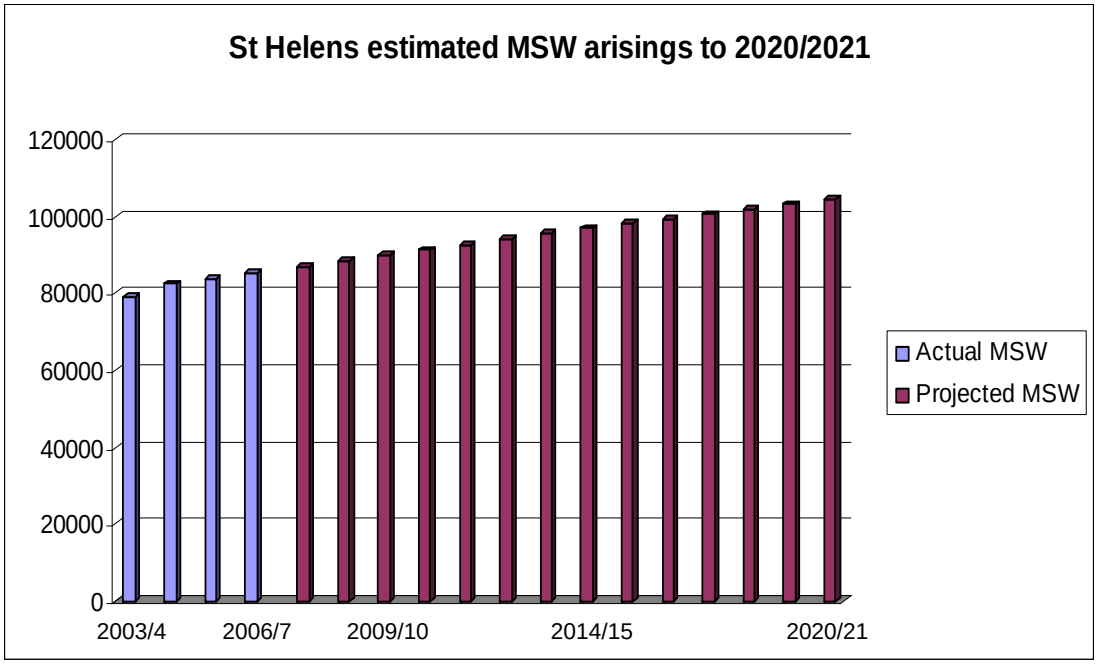
Taking account of these factors a considered forward estimate of MSW growth for St Helens is summarised in table 6.9 below.

Table 6.9: MSW Projections for St Helens

	Present – 2009/10	2010/11 – 2014/15	2015/6 +
Annual % MSW Growth rate	+1.75%	+1.5%	+1.25%

These rates are illustrated with the current MSW tonnages in Figure 6.18.

Figure 6.18: MSW Projections for St Helens



Wirral

Wirral has a population of 312293, this is predicted to remain relatively static until 2011 and then increase from +0.3% pa to +1.2% pa over the period 2011- 2021. The number of households is however predicted to increase by +0.6% pa, which will largely be accounted for by more people living in smaller sized households in the short term, however this increase could be questioned in the longer term if the population projections are correct. This factor is considered to make a notable contribution in terms of increasing waste growth.

Wirral operates a fortnightly refuse collection service (AWC) and all appropriate households receive a green waste collection service. The overall waste and recycling capacity equivalent available to households is ~360 litres per week, which is relatively low, limited by the AWC. These factors are considered to be established and therefore neutral or have limited impact on future arisings.

All Merseyside authorities undertake some waste minimisation activity, however it is relatively low key and typically relates to the WRAP Home Composting scheme and in some cases promoting the Mail Preference Service and education initiatives. It is anticipated that waste minimisation will increase in importance, as indicated by the recent Waste Strategy 2007 and as a measure to reduce exposure to the Landfill Allowance Trading Scheme (LATS). Therefore waste minimisation activity will be considered as a factor which will mitigate waste growth in the medium to long term.

The observed rate of MSW waste growth (reduction) in Wirral is around -0.5% pa growth over the last four years.

Other factors which may have a positive (an increase) impact on waste growth would be: increased prosperity; consumer purchasing habits; changing work habits (e.g. increasing numbers of persons working from home etc); other trade waste flowing into domestic waste. Prosperity and disposable income, consumer habits are problematic to estimate and are excluded, the other issues may have a minor impact on future waste growth.

Other factors which may have a negative (a decrease) impact on waste growth would be: variable charging; reduced prosperity; changing consumer purchasing habits; reduced capacity of containers available to households. Prosperity and disposable income, consumer habits are problematic to estimate and are excluded, the other issues are not being considered by the District at present and are therefore considered neutral. There are no trade waste implications for Wirral.

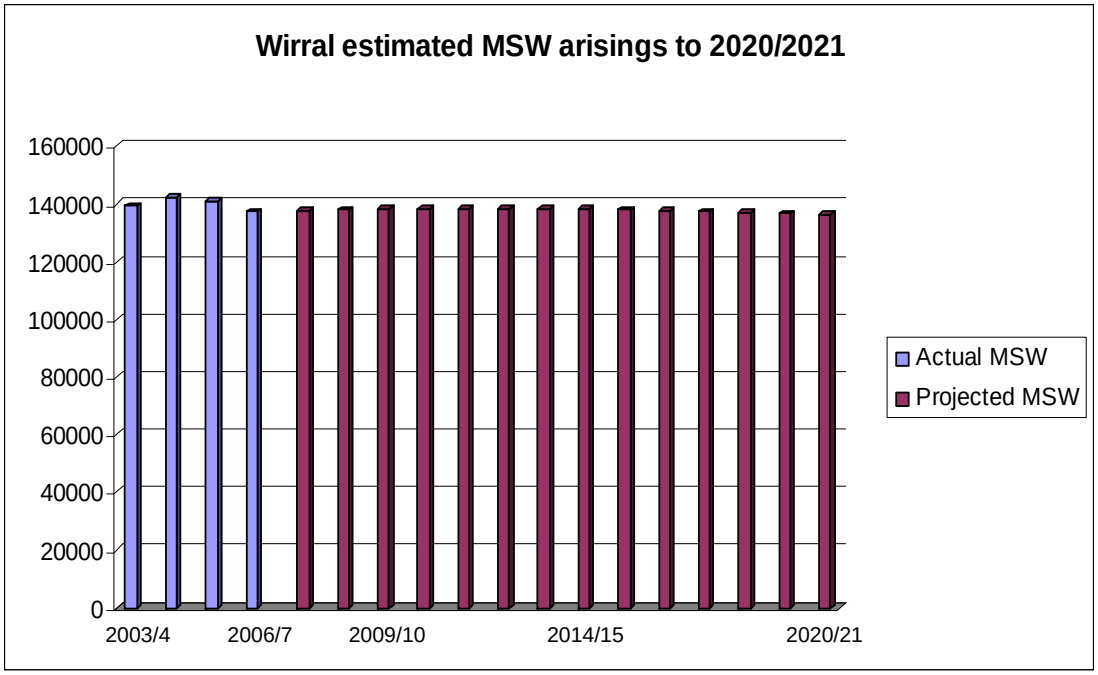
Taking account of these factors a considered forward estimate of MSW growth for Wirral is summarised in table 6.10, below.

Table 6.10: MSW Projections for Wirral

	Present – 2009/10	2010/11 – 2014/15	2015/6 +
Annual % MSW Growth rate	+0.25%	0%	-0.25%

These rates are illustrated with the current MSW tonnages in Figure 6.19.

Figure 6.19: MSW Projections for Wirral



Merseyside

These growth projections, when taken together, combine to form a projection for the Merseyside Waste Partnership, excluding Halton. This is to inform the update to the Joint Municipal Waste Management Strategy with the latest data and projections. A separate projection is made for Halton.

The result of these strategic level projections is a Merseyside MSW growth projection as summarised in table 6.11.

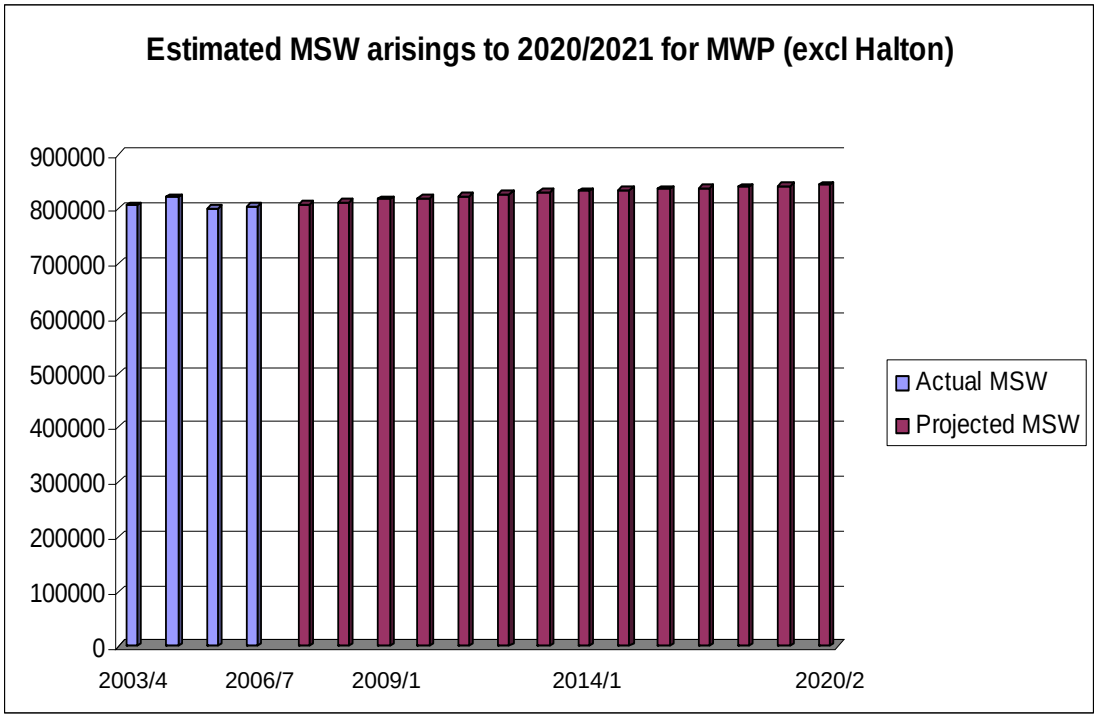
Table 6.11: MSW Projections for MWP

	Present – 2009/10	2010/11 – 2014/15	2015/6 +

Annual % MSW Growth rate	+0.6%	+0.4%	+0.2%

These rates are illustrated with the current MSW tonnages in Figure 6.20.

Figure 6.20: MSW Projections for MWP



Halton

Halton has a population of 118208; this is predicted to be increasing at a slow rate +0.04% per annum, increasing to +0.08% per annum by 2013. The household numbers are projected to increase at a greater rate + 0.5% pa, which will largely be accounted for by more people living in smaller sized households. This factor is considered to make a minor contribution in terms of increasing waste growth.

Halton operates a weekly refuse collection service and has a green waste collection service with the potential for roll-out of this service to a further 20,000 households. This is likely to make a substantial contribution to increasing arisings when fully implemented.

The overall waste and recycling capacity equivalent available to households varies from relatively low to relatively high depending on whether the household receives the green waste collection service. There are no plans to adopt Alternate Week collections at this stage. These factors are considered to be neutral or have limited impact on future arisings.

Halton undertakes some waste minimisation activity, however it is relatively low key and typically relates to the WRAP Home Composting scheme and promoting the Mail Preference Service and education initiatives. It is anticipated that waste minimisation will increase in importance, as indicated by the recent Waste Strategy 2007 and as a measure to reduce exposure to the Landfill Allowance Trading Scheme (LATS).

Therefore waste minimisation activity will be considered as a factor which will mitigate waste growth in the medium to long term.

The observed rate of household waste growth in Halton is around +1% pa growth over the last three years, falling from +1.9% average over the last five years.

Other factors which may have a positive (an increase) impact on waste growth would be: increased prosperity; consumer purchasing habits; changing work habits (e.g. increasing numbers of persons working from home etc); other trade waste flowing into domestic waste. Prosperity and disposable income, consumer habits are problematic to estimate and are excluded, the other issues may have a minor impact on future waste growth increases.

Other factors which may have a negative (a decrease) impact on waste growth would be: variable charging; reduced prosperity; reducing trade waste collections; reducing trade waste through HWRCs; changing consumer purchasing habits; reduced capacity of containers available to households. Prosperity and disposable income, consumer habits are problematic to estimate and are excluded, the other issues are not being considered by the District at present and are therefore considered neutral.

There is increasing pressure to reduce trade waste levels in view of LATS costs and Halton are already reducing their collection service, from the two datasets available (05/06 and 06/07) trade waste collected has decreased by 33%. Similarly a stricter enforcement of HWRCs will reduce non household waste entering the stream via this route. The impact going forward of these initiatives would need to be modelled to determine future effects.

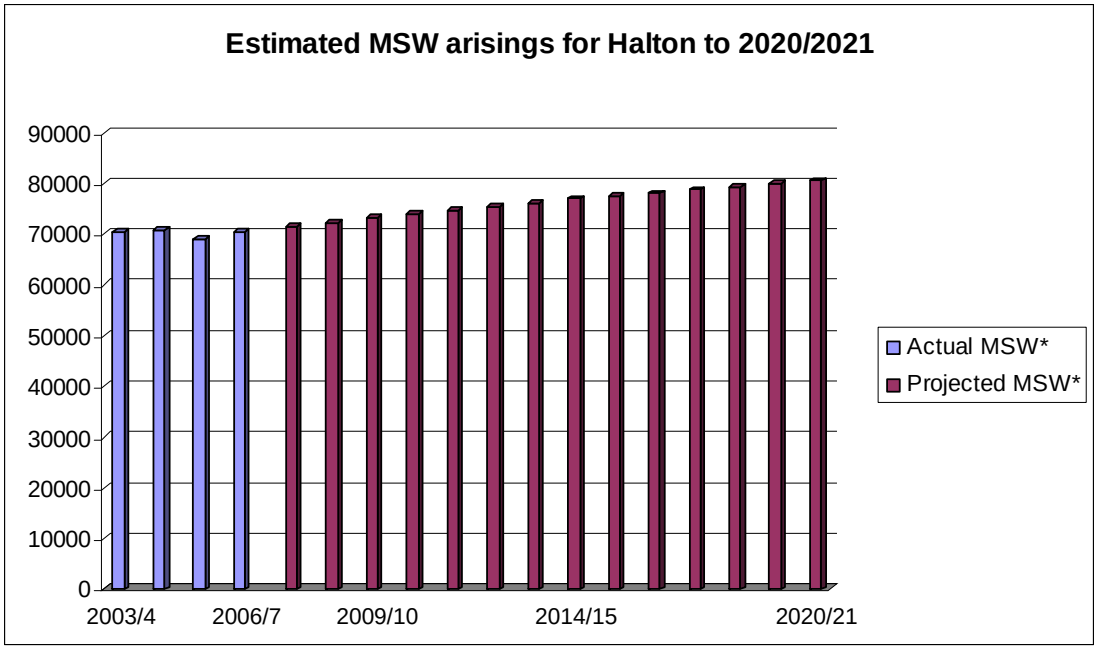
Taking account of these factors a considered forward estimate of MSW growth for Halton is summarised in table 6.12 below.

Table 6.12: MSW Projections for Halton

	Present – 2009/10	2010/11 – 2014/15	2015/6 +
Annual % MSW Growth rate	+1.25%	+1%	+0.75%

These rates are illustrated with the current MSW tonnages in Figure 6.21.

Figure 6.21: MSW Projections for Halton



*excludes trade waste as only two datasets available at the time of reporting

6.6 Concluding Comment

This supplementary report contains a summary of historical arisings for each partner of the Merseyside Waste Partnership. It considers household and non household waste data where the information is available, and considers key factors for variations in the data.

A set of forward projections is made based on known changes to waste management operations, and other key variables. This analysis highlights areas where further investigation would enable a more detailed modelling of further growth.

This document is intended as a Supplementary Report to the updates of the Halton and Merseyside Municipal Waste Management Strategy updates.