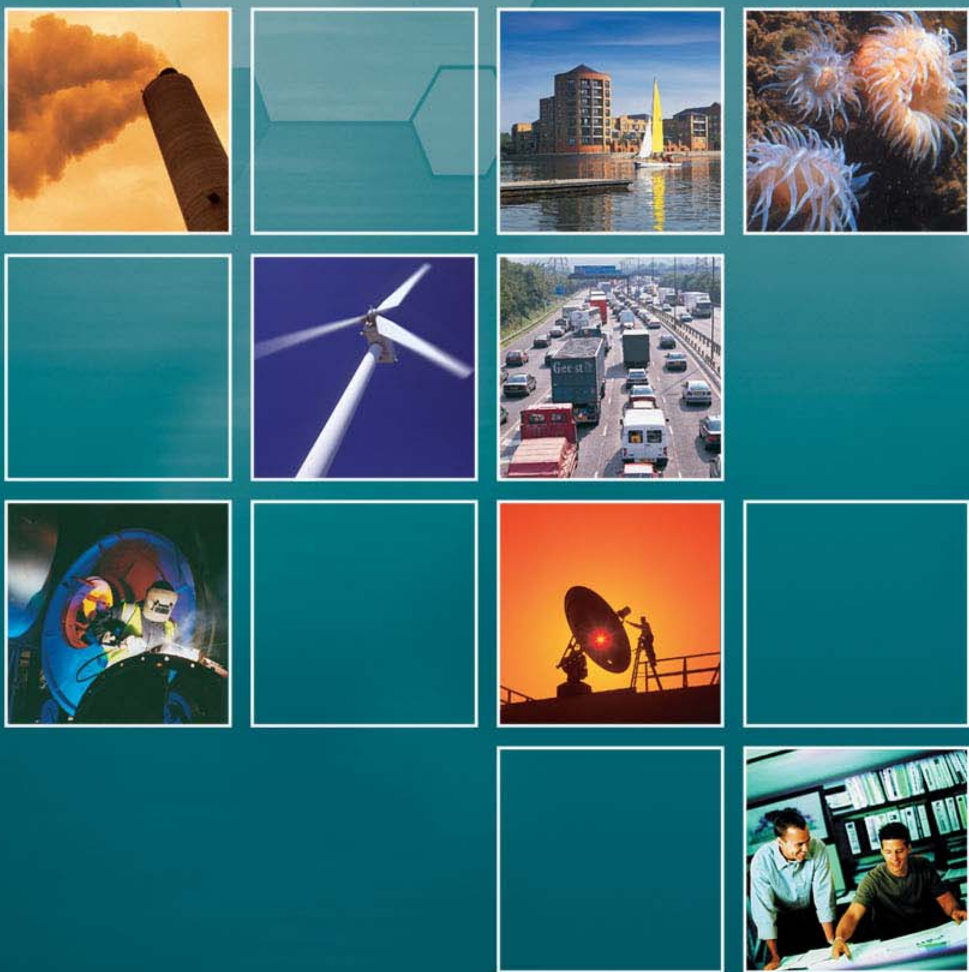
Isle of Wight Council

Waste Needs Assesment

Addendum to Technical Modelling conducted in October 2008

August 2009



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Isle of Wight Council

Waste Needs Assesment

Addendum to Technical Modelling conducted in October 2008

August 2009

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Executive Summary

Purpose of this Report

This report summarises the results of the additional sensitivity modelling that has been conducted on the needs assessment modelling that was originally completed in October 2008. The original modelling was conducted to support the IOW's core strategy by calculating the required land take that will be needed for facilities to treat waste arisings in the future.

This report should be read in conjunction with Entec's original modelling report 'Waste Needs Assessment; technical modelling, October 2008' and the results stated in this addendum should supersede the equivalent ones in the original report. This report outlines the implications that the new modelling results have on the need for:

1. Void capacity at Standen Heath landfill.
2. Other processing/recycling capacity.

As requested by Isle of Wight Council (IOW Council), two new growth rate scenarios were modelled and an updated compositional study was integrated into the model. All other assumptions were kept the same as the original modelling (i.e. C&I and C&D growth rates and aspirational recycling and composting targets from the Regional Waste Management Strategy.) The household growth rate profiles were developed by IOW Council and were based on the last five years data as a rolling average.

There are two models for each scenario; a 'best case' where new facilities are assumed to be available from 2009/10; and a 'worst case' where new facilities are assumed to be available only after six years. The maximum required capacities/ land take for facilities are the same for the best and worst case models, as despite the time delay they eventually both allow the regional recycling, composting and recovery targets. The results from the original modelling are in section 6.2 of the original report but are included in this addendum for information. The key difference between the two models is the landfill capacity usage, the results of the original modelling are in section 7 of the original report and are also included in this addendum for information.

Contents

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1. Updated Assumptions

The original modelling assumptions were based on the 'Proposed Alterations to Regional Planning Guidance, South East – Regional Waste Management Strategy (RWMS); 'No Time to Waste'' (March 2004)[1] and Entec's understanding of the current facility situation through discussions with IOW Council and Island Waste (IOW Councils' collection and treatment contractor).

Two new growth rate scenarios were modelled, and an updated compositional study was integrated into the model. All other assumptions were kept the same as the original modelling (i.e. C&I and C&D growth rates and aspirational recycling and composting targets from the Regional Waste Management Strategy.)

1.1 Growth Profiles

Two new growth rate scenarios were used for household waste arisings, as developed by IOW Council.

The household waste growth assumptions used were:

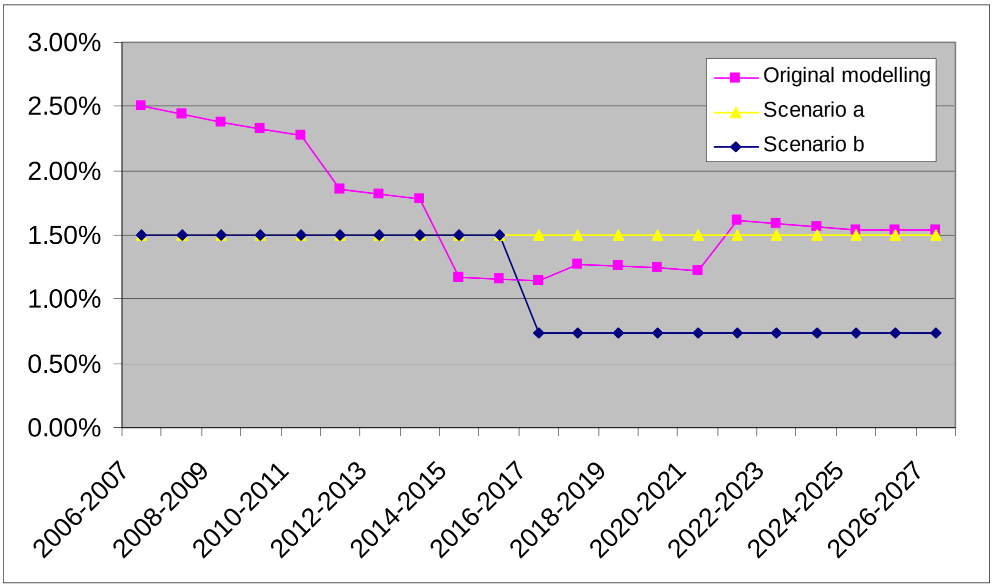
a. 1.5% per year throughout the plan period;

b. 1.5% per year up to 2015/2016 then reduced to 0.74% per year onwards.

In the original modelling the MSW growth rate was calculated from predicted tonnages in the Regional Waste Management Strategy (section 3.3.1 and table 3.3 in the original report); this rate was still applied to non household MSW (e.g. inert and grounds waste) in the updated modelling as it is not felt to have a strong link to household activity. All three growth rates are shown in figure 1.1.

[1] http://www.gose.gov.uk/gose/planning/regionalPlanning/431388/

Figure 1.1 Growth Rates used in the Modelling Scenarios



The original version of the model had two scenarios; the 'best case' where new facilities are assumed to be available from 2009/10 and the 'worst case' where new facilities are assumed to be available only after six years in 2015/16. Because of this there are two models for each of the new growth rate profiles, although it is noted later in this report that the differences between them are minimal.

1.2 Composition

An IOW specific household compositional study conducted in September / October 2008 was provided to Entec; this replaces the WRAP study[2] that was used for household waste composition in the original modelling. The model uses the composition to work out the maximum relative ratios of dry recyclables, green and kitchen waste compostables present in the household waste streams. These ratios are then used to inform the contribution of each waste type to meeting the recycling and composting targets. The changes in these ratios from the original composition to the updated study are shown below in table 1.1. These ratio percentages include the HWRC waste as well. Although some analysis of the HWRC waste was completed in the recent IOW specific study the data was not extensive enough to be used for this modelling (i.e. there was only residual skip analysis and no breakdown of visits per week), so the WRAP data set was kept.

[2] *'Analysis of household waste composition and factors driving waste increase'*, Dr Julian Parfitt, Principal Analyst, WRAP. December 2002.

Table 1.1 Original and Updated Composition Ratios

Waste Stream	Original (WRAP study)	Updated (including IOWC Household Compositional Survey)
Dry Recyclables	49.53%	49.71%
Green compostables	33.25%	26.53%
Kitchen waste compostables	17.22%	23.77%

Additional to the original proposal, Entec has modelled the original growth rates, but with the updated composition to quantify the effect the composition change has had on facility requirements.

2. Implications for Standen Heath Landfill Capacity

Table 2.1 summarises the years where full capacity is reached at Standen Heath Landfill for each of the models. As demonstrated by figure 1, the original modelling growth profile (from the RWMS) has a longer period of time where the growth rate is higher than the two new scenarios.

There is little difference between the various growth profiles, and no effect on the year for the worst case scenario where the landfill would be still used to dispose of high volumes of waste for an extended period before any new treatment facilities are available.

For confirmation, this updated modelling has continued with the assumption that inert waste is sent to existing inert landfills until they reach capacity, after which it is then sent to active landfill.

Table 2.1 Standen Heath Capacity Profiles

Growth Profile	Year that full capacity is reached	
	Best Case	Worst Case
Original (RWMS)	Mid 2023/24	Late 2013/14
Scenario a	2024/25	Late 2013/14
Scenario b	Late 2024/25	Late 2013/14

The effects of the different growth rates on the landfill capacity can be seen in figures 2.1 and 2.2, and the original modelling result is included for information.

Figure 2.1 Best Case Landfill Capacity Profile (over time period where full capacity is reached)

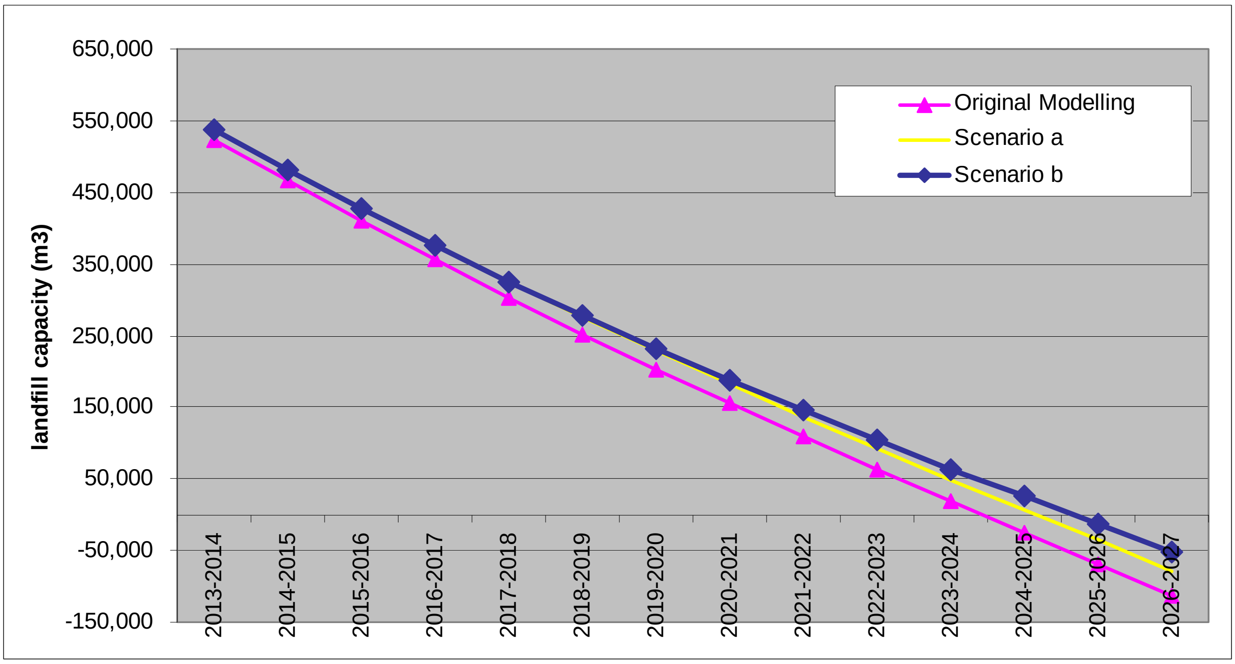
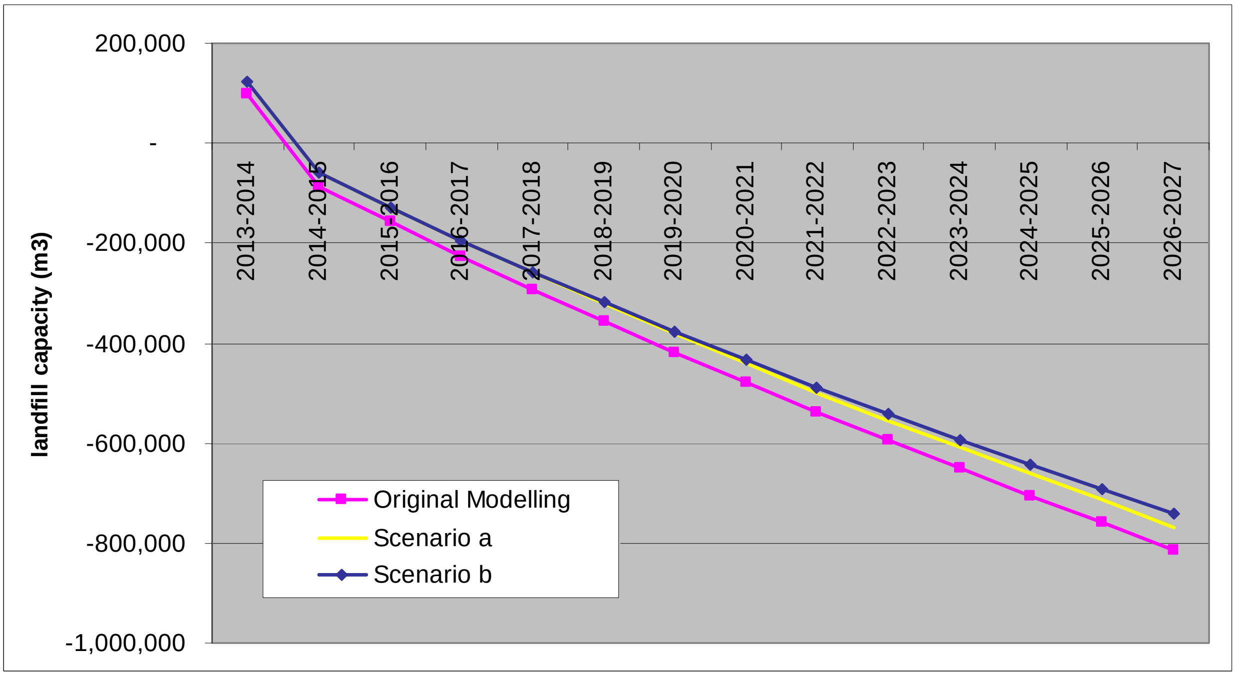


Figure 2.2 Worst Case Landfill Capacity Profile (over time period where full capacity is reached



3. Implications for Future Required Facilities

The updated household waste composition means the size of each of the new facilities that are needed to treat future household waste arisings has changed from the original modelling. Most notably this has affected the food and green waste treatment facilities. Full profiles are provided in Appendix A, and headline summaries are provided in table 3.1. In table 3.1 the facility capacities in row 1 account for existing facilities on the island and the capacities in row 2 assume all waste arisings would have to be treated.

The maximum required capacities/ land take for facilities are the same for the best and worst case models, as despite the time delay they eventually both allow the regional recycling, composting and recovery targets. The key difference between the two models is the landfill capacity usage.

The only difference between the best and worst case models in terms of facility sizing is for the excess inert C&D processing waste. Even after meeting targets there will still be some inert waste that will need to be disposed of. Between the modelling profiles there is a year on year difference due to the Best Case meeting targets earlier on, and the worst case not until 2015/16. However in total the maximum capacity that would be required is 130,000 tonnes , this equates to 3.9 hectares of land. This is the same for all the models and profiles as the growth rate is 0% for all the models. It is considered prudent to maximise recovery of this waste stream by building a large enough facility to take all C&D arisings. However the landfill model also includes the excess waste to show how the life of the landfill may be used if the maximum size facility is not built, this should be considered by IOW Council when planning for future waste requirements.

Table 3.1 Maximum Capacity and Facility Footprints

	Waste Stream	Facility type	Maximum Capacity and Facility Footprints							
			Original Study (Te)	Footprint (Ha)	Original Study, but with new composition data (Te)	Footprint (Ha)	Scenario a (Te)	Footprint (Ha)	Scenario b (Te)	Footprint (Ha)
A1	Food waste composting (MSW and C&I)	AD	27,000	0.7 *	32,000	0.8	31,000	0.8	30,000	0.7
A2		AD	37,000	0.9	42,000	1.0	41,000	1.0	40,000	1.0
B1	Green waste composting (MSW and C&I)	Windrow	11,000	0.9	7,000	0.6	6,000	0.5	5,000	0.4
B2		Windrow	26,000	2.2	22,000	1.8	21,000	1.8	20,000	1.6
C1	Green and food waste (MSW and C&I)	IVC	38,000	1.5	38,000	1.5	37,000	1.5	35,000	1.4
C2		IVC	63,300	2.5	63,000	2.5	62,000	2.5	60,000	2.4
D	Inert C&D processing Needs to be recycled to meet targets	Reprocessing facility	111,000	3.3	111,000	3.3	111,000	3.3	111,000	3.3
E	MSW recyclables	MRF or bulking bays	34,000	1.1	34,000	1.1	34,000	1.1	31,000	1.0
	C&I recyclables	MRF	49,000	1.6	49,000	1.3	49,000	1.6	49,000	1.6
	TOTAL	MRF	83,000	2.7	83,000	2.7	82,000	2.6	80,000	2.5

* In the original modelling a small facility basis (derived from the RWMS) was used for the A1 AD plant, this was an error and has been changed in this modelling – the difference is 0.2 hectares.

N.B. These figures have been rounded to the nearest 1,000 tonnes, please note that this means rows C may not necessarily be the sum of rows A + B.

4. Conclusion

Tables 4.1 - 4.3 summarise the key findings in terms of facility requirements and landfill void. Issues of note, compared to the last report are;

- The two new growth rates have little effect on the landfill capacity. The life of the landfill is only extended by a year and half at most when scenario b is applied;
- The composition change has altered the capacities of the facilities required for the dry recyclables, green and kitchen wastes; and
- The updated capacities of the facilities changing means that the footprints have also changed, most noticeably in the windrow facilities.

Table 4.1 Facility Types and Maximum Facility Capacities

Waste Stream	Potential Facilities	Maximum capacity requirement (tonnes), ignores current facilities		
		Original Modelling	Scenario a	Scenario b
MSW and C&I green waste	Windrow	26,000	21,000	20,000
MSW and C&I food waste	Anaerobic digestion (or similar technologies)	37,000	41,000	40,000
MSW and C&I food and green waste	IVC (or similar technologies)	63,000	62,000	60,000
MSW and C&I recyclables	MRF, bulking bays	83,000	82,000	80,000
C&D inert recycling	Reprocessing plant (Includes waste that could be recycled beyond that required to meet targets)	130,000	130,000	130,000
C&I and MSW residual waste *	Extend RRF and gasification facility, landfill, alternative treatment	36,000*	34,000*	31,000*

* Appendices B, C and D give the tonnage of suitable residual MSW and C&I waste that could be treated instead of sent to landfill. The figures for the residual waste are taken from these appendices and are the data for 2026/27 when all targets have been met. Building facilities with capacities to meet the residual waste arisings in earlier years could result in spare capacity in later years should the targets be met.

Table 4.2 Potential Built Facility Combinations and Overall Land Take Required

Option combination	Potential new/extended facilities	Total land take (ha)		
		Original Modelling	Scenario a	Scenario b
Options A1, B1, D and E	AD, Windrow, Inert C&D Reprocessing Plant, MRF and bulking bays	8.2	7.8	7.5
Options A2, B2, D and E		9.7	9.3	9
Options C1, D and E	In vessel composting, Inert C&D Reprocessing Plant, MRF and bulking bays	8.1	8	7.8
Options C2, D and E		9.1	9	8.8

Appendices B, C and D summarise the amount of residual waste that requires treating year on year for each scenario.

Table 4.3 Remaining void at Standen Heath with each scenario (Rounded to nearest 1000 tonnes)

Year	Remaining Void (m3) [#]					
	Original best Case	Original worst case	Scenario a best case	Scenario a worst case	Scenario b best case	Scenario b worst case
2007-2008	733,000	723,000	734,000	724,000	734,000	724,000
2008-2009 [+]	835,000	811,000	837,000	814,000	837,000	814,000
2009-2010	771,000	676,000	774,000	682,000	774,000	682,000
2010-2011	707,000	537,000	713,000	546,000	713,000	546,000
2011-2012	644,000	395,000	652,000	408,000	652,000	408,000
2012-2013	583,000	249,000	594,000	267,000	594,000	267,000
2013-2014	523,000	99,000	536,000	122,000	536,000	122,000
2014-2015 [*]	466,000	- 87,000	481,000	- 59,000	481,000	- 59,000
2015-2016	410,000	- 157,000	427,000	- 128,000	427,000	- 128,000
2016-2017	355,000	- 226,000	375,000	- 194,000	376,000	- 194,000
2017-2018	303,000	- 292,000	324,000	- 259,000	326,000	- 258,000

Year	Remaining Void (m3) #					
	Original best Case	**Original worst case**	**Scenario a best case**	**Scenario a worst case**	**Scenario b best case**	**Scenario b worst case**
2018-2019	252,000	- 356,000	275,000	- 321,000	278,000	- 319,000
2019-2020	203,000	- 418,000	228,000	- 382,000	232,000	- 378,000
2020-2021	156,000	- 479,000	182,000	- 441,000	188,000	- 434,000
2021-2022	109,000	- 537,000	136,000	- 498,000	145,000	- 489,000
2022-2023	63,000	- 595,000	92,000	- 554,000	104,000	- 543,000
2023-2024	19,000	- 650,000	49,000	- 609,000	64,000	- 594,000
2024-2025	- 24,000	- 704,000	7,000	- 661,000	26,000	- 643,000
2025-2026	- 69,000	- 760,000	- 36,000	- 715,000	- 13,000	- 693,000
2026-2027	- 114,000	- 816,000	- 80,000	- 770,000	- 53,000	- 743,000

+ There is an increase in the capacity of the landfill in year 2008/09 as the void space has been extended by an extra 218, 000 m^3 via the PPC permit .

* IOW estimates the landfill will reach capacity in 2015

These figures assume inert waste is sent to existing inert landfills on the island. For scenarios where their capacity is reached the inert waste is then sent to Standen Heath landfill. The marked difference between the best and worst case models is due to the recycling rates not being met in the first nine years of the worst case model.

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Appendix A
Scenario Profiles

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Appendix A

New Composition, RWMS Growth Profile - Best Case

Waste Stream	Facility	Capacity required (t)				Max size	Small/ large?	Size (ha)
		2009-2010	2014-2015	2019-2020	2026-27			
Food waste (MSW & C&I)	AD (or similar technologies)	7,000	20,000	25,000	32,000	32,000	Large	0.8
Food waste (MSW & C&I)	AD (or similar technologies)	17,000	30,000	35,000	42,000	42,000	Large	1.0
Green waste (MSW & C&I)	WINDROW	700	400	3,000	7,000	6,600	Large	0.6
Green waste (MSW & C&I)	WINDROW	16,000	15,000	18,000	22,000	22,000	Large	1.8
Food and green waste (MSW & C&I)	IVC (or similar technologies)	8,000	20,000	28,000	38,000	38,000	Large	1.5
Food and green waste (MSW & C&I)	IVC (or similar technologies)	33,000	45,000	53,000	63,000	63,000	Large	2.5
Inert C&D process								
Needs to be recycled	Inert Reprocessing facility	94,000	102,000	111,000	111,000	111,000	Large	3.3
Could be recycled		28,000	23,000	20,000	16,000	61,000	Large	1.8
TOTAL		121,500	125,000	130,000	127,000	131,000	Large	3.9
Recyclables	MRF or Bulking bays							
MSW	MRF	17,000	24,000	28,000	34,000	34,000	Large	1.1
C&I	MRF	32,000	35,000	42,000	49,000	49,000	Large	1.6
TOTAL		49,000	60,000	70,200	83,000	83,000	Large	2.7

New Composition, RWMS Growth Profile - Worst Case

Waste Stream	Facility	Cumulative Capacity required (t)				Max Size	Small/ large?	Size (ha)
		2009-2010	2014-15	2019-2020	2026-27			
Food waste (MSW & C&I)	AD (or similar technologies)	-	-	25,000	32,000	32,000	Large	0.8
Food waste (MSW & C&I)	AD (or similar technologies)			35,000	42,000	42,000	Large	1.0
Green waste (MSW & C&I)	WINDROW	4,000	1000	3,000	7,000	7,000	Large	0.6
Green waste (MSW & C&I)	WINDROW			18,000	22,000	22,000	Large	1.8
Food and green waste (MSW & C&I)	IVC (or similar technologies)	4,000	1000	28,000	38,000	38,000	Large	1.5
Food and green waste (MSW & C&I)	IVC (or similar technologies)			53,000	63,000	63,000	Large	2.5
Inert C&D process								
Needs to be recycled	Inert Reprocessing facility	26,000	26,000	111,000	111,000	111,000	Large	3.3
Could be recycled		83,000	83,000	20,000	16,000	83,000	Large	2.5
TOTAL		109,000	109,000	130,000	127,000	130,000	Large	3.9
Recyclables	MRF or Bulking bays							
MSW	MRF	14,000	16,000	28,000	34,000	34,000	Large	1.1
C&I	MRF	3,000	3,000	42,000	49,000	49,000	Large	1.6
TOTAL		17,000	19,000	70,000	83,000	83,000	Large	2.7

New Composition, Scenario A Growth Profile - Best Case

Waste Stream	Facility	Capacity required (t)				Max Size	Small/ large?	Size (ha)
		2009-2010	2014-2015	2019-2020	2026-27			
Food waste (MSW & C&I)	AD (or similar technologies)	7,000	19,000	25,000	31,000	31,000	Large	0.8
Food waste (MSW & C&I)	AD (or similar technologies)	17,000	29,000	35,000	41,000	41,000	Large	1.0
Green waste (MSW & C&I)	WINDROW	400	-	3,000	6,000	6,000	Large	0.5
Green waste (MSW & C&I)	WINDROW	15,000	15,000	18,000	21,000	21,000	Large	1.8
Food and green waste (MSW & C&I)	IVC (or similar technologies)	7,000	19,000	27,000	37,000	37,000	Large	1.5
Food and green waste (MSW & C&I)	IVC (or similar technologies)	32,000	44,000	52,000	62,000	62,000	Large	2.5
Inert C&D process								
Needs to be recycled	Inert Reprocessing facility	94,000	102,000	111,000	111,000	111,000	Large	3.3
Could be recycled		28,000	23,000	20,000	16,000	61,000	Large	1.8
TOTAL		122,000	125,000	130,000	127,000	130,000	Large	3.9
Recyclables	MRF or Bulking bays							
MSW	MRF	17,000	23,000	28,000	34,000	34,000	Large	1.1
C&I	MRF	32,000	35,000	42,000	49,000	49,000	Large	1.6
TOTAL		49,000	59,000	69,000	82,000	82,000	Large	2.6

New Composition, Scenario A Growth Profile - Worst Case

Waste Stream	Facility	Cumulative Capacity required (t)				Max Size	Small/ large?	Size (ha)
		2009-2010	2014-15	2019-2020	2026-27			
Food waste (MSW & C&I)	AD (or similar technologies)	-	-	25,000	31,000	31,000	Large	0.8
Food waste (MSW & C&I)	AD (or similar technologies)			35,000	41,000	41,000	Large	1.0
Green waste (MSW & C&I)	WINDROW	3,000	400	3,000	6,000	6,000	Large	0.5
Green waste (MSW & C&I)	WINDROW			18,000	21,000	21,000	Large	1.8
Food and green waste (MSW & C&I)	IVC (or similar technologies)	3,000	400	27,000	37,000	37,000	Large	1.5
Food and green waste (MSW & C&I)	IVC (or similar technologies)			52,000	62,000	62,000	Large	2.5
Inert C&D process								
Needs to be recycled	Inert Reprocessing facility	26,000	26,000	111,000	111,000	111,000	Large	3.3
Could be recycled		83,000	83,000	12,000	16,000	83,000	Large	2.5
TOTAL		109,000	109,000	130,000	127,000	130,000	Large	3.9
Recyclables	MRF or Bulking bays							
MSW	MRF	14,000	16,000	28,000	34,000	34,000	Large	1.1
C&I	MRF	3,000	3,000	42,000	49,000	49,000	Large	1.6
TOTAL		17,000	19,000	69,000	82,000	82,000	Large	2.6

New Composition, Scenario B Growth Profile - Best Case

Waste Stream	Facility	Capacity required (t)				Max Size	Small/ Large?	Size (ha)
		2009-2010	2014-2015	2019-2020	2026-27			
Food waste (MSW & C&I)	AD (or similar technologies)	7,000	19,000	24,000	30,000	30,000	Large	0.7
Food waste (MSW & C&I)	AD (or similar technologies)	17,000	29,000	34,000	40,000	34,000	Large	1.0
Green waste (MSW & C&I)	WINDROW	400	-	2,000	5,000	5,000	Large	0.4
Green waste (MSW & C&I)	WINDROW	15,000	15,000	17,000	120,000	20,000	Large	1.6
Food and green waste (MSW & C&I)	IVC (or similar technologies)	7,000	19,000	27,000	35,000	35,000	Large	1.4
Food and green waste (MSW & C&I)	IVC (or similar technologies)	32,000	44,000	52,000	60,000	60,000	Large	2.4
Inert C&D process								
Needs to be recycled	Inert Reprocessing facility	94,000	102,000	111,000	111,000	111,000	Large	3.3
Could be recycled		28,0 00	23,000	20,000	16,000	61,000	Large	1.8
TOTAL		122,000	125,000	130,000	127,000	130,000	Large	3.9
Recyclables	MRF or Bulking bays							
MSW	MRF	17,000	23,000	27,000	31,000	31,000	Large	1.0
C&I	MRF	32,000	35,000	42,000	49,000	49,000	Large	1.6
TOTAL		49,000	59,000	69,000	80,000	80,000	Large	2.5

New Composition, Scenario B Growth Profile - Worst Case

Waste Stream	Facility	Cumulative Capacity required (t)				Max Size	Small/ large?	Size (ha)
		2009-2010	2014-15	2019-2020	2026-27			
Food waste (MSW & C&I)	AD (or similar technologies)	-	-	24,000	30,000	30,000	Large	0.7
Food waste (MSW & C&I)	AD (or similar technologies)			34,000	40,000	40,000	Large	1.0
Green waste (MSW & C&I)	WINDROW	3,000	400	2,000	5,000	5,000	Large	0.4
Green waste (MSW & C&I)	WINDROW			17,000	20,000	20,000	Large	1.6
Food and green waste (MSW & C&I)	IVC (or similar technologies)	3,000	400	27,000	35,000	35,000	Large	1.4
Food and green waste (MSW & C&I)	IVC (or similar technologies)			52,000	60,000	60,000	Large	2.4
Inert C&D process								
Needs to be recycled	Inert Reprocessing facility	26,000	26,000	111,000	111,000	111,000	Large	3.3
Could be recycled		83,000	83,000	20,000	16,000	83,000	Large	2.5
TOTAL		109,000	109,000	130,000	127,000	130,000	Large	3.9
Recyclables	MRF or Bulking bays							
MSW	MRF	14,000	16,000	27,000	31,000	31,000	Large	1.0
C&I	MRF	3,000	3,000	41,718	49,000	49,000	Large	1.6
TOTAL		17,000	19,000	68,600	80,000	80,000	Large	2.5

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Appendix B
Residual Waste for Treatment – Original Modelling

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Appendix B

Doc Reg No.

Year	Residual waste streams (tonnes)					
	Best Case			Worst Case		
	MSW	C&I	Total	MSW	C&I	Total
2007-2008	27,000	63,000	90,000	34,000	63,000	97,000
2008-2009	26,000	65,000	91,000	35,000	65,000	100,000
2009-2010	24,000	26,000	50,000	37,000	67,000	104,000
2010-2011	24,000	26,000	50,000	38,000	69,000	107,000
2011-2012	23,000	26,000	49,000	39,000	71,000	110,000
2012-2013	22,000	26,000	48,000	40,000	73,000	113,000
2013-2014	21,000	26,000	47,000	41,000	74,000	116,000
2014-2015	19,000	25,000	45,000	42,000	76,000	118,000
2015-2016	19,000	25,000	44,000	19,000	25,000	44,000
2016-2017	19,000	24,000	42,000	19,000	24,000	42,000
2017-2018	18,000	23,000	41,000	18,000	23,000	41,000
2018-2019	18,000	22,000	40,000	18,000	22,000	40,000
2019-2020	17,000	21,000	38,000	17,000	21,000	38,000
2020-2021	17,000	21,000	37,000	17,000	21,000	37,000
2021-2022	16,000	20,000	36,000	16,000	20,000	36,000
2022-2023	16,000	20,000	36,000	16,000	20,000	36,000
2023-2024	16,000	19,000	35,000	16,000	19,000	35,000
2024-2025	15,000	19,000	34,000	15,000	19,000	34,000
2025-2026	16,000	19,000	35,000	16,000	19,000	35,000
2026-2027	17,000	19,000	36,000	17,000	19,000	36,000

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Appendix C
Residual Waste for Treatment – Scenario A Modelling

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Appendix C

Year	Residual Waste Streams (tonnes)					
	Best Case			Worst Case		
	MSW	C&I	Total	MSW	C&I	Total
2007-2008	27,000	63,000	90,000	33,000	63,000	96,000
2008-2009	25,000	65,000	90,000	34,000	65,000	99,000
2009-2010	23,000	26,000	49,000	35,000	67,000	102,000
2010-2011	22,000	26,000	48,000	35,000	69,000	104,000
2011-2012	21,000	26,000	47,000	36,000	71,000	107,000
2012-2013	20,000	26,000	46,000	36,000	73,000	109,000
2013-2014	19,000	26,000	45,000	37,000	74,000	112,000
2014-2015	17,000	25,000	43,000	39,000	76,000	114,000
2015-2016	17,000	25,000	42,000	17,000	25,000	42,000
2016-2017	17,000	24,000	41,000	17,000	24,000	41,000
2017-2018	17,000	23,000	40,000	17,000	23,000	40,000
2018-2019	16,000	22,000	38,000	16,000	22,000	38,000
2019-2020	16,000	21,000	37,000	16,000	21,000	37,000
2020-2021	16,000	21,000	36,000	16,000	21,000	36,000
2021-2022	15,000	20,000	35,000	15,000	20,000	35,000
2022-2023	15,000	20,000	35,000	15,000	20,000	35,000
2023-2024	15,000	19,000	34,000	15,000	19,000	34,000
2024-2025	14,000	19,000	33,000	14,000	19,000	33,000
2025-2026	15,000	19,000	33,000	15,000	19,000	33,000
2026-2027	15,000	19,000	34,000	15,000	19,000	34,000

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Appendix D
Residual Waste for Treatment – Scenario B Modelling

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Appendix D

Year	Residual Waste Streams (tonnes)					
	Best Case			Worst Case		
	MSW	C&I	Total	MSW	C&I	Total
2007-2008	27,000	63,000	90,000	33,000	63,000	96,000
2008-2009	25,000	65,000	90,000	34,000	65,000	99,000
2009-2010	23,000	26,000	49,000	35,000	67,000	102,000
2010-2011	22,000	26,000	48,000	35,000	69,000	104,000
2011-2012	21,000	26,000	47,000	36,000	71,000	107,000
2012-2013	20,000	26,000	46,000	36,000	73,000	109,000
2013-2014	19,000	26,000	45,000	37,000	74,000	112,000
2014-2015	17,000	25,000	43,000	39,000	76,000	114,000
2015-2016	17,000	25,000	42,000	17,000	25,000	42,000
2016-2017	17,000	24,000	40,000	17,000	24,000	40,000
2017-2018	16,000	23,000	39,000	16,000	23,000	39,000
2018-2019	15,000	22,000	37,000	15,000	22,000	37,000
2019-2020	15,000	21,000	36,000	15,000	21,000	36,000
2020-2021	14,000	21,000	35,000	14,000	21,000	35,000
2021-2022	13,000	20,000	33,000	13,000	20,000	33,000
2022-2023	13,000	20,000	32,000	13,000	20,000	32,000
2023-2024	12,000	19,000	31,000	12,000	19,000	31,000
2024-2025	11,000	19,000	30,000	11,000	19,000	30,000
2025-2026	12,000	19,000	30,000	12,000	19,000	30,000
2026-2027	12,000	19,000	31,000	12,000	19,000	31,000