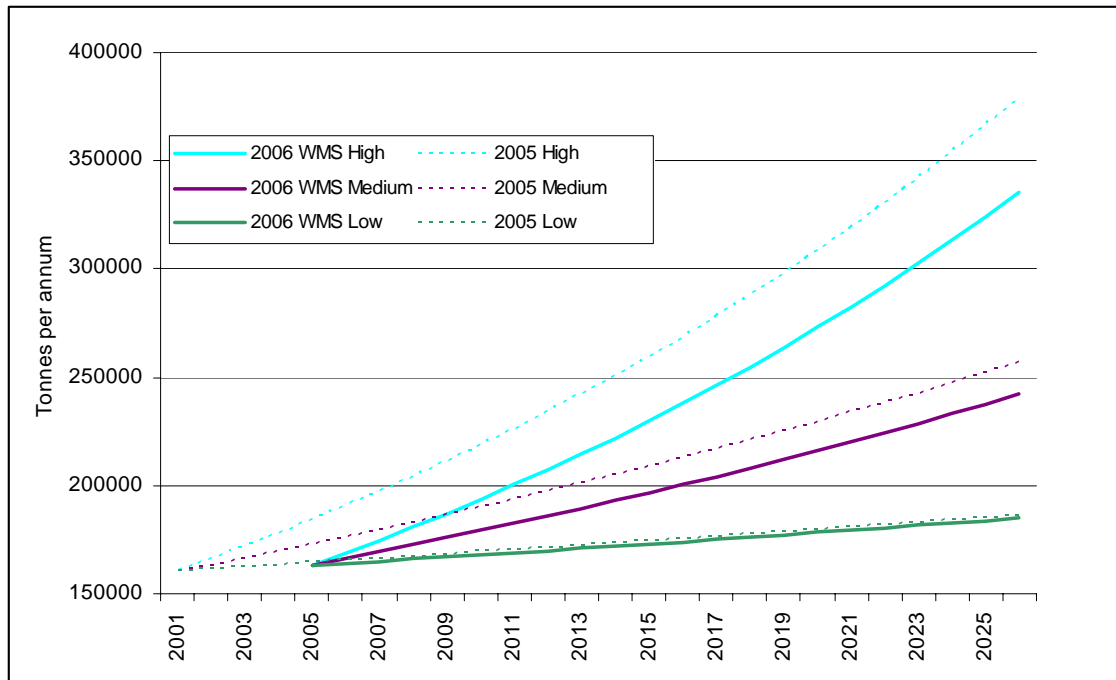

Plymouth City Council Waste LDF: Future Waste Management Requirements

1. Purpose of this Note

This note updates previous work undertaken in July 2005 to establish the requirements for waste management facilities to meet the needs of the City Council over the timescale of the Waste DPD. This note is revised to:

- Extend its time horizon to conform with that of the Core Strategy and the forthcoming Waste DPD to 2021 and beyond to 2026;
- Incorporate the findings of more recent work undertaken by the City Council to progress its MSW waste management strategy;
- Incorporate assumptions and growth trends in MSW arisings. The previous work was based upon a range of scenarios to address annual growth rates of between 0.6% (a low growth scenario) up to 3.5% (a high growth scenario) over the lifetime of the Waste DPD. Further and more recent work undertaken in November 2006 to inform the Council's MSW strategy was based upon more up to date data and trends. A comparison between these projected figures is graphed at Figure 1. Although its projections are still subject to uncertainty the revised projections effectively narrow the range of growth assumptions to which the Waste DPD must respond.

Figure 1 : Comparison of 2005 & 2006 MSW Growth Projections



Key: WMS – Waste Management Strategy 2006 projections

2. Baseline Assumptions

Prior to any estimate being made of the amount and type of waste requiring management in Plymouth over the life of the Waste DPD i.e. up to 2026, a set of assumptions were agreed with officers at Plymouth Council. These assumptions are addressed below.

2.1.1 Household Growth Assumptions

Household rather than population growth is used to influence predicted changes in waste arisings. The following baseline figures were agreed with Plymouth City Council in the preparation of the Waste Management Strategy:

- 2001 – 102 540 households;
- 2006 – 105 627 households;
- 2011 – 110 450 households;
- 2016 – 115 275 households;
- 2021 – 122 268 households; and
- 2026 – 129 262 households.

It is anticipated that there will be an annual increase of approximately 965 households over the period 2001 and 2016; and a further annual increase of 1 399 households over the period 2016 and 2026. In total, therefore, households are predicted to increase by 26 722 up to 2026.

Evidence drawn from 2000/01 data demonstrates that on average each household in Plymouth generated 1 565 kg of waste. Assuming that this rate of production does not change, the additional amount of municipal waste that will require handling in 2026 as a result of household growth alone is expected to equate to $26\,722 \times 1\,565 \text{ kg} = \mathbf{41\,820 \text{ tonnes}}$.

2.1.2 Waste Growth Assumptions

In considering the waste growth assumptions that would be appropriate to apply over the period of the Waste DPD, a steer has been taken from:

- LUC and AEA Technology's work on assessing future scenarios for the management of municipal solid waste (MSW) (February 2003);
- The Regional Waste Management Strategy for the South West (October 2004);
- SLR's work that underpins the Regional Waste Strategy, The Development of a Waste Management Strategy for the South West Region (April 2003); and
- LUC and AEA Technology's work on assessing future scenarios for the management of municipal solid waste (MSW) (February 2003) updated by Entec's 2006 work on formulating the options for the City's Waste Management Strategy.

The methodology adopted is based upon the approach adopted by the South West Regional Assembly in their Regional Waste Strategy i.e. a **high, medium and low** growth scenarios but updated to incorporate evidence of recent and projected trends identified from the most recent work on the City's Waste Management Strategy.

The rates adopted are as follows:

High Scenario

For the high scenario, rates exceed those used in the Regional Waste Strategy and also exceed the expected effects of planned house building. The assumptions adopted are as follows:

- Industrial and commercial waste – a compounded linear growth rate of 2.5% per annum up to the end of the life of the Waste DPD (2026);
- Special waste – same as industrial and commercial;
- Construction/demolition waste – a compounded linear growth rate of 2% per annum up to the end of the life of the Waste DPD (2026);
- MSW – a compounded linear growth rate of 3% per annum up to the end of the life of the Waste DPD (2026).

Medium Scenario

The assumptions adopted for the medium scenario are:

- Industrial and commercial waste – a compounded linear growth rate of 2% per annum growth up to 2006; then reducing to a growth rate of 1% per annum up to 2016; then reducing further to a neutral growth rate of 0% per annum up to the end of the life of the WLDD (2026);
- Special waste – same as industrial and commercial;
- Construction/demolition waste – a 0% growth rate up to the end of the life of the WLDD (2026); and
- MSW – a compounded linear growth rate of 1% per annum at household level, in addition to the forecast growth in housing numbers up to the end of the life of the WLDD (2026).

Low Scenario

The assumptions adopted for the low scenario are:

- Industrial and commercial waste – a compounded linear growth rate of -1% per annum up to the end of the life of the Waste DPD (2026);
- Special waste – same as industrial and commercial;
- Construction/demolition waste – a reduction in waste arisings at a linear rate of 2% per annum up to the end of the life of the WLDD (2026); and
- MSW – an initial compounded linear growth rate of 1% per annum at household level, decreasing to zero growth at household level by 2016 due to increased waste minimization measures. Waste arisings continue to grow with increasing household numbers.

2.2 Predicted Future Waste Management Requirements

2.2.1 How Much Waste?

Using 2004/05 as the baseline, and the assumptions set out above, calculations have been made as to how much waste is likely to arise up to 2026. These calculations (for key years and for each growth scenario) are set out in Tables 1 to 3 below.

2.2.2 Implications of Statutory and National Targets

Tables 4 to 6 set out how national, regional and local waste management targets will shape the way in which waste will, in the future, need to be managed in Plymouth.

Table 1 Waste Arisings in Plymouth 2000 - 20226: Low Growth Scenario (000 tonnes pa)

Waste Stream	2005	2010	2013	2015	2018	2020	2021	2026
Municipal Solid Waste	163	174	181	185	191	195	197	209
Industrial & Commercial	173	164	159	156	152	149	147	140
Construction & Demolition	522	472	444	426	401	385	378	341
Special	22	21	20	20	19	19	19	18
Total	880	831	805	788	763	748	741	708

Table 2 Waste Arisings in Plymouth 2000 - 2021: Medium Growth Scenario (000 tonnes pa)

Waste Stream	2005	2010	2013	2015	2018	2020	2021	2026
Municipal Solid Waste	163	175	185	192	203	212	216	240
Industrial & Commercial	195	207	213	217	217	217	217	217
Construction & Demolition	566	566	566	566	566	566	566	566
Special	25	26	27	28	28	28	28	28
Total	949	974	991	1 002	1 014	1 022	1 027	1 050

Table 3 Waste Arisings in Plymouth 2000 - 2021: High Growth Scenario (000 tonnes pa)

Waste Stream	2005	2010	2013	2015	2018	2020	2021	2026
Municipal Solid Waste	163	183	200	212	232	246	253	293
Industrial & Commercial	199	225	242	254	274	288	295	334
Construction & Demolition	612	676	718	747	792	824	841	928
Special	25	28	306	32	35	36	37	42
Total	1 000	1 112	1 190	1 245	1 332	1 394	1 426	1 597

Table 4 Implications of National, Regional and Local Waste Management Targets: Low Growth Scenario

Waste Stream & Target	Amount of Waste that Requires Alternative Treatment						
	2005	2010	2013	2015	2016	2021	2026
Municipal Solid Waste:							
Recycling & Composting (BVPI target and national targets)	39 197 (24%)	52 191 (30%)	54 348 (30%)	61 099 (33%)	61 671 (33%)	65 140 (33%)	68 837 (33%)
Allowable to Landfill ¹		66 397	44 225	44 225	44 225	30 946	30 946
Recovery Targets (including recycling and composting) ²	65 328 (40%)	78 287 (45%)	81 522 (45%)	124 050 (67%)	125 211 (67%)	132 255 (67%)	139 761 (67%)
Industrial & Commercial:							
Recycling & Composting	-	-	-	-	68 083 (44%)	64 746 (44%)	61 573 (44%)
Recovery	-	-	-	-	60 346 (39%)	57 388 (39%)	54 576 (39%)
Landfill	-	-	-	-	26 305 (17%)	25 015 (17%)	23 789 (17%)
Construction & Demolition	No national or regional target (simply a regional commitment to maximise recycling)						
Special Waste	No national or regional target						

1 - Waste and Emissions Trading Act 2003 Landfill Allowance Trading Scheme:
 - Baseline = Biodegradable MSW (BMW) produced in Plymouth 1995/96 = 101 683 tonnes
 - 66 397 tonnes of BMW allowable to landfill in 2009/10
 - 44 225 tonnes of BMW allowable to landfill in 2012/13
 - 30 946 tonnes of BMW allowable to landfill in 2019/20

2 - National Recovery Targets:
 - Recover value from 40% of MSW by 2005.
 - Recover value from 45% of MSW by 2013.
 - Recover value from 67% of MSW by 2015.

Table 5 Implications of National, Regional and Local Waste Management Targets: Medium Growth Scenario

Waste Stream & Target	Amount of Waste that Requires Alternative Treatment						
	2005	2010	2013	2015	2016	2021	2026
Municipal Solid Waste:							

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Recycling & Composting (BVPI target and national targets)	39 197 (24%)	52 492 (30%)	55 455 (30%)	63 253 (33%)	64 403 (33%)	71 385 (33%)	79 160 (33%)
Allowable to Landfill ¹		66 397	44 225	44 225	44 225	30 946	30 946
Recovery Targets (including recycling and composting) ²	65 328 (40%)	78 737 (45%)	83 182 (45%)	128 423 (67%)	130 758 (67%)	144 933 (67%)	160 719 (67%)

Industrial & Commercial:

Recycling & Composting	-	-	-	-	95 588 (44%)	95 588 (44%)	95 588 (44%)
Recovery	-	-	-	-	84 725 (39%)	84 725 (39%)	84 725 (39%)
Landfill	-	-	-	-	36 932 (17%)	36 932 (17%)	36 932 (17%)

Construction & Demolition No national or regional target (simply a regional commitment to maximise recycling)

Special Waste No national or regional target

- 1 - Waste and Emissions Trading Act 2003 Landfill Allowance Trading Scheme:
 - Baseline = Biodegradable MSW (BMW) produced in Plymouth 1995/96 = 101 683 tonnes
 - 66 397 tonnes of BMW allowable to landfill in 2009/10
 - 44 225 tonnes of BMW allowable to landfill in 2012/13
 - 30 946 tonnes of BMW allowable to landfill in 2019/20

- 2 - National Recovery Targets:
 - Recover value from 40% of MSW by 2005.
 - Recover value from 45% of MSW by 2013.
 - Recover value from 67% of MSW by 2015.

Table 6 Implications of National, Regional and Local Waste Management Targets: High Growth Scenario

Waste Stream & Target	Amount of Waste that Requires Alternative Treatment						
	2005	2010	2013	2015	2016	2021	2026
Municipal Solid Waste:							
Recycling & Composting (BVPI target and national targets)	39 197 (24%)	54 851 (30%)	59 937 (30%)	69 946 (33%)	72 044 (33%)	83 519 (33%)	96 821 (33%)
Allowable to Landfill ¹		66 397	44 225	44 225	44 225	30 946	30 946
Recovery Targets (including recycling and composting) ²	65 328 (40%)	82 276 (45%)	89 905 (45%)	142 011 (67%)	146 271 (67%)	169 569 (67%)	196 576 (67%)
Industrial & Commercial:							
Recycling & Composting	-	-	-	-	114 648 (44%)	129 714 (44%)	146 759 (44%)
Recovery	-	-	-	-	101 620 (39%)	114 973 (39%)	130 082 (39%)
Landfill	-	-	-	-	44 296 (17%)	50 117 (17%)	56 702 (17%)
Construction & Demolition	No national or regional target (simply a regional commitment to maximise recycling)						
Special Waste	No national or regional target						

1 - Waste and Emissions Trading Act 2003 Landfill Allowance Trading Scheme:
 - Baseline = Biodegradable MSW (BMW) produced in Plymouth 1995/96 = 101 683 tonnes
 - 66 397 tonnes of BMW allowable to landfill in 2009/10
 - 44 225 tonnes of BMW allowable to landfill in 2012/13
 - 30 946 tonnes of BMW allowable to landfill in 2019/20

2 - National Recovery Targets:
 - Recover value from 40% of MSW by 2005.
 - Recover value from 45% of MSW by 2013.
 - Recover value from 67% of MSW by 2015.

This chapter attempts to pull together the data presented in earlier sections of this report and set out the capacity that may be required during the period of the WLDD i.e. up to 2016.

3. Overall Need Assessment

This section sets out the capacity that may be required during the period of the WLDD i.e. up to 2026.

3.1 Municipal Waste

Recycling and Composting

By a target date of 2021, between about 65,000 tonnes and 83,000 tonnes of recycling and composting capacity for municipal waste will be required in Plymouth. This will rise to between 69,000 tonnes and 97,000 tonnes by 2026.

As existing capacity equates to about 10,000 tonnes per annum (this relates to the composting facility at Chelson Meadows), this means that about an additional 55,000 to 73,000 tonnes capacity is required by 2021.

Recovery

By a target date of 2021, between about 132,000 tonnes and 170,000 tonnes of recovery capacity for municipal waste will be required in Plymouth. This will rise to between 140,000 tonnes and 197,000 tonnes by 2026.

Existing non-inert/biodegradable recovery capacity equates to ~ 324 000 tonnes per annum. However, the vast majority of this capacity is for waste water treatment (at waste water treatment works). Indeed, in 2000/01, no municipal waste in Plymouth was sent to a recovery facility for management (excluding composting). As such, it can be concluded that between about 132,000 tonnes and 170,000 tonnes of recovery capacity is required in Plymouth by 2021.

Disposal to Landfill

Taking into account the Landfill Allowance Trading Scheme, there is a staged reduction in tonnages allowable to landfill as follows:

- 2009/2010 – 66,397 tonnes allowable to landfill, reducing to;
- 2012/2013 – 44,225 tonnes allowable reducing further to:
- 2019/2020 – 30,946 tonnes.

Landfill capacity for municipal waste will be required for this tonnage. However, depending on the types of recovery technology developed, there is likely to be a further residual amount from the recovery process.

3.2 Industrial and Commercial Waste

By a target date of 2021, the Waste Strategy for the South West Region demands that 83% of industrial and commercial wastes will either be recycled (44%) or subject to recovery (39%).

Recycling and Composting

By a target date of 2021, between about 65,000 tonnes and 130,000 tonnes of recycling and composting capacity for industrial and commercial waste will be required in Plymouth. This will increase to between 62,000 tonnes and 147,000 tonnes by 2026.

As existing capacity equates to ~10 000 tonnes per annum (this relates to the composting facility at Chelson Meadows for which there is no limit on the amount of industrial and commercial green waste. However, for the purposes of this report, a limit similar to that placed on municipal waste has been assumed). This means that an additional 55,000 to 120,000 tonnes of capacity is required by 2021.

Recovery

By a target date of 2021, between about 57,000 tonnes and 115,000 tonnes of further recovery capacity for industrial and commercial waste will be required in Plymouth. This will change to between 55,000 tonnes and 130,000 tonnes by 2026.

Existing non-inert/biodegradable recovery capacity equates to ~324 000 tonnes per annum. However, the vast majority of this capacity is for waste water treatment (at waste water treatment works). Indeed, in 2000/01, only 53 000 tonnes of industrial and commercial waste in Plymouth was sent to a recovery facility for management (excluding composting). As such, it can be concluded that up to 65,000 tonnes of industrial and commercial recovery capacity is required in Plymouth over by 2021.

Disposal to Landfill

As the Waste Strategy for the South West Region demands that 83% of industrial and commercial wastes will either be recycled or subject to recovery (39%), this leaves 17%, or between 24 000 and 57 000 tonnes to be landfilled. The recovery process reduces the waste it addresses by about 70%; the remainder of which (about 30%), equating to between 16 000 and 39 000 tonnes, will need to be landfilled.

In aggregate therefore, between 40 000 and 96 000 tonnes of industrial and commercial waste will be sent to landfill every year by 2026.

3.3 Other Waste Streams

Construction and Demolition Waste

By a target date of 2021, there will be between 378, 000 and 841,000 tonnes of construction and demolition waste arising in Plymouth. This will change to between 341,000 tonnes and 948,000 tonnes by 2026.

Given the national and regional commitment to maximising the recycling of construction and demolition waste, and against the background of there being no strategic recycling facilities in Plymouth, provision should be made for a network of new facilities.

Special Waste

This waste stream is predicted to stand between 18 000 and 42 000 tonnes by 2026. Historically, Plymouth has been a net exporter of this waste stream, although in 2000/01, almost 5 000 tonnes of special waste was landfilled in Plymouth. With the closure of Chelson Meadows (the only landfill site in Plymouth) and the implementation of the Landfill Directive, this situation will not be able to continue over the life of the Waste DPD. The need for specialist facilities to deal with this waste stream, coupled with the small quantities of special waste generated in Plymouth, means that it may be unlikely that new facilities in Plymouth at least in the short to medium term.

3.4 Conclusions

This assessment indicates that a significant amount of new waste management infrastructure is required if the City is to become more self-sufficient in managing its waste. The extent of requirements is always difficult to predict, but by using different scenarios the implications of different levels of growth are assessed and form the basis for planning. Growth levels will need

to be monitored during the course of the Waste DPD as even small variations can have significant implications for management requirements.

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