Kent Waste Needs Assessment 2022 Update

Management Requirements for Local Authority Collected Waste in Kent

Report: Post Client Review

Version: 1.1

Issued: 4th November 2022

BPP Consulting Document Control

Project: Kent Waste Needs Assessment 2022 Update

Report: Management Requirements for Local Authority Collected Waste in Kent

Version Description: Post Client Review

Version No: 1.1

Date: 04.11.2022

Version No.	Version Description	Author	Date	Reviewed	Date
0.1	Draft for Partner review	Alan Potter (BPP Partner)	11.08.2022	Ian Blake (BPP Partner)	26.08.22
1.0	Draft for KCC review	Alan Potter (BPP Partner)	05.09.2022	Dave Beaver (KCC WDA Reviewer) *& Bryan Geake (Client Contact)*	09.09.2022 & 3.11.2022
1.1	Post Client review	Alan Potter (BPP Partner)	04.11.2022		
1.2	Post Consultation	Alan Potter			

Table of Contents

1 Introduction 1

1.1 Definitions 1

2 Current Arisings and Management Profile of LACW Arising in Kent 2

2.1 Current Arisings of LACW in Kent 2

2.2 Current Management Profile of LACW in Kent 2

2.3 Collection & Management Contracts 3

2.3.1 KCC Management Contracts - Residual Waste 3

2.3.2 KCC Management Contracts - Recycling & Composting 4

2.3.1 KCC Management Contracts - Organic Waste 5

2.3.2 WCA Collection Contracts 5

2.4 2012 Joint Municipal Waste Management Strategy Update 6

2.5 KCC Waste Disposal Strategy 2017-2035 6

3 Forecasting Future Arisings of LACW in Kent 8

3.1 Kent Minerals & Waste Local Plan's Forecast for LACW 8

3.2 Historical Pattern of LACW Arisings in Kent 9

3.3 Planning Practice Guidance 11

3.4 Joint Municipal Waste Management Strategy for Kent 11

3.5 KCC Waste Disposal Strategy 2017-2035 11

3.6 LACW Growth Prediction 12

3.7 National Analysis of Future Household Waste Growth 15

3.8 Building A Growth Profile 16

3.8.1 Conclusion 19

3.8.2 Comparison to adopted Plan forecast 19

3.9 Derivation of New Management Targets to 2040 20

Table of Tables

Table 1 : Transfer Stations receiving LACW sent on to Allington EFW facility 3

Table 2 : Current LACW Contract for Alternative Treatment 4

Table 3: Current LACW Contract Capacities: Recycling Contracts (Tonnes per annum (tpa)) 4

Table 4: Current Contract Capacities: Organic Waste Contracts (Tonnes per annum (tpa)) 5

Table 5: LACW Organic Waste Delivery Routes 5

Table 6: KMWLP Forecast for Kent LACW Arisings 8

Table 7: Factors that may impact LACW Arisings 10

Table 8: Adopted Plan Forecast Arisings (Tonnes) vs. Baseline using Actual arisings value applying adopted Plan Growth Rates for Kent LACW Arisings 10

Table 9: Timing of Service Changes by Kent WCAs that might impact on Collected Household Waste Arisings 14

Table 10: DEFRA National LACW Forecast 5-year Growth Rates 16

Table 11: Forecast LACW arisings each year using the adjusted Plan forecast (tonnes) 19

Table 12: Forecast Quantities for Kent LACW Arisings Adopted Plan Forecast vs Adjusted 19

Table 13: Household Waste Management Targets as per the JMWMS 20

Table 14: Proposed Targets for LACW Management in Kent 21

Table 15: Projected Management Requirements for Adjusted LACW Forecast for Kent 21

Table 16: Projected Peak and Cumulative Management Requirements in Adopted Plan forecast vs Adjusted LACW forecast 21

Table of Figures

Figure 1: Kent LACW Management Profile 2010-11 – 2020-21 3

Figure 2: Trend in LACW Arisings 2010/11 to 2020/21 9

Figure 3: Total LACW arisings (columns) vs population (orange line) 2010/11 to 2020/21 12

Figure 4: Central Local Authority Collected Waste Arisings Forecast for England (2020-2050)..... 15

Figure 5: Projected LACW arisings per person in Kent 2010/11 to 2020/21 17

Figure 6: 'Cone of Possibilities' for Forecast Plan Area LACW Arisings (tonnes per annum) 18

Abbreviations and Glossary

Abbreviations

AD	Anaerobic Digestion
DEFRA	Department for Environment, Food and Rural Affairs
EA	Environment Agency
EfW	Energy from Waste
EWC	European Waste Catalogue
HWRC	Household Waste Recycling Centre
JMWMS	Joint Municipal Waste Management Strategy
LACW	Local Authority Collected Waste
MRF	Material Recycling Facility
MSW	Municipal Solid Waste
RDF	Refuse Derived Fuel
WCA	Waste Collection Authority
WDA	Waste Disposal Authority
WEEE	Waste Electrical & Electronic Equipment
WNA	Waste Needs Assessment
WPA	Waste Planning Authority

Glossary of Terms

Anaerobic Digestion	A process involving the decomposition of biodegradable and putrescible matter including green waste and food waste within a vessel to produce biogas and nutrient rich solid or liquid (digestate). The biogas can be used to generate energy or to power vehicles, and digestate can be applied to land as a fertiliser.
Commercial Waste	Waste arising from premises which are used wholly or mainly for trade, business, sport, recreation or entertainment, excluding household and industrial waste.
Composting	A process in which biodegradable waste (such as green waste and kitchen waste) is broken down in aerobic conditions by naturally occurring micro-organisms to produce a material suitable for use as a soil improver.
DEFRA	The UK Government department responsible for developing national waste management policy
Energy from Waste	The conversion of the calorific value of waste into energy, normally heat or electricity through applying thermal treatment of some sort.
Environment Agency	The body responsible for the regulation of waste management activities through issuing permits to control activities that handle or produce waste. It also provides up-to-date information on waste management matters and deals with other matters such as water issues including flood protection.
European Waste Catalogue (EWC)	Comprehensive listing of wastes, divided into 20 chapters, most of which are industry-based, although some are based on materials and processes. Each waste type is assigned a unique six-digit code.
Green waste	Biodegradable plant waste from gardens and parks such as grass or flower cuttings and hedge trimmings, from domestic and commercial sources suitable for subjecting to composting.
Hazardous Waste	Waste requiring special management under the Hazardous Waste Regulations 2005 due to it posing potential risk to public health or the environment (when improperly treated, stored, transported or disposed). This can be due to the quantity, concentration, or characteristics of the waste.
Household Waste	Waste from households collected through kerbside rounds, bulky items collected from households and waste delivered by householders to household waste recycling centres and "bring recycling sites" along with waste from street sweepings, and public litter bins. A sub-category of Local Authority Collected Waste.
Household Waste Recycling Centres	A facility that is available to the public to deposit waste not collected through kerbside collection (sometimes known as a civic amenity site).
Industrial Waste	Waste arising from any factory and from any premises occupied by an industry (excluding mines and quarries).
Joint Municipal Waste Management Strategy	A strategy developed by Kent County Council as Waste Disposal Authority in conjunction with the 12 Waste Collection Authorities in Kent. It presents a fifteen year plan for the future of recycling and management of municipal waste arising in the county.
Kerbside Collection	The collection of materials and waste at the point of their production from households, or occasionally industrial and commercial premises.
Landfill (including land raising)	The permanent disposal of waste to land, by the filling of voids or similar features, or the construction of landforms above ground level (land-raising).
Landfill Directive	Retained European Union legislation restricting the landfilling of biodegradable municipal waste and requiring pre treatment of all waste to be landfilled and separate disposal of hazardous, and non hazardous and inert wastes.
Local Authority Collected Waste	All waste collected by a local authority. Includes household waste and business waste where collected by a local authority plus non household fractions such as construction and demolition waste. LACW is the definition used in statistical publications, which previously referred to municipal waste.
Materials Recycling Facility (MRF)	A facility for sorting recyclable materials from the incoming waste stream.

Municipal Waste (MSW)	Term used to capture LACW plus waste that has a similar composition arising from businesses.
Organic Waste Treatment	Processes involving the decomposition of biodegradable and putrescible matter including green waste and food waste either by aerobic processes i.e., composting, or anaerobic processes i.e., digestion.
Open Windrow Composting	A process in which biodegradable waste (such as green waste and kitchen waste) is broken down in an open air environment (aerobic conditions) by naturally occurring micro-organisms to produce a material suitable for use as a soil improver.
Other Recovery	Processes that recover value from waste such as thermal treatment to recover energy. Lower than recycling or composting on the waste hierarchy.
Recovery	Term to cover any process that recovers value from waste including recycling, composting or thermal treatment to recover energy.
Recycling	The collection, storage and reprocessing of materials extracted from the waste stream either into the same product or a different one.
Refuse Derived Fuel	Fuel produced from the combustible component of municipal solid waste (MSW).
Residual Waste	Waste remaining after materials for reuse, recycling and composting/organic waste treatment e.g., anaerobic digestion have been removed.
Reuse	The action of using an item again for its original purpose or for a different function.
Waste Collection Authority (WCA)	A local authority that has a duty to collect household waste (LACW). They also have a duty to collect commercial waste if requested to do so and may also collect industrial waste. Each of the 12 Borough, City and District Councils in Kent is a Waste Collection Authority.
Waste Disposal Authority (WDA)	A local authority responsible for managing the waste collected by councils acting as waste collection authorities and the provision of household waste recycling centres. In this case Kent County Council
Waste Electrical & Electronic Equipment	Waste Electrical and Electronic Equipment required to be collected for recycling under to the relevant Regulations.
Waste Planning Authority (WPA)	The local authority responsible for waste development planning. In this case Kent County Council
Waste Transfer Station	A site to which waste is delivered for bulking prior to transfer to another place for further processing or disposal.

1 Introduction

This report forms a series of reports which make up the Kent Waste Needs Assessment 2022 (WNA). The WNA is intended to assess the need for waste management capacity in Kent over the period to 2040. The WNA informs updates to minerals and waste planning policy, set out in the Kent Minerals and Waste Local Plan, which are currently being prepared by Kent County Council. Other reports in the series cover the following matters:

- Commercial and Industrial (C&I) Waste;
- Local Authority Collected Waste (LACW);
- Construction, Demolition and Excavation (C, D & E) Waste; and
- Hazardous Waste.

This report considers the future requirements for the management of Local Authority Collected Waste (LACW) in Kent over the period 2023 to 2040[1] taking into account the following:

- Latest recorded arisings of LACW in 2020;
- current forecast in the adopted Kent Minerals and Waste Local Plan (2019);
- Planning Practice Guidance Growth Profiles (short term and long term);
- government national forecasts for LACW arisings in England;
- historical Pattern of LACW Arisings in Kent;
- Joint Municipal Waste Management Strategy for Kent; and,
- KCC Waste Disposal Strategy 2017-2035

1.1 Definitions

The meaning of abbreviations and terms used in this report are set out in the section above, however special attention needs to be given to the meaning of the term LACW.

LACW includes waste collected from homes (collected household waste) and waste deposited at Household Waste Recycling Centres (HWRCs) plus commercial waste collected by district and borough councils, street sweepings, litter and fly tipped materials. In general, the non-household waste fraction of LACW represents around 5% of the total collected arisings.

While the adopted Kent Minerals and Waste Local Plan (KMWLP) uses the term 'Municipal Solid Waste' to mean LACW, this report uses the term LACW as updates are being made to the KMWLP that replace use of the term MSW with LACW to align with national definitions. It should be noted that the term municipal waste now captures all LACW plus similar waste that may arise from businesses i.e., in C&I streams.

[1] While the proposed Plan period end at 2038, 2040/41 has been used in this exercise for comparability with the adopted plan and retain milestone periods of 5 years. The values for 2038 will fall somewhere between those shown for 2035/36 and 2040/41 and are specified where critical.

2 Current Arisings and Management Profile of LACW Arising in Kent

2.1 Current Arisings of LACW in Kent

In 2020/21 Kent generated:

- 678,893 tonnes of LACW.
  - 44% of this was recycled or composted.
- Of this tonnage 673,331 tonnes or 99% was classed as household waste.
  - 44% of this was recycled or composted with a 59:41 split.
- Non household waste accounts for the remaining tonnage of 5,562 tonnes
  - 49% of this was recycled or composted

In contrast to other waste streams the quantities of waste collected by or on behalf of local authorities in England are recorded and reported publicly using an online portal called WasteDataFlow (WDF).[2] In areas where there are two tier authorities (as is the case of Kent) data is entered both for the Waste Collection Authorities (WCAs) and the Waste Disposal Authority (WDA). Care needs to be taken when aggregating the data to avoid double counting between the datasets. In addition, data in WDF relates both to Household Waste (collected household waste plus waste collected at HWRC's) and LACW which includes elements of waste generated by Councils themselves, plus some schools, care homes, prisons and some commercial waste.

It should also be noted that the data relates to waste collected and managed by local authorities and so waste such as that managed by householders themselves e.g., by home composting or bonfires, is not counted in the total. However, that is considered to represent a very small amount of the total and as such would not significantly influence waste planning policy.

2.2 Current Management Profile of LACW in Kent

Figure 1 shows how the management profile for Kent's LACW has changed over time with the quantity sent to landfill averaging 2% from 2017-18 to 2020-21 while the quantity sent to incineration with Energy from Waste (EfW) has increased to just less than 55% in 2020-21. The quantity managed through incineration with EfW is significantly greater than that recycled/composted which stood at 44% in 2020-21. It is notable that in recent years there has been a drop in total arisings from 2018-19 to 2020-21.

[2] WasteDataFlow serves as the data collection system for the current DEFRA Municipal Waste Management Survey in England and similar surveys in Wales, Northern Ireland, and Scotland. Information is entered by local authorities in response to the individual questions in WasteDataFlow on a quarterly basis in England and the data are validated by the WasteDataFlow team and the Environment Agency. It can be accessed at http://www.wastedataflow.org/

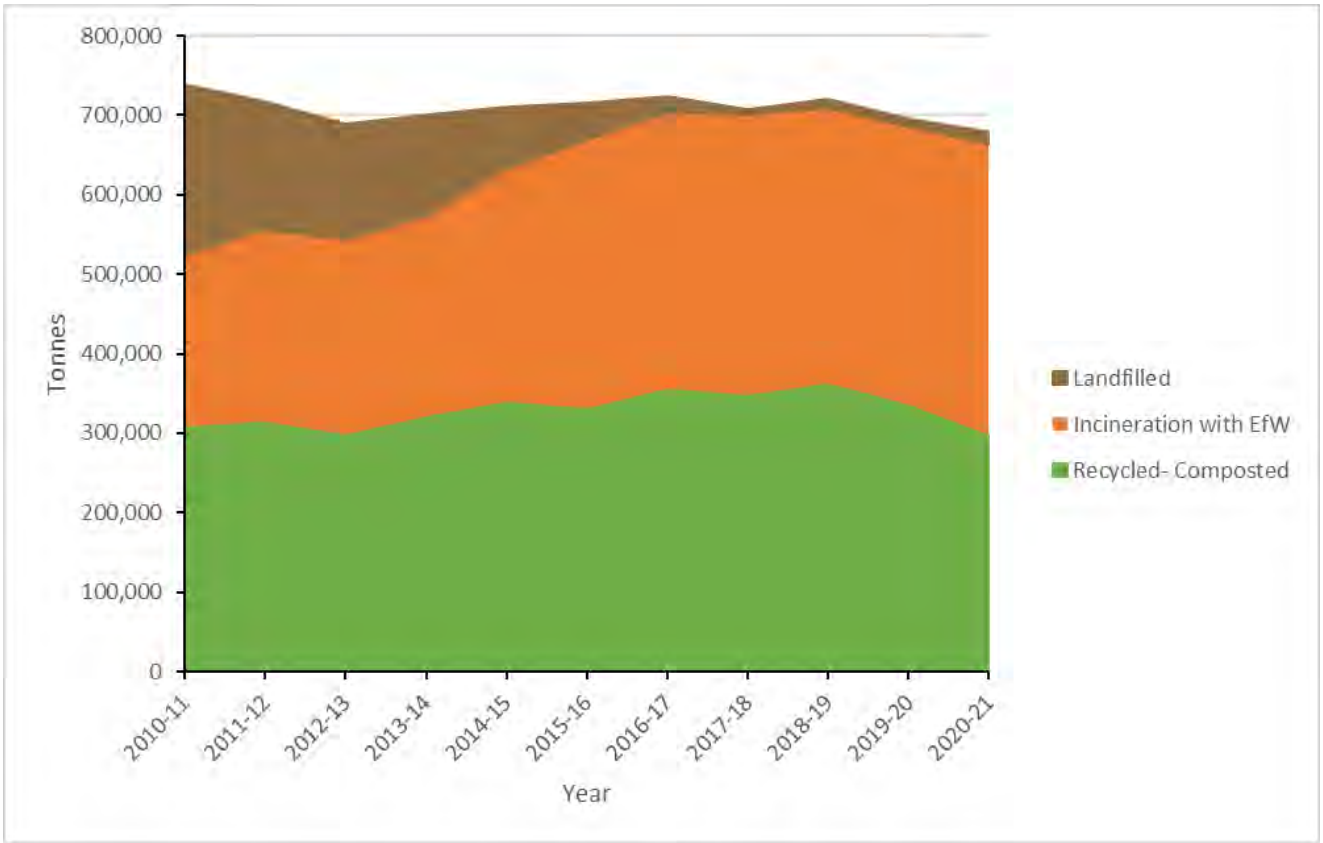

Figure 1: Kent LACW Management Profile 2010-11 – 2020-21
Source: DEFRA

2.3 Collection & Management Contracts

Existing and future management arrangements for LACW in Kent are primarily dictated by contracts for the collection and management of LACW put in place by Kent County Council (KCC) as the Waste Disposal Authority working with the district and borough Kent Waste Collection Authorities.

2.3.1 KCC Management Contracts - Residual Waste

The shift from landfill to incineration with EfW for the management of residual waste (as shown in Figure 1) is largely attributable to a WDA contract to supply LACW to the Allington Energy from Waste Facility (operated by Kent Enviropower Ltd). The first full year of operation for Allington was 2011/12 and the current contract underpins KCC's management of LACW until at least 2030. The current contract with Allington allows the County Council to deliver up to 374,000 tonnes per annum of LACW to the plant. This is delivered via a network of seven transfer stations located in Kent and, in the case of Maidstone, through direct delivery. The transfer stations are listed in Table 1 below.

Table 1 : Transfer Stations receiving LACW sent on to Allington EFW facility

Transfer Station	Host District Council	District Councils Served

Pepperhill	Gravesham	Gravesham & Dartford
Dunbrik	Sevenoaks	Sevenoaks
North Farm	Tunbridge Wells	Tunbridge Wells Tonbridge & Malling
Church Marshes	Swale	Swale
Ashford WTS	Ashford	Ashford & Shepway
Ling Metals	Canterbury	Canterbury & Thanet
Whitfield	Dover	Dover & Shepway

KCC also has 'alternative treatment contracts' that require the contracted providers to take LACW previously sent to landfill (e.g., bulky waste) and recycle and reuse it as far as possible, with the remainder being shredded and baled for Refuse Derived Fuel (RDF). None of these contracts are subject to minimum or maximum quantities and all three relate to providers with facilities located within Kent.

Table 2 : Current LACW Contract for Alternative Treatment

Contract	Site/ Operator	End Date
West Kent	Ridham: Countrystyle (predom. RDF)	2023
Mid Kent and East Kent (part)	Ridham: Countrystyle (predom. RDF)	2023
East Kent (part)	Hersden: Veolia PLC (predom. EfW)	2023

2.3.2 KCC Management Contracts - Recycling & Composting

To ensure reuse, recycling and composting of LACW is maximised in accordance with the waste hierarchy, KCC also has numerous contracts with recycling contractors for Community Recycling Centres (CRCs) and kerbside collected waste. Where possible this waste is sent to facilities within Kent. Examples of the main recycling and composting contracts established by KCC for the management of LACW arisings are listed in Table 3 below.

Table 3: Current LACW Contract Capacities: Recycling Contracts (Tonnes per annum (tpa))

Material	Site/ Operator	End Date
Mixed Dry Recycling	Crayford: N+P	2024
Wood Waste Recycling	Countrystyle	2028

An alternative management route for recyclable material is direct delivery to 'reprocessors', where it is used as a feedstock to displace virgin materials e.g., waste paper in place of wood pulp in paper manufacture. Where possible the County Council aims to send material to reprocessors within Kent. For example, paper and card from the CRCs in West Kent is sent to a card mill in Snodland. Arrangements for some recyclable materials involve management outside the County, as reprocessors with the ability to process certain types of recyclable materials do not exist in Kent. Provision of such strategic reprocessing capacity is normally beyond the scope of the waste planning system and is instead addressed as general industrial infrastructure.

2.3.1 KCC Management Contracts - Organic Waste

Several contracts are in place for the management of organic waste and all separately collected organic LACW is managed at Blaise Farm (New Earth Solutions) or Hope Farm (Countrystyle) as shown in Table 4 below.

Table 4: Current Contract Capacities: Organic Waste Contracts (Tonnes per annum (tpa))

Material	Site/ Operator	Maximum	End Date
Green Waste Composting (East Kent)	Hope Farm: Countrystyle	N/A	2026
Green Waste Composting (West Kent)	Blaise Farm: New Earth Solutions Kent Ltd	16,700 tpa (1,391 tpcm[3])	
Green Waste Composting (Mid Kent)		16,700 p.a (1,391 tpcm)	
Green Waste Composting (South West Kent)		*30,000 tpa*[4]	2024 (option to extend to 2029)
Food Waste from all WCAs other than Sevenoaks and Dartford		*N/A*[5]	2045

The routes by which the organic waste is delivered to the target facilities are detailed in Table 5 below.

Table 5: LACW Organic Waste Delivery Routes

Destination	WCA Served	Delivery Route
Blaise Farm	Gravesham & Dartford	Via Pepperhill WTS
	Sevenoaks	Via Dunbrik WTS
	Tunbridge Wells	Via North Farm WTS
	Swale	Via Church Marshes WTS
	Ashford/ Folkestone & Hythe	Via Ashford WTS
	Tonbridge & Malling/ Maidstone	Direct
	Canterbury & Thanet	Via Ling Hersden WTS
	Dover / Shepway	via Thanet Waste Services
Hope Farm (Green only)	Canterbury & Thanet	Via Ling Hersden WTS
	Dover / Shepway	Direct

2.3.2 WCA Collection Contracts

Within Kent, there are currently a variety of waste collection contracts in place with partnering agreements with KCC as WDA as follows:

- Folkestone and Hythe District Council, and Dover District Council, have a joint contract with Veolia until 2028
- Canterbury City Council, has a contract with Caneco until 2028.
- Sevenoaks District Council and Thanet District Council deliver the service through their DLOs.

[3] tcpm = tonnes per calendar month
[4] value set when cardboard and food was also delivered.
[5] current actuals c27,000tpa may increase to 35,000tpa.

- Dartford District Council has a contract with Urbaser until 2024.
- the Mid-Kent Joint Waste Partnership between Ashford District Council, Maidstone Borough Council, and Swale District Council. This has a contract with Biffa until 2023
- the West Kent Joint Waste Partnership, between, Tonbridge & Malling District Council, and Tunbridge Wells Borough Council. This has a contract with Urbaser until 2026.

The Kent Resource Partnership is a partnership between all the district councils and KCC, but has no powers to enter into contracts.

2.4 2012 Joint Municipal Waste Management Strategy Update

The JMWMS was updated by the Kent Resource Partnership in 2012 for the term 2012/13 to 2021/21.[6] This committed the members of the Kent Resource Partnership to, amongst other targets by 2020/21 to reduce household waste arisings by at least 10% (based on 2010/11 levels); recycle/compost at least 50%; and send no more than 5% to landfill with a stated ambition to get as close to zero untreated waste to landfill as possible.

In terms of actual performance:

- while the quantity of household waste arisings did fall between 2010/11 and 2015/16 the reduction was just less than 3% rather than the 5% target
- recycling /composting only stands at 44%;
- less than 2% of LACW is sent to landfill.

2.5 KCC Waste Disposal Strategy 2017-2035

In 2017, Kent County Council adopted a Waste Disposal Strategy for the period 2017-2035. This Strategy presents the overall 'ambition' for Kent County Council as the Waste Disposal Authority up to 2035 and is intended to inform *"major parts of the KJMWMS itself"*. It identifies six priorities to achieve the stated ambition *"to deliver a high quality household waste disposal service, whilst remaining cost-effective for the people of Kent, with an emphasis on waste reduction, reuse, recycling and achieving zero landfill"*

Within each priority, specific objectives are identified. The priorities and objectives of most relevance to the provision of management capacity for LACW are reproduced below:

- Priority 1 The Environment: We will deliver services which mitigate impacts on or from the environment and climate change.
- Objective B: Maximise reuse and recycling and eliminate waste to landfill in accordance with the Waste Hierarchy.
- Priority 3 Innovation and Change: The services we design and provide will be resilient through accommodating change and growth.

Waste Disposal Sites:

[6] The 2012 document committed to a refresher of the JMWS in 2016/17 and 2021/22; "or at any other times as agreed by the KRP; or in accordance with any changes in legislation relating to such strategies."

- Objective A: Ensure we have the capacity needed to deal with Kent's household waste, with final disposal points located where the evidence shows they need to be.
- Objective B: Household Waste Recycling Centres and Waste Transfer Stations will be located where the evidence shows they need to be.
- Objective C: Use technologies to ensure waste materials are recycled and reused in the most efficient and effective way, whilst ensuring minimal impacts on the environment.

3 Forecasting Future Arisings of LACW in Kent

The following matters have been taken into account in projecting future LACW arisings in Kent over the Plan period:

- LACW forecast in the adopted Kent Minerals & Waste Local Plan (2020);
- Existing and historical LACW arisings in Kent;
- Planning Practice Guidance on estimating LACW growth;
- National forecasts;
- Joint Municipal Waste Management Strategy for Kent;
- KCC Waste Disposal Strategy 2017-2035.

These are discussed below.

3.1 Kent Minerals & Waste Local Plan's Forecast for LACW

The conclusions on LACW capacity requirements in the adopted Kent Minerals & Waste Local Plan (KMWLP) (September 2020) were based on evidence published in *'Updated Management Requirement for Local Authority Collected Waste Generated in Kent'*[7] in November 2017. This report adopted a pattern of growth based on the national growth rate of 0.2% per annum published in a report prepared by DEFRA in 2014[8].

The 2015/16 baseline value for LACW arisings was recorded as 717,628 tonnes and applying the growth rate of 0.2% per annum predicted quantities of LACW in the Plan milestone years shown in Table 6 below.

Table 6: KMWLP Forecast for Kent LACW Arisings

	Milestone Year			
	2015/16	**2020/21**	**2025/26**	**2030/31**
Plan Forecast Arisings	717,628	724,833	732,111	739,461
Increase in tonnage on previous plan milestone	-	7,205	7,278	7,350

The difference between the values at each of the Plan milestone years is also shown in Table 6 above.

[7] Management requirements updated in *Capacity Requirement for the Management of Residual Non-Hazardous Waste* (September 2018., BPP Consulting).

[8] *'Forecasting 2020 Waste Arisings and Treatment Capacity'* Revised October 2014 Report DEFRA (Analysis to inform the review of DEFRA financial support for the Hertfordshire County Council residual waste treatment project).

3.2 Historical Pattern of LACW Arisings in Kent

The continued applicability of the adopted KMWLP forecast can be tested by considering the pattern observed in actual arisings of Kent LACW. Figure 2 below shows that although the KMWLP predicted a growth in arisings over the plan period, an overall declining trend in LACW arisings over the past decade from 2010/11 to 2020/21 has in fact occurred.

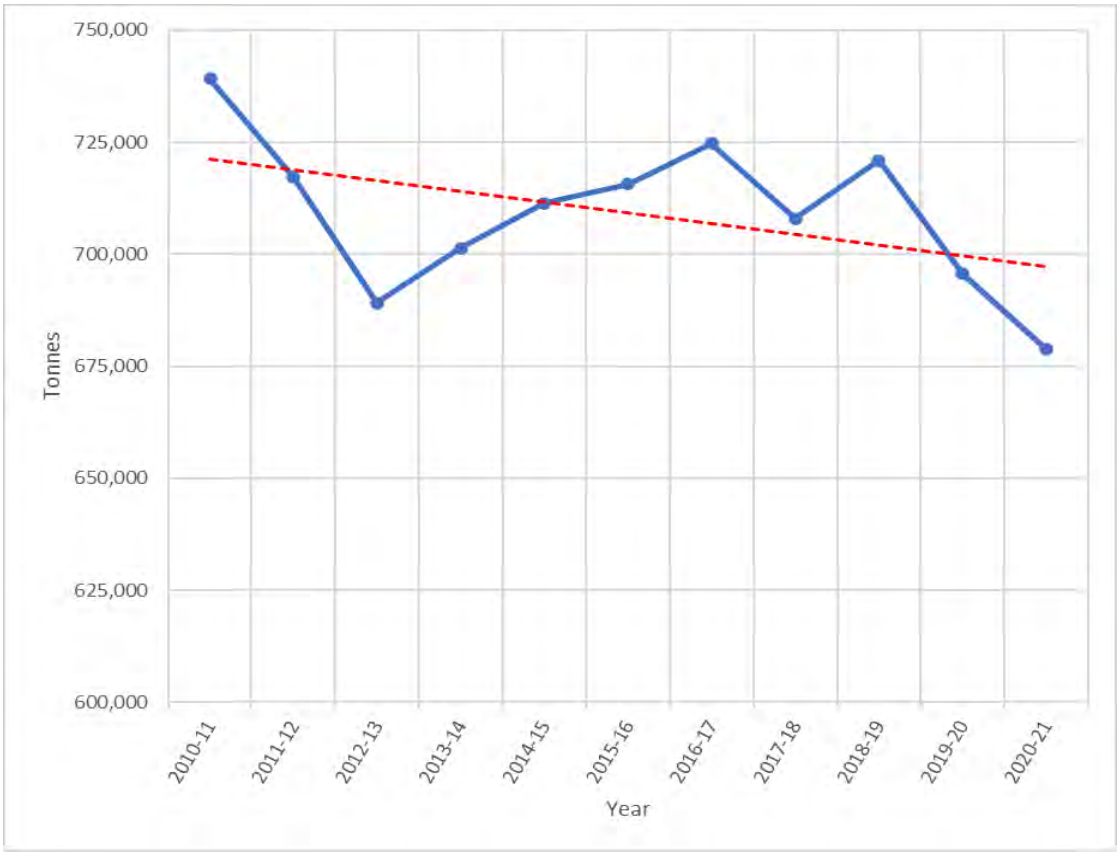

Figure 2: Trend in LACW Arisings 2010/11 to 2020/21

(Dashed red line is trend line that indicates a compound annual growth rate of minus 0.82% over the period + NB: y axis not to zero)

Data for LACW arisings in Kent (shown above) shows a consistent decline in arisings in the first 3 years followed by a rise for 4 years until 2016/17. This is followed by a dip in arisings in 2017/18 and then a return back to similar arisings in 2018/19. The last 2 years have shown a decline in arisings.

The declining trend reflects a general effort made by the County Council to exert downward pressure on arisings involving a combination of initiatives including changes in service provision concerning kerbside collections and Community Recycling Centres (CRC). For example, the introduction of tighter controls at CRCs on inputs of trade waste will have resulted in a reduction of waste being collected from these sites – this reduction will be maintained providing enforcement remains effective. Similarly, moves to alternate weekly collections for residual waste have been shown to result in reductions in such waste set out for collection by householders.

Table 7 below shows how particular service changes may affect the baseline level of LACW arisings and whether they would be expected to have a 'one-off' effect after which the baseline indicated would

return to 'normal' or whether they have an effect of resetting the baseline from which future trends should be measured.

Table 7: Factors that may impact LACW Arisings

	Measure/Event	Direction of Effect	Predicted Impact on Baseline
1	Trade Waste Ban at CRC via van permit scheme and resident only scheme	Reduction in CRC waste	Baseline reset
2	Expansion of kerbside Green waste collection)	Rise in green waste	Baseline reset
3	Kerbside Food Waste Collection	Reduction in overall quantity of food waste	Baseline reset
4	Alternate Weekly collection	Reduction in overall quantity of residual waste	Baseline reset
5	Drought/hot summer	Reduction in overall quantity of green waste	One-off and bounce back
6	Recession	Reduction overall although some increase in DIY waste	One-off and bounce back

Note for the year 2020, factors 5 and 6 are relevant, therefore it may be expected that the overall baseline value is reduced but may bounce back in subsequent years.

A review of service changes introduced in Kent by each WCA has been undertaken and this is presented in detail in Table 9.

Updating Plan Forecast Baseline
As a minimum, the Plan Forecast Baseline ought to be updated to reflect the latest data.

Table 8 below shows the difference between using a baseline value based on the actual 2020/21 arisings (678,893t) compared the previous Plan forecast (724,833t) on the predicted management capacity requirement in the milestone years up to 2030/31, 2030/31 marking the end of the Plan period of the adopted Plan.

Table 8: Adopted Plan Forecast Arisings (Tonnes) vs. Baseline using Actual arisings value applying adopted Plan Growth Rates for Kent LACW Arisings

	Baseline year	Milestone Years	
	2020/21	2025/26	2030/31
Plan Growth Rates per annum (%)		0.2	0.2
Adopted Plan Forecast Arisings (Tonnes)	724,833	732,111	739,461
Adjusted Forecast Arisings (actual 2020/21 arisings) (Tonnes)	678,893	685,709	692,594
Difference	-45,940	-46,402	-46,867

In light of the above and given DEFRA have published a more recent national forecast for LACW arisings, it is considered that the forecast of future LACW arisings ought to be updated to reflect the actual arisings value of 2020/21 and the most current national forecast for LACW. Moreover, the Plan period is to be extended to 2038.

3.3 Planning Practice Guidance

The government's Planning Practice Guidance (PPG)[9] states the following in relation to forecasting future arisings:

"How should waste planning authorities forecast future municipal waste arisings?

Forecasts of future municipal waste arisings are normally central to the development of Municipal Waste Management Strategies.

It will be helpful to examine municipal waste arisings according to source (i.e., household collections, civic amenity site wastes, trade waste etc.). This may allow growth to be attributed to particular factors and to inform future forecasts.

A 'growth profile', setting out the assumed rate of change in waste arisings may be a useful starting point for forecasting municipal waste arisings. The growth profile should be based on two factors:

- *household or population growth; and*
- *waste arisings per household or per capita.*

How is a growth profile prepared?

A growth profile is prepared through a staged process:

- *calculate arisings per head by dividing annual arisings by population or household data to establish short- and long-term average annual growth rates per household and*
- *factor in a range of different scenarios, e.g., constant rate of growth, progressively lowering growth rates due to waste minimisation initiatives.*

The final forecast can then be modelled with scenarios based on the long- and short-term rate of growth per household, together with household forecasts."

It is notable that the above examples of growth scenarios refer to either a constant rate or lowering of growth rates i.e., there is no mention of the possibility of a rising growth rate, from which it may be implied that the Government does not anticipate increasing growth in LACW being used as an appropriate scenario for modelling.

3.4 Joint Municipal Waste Management Strategy for Kent

While the PPG points towards the Municipal Waste Management Strategy as the primary source of forecasts for this stream since the latest *Kent Joint Municipal Waste Management Strategy (2005/06 to 2024/25)* (JMWMS) has been superseded, and the forecasts have not been updated, the JMWMS has not be used to establish LACW growth rates.

3.5 KCC Waste Disposal Strategy 2017-2035

The Kent County Council (KCC) Waste Disposal Strategy for the period 2017-2035 presents a forecast based on an assumption that annual waste arising per household (of 1.09 tonnes/hh/annum) remains constant but growth in arisings occurs in line with the projected growth rate in the total number of households in Kent of 22% between 2015 and 2031.

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

3.6 LACW Growth Prediction

As shown in Figure 3 below, the population of Kent has been increasing steadily by an average of 0.91% per annum over the last decade[10]. Over the same time period, total LACW arisings have fluctuated. While the growth in arisings (average growth 1.27%) correlated with population growth between 2012/13 and 2016/17 (average growth 0.99%), this correlation disappears in the subsequent years following a decline in total LACW arisings by an average of minus 1.60%.

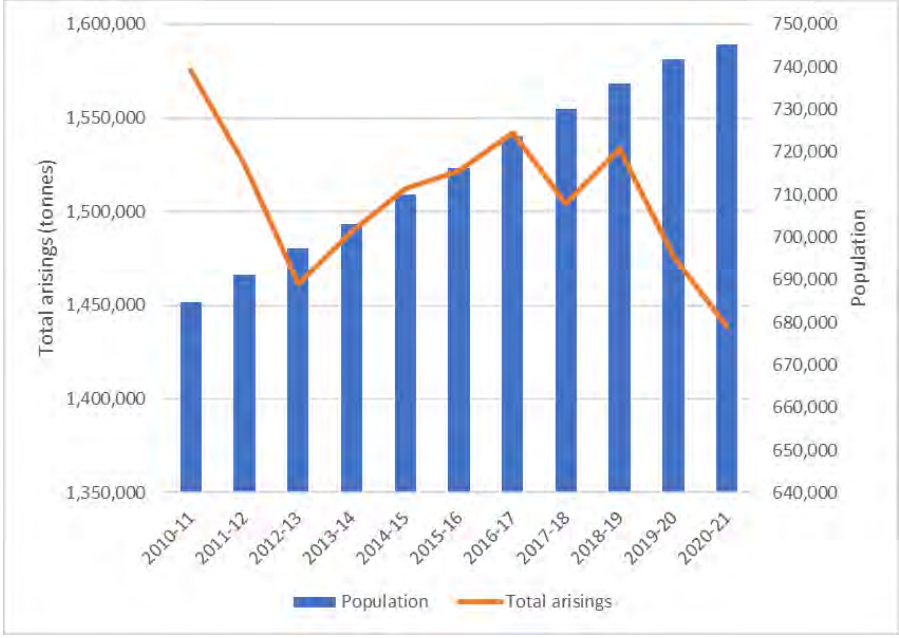

Figure 3: Total LACW arisings (columns) vs population (orange line) 2010/11 to 2020/21

This suggests that a growth profile based on the assumption that there is a linear relationship between growth in population and growth in household waste is an inappropriate basis for modelling future LACW arisings when planning for waste in Kent.

The recorded fall in arisings may be attributable to the introduction of service changes which reset the baseline from which future trends might be measured (as discussed in section 3.1.1 above). In order to establish the confounding effect service changes may have had on arisings, a review of service changes introduced by the WCAs in Kent has been undertaken. The results of this are shown in Table 9 below.

When considered over the period of arisings data displayed in Figure 3 (2010/1-2020/21) it shows that:

1. 6 WCAs had introduced alternate weekly collection for residual waste by 2011/12.
2. 1 WCA introduced alternate weekly collection for residual waste in 2013.
3. 1 WCA introduced alternate weekly collection for residual waste in 2017.

[10] Statistical Bulletin, July 2021: 2020 Mid-Year Population Estimates: Total Population of Kent authorities (Office for National Statistics).

4. 2 WCAs have yet to introduce alternate weekly collection for residual waste.
5. 3 WCAs introduced charging for green waste during the period (2017/2018).

Of most significance is that no service changes took place in 2012/13 the year in which collected arisings were lowest. This therefore suggests that the fall in collected arisings indicated was not solely due to the introduction of service changes and therefore must be due to other factors.

Table 9: Timing of Service Changes by Kent WCAs that might impact on Collected Household Waste Arisings

		Mid Kent contract							West Kent Contract			
	Sevenoaks	Maidstone	Swale	Ashford	Dover	Canterbury	Shepway	Thanet	Tonbridge & Malling	T Wells	Gravesham	Dartford
Introduction/expansion of kerbside Green waste collection	Since 2000 fortnightly	Since 2004/5	Since 2007	From May 2013	Since 2005	Since 2002 fortnightly	Since 2002/3 at least	Since 2004/5 at least fortnightly	18000 from 2005 fortnightly all in place at 2011/12 (co-collected with cardboard and food)	In place 2005/06	In place 2011	In place 2009
Kerbside Food Waste Collection	no	Since 2011/12	in place at 2014/15	Since July 2013 + March 2014 HMO	Since 2011/12	in place at 2013/14	Since 2011/12	in place at 2014/15	Since 2000 (with green waste)	In place 2005/06	in place at 2014/15	not at 2016/17
Alternate Weekly collection	no	Since 2011/12	Since 2007	Since July 2013 + March 2014 HMO	Since 2011/12	in place 2013/14	Since 2011	in place at 2011/12	2000 (pilot)	In place 2004/05	From June 2017	not at 2016/17
Charging for green waste	yes	yes	yes	yes	yes	purchase bin from Jan 2014	yes	yes	yes from 2018	yes from 2018	yes	yes

The analysis above shows that the break in the apparent relationship between arisings and population growth between 2017/18 and 2020/21 cannot in fact be explained in terms of service change. However, this does not alter the fact that a break in this relationship did occur and so consideration of alternative growth scenarios is considered to be warranted. Other growth scenarios have therefore been modelled as follows:

- Application of growth rates suggested by DEFRA's most recent national forecast report.
- Development of a forecast based on the method proposed in the PPG i.e., calculate arisings per head and factor in a range of different growth scenarios, e.g., constant rate of growth, progressively lowering growth rates due to waste minimisation initiatives.

Consideration of these alternative growth scenarios is set out below.

3.7 National Analysis of Future Household Waste Growth

DEFRA published a study of Future Waste Arisings in England[11] in 2021. This includes the most current national growth forecast published by Government for the LACW waste stream (amongst others). The method used to produce a forecast for LACW waste nationally involved the development of a model[12] using external variables such as population growth and Regional Gross Disposable Household Income trends (GDHI) to project LACW growth. Three scenarios were constructed (central, lower and upper) but for the purposes of this exercise the central forecast is referred to. The graph resulting from the forecast produced is reproduced as Figure 4 below.

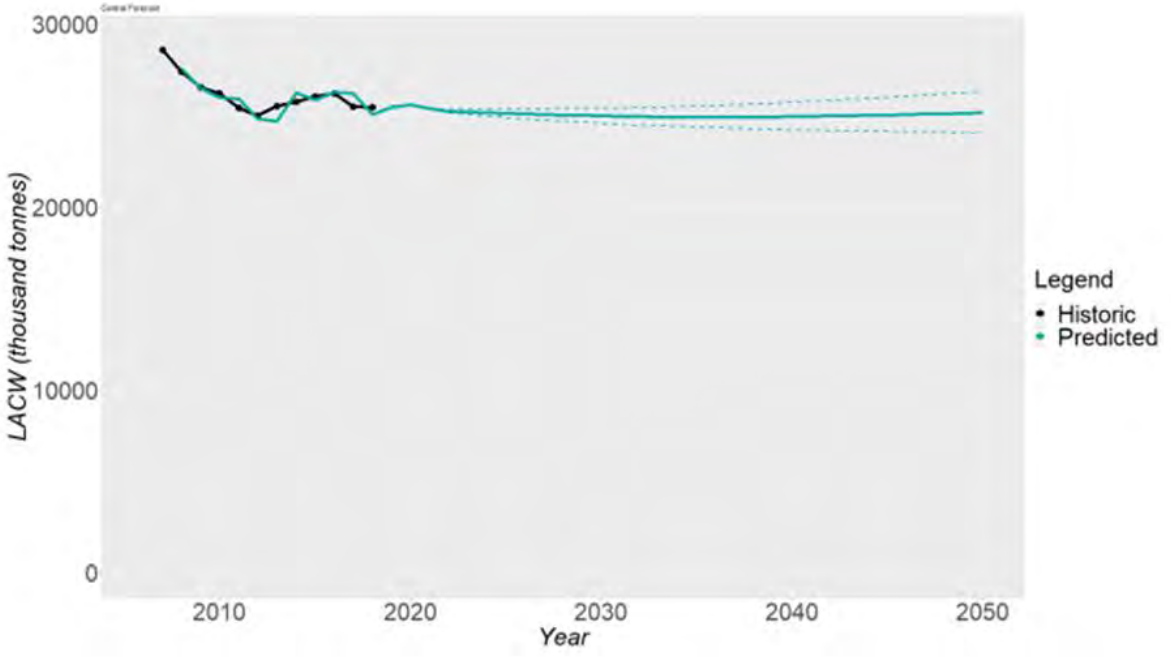

Figure 4: Central Local Authority Collected Waste Arisings Forecast for England (2020-2050)
Source: Future Waste Arisings, for DEFRA (2021)

[11] 'Future Waste Arisings' Eunomia, April 2021
[12] This is different to a standard time-series forecast as it includes lagged dependent variables

Figure 4 shows that nationally, LACW arisings are predicted to increase slightly to 2022 and then decrease marginally from 2022 to 2035, with a slight upswing from 2035 to 2050. The growth rate indicated at 5-year intervals from 2020 is shown in Table 10 below:

Table 10: DEFRA National LACW Forecast 5-year Growth Rates

	2020	2025	2030	2035	2040	2045	2050
5-year growth rate	-	-2.12%	-0.18%	-0.54%	+0.37%	+0.18%	+0.54%

The DEFRA 2021 report signals the direction in which growth in LACW in Kent may be headed, but it should be noted that the report is intended to provide a national picture, and so presents an average of what is predicted to happen across England. Thus, it masks any regional or local differences, such as varying levels of prosperity and associated consumption. Indeed, the observed pattern of decline in LACW arisings in Kent from 2010/11 to 2020/21 of minus 0.82% (as shown in Figure 2), reveals a deviation between the local trend in LACW arisings in Kent and the national growth rate forecast by DEFRA. It should be noted that the forecasts presented in the DEFRA 2021 report are being used as the basis for modelling of the achievement of targets related to the policy goals of national Resources & Waste Strategy published in 2018[13] and the Environment Act, and so represents the forecast of LACW driving national policy (such as the introduction of Deposit Return Schemes) that can reasonably be expected to impact LACW arising in Kent locally.

3.8 Building A Growth Profile

The method proposed in the PPG suggests that a growth profile should be based on household growth and waste arisings per household and/or population growth and waste arisings per capita, which can then be modelled with a range of different scenarios e.g., constant rate of growth and progressively lowering growth rates due to waste minimisation.

A growth profile can be established by following the guidance in PPG on a step-by-step basis as follows:

Step 1 – Establish short-term average annual growth rates per household/population

Step 2 – Establish long-term average annual growth rates per household/population

This is done (as indicated by PPG) by dividing annual arisings by population or household numbers data. Figure 5 below shows the results of the exercise of estimating LACW arisings in Kent by population.

[13] Our Waste, Our Resources: A Strategy for England, Department for Environment, Food & Rural Affairs, December 2018.

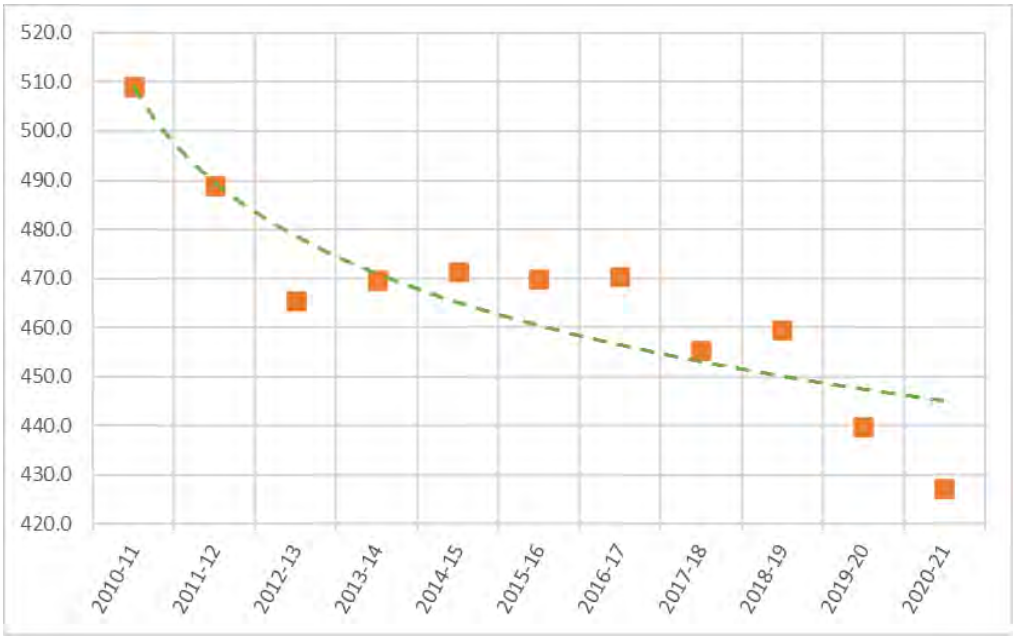

Figure 5: Projected LACW arisings per person in Kent 2010/11 to 2020/21
(NB: y axis is not to zero & green dashed line is a trendline)

It is evident from Figure 5 that the average LACW arisings per person has experienced large fluctuations over the decade, but, overall, arisings have been declining, as shown by the trend line, to approximately 427 kg per person in 2020/21. This yields the following:

- the average compound annual growth rate for LACW arisings per person for the period 2010/11 to 2020/21 is minus 1.71% (the long-term growth rate);
- the average compound annual growth rate for LACW arisings per person for the 5-year period 2014/15 to 2020/21 is minus 1.60% (short-term growth rate).

The actual arising value for 2020 has been used as the baseline and extrapolated with the annual short-term and long-term average growth values above and plotted along with the following set of growth factors to generate a cone of possibilities as shown in Figure 7:

- Waste Disposal Strategy of 1.35% per annum (updated using 2020/21 actual as a baseline and extrapolated to 2040 based on a linear forecast using an annual growth rate of 1.35%);
- DEFRA National Forecast of LACW at 5-year intervals;
- Adopted KMWLP projection of 0.20% per annum (adjusted using 2020/21 actual as a baseline and extrapolated to 2040);
- historical LACW growth of minus 0.82% per annum.

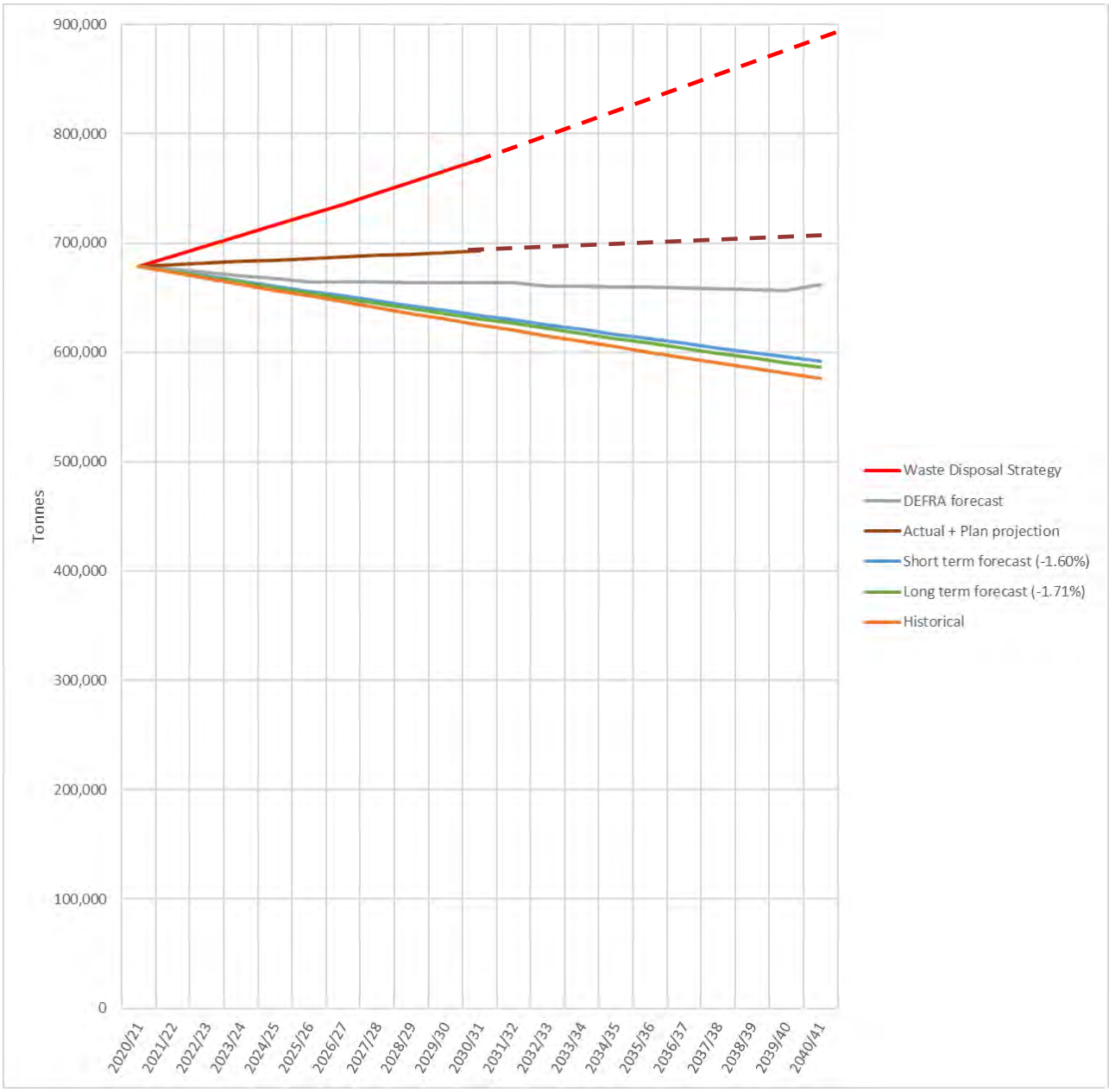

Figure 6: 'Cone of Possibilities' for Forecast Plan Area LACW Arisings (tonnes per annum)

Figure 6 shows the Waste Disposal Strategy forecast as an outlier compared to the other forecasts with three out of the six scenarios showing a declining LACW trajectory and DEFRA's forecast is one of a declining forecast from 2020/21 to 2030/31 with a slight upswing observed in 2039/40. This demonstrates that the forecast projection used in the adopted Plan is still robust and reasonable and therefore has been selected as the preferred forecast to 2040 adjusted to the most recent baseline value.

3.8.1 Conclusion

Using the adjusted adopted Plan forecast of 0.20% growth per annum modelled with the 2020/21 actual arisings as the baseline, is considered the most appropriate projection when forecasting for future LACW capacity needs in Kent. Applying this scenario results in a projected LACW arisings value in 2038 of c704,000 tonnes, an increase of c25,000 tonnes on the 2020/21 actual value. The modelled forecast arisings each year are shown in Table 11 below.

Table 11: Forecast LACW arisings each year using the adjusted Plan forecast (tonnes)

	Current Plan forecast using 2020 as the baseline
2020/21	*678,893*
2021/22	680,251
2022/23	681,611
2023/24	682,975
2024/25	684,340
2025/26	685,709
2026/27	687,081
2027/28	688,455
2028/29	689,832
2029/30	691,211
2030/31	692,594
2031/32	693,979
2032/33	695,367
2033/34	696,758
2034/35	698,151
2035/36	699,547
2036/37	700,947
2037/38	702,348
2038/39	703,753

3.8.2 Comparison to adopted Plan forecast

To understand the implication of resetting the adopted plan scenario with the 2020 baseline for Kent's future LACW management needs, the updated forecast has been compared to the adopted plan forecast to the end of the current Plan period. This is shown in Table 12 below.

Table 12: Forecast Quantities for Kent LACW Arisings Adopted Plan Forecast vs Adjusted

		Milestone Year	
	2020/21	**2025/26**	**2030/31**
Adopted Plan Forecast	*724,833*	732,111	739,461
Adjusted Forecast	*678,893*	685,709	692,594
Difference (Greatest)	*-45,940*	-46,402	-46,867

Table 12 shows that the Adjusted Adopted Plan scenario results in projected LACW arisings falls by c46,000 tonnes across the current Plan period.

3.9 Derivation of New Management Targets to 2040

The management targets for the current Plan period included in the adopted KMWLP are as set out in Table 13 below

Table 13: Household Waste Management Targets as per the JMWMS

		Milestone Year	
	2020/21	**2025/26**	**2030/31**
Recycling/composting	50%	55%	60%
Other Recovery	45%	43%	38%
Remainder to Landfill	2%	2%	2%

The current adopted KMWLP targets were arrived at based on an assessment of the updated JMWMS that committed the Kent Resource Partnership to achieve the following targets for the management of household waste:

- By 2015/16: To recycle/compost at least 45%; and send no more than 10% to landfill; and
- By 2020/21: To recycle/compost at least 50%; and send no more than 5% to landfill with a stated ambition to get as close to zero untreated waste to landfill as possible.

Since adoption of the amended Kent MWLP in 2020, further developments in waste and resource policy have occurred. This includes adoption of targets in the circular economy package as follows:

- recycle 65% of municipal waste[14] by 2035; and
- to have no more than 10% municipal waste going to landfill by 2035.

In addition, Government has a stated objective of eliminating food waste going to landfill by 2030; and eliminating avoidable waste of all kinds by 2050 and the intention to adopt a target to reduce the quantity of residual waste produced per person in England and hence requiring management by 50% by 2042. Achieving this target requires a recycling rate of over 70% to be achieved by 2042. As a result, revised Plan targets are proposed as set out in Table 14:

[14] LACW plus waste of similar composition arising from businesses.

Table 14: Proposed Targets for LACW Management in Kent

	Milestone Year				
	2020/21	**2025/26**	**2030/31**	**2035/36**	**2040/41**
Recycling/composting floor	50%	55%	60%	65%	70%
Landfill ceiling	2%	2%	2%	2%	2%
Remainder to Other Recovery	45%	43%	38%	33%	28%

Applying the above to the projected arisings gives the LACW management requirement set out in Table 15 below:

Table 15: Projected Management Requirements for Adjusted LACW Forecast for Kent

Italicised values are actuals

		Milestone Year				**Plan Period Peak/Cumulative Capacity Requirement**
	2020/21	**2025/26**	**2030/31**	**2035/36**	**2040/41**	
Predicted LACW Arisings	*678,893*	685,709	692,594	699,547	706,571	
Recycling/composting floor	*298,702*	377,140	415,556	454,706	494,600	494,600 and rising
Landfill ceiling	*14,551*	13,714	13,852	13,991	14,131	293,832 (265,598 tonnes @ 2038)
Remainder to Other Recovery	*365,640*	294,855	263,186	230,851	197,840	294,855 and falling

Overall Conclusions

Adjusting the adopted Plan preferred scenario for the measured baseline for 2020/21 results in the projections of Kent LACW arisings decreasing. This results in a reduction in capacity requirement of c47,000tpa in 2030/31 split as shown in Table 16 below:

Table 16: Projected Peak and Cumulative Management Requirements in Adopted Plan forecast vs Adjusted LACW forecast

	Adopted Plan forecast	**Adjusted LACW forecast**	**Difference**
Peak Recycling/ composting (2030/31)	444,000	416,000	-28,000
Cumulative Landfill (2020/21-2030/31)	161,000	154,000	-7,000
Peak Other Recovery (2025/26)	315,000	295,000	-20,000

This demonstrates that the approach taken in the Adopted Plan to provision for the management of LACW, remains robust, and might be regarded as overly cautious however this would allow for greater flexibility in planning future provision of capacity.