



Kirklees Council

Waste Needs Assessment

Part 2:

Growth Forecasts and Assessment of Future Capacity Requirements

4Resources

October 2016

 urbanvision

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Foreword

Kirklees Unitary Authority commissioned this study in August 2016. The Waste Needs Assessment uses information correct at that time of publication and it is therefore a living document. This includes information on waste arisings obtained from the EA Waste Data Interrogator 2014 and the EA Hazardous Waste Data Interrogator 2014 (both published in October 2015). The study covers the local authority area of Kirklees.

Executive Summary

Content of the Data Study

- I. Urban Vision and 4Resources were contracted by Kirklees Council to prepare a Waste Needs Assessment. The Study evaluates a number of scenarios predicting future waste arisings in the period 2016 to 2031 comparing the results with existing local waste capacity to identify any gaps in provision that will need to be addressed. The Council has also specified that the work should provide forecasts over an additional five years beyond the end of the Plan period to 2036.
- II. The Study has been produced in two parts. Part 1 provides a detailed analysis of current waste arisings in Kirklees for all waste streams and of the movement of wastes into and out of the area. In both cases data refer to the situation in 2014 which is the latest year for which information is available on all the principal waste streams.
- III. This Report, Part 2, documents subsequent analysis that provides a detailed analysis of capacity gaps for managing each of the waste streams.

Waste Streams

- IV. Seven waste streams have been analysed to estimate the quantity of waste that will be produced within Kirklees as follows (with the analysis largely focused on the first five):
 - Local Authority Collected Waste (LACW): waste collected by the Local Authority which is primarily waste produced by households (LACW(H)) but which can also include waste from certain non-household sources (LACW(Other)). Residues produced by the Energy From Waste (EfW) process which is used to treat some LACW(H) have also been included (LACW(Secondary))¹;
 - Commercial and Industrial wastes (C&I): wastes produced by companies in all industry sectors, including C&I waste collected by the Local Authority;
 - Construction, Demolition and Excavation wastes (CD&E): waste produced as a result of building, engineering, renovation and maintenance activities;
 - Hazardous waste: A sub category of all waste streams, where the material produced is hazardous and requires specialist treatment;
 - Agricultural Waste: waste produced by farming and forestry activity;

¹ These distinctions are made solely for the purposes of accurately identifying the respective quantities of wastes and how they are accounted for in this assessment in terms of how they are managed. They have no wider applicability.

- Low Level Non-Nuclear Radioactive Waste (LLW): waste associated with the use of low level radioactive substances (i.e. when taking x-rays and in laboratory testing); and
- Waste Water / Sewage Sludge: waste produced from washing, cleaning, and activities to treat waste water and sewage effluents.

Modelling Future Waste Arisings and Capacity Gaps

- V. Modelling work uses baseline data (set out in the Part 1 report referred to above) comprising the capacity of existing sites and the waste management functions they perform. This information is combined with projections of future change in arisings and management methods using combinations of five growth scenarios and three behaviour scenarios.
- VI. One growth scenario ('no growth') assumes arisings will remain at current levels throughout the period to 2031, although this is recognised as improbable. The other four scenarios assume increasing growth in arisings as follows:
- LACW increasing by between 3% and 3.3% per annum in the short term, and between 2% and 2.3% thereafter;
 - The other main streams would increase by between 0.55% and 0.87% per annum over the Plan period.
- VII. The 'no growth' and four other growth scenarios reflect the assumed impact of different economic factors applied to employment sector growth for LACW, C&I, CD&E and for the hazardous components of these waste streams. These factors include changes in population which will affect the quantity of waste produced by households (LACW(H)), economic changes that may increase the waste output of businesses and services (C&I waste) and infrastructure and housing growth (CD&E waste).
- VIII. The three behaviour scenarios represent how each of the streams could be managed over the plan period and can be summarised as follows:
- Scenario 1 – current levels of recycling and recovery are maintained;
 - Scenario 2 – recycling and recovery of LACW, C&I and CD&E wastes improves to achieve relevant statutory and non-statutory targets by 2020 and continues to improve further so that the rates achieved by 2031 are the maximum that are expected to be possible using current technology and given the composition of each stream;
 - Scenario 3 – a median level (between scenarios 1 and 2) which envisages modest improvement in recycling and recovery of LACW, C&I and CD&E wastes and

LACW(H) wastes and some diversion of waste away from landfill, though the 2020 target for recycling / composting of the former is not achieved.

- IX. Improvements in recycling performance assumed for Scenarios 2 and 3 result in proportionate reduction in the use of landfill disposal.
- X. Parameters in the growth and behaviour scenarios have been agreed with officers at Kirklees Council. The former are consistent with econometric forecasts that inform other Council plans, policy and strategy, while assumptions about future changes to management behaviour reflect industry expectations or, in the case of LACW, the strategy that the Council's Waste Collection and Disposal function is pursuing.

Existing Waste Capacity

- XI. A review of existing licensed waste management facilities operating within Kirklees has been undertaken, and this identifies a total of 64 sites. Most of the facilities are household waste recycling centres and transfer stations where LACW, C&I and CD&E wastes can be sorted, bulked and separated before onward transport for further management. There is a substantial amount of metal recycling capacity also, but a limited amount of treatment capacity, the most important of which is the Huddersfield Energy from Waste Plant. There are also a number of landfill sites and other sites where inert wastes are imported for landscaping and restoration purposes. The assessment assumes capacity will be available throughout the Plan period except where it is already known that sites will close prematurely (this constraint applies to three landfill sites).
- XII. By reviewing the existing waste management sites, establishing the type and quantity of waste they can manage annually, then matching this with the amount of waste being produced each year (under the different scenarios), the model calculates how much remaining capacity there is for each waste management route over time and to identify where gaps exist at present or will develop in the future.

Summary of Future Capacity Requirements

- XIII. The various combinations of growth and behaviour scenarios define an 'envelope' within which a number of different outcomes and requirements for additional capacity can be identified. The Energy from Waste facility in Huddersfield is scheduled to operate until 2023. The Council has an option to extend this period to 2028 and has asked that the study also evaluates continued operation of the plant to 2036. Both assessments are made solely for the purpose of informing the ongoing review of the residual LACW management strategy and do not imply any commitment to pursue either option at the present time. The table below identifies the results of capacity assessment for three of the options looked at along with the gaps for other waste management routes; these are set out in Table 2 of the main report. The three scenarios illustrate the implications of assuming no change and

of the high levels rates of growth and improvement in landfill diversion. In all cases negative figures identify capacity surpluses for certain routes.

Waste Management Route & Wastes	Baseline / No Growth 2031	Growth 4 Maximised Recycling / Recovery 2031	Growth 3 Median/Recovery 2031
Landfill (C+I)	101,515	44,307	48,957
Landfill (LACW)	16,140	12,701	12,394
Landfill (Hazardous)	6,386	7,103	7,289
Landfill (C+D&E)	-19,327	-60,189	-66,636
Thermal treatment with energy recovery ('Energy from waste') + Thermal Treatment (without energy recovery)	-19,600	-3,009	37,187
Recycling (C+I, & Agricultural)	88,678	172,653	156,835
Recycling (LACW only)	37,936	126,154	98,551
Recycling (C+D)	71,531	137,283	113,639
Recycling (metals only)	- 38,227	- 32,950	- 31,115
Recycling (Hazardous)	17,706	19,049	19,670
Composting	15,406	19,487	19,017
Treatment plant	-84,612	-81,293	-81,034
Other treatment plant / transfer (Hazardous / C&I)	27,438	22,144	61,308
Land Recovery	-58,321	-55,286	-55,902

Source: Kirklees Waste Needs Assessment model August 2016. All figures in tonnes]

- XIV. The points below summarise the principal conclusions about capacity needed to manage each stream based on the results of modelling.

LACW

- There is a capacity shortfall for preliminary sorting of LACW Recycling throughout the Plan period with the resources focused on a small footprint at the Huddersfield Materials Recycling Facility under the current contract arrangements.
- There are no operational sites composting green wastes within Kirklees and it is anticipated these materials will continue to be exported to facilities in other authorities.
- The existing EfW plant provides sufficient capacity for thermal treatment of LACW throughout the Plan period provided it remains operational beyond current contractual arrangements up to 2023/8. However under the highest growth (growth 4) there appears a small deficit in 2031 (shortfall of 3000 tonnes under the maximum recycling scenario)
- Kirklees has no landfill sites currently taking non-inert wastes such as LACW and therefore all waste that is not recycled or sent to the EfW plant is exported. If policy aims to implement the maximum level of recycling assumed in the analysis then the amount of waste sent to landfill will fall substantially although there will still be a shortfall in capacity for the disposal of LACW waste of over 57,008 tonnes by 2031. Should the median recycling option be taken forward, the requirement for landfill of C&I waste under growth 3 reduces from baseline levels but is around 4000 tonnes pa more than maximised recycling and places a greater demand on energy from waste for LACW, but existing capacity is sufficient assuming that the existing contract is extended beyond 2028 (except under growth scenario 4).

C&I Waste

- There will be a gap of around 88,678 tonnes of recycling capacity for handling C&I waste in 2016 rising to over 172,653 tonnes under the largest growth assumptions by 2031 for maximised recycling. Under median recycling the demand is slightly lower but a gap of over 156,835 has arisen by 2031 (median recycling growth scenario 3).
- As with the LACW stream it will be necessary to rely on continuing export of recyclate to external re-processors until such time as the identified local capacity comes forward. This situation applies to all scenarios but, as indicated above, the additional capacity needed will increase if the Plan seeks to promote high levels of recycling of these wastes.
- Under all the scenarios there is adequate transfer station capacity at sites handling mixed wastes and those handling specific materials such as metals.
- There is no EfW capacity for C&I wastes (the existing Huddersfield plant is currently contracted to handle LACW only). Even with recovery increasing from current

baseline by 1% to 4% by 2031 the additional capacity needed is very small and may be insufficient to make a local facility cost effective. Therefore it is likely that C&I wastes for EfW processing will continue to be exported outside the plan area.

- As with LACW there is an existing landfill capacity shortage that will persist throughout the Plan period though it will be reduced substantially under those scenarios assuming high levels of recycling and recovery. Should median recycling options be taken forward, the demand for landfill increases for C&I, but remains around the 15,000tpa for LACW.

CD&E Waste

- Kirklees at present has significant surplus landfill capacity for managing inert C&D and excavation wastes (and also capacity to use the latter in restoration projects if current rates of re-using this material are maintained)
- There is a surplus of capacity at waste transfer stations and bulking facilities for C&D over the whole Plan period throughout the plan period under all scenarios.
- At present there is a shortage of capacity for recycling CD&E wastes under all the scenarios over the whole Plan period. However the true rate may be disguised because mobile plant is being used to recycle this waste where it is created and these arisings are never reported. Similarly some transfer stations may also be making an unquantified contribution to recycling rates.

Hazardous Waste

- Kirklees currently relies on external treatment and recovery capacity to handle local arisings and it is unlikely that the small quantities involved would result in new local capacity coming forward
- Two landfill sites provide regionally significant capacity that result in the area being a net importer of hazardous wastes, however the eventual closure of both sites by 2028 will result in a small gap. This situation might be addressed if one or both facilities are granted extensions otherwise it will require new capacity or further reliance on external facilities.

Agricultural Waste

- The assessment has not identified the need for facilities to manage this stream specifically and any requirement is included in the assessed need for additional capacity to handle C&I wastes.

Sewage Sludge

- Yorkshire Water has advised the Council that additional capacity is likely to be needed at two plants within the Borough. The timescale for improvement has not

been established yet and will be identified through ongoing dialogue with the company.

Low Level Radioactive Waste (LLW)

- Kirklees contains a single location generating a very small amount of low-level radioactive waste, the nature of which means it can be disposed via the foul sewer network with other wastes. Therefore there is no need for specialised local management capacity.
- XV. If Kirklees is to become (net) self-sufficient in waste management capacity the Council will need to consider the requirements identified by this assessment and to adopt appropriate projections to plan for future waste capacity which would be delivered by the Plan.
- XVI. For any waste still requiring export to other areas, the Council should contact waste planning authorities receiving waste from Kirklees in order to establish whether they are aware of any foreseeable changes that may affect this position over the life of the Plan and in order to meet its obligations under the Duty to Co-Operate as defined in the Localism Act.

1. Introduction

- 1.1.1. Kirklees Unitary Authority (hereafter, the Council) is preparing the Kirklees Local Plan (KLP) which will include the planning framework for managing wastes arising within the authority area.
- 1.1.2. Urban Vision and 4Resources were contracted by the Council to prepare a Waste Needs Assessment to assess future waste capacity requirements in 2015. The purpose of this study was to enable the Council to plan for new facilities required to meet expected future waste arisings up to 2031 which represents a key part of the evidence base supporting the KLP. In addition the Council also requested that the Assessment review the implications of a change in waste management requirements over an additional 5-year period to 2036.
- 1.1.3. The Waste Needs Assessment was produced in two parts:
- Part 1: Waste Arisings in Kirklees; and
 - Part 2: Waste Capacity in Kirklees.
- 1.1.4. Part 1 of the Waste Data Study provided a detailed analysis of current waste arisings in Kirklees for all waste streams and waste movements into and out of the area for 2013. The information in Waste Data Study Part 1 was used to inform the stage 2 report and provides the basis for estimating future capacity requirements.
- 1.1.5. The Part 2 report presents the modelling options used to identify the future requirements for the plan area over the period referred to above. It provided detailed analysis of capacity gaps for each waste stream and the various ways in which the materials in it will be managed.
- 1.1.6. In July 2016, the Council requested a further update to both reports to address changes in waste arisings over the past 12 months and to apply alternative methods of forecasting based on updated agreed jobs figures and update the requirements for each of the waste streams based on the new figures.
- 1.1.7. In the 2015 report, a number of scenarios were modelled and these options are taken forward in this report. Each scenario presents a different option for modelling waste based on a range of recycling and recovery targets and growth levels being achieved.

The specifics of each option and proposed changes in 2016 report are set out in Tables 3&4 in Chapter 4 of this report.

1.1.8. The Waste Needs Assessment addresses the following seven controlled waste streams:

- Local Authority Collected Waste (LACW): waste collected by Local Authorities which is primarily waste produced by householders (referred to as LACW(H)) but which can also include some non-household waste such as collected road sweepings (LACW(other)). It also includes secondary waste arising as a by-product from treating residual household waste in an Energy from Waste facility (LACW(Secondary));
- Commercial and Industrial wastes (C&I): wastes produced by all sectors of industry;
- Construction, Demolition and Excavation wastes (CD&E): waste produced through the undertaking of building, engineering, renovation and maintenance of structures;
- Hazardous waste: A sub category of all waste streams, where the material produced is hazardous and requires specialist treatment and which cannot be managed with other wastes;
- Agricultural Waste: wastes produced by farming and forestry activity;
- Low Level Non-Nuclear Radioactive Waste (LLW): waste associated with activities such as taking x-rays and laboratory testing which use substances with low levels of radioactive emissions; and
- Waste Water/Sewage Sludge: waste produced from washing, cleaning, and hygienic activities to create waste water and sewage effluents.

1.1.9. A detailed review of the robustness and limitations of available information on current and expected arisings of waste in Kirklees has been carried out for all waste streams and is reported in the Part 1 report referred to above.

1.1.10. The data underlying the projections in this report represents the best available information at August 2016 although the timing of this updates means that the most recent data are for 2014 for C&I and CD&E waste and 2015 for LACW, which is therefore the base year from which forecasts are projected forward. Data sources include data reported via the Environment Agency Waste Data Interrogator (WDI) and Hazardous Waste Data Interrogator (HWDI) (both refer to 2014), and data from Defra's WasteDataFlow reporting facility which provides information on LACW, data has also been provided from the Councils Waste Management team on LACW.

- 1.1.11. Information on C&I waste is recognised to be poor. There have been no specific surveys of Commercial and Industrial (C&I) waste arisings in Kirklees and government have indicated that any future surveys are unlikely. Recent methods of calculation have been based on extrapolating data surveys of this stream that have been undertaken at national and regional levels, the latter being undertaken for North West England. The surveys which have been used for this study use data collected in 2009 and 2008/9 respectively^{2,3}. More recently Defra has suggested that future calculations should be based on a method devised by Jacobs which takes information from the EA's WDI. This method has not been used in this latest report as this is updating previous work which used the national and regional surveys. Any future detailed updates should look at using this alternative approach. This Needs Assessment Update is based on interpolating the results of a 2009 survey of the former North West region which represented the best available proxy for estimating the size of this stream locally and how it is managed at the time of preparing the original report.
- 1.1.12. It is acknowledged that this Study presents a picture at a particular point in time and requirements will need to be reviewed periodically throughout the preparation of the Plan as appropriate.

² Commercial and Industrial Waste Survey 2009 Final Report, May 2011 (Jacobs, for Defra).

³ North West of England Commercial and Industrial Waste Survey 2009 (Urban Mines, for the Environment Agency March 2010).

2. Overview of Kirklees Waste Arisings

2.1.1. Waste in Kirklees is generated by a wide range of sources and processes. The most familiar is waste collected from households, such as packaging and food. However this material only accounts for part of the overall waste arisings and much larger quantities are generated by the construction industry (Construction, Demolition and Excavation waste – CD&E), such as broken bricks and cables; and from business activities (Commercial and Industrial waste – C&I), such as food from restaurants and paper from offices. These three streams make up the majority of waste produced within Kirklees.

2.1.2. Table 1 and Figure 1 show the estimated waste arisings (and the relative proportions of each stream) in Kirklees in 2014/15. **Collectively these figures define the baseline arisings on which the subsequent needs assessment is based.**

Table 1: Arisings of Controlled Wastes in Kirklees in 2014/15

Waste Type	Tonnage	Percentage
Local Authority Collected Waste (H) (all household waste but excluding trade waste) ⁴	160,974	23%
Local Authority Collected Waste (Other) (all other waste from non-household sources but excluding trade waste)	17,400	
LACW (Secondary) secondary waste from energy recovery includes – this includes some LACW that is classed as hazardous	27,734	
Commercial Waste (CI) (including the trade waste element of LACW)	180,820	20%
Industrial Waste (I)	181,843	20%
Construction Demolition Waste (C&D)	77,000	9%
Excavation(E) ⁵	216,000	24%
Hazardous waste (is a sub set of other waste categories and can originate from CD&E, C&I & LACW sources)	32,516	4%

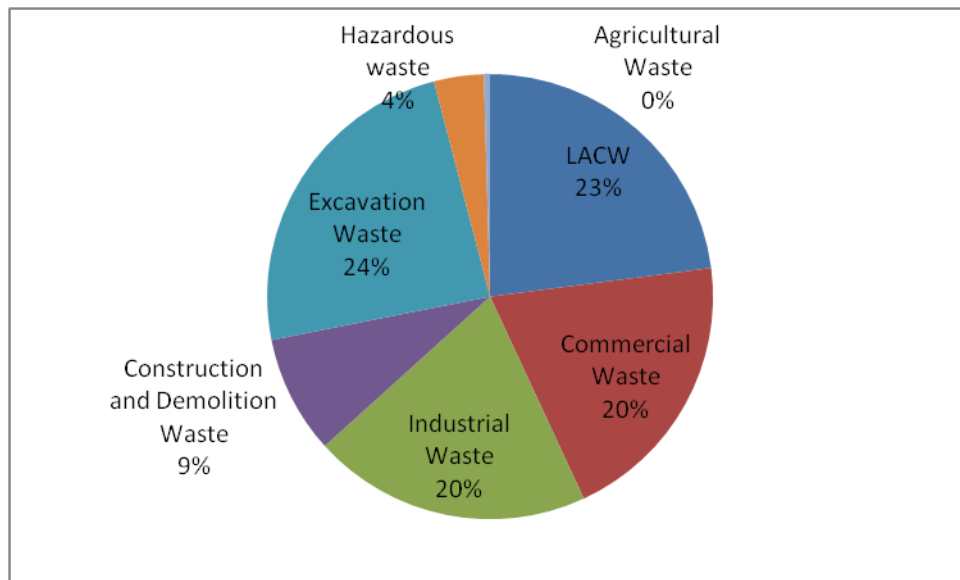
⁴ Trade waste is material collected under contract by the local authority from business premises. It is also contained in the estimates of C&I waste generated by businesses. It is excluded from the LACW stream in this study to prevent double-counting.

⁵ C&D and E wastes are assessed separately as there is more scope to recycle the former which has implications for estimating how much waste will need to be disposed to landfill.

Waste Type	Tonnage	Percentage
Agricultural Waste (leaving farm holdings)	4,012	<1%
Total	872,300	100%

[Source: Waste Needs Assessment Part 1: Waste Arisings in Kirklees, August 2016]

Figure 1: Relative Proportions of Principal Wastes Generated in Kirklees



[Source: analysis using Environment Agency Waste Data Interrogator, 2014, WasteDataFlow, Extrapolated NW 2009 C&I Survey and Extrapolated Agricultural 2003 survey]

- 2.1.3. Responsibility for managing waste water and sewage lies with Yorkshire Water. Additional capacity to meet population growth is most likely to be provided by expanding existing treatment facilities. This situation only has implications for the Plan if it requires the allocation of land outside the curtilage of existing waste water treatment facilities.
- 2.1.4. Arisings of low level radioactive wastes are negligible and cannot be readily identified by weight. A single site in the Plan area generates these wastes the quantity and nature of which means they can be safely disposed to foul sewer with other waste water.
- 2.1.5. Further detail on managing waste water and sewage and low level radioactive wastes is provided later in this report.

3. Context for the Needs Assessment

3.1.1. Most waste is produced as a result of demand for products or the creation of new infrastructure. The need to reduce waste creation directly, or indirectly by greater use of recycled materials is at the heart of strategies promoting sustainable consumption that apply at EU and national levels and which impact local waste strategies equally. Promoting change at local level for LACW is achieved through mechanisms such as the local Municipal Waste Management Strategy. Voluntary agreements such as the Courtauld Commitment - whereby manufacturers seek to reduce packaging waste by better design and use of predominantly recyclable materials – also contribute significantly to the reduction of wastes.

3.1.2. Planning for future waste management must also reflect the external influence of relevant legislation and the obligations this places on the Council as Waste Collection and Disposal Authority as well as its role as competent authority in preparing a Waste (and Minerals) Plan to provide for sustainable management of locally arising of wastes. Some legislative influences are readily identified; others are proposed and their implications cannot be taken into account at this time and represent risks that have to be considered when establishing policy.

3.1.3. Key aspects of the legislative landscape and their implications for this assessment and the Council’s waste planning are summarised below. Several matters impact the options for managing residual LACW in the future and aspects of this assessment will assist the Council in moving towards an appropriate strategy for dealing with this stream in the period after the current PFI contract ends. Other matters, such as future changes to mandatory targets, will need to be taken into account when assessing appropriate growth and performance assumptions that will be taken forward into the Plan.

EU Landfill Directive **What is in force or proposed?:** Sets target of reducing biodegradable waste sent to landfill to 35% of 1995 levels by 2020.

What are the implications?: Local performance currently exceeds the EU target substantially (7% household waste to landfill in 2013/14) as a result of a reliance on the EfW plant for residual disposal. A key issue for the medium/long-term will be the evolution of the strategy for managing residual LACW, whether current diversion rates can be maintained, and the technical solution(s) that can be used to achieve this.

EU Waste Framework Directive & Waste **What is in force or proposed?:** Directive sets target of recycling, composting or re-using 50% of household waste by 2020.

Management Plan for
England

What are the implications?: Local performance in 2013/14 was below the national average and action to address it in the short-term is being taken. 'Direct' diversion to recycling was relatively low (30%). In addition to this, the Council has a high rate of waste diversion classed as 'recovery'. This recovery does not count towards the government's 50% recycling target. The Council therefore needs to make further improvements on its recycling levels to meet national targets. With the EfW plant apparently operating at close to full capacity there is limited scope to divert more household waste down this route using existing local facilities. The local opportunity to implement increased recycling measures is dependent on the terms of the Authority's PFI contract with Sita Kirklees Ltd. The Council's upcoming waste strategy review may need to consider the viability and desirability of introducing organic waste collections.

Waste Management
Plan for England

What is in force or proposed?: In addition to the proposals from the EU, publication of the national Waste Management Plan introduced policy directions promoting the circular economy. One key aspect is the proposal for quality controls on materials collected and sorted by Materials Recycling Facilities. The aim of the proposal is to meet the standards required from organisations reprocessing plastics, glass, paper, etc. into secondary or recycled products thereby stimulating the development of a national recycling sector with the intention of reducing the export of recyclate (and therefore loss of a resource). At present these proposals refer only to monitoring of materials against defined standards and thresholds but without specific legislation enforcing them, although the latter is likely to emerge in due course.

A second policy direction of note involves promoting separate collection of food waste where this is not already provided. The Plan devolves this decision to individual authorities though, as referred to above, it may be necessary to deploy it widely in order to achieve further improvement in recycling and composting performance.

What are the implications?: In the short-term this development primarily has implications for Sita Kirklees Ltd in managing the wastes handled under the PFI contract. However the implications of this development will need to be followed through in the review of the residual waste management strategy so that infrastructure brought forward later in the plan period to replace the PFI facilities will meet any emerging standards.

EU Waste Framework
Directive

What is in force or proposed?: Sets target of recycling 70% of CD&E wastes by 2020. Performance against this target is difficult to assess and affected by significant differences in the size and recycling opportunities for the C&D and E streams separately.

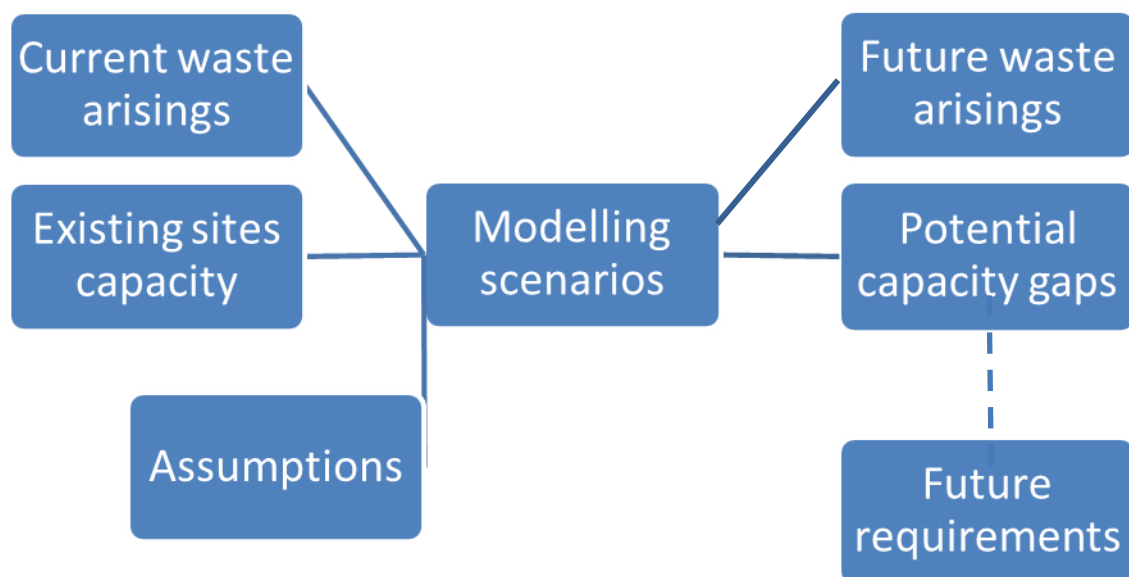
What are the implications?: Local C&D recycling performance already significantly exceeds the EU target (89% in 2013) but this is offset by limited recycling of E wastes (only 10%). Overall performance is therefore 32% but rises to 53% if E waste re-used in restoration or land recovery is included in the total. However there is no mechanism for reporting the quantity of E wastes that are used in backfilling and restoring the sites where they were generated. The level of recycling and re-use is likely to be significantly underestimated though an accurate figure cannot be identified. This situation is not necessarily critical of local performance. Defra claims

that national performance outstrips the EU target and that in many other Member States, but the inclusion of E wastes will have the same effect at national level as it does in the Authority and assessment is again hampered by a lack of accurate data. This is not a matter that the Authority can plan for proactively as the opportunity to maintain potentially higher rates of E waste re-use will depend on demand for landscaping material from future development projects and for fill to restore mineral sites. Conversely, high levels of local C&D recycling are likely to be maintained as the cost of alternative management methods is expensive by comparison and secondary materials should be cheaper than virgin material provided quality standards can be met.

4. Methodology for Predicting Future Waste Capacity Requirements

- 4.1.1. The Waste Needs Assessment has employed the structure shown in Figure 2 to assess future capacity requirements.

Figure 2: Methodology for Predicting Future Waste Requirements



4.2. Identifying Current Waste Arisings and Existing Capacity

- 4.2.1. In order to identify future waste arisings and capacity it is important to gain as accurate a picture as possible of current waste arisings and the capacity of existing permitted waste management facilities. Economic and waste trends are then used to forecast future waste growth and subsequently the need for new facilities can be projected based on any capacity gaps that are identified.
- 4.2.2. Data on waste arisings across the streams listed in Table 1 has been analysed and identified in the Part 1 report which defines the situation in the baseline year of 2014.
- 4.2.3. A review of existing licensed waste management facilities operating within Kirklees has been undertaken in parallel. Appendix 1 provides detail of the existing waste management sites in the Borough, the functions they provide, and the type of wastes

that each manages. Appendix 2 summarises the aggregate capacity of all facilities of a particular type.

4.2.4. There are currently 69 facilities operating in Kirklees carrying out a range of waste management activities across the principal waste streams. They include:

- facilities such as household waste recycling centres;
- transfer stations, where waste can be sorted, bulked and separated before onward transport for further management;
- sites recycling mixed wastes and specific materials such as metals;
- a range of treatment facilities dealing with common residual wastes;
- energy recovery facilities such as the Energy from Waste (EfW) plant in Huddersfield; and
- other facilities taking material such as hazardous wastes, electrical equipment, etc. that may require special handling.

4.2.5. There are also a number of landfill sites and other locations accepting inert wastes for backfilling, restoration and landscaping purposes (collectively referred to as land recovery operations). Planning permissions for three landfill sites in the Plan area will expire during the plan period.

4.2.6. Operational waste sites were identified from those locations listed in the Environment Agency's Waste Data Interrogator tool for 2014 which were cross-checked against a list of permitted facilities provided by the EA and against the Public Registers⁶. The Council also provided details of recently permitted sites that have yet to start operations but which are expected to contribute to local capacity during the Plan period. The resulting list was reviewed by council officers to identify any further information from relevant planning permissions or other sources regarding the capacity and end date for the existing use of a site.

4.2.7. Some capacity data has been compiled from the EA licence, and/or Planning Permission information (where available). However the EA has recently ceased

⁶ In the course of identifying site capacity (as subscribed in the following paragraphs) a number of sites were identified that had reported accepting waste in previous years but not in 2013. Sites that had only recently apparently stopped accepting waste recently were assumed to be mothballed for a short time and included in the capacity assessment except where Council officers advised a facility was known to have shut permanently. Sites that stopped accepting waste in 2010 or earlier were excluded based on the expectation that the recession had forced them to shut.

supplying details of licensed capacity for a site as this is a theoretical value and may not accurately reflect the physical throughput that the site can provide⁷. As a result a review of past annual throughputs was also undertaken to ascertain the most accurate information for the actual available capacity at each site. The past 6 years' data was reviewed in identifying the maximum perceived capacity for each facility based on how much material it actually handled.

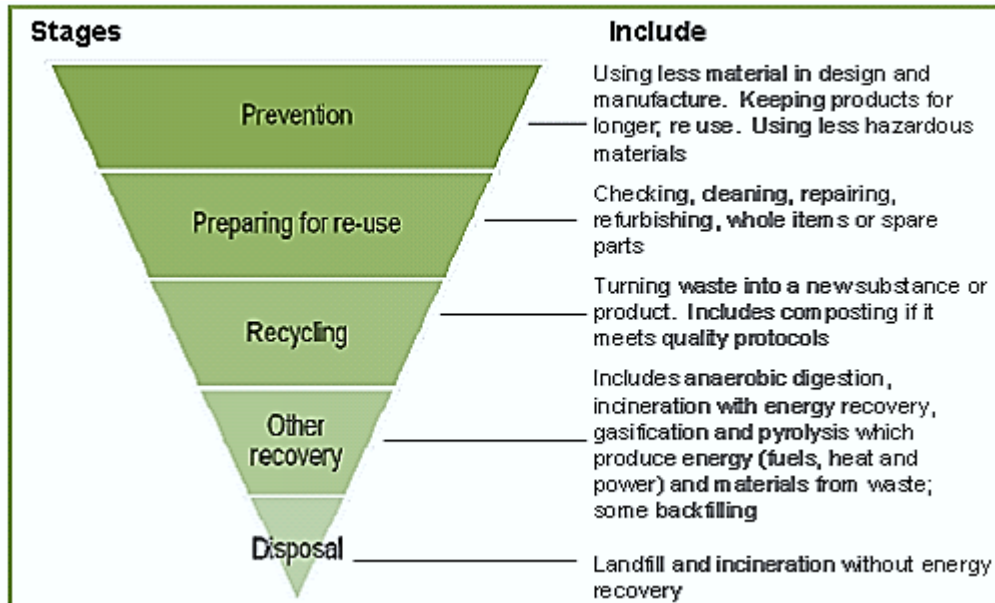
- 4.2.8. The capacity of all existing waste sites validated through this process has been included in the model for purposes of estimating future waste requirements for the KLP. The maximum throughput capacity identified over the last 6 years is assumed to be available for the duration of the KLP, unless the operator/landowner has advised otherwise.
- 4.2.9. All companies currently or recently operating waste sites were contacted by email to check details about their operations; however the response rate was extremely poor and did not identify any significant changes or new information.

4.3. Modelling and Assumptions

- 4.3.1. The Waste Needs Assessment provides information on future waste arisings for the principal waste streams shown in Table 1, and identifies where there may be a capacity gap at any time in the period 2016 -2031. Information is also provided on hazardous waste, which is a sub category of LACW, C&I and CD&E waste. The data study provides a level of detail and consistency that has not previously been available to Kirklees. The projection of future waste capacity requirements must consider how much waste arises and must evaluate the potential for recycling or energy recovery with the aim of managing waste more sustainably and moving it up the Waste Hierarchy as shown in Figure 3.

⁷ Environmental Permits for waste operations are issued in capacity bands and therefore the site capacity may be substantially less than the maximum allowed by its Permit. When such inaccuracies are repeated across a substantial number of sites there is a risk that the available capacity will be significantly over-estimated and therefore it is necessary to estimate capacity in other ways.

Figure 3: The Waste Hierarchy



Source: DCLG, National Planning Policy for Waste, Appendix A

- 4.3.2. In order to comply with the EU Waste Framework Directive and the National Planning Policy for Waste, each type of waste must be managed at the highest technically and economically feasible level in the Waste Hierarchy, while recognising that landfill will remain the only realistic option for disposing of certain wastes. The need for waste management facilities to deal with the waste in a more sustainable way will form an integral part of the waste element of the KLP. This approach is consistent with the Government's wider sustainable development agenda and its approach to sustainable waste management in particular.
- 4.3.3. As noted in section 3 of this report, local performance in recycling LACW is currently not on track to achieve the statutory target for 2020, while the combined levels of recycling and energy recovery mean that the corresponding target for diverting biodegradable waste from landfill is already being exceeded five years ahead of the 2020 target date.
- 4.3.4. Forecasting future requirements involved constructing a number of scenarios based on different levels of arisings growth, and different levels of recycling, recovery and landfill performance.
- 4.3.5. The growth scenarios considered for the LACW, C&I, CD&E and agricultural waste streams are summarised in Table 2.

Table 2: Summary of Growth Scenarios

Scenario	Annual growth rate assumptions
1.Growth (1) Lowest Growth	C- Variable growth over plan period
	I - Variable growth over plan period
	C,D &E - Variable growth same as industrial
	Hazardous - Variable growth same as industrial
	Agricultural - As baseline (Extrapolated for 2016)
	LACW(H) - Population growth and waste growth total 2% 2016-2036
	LACW (Other) Population, no waste growth at 0.6565% all plan years
2.Growth(2) Moderate Growth	C - Variable growth over plan period
	I - Variable growth over plan period
	C,D &E - Variable growth same as industrial
	Hazardous - Variable growth same as industrial
	Agricultural - As baseline (Extrapolated for 2016)
	LACW (H)- Population growth and waste growth at 2.0354 % 2016 and thereafter for plan period
	3. Growth (3) Higher Growth
I - Variable growth over plan period	
C,D &E - Variable growth same as industrial	
Hazardous - Variable growth same as industrial	
Agricultural - As baseline (Extrapolated for 2016)	
LACW(H) - Population growth and waste growth combined at 2.1341% 2016 and thereafter for plan period	
LACW(other) Population growth, no waste growth at 0.7906% for whole plan period	

4.Growth(4) Maximum Growth	C - Variable growth over plan period
	I - - Variable growth over plan period
	C,D &E - Variable growth same as industrial
	Hazardous - Variable growth same as industrial
	Agricultural - As baseline (Extrapolated for 2016)
	LACW(H) Population growth and waste growth combined at 2.2728 2016 and then whole plan period
	LACW(other) Population growth , waste growth at 0.9293% for whole plan period

[Sources: Kirklees Council WDA forecasts; Demographic Analysis and Forecasts, August 2016, Edge Analytics for Kirklees Council]

4.3.6. Growth rates reflect both external influences on future waste arisings and the Council's own expectations. The Council's Waste Disposal Authority provided the projections for LACW(H) which reflects the effects of changes in waste arisings as a result of waste reduction and recycling initiatives promoted through the Municipal Waste Management Strategy together with the impact of future population growth in the Borough.

4.3.7. Forecast growth rates for other streams are based on demographic projections of employment in Kirklees, drawing forecasts from econometric modelling undertaken for the Council that informs, and is therefore consistent with, other plans and strategies. They reflect:

- future anticipated levels of economic activity;
- the impact of fiscal financial/legislative factors such as landfill tax charges driving waste away from landfill (which affects LACW also);
- financial incentives such as Renewable Obligations Certificates which increase the economic viability of energy recovery).

4.3.8. Three waste management behavioural scenarios were defined in order to assess the implications of different options for managing these streams in terms of the proportion of material recycled, treated, used for energy recovery, and disposal. Table 3 sets out the three scenarios chosen to reflect the potential changes in practice in the management of waste arisings. It takes into account the increasing recycling potential through the changes in waste collection, processing and treatment practices, particularly for Commercial and Industrial waste, and the corresponding reduction in landfill disposal.

- 4.3.9. These 'behaviour modifiers' are based on professional judgement of realistic maximum levels of landfill diversion that might be achieved and were agreed with Council officers. They also reflect the best available information at the time this report was prepared and can be amended and re-modelled to take account of any future changes if performance falls below or exceeds these assumptions.
- 4.3.10. The LACW(H) targets have been selected to model the government target of recycling of LACW(H) for a combined country approach to 50% recycling by 2020 (Maximum recycling) and a lower target of 40% recycling (Median recycling) by 2020 (the baseline position for LACW(H) is 27% at 2014/15).

Table 3: Summary of Behaviour Scenarios

Behaviour Scenario 1 (Baseline)	
No change - the Part 1 report identifies the proportions of each waste stream that are currently recycled, composted, treated, sent to energy recovery or to landfill.	
Behaviour Scenario 2 (Maximised Recycling and Recovery)	
By 2020	By 2031
LACW(H) 50% recycled or composted; 45% to energy recovery 5% to landfill	LACW (all types) – no change from 2020
Other LACW as for baseline	Other LACW as for baseline
Secondary LACW as for baseline	Secondary LACW as for baseline
C - 75% recycled (66% <i>Baseline</i>); 6% to EfW (<i>baseline 1%</i>); 3% to other treatment (<i>baseline 3%</i>); 16% to landfill (<i>baseline 23%</i>)	C – 80% recycled; 6% to EfW; 4% to other treatment; 10% to landfill
I – 81% recycled or composted (71% <i>baseline</i>) ; 16% to landfill (23% <i>baseline</i>) ; 3% to land recovery (<i>baseline 3%</i>)	I – 85% recycled or composted; 12% to landfill; 3% to land recovery
C&D – 40% recycled (<i>baseline 32%</i>); 50% treated (<i>baseline 56%</i>); 10% to landfill (<i>baseline 13%</i>)	C&D – 45% recycled; 45% treated; 10% to landfill
E – 40% recycled (<i>baseline 24%</i>); 1% treated (<i>baseline 1%</i>); 43% to landfill (<i>baseline 59%</i>); 16% to land recovery (<i>baseline 16%</i>)	E –45% recycled; 1% treated; 38% to landfill; 16% to land recovery
Agricultural and hazardous as for baseline	Agricultural and hazardous as for baseline
Behaviour Scenario 3 (Median Recycling and Maximised Recovery)	

By 2020	By 2031
LACW (H) – 40% recycled or composted; 55% to energy recovery; 5% to landfill	LACW(all types) – no change from 2020
Other LACW as for baseline Secondary LACW as for baseline	Other LACW as for baseline Secondary LACW as for baseline
C – 70% recycled; 4% treated; 10% to energy recovery; 16% to landfill	C – 75% recycled; 4% treated; 15% to energy recovery; 6% to landfill
I – 76% recycled or composted; 21% to landfill; 3% to land recovery	I – 80% recycled or composted; 18% to landfill; 2% to land recovery
C&D – 35% recycled; 55% treated; 10% to landfill	C&D – 40% recycled; 50% treated; 10% to landfill
E – 30% recycled; 19% treated; 35% to landfill; 16% to land recovery	E – 35% recycled; 15% treated; 34% to landfill; 16% to land recovery

4.3.11. The approach summarised above allows up to 12 future scenarios to be modelled using different combinations of growth and behaviour assumptions. A summary of the waste arisings forecast for each combination of scenarios is provided in Appendix 3.

4.3.12. The approach to estimating capacity has been explained earlier in this chapter. In addition, assumptions have been made on specific existing waste management sites using information from the Council in regard to landfill sites, with total capacity void space remaining figures obtained from the Environment Agency. This is set out in Table 4. The estimated site closure dates may be subject to change and the model will be updated to reflect any new information.

Table 4: Assumptions about Existing and Planned Waste Management Sites

Waste Site	Capacity	Assumption
Kirklees Energy from Waste plant	132,000 tonnes (annual)	Funded through PFI between Council and Sita Kirklees Ltd. Contract expires in 2023 with an option for a 5 year extension to 2028. The model has 2 options – site closes in 2028 site continues to operate up to 2036 ⁸

[Source: Kirklees Council]

4.3.13. Many of the existing waste management operations can treat more than one waste type - eg. sites using technologies to treat residual can also treat residual C&I waste. Waste management site licences and planning permissions do not specify limits on the proportions of waste from each waste stream that can be handled at different sites. As a result professional judgement has to be applied to identify which waste streams each site handles, but it is not possible to determine the relative proportions except on those sites contracted to handle LACW only or which have permissions to handle hazardous wastes.

4.3.14. It is therefore not possible to assess each existing waste management facility by individual waste stream and so results are grouped together to gain an overall picture of capacity by waste management type. The resulting waste management types are shown in Table 5.

Table 5: Waste Management Facility Categories Used in the Model

Waste Management Facility Type
Landfill (C&I and LACW)
Landfill (Hazardous)
Inert Landfill (CD&E)
Energy from Waste (LACW, C&I)
Recycling (C&I, Agricultural)
Recycling (LACW)
Recycling (C&D)
Recycling (Metals) ⁹

⁸ These options are included for the purpose of modelling the effects of continued operation of the plant on residual waste disposal needs and do not imply any commitment at the present time to operation beyond 2023.

Recycling (Hazardous)
Recycling (LACW)
Composting (C&I, LACW)
Treatment (C&I)
Other Treatment/Transfer (Hazardous/CI)
Land Recovery (CD&E)

4.3.15. Utilising the latest data (at August 2016), existing information was assembled and collated into a Waste Facility Capacity Database, with each site allocated to managing one or more waste streams. Table 6 summarises the available capacity by stream and management function, which is assumed to be available for the duration of the plan unless information has been obtained from the operator indicating earlier closure.

Table 6: Estimated Annual Capacity Available from Licensed Operational Waste Management Facilities within Kirklees

	Transfer station	Recycling (MRF)	Recycling (special)	Treatment	Energy recovery	Land recovery	Landfill
LACW only	252, 962	32, 497			132,000		
LACW + C&I							
C&I only	9	78,451	3,246	6,352			
C&I + CD&E	61,736	37,214	24,389	65,494			
CD&E only	16,980						
E only						98,336	
Hazardous	1,266	3,012	67,368	24,786			

[Source: Kirklees Waste Needs Assessment model August 2016.]

⁹ The work distinguishes between Materials Recycling Facilities that accept and separate a range of mixed wastes, and specialised facilities that only manage certain types of material. Virtually all the latter type of local capacity is located in metal recycling sites and vehicle dismantlers with Kirklees containing a considerable surplus of both in common with many other local authorities. At the same time there may be a shortfall of capacity for recycling LACW and C&I wastes, but such specialised sites lack facilities for handling these materials and therefore any surplus of this type of capacity must not be traded against a shortfall of other capacity as there is no scope for this to happen.

4.3.16. The modelling process calculates the total available capacity for particular types of waste management sites and matches this to the arisings which can be managed through these sites. The process involves the following stages:

- For each stream or combination of streams the amount of capacity available for each management route is summed (eg. the amount of recycling capacity available to handle LACW and C&I wastes);
- The chosen Growth Modifier scenario (see Table 2) is used to forecast the change in arisings over the Plan period
- The chosen Behaviour Modifier scenario (see Table 3) is used to distribute the quantity of arisings between the different management routes reflecting the relative levels of recycling, recovery and disposal that are assumed;
- The available capacity is subtracted from the forecast quantity of waste that will need to be managed and the result indicates whether there is a gap or a surplus of capacity.

4.3.17. The model cannot show capacity surpluses or gaps for any single site or waste stream unless there is only one site entered in the model which is designated to take only one category of waste. In all other cases figures identify the total available capacity for the waste management type across all sites. The model has been designed to assume that all available waste management capacity is used to manage waste arising in Kirklees and no allowance is made for the use of capacity at merchant sites to accept wastes from outside the Authority.

5. Potential Capacity Gaps in 2031

- 5.1.1. The model allows the results of modelling all 12 scenario options as defined in the previous chapter to be used to assess future capacity requirements. At the time of writing this report no decision has been taken on which scenario the KLP would aim to deliver. This chapter documents and summarises the gap analysis for the scenarios.
- 5.1.2. The model projects capacity gaps across each of the modelling scenarios for the period 2016-2031. The detailed results of the requirements for each waste management route are set out in Appendix 4 and a summary of the position at the end of the Plan period is shown in Table 7. These three scenarios are presented as they represent the least and most extensive changes from the current position and the impact of choosing a median recycling option. Note that negative figures in the tables and figures below, and those in Appendix 4, identify capacity surpluses.
- 5.1.3. Table 7 also distinguishes between the EfW capacity available if the plant closes when planned, or if it continues to operate as referred to in Table 4.

Table 7: Capacity Gap Comparison for the Scenarios Modelling the Least and Most Extensive Changes in Requirements by 2031

Waste Management Route & Wastes	Baseline / No Growth 2031	Growth 4 Maximised Recycling / Recovery 2031	Growth 3 Median/Recovery
Landfill (C+I)	101,515	44,307	48,957
Landfill (LACW)	16,140	12,701	12,394
Landfill (Hazardous)	6,386	7,103	7,289
Landfill (C+D&E)	-19,327	-60,189	-66,636
Thermal treatment with energy recovery ('Energy from waste') + Thermal Treatment (without energy recovery)	-19,600	-3,009	37,187
Recycling (C+I, & Agricultural)	88, 678	172,653	156,835

Recycling (LACW only)	37,936	126,154	98,551
Recycling (C+D)	71,531	137,283	113,639
Recycling (metals only)	- 38,227	- 32,950	- 31,115
Recycling (Hazardous)	17,706	19,049	19,670
Composting	15,406	19,487	19,017
Treatment plant	-84,612	-81,293	-81,034
Other treatment plant / transfer (Hazardous / C&I)	27,438	22,144	61,308
Land Recovery	-58,321	-55,286	-55,902

[Source: Kirklees Waste Needs Assessment model May 2016. All figures in tonnes – negative figures indicate capacity surpluses]

6. Future Requirements

6.1. Introduction

6.1.1. This section of the report sets out the future requirements for each of the principal waste streams in turn, setting out:

- Current arisings and capacity of existing facilities;
- Capacity of additional facilities that will be required to deal with forecast future arisings¹⁰.

6.1.2. This aspect of the assessment can now also inform the Council's review of the strategy for managing residual LACW once the current PFI contract has ended.

6.2. Local Authority Collected Waste (LACW)

6.2.1. The collection and management of LACW across Kirklees is the responsibility of Kirklees Council as statutory Waste Collection and Waste Disposal Authority. LACW includes some "trade waste" which the council collects from businesses and other organisations. For the purpose of modelling and the waste needs assessment this material has been deducted from LACW as it is already captured under C&I waste management. For modelling purposes LACW has been further separated as LACW (H) (waste collected from households) and LACW (Other) (non-household wastes such as street sweepings) to allow assessment against the Waste Framework Directive recycling target (50% by 2020) which applies only to waste collected from households. The secondary waste by-products created from the first stage EfW recovery process have been further included as LACW (Secondary). The term residual waste refers to the waste that cannot be or is not separated for recycling or composting. The Council currently diverts most of its residual waste away from landfill through the waste disposal contract with Sita Kirklees Ltd (formerly Sita), principally through the Huddersfield EfW Plant.

¹⁰ The summary of the LACW stream includes a specific section reviewing future arisings due to the importance attached to understanding the implications of continued operation of the EfW facility and requirements for other infrastructure beyond the end of the PFI contract.

LACW: Current Arisings, Facilities and Management Mix

- 6.2.2. In 2014/5 arisings of LACW (H) totalled 160,974 tonnes with a further 17,400 tonnes of LACW(Other) and 27,734 tonnes of LACW (secondary). Therefore the total quantity of LACW waste was 206,108 representing 23% of all waste arisings in the Plan area¹¹.
- 6.2.3. As stated above, Kirklees currently relies on the EfW facility at Huddersfield as the primary method of disposing of residual LACW and at present the plant currently handles a total of 102,395 tonnes of LACW(H) and LACW(Other)).
- 6.2.4. Mixed recyclables are handled at the dedicated Materials Recycling Facility in Huddersfield and the Thornhill integrated Waste Management Facility in Dewsbury. In 2014 33,725 tonnes were recycled at these two sites with separated wastes sent to third party-operated reprocessing plants outside the Plan area. Some materials that require more specialised recycling (eg. batteries) are taken to other reprocessing sites operated by Suez (Sita's parent company) which serve several regions and which are located outside the authority.
- 6.2.5. There are no operational non-hazardous landfill sites in Kirklees (although one site Laneside Quarry Landfill was permitted until the end of 2015 to accept such material) and as a result any residual waste that cannot be sent for energy recovery is currently exported out of the Plan area. Currently the main export routes are to landfills in Scunthorpe, Wakefield and Leeds, however it is understood that from 2015 all waste will start to go to Skelton Grange landfill in Leeds. In 2014/15 the quantity of LACW(H) disposed to landfill was 15,236 tonnes.
- 6.2.6. There is a single site in Huddersfield that has a composting pad and which has permission to compost green waste. However the PFI contractor currently sends around 13,588 tonnes of material to a facility in Wakefield and the capacity gap assessment assumes this arrangement will continue in the foreseeable future.

LACW: Future Arisings

- 6.2.7. Table 8 summarises an analysis of the LACW capacity gap for all management routes for four combinations of growth and management scenarios covering the range of

¹¹ Further to the comment in the previous paragraph, the quantity of trade waste collected in 2014/15 and deducted from total LACW arisings was 25,147 tonnes.

possible outcomes. It also allows comparison of the impact of closure of the EfW facility in 2028 and if it remains in operation subsequently.

6.2.8. Table 8 shows that while the Growth 2, 3 and 4 scenarios would result in greater landfill diversion rates, the limited quantity of certain local capacity results in a corresponding increase in the capacity gap for facilities for recycling LACW(H) including a small amount of inert waste in that stream.

Table 8: Comparison of the LACW (H) and LACW (Other) Capacity Gaps

Scenarios:	Behaviour	Baseline	Med. Recycling	Med Recycling	Max. Recycling
	Growth	No Growth	Growth 2	Growth 3	Growth 4
Recycling (LACW)	2016	37,936	52,253	52,498	60,288
	2020	37,936	72,919	73,636	93,673
	2031	37,936	96,287	98,551	126,154
	2036	37,936	108,676	111,855	143,695
Recycling (Metals)	2016	2,223	2,385	2,392	2,401
	2020	2,223	2,585	2,602	2,627

Scenarios:	Behaviour	Baseline	Med. Recycling	Med Recycling	Max. Recycling
	Growth	No Growth	Growth 2	Growth 3	Growth 4
	2031	2,223	3,226	3,283	3,364
	2036	2,223	3,568	3,648	3,764
Composting	2016	13,588	14,246	14,287	14,346
	2020	13,588	14,974	15,076	15,219
	2031	13,588	18,689	19,017	19,487
	2036	13,588	20,671	21,135	21, 805
EfW to 2028	2016	- 28,345	-27,244	26,940	-33,973
	2020	- 28,345	-27,732	-27,025	-45,048
	2031	103,655	129,917	132,197	111,105
	2036	103,655	143,587	146,814	124,212
EfW to 2031	2016	- 28,345	-27,244	-26,940	-33,973
	2020	- 28,345	-27,732	-27,025	-45,048
	2031	-28,345	-2,083	197	-20,895
	2036	-28,345	11,587	14,814	-7788

Scenarios:	Behaviour	Baseline	Med. Recycling	Med Recycling	Max. Recycling
	Growth	No Growth	Growth 2	Growth 3	Growth 4
Landfill	2016	15,677	13,487	13,527	13,581
	2020	15,677	9,822	9,888	9,982
	2031	15,677	12,180	12,394	12,701
	2036	15,677	13,436	13,738	14,174

[Source: Kirklees Waste Needs Assessment model May 2016 – all figures in tonnes; negative values identify where there is a capacity surplus]

LACW: Required Facilities – Energy Recovery

6.2.9. The modelling scenarios assume that the existing energy recovery facility with a capacity of 132,000 tonnes will be available until 2028 and a further modelling exercise examines the effect of extended operations to 2036. Current operations allocate this capacity for managing LACW only and the assessment therefore assumes that any spare capacity that may be identified would not be available for energy recovery of residual C&I wastes.

6.2.10. Two other assumptions about EfW capacity should be noted:

- the capacity shown above reflects the maximum throughput reported over the period 2010-2014 and is therefore considered to be a realistic estimate of what can be accepted once the effect of partial closure for periodic scheduled maintenance is taken into account;
- it is expected that the plant will need to be refurbished if it continues operation beyond 2028 though it is not known whether this would result in a change in capacity. The model assumes the capacity referred to above would continue to be available throughout the extended operating period.

6.2.11. If the EfW plant closes in 2028, under the No growth/Baseline scenario combination there will be a shortfall of capacity of over 100,000 tonnes (103,655 tonnes at 2031) annually for the remainder of the Plan period, and under Growth 4 /maximised recycling combination this gap increases 33,900 tonnes in 2016 to 111,105 tonnes by 2031.

Under median recycling, growth 2 if the plant closes by 2028, there will be a shortfall by 2031 of 129,917 tonnes. If the Efw plant is not continued then the plan will need to address this gap.

6.2.12. This aspect of the assessment can now inform the Council's review of the strategy for managing residual LACW once the current PFI contract has ended.

LACW: Required Facilities – Recycling

6.2.13. The requirement for additional recycling capacity to achieve net self sufficiency increases over the plan period in all of the growth scenarios. The gap at primary processing facilities increases from 60,288 to 143,695 tonnes over the Plan period by 2036 under the Growth4/Maximum recycling scenario combination, under Growth 3/Median recycling the requirements rise from 52,498 in 2016 to 111,855 tonnes in 2036.

6.2.14. However it is important to recognise that recycling is a multi-stage process and the current assessment can only assess requirements for the initial stage of separating materials, whether this occurs at MRFs or HWRCs. The separated material requires further downstream capacity to reprocess it into secondary products and at present this activity occurs outside Kirklees. As recyclate comes from both LACW and C&I sources and from a wide geographic range of sources the delivery of new capacity locally will depend on whether it is commercially attractive to private waste contractors and it is not clear that the Plan can provide for these facilities specifically. Any continued reliance on external capacity has implications for matters the Council needs to address with respect to the Duty to Cooperate.

6.2.15. Additional non-inert capacity may be provided by expansion of the existing facilities however this will depend on the approach taken by the current PFI contractor. The small scale of the inert capacity gap and the current quantity of arisings suggests these materials will be handled at merchant sites locally or in other authorities, or that the contractor is moving them to a centralised facility outside Kirklees.

LACW: Required Facilities – Landfill

6.2.16. Even though all the Growth scenarios result in falling levels of landfill disposal there will still be a shortfall throughout the Plan period due to a lack of local capacity. The shortfalls for disposal of LACW(H) and LACW(other)) wastes fall from 15,677 tonnes

tonnes under the baseline position to 9,888 tonnes (median Recycling/Growth 3) by 2020 and 13,738 tonnes by 2036 as a result of the assumptions of continued growth in arisings under each scenario.

6.3. Commercial and Industrial (C&I) Waste

6.3.1. There have been no specific surveys of C&I waste arisings in Kirklees and therefore the quantities of C&I waste arisings have been extrapolated from a survey of this stream in the North West region as it is geographically close to Kirklees and data is published in sufficient detail with respect to the number, size and sector distribution of businesses to allow the results to be extrapolated to the Plan area.

C&I Waste: Current Arisings, Facilities and Management

6.3.2. Industrial waste makes up 54% of C&I arisings with the principal sources being Textiles / Wood / Paper / Publishing (27%), Other Manufacturing (25%) and Chemical and Non-metallic Minerals Manufacturing (23%). Commercial waste makes up 46% of C&I arisings with the main producing sectors being Retail and Wholesale, Other Services (i.e. banks, insurance, solicitors, service providers) and the Hotel and Catering sectors.

6.3.3. Combined C&I arisings at present amount to 362,000 tonnes of which around 32,000 tonnes is classified as hazardous waste.

6.3.4. Extrapolation of the NW survey results suggests of C&I waste, 65% is recycled (recycling tends to be higher in Industrial waste and this sector is more important in the NW and Yorks and Humber side than in the National average), 22% goes to landfill, 6% is managed by other treatment routes and it is not known how the other 7% is managed. Many of the existing waste management operations can treat more than one waste stream. However the facilities serving the PFI contract handle LACW only and therefore it is possible to identify the capacity available to manage C&I waste.

6.3.5. Currently there is estimated to be approximately 247,000 tonnes of capacity for recycling C&I wastes. However it should be recognised that some of these facilities also manage CD&E wastes with the respective quantities varying from year to year as the materials are normally managed under short-term contracts, making it difficult to establish requirements accurately.

C&I Waste Required Facilities: Transfer Stations

6.3.6. Waste transfer stations and bulking facilities provide a valuable component in the efficient management of waste materials though they do not contribute to recycling or recovery rates directly. They are particularly useful when waste arisings are relatively small in quantity and widely distributed within high density populated areas.

6.3.7. However, there is no certainty that transfer capacity is in the right location to serve future waste management needs and the Plan needs to be flexible up to a point, allowing additional facilities to come forward if it can be demonstrated that there are local shortages of capacity close to where waste arises.

C&I Waste Required Facilities: Recycling Facilities

6.3.8. The Baseline Scenario/no growth indicates that a gap of 88,678 tonnes in capacity appears for the baseline position and increases under all growth scenarios and with increased recycling. The gap becomes significant for C&I under both Growth options 2 and 4 when seeking to achieve the Maximised recycling scenario by 2031. Table 9 shows the growth in the capacity gap under this scenario combination.

Table 9: Capacity Gaps for Recycling C&I Waste Over the Plan Period*

Year	Baseline No Growth	Median Recycling Growth 2	Median Recycling Growth 3	Maximised Recycling Growth 4
2016	88,678	110,448	109,162	117,134
2021	88,678	133,350	131,202	148,865
2031	88,678	160,101	156,835	172,653

*Due to the nature of licensed waste management sites being able to treat both C&I and some agricultural wastes for (origin in this classification is not distinguished when reporting to the Environment Agency from sites) local knowledge has also been applied to aid separation of LACW wastes.

[Source: Kirklees waste needs assessment model, August 2016]

C&I Waste Required Facilities: Composting

6.3.9. The summary of LACW capacity requirements refers to a single site in Kirklees that is equipped and permitted to compost green waste. This facility has never been in service

and is operated by the PFI contractor which currently makes alternative arrangements using capacity outside Kirklees. It is unlikely this site will open for this purpose or that the capacity would be available to manage similar waste in the C&I stream.

6.3.10. Around 2,600 tonnes of C&I waste is currently composted. All modelling scenarios based on increase recycling performance also assume a proportionate increase until around 2020, then this requirement tapers out by 2031.. This level of requirement is typical of a small-scale green waste composting facility and suggests it would be realistic for the Plan to make provision for such a facility to come forward and reduce dependence on external capacity.

C&I Waste Required Facilities: Specialised Recycling

6.3.11. Modelling shows a surplus capacity for this type of facility throughout the Plan period under all scenario combinations though there are small differences in the size of the surplus (between 31,115 and 38,227 tonnes). Therefore no further capacity is needed to manage local wastes

C&I Waste Required Facilities: Treatment

6.3.12. Treatment includes a wide range of processes that may be required to deal with specific materials prior to recycling, energy recovery or final disposal. There is a current surplus of some 81,000 tonnes capacity within Kirklees throughout the entire Plan period. It is expected this will primarily be available to treat C&I wastes as the management route for LACW is determined by the terms of the PFI contract until 2023.

C&I Waste Required Facilities: Energy from Waste

6.3.13. Existing energy recovery capacity is dedicated to managing LACW through the PFI contract and, as stated previously, the assessment assumes there is no spare overhead available to manage locally arising C&I waste.

6.3.14. The baseline position suggests that a small proportion of C&I waste is currently going to thermal treatment with or without energy recovery. Even under the median recycling and maximum growth assumptions which create the highest demand for energy recovery, the requirement would be around 31,000 tonnes and would account for around 8% of arisings. This situation is likely to reflect the existing high level of recycling

which leaves only a moderate amount of residual waste, much of which may be unsuitable for this form of treatment.

6.3.15. This quantity is too small to make a local facility economically viable unless it serves a wider market. Published reports suggest the UK currently has a surplus of operational or planned EfW capacity. Therefore there would be limited incentive to bring forward additional capacity locally. It will be necessary to continue relying on capacity in other authorities.

C&I Waste Required Facilities: Non-Hazardous Landfill

6.3.16. There is a single landfill (Laneside Quarry) permitted to accept non-hazardous waste but it has only accepted inert waste in the past and this was due to close in 2015, however there was still over 600,000CM³ of void space available at the end of 2014. Nevertheless, for the purposes of this study the capacity it offers has been taken into account in the very early years of the Plan period while the site remains open.

6.3.17. Closure of the site will create a capacity gap of over 100,000 tonnes from 2016, rising to around 114,000 tonnes under the highest growth option by 2031 if there is no further improvement in recycling performance. Note that while further improvement could be envisaged for LACW in order to work towards EU and national targets, the high existing level of diversion of C&I wastes suggests the existing level may be a more accurate reflection of capacity needs in the longer term. In contrast the higher recycling performance assumed for the Growth 4/Maximised Recycling scenario combination would reduce the capacity shortfall to around 44,000 tonnes by 2031 and under Growth3/Median Recycling the requirement would be around 49,000 tonnes.

6.3.18. The fate of the site cannot be judged at this time. However if it was granted a further operational extension and if it began to take non-hazardous waste then the capacity gap of 100,000 tonnes would not materialise until 2026. However if higher recycling performance is achieved the shortfall would be around 48,000 tonnes from 2026 assuming not growth.

6.3.19. Given the previous history of this site it appears unlikely to expect that the operator would begin to take biodegradable waste, not least because of the complications this would entail in minimising environmental impacts, some of which should not arise while it takes inert waste only. As a result the Council will need to assume that disposal of

residual C&I waste will continue to depend on external capacity and it will need to take appropriate steps to contact receiving authorities to establish that capacity will continue to be available through the Plan period.

6.4. Construction, Demolition and Excavation (CD&E) Waste

6.4.1. Waste materials generated from Construction, Demolition and Excavation (CD&E) operations include surplus waste construction materials as well as a range of materials generated by the demolition of buildings and soils and sub-soils from excavation. Most of these materials are inert with respect to their pollution potential though small quantities of materials containing gypsum or asbestos, or that have been contaminated by previous land uses, are classified as hazardous waste.

CD&E Waste: Current Arisings, Facilities & Management

6.4.2. Kirklees at present has significant capacity for managing inert C&D and excavation wastes. This is primarily in the form of landfill capacity, though there is some treatment plant, recycling and transfer facilities.

6.4.3. Data published by the Environment Agency suggests that around 65,000 tonnes of C&D waste and 225,000 tonnes of excavation waste was produced in Kirklees in 2014. Around 61% of C&D and 85% of excavation waste arising locally was also managed locally. C&D waste that arose locally and was then exported went mainly to treatment facilities (21,119 tonnes or 83% of exported C&D waste) while 72% of locally arising excavation waste went to landfill, reclamation and land recovery.

6.4.4. The current management mix for C&D wastes is 49% transfer facilities, 37% treatment, 8% inert landfill, 5% recycling, and 1% through household waste recycling facilities. Current management mix for excavation wastes (2014) are 34% landfill, hazardous landfill 3%, 24% reclamation, 16% land recovery, 21% transfer station (non hazardous) and 2% through household waste recycling facilities.

6.4.5. In both cases these figures may disguise potentially higher rates of recycling or other diversion from landfill. Current requirements mean that some wastes managed or re-used at source go unreported however such practice makes no use of capacity at third party-provided facilities that the Plan may need to provide for. Therefore the figures

above are a reasonable estimate of the current position recognising the limitations of the data sources.

CD&E Waste Required Facilities: Transfer Stations

- 6.4.6. Waste transfer stations and bulking facilities often provide a valuable component in the transfer and bulking of CD&E waste materials. There is a surplus of such capacity over the whole Plan period, reflecting a situation common with other authorities.

CD&E Waste Required Facilities: Recycling

- 6.4.7. There is a shortfall of capacity for recycling of CD&E materials over the whole Plan period. The baseline situation (change in requirement driven by arisings growth only not by increased recycling performance) suggests a gap of almost 86,383 tonnes (growth 1/baseline situation) at 2031. This figure increases assumed by the growth 4/ maximised recycling scenario combination and reaches 137,283 tonnes by 2031.
- 6.4.8. Several local sites that may be capable of handling CD&E wastes are classified as transfer stations as this was their original function. Recycling provides operators with an additional revenue stream and is therefore a logical diversification of use at these locations. Experience from other needs assessment studies suggests they can contribute a potentially significant amount of additional recycling capacity that is hidden from the current analysis.
- 6.4.9. The Council may wish to undertake further research to identify whether any local sites are contributing extra recycling capacity which may reduce or possibly eliminate the gaps identified above. Note that this issue also applies to the C&I stream as many of these facilities manage both C&I and CD&E wastes though it may be difficult to establish the respective quantities and the implications for the individual capacity gaps.
- 6.4.10. The only means of recycling Excavation waste is through re-use of the material in landscaping development sites, engineering and restoration of landfill sites or minerals workings. Provision of future capacity lies outside the scope of the Plan because it will be dictated to a large extent by the scale and timing of development and regeneration activities that may require this material, both of which are unpredictable. It should also be noted that Excavation wastes extracted and re-used at source are not reported and therefore the 'capacity' (actually the demand for this material) will arise elsewhere in Kirklees or in other authorities.

CD&E Waste Required Facilities: Landfill

6.4.11. Kirklees at present has significant capacity for managing inert C&D and excavation wastes through existing landfill capacity throughout the plan period for all scenarios.

6.5. Hazardous Waste

6.5.1. Materials are classified as hazardous if they have characteristics that make them harmful to human health, or to the environment, either immediately or over an extended period of time. Such wastes require specialised handling during movement and management and usually arise in small quantities at sites spread over a wide area. As a result a network of specialised facilities has evolved to process the UK's hazardous wastes, with sites typically serving regional or national catchments.

Hazardous Waste: Current Arisings, Facilities & Management

6.5.2. A total of 32,537 tonnes of hazardous waste was recorded as arising in Kirklees in 2014 with 7,669 tonnes of these materials being managed locally as shown in Table 10. This is a reduction of 8% from the 2013 HWDI reports of 35,390 tonnes of hazardous waste arisings in Kirklees and a reduction of the amount of Kirklees arisings being managed locally, 23% (25%, 9,001 tonnes of materials being managed locally in 2013).

6.5.3. The principal local management capacity is in the form of two landfill sites. The Bradley Park landfill has shown an increase in the disposal of hazardous waste from 2013 to 2014 data (92,000 tonnes in 2013 and 104,000 tonnes in 2014), whilst the hazardous waste accepted at Thornhill Quarry, recorded as asbestos waste, has increased by 1000 tonnes (7000 tonnes in 2013 and 8000 tonnes in 2014).

6.5.4. There is also a small amount of transfer station capacity and a modest amount of treatment capacity (around 17,000 tonnes). The latter is specialised and is discussed below in the section on agricultural wastes.

6.5.5. Landfill disposal accounted for 86% of wastes that arose and were managed locally, which is unsurprising given the availability of this capacity and limited facilities for other management methods. Over 60% of local wastes that were exported were treated or recovered with the quantity being almost four times that landfilled locally. These figures

suggest local management of hazardous wastes conforms well to the Waste Hierarchy even if there is a dependence on external capacity.

Hazardous Waste Required Facilities: Landfill

- 6.5.6. The existing landfills mean that Kirklees is a net importer of hazardous wastes and the limited demand for capacity means there is no requirement during most of the Plan period.
- 6.5.7. However both facilities have time-limited permissions and it is not known whether applications to extend operations will be sought or granted. The projected capacity shortage following closure of both facilities is limited, ranging from just over 6,000 tonnes to just over 7,000, tonnes.
- 6.5.8. If no further time extension is possible it will be necessary to use facilities in other authorities unless additional local sites can be identified. However the implications of closure will probably be greater for other authorities that make use of these sites.

Hazardous Waste Required Facilities: Treatment & Recovery

- 6.5.9. The details above indicate the level of reliance on external capacity to treat and/or recover local hazardous wastes and this situation is unlikely to change significantly over the Plan period. As explained previously, the small quantities and diverse management requirements for handling these wastes mean that local facilities handling only small quantities of waste are unlikely to be economically viable. Consequently the KLP cannot make specific provision for such facilities though it might identify any allocated sites that might be suitable for this use in the event that a future planning application is submitted.
- 6.5.10. Instead the priority is to contact those Waste Planning Authorities receiving hazardous waste from Kirklees in order to establish whether they are aware of any foreseeable changes which may affect the availability of capacity over the Plan period, and in order that the Council complies with its obligations under the Duty to Cooperate. The accompanying Part 1 report on this study identifies the authorities that received local wastes in 2014 and the quantities involved.

6.6. Agricultural Waste

- 6.6.1. Agricultural premises are defined in the Agriculture Act 1947 as land used for: horticulture, fruit growing, seed growing, dairy farming, livestock breeding and keeping,

grazing land, meadow land, osier land (growing willow), market gardens and nursery grounds. It should be noted that accurate assessment of arisings and management methods is hampered by the lack of current data, with the principal sources used to calibrate these estimate being from 2001 and 2003.

Agricultural Waste: Current Arisings, Facilities & Management

- 6.6.2. There are 856 farm holdings in Kirklees which are estimated to generate almost 586,000 tonnes of waste. However over 99% of this material comprises organic by-products (e.g. waste milk, slurry) that is spread or buried on the farm where arises, while other material such as waste straw, wood, etc. is either re-used, buried or burned at source. As a result only 4,166 tonnes of these wastes are estimated to require external, off-farm capacity and to fall within the scope of capacity planning that the Plan needs to address.
- 6.6.3. Most of the material leaving the holdings is either incinerated or recycled. The majority of the former occurs at specialised facilities in order to comply with Animal By-Products legislation. The waste involved falls within the category of hazardous waste and again this means treatment capacity is specialised, centralised, and typically serves a national catchment. Residual waste suitable for recycling typically comprises wood, glass, paper, etc. It is therefore indistinguishable from parts of the C&I stream and managed at the same facilities, albeit in much smaller quantities.

Agricultural Waste: Required Facilities

- 6.6.4. The future projections assume no growth in arisings or significant change in agricultural practices have occurred since the original surveys were undertaken or that such changes will not occur over the Plan period. Such changes are considered to be unlikely. Any facilities to manage off site recycling and hazardous landfill would only be economically viable if larger quantities of these wastes arose locally and, as stated above, recyclable wastes can be managed at the same sites as C&I waste.
- 6.6.5. Capacity for specialised treatment is already available locally at facilities in Dewsbury (storage and rendering) and Huddersfield (high temperature incineration) and it is not anticipated that additional capacity will be needed.

6.7. Low Level Radioactive Waste

Arisings and Required Facilities

- 6.7.1. Information provided by the EA shows that a single site within the Plan area generates these wastes in very small quantities. The emissions are sufficiently harmless and in liquid form which enables their safe disposal to foul sewer along with other non-hazardous wastes.
- 6.7.2. Given the limited number of sources and quantity and nature of material involved there does not appear to be a requirement to provide any specialised facilities for managing low-level wastes within the Plan area.
- 6.7.3. Local disposal also implies the Council does not need to check on the availability of capacity in other authorities. However it should be noted that the EA no longer reports the quantities and sources of these arisings and it may be prudent for the Council to consider a future, small-scale survey of potential local sources of these materials to check that the current situation has not changed, and to take appropriate action if it has.

6.8. Waste Water / Sewage Sludge

Arisings and Required Facilities

- 6.8.1. Relevant waste water infrastructure falls into two categories: waste water treatment works (WWTWs) which process materials delivered by foul sewer, and sewage sludge treatment works (SSTWs) that treat semi-liquid treatment residues. In addition to a network of the former, a single SSTW operates within the Plan area.
- 6.8.2. The quantity of arisings is largely immaterial for the Plan insofar as treatment separates purified liquids (discharged to controlled waters) from residual sludge for which there are a number of disposal options (landfill, land spreading following decontamination in a sludge treatment works, or incineration). The choice of management methods lies with the statutory local undertaker: Yorkshire Water. Of these methods only landfill disposal has implications for the waste management capacity needs addressed by this study, but this material is already included as part of the C&I waste stream.
- 6.8.3. The key issue for the Plan is whether land will be needed outside the curtilage of existing WWTWs and SSWs to provide the additional capacity to meet future demand as a result of housing growth and industrial activity in the Plan area.

6.8.4. Recent discussions between Kirklees Council and Yorkshire Water have identified a need for infrastructure improvements at treatment facilities serving the Meltham and Clayton West areas. No date for the implementation of increased capacity has been identified as yet and both parties remain in discussion to determine the timing and whether any additional land take will be needed.

7. CONCLUSIONS & NEXT STEPS

7.1. Principal Conclusions

7.1.1. Chapter 6 provides detailed commentary on the findings of this study and its implications for the capacity that the KLP will need to provide for with regard to future waste management capacity. The principal conclusions from the capacity assessment – in terms of the need for extra facilities - are as summarised below, recognising that the requirements vary depending on the choice of growth and landfill diversion assumptions that are used. These points focus on the maximum capacity requirement that has been identified.

- A significant amount of additional capacity is needed for managing recycle LACW (60,288 tonnes in 2016 rising to 93,673 tonnes by 2020 and 126,154 tonnes by 2030 if the highest levels of recycling are achieved and assumed highest growth (scenario growth4/maximised recycling).
- The existing EfW plant provides adequate capacity until such time as it closes (although there is a tiny shortfall of approximately 3000 tonnes at 2031 assuming the highest growth and maximised recycling/recovery (Growth 4/max recycling/recovery). If this occurs during the Plan period (in 2028) it will result in a capacity gap of around 100,000 tonnes over the rest of the Plan period.
- There is no operational green waste composting capacity at present and components of the LACW and C&I streams are managed outside Kirklees. The former occurs within the terms of the PFI contract but it would be prudent for the Kirklees Local Plan to provide for a small merchant facility to address the latter gap.
- Substantial increase in the recycling rate for C&I waste could lead to a capacity gap of up to 100,000 tonnes by the end of the Plan period if the highest levels of recycling are realised, this would be reduced to around 83,000 tonnes under Growth 3/Median recycling. Some of this capacity may be available at sites that are currently identified as transfer stations and this may warrant further survey to establish whether this is available or whether the Plan will need to provide land for further facilities.
- Local EfW capacity is assumed to be dedicated to managing LACW. The estimated high level of existing recycling performance for C&I wastes results in a correspondingly low requirement for additional EfW and treatment capacity. The requirement for the former is around 31,000 tonnes by 2031 and it is unlikely this is sufficient to make an additional facility economically viable. Consequently it will be necessary to rely on external capacity in the future.

- There is a permanent shortage of non-hazardous landfill capacity for the disposal of residual LACW and C&I waste. The maximum requirements are for 10,000 tonnes and 114,000 tonnes respectively, with the former reflecting the existing high level of landfill diversion.
- The capacity shortfall for recycling CD&E wastes is substantial, rising from 65,000 tonnes to 95,000 under the highest performance assumptions and just under 74,000 tonnes under Growth 3/Median recycling. However, as with C&I wastes, some of this shortfall may be available already at sites currently categorised as transfer stations. It may be prudent to undertake further review of their waste management functions in order that the Plan does not over-provide this capacity if it is greater than currently estimated.
- The capacity shortfall for recycling CD&E wastes is substantial, rising from 99,897 tonnes in 2016 under the highest performance assumptions (highest growth 4 assumed and maximum recycling scenario assumed) to 137,283 tonnes by 2031. This reduces slightly under Growth 3/median recycling at 2016 by 88,182 tonnes and by 2031 to 113,639 tonnes. However, as with C&I wastes, some of this shortfall may be available already at sites currently categorised as transfer stations. It may be prudent to undertake further review of their waste management functions in order that the Plan does not over-provide this capacity if it is greater than currently estimated.
- Three quarters of locally-produced hazardous wastes are exported to management facilities in other authorities due to a lack of local capacity. This situation is commonplace due to the specialised nature of the materials and how they must be managed and consequently most authorities rely on capacity at external facilities that are part of a network of sites with regional or national catchments. The Plan can continue to rely on this approach provided the Council continues to check the availability of this external capacity with the authorities where the facilities are located.
- A small shortfall in hazardous landfill capacity will occur towards the end of the Plan period once both of the sites currently operating have closed. This situation may require reliance on external capacity unless operations can be extended at one or both of these sites.

7.1.2. Otherwise the Plan area is well-served by transfer station capacity, specialised recycling facilities (eg. those handling metal wastes), and voidspace at inert and hazardous landfills. Existing disposal and recycling arrangements for agricultural and low-level radioactive wastes are not expected to require additional capacity during the Plan period.

Next Steps

- 7.1.3. The information presented in this report is based on the best available data as at September 2016 when the principal analysis was undertaken.
- 7.1.4. If Kirklees is to become net self-sufficient in managing its waste then it will need to consider the implications and requirements of the modelling scenarios and select an appropriate scenario to identify the capacity gap and plan for future waste facilities in Kirklees.
- 7.1.5. Based on the findings of this study, the Council will need to identify sites/areas suitable to accommodate new waste management facilities to address the identified gaps. The number of sites and land area required cannot be established at this time and the next step will be to review the implications of the different analyses and to select the combination of Growth and Behaviour scenarios that defines the level of waste management performance the Council will aim to deliver through the KLP within the context of also meeting its statutory and non-statutory targets.
- 7.1.6. Assessment is not a one-off exercise and it will be prudent to re-assess capacity of existing sites periodically – as well as checking whether any new facilities have come forward in the interim – in order to assess the implications of both for the meeting the needs identified by this study.
- 7.1.7. Some capacity gaps result from a lack of local facilities and may persist because waste contractors will continue to take wastes to sites outside Kirklees rather than bringing forward new local capacity. This situation currently applies to green waste composting, reprocessing of separated recyclables into secondary products, and landfill disposal of non-hazardous waste. Detail on the destination and quantity of wastes involved has been provided in the Part 1 report.
- 7.1.8. In such circumstances, the Council should make contact with those Waste Planning Authorities receiving waste from Kirklees in order to establish whether they are aware of any changes which may affect the availability of external capacity over the life of the Plan. Again, this is not a one-off process and will need to be reviewed periodically.
- 7.1.9. Any loss of access to external capacity will increase certain existing capacity gaps, or create new ones where the current assessment assumes reliance on external facilities

will persist and this will need to be reflected in site allocations for future waste capacity included in the KLP.

Glossary of Terms

Acronym	Term	Definition
AD	Anaerobic Digestion	A process where biodegradable material is encouraged to break down in the absence of oxygen. Material is placed into a closed vessel and in controlled conditions the waste breaks down to produce a mixture of carbon dioxide, methane and solids/liquids known as digestate which can be used for fertiliser, compost or Solid Recovered Fuel (SRF)
APCRs	Air Pollution Control Residues	Bi-product produced from treatment of wastes through an energy from waste plant
C&I	Commercial and Industrial Waste	Waste generated by shops, offices, factories and other businesses and industry
-	Composting	A biological process which takes place in the presence of oxygen in which organic wastes, such as garden and kitchen waste, are converted into a stable, granular material. This can be applied to land to improve soil structure and enrich nutrient content.
CD&E	Construction Demolition and Excavation Waste	Controlled waste arising from the construction, repair, maintenance and demolition of buildings and structures.
EfW	Energy from Waste	The controlled high temperature burning of waste. Energy recovery is achieved by utilising the calorific value of the materials burnt. The most efficient facilities combine the production of heat (usually in the form of steam) with power (electricity) which is usually referred to as combined heat and power (CHP).
ELV	End of Life Vehicle	Motor vehicles that fall into the category of 'waste' as defined by the EU Waste Directive.
EA	Environment Agency	Agency which regulates waste management activities by issuing waste management licenses and other permits and exemptions. The EA also conducts national surveys of waste arising and waste facilities.
GVA	Gross Value Added	A measure of the value of the goods and services produced in the economy.
-	Hazardous waste	A sub category of all waste streams, where the material produced is hazardous and requires specialist treatment
-	Inert waste	Inert waste is waste that does not undergo significant physical, chemical or biological changes following disposal and does not adversely affect other matters that it may come into contact with, and does not endanger surface or groundwater.

Acronym	Term	Definition
-	Landfill	Restoration of land (for example, a former quarry) using waste.
-	Land recovery	The restoration of land using inert waste to enable the land to be used for a new purpose.
LACW	Local Authority Collected Waste	Previously known as municipal waste, LACW refers to all waste collected by a Local Authority.
LACW(H)	Local Authority Collected Waste Household	Household waste collected by a Local Authority
LACW (Other)	Local Authority Collected Waste other	Non-household waste collected by a Local Authority (such as street cleaning collection, rubble from household waste recycling sites).
LACW (Secondary)	Local Authority Collected Waste secondary	Secondary bi-products from initial treatment of LACW household waste through EfW producing metals, APCRs and bottom ash
LLW	Low level Radioactive Waste	Radioactive waste having a radioactive content not exceeding four GBq/te of alpha or 12 GBq/te of beta/gamma activity.
	Recycling	Turning waste into a new substance or product, includes composting if it meets quality protocols.
ROCs	Renewable Obligations Certificates	Green certificates issued to operators of accredited renewable generating stations for the eligible renewable electricity they generate.
SSTW	Sewage Sludge Treatment Works	Infrastructure providing initial treatment of material delivered by foul sewer from homes, businesses and the network draining the wider public realm.
	Thermal Treatment without energy recovery	Management of waste by incineration without use of facilities to capture heat given off for the purposes of energy recovery. Some facilities using this technology to manage LACW still exist while others involve very high temperature incineration due to the properties of specific wastes (ie.clinical, animal by-products and other hazardous wastes)
	Transfer/Transfer Station	Facility for receiving and 'bulking up' waste before its onward journey for treatment, recycling or disposal elsewhere.
	Treatment	Physical, chemical, biological or thermal waste management processes which change the characteristics of waste.

Acronym	Term	Definition
-	Waste facilities	Waste facilities include: Transfer stations Energy from Waste (Incineration with energy recovery) Recycling facility Treatment facility (e.g. mechanical biological or mechanical heat treatment) Household waste recycling centre Landfill/landraise Materials recovery facility
-	Waste streams	Waste streams include: LACW C&I CD&E Hazardous Agricultural LLW Waste Water/Sewage Sludge
-	Waste management routes	Waste management routes include: Recycling Composting (in vessel or open windrow) Treatment (recovery via thermal, physical, chemical or biological treatment) Landfill/landraise Transfer onwards to other waste management facility
WDI/HWDI	Waste Data Interrogator / Hazardous Waste Data Interrogator	Data tool prepared by the EA based on information provided by waste operators. It allows for assessments of strategic waste and general waste flow.
WEEE	Waste Electrical and Electronic Equipment	Term used to describe old, end-of-life or discarded appliances using electricity.
WWTW	Waste Water Treatment Works	Infrastructure providing initial treatment of material delivered by foul sewer from homes, businesses and the network draining the wider public realm.

Appendix 1

Appendix 1 provides details of existing and known planned waste facilities in Kirklees that are/will be operational during the plan period. Unless specified all sites are given a start date of 2016 for modelling purposes, even though they may well have been operational for some years. Again, unless known, the end date is assumed to the 2036 which is the end year for modelling purposes. New capacity may start during the plan period, and this is shown where known, and existing capacity which has an end date during the plan period are also shown to provide as accurate a picture of operational capacity.

Site Name	Facility Type	Annual Capacity	Start date	End date (if known)	Waste Categories	Landfill Site Void space (2015)
30 Pheasant Drive	Recycling (MRFS)	1,086	2016	2036	Hazardous & CI	
A1 Autospares	Recycling (Metals)	560	2016	2036	CI only	
Albert Haigh & Son Ltd	Recycling (Metals)	500	2016	2036	Hazardous & CI	
Arthur Brook Ltd	Recycling (Metals)	22,760	2016	2036	Hazardous & CI	
Atiques Auto Dismantlers	Recycling (Metals)	123	2016	2036	Hazardous & CI	
Bankwood Way Landfill	Landfill (inert)	5,000	2017	2018	CDE only	
Battysford Lock	Transfer stations (non-hazardous)	9	2016	2036	CI only	
Boulds Bins	Transfer stations (non-hazardous)	6,440	2016	2036	CI and CDE	
BRADLEY PARK LANDFILL SITE	Landfill (hazardous)	169,327	2016	2028	Hazardous & CDE	1972755
Britannia Road Site	Recycling (aggregates, other C and D)	4,564	2016	2036	CDE only	
Bromley Farm H W R C	Transfer stations (non-hazardous)	8,480	2016	2036	LACW only	
Bromley Farm Quarry	Landfill (inert)	9,000	2016	2020	CDE only	
C & J Blackburn	Transfer stations (non-hazardous)	15,311	2016	2036	CI and CDE	
Carr Hill Quarry	Transfer stations (inert waste)	16,980	2016	2036	CDE only	
Carr Hill Quarry	Land spreading	98,336	2016	2036	CDE only	
Cartwright Mill	Recycling (MRFS)	150	2016	2036	CI and CDE	

Site Name	Facility Type	Annual Capacity	Start date	End date (if known)	Waste Categories	Landfill Site Void space (2015)
Cheap As Skips	Recycling (MRFS)	4,856	2016	2036	CI and CDE	
Clayfield Works	Transfer stations (non-hazardous)	7,153	2016	2036	CI and CDE	
Clayton Hall Farm Bioenergy Plant	Treatment facility	5,009	2016	2036	CI only	
Colne Valley Skip Hire	Recycling (MRFS)	5,635	2016	2036	CI and CDE	
Combs Depot Asbestos Store	Transfer stations (C and D plus asbestos)	109	2016	2015	LACW only	
Corporation Yard	Transfer stations (non-hazardous)	40	2016	2036	LACW only	
Cross Heights Truckparts	Recycling (Metals)	300	2016	2036	CI and CDE	
Dewsbury Transfer Station	Recycling (MRFS)	77,930	2016	2036	CI only	
Electrical Waste Recycling Group Limited	Treatment facility	2,642	2016	2036	Hazardous & CI	
Emerald Street Household Waste Site & Composting Facility(no composting takes place)	Transfer stations (non-hazardous)	25,000	2013	2036	LACW only	
Flint Street Depot Asbestos Store	Transfer stations (C and D plus asbestos)	109	2016	2036	LACW only	
Foxhall Environmental Services	Transfer stations (hazardous)	1,013	2016	2036	Hazardous & CDE	
Headlands Road Depot	Transfer stations (non-hazardous)	26,777	2016	2036	LACW only	
Hollins Hey Landfill	Landfill (inert)	31,800	2018	2023	CDE only	159000
Huddersfield Auto Salvage	Recycling (Metals)	21,000	2016	2036	Hazardous & CI	
J B Schofield & Sons Ltd	Recycling (Metals)	17,782	2016	2036	CI and CDE	

Site Name	Facility Type	Annual Capacity	Start date	End date (if known)	Waste Categories	Landfill Site Void space (2015)
J S Bamforth & Co Ltd	Recycling (Metals)	17,166	2016	2036	Hazardous & CI	
J T Shingleton & Son	Recycling (MRFS)	7,552	2013	2036	CI and CDE	
Kirklees EfW plant	Incineration with Energy Recovery	132,000	2029	2036	LACW only	
Kirklees EfW plant	Incineration with Energy Recovery	132,000	2016	2028	LACW only	
Land Off Bent Ley Road	Recycling (Metals)	1,333	2016	2036	Hazardous & CI	
Laneside Quarry Landfill Site	Landfill (non-hazardous)	27,847	2016	2025	CDE only	1250000
Leeds Site	Transfer stations (hazardous)	1,266	2016	2036	Hazardous	
Meltham Hwrc	Transfer stations (non-hazardous)	10,452	2016	2036	LACW only	
Mill Street East Side	Recycling (MRFS)	2,125	2016	2036	CI and CDE	
Milnsbridge Resource Recovery Facility	Recycling (MRFS)	722	2016	2036	Hazardous & CI	
Mirfield Mini Skips	Transfer stations (inert waste)	477	2016	2036	CI and CDE	
Mirfield Motor Spares Ltd	Recycling (Metals)	190	2016	2036	Hazardous & CI	
Morley Waste Traders	Recycling (Metals)	2,686	2016	2036	CI only	
Morley Waste Traders Ltd	Recycling (Metals)	6,307	2016	2036	CI and CDE	
N C G U K Ltd. T D G Nab Lane	Treatment facility	2,135	2016	2036	Hazardous & CI	
Nab Lane H W S	Transfer stations (non-hazardous)	5,001	2016	2036	LACW only	
Neiley Sludge Treatment Facility	Treatment facility	7,986	2016	2036	CI and CDE	
Newlay Concrete Ltd	Treatment facility	57,508	2016	2036	CI and CDE	
P P Recycling	Recycling (MRFS)	1,585	2016	2036	CI and CDE	

Site Name	Facility Type	Annual Capacity	Start date	End date (if known)	Waste Categories	Landfill Site Void space (2015)
Pennine View Treatment Plant	Treatment facility	1,260	2016	2036	CI only	
Rawsons Scrapyard	Recycling (Metals)	161	2016	2036	Hazardous & CI	
Readymix Huddersfield Limited	Transfer stations (non-hazardous)	24,576	2016	2036	CI and CDE	
Scotland Yard	Transfer stations (non-hazardous)	23,567	2016	2036	CI and CDE	
Ss Components Ltd	Recycling (Metals)	244	2016	2036	Hazardous & CI	
The Old School House	Recycling (Metals)	7	2016	2036	Hazardous & CI	
The old Sewage Works Landfill	Landfill (inert)	29,333	2016	2017	CDE only	88000
The Reins	Transfer stations (non-hazardous)	25,320	2016	2036	LACW only	
Thornhill (Weaving Lane) HWRC	Transfer stations (non-hazardous)	13,487	2016	2036	LACW only	
Thornhill Integrated Waste Management Facility	Transfer stations (non-hazardous)	138,405	2016	2036	LACW only	
Thornhill Quarry Landfill Site	Landfill (hazardous)	55,759	2016	2019	Hazardous & CDE	252738
Truckline Services Ltd	Recycling (Metals)	3,884	2016	2036	Hazardous & CI	
Unit 7 and 8 Norquest Industrial Estate (Spivy & Son)	Treatment facility	83	2016	2036	CI only	
Upper Station Road	Recycling (MRFS)	1,204	2016	2036	Hazardous & CI	
Vine Street Mrf	Recycling (LACW)	32,497	2016	2036	LACW only	
Wellfield Quarry Landfill	Landfill (inert)	156,777	2016	2036	CDE only	455729
West Yorkshire Treatment Centre	Treatment facility	20,009	2016	2036	Hazardous & CI	
Wilkinson Brothers	Transfer stations (non-	521	2016	2036	CI only	

Site Name	Facility Type	Annual Capacity	Start date	End date (if known)	Waste Categories	Landfill Site Void space (2015)
	hazardous)					

Appendix 2

Appendix 2 shows year on year capacity by waste type and facility type.

Waste Type	Facility Type	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	
LACW only	Transfer stations (non-hazardous)	252,962	252,962	252,962	252,962	252,962	252,962	252,962	252,962	252,962	252,962	252,962	252,962	252,962	252,962	252,962	252,962	252,962	252,962	252,962	252,962	252,962	
LACW only	Transfer stations (C and D plus asbestos)	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109	
LACW only	Incineration with Energy Recovery	132,000	132,000	132,000	132,000	132,000	132,000	132,000	132,000	132,000	132,000	132,000	132,000	132,000	132,000	132,000	132,000	132,000	132,000	132,000	132,000	132,000	
LACW only	Recycling (LACW)	32,497	32,497	32,497	32,497	32,497	32,497	32,497	32,497	32,497	32,497	32,497	32,497	32,497	32,497	32,497	32,497	32,497	32,497	32,497	32,497	32,497	
Hazardous & CDE	Transfer stations (hazardous)	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	
Hazardous & CDE	Landfill (hazardous)	225,086	225,086	225,086	225,086	169,327	169,327	169,327	169,327	169,327	169,327	169,327	169,327	169,327	169,327	0	0	0	0	0	0	0	0
CI only	Transfer stations (non-hazardous)	530	530	530	530	530	530	530	530	530	530	530	530	530	530	530	530	530	530	530	530	530	
CI only	Recycling (MRFS)	77,930	77,930	77,930	77,930	77,930	77,930	77,930	77,930	77,930	77,930	77,930	77,930	77,930	77,930	77,930	77,930	77,930	77,930	77,930	77,930	77,930	
CI only	Recycling (Metals)	3,246	3,246	3,246	3,246	3,246	3,246	3,246	3,246	3,246	3,246	3,246	3,246	3,246	3,246	3,246	3,246	3,246	3,246	3,246	3,246	3,246	
CI only	Treatment facility	6,352	6,352	6,352	6,352	6,352	6,352	6,352	6,352	6,352	6,352	6,352	6,352	6,352	6,352	6,352	6,352	6,352	6,352	6,352	6,352	6,352	
CI and CDE	Transfer stations (non-hazardous)	77,047	77,047	77,047	77,047	77,047	77,047	77,047	77,047	77,047	77,047	77,047	77,047	77,047	77,047	77,047	77,047	77,047	77,047	77,047	77,047	77,047	
CI and CDE	Recycling (MRFS)	21,903	21,903	21,903	21,903	21,903	21,903	21,903	21,903	21,903	21,903	21,903	21,903	21,903	21,903	21,903	21,903	21,903	21,903	21,903	21,903	21,903	
CI and CDE	Recycling (Metals)	24,389	24,389	24,389	24,389	24,389	24,389	24,389	24,389	24,389	24,389	24,389	24,389	24,389	24,389	24,389	24,389	24,389	24,389	24,389	24,389	24,389	
CI and CDE	Treatment facility	65,494	65,494	65,494	65,494	65,494	65,494	65,494	65,494	65,494	65,494	65,494	65,494	65,494	65,494	65,494	65,494	65,494	65,494	65,494	65,494	65,494	
CI and CDE	Transfer stations (inert waste)	477	477	477	477	477	477	477	477	477	477	477	477	477	477	477	477	477	477	477	477	477	
CDE only	Landfill (non-hazardous)	27,847	27,847	27,847	27,847	27,847	27,847	27,847	27,847	27,847	27,847	0	0	0	0	0	0	0	0	0	0	0	
CDE only	Landfill (inert)	195,110	200,110	202,577	197,577	197,577	188,577	188,577	188,577	156,777	156,777	156,777	156,777	156,777	156,777	156,777	156,777	156,777	156,777	156,777	156,777	156,777	
CDE only	Land spreading	98,336	98,336	98,336	98,336	98,336	98,336	98,336	98,336	98,336	98,336	98,336	98,336	98,336	98,336	98,336	98,336	98,336	98,336	98,336	98,336	98,336	
CDE only	Recycling (aggregates, other C and D)	4,564	4,564	4,564	4,564	4,564	4,564	4,564	4,564	4,564	4,564	4,564	4,564	4,564	4,564	4,564	4,564	4,564	4,564	4,564	4,564	4,564	
CDE only	Transfer stations (inert waste)	16,980	16,980	16,980	16,980	16,980	16,980	16,980	16,980	16,980	16,980	16,980	16,980	16,980	16,980	16,980	16,980	16,980	16,980	16,980	16,980	16,980	
Hazardous & CI	Recycling (MRFS)	3,012	3,012	3,012	3,012	3,012	3,012	3,012	3,012	3,012	3,012	3,012	3,012	3,012	3,012	3,012	3,012	3,012	3,012	3,012	3,012	3,012	
Hazardous & CI	Recycling (Metals)	67,368	67,368	67,368	67,368	67,368	67,368	67,368	67,368	67,368	67,368	67,368	67,368	67,368	67,368	67,368	67,368	67,368	67,368	67,368	67,368	67,368	
Hazardous & CI	Treatment facility	24,786	24,786	24,786	24,786	24,786	24,786	24,786	24,786	24,786	24,786	24,786	24,786	24,786	24,786	24,786	24,786	24,786	24,786	24,786	24,786	24,786	
Hazardous	Transfer stations (hazardous)	1,266	1,266	1,266	1,266	1,266	1,266	1,266	1,266	1,266	1,266	1,266	1,266	1,266	1,266	1,266	1,266	1,266	1,266	1,266	1,266	1,266	

Appendix 3

This appendix presents capacity requirements by facility type throughout the plan period. Results are shown under each growth option and for each Recycling scenario. Positive numbers indicate a capacity requirement and negative numbers a capacity surplus.

No Growth

No Growth/ Baseline recycling																					
Facility type	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030	Gap2031	Gap2032	Gap2033	Gap2034	Gap2035	Gap2036
Landfill (C+I and LACW)	89,345	89,345	89,345	89,345	89,345	89,345	89,345	89,345	89,345	89,345	117,192	117,192	117,192	117,192	117,192	117,192	117,192	117,192	117,192	117,192	117,192
Landfill (Hazardous)	-218,700	-218,700	-218,700	-218,700	-162,941	-162,941	-162,941	-162,941	-162,941	-162,941	-162,941	-162,941	-162,941	6,386	6,386	6,386	6,386	6,386	6,386	6,386	6,386
Landfill (CD&E)	-57,660	-62,660	-65,127	-60,127	-60,127	-51,127	-51,127	-51,127	-19,327	-19,327	-19,327	-19,327	-19,327	-19,327	-19,327	-19,327	-19,327	-19,327	-19,327	-19,327	-19,327
Energy from waste	-24,485	-24,485	-24,485	-24,485	-24,485	-24,485	-24,485	-24,485	-24,485	-24,485	-24,485	-24,485	-24,485	-24,485	-24,485	-24,485	-24,485	-24,485	-24,485	-24,485	-24,485
Thermal Treatment (without energy recovery)	4,885	4,885	4,885	4,885	4,885	4,885	4,885	4,885	4,885	4,885	4,885	4,885	4,885	4,885	4,885	4,885	4,885	4,885	4,885	4,885	4,885
Recycling (C+I, Agri)	88,678	88,678	88,678	88,678	88,678	88,678	88,678	88,678	88,678	88,678	88,678	88,678	88,678	88,678	88,678	88,678	88,678	88,678	88,678	88,678	88,678
Recycling (C+D)	71,531	71,531	71,531	71,531	71,531	71,531	71,531	71,531	71,531	71,531	71,531	71,531	71,531	71,531	71,531	71,531	71,531	71,531	71,531	71,531	71,531
Recycling (Metals)	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227
Recycling (Hazardous)	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706
Recycling (LACW)	37,936	37,936	37,936	37,936	37,936	37,936	37,936	37,936	37,936	37,936	37,936	37,936	37,936	37,936	37,936	37,936	37,936	37,936	37,936	37,936	37,936
Composting	15,406	15,406	15,406	15,406	15,406	15,406	15,406	15,406	15,406	15,406	15,406	15,406	15,406	15,406	15,406	15,406	15,406	15,406	15,406	15,406	15,406
Treatment plant	-84,612	-84,612	-84,612	-84,612	-84,612	-84,612	-84,612	-84,612	-84,612	-84,612	-84,612	-84,612	-84,612	-84,612	-84,612	-84,612	-84,612	-84,612	-84,612	-84,612	-84,612
Other Treatment	27,438	27,438	27,438	27,438	27,438	27,438	27,438	27,438	27,438	27,438	27,438	27,438	27,438	27,438	27,438	27,438	27,438	27,438	27,438	27,438	27,438
Land recovery	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321

No Growth/ Max Recycling																					
Facility Type	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030	Gap2031	Gap2032	Gap2033	Gap2034	Gap2035	Gap2036
Landfill (C+I and LACW)	67,617	60,389	53,159	45,915	38,669	37,020	35,370	33,722	32,090	30,423	56,639	54,972	53,340	51,692	50,043	48,393	48,393	48,393	48,393	48,393	48,393
Landfill (Hazardous)	-218,700	-218,700	-218,700	-218,700	-162,941	-162,941	-162,941	-162,941	-162,941	-162,941	-162,941	-162,941	-162,941	6,386	6,386	6,386	6,386	6,386	6,386	6,386	6,386
Landfill (CD&E)	-72,239	-82,791	-90,837	-91,417	-96,997	-88,969	-89,963	-90,935	-60,128	-61,100	-62,094	-63,066	-64,059	-65,031	-66,025	-66,997	-66,997	-66,997	-66,997	-66,997	-66,997
Energy from waste	-33,460	-36,424	-39,423	-42,403	-45,401	-45,401	-45,401	-45,401	-45,401	-45,401	-45,401	-45,401	-45,401	-45,401	-45,401	-45,401	-45,401	-45,401	-45,401	-45,401	-45,401
Thermal Treatment (without energy recovery)	4,108	3,855	3,601	3,330	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077
Recycling (C+I, Agri)	-37,568	-40,279	-43,024	-45,733	-48,478	-48,478	-48,478	-48,478	-48,478	-48,478	-48,478	-48,478	-48,478	-48,478	-48,478	-48,478	-48,478	-48,478	-48,478	-48,478	-48,478
Recycling (C+D)	104,236	109,386	114,573	119,758	124,945	126,577	128,244	129,877	131,545	133,177	134,845	136,477	138,146	139,778	141,445	143,078	143,078	143,078	143,078	143,078	143,078
Recycling (Metals)	90,383	95,944	101,499	107,082	112,636	113,954	115,303	116,621	117,968	119,287	120,635	121,954	123,301	124,619	125,968	127,286	127,286	127,286	127,286	127,286	127,286
Recycling (Hazardous)	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227
Recycling (LACW)	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706
Composting	54,155	59,564	64,973	70,381	75,790	75,790	75,790	75,790	75,790	75,790	75,790	75,790	75,790	75,790	75,790	75,790	75,790	75,790	75,790	75,790	75,790
Treatment plant	15,098	15,002	14,905	14,793	14,696	14,533	14,369	14,205	14,042	13,878	13,696	13,533	13,369	13,205	13,042	12,878	12,878	12,878	12,878	12,878	12,878
Other Treatment	-84,615	-84,617	-84,619	-84,620	-84,621	-84,459	-84,296	-84,133	-83,970	-83,808	-83,627	-83,464	-83,301	-83,139	-82,976	-82,813	-82,813	-82,813	-82,813	-82,813	-82,813
Land recovery	26,852	25,949	25,038	24,113	23,203	22,857	22,502	22,156	21,802	21,455	21,101	20,754	20,400	20,054	19,699	19,353	19,353	19,353	19,353	19,353	19,353
Land recovery	-62,015	-61,107	-60,179	-59,250	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321	-58,321

No Growth /Median Recycling																					
Facility Type	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030	Gap2031	Gap2032	Gap2033	Gap2034	Gap2035	Gap2036
Landfill (C+I and LACW)	71,526	65,572	59,651	53,698	47,761	45,625	43,470	41,334	39,197	37,061	62,772	60,635	58,499	56,362	54,208	52,071	52,071	52,071	52,071	52,071	52,071
Landfill (Hazardous)	-218,700	-218,700	-218,700	-218,700	-162,941	-162,941	-162,941	-162,941	-162,941	-162,941	-162,941	-162,941	-162,941	6,386	6,386	6,386	6,386	6,386	6,386	6,386	6,386
Landfill (CD&E)	-79,627	-92,683	-103,193	-106,235	-114,277	-105,471	-105,666	-105,860	-74,255	-74,449	-74,665	-74,859	-75,054	-75,248	-75,443	-75,637	-75,637	-75,637	-75,637	-75,637	-75,637
Energy from waste	-23,444	-23,110	-22,757	-22,423	-22,070	-21,256	-20,425	-19,611	-18,779	-17,965	-17,134	-16,320	-15,488	-14,674	-13,843	-13,029	-13,029	-13,029	-13,029	-13,029	-13,029
Thermal Treatment (without energy recovery)	4,108	3,855	3,601	3,330	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077
Recycling (C+I, Agri)	96,440	99,050	101,625	104,236	106,811	108,444	110,111	111,743	113,412	115,044	116,712	118,344	120,012	121,645	123,312	124,945	124,945	124,945	124,945	124,945	124,945
Recycling (C+D)	79,468	81,409	83,327	85,267	87,186	88,504	89,853	91,171	92,518	93,837	95,185	96,504	97,851	99,169	100,518	101,836	101,836	101,836	101,836	101,836	101,836
Recycling (Metals)	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227	-38,227
Recycling (Hazardous)	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706
Recycling (LACW)	47,265	50,372	53,479	56,586	59,693	59,693	59,693	59,693	59,693	59,693	59,693	59,693	59,693	59,693	59,693	59,693	59,693	59,693	59,693	59,693	59,693
Composting	15,098	15,002	14,905	14,793	14,696	14,533	14,369	14,205	14,042	13,878	13,696	13,533	13,369	13,205	13,042	12,878	12,878	12,878	12,878	12,878	12,878
Treatment plant	-83,838	-83,586	-83,317	-83,083	-82,813	-82,813	-82,813	-82,813	-82,813	-82,813	-82,813	-82,813	-82,813	-82,813	-82,813	-82,813	-82,813	-82,813	-82,813	-82,813	-82,813
Other Treatment	45,182	50,349	55,543	60,738	65,933	64,809	63,655	62,532	61,400	60,254	59,122	57,976	56,844	55,721	54,567	53,443	53,443	53,443	53,443	53,443	53,443
Land recovery	-62,015	-61,107	-60,179	-59,250	-58,321	-58,484	-58,648	-58,812	-58,975	-59,139	-59,321	-59,485	-59,648	-59,812	-59,975	-60,139	-60,139	-60,139	-60,139	-60,139	-60,139

Growth Option 1

Growth Option 1/Baseline																					
Facility Type	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030	Gap2031	Gap2032	Gap2033	Gap2034	Gap2035	Gap2036
Landfill (C+I and LACW)	99,129	101,266	103,489	105,156	106,466	107,672	108,811	109,892	110,949	112,036	140,861	141,862	142,888	143,925	145,005	146,805	148,637	150,501	152,397	154,326	156,291
Landfill (Hazardous)	-217,950	-217,786	-217,611	-217,505	-161,691	-161,651	-161,618	-161,595	-161,574	-161,550	-161,561	-161,571	-161,578	7,741	7,733	7,764	7,795	7,825	7,857	7,889	7,921
Landfill (CD&E)	-40,938	-42,343	-40,984	-33,779	-32,769	-23,119	-22,657	-22,404	9,574	9,825	9,247	8,683	8,190	7,670	7,141	7,500	7,860	8,221	8,584	8,946	9,311
Energy from waste	-16,985	-14,755	-12,478	-10,162	-7,802	-5,395	-2,943	-442	2,109	4,709	7,364	10,073	12,834	15,650	18,524	21,471	24,476	27,540	30,665	33,853	37,105
Thermal Treatment (without energy)	5,361	5,462	5,567	5,636	5,678	5,714	5,744	5,770	5,794	5,820	5,832	5,844	5,859	5,872	5,888	5,936	5,985	6,035	6,085	6,136	6,188
Recycling (C+I, Agri)	104,140	107,339	110,664	113,080	114,928	116,604	118,153	119,599	120,995	122,423	123,745	125,095	126,471	127,854	129,312	132,118	134,971	137,874	140,825	143,827	146,881
Recycling (C+D)	80,789	82,779	84,897	86,117	86,677	87,036	87,293	87,433	87,531	87,670	87,350	87,038	86,765	86,477	86,184	86,383	86,583	86,782	86,983	87,183	87,385
Recycling (Metals)	-31,431	-29,957	-28,390	-27,465	-27,013	-26,704	-26,467	-26,314	-26,189	-26,033	-26,205	-26,371	-26,508	-26,653	-26,802	-26,597	-26,390	-26,180	-25,971	-25,759	-25,544
Recycling	19,860	20,323	20,816	21,100	21,230	21,314	21,374	21,406	21,429	21,461	21,387	21,314	21,251	21,184	21,115	21,162	21,208	21,255	21,301	21,348	21,395
Recycling (LACW)	42,167	43,445	44,747	46,074	47,426	48,805	50,208	51,639	53,096	54,581	56,095	57,636	59,208	60,810	62,442	64,104	65,798	67,526	69,287	71,081	72,909
Composting	16,601	16,939	17,287	17,619	17,941	18,266	18,593	18,924	19,262	19,606	19,946	20,294	20,649	21,012	21,382	21,770	22,167	22,572	22,985	23,405	23,834
Treatment plant	-83,511	-83,278	-83,033	-82,877	-82,782	-82,706	-82,641	-82,588	-82,538	-82,484	-82,466	-82,445	-82,422	-82,397	-82,372	-82,273	-82,172	-82,068	-81,965	-81,859	-81,751
Other Treatment	32,900	34,074	35,323	36,044	36,374	36,586	36,737	36,819	36,878	36,960	36,771	36,587	36,425	36,256	36,083	36,201	36,318	36,436	36,555	36,673	36,792
Land recovery	-53,452	-52,406	-51,292	-50,650	-50,356	-50,167	-50,032	-49,959	-49,907	-49,834	-50,003	-50,166	-50,310	-50,461	-50,615	-50,511	-50,406	-50,300	-50,195	-50,090	-49,984

Growth Option 1/ Max recycling																					
Facility Type	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030	Gap2031	Gap2032	Gap2033	Gap2034	Gap2035	Gap2036
Landfill (C+I and	75,672	69,503	63,143	56,124	48,666	47,427	46,118	44,750	43,363	41,927	68,274	66,719	65,202	63,641	62,076	60,765	61,467	62,183	62,909	63,649	64,401
Landfill (Hazardous)	-217,950	-217,786	-217,611	-217,505	-161,691	-161,651	-161,618	-161,595	-161,574	-161,550	-161,561	-161,571	-161,578	7,741	7,733	7,764	7,795	7,825	7,857	7,889	7,921
Landfill (CD&E)	-57,291	-65,449	-71,210	-71,067	-76,977	-68,672	-69,536	-70,530	-39,807	-40,808	-42,410	-43,969	-45,497	-47,011	-48,550	-49,474	-49,239	-49,003	-48,766	-48,529	-48,292
Energy from waste	-26,663	-27,939	-29,368	-30,912	-32,603	-30,789	-28,946	-27,067	-25,153	-23,206	-21,193	-19,139	-17,051	-14,921	-12,744	-10,443	-8,098	-5,706	-3,268	-781	1,756
Thermal Treatment (without energy	4,540	4,362	4,182	3,943	3,689	3,704	3,714	3,720	3,724	3,730	3,717	3,704	3,693	3,681	3,670	3,678	3,686	3,694	3,702	3,710	3,718
Recycling (C+I, Agri)	121,084	130,277	139,850	148,527	156,625	160,481	164,247	167,862	171,477	175,113	178,630	182,157	185,778	189,380	193,135	198,589	202,128	205,728	209,388	213,111	216,897
Recycling (C+D)	101,934	110,800	120,128	128,483	135,963	138,105	140,131	141,945	143,733	145,555	146,662	147,735	148,899	149,993	151,103	153,020	153,366	153,712	154,059	154,407	154,756
Recycling (Metals)	-31,431	-29,957	-28,390	-27,465	-27,013	-26,704	-26,467	-26,314	-26,189	-26,033	-26,205	-26,371	-26,508	-26,653	-26,802	-26,597	-26,390	-26,180	-25,971	-25,759	-25,544
Recycling	19,860	20,323	20,816	21,100	21,230	21,314	21,374	21,406	21,429	21,461	21,387	21,314	21,251	21,184	21,115	21,162	21,208	21,255	21,301	21,348	21,395
Recycling (LACW)	59,547	67,085	74,890	82,971	91,335	93,591	95,890	98,235	100,625	103,059	105,543	108,073	110,654	113,285	115,966	118,699	121,485	124,326	127,223	130,176	133,186
Composting	16,271	16,497	16,729	16,922	17,118	17,228	17,341	17,457	17,577	17,704	17,810	17,947	18,091	18,244	18,404	18,573	18,945	19,324	19,710	20,104	20,506
Treatment plant	-83,567	-83,367	-83,167	-83,047	-82,973	-82,705	-82,441	-82,182	-81,923	-81,657	-81,384	-81,124	-80,857	-80,585	-80,305	-79,930	-79,752	-79,570	-79,386	-79,198	-79,007
Other Treatment	32,243	32,365	32,503	32,082	31,296	31,071	30,779	30,433	30,056	29,708	29,116	28,541	27,979	27,421	26,854	26,538	26,634	26,731	26,828	26,924	27,022
Land recovery	-57,595	-55,604	-53,475	-51,757	-50,356	-50,167	-50,032	-49,959	-49,907	-49,834	-50,003	-50,166	-50,310	-50,461	-50,615	-50,511	-50,406	-50,300	-50,195	-50,090	-49,984

Growth Option 1/ Median Recycling																					
Facility Type	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030	Gap2031	Gap2032	Gap2033	Gap2034	Gap2035	Gap2036
Landfill (C+I and	80,058	75,452	70,775	65,399	59,568	57,846	56,008	54,100	52,137	50,158	75,831	73,629	71,405	69,138	66,819	64,773	65,339	65,917	66,502	67,098	67,703
Landfill (Hazardous)	-217,950	-217,786	-217,611	-217,505	-161,691	-161,651	-161,618	-161,595	-161,574	-161,550	-161,561	-161,571	-161,578	7,741	7,733	7,764	7,795	7,825	7,857	7,889	7,921
Landfill (CD&E)	-65,577	-76,805	-85,736	-88,725	-97,696	-88,537	-88,492	-88,575	-56,903	-56,988	-57,595	-58,166	-58,693	-59,235	-59,781	-59,800	-59,588	-59,375	-59,160	-58,946	-58,732
Energy from waste	-15,978	-13,492	-10,977	-8,489	-5,974	-2,800	448	3,737	7,106	10,515	14,070	17,677	21,372	25,120	28,980	33,095	36,274	39,514	42,818	46,187	49,623
Thermal Treatment (without energy	4,540	4,362	4,182	3,943	3,689	3,704	3,714	3,720	3,724	3,730	3,717	3,704	3,693	3,681	3,670	3,678	3,686	3,694	3,702	3,710	3,718
Recycling (C+I, Agri)	112,592	118,827	125,257	130,824	135,777	139,488	143,123	146,620	150,123	153,642	157,073	160,510	164,037	167,547	171,202	176,432	179,743	183,110	186,534	190,016	193,559
Recycling (C+D)	89,691	94,117	98,765	102,487	105,448	107,469	109,409	111,177	112,932	114,707	115,921	117,099	118,354	119,544	120,752	122,602	122,882	123,161	123,441	123,723	124,004
Recycling (Metals)	-31,431	-29,957	-28,390	-27,465	-27,013	-26,704	-26,467	-26,314	-26,189	-26,033	-26,205	-26,371	-26,508	-26,653	-26,802	-26,597	-26,390	-26,180	-25,971	-25,759	-25,544
Recycling	19,860	20,323	20,816	21,100	21,230	21,314	21,374	21,406	21,429	21,461	21,387	21,314	21,251	21,184	21,115	21,162	21,208	21,255	21,301	21,348	21,395
Recycling (LACW)	52,164	57,038	62,076	67,283	72,663	74,546	76,464	78,420	80,413	82,444	84,515	86,625	88,777	90,970	93,205	95,483	97,805	100,172	102,586	105,046	107,553
Composting	16,271	16,497	16,729	16,922	17,118	17,228	17,341	17,457	17,577	17,704	17,810	17,947	18,091	18,244	18,404	18,573	18,945	19,324	19,710	20,104	20,506
Treatment plant	-82,746	-82,267	-81,763	-81,374	-80,984	-80,876	-80,777	-80,686	-80,599	-80,508	-80,432	-80,353	-80,273	-80,191	-80,106	-79,930	-79,752	-79,570	-79,386	-79,198	-79,007
Other Treatment	52,804	60,370	68,365	75,727	82,531	81,572	80,456	79,247	77,981	76,735	75,042	73,349	71,719	70,093	68,436	67,281	67,467	67,653	67,840	68,027	68,214
Land recovery	-57,595	-55,604	-53,475	-51,757	-50,356	-50,364	-50,427	-50,552	-50,699	-50,826	-51,211	-51,567	-51,903	-52,245	-52,589	-52,684	-52,584	-52,483	-52,383	-52,282	-52,181

Growth Option 2

Growth Option 2/ Baseline recycling																					
Facility Type	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030	Gap2031	Gap2032	Gap2033	Gap2034	Gap2035	Gap2036
Landfill (C+I and LACW)	98,043	99,812	101,662	102,962	103,903	104,744	105,518	106,232	106,931	107,660	136,127	136,780	137,466	138,161	138,903	139,642	140,399	141,171	141,962	142,770	143,597
Landfill (Hazardous)	-218,015	-217,873	-217,722	-217,639	-161,846	-161,829	-161,817	-161,815	-161,814	-161,811	-161,841	-161,870	-161,894	7,409	7,384	7,358	7,332	7,307	7,282	7,258	7,234
Landfill (CD&E)	-42,482	-44,423	-43,616	-36,950	-36,466	-27,331	-27,376	-27,628	3,860	3,629	2,597	1,600	690	-239	-1,166	-2,150	-3,126	-4,097	-5,062	-6,020	-6,972
Energy from waste	-16,893	-14,629	-12,316	-9,963	-7,564	-5,116	-2,621	-76	2,520	5,170	7,874	10,636	13,451	16,324	19,256	22,249	25,302	28,415	31,593	34,834	38,142
Thermal Treatment (without energy recovery)	5,308	5,389	5,477	5,527	5,552	5,569	5,581	5,589	5,595	5,603	5,598	5,594	5,592	5,590	5,589	5,587	5,586	5,584	5,583	5,582	5,582
Recycling (C+I, Agri)	102,081	104,584	107,206	108,925	110,070	111,050	111,902	112,647	113,349	114,092	114,719	115,392	116,101	116,818	117,611	118,389	119,184	119,995	120,821	121,663	122,521
Recycling (C+D)	79,935	81,627	83,440	84,362	84,630	84,705	84,680	84,541	84,368	84,240	83,669	83,117	82,612	82,098	81,585	81,041	80,500	79,963	79,428	78,898	78,370
Recycling (Metals)	-32,041	-30,779	-29,430	-28,718	-28,474	-28,369	-28,333	-28,377	-28,446	-28,480	-28,832	-29,168	-29,469	-29,775	-30,080	-30,407	-30,728	-31,047	-31,361	-31,672	-31,979
Recycling (Hazardous)	19,661	20,055	20,477	20,692	20,754	20,771	20,765	20,733	20,693	20,663	20,530	20,402	20,284	20,165	20,045	19,919	19,793	19,668	19,544	19,420	19,297
Recycling (LACW)	42,245	43,551	44,881	46,238	47,621	49,030	50,467	51,932	53,424	54,944	56,495	58,076	59,688	61,330	63,003	64,712	66,451	68,224	70,032	71,875	73,754
Composting	16,595	16,933	17,279	17,609	17,931	18,254	18,582	18,913	19,251	19,596	19,938	20,288	20,646	21,012	21,386	21,766	22,154	22,551	22,956	23,369	23,792
Treatment plant	-83,632	-83,440	-83,238	-83,123	-83,070	-83,035	-83,010	-82,997	-82,986	-82,972	-82,991	-83,008	-83,020	-83,033	-83,042	-83,055	-83,068	-83,079	-83,090	-83,100	-83,108
Other Treatment	32,396	33,395	34,464	35,008	35,166	35,210	35,195	35,113	35,011	34,936	34,599	34,273	33,976	33,673	33,369	33,049	32,730	32,412	32,097	31,784	31,473
Land recovery	-53,901	-53,012	-52,059	-51,573	-51,433	-51,393	-51,406	-51,479	-51,570	-51,638	-51,939	-52,228	-52,493	-52,764	-53,034	-53,320	-53,605	-53,887	-54,168	-54,447	-54,724

Growth Option 2/Max recycling																					
Facility Type	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030	Gap2031	Gap2032	Gap2033	Gap2034	Gap2035	Gap2036
Landfill (C+I and LACW)	74,784	68,403	61,871	54,729	47,193	45,793	44,335	42,829	41,320	39,778	66,028	64,398	62,816	61,206	59,602	57,983	58,271	58,566	58,871	59,181	59,501
Landfill (Hazardous)	-218,015	-217,873	-217,722	-217,639	-161,846	-161,829	-161,817	-161,815	-161,814	-161,811	-161,841	-161,870	-161,894	7,409	7,384	7,358	7,332	7,307	7,282	7,258	7,234
Landfill (CD&E)	-58,671	-67,224	-73,350	-73,517	-79,683	-71,725	-72,923	-74,241	-43,824	-45,121	-46,992	-48,799	-50,558	-52,291	-54,035	-55,777	-56,415	-57,049	-57,679	-58,306	-58,927
Energy from waste	-26,627	-27,911	-29,361	-30,937	-32,673	-30,865	-29,025	-27,151	-25,242	-23,293	-21,283	-19,229	-17,138	-15,006	-12,824	-10,599	-8,331	-6,019	-3,660	-1,254	1,200
Thermal Treatment (without energy recovery)	4,495	4,304	4,115	3,866	3,607	3,610	3,609	3,603	3,596	3,591	3,568	3,545	3,525	3,504	3,484	3,462	3,440	3,418	3,396	3,375	3,354
Recycling (C+I, Agri)	118,855	127,220	135,918	143,686	150,832	153,809	156,684	159,392	162,097	164,822	167,406	170,010	172,712	175,385	178,199	180,957	181,861	182,783	183,727	184,690	185,673
Recycling (C+D)	100,868	109,280	118,097	125,908	132,811	134,473	136,014	137,340	138,638	139,972	140,604	141,216	141,921	142,560	143,214	143,763	142,826	141,895	140,970	140,051	139,137
Recycling (Metals)	-32,041	-30,779	-29,430	-28,718	-28,474	-28,369	-28,333	-28,377	-28,446	-28,480	-28,832	-29,168	-29,469	-29,775	-30,080	-30,407	-30,728	-31,047	-31,361	-31,672	-31,979
Recycling (Hazardous)	19,661	20,055	20,477	20,692	20,754	20,771	20,765	20,733	20,693	20,663	20,530	20,402	20,284	20,165	20,045	19,919	19,793	19,668	19,544	19,420	19,297
Recycling (LACW)	59,644	67,224	75,077	83,212	91,636	93,942	96,292	98,690	101,134	103,625	106,167	108,759	111,402	114,097	116,844	119,649	122,506	125,420	128,392	131,423	134,514
Composting	16,265	16,490	16,719	16,910	17,105	17,220	17,339	17,461	17,591	17,728	17,847	17,996	18,155	18,324	18,502	18,689	19,070	19,458	19,854	20,258	20,671
Treatment plant	-83,687	-83,529	-83,369	-83,289	-83,256	-83,033	-82,816	-82,604	-82,392	-82,177	-81,952	-81,743	-81,527	-81,308	-81,080	-80,850	-80,809	-80,767	-80,724	-80,680	-80,634
Other Treatment	31,745	31,708	31,688	31,124	30,202	29,836	29,407	28,928	28,424	27,954	27,251	26,572	25,914	25,263	24,608	23,953	23,692	23,431	23,173	22,917	22,661
Land recovery	-58,003	-56,168	-54,207	-52,659	-51,433	-51,393	-51,406	-51,479	-51,570	-51,638	-51,939	-52,228	-52,493	-52,764	-53,034	-53,320	-53,605	-53,887	-54,168	-54,447	-54,724

Growth Option 2/ Median Recycling																					
Facility Type	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030	Gap2031	Gap2032	Gap2033	Gap2034	Gap2035	Gap2036
Landfill (C+I and LACW)	79,125	74,273	69,379	63,824	57,851	55,946	53,943	51,886	49,793	47,703	73,283	71,011	68,738	66,438	64,105	61,755	61,886	62,021	62,167	62,319	62,480
Landfill (Hazardous)	-218,015	-217,873	-217,722	-217,639	-161,846	-161,829	-161,817	-161,815	-161,814	-161,811	-161,841	-161,870	-161,894	7,409	7,384	7,358	7,332	7,307	7,282	7,258	7,234
Landfill (CD&E)	-66,874	-78,430	-87,639	-90,833	-99,938	-91,084	-91,340	-91,719	-60,334	-60,699	-61,568	-62,388	-63,153	-63,926	-64,697	-65,497	-66,073	-66,647	-67,216	-67,782	-68,344
Energy from waste	-15,967	-13,508	-11,038	-8,612	-6,177	-3,050	146	3,376	6,681	10,025	13,504	17,033	20,646	24,307	28,074	31,892	34,816	37,798	40,837	43,935	47,092
Thermal Treatment (without energy recovery)	4,495	4,304	4,115	3,866	3,607	3,610	3,609	3,603	3,596	3,591	3,568	3,545	3,525	3,504	3,484	3,462	3,440	3,418	3,396	3,375	3,354
Recycling (C+I, Agri)	110,448	115,922	121,562	126,326	130,451	133,350	136,160	138,818	141,476	144,149	146,711	149,290	151,960	154,602	157,378	160,101	160,968	161,854	162,758	163,681	164,623
Recycling (C+D)	88,748	92,815	97,082	100,414	102,980	104,617	106,167	107,539	108,895	110,272	111,095	111,891	112,766	113,575	114,401	115,133	114,377	113,626	112,879	112,137	111,399
Recycling (Metals)	-32,041	-30,779	-29,430	-28,718	-28,474	-28,369	-28,333	-28,377	-28,446	-28,480	-28,832	-29,168	-29,469	-29,775	-30,080	-30,407	-30,728	-31,047	-31,361	-31,672	-31,979
Recycling (Hazardous)	19,661	20,055	20,477	20,692	20,754	20,771	20,765	20,733	20,693	20,663	20,530	20,402	20,284	20,165	20,045	19,919	19,793	19,668	19,544	19,420	19,297
Recycling (LACW)	52,253	57,163	62,241	67,491	72,919	74,843	76,805	78,806	80,845	82,924	85,044	87,206	89,411	91,658	93,949	96,287	98,669	101,097	103,574	106,101	108,676
Composting	16,265	16,490	16,719	16,910	17,105	17,220	17,339	17,461	17,591	17,728	17,847	17,996	18,155	18,324	18,502	18,689	19,070	19,458	19,854	20,258	20,671
Treatment plant	-82,874	-82,443	-81,988	-81,648	-81,311	-81,250	-81,199	-81,155	-81,113	-81,070	-81,039	-81,006	-80,968	-80,932	-80,890	-80,850	-80,809	-80,767	-80,724	-80,680	-80,634
Other Treatment	52,100	59,345	66,967	73,923	80,288	79,051	77,671	76,207	74,702	73,233	71,337	69,461	67,665	65,883	64,083	62,303	61,800	61,299	60,802	60,307	59,815
Land recovery	-58,003	-56,168	-54,207	-52,659	-51,433	-51,585	-51,790	-52,054	-52,336	-52,593	-53,098	-53,569	-54,014	-54,462	-54,907	-55,366	-55,637	-55,907	-56,175	-56,441	-56,706

Growth Option 3

Growth Option 3/ Baseline recycling																					
Facility Type	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030	Gap2031	Gap2032	Gap2033	Gap2034	Gap2035	Gap2036
Landfill (C+I and LACW)	97,431	99,140	100,931	102,173	103,058	103,846	104,566	105,227	105,874	106,557	134,976	135,583	136,301	137,029	137,805	138,579	139,371	140,181	141,010	141,857	142,724
Landfill (Hazardous)	-218,053	-217,915	-217,768	-217,689	-161,901	-161,886	-161,878	-161,879	-161,883	-161,882	-161,915	-161,946	-161,969	7,336	7,313	7,289	7,265	7,243	7,219	7,198	7,176
Landfill (CD&E)	-43,407	-45,464	-44,775	-38,218	-37,840	-28,805	-28,950	-29,298	2,093	1,770	653	-423	-1,311	-2,216	-3,121	-4,080	-5,032	-5,979	-6,919	-7,854	-8,783
Energy from waste	-16,585	-14,204	-11,773	-9,295	-6,767	-4,185	-1,550	1,140	3,887	6,693	9,562	12,491	15,483	18,539	21,662	24,850	28,106	31,432	34,829	38,295	41,838
Thermal Treatment (without energy recovery)	5,275	5,354	5,437	5,483	5,504	5,518	5,526	5,531	5,534	5,538	5,530	5,523	5,521	5,519	5,519	5,517	5,516	5,515	5,515	5,514	5,514
Recycling (C+I, Agri)	100,845	103,207	105,685	107,263	108,267	109,106	109,817	110,422	110,987	111,593	112,080	112,619	113,336	114,059	114,857	115,644	116,446	117,264	118,098	118,948	119,813
Recycling (C+D)	79,422	81,052	82,798	83,660	83,870	83,889	83,808	83,616	83,390	83,211	82,592	81,996	81,505	81,003	80,503	79,973	79,445	78,921	78,401	77,883	77,369
Recycling (Metals)	-32,401	-31,182	-29,878	-29,207	-29,002	-28,933	-28,933	-29,014	-29,117	-29,185	-29,566	-29,931	-30,219	-30,512	-30,804	-31,115	-31,424	-31,728	-32,029	-32,325	-32,617
Recycling (Hazardous)	19,542	19,921	20,328	20,528	20,577	20,581	20,563	20,518	20,465	20,424	20,280	20,141	20,027	19,910	19,794	19,670	19,547	19,426	19,304	19,184	19,064
Recycling (LACW)	42,461	43,845	45,256	46,698	48,167	49,665	51,193	52,753	54,345	55,968	57,623	59,313	61,036	62,795	64,590	66,422	68,289	70,195	72,139	74,124	76,148
Composting	16,625	16,976	17,337	17,682	18,020	18,360	18,705	19,054	19,411	19,776	20,138	20,510	20,891	21,281	21,680	22,086	22,502	22,927	23,361	23,805	24,259
Treatment plant	-83,704	-83,522	-83,328	-83,221	-83,177	-83,149	-83,132	-83,127	-83,125	-83,118	-83,145	-83,168	-83,179	-83,191	-83,200	-83,212	-83,223	-83,233	-83,242	-83,252	-83,259
Other Treatment	32,093	33,055	34,086	34,594	34,717	34,729	34,682	34,568	34,435	34,329	33,964	33,612	33,322	33,027	32,732	32,419	32,108	31,798	31,491	31,185	30,882
Land recovery	-54,171	-53,314	-52,396	-51,942	-51,832	-51,823	-51,865	-51,966	-52,085	-52,178	-52,504	-52,817	-53,076	-53,340	-53,603	-53,882	-54,159	-54,435	-54,708	-54,980	-55,251

Growth Option 3/ Max recycling																					
WasteManGroupID	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030	Gap2031	Gap2032	Gap2033	Gap2034	Gap2035	Gap2036
Landfill (C+I and LACW)	74,284	67,893	61,360	54,225	46,704	45,289	43,820	42,304	40,790	39,246	65,499	63,872	62,331	60,762	59,202	57,625	57,933	58,248	58,572	58,905	59,247
Landfill (Hazardous)	-218,053	-217,915	-217,768	-217,689	-161,901	-161,886	-161,878	-161,879	-161,883	-161,882	-161,915	-161,946	-161,969	7,336	7,313	7,289	7,265	7,243	7,219	7,198	7,176
Landfill (CD&E)	-59,498	-68,112	-74,293	-74,496	-80,687	-72,793	-74,052	-75,428	-45,066	-46,414	-48,331	-50,178	-51,907	-53,610	-55,325	-57,038	-57,660	-58,278	-58,893	-59,503	-60,109
Energy from waste	-26,383	-27,596	-28,983	-30,505	-32,195	-30,299	-28,367	-26,397	-24,387	-22,336	-20,217	-18,052	-15,836	-13,573	-11,257	-8,893	-6,481	-4,018	-1,503	1,061	3,680
Thermal Treatment (without energy recovery)	4,467	4,275	4,085	3,835	3,576	3,577	3,573	3,566	3,557	3,549	3,524	3,500	3,480	3,460	3,440	3,418	3,397	3,376	3,355	3,334	3,313
Recycling (C+I, Agri)	117,518	125,691	134,186	141,749	148,680	151,474	154,163	156,683	159,198	161,735	164,125	166,540	169,228	171,887	174,685	177,430	178,345	179,279	180,234	181,208	182,202
Recycling (C+D)	100,229	108,519	117,203	124,877	131,640	133,202	134,642	135,866	137,064	138,297	138,834	139,353	140,061	140,702	141,358	141,913	140,999	140,091	139,188	138,291	137,400
Recycling (Metals)	-32,401	-31,182	-29,878	-29,207	-29,002	-28,933	-28,933	-29,014	-29,117	-29,185	-29,566	-29,931	-30,219	-30,512	-30,804	-31,115	-31,424	-31,728	-32,029	-32,325	-32,617
Recycling (Hazardous)	19,542	19,921	20,328	20,528	20,577	20,581	20,563	20,518	20,465	20,424	20,280	20,141	20,027	19,910	19,794	19,670	19,547	19,426	19,304	19,184	19,064
Recycling (LACW)	59,910	67,610	75,598	83,886	92,481	94,925	97,419	99,965	102,564	105,216	107,922	110,686	113,506	116,385	119,323	122,322	125,383	128,507	131,696	134,952	138,273
Composting	16,294	16,532	16,775	16,979	17,189	17,321	17,458	17,599	17,749	17,908	18,049	18,222	18,405	18,599	18,803	19,017	19,423	19,838	20,261	20,694	21,135
Treatment plant	-83,759	-83,609	-83,459	-83,387	-83,362	-83,147	-82,940	-82,738	-82,538	-82,332	-82,119	-81,920	-81,706	-81,488	-81,262	-81,034	-80,993	-80,950	-80,906	-80,861	-80,815
Other Treatment	31,447	31,379	31,330	30,740	29,796	29,404	28,950	28,447	27,920	27,428	26,706	26,009	25,362	24,723	24,081	23,437	23,182	22,928	22,676	22,425	22,177
Land recovery	-58,248	-56,449	-54,528	-53,019	-51,832	-51,823	-51,865	-51,966	-52,085	-52,178	-52,504	-52,817	-53,076	-53,340	-53,603	-53,882	-54,159	-54,435	-54,708	-54,980	-55,251

Growth Option 3/ Median recycling																					
Facility Type	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030	Gap2031	Gap2032	Gap2033	Gap2034	Gap2035	Gap2036
Landfill (C+I and LACW)	78,599	73,724	68,813	63,249	57,270	55,350	53,334	51,268	49,170	47,079	72,665	70,401	68,178	65,929	63,648	61,351	61,502	61,661	61,828	62,004	62,189
Landfill (Hazardous)	-218,053	-217,915	-217,768	-217,689	-161,901	-161,886	-161,878	-161,879	-161,883	-161,882	-161,915	-161,946	-161,969	7,336	7,313	7,289	7,265	7,243	7,219	7,198	7,176
Landfill (CD&E)	-67,652	-79,243	-88,477	-91,675	-100,769	-91,976	-92,289	-92,724	-61,394	-61,812	-62,730	-63,593	-64,342	-65,098	-65,853	-66,636	-67,198	-67,757	-68,312	-68,864	-69,412
Energy from waste	-15,720	-13,183	-10,639	-8,141	-5,639	-2,416	879	4,212	7,624	11,078	14,671	18,317	22,069	25,877	29,794	33,769	36,869	40,034	43,261	46,552	49,911
Thermal Treatment (without energy recovery)	4,467	4,275	4,085	3,835	3,576	3,577	3,573	3,566	3,557	3,549	3,524	3,500	3,480	3,460	3,440	3,418	3,397	3,376	3,355	3,334	3,313
	-11,253	-8,908	-6,554	-4,306	-2,063	1,161	4,452	7,778	11,181	14,627	18,195	21,817	25,549	29,337	33,234	37,187	40,266	43,410	46,616	49,886	53,224
Recycling (C+I, Agri)	109,162	114,469	119,935	124,527	128,473	131,202	133,840	136,321	138,804	141,302	143,683	146,084	148,740	151,366	154,126	156,835	157,712	158,607	159,522	160,455	161,405
Recycling (C+D)	88,182	92,165	96,341	99,586	102,063	103,618	105,086	106,374	107,648	108,941	109,684	110,403	111,276	112,083	112,907	113,639	112,902	112,169	111,441	110,717	109,998
Recycling (Metals)	-32,401	-31,182	-29,878	-29,207	-29,002	-28,933	-28,933	-29,014	-29,117	-29,185	-29,566	-29,931	-30,219	-30,512	-30,804	-31,115	-31,424	-31,728	-32,029	-32,325	-32,617
Recycling (Hazardous)	19,542	19,921	20,328	20,528	20,577	20,581	20,563	20,518	20,465	20,424	20,280	20,141	20,027	19,910	19,794	19,670	19,547	19,426	19,304	19,184	19,064
Recycling (LACW)	52,498	57,510	62,699	68,074	73,636	75,678	77,761	79,888	82,059	84,273	86,532	88,840	91,193	93,596	96,048	98,551	101,104	103,710	106,369	109,085	111,855
Composting	16,294	16,532	16,775	16,979	17,189	17,321	17,458	17,599	17,749	17,908	18,049	18,222	18,405	18,599	18,803	19,017	19,423	19,838	20,261	20,694	21,135
Treatment plant	-82,951	-82,531	-82,088	-81,759	-81,434	-81,381	-81,339	-81,304	-81,273	-81,238	-81,217	-81,192	-81,155	-81,118	-81,075	-81,034	-80,993	-80,950	-80,906	-80,861	-80,815
Other Treatment	51,678	58,831	66,352	73,202	79,455	78,169	76,742	75,234	73,689	72,182	70,253	68,351	66,584	64,830	63,059	61,308	60,817	60,329	59,843	59,361	58,881
Land recovery	-58,248	-56,449	-54,528	-53,019	-51,832	-52,013	-52,245	-52,535	-52,841	-53,122	-53,649	-54,141	-54,577	-55,016	-55,452	-55,902	-56,167	-56,430	-56,691	-56,951	-57,209

Growth Option 4

Growth Option 4/ Baseline																					
Facility Type+A37	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030	Gap2031	Gap2032	Gap2033	Gap2034	Gap2035	Gap2036
Landfill (C+I and LACW)	97,294	98,825	100,436	101,500	102,205	102,815	103,359	103,844	104,463	105,121	133,568	134,210	134,889	135,580	136,318	137,061	137,822	138,603	139,404	140,225	141,066
Landfill (Hazardous)	-218,070	-217,952	-217,825	-217,765	-161,996	-162,001	-162,013	-162,033	-162,047	-162,057	-162,090	-162,119	-162,144	7,156	7,130	7,103	7,076	7,050	7,025	7,001	6,977
Landfill (CD&E)	-43,885	-46,419	-46,209	-40,129	-40,228	-31,671	-32,292	-33,118	-1,997	-2,592	-3,726	-4,815	-5,814	-6,829	-7,842	-8,905	-9,960	-11,008	-12,048	-13,081	-14,107
Energy from waste	-16,134	-13,592	-10,990	-8,336	-5,626	-2,852	-18	2,881	5,846	8,880	11,985	15,160	18,407	21,727	25,124	28,596	32,148	35,781	39,494	43,293	47,178
Thermal Treatment (without energy recovery)	5,263	5,330	5,401	5,435	5,442	5,444	5,441	5,433	5,430	5,430	5,421	5,414	5,409	5,403	5,399	5,393	5,389	5,384	5,380	5,376	5,373
Recycling (C+I, Agri)	100,495	102,505	104,631	105,857	106,505	106,988	107,343	107,589	108,073	108,600	109,077	109,608	110,182	110,762	111,416	112,062	112,722	113,398	114,088	114,793	115,514
Recycling (C+D)	79,157	80,522	82,004	82,603	82,547	82,302	81,959	81,501	81,125	80,796	80,168	79,565	79,013	78,451	77,890	77,301	76,717	76,137	75,560	74,989	74,421
Recycling (Metals)	-32,582	-31,548	-30,430	-29,944	-29,925	-30,041	-30,227	-30,493	-30,698	-30,868	-31,252	-31,615	-31,942	-32,274	-32,603	-32,950	-33,292	-33,629	-33,962	-34,291	-34,614
Recycling (Hazardous)	19,480	19,798	20,143	20,282	20,269	20,212	20,132	20,026	19,938	19,862	19,716	19,575	19,447	19,316	19,186	19,049	18,913	18,778	18,644	18,511	18,378
Recycling (LACW)	42,768	44,262	45,787	47,345	48,937	50,563	52,224	53,919	55,652	57,423	59,231	61,078	62,965	64,892	66,860	68,872	70,926	73,026	75,171	77,362	79,600
Composting	16,679	17,044	17,422	17,785	18,140	18,499	18,865	19,235	19,617	20,008	20,402	20,804	21,218	21,642	22,075	22,518	22,971	23,435	23,911	24,397	24,894
Treatment plant	-83,733	-83,580	-83,414	-83,336	-83,319	-83,321	-83,333	-83,357	-83,367	-83,373	-83,401	-83,426	-83,445	-83,465	-83,483	-83,503	-83,522	-83,540	-83,557	-83,575	-83,591
Other Treatment	31,937	32,743	33,617	33,970	33,938	33,793	33,590	33,320	33,098	32,904	32,534	32,178	31,851	31,520	31,189	30,842	30,497	30,156	29,815	29,478	29,143
Land recovery	-54,311	-53,592	-52,813	-52,499	-52,528	-52,657	-52,837	-53,078	-53,276	-53,449	-53,779	-54,096	-54,386	-54,682	-54,977	-55,286	-55,594	-55,899	-56,202	-56,503	-56,801

Growth Option 4/ Max recycling																					
Facility Type	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030	Gap2031	Gap2032	Gap2033	Gap2034	Gap2035	Gap2036
Landfill (C+I and LACW)	74,167	67,645	60,996	53,766	46,169	44,663	43,108	41,515	40,005	38,468	64,761	63,182	61,654	60,101	58,560	57,008	57,309	57,621	57,941	58,270	58,610
Landfill (Hazardous)	-218,070	-217,952	-217,825	-217,765	-161,996	-162,001	-162,013	-162,033	-162,047	-162,057	-162,090	-162,119	-162,144	7,156	7,130	7,103	7,076	7,050	7,025	7,001	6,977
Landfill (CD&E)	-59,926	-68,928	-75,458	-75,971	-82,435	-74,869	-76,450	-78,141	-47,943	-49,451	-51,347	-53,172	-54,944	-56,689	-58,442	-60,189	-60,878	-61,563	-62,242	-62,917	-63,588
Energy from waste	-25,992	-27,094	-28,381	-29,812	-31,426	-29,402	-27,338	-25,229	-23,059	-20,840	-18,554	-16,214	-13,824	-11,381	-8,878	-6,319	-3,705	-1,031	1,700	4,493	7,347
Thermal Treatment (without energy recovery)	4,455	4,253	4,052	3,792	3,522	3,513	3,499	3,480	3,465	3,452	3,426	3,402	3,380	3,357	3,334	3,310	3,287	3,263	3,240	3,217	3,194
	-21,537	-22,841	-24,329	-26,020	-27,904	-25,889	-23,839	-21,749	-19,594	-17,388	-15,128	-12,812	-10,444	-8,024	-5,544	-3,009	-418	2,232	4,940	7,710	10,541
Recycling (C+I, Agri)	117,134	124,900	132,964	140,074	146,525	148,865	151,089	153,134	155,509	157,905	160,249	162,624	165,099	167,545	170,124	172,653	173,385	174,137	174,907	175,696	176,505
Recycling (C+D)	99,897	107,820	116,097	123,326	129,603	130,731	131,727	132,499	133,417	134,367	134,846	135,311	135,872	136,366	136,875	137,283	136,271	135,266	134,268	133,278	132,294
Recycling (Metals)	-32,582	-31,548	-30,430	-29,944	-29,925	-30,041	-30,227	-30,493	-30,698	-30,868	-31,252	-31,615	-31,942	-32,274	-32,603	-32,950	-33,292	-33,629	-33,962	-34,291	-34,614
Recycling (Hazardous)	19,480	19,798	20,143	20,282	20,269	20,212	20,132	20,026	19,938	19,862	19,716	19,575	19,447	19,316	19,186	19,049	18,913	18,778	18,644	18,511	18,378
Recycling (LACW)	60,288	68,156	76,335	84,837	93,673	96,316	99,017	101,776	104,596	107,479	110,425	113,436	116,513	119,656	122,869	126,154	129,510	132,941	136,448	140,032	143,695
Composting	16,347	16,598	16,856	17,076	17,301	17,454	17,614	17,782	17,962	18,151	18,327	18,536	18,756	18,988	19,231	19,487	19,930	20,383	20,847	21,320	21,805
Treatment plant	-83,787	-83,662	-83,534	-83,484	-83,481	-83,292	-83,109	-82,934	-82,742	-82,544	-82,334	-82,136	-81,932	-81,725	-81,510	-81,293	-81,261	-81,227	-81,193	-81,158	-81,121
Other Treatment	31,292	31,078	30,887	30,162	29,090	28,563	27,978	27,346	26,751	26,193	25,477	24,789	24,122	23,464	22,804	22,144	21,861	21,581	21,302	21,026	20,751
Land recovery	-58,374	-56,708	-54,927	-53,563	-52,528	-52,657	-52,837	-53,078	-53,276	-53,449	-53,779	-54,096	-54,386	-54,682	-54,977	-55,286	-55,594	-55,899	-56,202	-56,503	-56,801

Growth Option 4/ Median Recycling																					
Facility Type	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030	Gap2031	Gap2032	Gap2033	Gap2034	Gap2035	Gap2036
Landfill (C+I and LACW)	78,469	73,440	68,381	62,681	56,577	54,534	52,402	50,226	48,112	46,004	71,630	69,410	67,193	64,955	62,690	60,414	60,555	60,709	60,869	61,040	61,220
Landfill (Hazardous)	-218,070	-217,952	-217,825	-217,765	-161,996	-162,001	-162,013	-162,033	-162,047	-162,057	-162,090	-162,119	-162,144	7,156	7,130	7,103	7,076	7,050	7,025	7,001	6,977
Landfill (CD&E)	-68,054	-79,990	-89,514	-92,944	-102,217	-93,708	-94,305	-95,023	-63,850	-64,425	-65,345	-66,211	-67,019	-67,835	-68,647	-69,484	-70,107	-70,726	-71,340	-71,950	-72,556
Energy from waste	-15,302	-12,632	-9,961	-7,340	-4,721	-1,351	2,095	5,588	9,194	12,851	16,642	20,498	24,449	28,461	32,592	36,787	40,125	43,535	47,017	50,576	54,210
Thermal Treatment (without energy recovery)	4,455	4,253	4,052	3,792	3,522	3,513	3,499	3,480	3,465	3,452	3,426	3,402	3,380	3,357	3,334	3,310	3,287	3,263	3,240	3,217	3,194
Recycling (C+I, Agri)	108,794	113,722	118,798	122,985	126,515	128,827	131,041	133,088	135,443	137,814	140,150	142,512	144,968	147,395	149,950	152,456	153,165	153,891	154,634	155,395	156,175
Recycling (C+D)	87,890	91,567	95,424	98,337	100,469	101,678	102,790	103,714	104,759	105,818	106,507	107,173	107,920	108,602	109,298	109,904	109,087	108,276	107,470	106,671	105,877
Recycling (Metals)	-32,582	-31,548	-30,430	-29,944	-29,925	-30,041	-30,227	-30,493	-30,698	-30,868	-31,252	-31,615	-31,942	-32,274	-32,603	-32,950	-33,292	-33,629	-33,962	-34,291	-34,614
Recycling (Hazardous)	19,480	19,798	20,143	20,282	20,269	20,212	20,132	20,026	19,938	19,862	19,716	19,575	19,447	19,316	19,186	19,049	18,913	18,778	18,644	18,511	18,378
Recycling (LACW)	52,845	58,001	63,349	68,896	74,649	76,860	79,119	81,425	83,783	86,193	88,655	91,171	93,741	96,368	99,051	101,795	104,597	107,462	110,390	113,381	116,439
Composting	16,347	16,598	16,856	17,076	17,301	17,454	17,614	17,782	17,962	18,151	18,327	18,536	18,756	18,988	19,231	19,487	19,930	20,383	20,847	21,320	21,805
Treatment plant	-82,979	-82,585	-82,166	-81,861	-81,560	-81,534	-81,517	-81,509	-81,484	-81,456	-81,436	-81,412	-81,384	-81,356	-81,324	-81,293	-81,261	-81,227	-81,193	-81,158	-81,121
Other Treatment	51,460	58,360	65,591	72,115	78,005	76,454	74,770	73,011	71,341	69,716	67,814	65,940	64,149	62,374	60,586	58,819	58,275	57,734	57,198	56,664	56,136
Land recovery	-58,374	-56,708	-54,927	-53,563	-52,528	-52,843	-53,209	-53,633	-54,013	-54,366	-54,892	-55,382	-55,844	-56,308	-56,770	-57,242	-57,536	-57,827	-58,117	-58,404	-58,688

Appendix 4: Capacity Requirements by waste management type

This appendix presents information on the estimated capacity required per waste stream by waste type over the plan period. The results are presented by Growth option with each option presenting the 3 different recycling scenarios.

No Growth

No Growth/ Baseline recycling		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Waste type	Facility Type																					
Industrial Waste	Landfill (C+I and LACW)	45,461	45,461	45,461	45,461	45,461	45,461	45,461	45,461	45,461	45,461	45,461	45,461	45,461	45,461	45,461	45,461	45,461	45,461	45,461	45,461	45,461
Industrial Waste	Recycling (C+I, Agri)	72,737	72,737	72,737	72,737	72,737	72,737	72,737	72,737	72,737	72,737	72,737	72,737	72,737	72,737	72,737	72,737	72,737	72,737	72,737	72,737	72,737
Industrial Waste	Composting	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818
Industrial Waste	Recycling (Metals)	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553
Industrial Waste	Treatment plant	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818	1,818
Industrial Waste	Land recovery	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455
Industrial Waste	Don't know	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Commercial Waste	Landfill (C+I and LACW)	56,054	56,054	56,054	56,054	56,054	56,054	56,054	56,054	56,054	56,054	56,054	56,054	56,054	56,054	56,054	56,054	56,054	56,054	56,054	56,054	56,054
Commercial Waste	Thermal Treatment (energy recovery)	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808
Commercial Waste	Thermal Treatment (without energy recovery)	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808	1,808
Commercial Waste	Recycling (C+I, Agri)	117,533	117,533	117,533	117,533	117,533	117,533	117,533	117,533	117,533	117,533	117,533	117,533	117,533	117,533	117,533	117,533	117,533	117,533	117,533	117,533	117,533
Commercial Waste	Composting	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Commercial Waste	Treatment plant	3,616	3,616	3,616	3,616	3,616	3,616	3,616	3,616	3,616	3,616	3,616	3,616	3,616	3,616	3,616	3,616	3,616	3,616	3,616	3,616	3,616
Commercial Waste	Don't know	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction and Demolition Waste	Landfill (CD&E)	10,010	10,010	10,010	10,010	10,010	10,010	10,010	10,010	10,010	10,010	10,010	10,010	10,010	10,010	10,010	10,010	10,010	10,010	10,010	10,010	10,010
Construction and Demolition Waste	Recycling (Inerts C+D)	24,255	24,255	24,255	24,255	24,255	24,255	24,255	24,255	24,255	24,255	24,255	24,255	24,255	24,255	24,255	24,255	24,255	24,255	24,255	24,255	24,255
Construction and Demolition Waste	Other Treatment	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735
Excavation Waste	Landfill (CD&E)	127,440	127,440	127,440	127,440	127,440	127,440	127,440	127,440	127,440	127,440	127,440	127,440	127,440	127,440	127,440	127,440	127,440	127,440	127,440	127,440	127,440
Excavation Waste	Recycling (Inerts C+D)	51,840	51,840	51,840	51,840	51,840	51,840	51,840	51,840	51,840	51,840	51,840	51,840	51,840	51,840	51,840	51,840	51,840	51,840	51,840	51,840	51,840
Excavation Waste	Other Treatment	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160
Excavation Waste	Land recovery	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560
Agricultural Waste	Incineration (Animal By-Product)	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725
Agricultural Waste	Recycling (C+I, Agri)	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253
Agricultural Waste	Treatment plant	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034
LACW (Other)	Landfill (C+I and LACW)	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441
LACW (Other)	Thermal Treatment (energy recovery)	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260
LACW (Other)	Recycling (LACW)	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699
Hazardous waste	Landfill (Hazardous)	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854
Hazardous waste	Thermal Treatment (energy recovery)	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327
Hazardous waste	Thermal Treatment (without energy recovery)	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077
Hazardous waste	Recycling (Hazardous)	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706
Hazardous waste	Treatment plant	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552
LACW (H)	Landfill (C+I and LACW)	15,236	15,236	15,236	15,236	15,236	15,236	15,236	15,236	15,236	15,236	15,236	15,236	15,236	15,236	15,236	15,236	15,236	15,236	15,236	15,236	15,236
LACW (H)	Thermal Treatment (energy recovery)	102,395	102,395	102,395	102,395	102,395	102,395	102,395	102,395	102,395	102,395	102,395	102,395	102,395	102,395	102,395	102,395	102,395	102,395	102,395	102,395	102,395
LACW (H)	Recycling (LACW)	29,755	29,755	29,755	29,755	29,755	29,755	29,755	29,755	29,755	29,755	29,755	29,755	29,755	29,755	29,755	29,755	29,755	29,755	29,755	29,755	29,755
LACW (H)	Composting	13,588	13,588	13,588	13,588	13,588	13,588	13,588	13,588	13,588	13,588	13,588	13,588	13,588	13,588	13,588	13,588	13,588	13,588	13,588	13,588	13,588
LACW Secondary	Landfill (Hazardous)	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532
LACW Secondary	Recycling (LACW)	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979
LACW Secondary	Recycling (Metals)	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223

No Growth /Max recycling		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Waste Type	Facility Type																					
Industrial Waste	Landfill (C+I and LACW)	38,442	36,114	33,768	31,441	29,095	28,440	27,767	27,113	26,458	25,785	25,131	24,458	23,803	23,149	22,476	21,821	21,821	21,821	21,821	21,821	21,821
Industrial Waste	Recycling (C+I, Agri)	80,538	83,120	85,721	88,321	90,922	91,740	92,576	93,395	94,231	95,049	95,886	96,704	97,541	98,359	99,195	100,014	100,014	100,014	100,014	100,014	100,014
Industrial Waste	Composting	1,818	1,818	1,818	1,818	1,818	1,655	1,491	1,327	1,164	1,000	818	655	491	327	164	0	0	0	0	0	0
Industrial Waste	Recycling (Metals)	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553
Industrial Waste	Treatment plant	1,037	782	527	255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial Waste	Land recovery	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455
Industrial Waste	Don't know	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Landfill (C+I and LACW)	44,427	40,558	36,688	32,801	28,931	27,937	26,960	25,966	24,989	23,995	23,018	22,024	21,047	20,053	19,077	18,082	18,082	18,082	18,082	18,082	18,082
Commercial Waste	Thermal Treatment (energy recovery)	5,678	6,980	8,263	9,565	10,849	10,849	10,849	10,849	10,849	10,849	10,849	10,849	10,849	10,849	10,849	10,849	10,849	10,849	10,849	10,849	10,849
Commercial Waste	Thermal Treatment (without energy recovery)	1,031	778	524	253	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Recycling (C+I, Agri)	125,290	127,858	130,444	133,029	135,615	136,429	137,260	138,074	138,906	139,720	140,551	141,365	142,197	143,011	143,842	144,656	144,656	144,656	144,656	144,656	144,656
Commercial Waste	Composting	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Treatment plant	4,394	4,647	4,900	5,171	5,425	5,587	5,750	5,913	6,076	6,238	6,419	6,582	6,745	6,907	7,070	7,233	7,233	7,233	7,233	7,233	7,233
Commercial Waste	Don't know	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction and Demolition Waste	Landfill (CD&E)	9,017	8,693	8,362	8,031	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700
Construction and Demolition Waste	Recycling (Inerts C+D)	27,058	27,997	28,929	29,868	30,800	31,146	31,501	31,847	32,201	32,548	32,902	33,249	33,603	33,949	34,304	34,650	34,650	34,650	34,650	34,650	34,650
Construction and Demolition Waste	Other Treatment	40,918	40,317	39,709	39,108	38,500	38,154	37,799	37,453	37,099	36,752	36,398	36,051	35,697	35,351	34,996	34,650	34,650	34,650	34,650	34,650	34,650
Excavation Waste	Landfill (CD&E)	113,854	108,626	103,378	98,129	92,880	91,908	90,914	89,942	88,949	87,977	86,983	86,011	85,018	84,046	83,052	82,080	82,080	82,080	82,080	82,080	82,080
Excavation Waste	Recycling (Inerts C+D)	67,889	72,511	77,134	81,778	86,400	87,372	88,366	89,338	90,331	91,303	92,297	93,269	94,262	95,234	96,228	97,200	97,200	97,200	97,200	97,200	97,200
Excavation Waste	Other Treatment	3,391	3,089	2,786	2,462	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160
Excavation Waste	Land recovery	30,866	31,774	32,702	33,631	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560
Agricultural Waste	Incineration (Animal By-Product)	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725
Agricultural Waste	Recycling (C+I, Agri)	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253
Agricultural Waste	Treatment plant	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034
LACW (Other)	Landfill (C+I and LACW)	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441
LACW (Other)	Thermal Treatment (energy recovery)	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260
LACW (Other)	Recycling (LACW)	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699
Hazardous waste	Landfill (Hazardous)	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854
Hazardous waste	Thermal Treatment (energy recovery)	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327
Hazardous waste	Thermal Treatment (without energy recovery)	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077
Hazardous waste	Recycling (Hazardous)	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706
Hazardous waste	Treatment plant	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552
LACW (H)	Landfill (C+I and LACW)	12,154	11,123	10,109	9,079	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049
LACW (H)	Thermal Treatment (energy recovery)	89,550	85,284	81,002	76,720	72,438	72,438	72,438	72,438	72,438	72,438	72,438	72,438	72,438	72,438	72,438	72,438	72,438	72,438	72,438	72,438	72,438
LACW (H)	Recycling (LACW)	45,974	51,383	56,792	62,200	67,609	67,609	67,609	67,609	67,609	67,609	67,609	67,609	67,609	67,609	67,609	67,609	67,609	67,609	67,609	67,609	67,609
LACW (H)	Composting	13,280	13,184	13,087	12,975	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878
LACW Secondary	Landfill (Hazardous)	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532
LACW Secondary	Recycling (LACW)	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979
LACW Secondary	Recycling (Metals)	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223

No Growth /Median recycling																						
Waste Type	Facility Type	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Industrial Waste	Landfill (C+I and LACW)	42,351	41,297	40,260	39,224	38,187	37,696	37,187	36,696	36,205	35,714	35,205	34,714	34,223	33,732	33,223	32,732	32,732	32,732	32,732	32,732	32,732
Industrial Waste	Recycling (C+I, Agri)	76,629	77,938	79,229	80,538	81,829	82,648	83,484	84,302	85,139	85,957	86,794	87,612	88,448	89,267	90,103	90,922	90,922	90,922	90,922	90,922	90,922
Industrial Waste	Composting	1,818	1,818	1,818	1,818	1,818	1,655	1,491	1,327	1,164	1,000	818	655	491	327	164	0	0	0	0	0	0
Industrial Waste	Recycling (Metals)	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553	54,553
Industrial Waste	Treatment plant	1,037	782	527	255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial Waste	Land recovery	5,455	5,455	5,455	5,455	5,455	5,292	5,128	4,964	4,801	4,637	4,455	4,291	4,128	3,964	3,801	3,637	3,637	3,637	3,637	3,637	3,637
Industrial Waste	Don't know	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Landfill (C+I and LACW)	44,427	40,558	36,688	32,801	28,931	27,286	25,640	23,995	22,349	20,704	19,077	17,431	15,786	14,140	12,495	10,849	10,849	10,849	10,849	10,849	10,849
Commercial Waste	Thermal Treatment (energy recovery)	8,788	11,102	13,435	15,749	18,082	18,896	19,727	20,541	21,373	22,187	23,018	23,832	24,664	25,478	26,309	27,123	27,123	27,123	27,123	27,123	27,123
Commercial Waste	Thermal Treatment (without energy recovery)	1,031	778	524	253	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Recycling (C+I, Agri)	121,403	122,704	123,988	125,290	126,574	127,388	128,219	129,033	129,865	130,679	131,510	132,324	133,156	133,970	134,801	135,615	135,615	135,615	135,615	135,615	135,615
Commercial Waste	Composting	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Treatment plant	5,171	5,678	6,202	6,708	7,233	7,233	7,233	7,233	7,233	7,233	7,233	7,233	7,233	7,233	7,233	7,233	7,233	7,233	7,233	7,233	7,233
Commercial Waste	Don't know	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction and Demolition Waste	Landfill (CD&E)	9,017	8,693	8,362	8,031	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700	7,700
Construction and Demolition Waste	Recycling (Inerts C+D)	25,410	25,795	26,180	26,565	26,950	27,296	27,651	27,997	28,351	28,698	29,052	29,399	29,753	30,099	30,454	30,800	30,800	30,800	30,800	30,800	30,800
Construction and Demolition Waste	Other Treatment	42,573	42,512	42,458	42,404	42,350	42,004	41,649	41,303	40,949	40,602	40,248	39,901	39,547	39,201	38,846	38,500	38,500	38,500	38,500	38,500	38,500
Excavation Waste	Landfill (CD&E)	106,466	98,734	91,022	83,311	75,600	75,406	75,211	75,017	74,822	74,628	74,412	74,218	74,023	73,829	73,634	73,440	73,440	73,440	73,440	73,440	73,440
Excavation Waste	Recycling (Inerts C+D)	58,622	60,178	61,711	63,266	64,800	65,772	66,766	67,738	68,731	69,703	70,697	71,669	72,662	73,634	74,628	75,600	75,600	75,600	75,600	75,600	75,600
Excavation Waste	Other Treatment	20,066	25,294	30,542	35,791	41,040	40,262	39,463	38,686	37,908	37,109	36,331	35,532	34,754	33,977	33,178	32,400	32,400	32,400	32,400	32,400	32,400
Excavation Waste	Land recovery	30,866	31,774	32,702	33,631	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560	34,560
Agricultural Waste	Incineration (Animal By-Product)	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725
Agricultural Waste	Recycling (C+I, Agri)	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253
Agricultural Waste	Treatment plant	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034
LACW (Other)	Landfill (C+I and LACW)	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441	441
LACW (Other)	Thermal Treatment (energy recovery)	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260
LACW (Other)	Recycling (LACW)	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699	15,699
Hazardous waste	Landfill (Hazardous)	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854	5,854
Hazardous waste	Thermal Treatment (energy recovery)	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327
Hazardous waste	Thermal Treatment (without energy recovery)	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077	3,077
Hazardous waste	Recycling (Hazardous)	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706	17,706
Hazardous waste	Treatment plant	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552	5,552
LACW (H)	Landfill (C+I and LACW)	12,154	11,123	10,109	9,079	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049	8,049
LACW (H)	Thermal Treatment (energy recovery)	96,456	94,476	92,496	90,516	88,536	88,536	88,536	88,536	88,536	88,536	88,536	88,536	88,536	88,536	88,536	88,536	88,536	88,536	88,536	88,536	88,536
LACW (H)	Recycling (LACW)	39,084	42,191	45,298	48,405	51,512	51,512	51,512	51,512	51,512	51,512	51,512	51,512	51,512	51,512	51,512	51,512	51,512	51,512	51,512	51,512	51,512
LACW (H)	Composting	13,280	13,184	13,087	12,975	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878	12,878
LACW Secondary	Landfill (Hazardous)	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532	532
LACW Secondary	Recycling (LACW)	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979	24,979
LACW Secondary	Recycling (Metals)	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223	2,223

Growth option 1

Growth 1/Baseline recycling		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Waste Type	Faci																					
Industrial Waste	Landfill (C+ and LACW)	50,991	52,180	53,446	54,175	54,509	54,724	54,877	54,961	55,019	55,103	54,911	54,725	54,562	54,390	54,215	54,334	54,453	54,572	54,692	54,812	54,932
Industrial Waste	Recycling (C+, Agri)	81,586	83,489	85,513	86,680	87,215	87,559	87,804	87,937	88,031	88,164	87,858	87,560	87,299	87,024	86,743	86,934	87,124	87,316	87,507	87,699	87,892
Industrial Waste	Composting	2,040	2,087	2,138	2,167	2,180	2,189	2,195	2,198	2,201	2,204	2,196	2,189	2,182	2,176	2,169	2,173	2,178	2,183	2,188	2,192	2,197
Industrial Waste	Recycling (Metals)	61,190	62,616	64,135	65,010	65,411	65,669	65,853	65,953	66,023	66,123	65,894	65,670	65,474	65,268	65,058	65,200	65,343	65,487	65,630	65,774	65,919
Industrial Waste	Treatment plant	2,040	2,087	2,138	2,167	2,180	2,189	2,195	2,198	2,201	2,204	2,196	2,189	2,182	2,176	2,169	2,173	2,178	2,183	2,188	2,192	2,197
Industrial Waste	Land recovery	6,119	6,262	6,414	6,501	6,541	6,567	6,585	6,595	6,602	6,612	6,589	6,567	6,547	6,527	6,506	6,520	6,534	6,549	6,563	6,577	6,592
Industrial Waste	Don't know	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Commercial Waste	Landfill (C+ and LACW)	59,208	59,826	60,447	61,043	61,669	62,304	62,926	63,552	64,173	64,791	65,567	66,353	67,133	67,924	68,754	70,001	71,271	72,564	73,880	75,220	76,585
Commercial Waste	Thermal Treatment (energy recovery)	1,910	1,930	1,950	1,969	1,989	2,010	2,030	2,050	2,070	2,090	2,115	2,140	2,166	2,191	2,218	2,258	2,299	2,341	2,383	2,426	2,470
Commercial Waste	Thermal Treatment (without energy recovery)	1,910	1,930	1,950	1,969	1,989	2,010	2,030	2,050	2,070	2,090	2,115	2,140	2,166	2,191	2,218	2,258	2,299	2,341	2,383	2,426	2,470
Commercial Waste	Recycling (C+, Agri)	124,146	125,442	126,743	127,992	129,305	130,637	131,941	133,254	134,556	135,851	137,479	139,127	140,764	142,422	144,161	146,776	149,439	152,150	154,910	157,720	160,581
Commercial Waste	Composting	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Commercial Waste	Treatment plant	3,820	3,860	3,900	3,938	3,979	4,020	4,060	4,100	4,140	4,180	4,230	4,281	4,331	4,382	4,436	4,516	4,598	4,682	4,766	4,853	4,941
Commercial Waste	Don't know	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction and Demolition Waste	Landfill (CD&E)	11,228	11,490	11,768	11,929	12,002	12,050	12,083	12,102	12,115	12,133	12,091	12,050	12,014	11,976	11,938	11,964	11,990	12,016	12,043	12,069	12,096
Construction and Demolition Waste	Recycling (Inerts C+D)	27,206	27,840	28,515	28,904	29,083	29,197	29,279	29,324	29,355	29,399	29,297	29,198	29,111	29,019	28,926	28,989	29,053	29,116	29,180	29,244	29,308
Construction and Demolition Waste	Other Treatment	47,934	49,052	50,241	50,927	51,241	51,443	51,587	51,665	51,721	51,799	51,619	51,444	51,290	51,129	50,964	51,076	51,188	51,300	51,413	51,526	51,639
Excavation Waste	Landfill (CD&E)	142,944	146,277	149,825	151,869	152,806	153,408	153,837	154,071	154,236	154,469	153,933	153,410	152,953	152,471	151,980	152,313	152,647	152,982	153,318	153,654	153,992
Excavation Waste	Recycling (Inerts C+D)	58,147	59,503	60,946	61,777	62,158	62,403	62,578	62,673	62,740	62,835	62,617	62,404	62,218	62,022	61,822	61,958	62,094	62,230	62,367	62,503	62,641
Excavation Waste	Other Treatment	2,423	2,479	2,539	2,574	2,590	2,600	2,607	2,611	2,614	2,618	2,609	2,600	2,592	2,584	2,576	2,582	2,587	2,593	2,599	2,604	2,610
Excavation Waste	Land recovery	38,765	39,668	40,630	41,185	41,439	41,602	41,719	41,782	41,827	41,890	41,744	41,603	41,479	41,348	41,215	41,305	41,396	41,487	41,578	41,669	41,760
Agricultural Waste	Incineration (Animal By-Product)	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725
Agricultural Waste	Recycling (C+, Agri)	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253
Agricultural Waste	Treatment plant	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034
LACW (Other)	Landfill (C+ and LACW)	450	453	456	459	462	465	468	471	474	477	480	483	486	490	493	496	499	503	506	509	513
LACW (Other)	Thermal Treatment (energy recovery)	1,285	1,293	1,302	1,310	1,319	1,328	1,336	1,345	1,354	1,363	1,372	1,381	1,390	1,399	1,408	1,418	1,427	1,436	1,446	1,455	1,465
LACW (Other)	Recycling (LACW)	16,010	16,115	16,221	16,328	16,435	16,543	16,651	16,761	16,871	16,981	17,093	17,205	17,318	17,432	17,546	17,661	17,777	17,894	18,012	18,130	18,249
Hazardous waste	Landfill (Hazardous)	6,566	6,719	6,882	6,976	7,019	7,047	7,067	7,077	7,085	7,096	7,071	7,047	7,026	7,004	6,981	6,997	7,012	7,027	7,043	7,058	7,074
Hazardous waste	Thermal Treatment (energy recovery)	367	375	384	390	392	394	395	395	396	396	395	394	392	391	390	391	392	393	393	394	395
Hazardous waste	Thermal Treatment (without energy recovery)	3,451	3,532	3,617	3,667	3,689	3,704	3,714	3,720	3,724	3,730	3,717	3,704	3,693	3,681	3,670	3,678	3,686	3,694	3,702	3,710	3,718
Hazardous waste	Recycling (Hazardous)	19,860	20,323	20,816	21,100	21,230	21,314	21,374	21,406	21,429	21,461	21,387	21,314	21,251	21,184	21,115	21,162	21,208	21,255	21,301	21,348	21,395
Hazardous waste	Treatment plant	6,227	6,373	6,527	6,616	6,657	6,683	6,702	6,712	6,719	6,730	6,706	6,683	6,663	6,643	6,621	6,636	6,650	6,665	6,679	6,694	6,709
LACW (H)	Landfill (C+ and LACW)	16,327	16,654	16,987	17,326	17,673	18,026	18,387	18,755	19,130	19,512	19,903	20,301	20,707	21,121	21,543	21,974	22,414	22,862	23,319	23,785	24,261
LACW (H)	Thermal Treatment (energy recovery)	109,728	111,922	114,161	116,444	118,773	121,148	123,571	126,043	128,564	131,135	133,757	136,433	139,161	141,944	144,783	147,679	150,633	153,645	156,718	159,853	163,050
LACW (H)	Recycling (LACW)	31,886	32,524	33,174	33,837	34,514	35,205	35,909	36,627	37,359	38,107	38,869	39,646	40,439	41,248	42,073	42,914	43,772	44,648	45,541	46,452	47,381
LACW (H)	Composting	14,561	14,852	15,149	15,452	15,761	16,077	16,398	16,726	17,061	17,402	17,750	18,105	18,467	18,836	19,213	19,597	19,989	20,389	20,797	21,213	21,637
LACW Secondary	Landfill (Hazardous)	570	581	593	605	617	629	642	655	668	681	695	709	723	737	752	767	783	798	814	831	847
LACW Secondary	Recycling (LACW)	26,768	27,303	27,849	28,406	28,974	29,554	30,145	30,748	31,363	31,990	32,630	33,282	33,948	34,627	35,320	36,026	36,746	37,481	38,231	38,996	39,776
LACW Secondary	Recycling (Metals)	2,382	2,430	2,478	2,528	2,579	2,630	2,683	2,736	2,791	2,847	2,904	2,962	3,021	3,082	3,143	3,206	3,270	3,336	3,402	3,470	3,540

Growth 1/ Max recycling		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Waste Type	Facility Type																					
Industrial Waste	Landfill (C+I and LACW)	43,118	41,452	39,700	37,467	34,886	34,235	33,519	32,779	32,021	31,254	30,355	29,442	28,569	27,695	26,804	26,080	26,137	26,195	26,252	26,310	26,367
Industrial Waste	Recycling (C+I, Agri)	90,337	95,407	100,777	105,251	109,019	110,433	111,752	112,911	114,044	115,209	115,819	116,411	117,068	117,678	118,296	119,534	119,796	120,059	120,322	120,586	120,851
Industrial Waste	Composting	2,040	2,087	2,138	2,167	2,180	1,992	1,800	1,605	1,408	1,212	988	788	589	392	195	0	0	0	0	0	0
Industrial Waste	Recycling (Metals)	61,190	62,616	64,135	65,010	65,411	65,669	65,853	65,953	66,023	66,123	65,894	65,670	65,474	65,268	65,058	65,200	65,343	65,487	65,630	65,774	65,919
Industrial Waste	Treatment plant	1,163	898	620	303	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial Waste	Land recovery	6,119	6,262	6,414	6,501	6,541	6,567	6,585	6,595	6,602	6,612	6,589	6,567	6,547	6,527	6,506	6,520	6,534	6,549	6,563	6,577	6,592
Industrial Waste	Don't know	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Landfill (C+I and LACW)	46,927	43,287	39,563	35,720	31,829	31,051	30,265	29,439	28,609	27,735	26,925	26,070	25,208	24,299	23,398	22,581	22,991	23,408	23,832	24,265	24,705
Commercial Waste	Thermal Treatment (energy recovery)	5,997	7,449	8,911	10,417	11,936	12,059	12,179	12,300	12,421	12,540	12,690	12,843	12,994	13,147	13,307	13,549	13,794	14,045	14,299	14,559	14,823
Commercial Waste	Thermal Treatment (without energy recovery)	1,089	830	565	276	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Recycling (C+I, Agri)	132,339	136,462	140,665	144,868	149,198	151,640	154,087	156,543	159,025	161,496	164,403	167,338	170,302	173,294	176,431	180,647	183,924	187,261	190,658	194,117	197,638
Commercial Waste	Composting	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Treatment plant	4,641	4,960	5,284	5,632	5,968	6,210	6,455	6,704	6,956	7,211	7,508	7,791	8,078	8,370	8,672	9,032	9,196	9,363	9,533	9,706	9,882
Commercial Waste	Don't know	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction and Demolition Waste	Landfill (CD&E)	10,114	9,978	9,831	9,571	9,233	9,269	9,295	9,309	9,319	9,333	9,301	9,269	9,242	9,212	9,183	9,203	9,223	9,243	9,264	9,284	9,304
Construction and Demolition Waste	Recycling (Inerts C+D)	30,350	32,135	34,010	35,594	36,930	37,493	38,026	38,502	38,972	39,451	39,742	40,024	40,330	40,617	40,909	41,413	41,504	41,595	41,686	41,777	41,869
Construction and Demolition Waste	Other Treatment	45,896	46,277	46,684	46,605	46,163	45,928	45,629	45,279	44,899	44,547	43,964	43,398	42,844	42,294	41,735	41,413	41,504	41,595	41,686	41,777	41,869
Excavation Waste	Landfill (CD&E)	127,705	124,683	121,536	116,939	111,367	110,636	109,746	108,738	107,651	106,636	105,066	103,539	102,038	100,554	99,044	98,100	98,315	98,531	98,747	98,964	99,181
Excavation Waste	Recycling (Inerts C+D)	76,148	83,229	90,682	97,453	103,597	105,176	106,669	108,007	109,325	110,668	111,484	112,275	113,133	113,940	114,758	116,171	116,426	116,681	116,937	117,194	117,451
Excavation Waste	Other Treatment	3,804	3,545	3,276	2,934	2,590	2,600	2,607	2,611	2,614	2,618	2,609	2,600	2,592	2,584	2,576	2,582	2,587	2,593	2,599	2,604	2,610
Excavation Waste	Land recovery	34,622	36,470	38,447	40,078	41,439	41,602	41,719	41,782	41,827	41,890	41,744	41,603	41,479	41,348	41,215	41,305	41,396	41,487	41,578	41,669	41,760
Agricultural Waste	Incineration (Animal By-Product)	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725
Agricultural Waste	Recycling (C+I, Agri)	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253
Agricultural Waste	Treatment plant	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034
LACW (Other)	Landfill (C+I and LACW)	450	453	456	459	462	465	468	471	474	477	480	483	486	490	493	496	499	503	506	509	513
LACW (Other)	Thermal Treatment (energy recovery)	1,285	1,293	1,302	1,310	1,319	1,328	1,336	1,345	1,354	1,363	1,372	1,381	1,390	1,399	1,408	1,418	1,427	1,436	1,446	1,455	1,465
LACW (Other)	Recycling (LACW)	16,010	16,115	16,221	16,328	16,435	16,543	16,651	16,761	16,871	16,981	17,093	17,205	17,318	17,432	17,546	17,661	17,777	17,894	18,012	18,130	18,249
Hazardous waste	Landfill (Hazardous)	6,566	6,719	6,882	6,976	7,019	7,047	7,067	7,077	7,085	7,096	7,071	7,047	7,026	7,004	6,981	6,997	7,012	7,027	7,043	7,058	7,074
Hazardous waste	Thermal Treatment (energy recovery)	367	375	384	390	392	394	395	395	396	396	395	394	392	391	390	391	392	393	393	394	395
Hazardous waste	Thermal Treatment (without energy recovery)	3,451	3,532	3,617	3,667	3,689	3,704	3,714	3,720	3,724	3,730	3,717	3,704	3,693	3,681	3,670	3,678	3,686	3,694	3,702	3,710	3,718
Hazardous waste	Recycling (Hazardous)	19,860	20,323	20,816	21,100	21,230	21,314	21,374	21,406	21,429	21,461	21,387	21,314	21,251	21,184	21,115	21,162	21,208	21,255	21,301	21,348	21,395
Hazardous waste	Treatment plant	6,227	6,373	6,527	6,616	6,657	6,683	6,702	6,712	6,719	6,730	6,706	6,683	6,663	6,643	6,621	6,636	6,650	6,665	6,679	6,694	6,709
LACW (H)	Landfill (C+I and LACW)	13,024	12,158	11,271	10,325	9,336	9,523	9,713	9,908	10,106	10,308	10,514	10,724	10,939	11,157	11,381	11,608	11,840	12,077	12,319	12,565	12,816
LACW (H)	Thermal Treatment (energy recovery)	95,963	93,219	90,310	87,246	84,025	85,705	87,419	89,168	90,951	92,770	94,625	96,518	98,448	100,417	102,426	104,474	106,564	108,695	110,869	113,086	115,348
LACW (H)	Recycling (LACW)	49,266	56,164	63,317	70,734	78,423	79,991	81,591	83,223	84,888	86,585	88,317	90,083	91,885	93,723	95,597	97,509	99,459	101,448	103,477	105,547	107,658
LACW (H)	Composting	14,231	14,410	14,591	14,755	14,938	15,236	15,541	15,852	16,169	16,492	16,822	17,159	17,502	17,852	18,209	18,573	18,945	19,324	19,710	20,104	20,506
LACW Secondary	Landfill (Hazardous)	570	581	593	605	617	629	642	655	668	681	695	709	723	737	752	767	783	798	814	831	847
LACW Secondary	Recycling (LACW)	26,768	27,303	27,849	28,406	28,974	29,554	30,145	30,748	31,363	31,990	32,630	33,282	33,948	34,627	35,320	36,026	36,746	37,481	38,231	38,996	39,776
LACW Secondary	Recycling (Metals)	2,382	2,430	2,478	2,528	2,579	2,630	2,683	2,736	2,791	2,847	2,904	2,962	3,021	3,082	3,143	3,206	3,270	3,336	3,402	3,470	3,540

Growth Option 2

Growth 2/ Baseline recycling																						
Waste Type	Facility Type	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Industrial Waste	Landfill (C+I and LACW)	50,481	51,492	52,575	53,126	53,286	53,331	53,316	53,233	53,130	53,053	52,712	52,382	52,081	51,774	51,467	51,142	50,819	50,498	50,179	49,862	49,547
Industrial Waste	Recycling (C+I, Agri)	80,770	82,388	84,120	85,002	85,258	85,330	85,306	85,173	85,007	84,885	84,339	83,812	83,330	82,838	82,348	81,827	81,310	80,797	80,286	79,779	79,275
Industrial Waste	Composting	2,019	2,060	2,103	2,125	2,131	2,133	2,133	2,129	2,125	2,122	2,108	2,095	2,083	2,071	2,059	2,046	2,033	2,020	2,007	1,994	1,982
Industrial Waste	Recycling (Metals)	60,577	61,791	63,090	63,752	63,944	63,997	63,979	63,880	63,755	63,664	63,254	62,859	62,497	62,129	61,761	61,370	60,983	60,597	60,215	59,834	59,456
Industrial Waste	Treatment plant	2,019	2,060	2,103	2,125	2,131	2,133	2,133	2,129	2,125	2,122	2,108	2,095	2,083	2,071	2,059	2,046	2,033	2,020	2,007	1,994	1,982
Industrial Waste	Land recovery	6,058	6,179	6,309	6,375	6,394	6,400	6,398	6,388	6,376	6,366	6,325	6,286	6,250	6,213	6,176	6,137	6,098	6,060	6,021	5,983	5,946
Industrial Waste	Don't know	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Landfill (C+I and LACW)	58,615	59,037	59,462	59,861	60,285	60,718	61,136	61,554	61,969	62,381	62,940	63,513	64,081	64,657	65,269	65,889	66,515	67,146	67,783	68,427	69,077
Commercial Waste	Thermal Treatment (energy recovery)	1,891	1,904	1,918	1,931	1,945	1,959	1,972	1,986	1,999	2,012	2,030	2,049	2,067	2,086	2,105	2,125	2,146	2,166	2,187	2,207	2,228
Commercial Waste	Thermal Treatment (without energy recovery)	1,891	1,904	1,918	1,931	1,945	1,959	1,972	1,986	1,999	2,012	2,030	2,049	2,067	2,086	2,105	2,125	2,146	2,166	2,187	2,207	2,228
Commercial Waste	Recycling (C+I, Agri)	122,903	123,788	124,678	125,515	126,404	127,312	128,188	129,066	129,934	130,799	131,972	133,172	134,363	135,572	136,855	138,154	139,466	140,790	142,127	143,476	144,838
Commercial Waste	Composting	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Treatment plant	3,782	3,809	3,836	3,862	3,889	3,917	3,944	3,971	3,998	4,025	4,061	4,098	4,134	4,171	4,211	4,251	4,291	4,332	4,373	4,415	4,457
Commercial Waste	Don't know	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction and Demolition Waste	Landfill (CD&E)	11,115	11,338	11,577	11,698	11,733	11,743	11,740	11,721	11,699	11,682	11,607	11,534	11,468	11,400	11,333	11,261	11,190	11,119	11,049	10,979	10,910
Construction and Demolition Waste	Recycling (Inerts C+D)	26,934	27,473	28,051	28,345	28,430	28,454	28,446	28,402	28,347	28,306	28,124	27,948	27,787	27,623	27,460	27,286	27,114	26,943	26,772	26,603	26,435
Construction and Demolition Waste	Other Treatment	47,454	48,405	49,423	49,941	50,091	50,133	50,119	50,041	49,944	49,872	49,551	49,241	48,958	48,670	48,381	48,076	47,772	47,470	47,170	46,872	46,576
Excavation Waste	Landfill (CD&E)	141,513	144,349	147,384	148,929	149,378	149,503	149,461	149,228	148,938	148,724	147,767	146,843	145,999	145,138	144,278	143,366	142,461	141,561	140,666	139,778	138,895
Excavation Waste	Recycling (Inerts C+D)	57,565	58,718	59,953	60,581	60,764	60,815	60,798	60,703	60,585	60,498	60,109	59,733	59,389	59,039	58,689	58,319	57,950	57,584	57,220	56,859	56,499
Excavation Waste	Other Treatment	2,399	2,447	2,498	2,524	2,532	2,534	2,533	2,529	2,524	2,521	2,505	2,489	2,475	2,460	2,445	2,430	2,415	2,399	2,384	2,369	2,354
Excavation Waste	Land recovery	38,377	39,145	39,968	40,388	40,509	40,543	40,532	40,469	40,390	40,332	40,072	39,822	39,593	39,359	39,126	38,879	38,633	38,389	38,147	37,906	37,666
Agricultural Waste	Incineration (Animal By-Product)	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725
Agricultural Waste	Recycling (C+I, Agri)	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253
Agricultural Waste	Treatment plant	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034
LACW (Other)	Landfill (C+I and LACW)	450	453	456	460	463	466	469	472	476	479	482	486	489	492	496	499	503	506	510	513	517
LACW (Other)	Thermal Treatment (energy recovery)	1,286	1,295	1,304	1,313	1,322	1,331	1,341	1,350	1,359	1,369	1,378	1,388	1,397	1,407	1,417	1,427	1,436	1,446	1,456	1,466	1,477
LACW (Other)	Recycling (LACW)	16,027	16,138	16,250	16,362	16,475	16,589	16,704	16,820	16,936	17,053	17,171	17,290	17,410	17,530	17,651	17,774	17,897	18,020	18,145	18,271	18,397
Hazardous waste	Landfill (Hazardous)	6,500	6,631	6,770	6,841	6,862	6,867	6,866	6,855	6,842	6,832	6,788	6,745	6,706	6,667	6,627	6,586	6,544	6,503	6,462	6,421	6,380
Hazardous waste	Thermal Treatment (energy recovery)	363	370	378	382	383	384	384	383	382	382	379	377	375	372	370	368	366	363	361	359	356
Hazardous waste	Thermal Treatment (without energy recovery)	3,417	3,485	3,559	3,596	3,607	3,610	3,609	3,603	3,596	3,591	3,568	3,545	3,525	3,504	3,484	3,462	3,440	3,418	3,396	3,375	3,354
Hazardous waste	Recycling (Hazardous)	19,661	20,055	20,477	20,692	20,754	20,771	20,765	20,733	20,693	20,663	20,530	20,402	20,284	20,165	20,045	19,919	19,793	19,668	19,544	19,420	19,297
Hazardous waste	Treatment plant	6,165	6,289	6,421	6,488	6,508	6,513	6,511	6,501	6,489	6,479	6,438	6,397	6,361	6,323	6,286	6,246	6,206	6,167	6,128	6,089	6,051
LACW (H)	Landfill (C+I and LACW)	16,344	16,677	17,016	17,362	17,716	18,076	18,444	18,820	19,203	19,594	19,993	20,399	20,815	21,238	21,671	22,112	22,562	23,021	23,490	23,968	24,456
LACW (H)	Thermal Treatment (energy recovery)	109,842	112,077	114,359	116,686	119,061	121,485	123,957	126,480	129,055	131,682	134,362	137,097	139,887	142,734	145,639	148,604	151,629	154,715	157,864	161,077	164,356
LACW (H)	Recycling (LACW)	31,919	32,569	33,231	33,908	34,598	35,302	36,021	36,754	37,502	38,265	39,044	39,839	40,650	41,477	42,321	43,183	44,062	44,959	45,874	46,807	47,760
LACW (H)	Composting	14,576	14,873	15,176	15,484	15,800	16,121	16,449	16,784	17,126	17,474	17,830	18,193	18,563	18,941	19,327	19,720	20,121	20,531	20,949	21,375	21,810
LACW Secondary	Landfill (Hazardous)	571	582	594	606	619	631	644	657	671	684	698	712	727	742	757	772	788	804	820	837	854
LACW Secondary	Recycling (LACW)	26,796	27,341	27,897	28,465	29,045	29,636	30,239	30,855	31,483	32,123	32,777	33,444	34,125	34,820	35,528	36,252	36,989	37,742	38,510	39,294	40,094
LACW Secondary	Recycling (Metals)	2,385	2,433	2,483	2,533	2,585	2,637	2,691	2,746	2,802	2,859	2,917	2,976	3,037	3,099	3,162	3,226	3,292	3,359	3,427	3,497	3,568

Growth 2/ Maximised Recycling

Waste Type	Facility Type	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Industrial Waste	Landfill (C+I and LACW)	42,687	40,906	39,053	36,742	34,103	33,364	32,565	31,748	30,921	30,092	29,139	28,182	27,270	26,363	25,445	24,548	24,393	24,239	24,086	23,934	23,782
Industrial Waste	Recycling (C+I, Agri)	89,432	94,149	99,136	103,214	106,573	107,622	108,573	109,362	110,127	110,924	111,180	111,427	111,745	112,018	112,301	112,513	111,802	111,095	110,394	109,696	109,003
Industrial Waste	Composting	2,019	2,060	2,103	2,125	2,131	1,941	1,749	1,554	1,360	1,167	949	754	562	373	185	0	0	0	0	0	0
Industrial Waste	Recycling (Metals)	60,577	61,791	63,090	63,752	63,944	63,997	63,979	63,880	63,755	63,664	63,254	62,859	62,497	62,129	61,761	61,370	60,983	60,597	60,215	59,834	59,456
Industrial Waste	Treatment plant	1,151	886	610	298	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial Waste	Land recovery	6,058	6,179	6,309	6,375	6,394	6,400	6,398	6,388	6,376	6,366	6,325	6,286	6,250	6,213	6,176	6,137	6,098	6,060	6,021	5,983	5,946
Industrial Waste	Don't know	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Landfill (C+I and LACW)	46,457	42,716	38,919	35,028	31,115	30,261	29,404	28,514	27,626	26,703	25,846	24,954	24,061	23,131	22,213	21,255	21,456	21,660	21,866	22,073	22,283
Commercial Waste	Thermal Treatment (energy recovery)	5,937	7,351	8,766	10,215	11,668	11,752	11,833	11,914	11,994	12,074	12,182	12,293	12,403	12,514	12,633	12,753	12,874	12,996	13,119	13,244	13,370
Commercial Waste	Thermal Treatment (without energy recovery)	1,078	819	556	270	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Recycling (C+I, Agri)	131,015	134,663	138,374	142,064	145,851	147,779	149,703	151,622	153,562	155,490	157,818	160,175	162,559	164,959	167,490	170,036	171,651	173,280	174,925	176,586	178,262
Commercial Waste	Composting	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Treatment plant	4,595	4,894	5,198	5,523	5,834	6,052	6,271	6,493	6,717	6,942	7,208	7,458	7,710	7,967	8,232	8,502	8,583	8,664	8,746	8,829	8,913
Commercial Waste	Don't know	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction and Demolition Waste	Landfill (CD&E)	10,012	9,847	9,671	9,385	9,025	9,033	9,030	9,016	8,999	8,986	8,928	8,872	8,821	8,769	8,717	8,662	8,608	8,553	8,499	8,445	8,392
Construction and Demolition Waste	Recycling (Inerts C+D)	30,046	31,712	33,456	34,905	36,102	36,539	36,944	37,292	37,633	37,984	38,150	38,311	38,496	38,664	38,836	38,980	38,734	38,489	38,246	38,005	37,764
Construction and Demolition Waste	Other Treatment	45,436	45,666	45,923	45,703	45,127	44,759	44,331	43,856	43,357	42,890	42,203	41,540	40,896	40,260	39,620	38,980	38,734	38,489	38,246	38,005	37,764
Excavation Waste	Landfill (CD&E)	126,427	123,039	119,556	114,675	108,869	107,819	106,624	105,320	103,954	102,670	100,857	99,106	97,398	95,717	94,025	92,338	91,754	91,175	90,599	90,026	89,458
Excavation Waste	Recycling (Inerts C+D)	75,386	82,132	89,205	95,567	101,273	102,498	103,634	104,612	105,569	106,552	107,018	107,469	107,989	108,460	108,942	109,347	108,656	107,970	107,288	106,610	105,937
Excavation Waste	Other Treatment	3,766	3,499	3,222	2,878	2,532	2,534	2,533	2,529	2,524	2,521	2,505	2,489	2,475	2,460	2,445	2,430	2,415	2,399	2,384	2,369	2,354
Excavation Waste	Land recovery	34,275	35,989	37,320	39,302	40,509	40,543	40,532	40,469	40,390	40,332	40,072	39,822	39,593	39,359	39,126	38,879	38,633	38,389	38,147	37,906	37,666
Agricultural Waste	Incineration (Animal By-Product)	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725
Agricultural Waste	Recycling (C+I, Agri)	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253
Agricultural Waste	Treatment plant	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034
LACW (Other)	Landfill (C+I and LACW)	450	453	456	460	463	466	469	472	476	479	482	486	489	492	496	499	503	506	510	513	517
LACW (Other)	Thermal Treatment (energy recovery)	1,286	1,295	1,304	1,313	1,322	1,331	1,341	1,350	1,359	1,369	1,378	1,388	1,397	1,407	1,417	1,427	1,436	1,446	1,456	1,466	1,477
LACW (Other)	Recycling (LACW)	16,027	16,138	16,250	16,362	16,475	16,589	16,704	16,820	16,936	17,053	17,171	17,290	17,410	17,530	17,651	17,774	17,897	18,020	18,145	18,271	18,397
Hazardous waste	Landfill (Hazardous)	6,500	6,631	6,770	6,841	6,862	6,867	6,866	6,855	6,842	6,832	6,788	6,745	6,706	6,667	6,627	6,586	6,544	6,503	6,462	6,421	6,380
Hazardous waste	Thermal Treatment (energy recovery)	363	370	378	382	383	384	384	383	382	382	379	377	375	372	370	368	366	363	361	359	356
Hazardous waste	Thermal Treatment (without energy recovery)	3,417	3,485	3,559	3,596	3,607	3,610	3,609	3,603	3,596	3,591	3,568	3,545	3,525	3,504	3,484	3,462	3,440	3,418	3,396	3,375	3,354
Hazardous waste	Recycling (Hazardous)	19,661	20,055	20,477	20,692	20,754	20,771	20,765	20,733	20,693	20,663	20,530	20,402	20,284	20,165	20,045	19,919	19,793	19,668	19,544	19,420	19,297
Hazardous waste	Treatment plant	6,165	6,289	6,421	6,488	6,508	6,513	6,511	6,501	6,489	6,479	6,438	6,397	6,361	6,323	6,286	6,246	6,206	6,167	6,128	6,089	6,051
LACW (H)	Landfill (C+I and LACW)	13,037	12,175	11,290	10,346	9,359	9,549	9,744	9,942	10,144	10,351	10,561	10,776	10,996	11,220	11,448	11,681	11,919	12,161	12,409	12,661	12,919
LACW (H)	Thermal Treatment (energy recovery)	96,062	93,348	90,466	87,428	84,229	85,943	87,692	89,477	91,298	93,157	95,053	96,988	98,962	100,976	103,031	105,128	107,268	109,451	111,679	113,952	116,272
LACW (H)	Recycling (LACW)	49,318	56,242	63,427	70,882	78,613	80,214	81,846	83,512	85,212	86,946	88,716	90,522	92,364	94,244	96,162	98,120	100,117	102,155	104,234	106,355	108,520
LACW (H)	Composting	14,246	14,430	14,616	14,785	14,974	15,279	15,590	15,907	16,231	16,561	16,898	17,242	17,593	17,951	18,317	18,689	19,070	19,458	19,854	20,258	20,671
LACW Secondary	Landfill (Hazardous)	571	582	594	606	619	631	644	657	671	684	698	712	727	742	757	772	788	804	820	837	854
LACW Secondary	Recycling (LACW)	26,796	27,341	27,897	28,465	29,045	29,636	30,239	30,855	31,483	32,123	32,777	33,444	34,125	34,820	35,528	36,252	36,989	37,742	38,510	39,294	40,094
LACW Secondary	Recycling (Metals)	2,385	2,433	2,483	2,533	2,585	2,637	2,691	2,746	2,802	2,859	2,917	2,976	3,037	3,099	3,162	3,226	3,292	3,359	3,427	3,497	3,568

Growth Option 3

Growth 3 Baseline Recycling																						
Waste Type	Facility Type	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Industrial Waste	Landfill (C+I and LACW)	50,175	51,148	52,192	52,707	52,832	52,843	52,796	52,680	52,545	52,439	52,069	51,713	51,419	51,120	50,821	50,504	50,189	49,876	49,565	49,255	48,948
Industrial Waste	Recycling (C+I, Agri)	80,280	81,838	83,507	84,331	84,532	84,550	84,473	84,289	84,073	83,902	83,310	82,741	82,271	81,792	81,313	80,806	80,302	79,801	79,303	78,809	78,317
Industrial Waste	Composting	2,007	2,046	2,088	2,108	2,113	2,114	2,112	2,107	2,102	2,098	2,083	2,069	2,057	2,045	2,033	2,020	2,008	1,995	1,983	1,970	1,958
Industrial Waste	Recycling (Metals)	60,210	61,378	62,630	63,248	63,399	63,412	63,355	63,216	63,054	62,926	62,483	62,055	61,703	61,344	60,985	60,605	60,226	59,851	59,477	59,106	58,738
Industrial Waste	Treatment plant	2,007	2,046	2,088	2,108	2,113	2,114	2,112	2,107	2,102	2,098	2,083	2,069	2,057	2,045	2,033	2,020	2,008	1,995	1,983	1,970	1,958
Industrial Waste	Land recovery	6,021	6,138	6,263	6,325	6,340	6,341	6,335	6,322	6,305	6,293	6,248	6,206	6,170	6,134	6,098	6,060	6,023	5,985	5,948	5,911	5,874
Industrial Waste	Don't know	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Landfill (C+I and LACW)	58,260	58,643	59,029	59,388	59,771	60,163	60,539	60,915	61,287	61,658	62,173	62,701	63,267	63,840	64,450	65,067	65,690	66,319	66,954	67,595	68,242
Commercial Waste	Thermal Treatment (energy recovery)	1,879	1,892	1,904	1,916	1,928	1,941	1,953	1,965	1,977	1,989	2,006	2,023	2,041	2,059	2,079	2,099	2,119	2,139	2,160	2,180	2,201
Commercial Waste	Thermal Treatment (without energy recovery)	1,879	1,892	1,904	1,916	1,928	1,941	1,953	1,965	1,977	1,989	2,006	2,023	2,041	2,059	2,079	2,099	2,119	2,139	2,160	2,180	2,201
Commercial Waste	Recycling (C+I, Agri)	122,157	122,961	123,770	124,524	125,327	126,148	126,936	127,725	128,506	129,283	130,362	131,470	132,657	133,859	135,136	136,430	137,736	139,055	140,387	141,731	143,088
Commercial Waste	Composting	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Treatment plant	3,759	3,783	3,808	3,832	3,856	3,881	3,906	3,930	3,954	3,978	4,011	4,045	4,082	4,119	4,158	4,198	4,238	4,279	4,320	4,361	4,403
Commercial Waste	Don't know	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction and Demolition Waste	Landfill (CD&E)	11,048	11,262	11,492	11,606	11,633	11,636	11,625	11,600	11,570	11,546	11,465	11,387	11,322	11,256	11,190	11,120	11,051	10,982	10,914	10,846	10,778
Construction and Demolition Waste	Recycling (Inerts C+D)	26,770	27,290	27,846	28,121	28,188	28,194	28,168	28,107	28,035	27,978	27,781	27,591	27,434	27,274	27,115	26,946	26,778	26,611	26,445	26,280	26,116
Construction and Demolition Waste	Other Treatment	47,166	48,082	49,063	49,547	49,664	49,675	49,630	49,522	49,395	49,294	48,947	48,612	48,336	48,055	47,774	47,476	47,180	46,885	46,593	46,302	46,013
Excavation Waste	Landfill (CD&E)	140,655	143,384	146,310	147,753	148,104	148,136	148,002	147,679	147,300	147,001	145,965	144,967	144,144	143,305	142,466	141,577	140,694	139,816	138,944	138,077	137,216
Excavation Waste	Recycling (Inerts C+D)	57,216	58,326	59,516	60,103	60,246	60,259	60,204	60,073	59,919	59,797	59,375	58,969	58,635	58,293	57,952	57,591	57,231	56,874	56,520	56,167	55,817
Excavation Waste	Other Treatment	2,384	2,430	2,480	2,504	2,510	2,511	2,509	2,503	2,497	2,492	2,474	2,457	2,443	2,429	2,415	2,400	2,385	2,370	2,355	2,340	2,326
Excavation Waste	Land recovery	38,144	38,884	39,677	40,069	40,164	40,172	40,136	40,048	39,946	39,865	39,584	39,313	39,090	38,862	38,635	38,394	38,154	37,916	37,680	37,445	37,211
Agricultural Waste	Incineration (Animal By-Product)	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725
Agricultural Waste	Recycling (C+I, Agri)	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253
Agricultural Waste	Treatment plant	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034
LACW (Other)	Landfill (C+I and LACW)	452	455	459	462	466	470	473	477	481	485	489	492	496	500	504	508	512	516	520	524	529
LACW (Other)	Thermal Treatment (energy recovery)	1,290	1,300	1,311	1,321	1,331	1,342	1,353	1,363	1,374	1,385	1,396	1,407	1,418	1,429	1,440	1,452	1,463	1,475	1,487	1,498	1,510
LACW (Other)	Recycling (LACW)	16,074	16,201	16,329	16,459	16,589	16,720	16,852	16,985	17,120	17,255	17,391	17,529	17,667	17,807	17,948	18,090	18,233	18,377	18,522	18,669	18,816
Hazardous waste	Landfill (Hazardous)	6,461	6,586	6,721	6,787	6,803	6,805	6,799	6,784	6,766	6,753	6,705	6,659	6,621	6,583	6,544	6,503	6,463	6,423	6,382	6,343	6,303
Hazardous waste	Thermal Treatment (energy recovery)	361	368	375	379	380	380	380	379	378	377	375	372	370	368	366	363	361	359	357	354	352
Hazardous waste	Thermal Treatment (without energy recovery)	3,396	3,462	3,533	3,567	3,576	3,577	3,573	3,566	3,557	3,549	3,524	3,500	3,480	3,460	3,440	3,418	3,397	3,376	3,355	3,334	3,313
Hazardous waste	Recycling (Hazardous)	19,542	19,921	20,328	20,528	20,577	20,581	20,563	20,518	20,465	20,424	20,280	20,141	20,027	19,910	19,794	19,670	19,547	19,426	19,304	19,184	19,064
Hazardous waste	Treatment plant	6,128	6,247	6,374	6,437	6,452	6,454	6,448	6,434	6,417	6,404	6,359	6,316	6,280	6,243	6,207	6,168	6,129	6,091	6,053	6,015	5,978
LACW (H)	Landfill (C+I and LACW)	16,391	16,741	17,098	17,463	17,836	18,217	18,605	19,002	19,408	19,822	20,245	20,677	21,119	21,569	22,030	22,500	22,980	23,470	23,971	24,483	25,005
LACW (H)	Thermal Treatment (energy recovery)	110,160	112,511	114,912	117,364	119,869	122,427	125,039	127,708	130,433	133,217	136,060	138,964	141,929	144,958	148,052	151,211	154,438	157,734	161,100	164,538	168,050
LACW (H)	Recycling (LACW)	32,011	32,694	33,392	34,105	34,833	35,576	36,335	37,111	37,903	38,712	39,538	40,381	41,243	42,123	43,022	43,941	44,878	45,836	46,814	47,813	48,834
LACW (H)	Composting	14,618	14,930	15,249	15,574	15,907	16,246	16,593	16,947	17,309	17,678	18,055	18,441	18,834	19,236	19,647	20,066	20,494	20,932	21,378	21,835	22,301
LACW Secondary	Landfill (Hazardous)	572	585	597	610	623	636	650	664	678	692	707	722	737	753	769	786	802	820	837	855	873
LACW Secondary	Recycling (LACW)	26,873	27,447	28,032	28,631	29,242	29,866	30,503	31,154	31,819	32,498	33,191	33,900	34,623	35,362	36,117	36,888	37,675	38,479	39,300	40,139	40,995
LACW Secondary	Recycling (Metals)	2,392	2,443	2,495	2,548	2,602	2,658	2,715	2,773	2,832	2,892	2,954	3,017	3,081	3,147	3,214	3,283	3,353	3,424	3,497	3,572	3,648

Growth Option 4

Growth 4/Baseline Recycling		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Waste Type	Facility Type																					
Industrial Waste	Landfill (C+I and LACW)	50,017	50,832	51,718	52,075	52,042	51,896	51,690	51,417	51,192	50,996	50,621	50,260	49,930	49,595	49,259	48,908	48,559	48,212	47,868	47,527	47,187
Industrial Waste	Recycling (C+I, Agri)	80,027	81,332	82,749	83,320	83,268	83,033	82,704	82,267	81,908	81,593	80,993	80,417	79,888	79,351	78,815	78,253	77,694	77,140	76,589	76,042	75,500
Industrial Waste	Composting	2,001	2,033	2,069	2,083	2,082	2,076	2,068	2,057	2,048	2,040	2,025	2,010	1,997	1,984	1,970	1,956	1,942	1,928	1,915	1,901	1,887
Industrial Waste	Recycling (Metals)	60,020	60,999	62,061	62,490	62,451	62,275	62,028	61,700	61,431	61,195	60,745	60,313	59,916	59,513	59,111	58,689	58,271	57,855	57,442	57,032	56,625
Industrial Waste	Treatment plant	2,001	2,033	2,069	2,083	2,082	2,076	2,068	2,057	2,048	2,040	2,025	2,010	1,997	1,984	1,970	1,956	1,942	1,928	1,915	1,901	1,887
Industrial Waste	Land recovery	6,002	6,100	6,206	6,249	6,245	6,227	6,203	6,170	6,143	6,119	6,074	6,031	5,992	5,951	5,911	5,869	5,827	5,785	5,744	5,703	5,662
Industrial Waste	Don't know	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Landfill (C+I and LACW)	58,213	58,550	58,888	59,200	59,534	59,876	60,203	60,528	60,930	61,332	61,845	62,374	62,899	63,432	64,000	64,576	65,157	65,744	66,336	66,933	67,535
Commercial Waste	Thermal Treatment (energy recovery)	1,878	1,889	1,900	1,910	1,920	1,931	1,942	1,953	1,965	1,978	1,995	2,012	2,029	2,046	2,065	2,083	2,102	2,121	2,140	2,159	2,179
Commercial Waste	Thermal Treatment (without energy recovery)	1,878	1,889	1,900	1,910	1,920	1,931	1,942	1,953	1,965	1,978	1,995	2,012	2,029	2,046	2,065	2,083	2,102	2,121	2,140	2,159	2,179
Commercial Waste	Recycling (C+I, Agri)	122,060	122,765	123,474	124,129	124,829	125,547	126,231	126,914	127,757	128,599	129,676	130,783	131,886	133,003	134,193	135,401	136,620	137,850	139,091	140,343	141,606
Commercial Waste	Composting	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Treatment plant	3,756	3,777	3,799	3,819	3,841	3,863	3,884	3,905	3,931	3,957	3,990	4,024	4,058	4,092	4,129	4,166	4,204	4,242	4,280	4,318	4,357
Commercial Waste	Don't know	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction and Demolition Waste	Landfill (CD&E)	11,013	11,193	11,388	11,466	11,459	11,427	11,382	11,322	11,272	11,229	11,146	11,067	10,994	10,920	10,846	10,769	10,692	10,616	10,540	10,465	10,390
Construction and Demolition Waste	Recycling (Inerts C+D)	26,686	27,121	27,593	27,784	27,766	27,688	27,579	27,433	27,313	27,208	27,008	26,816	26,640	26,461	26,282	26,094	25,908	25,723	25,539	25,357	25,176
Construction and Demolition Waste	Other Treatment	47,018	47,785	48,617	48,953	48,922	48,784	48,591	48,334	48,123	47,938	47,586	47,247	46,936	46,621	46,306	45,975	45,647	45,322	44,998	44,677	44,358
Excavation Waste	Landfill (CD&E)	140,212	142,498	144,980	145,982	145,890	145,479	144,903	144,137	143,508	142,956	141,905	140,895	139,969	139,028	138,089	137,103	136,125	135,153	134,189	133,231	132,280
Excavation Waste	Recycling (Inerts C+D)	57,035	57,965	58,975	59,383	59,345	59,178	58,944	58,632	58,376	58,152	57,724	57,313	56,937	56,554	56,172	55,771	55,373	54,978	54,585	54,196	53,809
Excavation Waste	Other Treatment	2,376	2,415	2,457	2,474	2,473	2,466	2,456	2,443	2,432	2,423	2,405	2,388	2,372	2,356	2,340	2,324	2,307	2,291	2,274	2,258	2,242
Excavation Waste	Land recovery	38,023	38,644	39,317	39,588	39,563	39,452	39,296	39,088	38,917	38,768	38,483	38,209	37,958	37,703	37,448	37,181	36,915	36,652	36,390	36,130	35,873
Agricultural Waste	Incineration (Animal By-Product)	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725
Agricultural Waste	Recycling (C+I, Agri)	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253
Agricultural Waste	Treatment plant	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034
LACW (Other)	Landfill (C+I and LACW)	453	458	462	466	470	475	479	484	488	493	497	502	507	511	516	521	526	531	536	541	546
LACW (Other)	Thermal Treatment (energy recovery)	1,295	1,307	1,320	1,332	1,344	1,357	1,369	1,382	1,395	1,408	1,421	1,434	1,448	1,461	1,475	1,488	1,502	1,516	1,530	1,544	1,559
LACW (Other)	Recycling (LACW)	16,141	16,291	16,442	16,595	16,749	16,905	17,062	17,220	17,380	17,542	17,705	17,870	18,036	18,203	18,372	18,543	18,715	18,889	19,065	19,242	19,421
Hazardous waste	Landfill (Hazardous)	6,441	6,546	6,660	6,706	6,702	6,683	6,656	6,621	6,592	6,567	6,518	6,472	6,430	6,386	6,343	6,298	6,253	6,208	6,164	6,120	6,076
Hazardous waste	Thermal Treatment (energy recovery)	360	366	372	375	374	373	372	370	368	367	364	362	359	357	354	352	349	347	344	342	339
Hazardous waste	Thermal Treatment (without energy recovery)	3,385	3,441	3,501	3,525	3,522	3,513	3,499	3,480	3,465	3,452	3,426	3,402	3,380	3,357	3,334	3,310	3,287	3,263	3,240	3,217	3,194
Hazardous waste	Recycling (Hazardous)	19,480	19,798	20,143	20,282	20,269	20,212	20,132	20,026	19,938	19,862	19,716	19,575	19,447	19,316	19,186	19,049	18,913	18,778	18,644	18,511	18,378
Hazardous waste	Treatment plant	6,108	6,208	6,316	6,360	6,356	6,338	6,313	6,279	6,252	6,228	6,182	6,138	6,098	6,057	6,016	5,973	5,930	5,888	5,846	5,804	5,763
LACW (H)	Landfill (C+I and LACW)	16,458	16,832	17,215	17,606	18,006	18,415	18,834	19,262	19,700	20,147	20,605	21,074	21,553	22,042	22,543	23,056	23,580	24,116	24,664	25,224	25,798
LACW (H)	Thermal Treatment (energy recovery)	110,608	113,121	115,693	118,322	121,011	123,762	126,574	129,451	132,393	135,402	138,480	141,627	144,846	148,138	151,505	154,948	158,470	162,072	165,755	169,523	173,376
LACW (H)	Recycling (LACW)	32,142	32,872	33,619	34,383	35,165	35,964	36,781	37,617	38,472	39,347	40,241	41,155	42,091	43,048	44,026	45,027	46,050	47,097	48,167	49,262	50,381
LACW (H)	Composting	14,678	15,011	15,353	15,702	16,058	16,423	16,797	17,178	17,569	17,968	18,377	18,794	19,221	19,658	20,105	20,562	21,029	21,507	21,996	22,496	23,007
LACW Secondary	Landfill (Hazardous)	575	588	601	615	629	643	658	673	688	703	719	736	753	770	787	805	823	842	861	881	901
LACW Secondary	Recycling (LACW)	26,982	27,596	28,223	28,864	29,520	30,191	30,878	31,579	32,297	33,031	33,782	34,550	35,335	36,138	36,959	37,799	38,658	39,537	40,436	41,355	42,295
LACW Secondary	Recycling (Metals)	2,401	2,456	2,512	2,569	2,627	2,687	2,748	2,810	2,874	2,940	3,006	3,075	3,145	3,216	3,289	3,364	3,440	3,519	3,599	3,680	3,764

Growth 4 /Maximised Recycling		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Waste Type	Facility Type	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Industrial Waste	Landfill (C+I and LACW)	42,294	40,381	38,416	36,015	33,307	32,466	31,572	30,665	29,794	28,925	27,983	27,040	26,143	25,254	24,354	23,476	23,308	23,142	22,977	22,813	22,650
Industrial Waste	Recycling (C+I, Agri)	88,610	92,942	97,519	101,172	104,084	104,726	105,262	105,631	106,112	106,622	106,769	106,914	107,130	107,303	107,484	107,597	106,829	106,067	105,310	104,558	103,812
Industrial Waste	Composting	2,001	2,033	2,069	2,083	2,082	1,889	1,695	1,501	1,311	1,122	911	724	539	357	177	0	0	0	0	0	0
Industrial Waste	Recycling (Metals)	60,020	60,999	62,061	62,490	62,451	62,275	62,028	61,700	61,431	61,195	60,745	60,313	59,916	59,513	59,111	58,689	58,271	57,855	57,442	57,032	56,625
Industrial Waste	Treatment plant	1,140	874	600	292	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial Waste	Land recovery	6,002	6,100	6,206	6,249	6,245	6,227	6,203	6,170	6,143	6,119	6,074	6,031	5,992	5,951	5,911	5,869	5,827	5,785	5,744	5,703	5,662
Industrial Waste	Don't know	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Landfill (C+I and LACW)	46,139	42,364	38,543	34,641	30,727	29,841	28,955	28,038	27,163	26,254	25,396	24,507	23,618	22,692	21,781	20,831	21,019	21,208	21,399	21,591	21,786
Commercial Waste	Thermal Treatment (energy recovery)	5,896	7,290	8,681	10,102	11,523	11,589	11,652	11,715	11,793	11,871	11,970	12,072	12,174	12,277	12,387	12,499	12,611	12,725	12,839	12,955	13,071
Commercial Waste	Thermal Treatment (without energy recovery)	1,070	812	551	267	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Recycling (C+I, Agri)	130,116	133,550	137,037	140,494	144,033	145,731	147,419	149,095	150,989	152,875	155,072	157,302	159,561	161,834	164,232	166,648	168,148	169,662	171,189	172,730	174,285
Commercial Waste	Composting	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Waste	Treatment plant	4,563	4,854	5,148	5,462	5,761	5,968	6,176	6,385	6,604	6,826	7,082	7,324	7,568	7,816	8,072	8,332	8,407	8,483	8,559	8,636	8,714
Commercial Waste	Don't know	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction and Demolition Waste	Landfill (CD&E)	9,920	9,720	9,513	9,200	8,815	8,790	8,755	8,709	8,671	8,638	8,574	8,513	8,457	8,400	8,343	8,284	8,225	8,166	8,108	8,050	7,992
Construction and Demolition Waste	Recycling (Inerts C+D)	29,769	31,305	32,911	34,214	35,259	35,555	35,817	36,020	36,261	36,511	36,637	36,759	36,906	37,036	37,170	37,277	37,011	36,747	36,485	36,225	35,966
Construction and Demolition Waste	Other Treatment	45,018	45,081	45,174	44,798	44,074	43,554	42,979	42,360	41,776	41,227	40,529	39,858	39,207	38,565	37,921	37,277	37,011	36,747	36,485	36,225	35,966
Excavation Waste	Landfill (CD&E)	125,264	121,462	117,606	112,406	106,327	104,918	103,372	101,727	100,163	98,688	96,856	95,092	93,376	91,688	89,992	88,304	87,674	87,048	86,427	85,810	85,197
Excavation Waste	Recycling (Inerts C+D)	74,692	81,079	87,750	93,676	98,908	99,740	100,474	101,043	101,720	102,420	102,773	103,116	103,530	103,894	104,269	104,570	103,824	103,083	102,347	101,617	100,892
Excavation Waste	Other Treatment	3,731	3,454	3,170	2,821	2,473	2,466	2,456	2,443	2,432	2,423	2,405	2,388	2,372	2,356	2,340	2,324	2,307	2,291	2,274	2,258	2,242
Excavation Waste	Land recovery	33,960	35,528	37,203	38,524	39,563	39,452	39,296	39,088	38,917	38,768	38,483	38,209	37,958	37,703	37,448	37,181	36,915	36,652	36,390	36,130	35,873
Agricultural Waste	Incineration (Animal By-Product)	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725
Agricultural Waste	Recycling (C+I, Agri)	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253	1,253
Agricultural Waste	Treatment plant	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034	1,034
LACW (Other)	Landfill (C+I and LACW)	453	458	462	466	470	475	479	484	488	493	497	502	507	511	516	521	526	531	536	541	546
LACW (Other)	Thermal Treatment (energy recovery)	1,295	1,307	1,320	1,332	1,344	1,357	1,369	1,382	1,395	1,408	1,421	1,434	1,448	1,461	1,475	1,488	1,502	1,516	1,530	1,544	1,559
LACW (Other)	Recycling (LACW)	16,141	16,291	16,442	16,595	16,749	16,905	17,062	17,220	17,380	17,542	17,705	17,870	18,036	18,203	18,372	18,543	18,715	18,889	19,065	19,242	19,421
Hazardous waste	Landfill (Hazardous)	6,441	6,546	6,660	6,706	6,702	6,683	6,656	6,621	6,592	6,567	6,518	6,472	6,430	6,386	6,343	6,298	6,253	6,208	6,164	6,120	6,076
Hazardous waste	Thermal Treatment (energy recovery)	360	366	372	375	374	373	372	370	368	367	364	362	359	357	354	352	349	347	344	342	339
Hazardous waste	Thermal Treatment (without energy recovery)	3,385	3,441	3,501	3,525	3,522	3,513	3,499	3,480	3,465	3,452	3,426	3,402	3,380	3,357	3,334	3,310	3,287	3,263	3,240	3,217	3,194
Hazardous waste	Recycling (Hazardous)	19,480	19,798	20,143	20,282	20,269	20,212	20,132	20,026	19,938	19,862	19,716	19,575	19,447	19,316	19,186	19,049	18,913	18,778	18,644	18,511	18,378
Hazardous waste	Treatment plant	6,108	6,208	6,316	6,360	6,356	6,338	6,313	6,279	6,252	6,228	6,182	6,138	6,098	6,057	6,016	5,973	5,930	5,888	5,846	5,804	5,763
LACW (H)	Landfill (C+I and LACW)	13,128	12,289	11,422	10,491	9,512	9,728	9,949	10,175	10,407	10,643	10,885	11,133	11,386	11,644	11,909	12,180	12,456	12,740	13,029	13,325	13,628
LACW (H)	Thermal Treatment (energy recovery)	96,732	94,218	91,521	88,654	85,608	87,554	89,544	91,579	93,660	95,789	97,966	100,193	102,470	104,799	107,181	109,617	112,108	114,656	117,262	119,927	122,653
LACW (H)	Recycling (LACW)	49,662	56,766	64,167	71,875	79,901	81,717	83,574	85,474	87,416	89,403	91,435	93,513	95,639	97,812	100,035	102,309	104,634	107,012	109,444	111,932	114,476
LACW (H)	Composting	14,346	14,565	14,787	14,993	15,219	15,565	15,919	16,281	16,651	17,029	17,416	17,812	18,217	18,631	19,054	19,487	19,930	20,383	20,847	21,320	21,805
LACW Secondary	Landfill (Hazardous)	575	588	601	615	629	643	658	673	688	703	719	736	753	770	787	805	823	842	861	881	901
LACW Secondary	Recycling (LACW)	26,982	27,596	28,223	28,864	29,520	30,191	30,878	31,579	32,297	33,031	33,782	34,550	35,335	36,138	36,959	37,799	38,658	39,537	40,436	41,355	42,295
LACW Secondary	Recycling (Metals)	2,401	2,456	2,512	2,569	2,627	2,687	2,748	2,810	2,874	2,940	3,006	3,075	3,145	3,216	3,289	3,364	3,440	3,519	3,599	3,680	3,764

