Kent Minerals & Waste Local Plan Early Partial Review

Sensitivity Testing of Preferred Scenario

Purpose

The following document present the outcome of sensitivity analysis to test the robustness of the preferred waste management scenario that underpins the Kent Mineral s& Waste Plan Early Partial Review (EPR) for waste.

Proposed Baseline Management Profile

Table 1 combines the values for LACW and C&I waste shown in Table 3 and Table 6 of the *Capacity requirement for management of residual Non Hazardous Waste in Kent* Report (BPP Consulting v1.4 Sept 2018) (KCC/SP38) and shows the total predicted management requirement for non-hazardous waste arising in Kent (exc non inert CDEW as that is addressed in the CDEW stream and all assumed to go to landfill) over the Plan period.

Table 1: Combined EPR Management Tonnages applying Proposed Targets

	Data column	***1***	***2***	***3***	***4***
Data Row		**2015/16**	**2020/21**	**2025/26**	**2030/31**
	Recycling				
a	LACW	331,433	362,500	403,000	444,000
b	C&I	535,000	637,000	736,000	845,000
c	*Total Recycling*	*866,433*	*999,500*	*1,139,000*	*1,289,000*
	Other Recovery				
d	LACW	335,068	348,000	315,000	281,000
e	C&I	237,800	446,000	435,000	422,000
f	*Total Other Recovery*	*572,868*	*794,000*	*750,000*	*703,000*
g	***Total Recovery Requirement***	***1,439,301***	***1,793,500***	***1,889,000***	***1,992,000***
	Landfill				
h	LACW	43,197	14,500	14,500	15,000
i	C&I	416,000	191,000	167,000	141,000
j	*Total Landfill*	*459,197*	*205,500*	*181,500*	*156,000*
k	**Total Arisings**	**1,898,498**	**1,999,000**	**2,070,500**	**2,148,000**

Table 2 shows how these amounts correspond to an overall management profile expressed as percentages of total predicted non-hazardous waste arisings over the Plan period (data line k Table 1).

Table 2: Combined EPR Management Tonnages expressed as percentages of total arisings

	Data column	***1***	***2***	***3***	***4***
Data Row		**2015/16**	**2020/21**	**2025/26**	**2030/31**
a	**Recycling**	46%	50%	55%	60%
b	**Other Recovery**	30%	40%	36%	33%
c	**Landfill**	24%	10%	9%	7%

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Scenario 1: Determining the minimum recycling rate that may be achieved while remaining net self sufficient.

Table 3 shows the recycling rate that would need to be achieved for Kent waste management capacity to be sufficient to manage the equivalent of projected Kent residual waste arisings after:

1. the actual i.e. built or in the process of being built, Other Recovery capacity in Kent is taken account of (data line a); and
2. the modelled landfill rates from Table 2 (data line b) are applied.

Table 3: Combined EPR Management Tonnages counting actual Other Recovery Capacity and applying Proposed Landfill Limits

	Data column	***1***	***2***	***3***	***4***
Data Line		**2015/16**	**2020/21**	**2025/26**	**2030/31**
a	**Other Recovery**	500,000[1]	1,025,000	1,025,000	1,025,000
b	**Remainder to Landfill**	532,065	205,500	181,500	156,000
c	***Total***	*1,032,065*	*1,230,500*	*1,206,500*	*1,181,000*
d	**Recycling**	866,433	768,500	864,000	967,000

Table 4 shows what these amounts represent in terms of % of predicted arisings:

Table 4: Combined EPR Management Tonnages applying actual Other Recovery Capacity and Proposed Landfill Limits expressed as percentages of total arisings

	Data column	***1***	***2***	***3***	***4***
Data Line		**2015/16**	**2020/21**	**2025/26**	**2030/31**
a	**Other Recovery**	26%	51%	50%	48%
b	**Remainder to Landfill**	28%	10%	9%	7%
c	**Recycling**	46%	38%	42%	45%

Conclusion

Once actual Other Recovery capacity in Kent is taken account of (line a), the recycling rate would only need to achieve 45% (cell c4) for the landfill limit to be achieved over the Plan period. This is actually a lower rate than the starting combined recycling rate of 46% (cell c1).

[1] Other Recovery shortfall of 72,868 assumed to be managed through landfill as worst case. This alters the starting % but is a statistical aberration.

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Scenario 2: Determining the minimum recycling rate that may be achieved with zero waste to landfill while remaining net self sufficient.

Table 5 shows the recycling rate that would need to be achieved for Kent management capacity to be sufficient to manage equivalent of projected Kent residual waste arisings when:

1. the actual Other Recovery capacity in Kent is taken account of (line a); and

2. a zero waste to landfill rate from 2020/21 onwards is applied (line b)..

Table 5: Combined EPR Management Tonnages counting actual Other Recovery Capacity and applying zero waste to Landfill

	Data column	*1*	*2*	*3*	*4*
Data Line		**2015/16**	**2020/21**	**2025/26**	**2030/31**
a	**Other Recovery**	500,000	1,025,000	1,025,000	1,025,000
b	**Remainder to Landfill**	532,065	0	0	0
c	***Total***	*1,032,065*	*1,025,000*	*1,025,000*	*1,025,000*
d	**Recycling**	866,433	974,000	1,045,500	1,123,000

Table 6 shows what these amounts represent in terms of % arisings:

Table 6: Combined EPR Management Tonnages counting actual Other Recovery Capacity and applying zero waste to Landfill, expressed as percentages of total arisings

	Data column	*1*	*2*	*3*	*4*
Data Line		**2015/16**	**2020/21**	**2025/26**	**2030/31**
a	**Other Recovery**	26%	51%	50%	48%
b	**Remainder to Landfill**	28%	0%	0%	0%
c	**Recycling**	46%	49%	50%	52%

Conclusion

A maximum recycling rate of 52% (line c column 4)would need to be achieved for 100% landfill diversion to be achieved (line b) when the actual Other Recovery capacity in Kent (line a) is taken account of. This only represents a growth of six percentage points above starting levels over the Plan period which equates to an annual average increase of 0.4%.

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Scenario 3: Determining the maximum landfill rate if recycling rate remains constant while remaining net self sufficient.

Table 7 shows the tonnage that would be destined for landfill for Kent management capacity to be sufficient to manage equivalent of projected Kent arisings once :

1. the actual Other Recovery capacity in Kent is taken account of (line a); and
2. no change in the recycling rate of 46% for the Plan period is assumed (line b).

Table 7: Combined EPR Management Tonnages counting actual Other Recovery Capacity and applying constant recycling rate

	Data Column	***1***	***2***	***3***	***4***
Data Line		**2015/16**	**2020/21**	**2025/26**	**2030/31**
a	Other Recovery	500,000	1,025,000	1,025,000	1,025,000
b	Recycling	866,433	912,300	944,931	980,300
c	*Total Recovered*	*1,366,433*	*1,937,300*	*1,969,931*	*2,005,300*
d	Remainder to Landfill	532,065	61,700	100,569	142,700

Table 8 shows what these amounts represent in terms of % arisings:

Table 8: Combined EPR Management Tonnages counting actual Other Recovery Capacity and applying constant recycling rate expressed as percentages of total arisings

	Data Column	***1***	***2***	***3***	***4***
Data Line		2015/16	2020/21	2025/26	2030/31
a	Other Recovery	26%	51%	50%	48%
b	Recycling	46%	46%	46%	46%
c	Remainder to Landfill	28%	3%	5%	7%

Conclusion

Even if the current recycling rate remains constant (line b) the peak landfill requirement would only be 7% at the end of the Plan period (line c column 4) once the actual Other Recovery capacity in Kent (line a) is taken account of. This would still fall below the national landfill reduction target of 10% by 2030 stated in the national Resource & Waste strategy.

Overall Conclusion on Recycling Rates Sensitivity

This sensitivity analysis demonstrates that in order for net self sufficiency in management capacity for the equivalent tonnage of Kent residual waste to be maintained:

1. the achievement of the target proposed landfill diversion rate is not dependant on increasing recycling rates.
2. recycling rates could remain constant (or even fall) for the proposed landfill diversion targets to be achieved.
3. zero waste to landfill could be achieved with the recycling rate peaking at 52% at 2030/31, only a growth of six percentage points on the combined starting rate over the Plan period which equates to an average annual growth rate of 0.4%. It is notable this rate is some 8 percentage points lower than the Plan target in that year allowing for significant under performance.

Therefore it can be concluded that the proposed approach is robust as it would withstand substantially lesser achievement in recycling without compromising the net self sufficient management capacity for the equivalent tonnage of Kent residual waste. This is primarily attributable to the Other Recovery capacity that is operating in Kent in the form of Allington EfW (500ktpa) or will be by 2020 at Kemsley SEP (525ktpa).

Plan Area Recovery Capacity

When one considers the Plan Area Other Recovery Capacity with the combined recycling/composting capacity (*Table 10 data line 2 Non Hazardous Waste Recycling/Composting Capacity Requirement v1.1 Sept 2018 BPP Consulting*) one gets the following values:

Recycling/composting: 2,014,000 tpa

Other Recovery: 1,025,000 tpa

Total Recovery Capacity: 3,039,000 tpa

This compares with the predicted maximum Plan area recovery capacity requirement identified in Table 1 of c1.9Mt in 2030/31 (cell g4).

This shows that the Plan area has substantial surplus Recovery capacity to meet the proposed targets, and suggests that were arisings of non hazardous residual waste to exceed the predicted forecast, it would need to exceed 3.2Mt for the national target of 60% recycling to be at risk of not being met[2]. This would require arisings over the Plan period to grow by more than 1.3Mt. This represents an annual average growth rate exceeding 4.5% per annum which is considered to be well beyond the bounds of any justified scenario.

[2] The combined Recovery capacity would leave 183,400 tonnes going to landfill which represents 6% of the elevated arising value.

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Comparison of Rates in adopted KMWLP vs EPR

Landfill Rates

The combined rates in the adopted KMWLP are shown in Table 9 below:

Table 9: Combined KMWLP Management Tonnages showing combined landfill requirement and rate

	Data column	***1***	***2***	***3***	***4***	
Data Line		**2015/16**	**2020/21**	**2025/26**	**2030/31**	**Source**
a	KMWLP LACW Forecast	739,466	779,110	835,193	899,740	Table 9 LACW - data row 2
b	Landfill Rate	9%	7%	4%	3%	
c	Amount	66,552	54,538	33,408	26,992	
d	KMWLP C&I Forecast	1,104,000	1,183,000	1,243,000	1,307,000	Table 26 C&I report - data row 2
e	Landfill Rate	19%	16%	16%	16%	
f	Amount	209,760	189,280	198,880	209,120	
g	Total Projected to Landfill	276,312	243,818	232,288	236,112	
h	Projected Arisings	1,843,466	1,962,110	2,078,193	2,206,740	
I	**% total arisings to landfill**	**15%**	**12%**	**11%**	**11%**	

When these values are compared with the combined values displayed in Table 1 (line k) the results are shown in Table 10 below.

Table 10: Comparison of Landfill Rates in Adopted KMWLP vs EPR

	Data column	*1*	*2*	*3*	*4*
Data Line		2015/16	2020/21	2025/26	2030/31
a	Adopted KMWLP	15%	12%	11%	11%
b	Proposed EPR	*24%*	10%	9%	7%
c	**Diff**		**-2%**	**-2%**	**-3%**

Conclusion

The proposed EPR will result in a greater level of landfill diversion than that in the adopted KMWLP (line c) and will ensure that the Plan area is on the trajectory to meet the 10% landfill diversion target by 2030 of the national Resource & Waste Strategy.

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Recycling Rates

The combined rates in the adopted KMWLP are shown in Table 11 below:

Table 11: Combined KMWLP Management Tonnages showing combined recycling requirement and rate

	Data column	*1*	*2*	*3*	*4*
Data Line		2015/16	2020/21	2025/26	2030/31
a	KMWLP LACW Forecast	739,466	779,110	835,193	899,740
b	Recycling Rate	51%	55%	59%	62%
c	Amount	377,128	428,511	492,764	557,839
d	KMWLP C&I Forecast	1,104,000	1,183,000	1,243,000	1,307,000
e	Recycling Rate	61%	63%	65%	65%
	Amount	673,440	745,290	807,950	849,550
f					
g	Total Projected Quantity Recycled	1,050,568	1,173,801	1,300,714	1,407,389
h	Projected Arisings	1,843,466	1,962,110	2,078,193	2,206,740
i	% total arisings	57%	60%	63%	64%

When these values are compared with the combined values displayed in Table 1 (line k) the results are shown in Table 12 below.

Table 12: Comparison of Recycling Rates in Adopted KMWLP vs EPR

	Data column	*1*	*2*	*3*	*4*
Data Line		2015/16	2020/21	2025/26	2030/31
a	Adopted KMWLP	57%	60%	63%	64%
b	Proposed EPR	46%	50%	55%	60%
c	Diff	-11%	-10%	-8%	-4%

Conclusion

The proposed EPR is aiming for a less ambitious level of recycling than the adopted KMWLP but will still ensure that the Plan area is on the trajectory to meet the 60% municipal waste recycling target by 2030 of the national Resource & Waste Strategy (Table 12 cell b4).

It should also be noted that the actual recycling capacity available in the Plan area of c2Mt is already substantially in excess of the peak recycling target tonnage of 1.4 Mt (Table 11 cell g4) so availability of capacity should not in itself act as a constraint when seeking to go beyond the target levels (which for tier 3 capacity are set as minima).

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Other Recovery Rates

The combined rates in the adopted KMWLP are shown in Table 13 below:

Table 13: Combined KMWLP Management Tonnages showing combined Other Recovery requirement & rate

	Data column	*1*	*2*	*3*	*4*
Data Line		**2015/16**	**2020/21**	**2025/26**	**2030/31**
a	**KMWLP LACW Forecast**	739,466	779,110	835,193	899,740
b	**Other Recovery Rate**	40%	38%	37%	35%
c	**Amount**	295,786	296,062	309,021	314,909
d	**KMWLP C&I Forecast**	1,104,000	1,183,000	1,243,000	1,307,000
e	**Other Recovery Rate**	20%	21%	19%	19%
	Amount	220,800	248,430	236,170	248,330
f					
g	**Total Projected Quantity Treated through Other Recovery**	516,586	544,492	545,191	563,239
h	**Projected Arisings**	1,843,466	1,962,110	2,078,193	2,206,740
i	**% total arisings to Other Recovery**	28%	28%	26%	26%

When these values are compared with the combined values displayed in Table 1 the results are shown in Table 14 below.

Table 14: Comparison of Other Recovery in Adopted KMWLP vs EPR

	Data column	*1*	*2*	*3*	*4*
Data Line		**2015/16**	**2020/21**	**2025/26**	**2030/31**
a	**Adopted KMWLP**	28%	28%	26%	26%
b	**Proposed EPR**	30%	40%	36%	33%
c	**Diff**	**2%**	**12%**	**10%**	**7%**

Conclusion

The proposed EPR will result in a greater level of Other Recovery than the adopted KMWLP

It should however be noted that the actual Other Recovery capacity available in the Plan area of c1.025Mt is already substantially in excess of the peak Other Recovery requirement tonnage of 0.563 Mt (Table 13 cell g4). For a need for additional Other Recovery capacity to exist, the requirement would have to exceed 1,025,000 tpa. This tonnage represents 46% of peak projected arisings (Table 13, cell h4) for additional capacity to be needed. This would clearly conflict with achievement of the target recycling rate of 60% in 2030/31 (the recycling rate would have to fall well below 54% for a case to be justified for additional EfW capacity contributing towards self sufficiency for Kent waste).

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KMWLP vs EPR Management Profile comparison

Figure 1 shows the projected combined management profile underpinning the adopted KMWLP, while Figure 2 shows the projected combined management profile proposed in the EPR. Note the first entry for the EPR Profile for 2015/16 is based on actual rather than projected values.

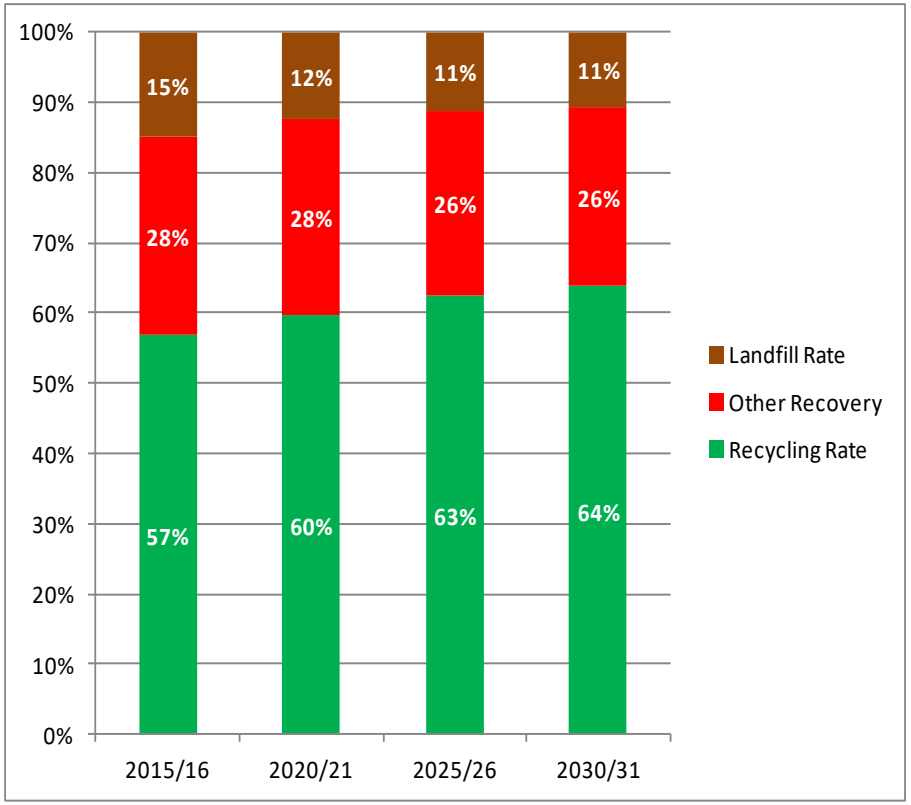

Figure 1: Adopted Kent MWLP Waste Management Profile

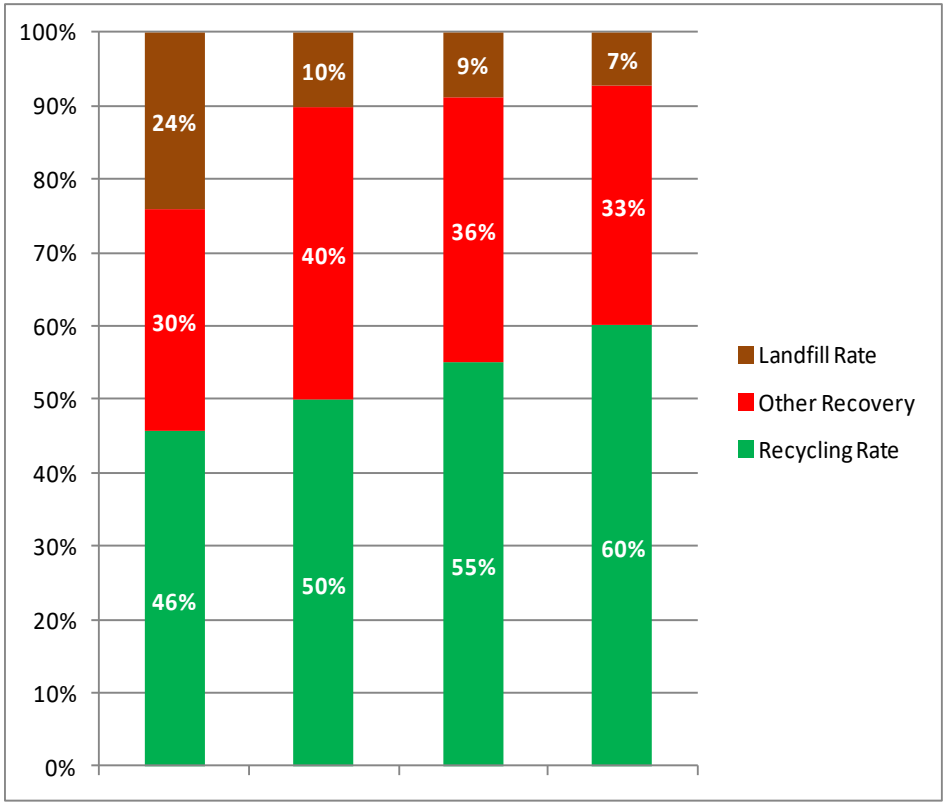

Figure 2: Proposed EPR Waste Management Profile

Appendix 1: Waste Framework Directive Obligations on Planning Authorities

Exercise of planning functions

18. A planning authority must have regard to the following provisions of the Waste Framework Directive when exercising its planning functions to the extent that those functions relate to waste management—

(a)Article 13;

Article 13Protection of human health and the environment

Member States shall take the necessary measures to ensure that waste management is carried out without endangering human health, without harming the environment and, in particular:

(a) without risk to water, air, soil, plants or animals;

(b) without causing a nuisance through noise or odours; and

(c) without adversely affecting the countryside or places of special interest.

(b)the first paragraph of Article 16(1), ignoring the words "in cooperation with other Member States where this is necessary or advisable" and "taking into account best available techniques";

take appropriate measures, …to establish an integrated and adequate network of waste disposal installations and of installations for the recovery of mixed municipal waste collected from private households, including where such collection also covers such waste from other producers, …

(c)Article 16(2) and (3).

2. The network shall be designed to enable the Community as a whole to become self-sufficient in waste disposal as well as in the recovery of waste referred to in paragraph 1, and to enable Member States to move towards that aim individually, taking into account geographical circumstances or the need for specialised installations for certain types of waste.

3. The network shall enable waste to be disposed of or waste referred to in paragraph 1 to be recovered in one of the nearest appropriate installations, by means of the most appropriate methods and technologies, in order to ensure a high level of protection for the environment and public health.

The Waste (England and Wales) Regulations 2011