Non-Hazardous Waste Capacity Gap Update

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Table of Contents

Table of Tables

Table of Figures

1 Introduction

BPP Consulting LLP was commissioned by Essex County Council in February 2018 to review and update the Non Hazardous Waste section of the Waste Capacity Gap Assessment produced in December 2015[1] that formed part of the replacement Waste Local Plan evidence base.

2 Non-Hazardous Waste Future Capacity Requirements

This waste stream is a combination of the Local Authority Collected Waste stream and the commercial and industrial (C&I) waste stream.

2.1 Local Authority Collected Waste (LACW)

Definitions

In the UK, until 2010, the term Municipal Solid Waste (MSW) was synonymous with waste collected by local authorities. However, in 2010 the UK expanded its definition to include waste from other sources similar in nature and composition to align with the EU definition this therefore included wastes of a similar type collected from businesses by private waste collection companies for the first term.

The term "local authority collected waste" (LACW) is now used to distinguish between that waste that was formerly known as municipal solid waste (MSW) and the new wider definition of municipal solid waste (LACW plus). LACW includes waste produced by householders collected from their homes (collected household waste), waste deposited at Household Waste Recycling Centres (HWRCs) plus commercial waste collected by district councils, street sweepings, litter and fly tipped materials. In general, the non-household waste fraction of LACW represents around 5% of total collected arisings. For the purposes of this report LACW should be taken to mean what was previously referred to as MSW.

2.1.1 Historical Arisings

The ten-year pattern observed in LACW arisings in Essex & Southend-on-Sea, shown in Figure 1 below, shows a dip between 2009/10 and 2012/13 with a relatively sharp rise in 2013/14 with arisings continuing to grow through to 2016/17.

[1] Topic Paper 1: Waste Capacity Gap Update Version 1.2 December 2015 BPP Consulting

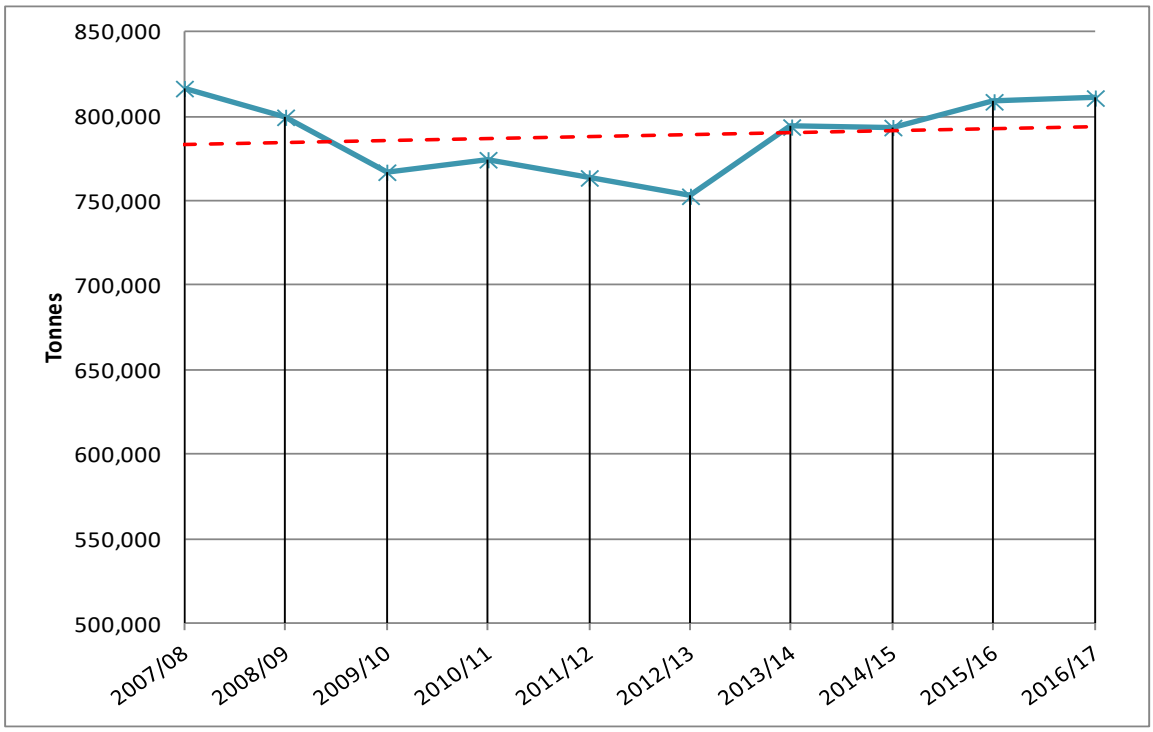

Figure 1: Trend in LACW Arisings 2007/08 to 2016/17

(dashed red line is trend line that indicates a modest growth rate of plus 0.6% over the most recent five year period).

2.1.2 Household Waste Growth Prediction

The following forecasts were modelled in the WNA update of December 2015:

- Application of the growth rates used in the *Final Business Case* for the Private Finance Initiative PFI [2] using the 2013/14 actual arisings as a starting point.
- Application of growth rates suggested by the most current Defra forecast study at the time[3].
- Development of a forecast based on the method proposed in the Government Planning Practice Guidance (PPG)[4] i.e. calculate arisings per head and factor in a range of different scenarios, e.g. constant rate of growth, progressively lowering growth rates due to waste minimisation initiatives.

A forecast based on the PPG approach was used as the underpinning forecast in the replacement WLP 2017.

[2] Essex County Council & Southend-on-Sea Borough Council Final Business Case Department for Environment, Food and Rural Affairs Waste Infrastructure Delivery Programme (WIDP) Application for Waste Infrastructure Credits (08/12/2011)

[3] Forecasting 2020 Waste Arisings and Treatment Capacity Defra (Revised February 2013, Published October 2013).

[4] Ref.: Revision date: 16 10 2014 Paragraph: 029 & 30 Reference ID: 28-029-20141016

2.1.3 Revisiting the LACW Growth Profile

In view of the change in pattern of arisings presented in Figure 1 the relevance of the forecast used to underpin the WLP 2017 WNA for LACW has been revisited. The guidance in PPG has been followed on a step by step basis:

- Establish short-term average annual growth rates per household or head of population
- Establish long-term average annual growth rates per household or head of population

Figure 2 below shows the results of this exercise by head of population for Essex (red) and Southend on Sea (blue) separately.

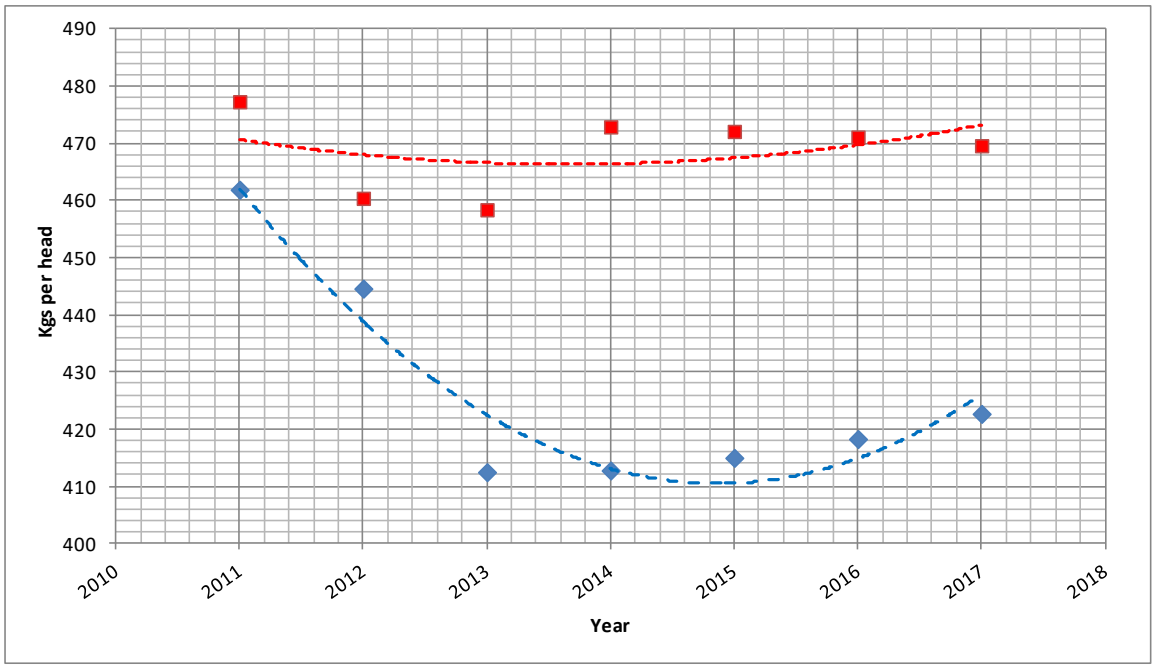

Figure 2: Plan Area Household Waste Arisings (kg per head of population)

It is evident from this that the amount per head 2014 value for Essex represented a clear break between the decline in tonnes per head observed in from 2012-2013 and a plateauing out from thereon through to 2017.Therefore:

- the short-term average annual growth rates per head of population has been calculated using a 5-year average from 2012/13 to 2016/17 values resulting in a range of 416 - 469 kg/pp with a mean average across the Plan Area of 442.5 kg/pp.
- the 7-year average annual growth rate per head of population is 448kg/pp.

Applying the 7-year average per capita value to the current and projected growth in population for the Plan Area as presented in projections published by the Office for National Statistics [5] gives values over the plan period as plotted in Figure 3. The baseline forecast presented is that in the recently adopted replacement Waste Local Plan. As the values generated are for household waste arisings which is a subset of total LACW, and the baseline forecast is for LACW for comparative purposes, the values have been amended to account for the non-household waste component on the basis that it represents 4% of LACW arisings.

[5] https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/localauthoritiesinenglandtable2

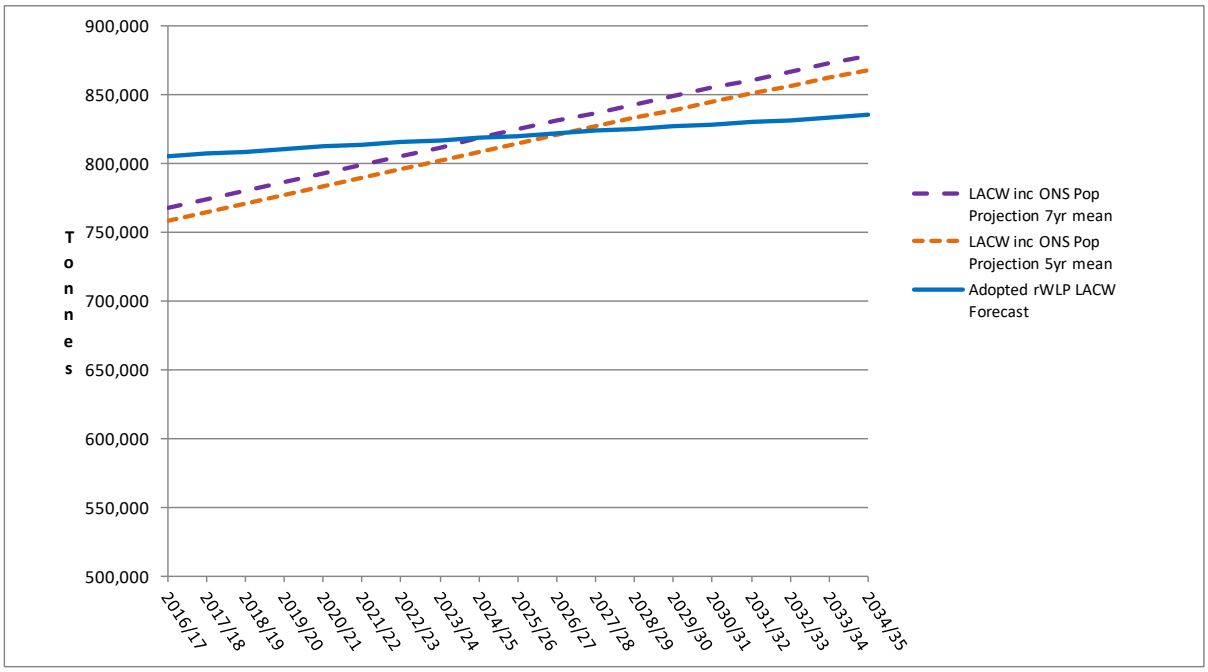

Figure 3: Forecast Plan Area LACW Arisings (tonnes per annum) (y axis not at zero)

2.2 Conclusion

The adopted Plan forecast for LACW still appears to be credible when compared with the waste arisings per head of population projections with a convergence between the two in the middle of the Plan period. On that basis, the adopted Plan forecast has been retained for the purposes of this update.

Calculating Need for Management of Non-Hazardous Waste

There are three major components of non-hazardous waste: Local Authority Collected Waste, Commercial and Industrial and residual non-hazardous waste imported from Greater London. These will be investigated in the following sections

2.3 Calculating Need for Management of Non-Hazardous LACW

2.3.1 LACW Historical Management Profile

To understand the future management needs for this waste stream it is helpful to consider the historical trends. Figure 4 shows the changing profile of management with landfill dropping below 200,000tp or c20% in the most recent year. Incineration with energy recovery plays an increasing role as this is the primary destination for MBT output material. It should be noted that MBT only acts as an intermediate facility with output waste requiring final disposal via incineration or landfill as shown in Figure 4.

For the purposes of this report the datasets published by Defra (as informed by the data provided by Essex and Southend-on-Sea WDAs via WasteDataFlow) and reports on combined amount of LACW managed. It also specifically identifies the amount of LACW that was incinerated (with and without energy recovery) beyond the Plan Area. This results in the management profile presented in Figure 4.

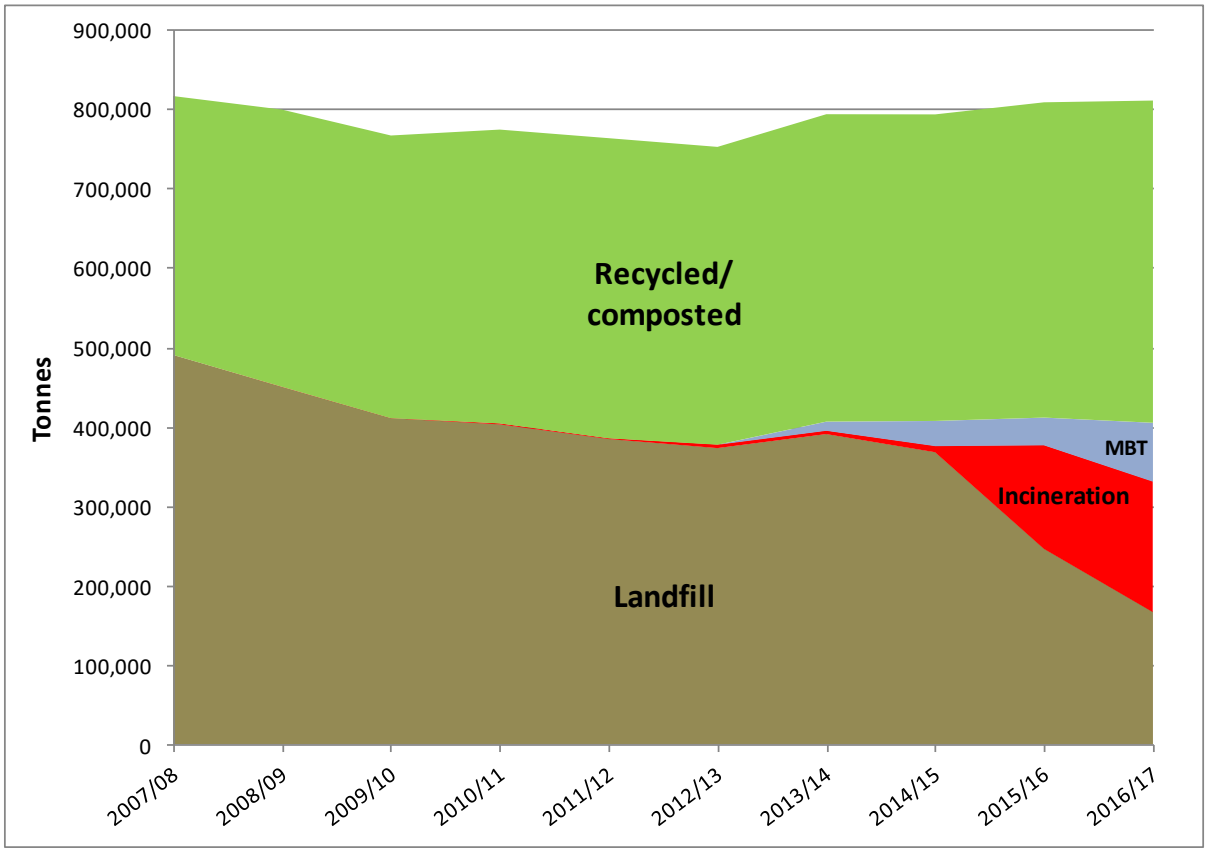

Figure 4: Essex & Southend-On-Sea LACW Management Profile 2007/08 to 2016/17 (Managed Within and Outside Plan Area)
Source DEFRA dataset plus MBT process losses [6]

2.3.2 Current LACW Management Profile

The latest figures from 2016/17 indicate that LACW generation in the Plan Area was just over 811,000 tonnes[7]. This includes waste materials collected at the kerbside, that taken to Household Waste Recycling Centres (HWRCs) and non-household waste such as street sweepings. The management profile for this waste stream from the Plan Area in 2016/17 was as follows:

- Recycled/composted: 50% = 404,947 tonnes
- Incineration with EfW: 20% = 165,088 tonnes
- Landfilled: 20% = 167,170 tonnes

The remainder 73,824t is taken to be the tonnage lost through bio-stabilisation process (this process effectively reduces the weight of the waste as a result of moisture and carbon dioxide losses) in the process at the Mechanical Biological Treatment (MBT) plant at Tovi Eco Park, (Courtauld Road), Basildon (see below).

[6] This is not directly comparable with the data that is presented in the Essex AMR 2016/17, or that published on Essex County Council's website as it includes Southend on Sea data.

[7] Local Authority Collected Waste Management Statistics Defra 27 December 2017
https://data.gov.uk/dataset/5aea1caf-3e38-4d57-b321-ba34eb762b6e/local-authority-collected-waste-management-statistics

Essex County Council and Southend on Sea Council in their capacity as Waste Disposal Authorities entered into a contract that resulted in the provision of a Mechanical and Biological Treatment (MBT) plant at Tovi Eco Park in Basildon with capacity to treat up to c417,000 tonnes of the residual. Since most inputs to this facility leave for onward management this is only regarded as an intermediate treatment facility with only the process loss of c18% by weight being counted as having met its final fate at the plant.

In addition to residual waste approximately 176,000 tonnes per annum of biowaste (green garden and food waste) is separately collected by the Authorities.

Local Authority collected biowaste are managed through four year framework contracts for the treatment of around 90,000 tonnes of green waste and 85,000 tonnes of food or mixed food and garden waste. These contracts utilise capacity at a combination of open windrow and in-vessel composting, and anaerobic digestion facilities located both within and outside the Plan Area.

2.4 LACW Targets

2.4.1 Recycling

The Joint Municipal Waste Strategy stated that Essex will aim to exceed the levels of recycling and composting of household waste as set out in Waste Strategy for England 2007:

- 40% by 2010
- 45% by 2015
- 50% by 2020

It went on to express an ambition to deliver an innovative and resource efficient waste management system for the county, with an aspiration to collectively achieve 60% recycling of household waste by 2020. Since that time the revised Waste Framework Directive (rWFD) introduced a target of 50% household waste recycling by 2020.

If the rWFD target is to be met at 2020 and maintained, then just less than 400,000 tonnes of material[8] will need to be managed separately for recycling/composting (based on arisings in 2016/17). The waste management capacity requirements to support the achievement of the WFD recycling targets varies depending on the collection method used. In particular, whether materials are separated at the point of collection via segregated collection vehicles or collected together (commingled) and then subsequently separated at a specialist facility (Materials Recycling Facility (MRF)).

[8] 387,700 tonnes in 2020 and 397,000 tonnes at 2035 based on LACW forecast in Table 1 adjusted for element of LACW (5%) not classed as household waste.

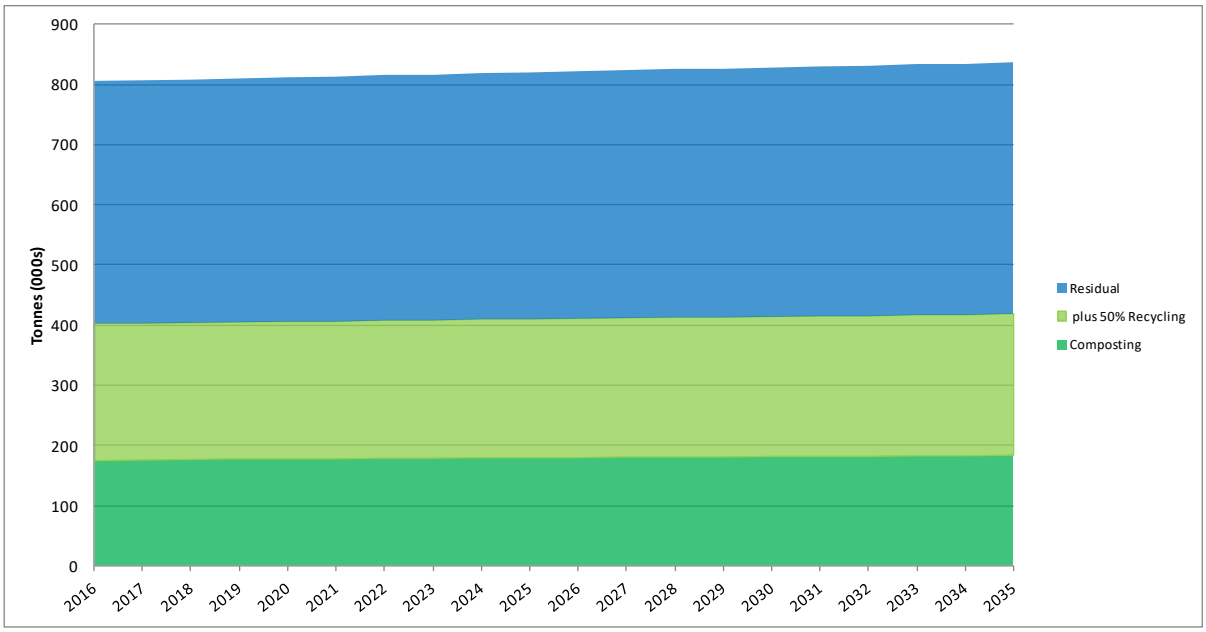

Figure 5: Essex & Southend-On-Sea LACW Management Profile 2016 to 2035

(Adopted Plan LACW Forecast)

Table 1: Projected Management Profile of Forecast LACW Arisings to 2035 (000s) tonnes

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Composting	176	177	178	179	179	179	180	180	181	181	181	182	182	182	183	183	183	184	184	185
plus 50% Recycling	227	226	226	226	227	227	228	228	229	229	230	230	231	231	231	232	232	233	233	234
Residual	403	404	404	405	406	407	408	408	409	410	411	412	413	413	414	415	416	417	417	418

2.5 LACW Capacity Requirement

The following maximum capacity requirement is implied from the above profile of management if maximum diversion from landfill is to be achieved and net self-sufficiency is to be pursued in this waste stream:

Table 2: Forecast LACW Maximum Capacity Requirement (at 2035) following Profile in Table 1

Treatment Method	Facility Type	Tonnes
Organic Treatment inc Composting or AD	Open Windrow/IVC and/or Anaerobic Digestion	185,000
Recycling e.g. kerbside collection	Transfer Station (bulking) or MRF if commingled	234,000
Residual	*MBT input*	*418,000*
	MBT output to EfW or Landfill (c50% of input remaining after process loss and recyclate recovered)	209,000

Comparing that against the existing capacity provision the following additional requirement emerges.

2.5.1 LACW Composting

Open Windrow or IVC of green waste

As at 31 March 2017 there was 176,154 tonnes of operational composting capacity within the Plan Area. Of this 139, 822t is open windrow composting and 65,272t is IVC (Stewards Yard [green waste only] and Pitsea). Assuming all capacity is retained throughout the plan period, there appears to be sufficient capacity in the open windrow only sites alone (139,822 tonnes) to cater for the projected quantity of LACW green waste management requirement (90,000 tonnes).

2.5.2 LACW Organic Treatment

IVC or AD of food and mixed food/ green waste

As at the 31 March 2017 there was c77,000 tonnes per annum of consented operational in-vessel organic treatment capacity within the Plan Area. Of this 20,000 tpa is the IVC (Pitsea)[9] and 57,000 tonnes is AD (Tamar & Marsh Farm). Therefore, there appears to be shortfall in management capacity of c 8,000tpa to cater for the projected quantity of food or mixed food/ green waste of 85,000tpa

2.5.3 LACW Recycling

It would be over simplistic to suggest that meeting and sustaining the recycling target of 50% would necessarily require an equivalent amount of processing/management capacity to be available, since the waste management capacity requirements to support the achievement of the LACW recycling targets varies depending on the collection method used. In particular, whether materials are separated at the point of collection via segregated collection vehicles and bulked up for delivery to reprocessors requiring bulking sites or collected together (commingled) and then subsequently separated at a specialist facility Materials Reclamation Facility (MRF).

Where materials are source separated, it is possible for them to be delivered to separate storage areas within a depot from where the bulked up recyclates are then transported directly to reprocessors or even taken directly to reprocessors. These reprocessors may be located within the Plan Area such as the O-I Manufacturing UK Limited glass bottle manufacturing centre in Harlow or beyond the Plan Area. In contrast to this, where materials are collected as mixed, or 'commingled', they need to be processed through a MRF for separation and it would be from there that the recyclates would be sent on to reprocessors. Even for commingled materials they may be bulked at intermediate sites before being transported on to a MRF further afield for processing. The same can also be true for separately collected waste from commercial sources for example packaging returned to supermarket depots using reverse logistics. This means there is not necessarily a linear relationship between arisings and management capacity requirement i.e. for 1,000 tonnes of LACW to be recycled 1,000 tonnes of MRF processing capacity is not necessarily required. This means that much of the material collected to meet the revised Waste Framework Directive target of 50% recycling of household waste by 2020 could be effectively managed without the provision of additional MRF capacity within the Plan Area.

The expectation that current arrangements will continue is reinforced by the rWFD presumption that the main target materials will be separately collected unless collecting separately is shown not to be

[9] Given that the open windrow capacity is more than sufficient to deal with green LACW arisings this IVC capacity has been counted under this heading.

technically, environmentally and economically practicable (TEEP). Review of the TEEP assessments available online for the Essex WCAs[10] indicates that 5 of the Waste Collection Authorities for which assessment data could be accessed, all materials requiring 'MRF-ing' were moved to 'MRFs' outside the Plan Area with material going via bulking sites in the county. Therefore, provision of additional dedicated MRF-ing capacity within the Plan Area may still not be necessary. It is considered reasonable to assume no additional capacity will be required to manage this stream through this route on the assumption that MRF-ing capacity outside the Plan Area remains available for the duration of the Plan period. The ongoing availability of capacity currently relied upon beyond the Plan Area, over and above the thresholds set out in the AMR 2016/17, is confirmed through operation of on-going Duty to Co-Operate mechanisms.

2.5.4 Residual LACW

Capacity at the MBT Facility at Tovi Eco Park although primarily for the management of LACW, could be available to manage C&I waste The process can reduce the weight of residual waste by around 50%. This is achieved by the removal of recyclates such as glass, cardboard, plastic, aggregate and the bio-stabilisation process losses. So, in the case of this plant, up to 417,000 tpa input is converted into around 200,000 tpa of stabilised residual waste with the difference being in recovered recyclate and process losses. The resulting stabilised material may either be disposed of to landfill or used as a Refuse Derived Fuel (RDF) in appropriately consented combustion plants in the UK or abroad. Since landfill avoidance is preferred in accordance with the Waste Hierarchy it is currently exported to produce electricity and/or heat at combustion plants elsewhere in Europe.[11]

To assure compliance with the goal of net self-sufficiency and landfill diversion the Plan made provision for the management of the equivalent tonnage of residue within the Plan Area. i.e. 200,000 tonnes per annum of capacity was provided for further management of non-hazardous residual waste.

Table 3: Capacity Gap against LACW Capacity Requirement following Profile in Table 2

Treatment Method	Facility Type	Requirement (Tonnes) from Table 2	Consented Operational Capacity	Capacity Requirement
Organic Treatment	Composting (Open or IVC)	c90,000	c140,000 (exc IVC)	None
	AD or IVC	C85,000	77,000 (inc IVC)	8,000
Recycling	Transfer Station (bulking) or MRF	234,000	310,000	None
Residual	MBT	417,000 + either c4.18Mm^3 non-hazardous landfill[12] or 209,000 tpa thermal treatment.	417,000 (MBT) + 4.16 Mm3[13] non haz landfill capacity.	0.02Mm3landfill OR 209,000 tpa thermal treatment OR combination of both

[10] See here for note on TEEP for contract procured by Basildon, Brentwood, Rochford and Uttlesford in partnership *uttlesford.moderngov.co.uk/Data/Cabinet/201610121900/.../Document%2014.....pdf*

[11] This is conducted under a contract running to 2018. A long-term solution for the management of the material is to be secured through a competitive tender process managed by the County Council as the Waste Disposal Authority.

[12] 209,000tpa over 20 years with assumed density of 1:1.

[13] Based on Environment Agency dataset for remaining void at Essex Non-Hazardous Waste landfill at the end of 2016. See Appendix 1 for capacity breakdown.

2.6 Commercial & Industrial Waste

The WNA Update of December 2015 relied on a value of 1.153 mt at 2013 and extrapolated this forward applying the growth rates in economic activity forecast by the East of England Economic Forecast Model (EEEFM). This resulted in a value of 1.285 million tonnes produced in 2035. On that basis this tonnage was provided for to be managed in order that the overall aspiration of net self-sufficiency scenario to be achieved.

However, the method applied to generate the baseline value applied has now been superseded. The revised baseline value for 2016 is 0.91 mt.[14] Table 4 presents the updated forecast applying the revised baseline through to the end of the Plan period and compares it with the forecast that underpinned provision in the adopted WLP 2017.

Table 4: Forecast C&I Arisings to 2035 (000s) tonnes

Year	2013 Est @ EEEFM	2016 C+I Est@ EEEFM	Diff
2016	1,210	915	-295
2017	1,223	928	-295
2018	1,232	937	-295
2019	1,237	942	-295
2020	1,243	948	-295
2021	1,247	952	-295
2022	1,249	954	-295
2023	1,252	957	-295
2024	1,255	960	-295
2025	1,257	962	-295
2026	1,260	965	-295
2027	1,262	967	-295
2028	1,264	969	-295
2029	1,268	973	-295
2030	1,271	976	-295
2031	1,274	979	-295
2032	1,277	982	-295
2033	1,279	984	-295
2034	1,282	987	-295
2035	1,285	990	-295
Overall Total	**25,127**	**19,227**	**-5,900**

[14] See *Updated Baseline for Commercial & Industrial Waste Generated in Essex & Southend on Sea April 2018* BPP Consulting

2.6.1 Future Management Needs of C & I Waste

The C&I waste stream is not subject to the same statutory management or landfill diversion targets as LACW, however the Landfill Directive is directed at "similar wastes" to household waste and an element of C & I waste may be classed as "similar wastes". In addition, certain waste are targeted, for example Packaging and WEEE. There is however, an expectation that the Plan should seek to move waste up the hierarchy regardless of its source.

Therefore, what potential opportunity might there be to manage this stream up the Waste hierarchy is considered.

2.6.2 C & I Biowaste

The C&I waste stream has been assessed to contain around 13% organic waste.[15] and the adopted WLP 2017 provision was based on the assumption that all such material could be effectively captured for separate treatment. However, this is now considered to be an unrealistic assumption and instead a rate of 10% (or equivalent of 77% capture rate) has been applied. This generates the profile of arising of this material shown in Table 5 based on the above forecast.

Table 5: Forecast Capture of Biowaste Arisings from C&I Waste Stream to 2035 (000s) tonnes

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
C&I Arising Forecast	915	925	932	935	940	943	944	947	949	951	953	954	956	959	961	963	966	967	969	972
Captured Organic Content at 10%	92	92	93	94	94	94	94	95	95	95	95	95	96	96	96	96	97	97	97	97

The peak quantity of biowaste projected to require management within this stream is 97,000 tonnes per annum at 2034 and 2035.

2.6.3 Total Biowaste Provision

When aggregating the organic fraction of C&I with the biowaste fraction of LACW the picture presented in Table 7 and Figure 6 emerges. This shows that if all consented capacity is counted a biowaste treatment capacity shortfall of between 5,000 tonnes per annum at 2016 and 99,000 tonnes per annum in 2035 emerges, with a significant jump occurring at 2022 with the scheduled closure of 2 facilities with time limited consents.

Crumps has consent for 110,000 tpa MRF/IVC but the IVC capacity is reserved for pre treatment of waste prior to landfill (due to proximity of landfill site to Stansted Airport). In addition a green waste IVC of 10,000 tpa is to be built replacing 8,000 tpa current open windrow facility. This is projected to occur at 2019 and at this point the additional 2,000 tonnes of IVC capacity is counted in the non operational consented capacity line of Table 6.

[15] Commercial and Industrial Waste Survey 2009: Final Report, Defra May 2011, Available: http://archive.defra.gov.uk/evidence/statistics/environment/waste/documents/commercial-industrialwaste101216.pdf

Table 6: Projected combined LACW & C&I biowaste management requirement and projected shortfall for Essex & Southend On Sea (000s tonnes)

Line		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
1	C&I Biowaste at 10% Organic Content (Table 6)	92	92	93	94	94	94	94	95	95	95	95	95	96	96	96	96	97	97	97	97
2	LACW Composting (Actual contracted)	176	177	178	179	179	179	180	180	181	181	181	182	182	182	183	183	183	184	184	185
3	**Total Biowaste (line 1+ line 2)**	**268**	**269**	**271**	**273**	**273**	**273**	**274**	**275**	**276**	**276**	**276**	**277**	**278**	**278**	**279**	**279**	**280**	**281**	**281**	**282**
4	Consented Operational Capacity (Table 3)	233	233	233	233	233	233	233	233	233	233	233	233	233	233	233	233	233	233	233	233
5	minus time limited		-20	-20	-28	-28	-28	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90
6	**Total capacity (line 4+line 5)**	**233**	**213**	**213**	**205**	**205**	**205**	**143**	**143**	**143**	**143**	**143**	**143**	**143**	**143**	**143**	**143**	**143**	**143**	**143**	**143**
7	Total shortfall (total Biowaste (line 3) minus Total capacity (line 6)	35	56	58	68	68	68	131	132	133	133	133	134	135	135	136	136	137	138	138	139
8	Consented Non Operational	30	30	30	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
9	**Total shortfall inc consented (line 7 minus line 8)**	**5**	**26**	**28**	**28**	**28**	**28**	**91**	**92**	**93**	**93**	**93**	**94**	**95**	**95**	**96**	**96**	**97**	**98**	**98**	**99**

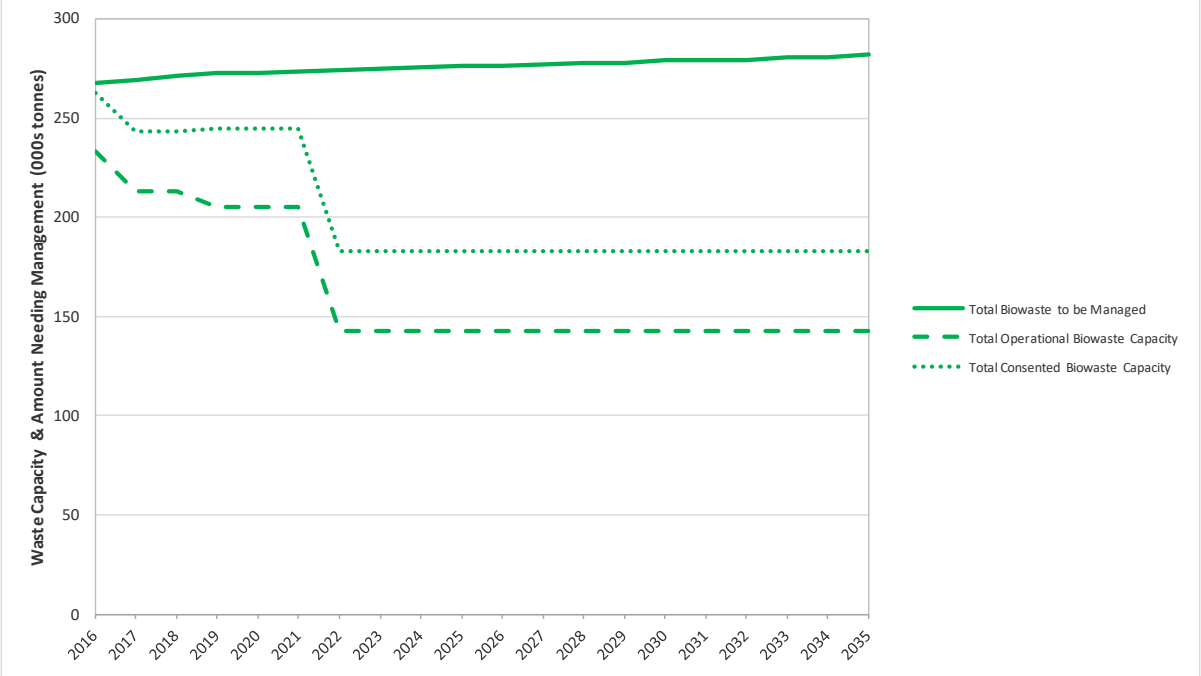

Figure 6: Predicted biowaste arisings vs. operational capacity and consented capacity from 2015 to 2035 (000s tonnes)

2.7 Imports from London

The adopted replacement Waste Local Plan recognises the need to continue to make provision for imports from London, albeit at a reducing rate. This is with the expectation that after 2026, imports of non-hazardous waste to landfill should only be of non-recyclable and non-biodegradable wastes which aligns with Policy 5.16 (Waste net self-sufficiency) of the current London Plan 2016 which seeks the cessation of landfilling of biodegradable or recyclable waste by 2026 (Para 5.71). This Policy aspiration is affirmed in the New London Plan undergoing development at para 9.8.2, with Table 9.3 committing to the cessation of all exports of household and C&I waste by 2026. After this date some provision may also be made for the management of residues suitable for energy recovery at consented plant.

Provision in the adopted Plan was based on the tonnages derived from Duty to Cooperate correspondence[16] with the authorities developing the North London Waste Plan at that time from a baseline value of 20,353 tonnes in 2014. A review of the 2016 data in the WDI for inputs to Plan Area landfill from the authorities producing the North London Waste Plan shows that only 16,206 tonnes was received, so the 2016 value has been amended to reflect this in the modelling. For the purposes of this projection it has been assumed that the imports from London will follow a linear year on year reduction to 2030 after which it will stabilise. This is displayed in Table 7.

Table 7: Projected Imports from North London of C&I waste to the Plan Area (tonnes)

2016	2021	2026	2031
16,206	15,589	13,589	11,882

[16] Letter to Alethea Evans Essex County Council from Archie Onslow dated 18th December 2015 on behalf of NWLP.

2.8 C&I (plus London) Non-Hazardous Waste Management Requirements

Given that the predicted shortfall for residual LACW management is provided for through the plan, Table 8 below shows the running total of non-hazardous C&I waste plus provision for London predicted to require management across the plan period if:

1. the biowaste managed from the C&I waste stream is deducted from the total projected arisings; and
2. the projected imports from North London are added.

Line		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
1	Total Non Haz Arisings	915	925	932	935	940	943	944	947	949	951	953	954	956	959	961	963	966	967	969	972
2	Projected biowaste managed	92	92	93	94	94	94	94	95	95	95	95	95	96	96	96	96	97	97	97	97
3	Residual Non Haz waste to be managed (line 1 minus line 2)	824	832	838	842	846	849	850	852	854	855	858	859	860	863	865	867	869	870	873	875
4	Plus Non haz imports from London	16	16	16	16	16	16	15	15	14	14	14	13	13	12	12	12	12	12	12	12
5	Residual Non haz to be managed (line 3 plus line 4)	**840**	**848**	**854**	**858**	**862**	**864**	**865**	**867**	**868**	**869**	**871**	**872**	**873**	**875**	**877**	**879**	**881**	**882**	**885**	**887**

Table 8: Projected Quantities of Non-Hazardous Waste Requiring Management including imports from North London of C&I waste to the Plan Area (000s tonnes) excluding LACW after biowaste deducted

2.9 C & I Waste Recovery including Recycling

Although there are no explicit recycling or recovery targets for C&I waste, the need to encourage waste to move out of landfill has been taken to be the overriding objective. The predicted non-hazardous waste arisings requiring management in Table 9 has been compared against existing operational and consented but non-operational recycling and other recovery capacity (such as thermal treatment) to get a sense for the size of any capacity gap, should one exist. It should be borne in mind that significant tonnages of LACW and some C&I waste are separately collected and managed either directly by reprocessors or via bulking sites and therefore do not require management through other capacity. However, these have not been taken account of, i.e. deducted from the total, and therefore the assumed capacity requirement can be considered to be a pessimistic assessment.

2.9.1 C & I Waste Capacity Assessment

Total operational consented recycling and recovery management capacity within the Plan Area has been calculated to be just less than 1.36 million tonnes in 2017[17]. Table 9 presents this by facility type.[18]

Table 9: Consented Operational Capacity for facilities providing recovery capacity for C&I waste in the Plan Area (tonnes) as at 31 March 2017

Facility Type	Capacity (tpa)
End of Life Vehicles	405, 401
Metal Recycling	318,003
Materials Recycling /Recovery	626,667
Tyre Recycling	11,110
	1,361,181

Table 9 shows consented operational capacity only. See appendices for the site by site capacities for each facility type. If consented non-operational capacity is also taken into account an additional 933,000 tonnes of landfill diversion/recovery capacity is theoretically available. See Table 10 for the breakdown. .

Table 10: Consented Non-operational Capacity for facilities that may provide landfill diversion/recovery capacity for C&I waste in the Plan Area excluding biowaste capacity(tonnes)

Capacity type	Additional Consented Capacity (tpa)	Notes
Rivenhall Integrated Waste Management Facility	823,000	MBT, MRF, and EfW/CHP with different capacities. Given scope for variation in individual plant capacity, maximum prescribed Condition 29 of planning consent applied Note the 30ktpa for AD counted in biowaste has been deducted from the total
Crumps Farm MRF & IVC	110,000	Consent includes a MRF prior to IVC which together are predicted to reduce the quantity of input waste requiring landfilling by 50% (counted as landfill diversion capacity rather than recovery).
Total	**933,000**	

[17] This value excludes sites identified by the permitting regime as 'waste transfer' at some of which a degree of separation for recycling will undoubtedly be taking place . These sites collectively account for over 1 million tonnes of additional capacity, a proportion of which would count towards C&I waste recycling capacity.

[18] See Appendix 1 for site by site breakdown.

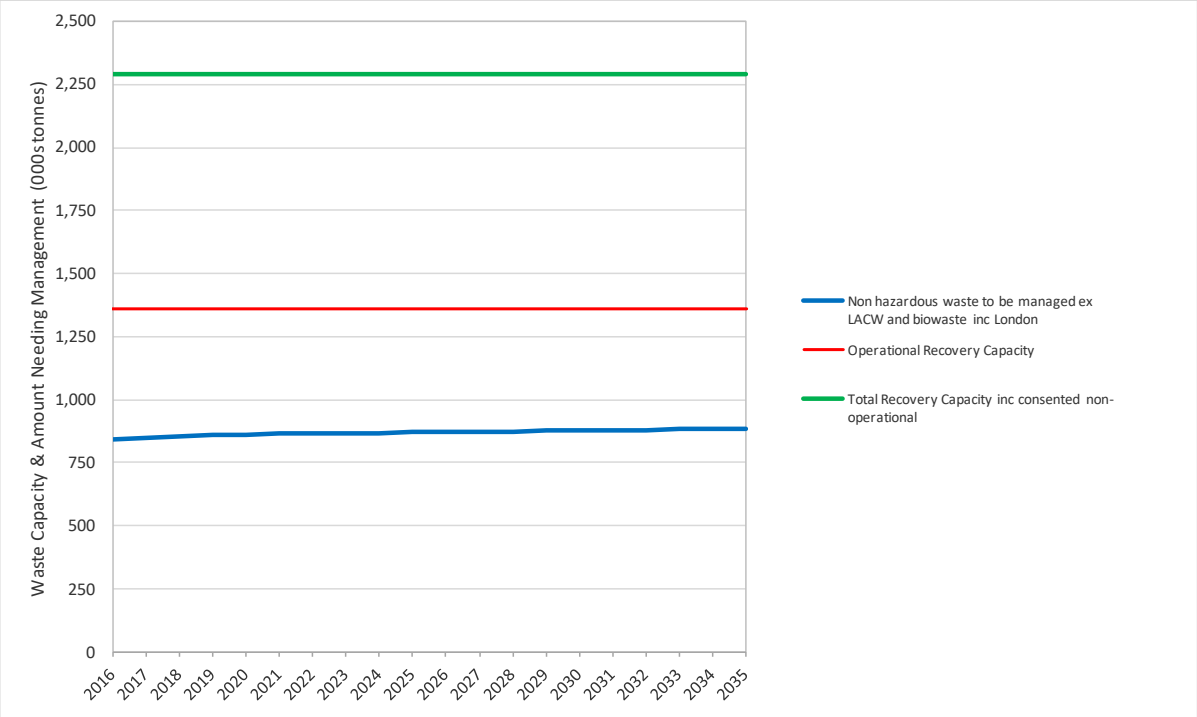

Figure 7: Projected Non-Hazardous Waste Recovery Capacity Gap (inc N London) after biowaste

Figure 7 above assumes that all existing operational capacity will continue to operate throughout the Plan period. There is no evidence to suggest this will not be the case and given the adopted Plan's commitment to safeguarding existing permitted sites, any capacity that may be lost at these sites as a result of 'churn' from redevelopment should be replaced with the equivalent capacity.

2.10 Conclusion – C & I Waste Provision

Comparison between the tonnage of non-hazardous waste requiring management shown in Line 5 Table 9 (0.84 million tonnes at 2017 and 0.89 million tonnes at 2035) and operational consented capacity 1.36mtpa (Table 10) suggests there is no recovery capacity shortfall for non-hazardous waste management throughout the Plan period. This is illustrated in Figure 7 above.

The development of currently non-operational consented capacity, which includes capacity for energy recovery is detailed in Table 11 If the non-operational capacity became operational it would provide a peak projected capacity surplus of 1.454m tonnes at 2017 reducing to 1.408m tonnes at the end of the Plan period.

Appendix 1: Capacity Breakdown

Table A1.1 Operational Consented Organic Waste Treatment Capacity (tpa)
Source: Essex County Council

Facility Type	Site name	Capacity (tonnes per annum)	Totals by Type (tpa)	Total Composting Capacity (tpa)	Total Organic Treatment Capacity (tpa)
Open-Windrow Composting	Stansted Compost	555	139,882	176,154	
	Widdington Pit	15,000			
	Pitsea	46,800			
	Birch Airfield	33,528			
	Ashlyns Organic Farm	25,000			
	Loamylands	5,000			
	Glebe Farm	6,000			
	Crumps Farm	8,000			
In Vessel Composting (green waste only)	Stewards Yard	16,272	16,272		
In Vessel Composting	Pitsea	20,000	20,000		77,000
Anaerobic Digestion	Tamar Bluebridge	45,000	57,000		
	Marsh Farm	12,000			
Total			**233,154**		

Table A1.2 Remaining Non -Hazardous Landfill Void
Source: Environment Agency

Facility name	Remaining Capacity as at 31 March 2016 (cubic metres)	% input 'inert' material
Martells Quarry Landfill (Ria)	65,000	14%
Pitsea Landfill	160,491	56%
Bellhouse Landfill Site	4,458,807	49%
Barling Marsh Landfill	201,0000	91%
Elsenham Landfill	1,709,008	100%
Total void	**4,619,298**	
minus 10% inert	*461,929*	
Total remaining non-haz void	**4,157,369**	

Table A1.3 End of Life Vehicle Sites

Source: Essex County Council

Site name/Location	Operator	Capacity tpa
Hovefield	Total Waste Management	150,000
Buckwyns,	Edwards & Son Ltd	985
Mackers Metals	Charlie McDermott	33,000
Allshots	Allshots Farm	1,850
Cordons Farm	Essex Auto Salvage Ltd	10,000
Morelands	Kevin O'Sullivan	4,596
Brentwood Auto Spares Ltd	Brentwood Auto Spares Ltd	895
Arrow Salvage & Spares Ltd,	C Anderson	188
Stock Auto Breakers,	B Street	3,818
Car Busters	Car busters	1,669
Chase Autos,	T H Loeber & Partners	739
G&L Autospares,	Mr G N & Mrs L K Watchorn	4,898
Autobreak Vehicle Dismantlers	JB & CA Willburn	7,826
Autospares	AJ England	188
BMW Bitz Ltd	BMW Bitz Ltd	120
First Call Renault	Paul David Smith?	5,000
NIRRO	Nirro	800
CWJ Kirby (Metal Merchants)	C W J Kirby (Metal Merchants) Ltd	452
AGT Cars Ltd,	G Price	138
Ace Auto Salvage,	Glenn Sutherland	138
BM Spares,	John Walton	55,875
Buck Rogers Car Breakers,	SJ & JM Rogers	244
Nevendon Cars South East,	AD, AL & PM Brown Motorhog Limited	2,689
Good Companions Garage	Wisbey Andrew	2,065
Roachside Recycling Centre	Roachside Recycling Centre Ltd	7,836
Hockley Vehicle Dismantlers,	A Smith & J Gladwin	2,706
Scrapco Metal Recycling	Scrapco Metal Recycling	22,173
Imperial Metal Recyclers	Imperial Metal Recyclers Ltd	2,197
Userve Ltd	Copart UK	144
Vauxhall & Ford Spares	Caro Eduardo Donald	407
Bottles Hall	John Whiting Ltd	2,521
Vauxhall Performance & Spares Centre	Edward Caro	150
Foundry Yard, Walton the Naze	Tendring Recycling	688
Nationwide Metal Recycling	Nationwide Metal Recycling	26,536
Clacton Car Breakers,	PR & RD Napier	8,000
Martells Quarry	Easco (Wheelers) Ltd (D&J Edwards)	37,735
Harlow Metal Recycling	C, T, A & L Hill	5,143
A1 Walton Salvage	Graham Fuller	644
	Total	**405,401**

Total of listed sites adds up to 405,053t additional tonnage of 348tpa from sites with capacity of 100tpa or less pa not listed.

Table A1.4 Metal Recycling Sites

Source: Essex County Council

Site name	Operator	Capacity (tpa)
EHS Metals Brentwood,	EH Metals Ltd	7,892
Enfield Metals	Enfield Metals Reclamation Co Ltd	736
Essex Batteries	Essex Batteries Limited	548
The Scrap Yard	Brand and Howes Environmental Ltd	75,000
Environ Automotive,	Environ Automotive	2714
SITA Boreham,	SITA	48,302
Auto Body Works,	Auto Body Works	500
Temple Farm, Slessor	C Anderson t/a Temple Farm Salvage	9,379
The Boreham Recycling Centre	European Metal Recycling Ltd	15,977
Green Acres	Colchester Skip Hire	48,000
King Edward Quay,	SITA	39,908
Haven Road TS	Charles Trent Ltd	1087
Randalls Works, Woodside	Total Waste Management Ltd	37,350
Mark's Commercials	M Juniper	1,863
AWA	AWA Refiners Ltd	782
Platinum Batteries	Platinum Batteries (Europe) Limited	479
Olivers Wharf	Brightlingsea Export Terminal	15,309
Pafkin Site	Doe Metal Recycling	300
Lindsell Stores	John Malcolm Lilley	10,000
Clarkes	A Clarke & Sons Ltd	1,798
	Total	**318,003**

Table A1.5 Material Recycling Sites

Site name	Operator	Capacity tpa
Archers Field	Veolia Environmental Services	55,000
Southfields Industrial Estate	Great Bear	9558
Whites Yard, Basildon	Clearaway	25,000
Hallsford Bridge,	P W Keen Ltd	905
Codham Hall Farm	Forefront Utilities Ltd	74,999
Essex Reclamation	Essex Reclamation	45521
Essex Regiment Way/Belsteads Farm	Dunmow Skips	300,000
O-I Glass UK	O-I Manufacturing Ltd	60,135
Green Recycling Quayside Industrial Park	Green Recycling Ltd	45,000
Tavern Garage The Causeway	Alan Wiseman	1,500
Central Cleansing Depot	Southend B Council c/o Cory Environmental	9,049
	Total	**626,667**

Table A1.6 Tyre Recycling Sites

Site name	Operator	Capacity (tpa)
Unit H, Ashtree Farm,	Banner Build Ltd	10,000
Unit 10, Brunel Road, Manor Trading Est,	Anglo Environmental	1,110
	Total	**11,110**