

Lincolnshire Minerals and Waste Local Plan Evidence Base

Lincolnshire Waste Needs Assessment 2021 - Report 1

Lincolnshire Local Authority Collected Waste (LACW) Management Requirements

Final Issue v1.1

Issued: 24 June 2021

Prepared on behalf of
Lincolnshire County Council

BPP Consulting Document Control

Project: Lincolnshire Waste Needs Assessment 2021

Report: Lincolnshire LACW Management Requirements - Report 1

Version Description: Final Issue

Version No.: 1.1

Date: 24.06.2021

Version No.	Version Description	Author	Date	Reviewed	Date
0.1	Internal Review	Alan Potter (Partner)	15.02.2021	Ian Blake (Partner)	16.02.2021
1.0	Client Review	Alan Potter (Partner)	18.02.2021	Matthew Michell (Client Contact)	25.02.2021
1.1	Final Issue	Alan Potter (Partner)	24.06.2021	Matthew Michell (Client Contact)	

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Abbreviations and Glossary of Terms

Abbreviations

Abbreviation	Explanation
AD	Anaerobic Digestion
DEFRA	Department for Environment, Food and Rural Affairs
EA	Environment Agency
EfW	Energy from Waste
EWC	European Waste Catalogue
GVA	Gross Value Added
HWRC	Household Waste Recycling Centre
LACW	Local Authority Collected Waste
LCA	Life Cycle Assessment
MRF	Material Recycling Facility
MDR	Mixed Dry Recyclables
MSW	Municipal Solid Waste
MWMS	Municipal Waste Management Strategy
WCA	Waste Collection Authority
WDA	Waste Disposal Authority
WEEE	Waste Electrical & Electronic Equipment
WNA	Waste Needs Assessment
WPA	Waste Planning Authority

Glossary of Terms

Term	Definition
Anaerobic Digestion	A process to manage organic matter including green waste and food waste, involving bacterial decomposition in the absence of air, producing a biogas and nutrient rich solid or liquid (digestate). The biogas can be used to generate energy or to power vehicles, and the digestate can be applied to land as a fertiliser and/or soil conditioner. Considered to be classed alongside composting on the Waste Hierarchy for the management of food waste even though it is an Energy from Waste process due to the LCA benefits offered.
Commercial Waste	As defined in The Controlled Waste (England and Wales) Regulations 2012. In brief: Waste arising from premises which are used wholly or mainly for trade, business, sport, recreation or entertainment, excluding industrial waste.
DEFRA	The UK Government department responsible for developing and implementing national waste management policy and reporting LACW statistics for England.
Energy from Waste	The conversion of the calorific value of waste into energy, normally heat or electricity through applying thermal treatment of some sort. May also include the production of gas that can be used to generate energy. In terms of the Waste Hierarchy, the management of waste by Energy from Waste is classed as 'other recovery'.
Environment Agency	The body responsible for the regulation of waste management activities through issuing permits to control activities that manage waste. It also provides up-to-date information on waste management matters and deals with matters related to the water environment including flood protection.
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 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 its characteristics such as ecotoxicity or corrosiveness.
Household Waste	As defined in The Controlled Waste (England and Wales) Regulations 2012. In brief: 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". Also includes waste from street sweepings, and public litter bins.
Household Waste Recycling Centres	A facility that is available to the public to deposit their household waste, particularly that not collected through kerbside collection (also known as a civic amenity site).

Term	Definition
Incineration	The controlled combustion of waste. Energy may also be recovered in the form of heat (see Energy from Waste). If energy is not recovered to a certain standard it sits at the bottom of the waste hierarchy being classed as 'disposal' alongside landfill.
Industrial Waste	As defined in The Controlled Waste (England and Wales) Regulations 2012. In brief: Waste arising from any factory and from any premises occupied by an industry (excluding mines and quarries).
Kerbside Collection	The collection of materials and waste from households, or occasionally industrial and commercial premises.
Landfill (including land raising)	The permanent disposal of waste to land, by filling voids or similar features, or the construction of landforms above ground level (land-raising).
Landfill Directive	European Union requirements 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 to landfill.
Lincolnshire Waste Strategy	A strategy developed by Lincolnshire County Council as Waste Disposal Authority in collaboration with the seven Waste Collection Authorities that includes a plan for the future of recycling and management of LACW (aka municipal waste) arising in Lincolnshire County
Local Authority Collected Waste	Waste collected by, or on behalf of, local authorities. LACW includes waste produced by householders both collected from their homes (collected household waste), and deposited at Household Waste Recycling Centres (HWRCs), plus municipal parks and gardens waste and waste resulting from the clearance of fly-tipped material and street sweepings, litter and trade waste collected by or on behalf of councils. Referred to as municipal waste prior to 2010.
Materials Recycling Facility (MRF)	A facility for sorting recyclable materials from the incoming waste stream.
Municipal Waste (MSW) (from 2010)	Local Authority Collected Waste plus any wastes similar in nature and composition including that collected from businesses by private waste collection companies i.e. commercial waste. (Term used for reporting on EU Directive purposes only)
Open Windrow Composting	A process in which biodegradable waste (such as green 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 such as energy from waste that recover value from waste other than recycling or composting. Situated below recycling and composting in the waste hierarchy, but above disposal.
Recovery	Subjecting waste to processes that recover value including recycling, composting or thermal treatment to recover energy.

Term	Definition
Recycling	Extracting materials from the waste stream for reprocessing into products (the same e.g. glass bottles or a different one e.g. aggregate).
The Plan Area	The area subject to the Local Plan to which this study relates; in this case Lincolnshire County.
Residual Waste	Waste remaining after waste managed by re-use, recycling and composting/organic waste treatment e.g. anaerobic digestion, have been removed.
Waste Collection Authority (WCA)	A local authority that has a duty to collect household waste. They also have a duty to arrange for the collection of commercial waste if requested to do so and may also collect industrial waste. In this case the District or Borough Council.
Waste Disposal Authority (WDA)	A local authority responsible for managing the waste collected by waste collection authorities and the provision of household waste recycling centres. In this case Lincolnshire County Council.
Waste Minimisation / Reduction	The most desirable way of managing waste according to the waste hierarchy, by avoiding its production in the first place.
Waste Planning Authority (WPA)	The local authority responsible for waste planning and development control. In the case of Lincolnshire this is Lincolnshire 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

- 1.1 BPP Consulting LLP has been commissioned by Lincolnshire County Council to produce a 'Waste Needs Assessment' (WNA) for Lincolnshire to inform the update of the adopted Lincolnshire Minerals & Waste Local Plan. This work is being carried out in the context of the National Planning Policy for Waste (NPPW) and the waste chapter of the Planning Practice Guidance (PPG) which expects that:

"Planned provision of new capacity and its spatial distribution should be based on robust analysis of best available data and information....." (emphasis added)¹

- 1.2 This WNA (known as the 'Lincolnshire Waste Needs Assessment 2021') consists of an overall main summary report and five waste stream specific supporting reports, namely:
1. Local Authority Collected Waste;
 2. Commercial and Industrial Waste;
 3. Construction, Demolition & Excavation Waste;
 4. Hazardous Waste; and
 5. 'Other' Waste.
- 1.3 This report assesses the baseline data for the Local Authority Collected Waste (LACW) stream arising in Lincolnshire, and projects forward to provide an assessment of future management requirements for LACW in Lincolnshire to 2045.

Definitions

- 1.4 In the UK, until 2010, the term municipal solid waste (MSW) (or municipal waste) was taken as meaning waste collected by local authorities (mainly from households). However, to ensure consistent application of EU directives concerning the management of municipal waste by member states, in 2010, the UK expanded its definition to include not just waste from households but any wastes similar in nature and composition and so, for the first time, the term municipal waste included wastes (of a similar type) collected from businesses by private waste collection companies. Such waste includes that produced from retail and offices that falls within the commercial waste stream.

¹ DEFRA. 2014. National Planning Policy for Waste.

1.5 In light of this, the term “local authority collected waste” (LACW) was introduced to cover waste that was collected only by local authorities. LACW includes ‘household waste’ (waste produced by householders collected from their homes (collected household waste) plus waste deposited at Household Waste Recycling Centres (HWRCs)), plus waste collected by councils from businesses, street sweepings, litter, municipal parks and gardens and fly tipped materials. Typically, the non-household waste fraction of LACW represents around 5% of the total LACW arisings.

Management of Lincolnshire LACW

1.6 Lincolnshire County Council has responsibilities as the statutory Waste Disposal Authority (WDA) for Lincolnshire. It works alongside the seven Borough and District councils that act as the Waste Collection Authority (WCA) for their respective areas within Lincolnshire. Collectively, these authorities make up the Lincolnshire Waste Partnership.

1.7 Lincolnshire County Council contracts out much of the management of LACW with separate contracts for the transportation and sorting of mixed dry recyclables (MDR), the composting of garden waste and disposal of residual waste as follows:

- Residual Waste is managed by FCC Environment until 2039.
- Green waste collected from households is managed until 2022 (c70,000 tonnes per annum);
- MDR is managed by Mid UK Recycling at its Materials Reclamation Facilities (MRF) in Caythorpe and Market Deeping until 2025.

1.8 The significant elements of the LACW stream currently follow management routes as follows:

- **Residual waste:** All residual waste collected at the kerbside and HWRCs (including bulky household waste) is delivered to one of five Waste Transfer Station (WTS) located in Lincolnshire and operated by the county council itself. The bulk of this waste is then transferred onto the energy from waste plant located in Lincolnshire (Hykeham) under a contract that is due to end 2039. A small quantity of residual LACW (c15,000) is sent to landfill within Lincolnshire.
- **Dry Mixed Recyclables:** Collected via kerbside schemes delivered to one of the five county council operated WTS plus one of three WTS operated by third parties or taken direct to an in-county MRF. Where deposited at a WTS, the DMR are bulked up and then moved onto an in-county MRF operated by Mid UK Recycling in Caythorpe with some going to a smaller facility located in Market Deeping.

- **Green waste** collected at kerbside and also received segregated at HWRCs: Delivered either direct, or via two third party WTSs, to one of eight composting facilities, seven of which are located within the county.
- Separately collected **glass** collected via bring bank scheme (East Lindsey) and county wide network of HWRCs, is transferred via the county council operated WTS in Louth.
- **Rubble** disposed of at HWRCs: Managed under contract to five different contractors and largely recycled.
- **Wood** aggregated at HWRCs: Managed under contract to five different contractors.
- **Waste Electrical & Electronic Equipment (WEEE)**: Large & small electrical appliances collected from HWRCs under contract by Repic and delivered to Sims Group UK in Newport Wales. This includes fridges aggregated at HWRCs.

2 Lincolnshire LACW Management Profile

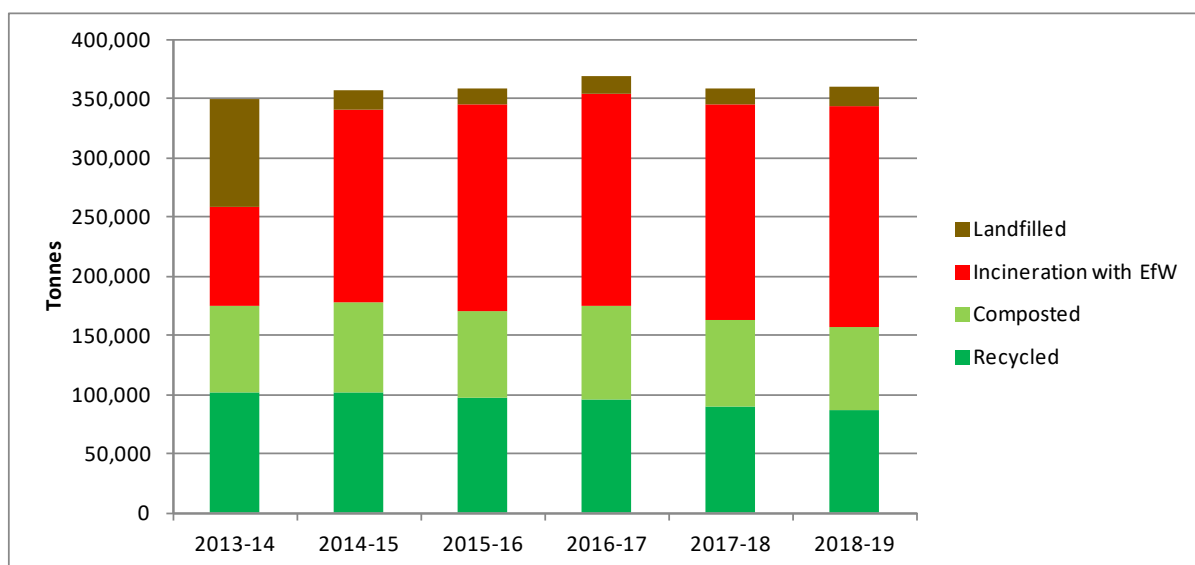


Figure 1: Management Profile for Lincolnshire LACW 20013/14-2018/19

(Source: Defra²)

2.1 Figure 1 shows that the LACW management profile that includes recycling and composting which peaked in 2013/14 and 2014/15 at 50%, stabilised with a combined rate of c48% in the following two years and then fell to 44% in 2018/19³. Since 2014/15 the principal management method for residual waste (waste remaining after recycling/composting) is Energy from Waste (EfW). This has largely displaced residual LACW managed by landfill in recent years while residual LACW managed by landfill has fallen to between 4 and 5% (c15,500tpa).

² <https://www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables>

³ It should be noted that as this relates to LACW this figure differs to rates reported for the purposes of NI192 which relates to household waste, a subset of LACW.

3 Lincolnshire LACW Forecast

3.1 The following have been taken into account in establishing potential trajectories of LACW growth in Lincolnshire over the Plan period:

- Planning Practice Guidance
- Historical Pattern of LACW Arisings in Lincolnshire
- Joint Municipal Waste Management Strategy for Lincolnshire (including the subsequent 2019/20 Annual Report)
- Population Growth Forecasts

Growth rates derived from the above have then been applied to baseline LACW arisings i.e. latest measured arisings of LACW. This approach is discussed below.

Planning Practice Guidance

3.2 The national Planning Practice Guidance (PPG)⁴ states the following in relation to forecasting future municipal waste arisings (or more correctly LACW):

"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."

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

3.3 It is notable that the examples of growth scenarios in PPG 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, suggesting that the Government does not see increasing growth in LACW as a scenario to be modelled. The Government’s national Resources & Waste Strategy (published in 2018)⁵ does not include LACW arisings forecasts, and hence there are no current publically available Government forecasts for LACW growth for England to be referenced.

Historical Pattern of LACW Arisings in Lincolnshire

3.4 The observed pattern of LACW arisings in the County in the past decade and a half is shown in Figure 3 below. This period (2005/06 to 2018/19) has been selected to account for economic cycles within which peaks and troughs of LACW production occur. The average annual growth rate over this period is minus 0.15%.

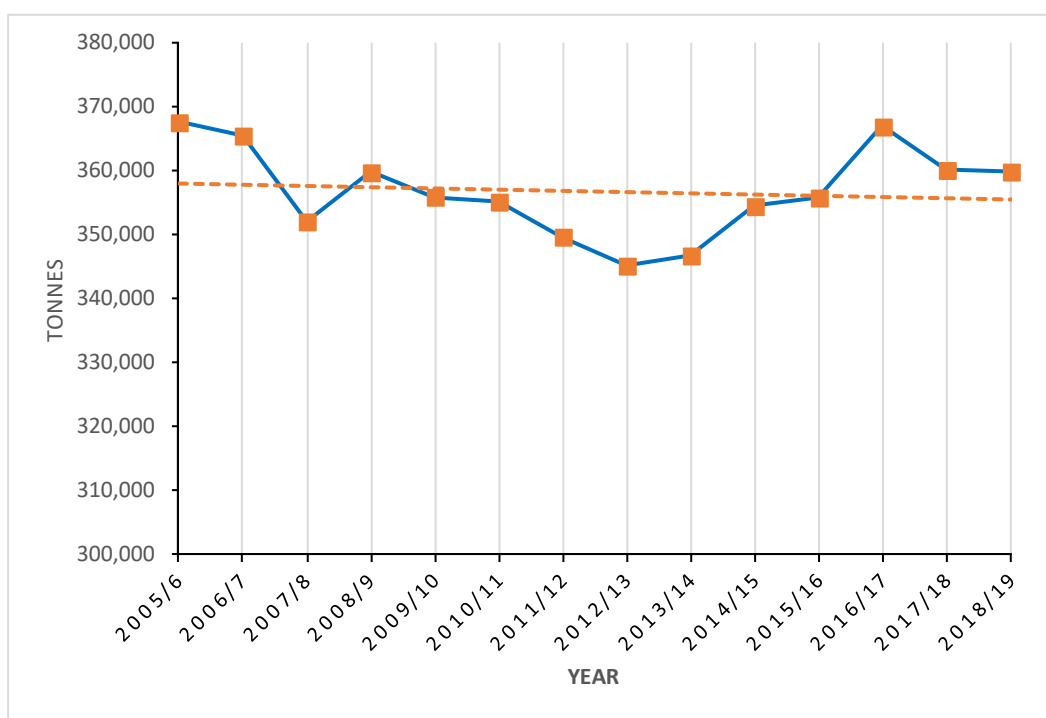


Figure 2: Trend in LACW Arisings in Lincolnshire 2005/06 to 2018/19 (Source: Defra)

(N.B. y axis is not at zero)(dashed orange line is trend line that indicates a compound annual growth rate of minus 0.15% over the period).

⁵ Our Waste, Our Resources: A Strategy for England, Department for Environment, Food & Rural Affairs, December 2018,

3.5 Figure 3 shows a declining trend in LACW arisings to 2012/13, followed by a rise in the next four years to 2016/17, followed by a drop in 2017/18 and plateauing in 2018/19. While the growth in the last seven years suggests a compound annual growth rate of +0.6%, the overall trend over the past thirteen year period remains as a negative value (minus 0.15%). This is against a backdrop of continuing growth in population and household numbers in Lincolnshire.

3.6 It should be noted that historical data indicates while the population in Lincolnshire grew by an average of 0.75% per annum between 2010/11 to 2018/19, over the same period household waste production fell by an average of minus 0.15% per annum. This suggests that it may not be appropriate to assume a linear relationship between growth in population and growth in household waste. This is reflected in the observed trend in annual collected waste per person over the past decade vs population as presented in Figure 3.

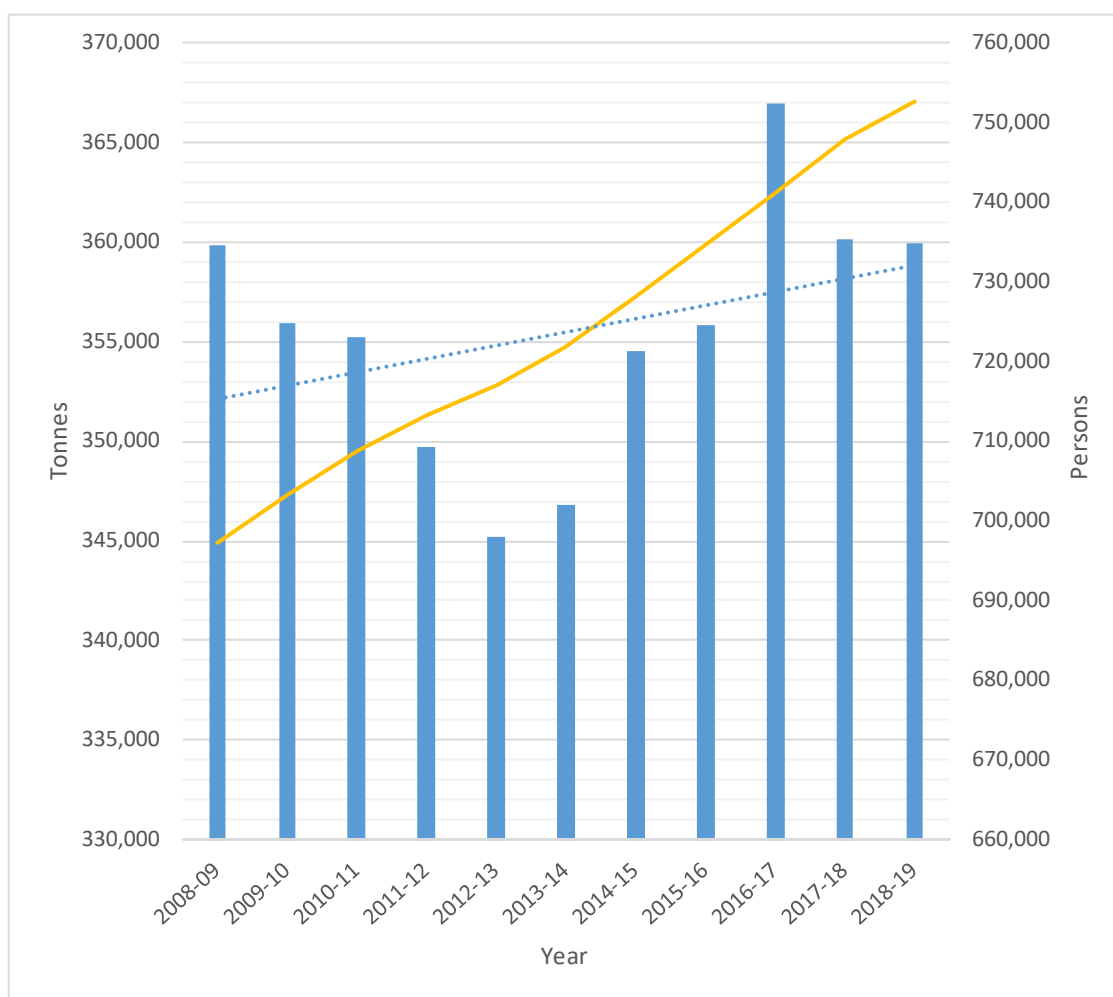


Figure 3: LACW Arisings in Lincolnshire (blue bars) 2008/09 to 2018/19 with blue dashed trendline vs Lincolnshire population (orange line)

(Source: Defra & ONS)

Generating A Growth Profile

3.7 PPG provides step by step guidance on how growth profiles are to be generated 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

3.8 This is done by dividing annual arisings by population or household data.

3.9 Figure 4 below shows the results of this exercise by head of population.

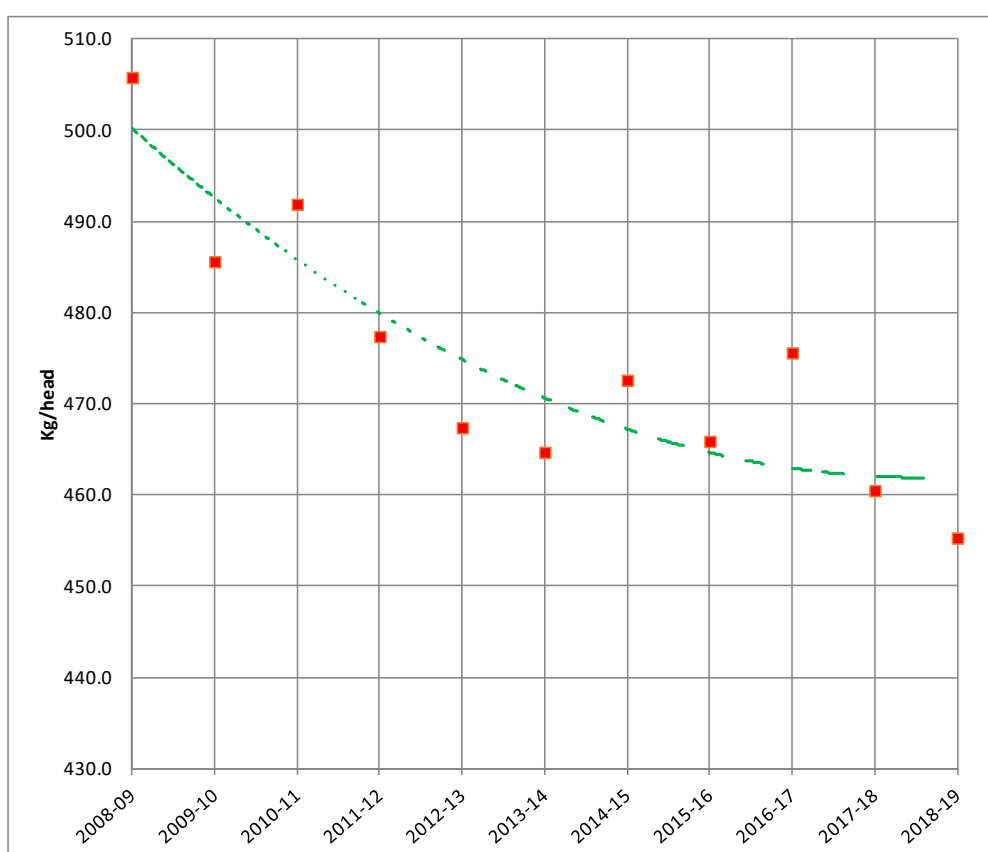


Figure 4: Collected household waste per person in Lincolnshire County 2008/09 to 2018/19
(NB: y axis not at zero)

- 3.10 It is evident from this that the 2013/14 value represents a break between the steady decline in waste arisings per person observed between 2008/09 and 20013/14 with a more erratic pattern emerging comprising peaks⁶ (2016/17 – 475.6 kg/head) and troughs (2018/19 - 455 kg/head).
- the compound annual growth rate for arisings per person for the decade 2008/09 to 2018/19 is minus 1.05% (the long term growth rate), whereas
 - the compound annual growth rate for arisings per household for the 5 year period 2014/15 to 2018/19 is minus 0.74 % (the short term growth rate) reinforcing the decreasing trend indicated by the historic data.

It should be noted that the trends arising are time dependant, and were they to be calculated for a different period e.g. six years instead of five, the indicated growth rate might be significantly different.

Joint Municipal Waste Management Strategy for Lincolnshire

- 3.11 PPG points towards the Municipal Waste Management Strategy as a source of forecasts and so the Waste Strategy for Lincolnshire (adopted January 2019) has been considered. This strategy presents a fifteen year plan for the future of recycling and management of municipal waste arising in Lincolnshire from 2016 to 2031.
- 3.12 The JMWMS identified an annual growth rate of waste per person of 0.5% to 2020 and then 0.25% to 2031 in line with those used in the adopted Minerals & Waste Local Plan. This growth rate per person was then applied to the projected growth in population through to 2031. On this basis the quantity of household waste requiring management at the end of the strategy period would have increased by around 50,000 tpa.
- 3.13 However, given that there is a specific target in the Lincolnshire Waste Partnerships 2019/20 Annual Report to hold per head arisings at their current level going forward i.e. zero growth per head and the fact that collected household waste per head is falling, a forecast growth rate per head of 0% has been modelled with growth in arisings reflecting population growth only. To do otherwise would essentially be planning for failure to meet the LWP's strategic goal.

⁶ Arisings will reflect annual variability in weather conditions particularly when it comes to green waste and also waste from abnormal events such as flooding.

Generating a Forecast

3.14 In order to identify a preferred scenario, a number of different scenarios have been modelled to create a cone of possibilities. For the purposes of this exercise and taking account of the information presented above, the following set of growth factors have been applied:

- Historical LACW Growth based on the data presented in Figure 2 and the resulting annual growth factor of minus 0.15% per annum;
- Historical LACW Growth based on the data presented in Figure 4 and the resulting short term annual growth rate per head of minus 0.74% per annum multiplied by predicted population growth;
- An annual growth rate per head of 0% multiplied by predicted population growth (consistent with the approach taken in the municipal waste strategy)

3.15 The values applied are summarised in Table 1 below, assuming no variation across the planning period.

Table 1: Forecast Per Annum Growth Rates for Lincolnshire LACW Arisings

Scenario	Average Annual Growth Rate
Low (-0.74% per head x population growth)	- 0.31%
Med (istorical)	- 0.15%
High (Zero per head x population growth)	+0.46 %

3.16 The predicted arisings applying the above growth rates to the most recent actual LACW arising value for 2018/19 are shown in Table 2 and plotted in Figure 5 below.

Table 2: Forecast Values for Lincolnshire LACW Arisings (Tonnes)

Year	minus 0.74% growth rate x population growth (Low)	Historical (Medium)	Zero per head x pop growth (High)	Difference between highest and lowest value p.a.
2019/20	359,905	359,371	362,568	3,197
2020/21	359,708	358,832	365,053	6,221
2021/22	359,376	358,294	367,417	9,123
2022/23	358,995	357,756	369,747	11,990
2023/24	358,562	357,220	372,037	14,817
2024/25	358,006	356,684	374,213	17,529
2025/26	357,367	356,149	376,314	20,165
2026/27	356,635	355,615	378,328	22,714
2027/28	355,810	355,081	380,252	25,171
2028/29	354,868	354,549	382,060	27,512
2029/30	353,812	354,017	383,750	29,938
2030/31	352,683	353,486	385,365	32,682
2031/32	351,479	352,956	386,901	35,422
2032/33	350,177	352,426	388,332	38,154
2033/34	348,807	351,897	389,686	40,879
2034/35	347,421	351,370	391,021	43,600
2035/36	346,037	350,843	392,357	46,320
2036/37	344,616	350,316	393,650	49,033
2037/38	343,176	349,791	394,917	51,741
2038/39	341,751	349,266	396,200	54,449
2039/40	340,343	348,742	397,499	57,156
2040/41	338,949	348,219	398,812	59,864
2041/42	337,554	347,697	400,122	62,568
2042/43	336,160	347,175	401,431	65,271
2043/44	334,772	346,655	402,744	67,972
2044/45	333,390	346,135	404,062	70,672

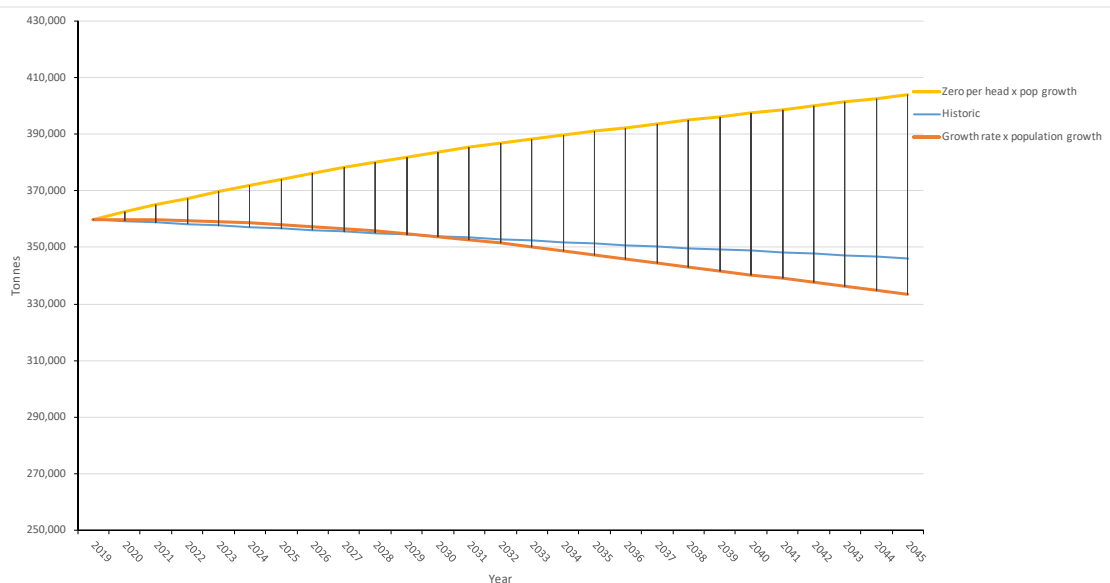


Figure 5: LACW Arisings Forecasts. (NB: y axis not at zero)

Discussion

- 3.17 As Figure 5 shows, two of the three scenarios result in downward growth trajectories throughout the planning period. Past data suggests that a decline in LACW arisings is possible. However, it is considered that a trajectory based on the historic falling growth rate scenario seems unlikely since year on year falls in arisings do not follow the pattern observed over the past five years as shown in Figure 2.
- 3.18 Given the predicted growth in population over the period, the scenarios suggest that a value somewhere between the negative growth based on the historical data and the extrapolation of a simple linear relationship between projected growth in population and arising might provide a projection that is closer to the actual growth likely to be experienced in future.
- 3.19 The forecast based on a zero growth rate and population growth implies the waste per person factor of 455.3 kg per annum will remain constant throughout the planned period. However, Figure 3 shows that the relationship between household waste production and population (and hence household numbers) is not necessarily linear. Consideration of LACW arisings per head values in neighbouring authorities in the East Midlands shows that the Lincolnshire value is the highest, with Leicestershire County Council reporting only 435.1 kgs/head. Hence, a projection based on a static annual waste per person production value of 455.3kg may be on the high side. Moreover this projection does not factor in the impact of the expected introduction of Extended Producer Responsibility for packaging waste and other initiatives which can be expected to further reduce arisings per head.

Forecast Conclusion

- 3.20 While growth scenarios based on the method proposed in the PPG have been modelled it was felt that this overly suppresses growth rates. Therefore a positive rate of growth has been selected that reflects the target in the recently adopted Lincolnshire Waste Strategy of zero waste arisings per head of population, reflecting the effect of waste minimisation initiatives, combined with the growth derived from anticipated increases in population.
- 3.21 Planning on the basis of zero growth in arisings per head may be overly pessimistic and a more ambitious negative growth rate might be preferred that would reflect per head arisings being achieved elsewhere and forthcoming legislative changes intended to reduce waste production, however, for the purpose of ensuring flexibility within the Plan it is proposed that this forecast be used.
- 3.22 Using the measured baseline for 2018/19 and a zero increase per head x population growth scenario) results in projected LACW arisings by 2045 of 404,000 tonnes, an increase of c44,000 tonnes on the 2018/19 value and an average annual increase of 1,700 tonnes.

4 Future Lincolnshire LACW Management Capacity Needs

4.1 Final fate destinations and quantities of LACW managed at these destinations in 2019 are discussed in Section 1 above and summarised in Table 3 below. A distinction is drawn between waste managed within Lincolnshire and outside in Table 3.

Table 3: Final Fate Destinations and tonnages for Lincolnshire County LACW Arisings 2019/20 (500 t+) (Source: Wastedataflow)

Waste Type	Final Fate Destination Site	In Lincs	Out Lincs	Note
Residual Waste	FCC North Hykeham EfW Plant	184,932	-	ERF
Residual Waste	Lincs Waste	14,721	-	Landfill
Mixed Dry Recyclables	Mid UK Recycling (Caythorpe)	44,094	-	MRF
Mixed Dry Recyclables	Mid UK Recycling (Barkston)	22,272	-	MRF
Green Waste	Clarkeson Recycling (Riby)	1,184	-	Open windrow
Green Waste	Greenaway (Alford)	5,326	-	Open windrow
Green Waste	Land Network (Sth Elkington)	12,057	-	Open windrow
Green Waste	Land Network (Sturgate Airfield)	4,638	-	Open windrow
Green Waste	Material Change (Decoy Farm)	13,655	-	Open windrow
Green Waste	MEC Recycling (The Willows Saxilby)	3,325	-	Open windrow
Green Waste	MEC Recycling (Ansons Farm Swinderby)	16,782	-	Open windrow
Green Waste	Mid UK/New Earth Honey Pot Lane	8,765	-	Open windrow
Green Waste	Mid UK/New Earth Market Deeping	3,236	-	Open windrow
Green Waste	Mid UK Recycling Caythorpe	4,669	-	Open windrow
Rubble	Bourne Skip Hire & Recycling (Bourne)	3,765	-	Aggregate Recycling
Rubble	Mid UK Recycling (Caythorpe)	3,152	-	Aggregate Recycling
Rubble	Louth GBM Waste Management	5,899	-	Aggregate Recycling
Rubble	Sid Dennis & Sons Ltd, (Skegness)	3,131	-	Aggregate Recycling
Rubble	New Earth (West) Ltd, (South Hykeham)	2,670	-	Aggregate Recycling
Rubble	Silver Skips Lincolnshire Ltd, (Boston)	10,853	-	Aggregate Recycling
Wood	Clarkeson Recycling (Riby)	1,673	-	Wood Shredding
Wood	Mid UK Recycling (Caythorpe)	5,164	-	Wood Shredding

Waste Type	Final Fate Destination Site	In Lincs	Out Lincs	Note
Wood	R Plevin & Sons (Notts)	-	4,176	Wood Shredding
Wood	Sid Dennis & Sons Ltd, (Skegness)	3,131	-	Wood Shredding
Wood	Silver Skips Lincolnshire Ltd, (Boston)	5,491	-	Wood Shredding
WEEE	Sims Group UK Ltd	-	3,622	WEEE Processing

4.2 The dataset presented in Table 3 generated from Wastedataflow and data on LACW management submitted to Defra by Lincolnshire WDA indicates the following:

- Around 86,000 tonnes of the c157,000 tonnes of LACW recycled, reused or composted, was recycled or reused in calendar year 2019. Of this around 66,400t was sent to one of two MRFs located in Lincolnshire for segregation with the remainder c20,000t sent direct to reprocessors following aggregation at either HWRCs or WTS in Lincolnshire. Given the substantial proportion of waste going for recycling passes through a MRF this indicates that increasing recycling may require provision of additional MRF segregation capacity assuming materials continue to be collected commingled. However if they were to be segregated at the point of collection in a condition that reprocessing sites can accept they may only require bulking prior to direct delivery.
- Around 70,000 tonnes of the c157,000 tonnes of LACW recycled, reused or composted, was composted. This waste was sent to composting sites within Lincolnshire following aggregation at either HWRCs or WTSs.
- All Lincolnshire's residual LACW met its ultimate fate within Lincolnshire.

Waste Management Targets

4.3 Having established the existing management profile, the next step is to consider what management profile may be desirable and achievable and therefore what waste management targets ought to be set in the Plan to achieve that management profile.

4.4 The *Waste Strategy for Lincolnshire* has a stated objective of contributing to a national 55% recycling rate for LACW as a whole by 2025 and includes an action plan of specific steps to be taken to move towards a higher recycling rate in Lincolnshire.

4.5 Lincolnshire County Council has not yet set targets beyond 2025, however the national Resource & Waste Strategy includes the following targets for municipal waste⁷:

- 65% recycling by 2035; and
- 10% limit of landfilling by 2035.

4.6 The targets shown in Table 4 below combine the targets the LWP has set itself with those in the national strategy plus the minimal landfill levels already being achieved. It is proposed that these targets are used to derive the requirements for LACW capacity.

Table 4: Proposed LACW Management Profile for Lincolnshire in Milestone Years (2018/19 are actual values, with landfill assumed to remain at that level)

Fate	Latest actual (2018/19)	2024/25	2029/30	2035/36	2039/40	2044/45
Recycling/composting	44% ⁸	55%	60%	65%	65%	65%
Other Recovery ⁹	51%	40%	35%	30%	30%	30%
Overall diversion from landfill	95%	95%	95%	95%	95%	95%
Remainder to Landfill	5%	5%	5%	5%	5%	5%

4.7 Applying the proposed targets to the preferred forecast gives the following capacity requirement when a year on year progression towards the recycling/composting targets is assumed:

⁷ LACW is all classed as municipal waste along with waste of a similar nature.

⁸ As this relates to LACW this figure differs to rates reported for the purposes of NI192 which relates to household waste a subset of LACW. This includes metals recycled from IBA for the North Hykenham EFW plant.

⁹ This identifies the consequential predicted remaining management requirement assuming the recycling/composting and landfill diversion targets are met.

Table 5: Future Management Profile for Forecast Lincolnshire LACW Arisings (Tonnes) (2018/19 are actual values)

Year	Forecast Arisings	Recycling/ composting	Residual Waste	Other Recovery	Remainder to Landfill
2018/19	359,911	156,662	203,249	187,946	15,303
2019/20	362,568	164,855	197,714	179,585	18,128
2020/21	365,053	173,047	192,006	173,753	18,253
2021/22	367,417	181,240	186,177	167,806	18,371
2022/23	369,747	189,432	180,315	161,827	18,487
2023/24	372,037	197,625	174,412	155,810	18,602
2024/25	374,213	205,817	168,396	149,685	18,711
2025/26	376,314	210,704	165,610	146,794	18,816
2026/27	378,328	215,590	162,738	143,822	18,916
2027/28	380,252	220,477	159,775	140,763	19,013
2028/29	382,060	225,363	156,697	137,594	19,103
2029/30	383,750	230,250	153,500	134,312	19,187
2030/31	385,365	235,033	150,333	131,064	19,268
2031/32	386,901	239,815	147,086	127,741	19,345
2032/33	388,332	244,598	143,733	124,317	19,417
2033/34	389,686	249,381	140,305	120,821	19,484
2034/35	391,021	254,164	136,857	117,306	19,551
2035/36	392,357	255,032	137,325	117,707	19,618
2036/37	393,650	255,872	137,777	118,095	19,682
2037/38	394,917	256,696	138,221	118,475	19,746
2038/39	396,200	257,530	138,670	118,860	19,810
2039/40	397,499	258,374	139,125	119,250	19,875
2040/41	398,812	259,228	139,584	119,644	19,941
2041/42	400,122	260,079	140,043	120,037	20,006
2042/43	401,431	260,930	140,501	120,429	20,072
2043/44	402,744	261,784	140,960	120,823	20,137
2044/45	404,062	262,640	141,422	121,218	20,203
Peak/ cumulative	n/a	262,640 (Peak)	n/a	187,986 (Peak)	517,000 (Cumulative)

Capacity Requirements

- 4.8 This section considers what additional capacity may be required to meet the increased recycling/composting targets for LACW in Lincolnshire over the planning period. Particular consideration has been given to the processing of food waste separated from residual waste currently sent to EfW in order for the increased recycling targets to be met, and in line with the national proposal for compulsory food waste collections. While food waste can be treated through in vessel composting (when mixed with green waste or cardboard), it is considered (and indeed recommended by the government) that anaerobic digestion of food waste is the most likely management method with green waste continuing to be managed at existing open windrow composting sites in Lincolnshire.
- 4.9 Separate food waste collection trials have been undertaken in selected parts of Lincolnshire involving a limited number of households and these indicate that the quantity of food waste that may be separately collected might amount to 1.5 kg/household/week. Given there are around 350,000 households in Lincolnshire this would equate to a total tonnage of c27,200 tonnes per annum collected. This represents around 7% of the LACW arisings in 2018/19.
- 4.10 Table 6 shows the following maximum management capacity requirement indicated by the projected LACW management profile of:
- 20% of LACW as green waste to composting;
 - 7% of LACW as food waste to anaerobic digestion; and
 - difference to recycling (peaking at % in 2035 onwards).

Table 6: Profile for Forecast Lincolnshire LACW Arisings Managed by Recycling/Composting (Tonnes) in Milestone Years (2018/19 are actual values)

Fate	2018/19	2024/25	2029/30	2035/36	2039/40	2044/45	Max Req.	Diff on 2018/19
Forecast Arisings Managed via R&C (see Table 5)	158,767	205,817	230,250	254,164	258,374	262,640	n/a	103,873
Composting @ c20%¹⁰	70,315	73,109	74,972	76,393	77,658	78,941	78,941	8,626
Anaerobic Digestion @ 7%	0	28,289	29,010	29,661	30,049	30,546	30,546	30,546
Recycling (Remainder)	88,452	105,305	127,176	149,646	151,607	154,110	154,110	67,951

¹⁰ Continuing 19.6% actual forward.

4.11 The resulting management profile against the preferred forecast is displayed in Figure 6.

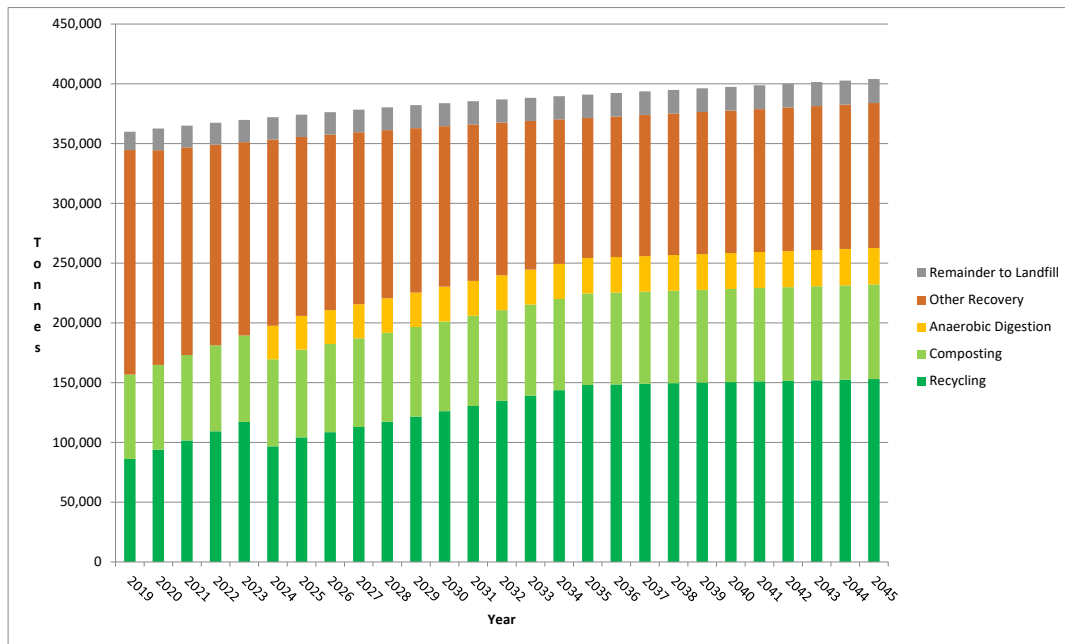


Figure 6: LACW Management Profile based on Preferred Forecast

Capacity Assessment

While nPPG expects waste planning authorities to identify sufficient opportunities to meet the identified needs of an area for the management of waste through the Local Plan, there is no expectation that a WPA plans to deal solely with its own waste to meet the requirements. Rather the expectation is that each WPA provides at least an amount of management capacity equivalent to the amount of waste predicted to arise within each Plan area. This approach is referred to as 'net self sufficiency', the 'net' being allowance made for the flow of waste to and from a Plan area given that waste is managed through the market which transcends administrative boundaries. This approach is intended to ensure that existing capacity is used effectively and efficiently and that waste is managed at the nearest facility when the disposal or recovery of mixed municipal waste collected from private households is concerned. It also reflects the fact that many types of waste processing facilities are capital intensive so are influenced by economies of scale in construction and operation. This results in fewer, larger, more sophisticated facilities being developed that may service larger than local i.e. sub-regional (or regional) markets.

LACW Organic Treatment

Open Windrow Composting for green waste

- 4.12 Table 6 shows that a maximum of 79,000 tonnes per annum of capacity would be required to receive green waste for composting. This is 8,600 tonnes per annum greater than the current quantity composted. Review of the Lincolnshire County Council Master Site List shows there was 187,550 tonnes of composting capacity operational within the Plan Area. Assuming all capacity is retained throughout the plan period, there appears to be sufficient capacity to cater for the projected quantity of LACW green waste requiring management through composting

Anaerobic Digestion for food waste

- 4.13 Table 6 shows that a maximum of 29,400 tonnes of AD capacity would be required to receive food waste for processing into digestate. Given no food waste is currently collected from the LACW stream this represents an increase on the current quantity processed of 29,400 tonnes per annum. Review of the Lincolnshire County Council planning records shows there was c350,000 tonnes per annum of consented anaerobic digestion organic treatment capacity operational within the Plan Area. Assuming all capacity is retained throughout the plan period, there appears to be sufficient capacity to cater for the projected quantity of LACW food requiring separate management. It should however be noted that the existence of consented capacity does not necessarily mean that the capacity will be made available commercially or that it is necessarily located in the optimal location to manage LACW food waste arisings close to their point of origin. Therefore there may be an identified need for additional capacity to serve the LACW contract over and above the consented capacity. Such a need would be expected to be identified in the JMWMS.

LACW Recycling

- 4.14 Table 6 shows that a maximum of 154,100 tonnes per annum of capacity would be required to achieve LACW waste recycling targets. This is 68,000 tonnes per annum more than is currently recycled. Review of the Lincolnshire County Council Master Site List shows there was c250,000 tonnes per annum of consented Materials Reclamation Facility (MRF) capacity suitable for separating materials from the LACW stream operational within the Plan Area.¹¹ Assuming all capacity is retained throughout the plan period, there appears to be sufficient capacity to cater for the projected quantity of LACW requiring management for recycling.
- 4.15 However it would be overly simplistic to suggest that meeting and sustaining the recycling targets 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 MRF.
- 4.16 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. It is also possible that source separated materials can be transported directly from the point of collection to reprocessors without the use of an intermediate facility. These reprocessors may be located within the Plan Area or beyond the Plan Area.

¹¹ 200,000tpa at Caythorpe and 360,000 tpa at Barkston Lincs CC Planning Records.

- 4.17 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. 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 given kerbside separation much of the material collected to meet the proposed recycling targets might be effectively managed without reliance on MRF capacity within the Plan Area. It should be noted that Government intends to address the matter of collection systems through its consistency in recycling policy measures.
- 4.18 Notwithstanding the above, assuming all MRF capacity is retained throughout the planning period, there appears to be sufficient capacity to cater for the projected quantity of LACW requiring management for recycling. This is on the basis that the max quantity requiring recycling is 159,456 tpa (Table 6) while consented capacity stands at 560,000tpa.

Residual Waste Management

- 4.19 Finally it is necessary to consider requirements for the management of residual waste. Table 5 shows the following:
- Peak 'Other Recovery' requirement c188,000 tpa falling to c121,000 tpa in 2044/45; and
 - Cumulative Non-Inert Landfill requirement of c517,000 tonnes over the planning period (to 2045) with a peak annual demand of 20,200 tpa in 2045.

As the capacity to meet residual LACW management requirements would also be utilised to manage residual waste from the C&I waste stream, provision for this need is considered in the overview report.