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Oxfordshire County Council

Minerals & Waste Local Plan Support

Review of Municipal Solid Waste Forecasts for Oxfordshire

Final Report

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1. Introduction

Predictions of future municipal solid waste growth have been made by the Oxfordshire Waste Disposal Authority and Waste Collection Authorities (working together as the Oxfordshire Waste Partnership (OWP) in the Oxfordshire Joint Municipal Waste Management Strategy (JMWMS)[1]. The following is a critique of these predictions and is intended to inform selection of waste growth scenarios used in the assessment of capacity requirements underpinning the Oxfordshire Minerals and Waste Core Strategy.

Box 1: Definition of MSW in the JMWMS

In 2010 after discussions with the European Union (EU), the UK expanded its definition to align with the wider European definition and include waste from other sources that is similar in nature and composition. The term "local authority collected waste" has subsequently been developed to replace the old UK definition of municipal waste. This strategy is therefore addressing all wastes produced in Oxfordshire that come under the heading of 'local authority collected waste'. This includes waste produced within Oxfordshire by householders, commercial waste collected by district councils, waste deposited at Household Waste Recycling Centres (HWRCs), street sweepings, litter and fly tipped materials.

[1] Oxfordshire Joint Municipal Waste Management Strategy 2013, available at: http://www.oxfordshirewaste.gov.uk/cms/content/our-strategy

2. Future Household Waste Growth Prediction

The expectations of the OWP regarding future growth in household waste is set out in paragraph 9.2 of the Oxfordshire Joint Municipal Waste Management Strategy 2013; this states:

"Early indications are that after several years of continual waste reduction, we will see a small rise in waste arisings in 2012/13. **From this point forward we have predicted 0% growth per household, but with overall waste levels increasing due to growth in the number of houses within the county**."

Achievement of 0% waste growth per household from 2012/13 is reflected in policy 3 of the Strategy as follows: "Oxfordshire Waste Partnership will help households and individuals to reduce and manage their waste in order to ensure zero growth or better of municipal waste per person per annum."

The forecast growth in MSW is shown graphically in Chart 5 of the JMWMS (reproduced below for ease of reference).

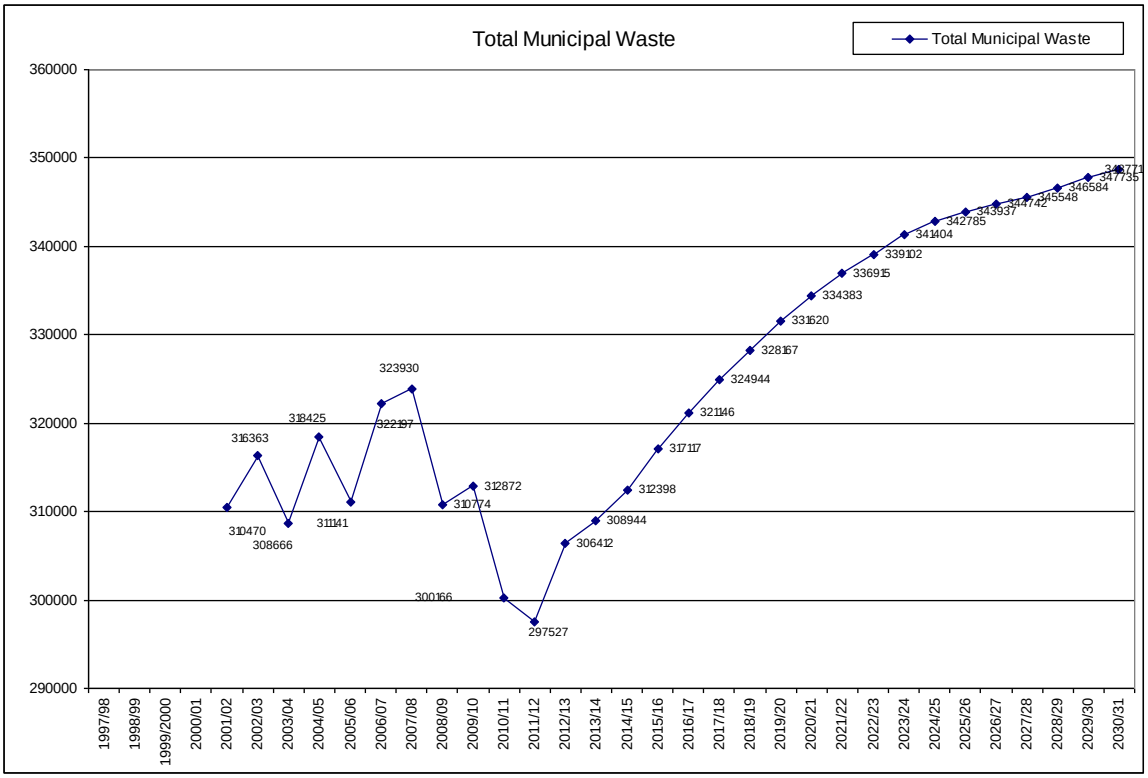

Figure 1: Arisings and Forecast Growth in MSW

(OCC JMWMS 2013)

Our analysis of the extent to which 0% growth per household can be considered a robust growth rate for MSW through to 2030/31 has involved consideration of the following:

- Influence of growth in non-household waste on the overall MSW stream;
- Historical MSW growth pattern and possible reasons;
- Future Trends;
- Recent Government analysis of future household waste growth.

The details of this analysis are set out below:

2.1. Influence of Growth in Non-household Waste on the Overall MSW Stream

Analysis of the data underlying the graph presented in the JMWMS (as shown above) reveals that the increases in MSW have been calculated by applying the year on year predicted percentage increase in households to the entire MSW stream. This approach could be questioned, as a change in the number of households is unlikely to influence the amount of non-household MSW generated from non-household sources. However due to its relatively small contribution (between 4% & 8%) any growth in non-household MSW can be expected to only have a very small influence on the overall growth in MSW.

2.2. Historical MSW Growth Pattern

Analysis of the trend in municipal solid waste arisings between 2001/02 and 2012/13[2] suggests that the trend remains towards decline. This is shown in Figure 2 below:

[2] Data for MSW arisings the most recent year (2012/13) has been included in the analysis of the historic trend. This data was unavailable at the time of drafting the JMWMS.

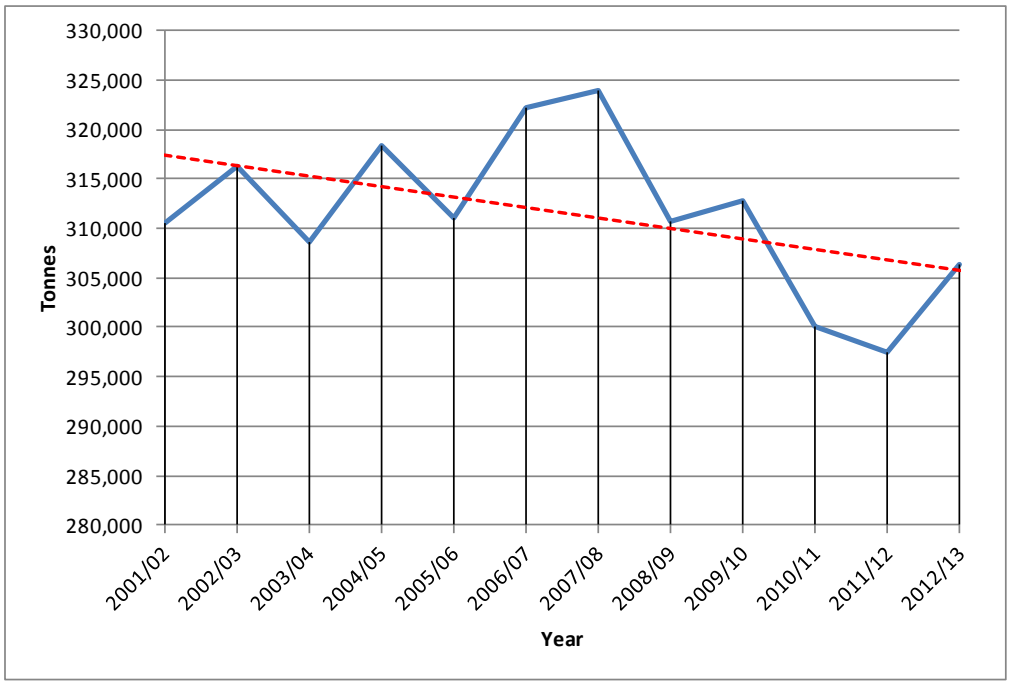

Figure 2: Trend in MSW Arisings 2001/02 to 2012/13
(*dashed red line is trend line indicating a compound growth rate of -0.11% over the period).*

It is worth noting that the rapid decline measured between 2007/08 to 2010/11 slowed between 2010/11 and 2011/12. Also data from 2012/13 (which has not been considered in the JMWMS) shows an increase for the first time since 2007/08 of 3% (8,885 tonnes).

2.3. Impact of change in service

The potential impact of the recession, which may have resulted in reduced MSW arisings, is noted in the JMWMS and it is also suggested that the observed decline is attributable to waste minimisation initiatives. Service changes in recent years will also have had an impact, in particular the introduction of alternate weekly collection (AWC) by four of the five district councils between 2009 and 2011[3] has coincided with a marked reduction in arisings[4] (See Appendix 1 and Figure 3 below).

[3] Cherwell DC moved to AWC in 2003.

[4] This is consistent with a 2007 report published by WRAP found that "well run" AWC schemes not only encourage recycling, but can also reduce the overall amount of waste produced as residents seek to avoid waste generation. http://www.wrap.org.uk/sites/files/wrap/AWC%20Revised%20Final%20Report%20-%20130707.PDF

In addition, from 1st November 2010, a permit scheme for vans and trailers to prevent trade waste being deposited without charge as household waste at Household Waste Recycling Sites was introduced by OCC, and in its first year this was calculated to have removed approx 2,300 tonnes of waste from the household waste stream.

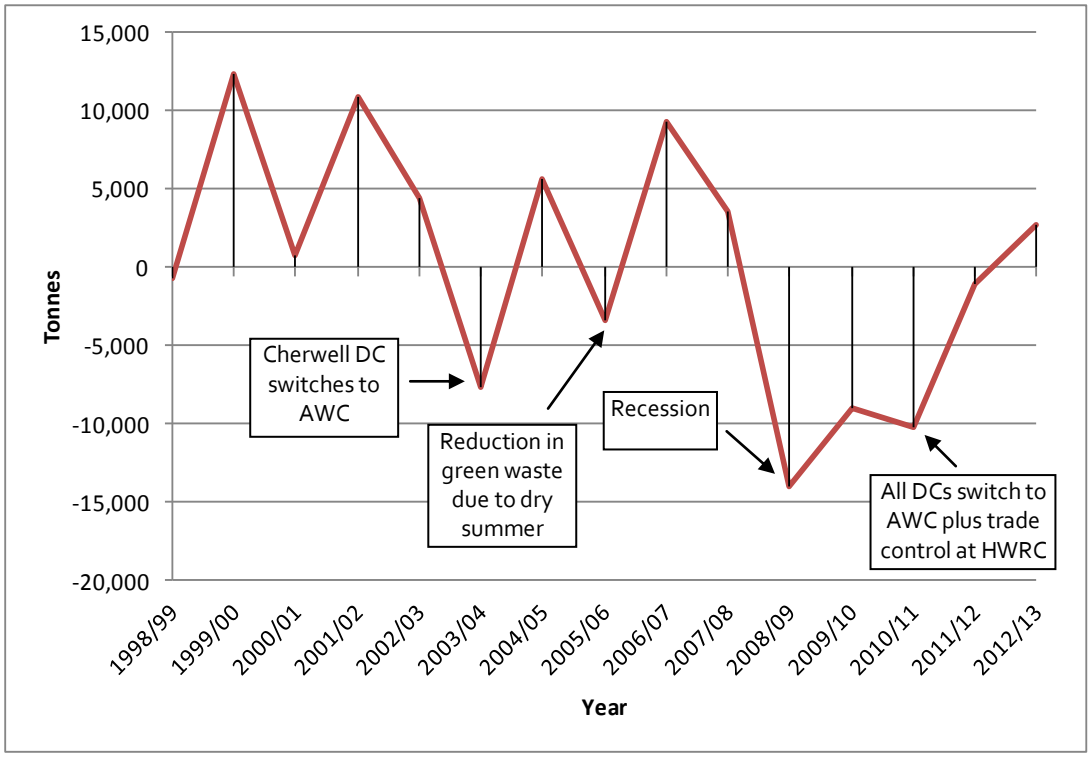

Figure 3: Annual Variation in Household Waste Arisings 1998/99 to 2012/13 Showing Potential Causal Factors

3. Factors Affecting Future Growth

3.1. Future service changes

While the service changes highlighted above will have an enduring impact on quantities of waste collected, the decrease in growth resulting from them will only be noted in the year of their introduction. And so, while MSW arisings may now be at a lower level, the question regarding the direction of future growth in MSW arisings remains.

The JMWMS includes various commitments to future action intended to help ensure that zero waste growth is achieved. Elsewhere in the Strategy there are proposals for changes to the waste management service provided by the partnership. It is possible that these initiatives could affect the amount of waste produced overall. Proposed changes include the following:

- "Recycling and food waste collections from flats will continue to be rolled out over the short term, ensuring that as many households as possible have access to these services."
- "We will also investigate the possibility of establishing staffed 'recycling and reuse only' sites in more rural areas of the county where householders are able to take larger items (such as fridges, TVs and green waste) for recycling, but these sites will not accept residual waste."

The likely impact of these changes on future waste arisings is unclear and not assessed in detail here, although improvement in service provision may lead to increases in overall MSW arisings as improved opportunities for collection result in increases in the total amount of waste set out.

3.2. Economy

The other factor which has influenced MSW growth in the past (as observed in Figure 2 above) is the health of the economy. It is clear that the decline in 2008/09 is consistent with the 'credit crunch' which resulted in a reduction in domestic expenditure. As the economy recovers it is reasonable to assume that growth in MSW will be positive.

3.3. Population

It is anticipated that by 2031 the population of Oxfordshire will have increased by 8.75% from 2011 to 2031. Such an increase will result in an increase in the production of household waste. See Appendix 2 for information on the changing relationship between household numbers and waste production. So even while the household waste produced per person may decrease, overall an increasing population means there is likely to be an increase in household waste. Clearly this is linked to an increase in the number of households which is predicted to be 15% over the same period which has been identified by OCC as the reason for the prediction for year on year increases in MSW. See Appendix 3 for details.

Taking all of the above factors into account suggests that over time negative MSW growth is unlikely. However this needs to be weighed against a recent Government report that considers MSW arisings will decrease over time and this is explored in more detail below:

4. Recent Government Analysis of Future Household Waste Growth

In October 2013 the Government set out its latest view on future growth in municipal waste in a report published by DEFRA: "Forecasting 2020 Waste Arisings and Treatment Capacity (Revised February 2013)". This document considers the likelihood of England meeting the 2020 Landfill Directive target concerning the diversion of biodegradable MSW from landfill. In doing so it considers future waste arisings as well as existing, and likely future, capacity for managing this waste stream by means other than landfill.

The modelling of future household waste arisings in the report involved forecasting forward historic trends which results in a number of scenarios being generated as shown in Figure 4 below. It is significant that the central scenario prediction shows a small but steady fall in household waste arisings to 2020.

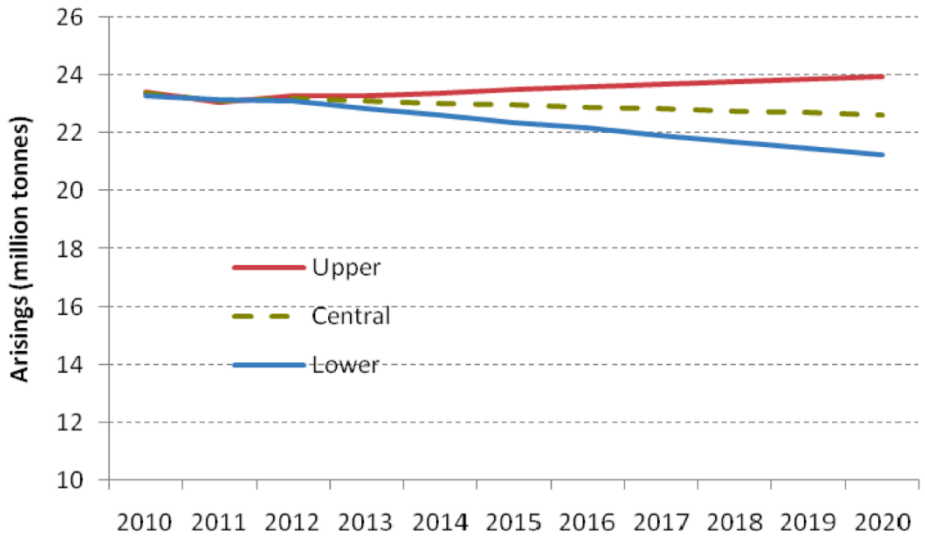

Figure 4: Defra Household Waste Arising Forecasts

Source: "Forecasting 2020 Waste Arisings and Treatment Capacity (Revised February 2013)", Defra, October 2013

No comment is made on the appropriateness of the modelling method used (known as SARIMA[5]) but it should be noted that justification for its use is included in the report as follows:

"Alternative approaches for forecasting household waste arisings were also considered; for example, models based on changes in the underlying drivers of waste, such as economic activity and waste intensity. Such alternative approaches were found to produce implausible results for household arisings with high forecast error. Therefore, the SARIMA model provides the most statistically robust forecast of future levels of household waste arisings."

The report did consider an alternative scenario under which waste increases took place due to economic recovery. This involved modelling a 20% chance of a 20% increase in household waste arisings in 2020. This was carried out in order to test the sensitivity of conclusions being reached regarding the likelihood of meeting the Landfill Directive targets and need to fund new infrastructure via PFI credits.

While the report provides a feel for the direction in which growth in household waste arisings may be headed it should of course be noted that it is intended to provide a national picture and so presents an average of what might happen across the country, thus masking any regional differences such as varying levels of prosperity and associated consumption. It does however give some credence to consideration of a scenario with static or even modest declining growth as a sensitivity.

The applicability of the conclusions of the Defra report to the situation in Oxfordshire must also be considered against the recent pattern observed in MSW arisings in Oxfordshire, of a slowing in the decrease in MSW arisings and an actual increase in the most recent year's data as shown in Figure 1.

[5] SARIMA = Seasonal Auto-Regressive Integrated Moving Average.

5. Conclusion

The historical trends identified range from some growth (1997/98-2012/13) to steep decline (2006/07-2008/09) depending on the period taken into account. The question to consider is which years might be considered representative of future years in terms of service profile and demographics. This suggests exclusion of data from pre-service change years but also moderation of more recent data given the sharp decline attributable both to one-off service changes and the recession.

Taking all of the above into account, the growth scenario put forward in the JMWMS does not seem an unreasonable basis for forward planning. However it is recommended that several MSW growth scenarios be considered to allow planning within in a range. This reflects the fact that any single prediction is likely to be 'wrong' and suggesting otherwise will invite criticism. Planning within a range also allows for an element of flexibility and is in accordance with the approach advocated in Annex D of the PPS10 companion guide.

We therefore propose modelling high, medium and low growth scenarios and work should be undertaken to assess the detail of each one. In any event it does seem sensible to ensure that the growth scenario used in the JMWMS is considered as this does not seem unreasonable and doing so would demonstrate consistency in forward planning across the authority.

Development of the other scenarios should take the following into account:

- Future service changes
- Population growth forecasts
- Housing growth forecasts[6]
- Fiscal and legislative measures affecting consumption and production of waste

Development of the scenarios should also take into account the guidance in Annex D of the PPS10 Companion Guide.

[6] See Appendix 2 for key points on the relationship between household numbers and waste arisings is included.

Appendix 1: Introduction of Alternate Weekly Collection in Oxfordshire

Cherwell DC – October 2009, introduced food waste collection mixed with free green waste collection, Cherwell were already on alternate weekly collection since 2003

Oxford City – Changed to alternate weekly collection between December 2009 and June 2010

South Oxfordshire DC – Changed to alternate weekly collection in June 2009

Vale of White Horse DC – Changed to alternate weekly collection in October 2010

West Oxfordshire DC – Changed to alternate weekly collection between November 2010 and January 2011

Appendix 2: Relationship between household numbers & waste arisings in Oxfordshire

Dwelling Stock has increased by 10.35% since 2001, whereas over the same period waste decreased by 3.03%.

From 2001 to 2008 there was an increase in housing of 6.56% and in waste of 8.2%, which shows slight waste growth over housing growth.

Data sets for residual waste and dwelling stock back to 2001, shows that residual household waste per household decreased from just over a tonne in 2001-02 (1010kgs) to 409kgs in 2011-12.

In 2012-13 this increased to 411kgs in line with the overall increase in household waste in that year of 0.96%.

Appendix 3: Oxfordshire population & household forecasts to 2031

TableA2.1 – Oxfordshire Population and Household Forecasts 2011-2031

Year	Oxfordshire Population	Percentage of Oxfordshire Population	Oxfordshire Households	Percentage of 2011 Households
2011	655,700	100%	264,400	100%
2012	658,700	100.46%	266,200	100.68%
2013	662,500	101.04%	268,400	101.52%
2014	668,500	101.95%	271,400	102.65%
2015	677,000	103.25%	275,500	104.20%
2016	684,100	103.33%	279,000	105.52%
2017	690,300	105.28%	282,300	106.77%
2018	695,000	105.99%	285,100	107.83%
2019	699,900	106.74%	288,100	108.96%
2020	704,000	107.37%	290,500	109.87%
2021	707,000	107.82%	292,700	110.70%
2022	710,000	108.28%	294,600	111.42%
2023	712,200	108.62%	296,600	112.18%
2024	713,300	108.78%	297,800	112.63%
2025	713,700	108.85%	298,800	113.01%
2026	713,300	108.78%	299,500	113.28%
2027	712,700	108.69%	300,200	113.54%
2028	712,500	108.66%	301,100	113.88%
2029	712,700	108.69%	302,100	114.26%
2030	712,900	108.72%	303,000	114.60%
2031	713,100	108.75%	304,200	115.05%