

Waste Strategy

2016 - 2020

Reduce, Reuse and Recycle

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1. Executive Summary

In 2014/15, the London Borough of Barking and Dagenham (LBBD) produced just under 90,000 tonnes of waste. This means, on average, each of the borough’s households threw away approximately one tonne (953kg) of residual waste. As a result, Barking and Dagenham has the highest level of waste production per household in London. This is 50kg more per household than our closest performing borough.

In addition to producing the highest volume of residual waste of all the London boroughs per household, LBBD was ranked in the bottom quartile of the London boroughs for recycling performance in 2014/15 at 23%. This is less than half the recycling rate of the top-performing borough of Bexley at 54%.

Waste collection and disposal is an issue that is continuously highlighted as a concern for our residents. As a Council, we have therefore updated our Waste Strategy and the targets we hope to achieve by 2020. The strategy covers the period 2016 -2020. This length gives us the flexibility to review the strategy frequently in light of the constant changes that occur in the waste and recycling sector. The Council’s waste strategy vision for 2020 is:

Our Waste Strategy Vision for 2020
‘We want to reduce waste, increase re-use, increase recycling and provide effective, efficient and customer-focused waste services that demonstrate value for money.’

This Strategy will contribute to the Council’s corporate objectives of:

- Encouraging civic pride.
- Enabling social responsibility.
- Growing the borough.

Recognising the role we all play and how we can all impact on reducing, reusing and recycling waste is at the heart of this strategy. In order to achieve our vision a significant behavioural change towards waste management is essential. This will be supported and facilitated by the new ‘Insight and Intelligence’ function, to identify the best approach for the Council to educate, encourage and enforce our Reduce, Reuse and Recycle message. The targets we aim to achieve as a borough in regards to waste by 2020 are listed in *Table 1* below.

Table 1 - Waste Strategy 2016 - 2020 Target Summary

3R	Target	Target Description	Quantifiable Target by 2020
Reduce	8.2.1	Educate, encourage and enforce the behavioural change of LBBD residents to reduce their volume of waste produced per household.	We aspire to reduce our volume of waste per household by 6% year on year until 2020. It is our ambition to become the best performing ELWA borough by 2020, which could save the Council over £2 million (dependent upon Target 10.2.1 being

3R	Target	Target Description	Quantifiable Target by 2020
			achieved).
	8.2.2	Encourage schools to implement the Eco-Schools scheme and participate in the LBBB Environmental Project.	Achieve 25 Eco-Schools and participants in the LBBB Environment Project over the period 2016 – 2020.
Reuse	9.2.1	Achieve a waste stream volume reduction through reuse.	Achieve a 50 tonnes waste stream reduction by 2020.
Recycle	10.2.1	Achieve the London average recycling rate.	Achieve the London average recycling rate (currently 31%) by 2020.
	10.2.2	Secure waste and recycling contracts to commercial customers.	Achieve 700 commercial customers by 2020.
Operational Efficiency	11.2.1	Possess a specialist workforce that provides an efficient and valuable service for LBBB.	Achieve a 99% collection rate for residential and commercial services for the period 2016 – 2020.

2. Introduction

In 2014/15, the LBBD produced just under 90,000 tonnes of waste. This means, on average, each of the borough's households threw away approximately one tonne (953kg) of residual waste. As a result, Barking and Dagenham has the highest level of waste production per household in London. This is 50kg more per household than our closest performing borough.

Some of the borough's waste is recycled, some of it is reused, some diverted for energy recovery and some of it is sent to landfill. This means precious resources are being wasted. In Barking and Dagenham too much waste is sent to landfill, which is limited and increasingly expensive. We therefore need to look at dealing with our waste in a more sustainable way. For LBBD this means identifying ways that we can reduce the amount of waste produced.

Managing waste effectively is a key part of delivering a clean, green and safe borough. Our residents have consistently informed us how important it is to them to live in a clean and green area. This new strategy is a response to our resident's comments, setting out our vision and our key objectives of reducing the amount of waste we produce and throw away, reusing as much as possible and recycling more than we do now. This is about changing our current behaviour and all working together to ensure a sustainable future for our borough.

Waste collection and disposal is an issue that is continuously highlighted as a concern for our residents. As a Council, we have therefore updated our Waste Strategy and the targets we hope to achieve by 2020. The strategy covers the period 2016 -2020. This length gives us the flexibility to review the strategy frequently in light of the constant changes that occur in the waste and recycling sector. The Council's waste strategy vision for 2020 is:

Our Waste Strategy Vision for 2020

'We want to reduce waste, increase re-use, increase recycling and provide effective, efficient and customer-focused waste services that demonstrate value for money.'

The strategic objectives are:

1. To reduce the quantity of waste produced by the borough.
2. To minimise the amount of waste that goes to landfill through increased reuse, recycling, composting and energy recovery.
3. To provide an excellent waste containment and collection service to residents and businesses.
4. To ensure that the Council's waste collection services are cost effective.
5. To determine the best approach to reuse and recycling.
6. To fully participate in the East London Waste Authority (ELWA), joint management of disposal and collection operations and the preparation for future contractual arrangements.

This new Strategy is aligned to the Council's current and future financial pressures, which will transform our borough and how our council works. Having already sustained the deepest cuts in

government support in the last few years, further reductions mean that we will face a budget shortfall of £63 million, a third of our remaining budget, by 2020. The Council's medium term strategy sets out plans for a new 'Refuse' service that will be effective and efficient and will champion our 'Reduce', 'Reuse' and 'Recycle' message.

Through 2016 - 2020, this new strategy will evaluate future commercial options for the East London Waste Authority (ELWA) and Shanks contract. Having a clear strategic position will enable us to make operational efficiency decisions with clear and unambiguous direction, whilst delivering the Council's vision and priorities.

One borough; one community; London's growth opportunity.

This Strategy will contribute to the Council's corporate objectives of:

- Encouraging civic pride.
- Enabling social responsibility.
- Growing the borough.

3. Impetus for Strategic Change

3.1 Where are we?

The residents of LBBDD produce the highest tonnage of residual waste, per household of all the London boroughs, averaging 953kg in 2014/15. This volume of waste weighs slightly less than a small sports carⁱ or is the equivalent of filling an average sized living roomⁱⁱ with rubbish, as demonstrated in *Figure 1*. The volume of residual waste produced per household by LBBDD equates to 6% more waste than Newham, 28% more than Redbridge and 42% more than Havering per household.ⁱⁱⁱ

Figure 1 - One LBBDD Household's Annual Non-Recyclable Waste

On average a Barking and Dagenham household's annual non-recyclable Waste is:
953kg



The borough's residents dispose of their residual waste in their grey bin.^{iv} The waste disposed of into this bin should be items that cannot be reduced, reused or recycled but will be used for energy recovery or sent to landfill. The Council currently prevents 74% of residual waste going to landfill, through positive waste diversion, which is anticipated to improve to 80%, although this does not justify the total volume of waste produced.

Over the last two years we have seen a reduction in the volume of total household waste. The 2014/15 levels saw a reduction of 2.3% from 2013/14, the 6th best rate of the London boroughs.^v This reflects the successful work of the Waste Minimisation Team, which was introduced in 2012.

ⁱ 1967-71 MG B GT (Weight 993kg).

ⁱⁱ Average size living in the United Kingdom is 3.53 cubic metres.

ⁱⁱⁱ Please refer to *Appendix A: Volume Analysis of London's Waste by Borough 2014/15* for further details.

^{iv} Please refer to *Appendix B: Current Residual and Recycling Waste Collection Service* for further details.

^v Please refer to *Appendix C: London Borough Waste Volume Reduction Rates 2013/14 vs. 2014/15* for further details.

In addition to producing the highest volume of residual waste of all the London boroughs per household, LBBD was ranked in the bottom quartile of the London boroughs for recycling performance in 2014/15 at 23.4%. This is less than half the recycling rate of the top-performing borough of Bexley at 54%.^{vi} Additionally, from 2011/12, the recycling rate of the borough fell from 30.5% to 19.2% in 2015/16.^{vii}

3.2 Why are we here?

There is no direct causal evidence as to why LBBD residents produce the largest volume of residual waste per household of all the London boroughs, and recycle less than 27 other boroughs.

Residents require significant education, encouragement and enforcement in order to positively change behaviours and attitudes towards waste management. This is supported by the findings of the 2011 ELWA Waste Composition Analysis, which identified the following for LBBD:

- 40% of collected household waste was food waste as of 2011, with 48% of this food waste being compostable.
- 9% of collected household waste was paper as of 2011, with 64% of this paper waste being recyclable.
- 5% of collected household waste was card and cardboard as of 2011, with 77% of this waste being recyclable.

However, socio-economic factors can have an indirect influence upon the volume of residual waste produced and resident’s behaviours in relation to waste management. Due to the changing landscape of LBBD, the key population, financial, housing and commercial factors identified have been summarised in *Table 2* below.^{viii}

Table 2 - Barking and Dagenham Socio-Economic Indirect Factors Summary

Indirect Factor	Statistical Evidence
Population growth	<ul style="list-style-type: none"> • The population of the borough has grown 7.58% since 2012, to 205,403 in 2016 and is predicted to grow by a further 8.23% by 2020 and 35.72% by 2040.
Population age	<ul style="list-style-type: none"> • 9.92% of the borough’s population is aged 4 or under, significantly greater than the 7.36% London average and the highest rate of all the boroughs.
Household income	<ul style="list-style-type: none"> • The borough ranked 9th for income deprivation in the English Indices of Deprivation 2015, with 22.4% of residents living in income deprived households • Barking and Dagenham’s has the lowest median income in London.
Number of dwellings	<ul style="list-style-type: none"> • Since 2010, there has been a 3.40% increase in the number of dwellings in the borough, reaching 73,760 in 2015.
Persons per dwelling	<ul style="list-style-type: none"> • The borough had 2.73 persons per dwelling in 2014, which is greater than the London borough average of 2.46.
Commercial activity	<ul style="list-style-type: none"> • The borough had a 35.80% increase in the number of active

^{vi} Please refer to *Appendix D: Recycling Rates of London’s Boroughs 2014/15* for further details.

^{vii} Please refer to *Appendix E: Current Recycling Performance in LBBD* for further details.

^{viii} Please refer to *Appendix F: Socio-Economic Factors Influencing LBBD’s Production of Household Waste* for further details.

Indirect Factor	Statistical Evidence
	businesses from 2010 to 2014, the fourth highest increase in London.
Population turnover	<ul style="list-style-type: none"> In 2013/14, the Borough had an inward net flow of -1,120 persons. This consisted of a 14,050 person outflow and a 12,930 person inflow.

4. Changing Our Behaviour Towards Waste

4.1 Our behaviour towards waste

Collecting and disposing of waste is a fundamental service provided by the Council, with our residents informing us that waste collection is one of their top priorities. In reality, the Council is the end of the waste management chain and not the beginning, and as such every household and commercial customer has a responsibility for reducing their waste, reusing and recycling where possible and disposing of waste, which preserves our environment for present and future generations.

Recognising the role we all play and how we can all impact on reducing, reusing and recycling waste is at the heart of this strategy. This means we all need to answer some fundamental questions, which are addressed in *Table 3* below.

Table 3 - Fundamental Behavioural Change Questions and Answers

Question	Answer
Why do we produce the highest volume of waste per household in London?	Every household produces an average of 953kg of residual waste, which is over twice as much compared with households in Tower Hamlets and approximately 30% more than Havering. If every household recognises why it produces so much waste we can all start to take steps to reduce the volume of waste by making small changes to our daily routines.
What daily measures can we take to reduce, reuse and recycle our waste?	<p>Recognising that it is our responsibility and our ownership to reduce, reuse and recycle, we can start to make a difference. The role of the Council is to provide residents and commercial customers with the information required to make daily changes and make sensible and socially responsible decisions, to ensure we all play our part in reducing our volume of waste. The Council has identified the following key three steps:</p> <ul style="list-style-type: none"> • Educate – There are alternative ways of managing waste. For example some food waste can be composted or recycled. Alternatively, understanding how much of our household waste is food can help educate us on what we buy, consume and dispose of. For some households this can provide valuable information on how they can manage their budgets and potentially make savings. • Encourage – Disposing of waste considerately has a big role to play in our daily lives, the perceptions of where we live and the quality of our environment. An area blighted by waste can have a detrimental effect on a local community and there is evidence to suggest that environmental-crime can create increased anti social behaviour. Encouraging local residents and commercial customers to dispose of their waste intelligently with the appropriate number of bins will be fundamental to our success. No area should suffer from the inconsiderate actions of a handful of people and taking a united stance to address this issue will have a positive impact on our environment. • Enforce – Enforcement is a fundamental part of the Council's approach against those who persistently fail to take steps to reduce their waste or commit environmental-crime. The Council will use the

	wide range of enforcement powers at its disposal. If we are going to make our enforcement work effectively we will need the support of local residents so that we can target our resources at those who impact us the most.
What is the Council's service offering?	The Council cannot expect residents and commercial customers to embrace behaviour change if we are not clear on our service offering and expectations are for the collection and disposal of waste. The approach will be to provide a clear and consistent message on our service offering, the times and what we will and won't collect, matched with what we expect from households and commercial customers across the borough.

4.2 How we will drive behaviour change?

In order to achieve the behavioural change required to reach our targets, the use of data-driven insight and intelligence will be essential to accurately target resources to those areas where they will be most effective. As a result, we are able to shape strategies and policies that will be relevant to the Council's objectives and ambitions.

The Council's new Corporate 'Insight and Intelligence Unit' will provide a central source of expertise and tools to support these areas. More specifically this team will provide subject matter knowledge; challenge and skills transfer in the following disciplines: predictive analysis, machine learning, modelling, customer segmentation/clustering, exploratory data analysis, statistical analysis, data interpretation, data presentation, behavioural insight and experimental design. To support this process the new 'Insight and Intelligence Unit' will have access to a range of analytical tools and external data sources at their disposal.

The current view is for the new 'Insight and Intelligence Unit' to utilise their core competencies in facilitating the behaviour change that is needed in the community to reduce waste. This will be delivered through the design and implementation of targeted interventions to influence required behaviours. Such interventions will be statistically modelled to ensure that outcomes are assessed rather than inputs. Thus giving the organisation confidence that their social interventions encourage both behavioural change and demand reduction, whilst ensuring the relevant outcomes are measured.

5. Policy and Statutory Drivers

Our previous strategy set out three simple objectives to:

1. Reduce the quantity of municipal waste produced by the borough.
2. Minimise the amount of municipal waste that goes to landfill through increased reuse, recycling, composting and energy recovery.
3. Provide an excellent, cost-effective waste containment and collection service to all residents.

We now need to add to these some further objectives:

- Decrease residual and commercial waste arising and the cost of waste disposal.
- Ensure that the Council's whole waste collection services are cost effective.
- Determine the best approach to reuse and recycling.

Although there are no national targets to meet, there is a target set by the London Mayor's Municipal Waste Strategy (2011), which suggests that all London boroughs should aim to achieve 50% recycling by 2020. In the medium to long term, the government may ask local authorities to meet this target.^{ix}

The Waste Minimisation Act, which became law in November 1998, can be regarded as the key national driver for waste minimisation. Whilst it does not impose any statutory requirements, the Act is the key instrument in enabling local authorities to take specific action to reduce waste generation.

^{ix} Please refer to *Appendix G: European, National, Regional and Local Requirements* for further details.

6. ELWA and Shanks Contract

In December 2002, through the ELWA partnership, LBBB entered into a 25 year integrated waste management contract with Shanks Waste Management Limited. The natural contract expiry is 2027 and therefore has 11 years remaining.

The contract has the following objectives:

- Waste management services shall be both reliable and achievable in terms of managing and disposing of the waste.
- Waste management services shall be environmentally and economically sustainable in terms of:
 - Encouraging waste minimisation initiatives by providing an education service throughout the term of the contract.
 - Seeking to maximise waste recycling and composting opportunities potentially supported by recovery of energy.
 - Contributing to local economic development.
- Waste management services must be delivered in the most cost effective manner.

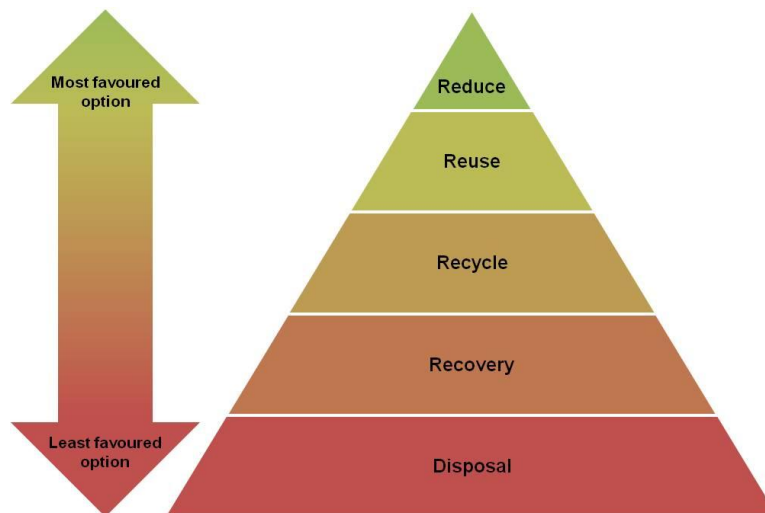
Over the course of the contract Shanks is required to invest over £100 million in new and improved facilities, new ways to treat and transport waste and better communications with ELWA residents^x

^x Please refer to *Appendix H: ELWA Infrastructure Constructed Since 2002* for further details.

7. The Waste Hierarchy

The guiding principle used in the design of this Waste Strategy is the 'Waste Hierarchy'. This is a globally adopted principle in relation to the sustainable management of waste and the impact on the environment. This principle sets out that reducing waste (through prevention and minimisation) is the best environmental option for waste management. It should therefore be considered before reuse, recycling and composting, energy recovery and finally disposal to landfill and is represented below in *Figure 2*.

Figure 2 - The Waste Hierarchy



The options of the Waste Hierarchy are:

1. **Reduce (Prevention and Minimisation):** The most effective environmental and economical solution is to reduce the generation of waste.
2. **Reuse:** Products and materials can sometimes be used again, for the same or different purpose.
3. **Recycle:** Resources can often be recovered from waste.^{xi}
4. **Recovery (of energy and materials):** Value can also be recovered by generating energy from waste.
5. **Disposal:** If none of the above offers an appropriate solution, only then should waste be disposed.

As our borough currently produces the most waste in London per household, it is right that our main emphasis will be to reduce the amount of total waste that is produced. However, we will also encourage our residents to reuse and recycle and compost as much as possible.

In parallel to the development of this strategy, the London Mayor's Officer (Resource London) commissioned a review of LBBD's waste and recycling with the aim to make efficiency savings,

^{xi} Please refer to *Appendix I: Why Recycle?* for further details.

reduce waste volumes and increase recycling. The recommendations made in this report will be considered going forward to support the objectives identified in this strategy.

8. Reduce

Reducing the volume of waste produced means using fewer resources in the first place and is the most effective environmental and economical approach to waste management. This eliminates the generation of harmful and persistent wastes and supports efforts to promote a sustainable society.

8.1 What we will do:

We recognise that significant change is required in order to deliver our vision to reduce waste. Although the main focus is on minimising household waste, as the main source of waste the Council deals with, other types of Municipal Solid Waste are also contained in our plans e.g. businesses, schools and parks. We will undertake the following activities to reduce waste:

- Launch a communications and educational campaigns to raise awareness for residents to demonstrate how to best to treat household waste and reduce waste volume.
- Take enforcement action against residents who produce excess residual waste.
- Minimise the social, environmental and financial impacts of waste management.
- Work with as many community groups as possible from across the borough to promote waste minimisation activities and projects.
- Continue to promote Eco-Schools as a way through which schools can reduce their environmental impact.

8.2 What we aim to achieve:

- **8.2.1:** Educate, encourage and enforce the behavioural change of LBBB residents to reduce their volume of waste produced per household. We aspire to reduce our volume of waste per household by 6% year on year until 2020. It is our ambition to become the best performing ELWA borough by 2020, which could save the Council over £2 million (dependent upon Target 8.2.2 being achieved).
- **8.2.2:** Encourage at least 25 schools to implement the Eco-Schools scheme and participate in the LBBB Environmental Project over the period 2016 – 2020.

9. Reuse

Reuse is any means by which the lifespan of a product is prolonged, which results in the prevention or delay of the product entering the waste stream. As simple as passing on unwanted belongings to family or friends, or donating to charities provide a new lease of life for products and reduces the volume of waste produced.

9.1 What we will do

We recognise that significant change is required in order to deliver upon our vision to increase waste reuse, we will:

- Launch a communications and educational campaigns to raise awareness for our residents to demonstrate how to best treat household waste and increase waste reuse volumes.
- Seek to implement initiatives that maximise the reuse of goods and materials at Frizlands Reuse and Recycling Centre.
- Support reuse initiatives, including the third sector, which promote furniture and appliance reuse schemes.

9.2 What we aim to achieve

- **9.2.1:** Achieve a waste stream volume reduction through reuse of 50 tonnes by 2020.

10. Recycling

Recycling and processing materials, which would otherwise be disposed of, into useful products repeatedly is good for the environment as it reduces raw material inputs and the need for unnecessary quarrying, mining, logging, manufacturing and transportation. Through recycling we reduce the volume of waste produced, which leads to a reduction in greenhouse gases from the methane released from landfill.

10.1 What we will do

We recognise that significant change is required in order to deliver upon our vision to increase recycling, we will:

- Launch a communications and educational campaigns to raise awareness for our residents to demonstrate how to best treat household waste and increase waste recycling volumes.
- Work with local businesses to offer recycling service for their waste.
- Promote recycling centres and composting.

10.2 What we aim to achieve

- **10.2.1:** Achieve the London average recycling rate (currently 31%) by 2020.
- **10.2.2:** Secure waste and recycling contracts to over 700 commercial customers over the period 2016 – 2020.

11. Operational Efficiency

The Council's current and future financial pressures demand an organisation that is designed to enable the contribution of others as well as deliver services ourselves. This results in the Council moving away from professional service silos, and becoming an organisation that is designed around what we need to achieve for those who live or work in our borough – with clear long-term goals, higher standards, increased performance, and structures that allow our workforce and others to deliver the best possible service.

11.1 What will we do:

To deliver an efficient waste collection service, which is customer-focused, we will:

- Provide a specialised 'Refuse' service for LBBB residents, businesses and schools.
- Provide a cost effective waste management service without a negative impact on service performance.
- Establish a data and performance driven waste management service utilising technologies available.
- Provide a highly visible, strongly branded LBBB cleaning operation.
- Ensure no gaps or overlap in Council cleaning and maintenance contracts.

11.2 What we aim to achieve

- **11.2.1:** Possess a specialist workforce that provides an efficient and valuable service for LBBB residential and commercial customers, with a 99% collection rate for the period 2016 – 2020.

12. Monitoring

12.1 Objective

It is essential performance on all elements of this strategy is monitored, to guide improvements in performance as well as future amendments to the strategy itself.

12.2 Monitoring Framework

Data will be collected by a variety of methods to evaluate and measure progress of the objectives and 2020 aspirational outcomes contained in this strategy. The methods adopted will be selected on the basis of ease of use, quality of results and cost.

Waste collection will be monitored regularly to provide the data necessary to apply the controls set out in this strategy. This will include monitoring expenditure and income through monthly financial reports and the annual report, which is published each September.

For non-compliance to waste disposal guidelines, enforcement provided will be monitored through the enforcement process itself in terms of the number of successful penalty notices issued against the number of fines paid.

13. Implementation

A draft high-level implementation has been developed. Once the Waste Strategy is approved by Cabinet, a detailed implementation plan will be finalised in accordance with LBBD guidelines and standards.

14. Appendices

List of appendices:

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- Appendix I: Why Recycle?

Appendix A: Volume Analysis of London's Waste by Borough 2014/15

Table 4 - Volume Analysis of London's Waste by Borough 2014/15

Ranking	London Borough	Total Household Waste Collected (tonnes)	Total Household Waste Sent For Recycling, Composting or Reuse (tonnes)	Total Households in Authority Area	Total Residual Household Waste per Household (kg)
1st	City of London	3,771.47	1,296.65	6,550	377.84
2nd	Islington LB	59,964.69	19,671.19	103,750	388.37
3rd	Ealing LB	95,287.45	38,218.16	131,390	434.35
4th	Tower Hamlets LB	71,649.11	20,145.66	117,410	438.66
5th	Lambeth LB	85,319.24	24,134.74	136,390	448.6
6th	Bexley LB	97,239.00	52,548.00	44,691	465.58
7th	RB of Kensington and Chelsea	54,574.21	13,810.26	87,510	465.82
8th	Bromley LB	123,302.70	59,212.83	137,230	467.03
9th	Hammersmith and Fulham LB	52,229.21	10,827.06	83,980	493.00
10th	Hillingdon LB	95,122.00	41,695.17	108,030	494.56
11th	RB of Kingston upon Thames	61,941.00	28,323.00	65,320	514.67
12th	Haringey LB	87,411.63	32,626.78	105,920	517.23
13th	Croydon LB	129,147.70	51,525.98	149,380	519.63
14th	Richmond upon Thames LB	74,752.97	30,793.26	82,820	530.79
15th	Harrow LB	87,017.19	39,282.73	88,060	542.07
16th	Wandsworth LB	95,081.15	19,679.83	137,640	547.82
17th	Merton LB	72,405.59	27,134.96	82,480	548.87
18th	Southwark LB	111,261.98	38,474.90	131,240	554.61
19th	Sutton LB	73,350.45	27,556.93	81,000	565.35
20th	Brent LB	99,912.68	35,176.73	113,910	568.31
21st	Camden LB	82,371.00	21,626.50	105,520	575.67
22nd	Hackney LB	84,286.11	21,291.23	107,200	587.64
23rd	City of Westminster	90,621.00	17,325.00	122,900	596.38
24th	Hounslow LB	89,462.24	30,836.06	98,260	596.64
25th	Enfield LB	123,082.86	47,343.76	122,780	616.87
26th	Barnet LB	146,292.44	55,524.50	142,950	634.96
27th	Waltham Forest LB	99,517.88	35,291.63	100,340	640.09
28th	RB of Greenwich	107,260.00	36,828.00	107,020	658.12

29th	Havering LB	100,897.46	32,714.52	101,620	670.96
30th	Lewisham LB	107,033.00	18,297.00	121,160	732.39
31st	Redbridge LB	106,196.00	30,464.48	101,770	744.14
32nd	Newham LB	116,711.35	20,023.23	107,770	897.17
33rd	Barking and Dagenham LB	89,955.00	21,070.98	72,320	952.49

Appendix B: Current Residual and Recycling Waste Collection Service

LBBB is a Waste Collection Authority (WCA) and all waste types collected are delivered to the Waste Disposal Authority (WDA) called the ELWA. ELWA was established on 1 January 1986 as a Statutory WDA, responsible for the disposal of waste from LBBB, Havering, Newham and Redbridge. ELWA directs the boroughs 'regarding where and in what form it must deliver the waste and co-mingled recycling it collects' to their disposal contractor – Shanks East London (SEL) PLC.

LBBB waste and recycling services currently comprise of a grey bin for domestic waste, a brown bin for recycling and a green bin for garden waste all free of any charge. The following bin capacities are available for LBBB residents, as depicted in *Figure 3* below:

- Grey bin for residual 140 litres.
- Brown for recycling 240 litres.
- Green for green garden waste 140 litres.

Figure 3 - Bins Provided to LBBB Residents



Residents are advised to only use the brown wheelie bin for storage of recyclates prior to collection, excess recyclates can be placed in any see-through bags where the materials can be easily seen by collection crews and placed next to the brown wheelie.

Low and high-rise flats occupiers are provided with 1100 litre blue euro bins for recyclates provided for every 6 flats in the block. Residents are provided with a mixed material-recycling bin to collect paper, card, plastic bottles and tin as represented in *Figure 4* below. Glass is to be added to the residual bin where it can be extracted through the MBT process. This change will bring the flats inline with the kerbside properties in the borough as opposed to the twin-stream system in place up until 30th June 2016.

Figure 4 - Waste Separation Required in LBBD



Selected businesses like public houses can access recycling bins as an additional option through our waste contractors (Bring Banks collections); on the proviso that they have a trade waste agreement with the Council and the site will be accessible to the public. This service includes:

- A weekly collection of residual waste from 1100 litre red euro bin.
- A variety of bring banks are available to residents and trade customers across the Local Authority, through these 1100 litre banks we collect:
 - Textiles
 - Glass
 - Paper and card
 - Tins and cans

Waste minimisation activities undertaken by the Council are:

- Recruitment of community volunteers for specific events like litter picking, build capacity, encourage and empower communities to get involved and promote waste minimisation.
- Work with schools to promote waste minimisation with the objective of targeting wider audiences.
- Train LBBD collection crews and raise waste minimisation awareness
- Work with not for profit organisations to support our communication campaigns.
- Carry out door stepping campaigns
- Target low performing areas and perform waste and recycling education visits.

Appendix C: London Borough Waste Volume Reduction Rates 2013/14 vs. 2014/15

Table 5 - London Borough Waste Volume Reduction Rates 2013/14 vs. 2014/15

Ranking	London Borough	Waste Reduction % 2013/14 vs. 2014/15
1st	Hillingdon LB	-5.69%
2nd	Richmond upon Thames LB	-3.78%
3rd	Havering LB	-3.54%
4th	Lewisham LB	-2.90%
5th	Sutton LB	-2.42%
6th	Barking and Dagenham LB	-2.28%
7th	Croydon LB	-1.23%
8th	Hounslow LB	-1.13%
9th	Enfield LB	-1.01%
10th	City of London	-0.23%
11th	Barnet LB	-0.16%
12th	Bromley LB	-0.11%
13th	Harrow LB	0.66%
14th	Bexley LB	0.72%
15th	Waltham Forest LB	0.97%
16th	Islington LB	1.06%
17th	Royal Bor. of Kingston upon Thames	1.09%
18th	Redbridge LB	1.28%
19th	Royal Bor. of Kensington and Chelsea	1.50%
20th	Hammersmith and Fulham LB	1.81%
21st	Southwark LB	1.84%
22nd	Haringey LB	1.89%
23rd	Wandsworth LB	2.05%
24th	Royal Bor. Of Greenwich	2.11%
25th	Brent LB	2.53%
26th	Ealing LB	2.53%
27th	Camden LB	2.68%
28th	Hackney LB	3.27%
29th	Merton LB	3.39%
30th	Tower Hamlets LB	3.69%
31st	Westminster City Council	3.87%
32nd	Lambeth LB	5.04%
33rd	Newham LB	5.34%

Appendix D: Recycling Rates of London's Boroughs 2014/15

Table 6 - Recycling Rates of London's Boroughs 2014/15

Ranking	London Borough	2014/15 Recycling Rate %
1st	Bexley LB	54.0%
2nd	Bromley LB	48.0%
3rd	Royal Bor.of Kingston upon Thames	45.7%
4th	Harrow LB	45.1%
5th	Hillingdon LB	43.8%
6th	Richmond upon Thames LB	41.2%
7th	Ealing LB	40.1%
8th	Croydon LB	39.9%
9th	Enfield LB	38.5%
10th	Barnet LB	38.0%
11th	Sutton LB	37.6%
12th	Merton LB	37.5%
13th	Haringey LB	37.3%
14th	Waltham Forest LB	35.5%
15th	Brent LB	35.2%
16th	Southwark LB	34.6%
17th	Hounslow LB	34.5%
18th	City of London	34.4%
19th	Royal Bor. Of Greenwich	34.3%
20th	Islington LB	32.8%
21st	Havering LB	32.4%
22nd	Redbridge LB	28.7%
23rd	Lambeth LB	28.3%
24th	Tower Hamlets LB	28.1%
25th	Camden LB	26.3%
26th	Royal Bor. of Kensington and Chelsea	25.3%
27th	Hackney LB	25.3%
28th	Barking and Dagenham LB	23.4%
29th	Hammersmith and Fulham LB	20.7%
30th	Wandsworth LB	20.7%
31st	City of Westminster	19.1%
32nd	Newham LB	17.2%
33rd	Lewisham LB	17.1%

Appendix E: Current Recycling Performance in LBBB

A composition analysis conducted by ELWA showed that theoretically the optimal recycling performance across ELWA could be between 35% and 40% under the current contract. Kerbside recycling collection in LBBB services 32,000 properties and was implemented to improve the borough's low base of 1.9% recycling and composting rate. Performance improved rapidly and peaked at 30.5% at year-end to march 2012. This represented a 1,500% increase in recycling performance within nine years.

However, a policy decision by the Council to stop separate kerbside glass collections from April 2012/13 in order to meet the Council's savings targets resulted in a decrease of 3% for the recycling and composting rate. Recycling and composting performance continued to fall to 23.4% in 2014/15. Other contributing factors for the decline in recycling and composting performance include the move from a bag collection to a bin collection - which is operationally effective, but needed to be accompanied by strong communications and enforcement to sustain the recycling and composting performance rates.

This decline in the recycling and composting performance rate was in stark contrast to the Council's adopted Municipal Waste Strategy of achieving the highest recycling rate in London. *Table 7* below shows the performance for the past four years.

Table 7 - LBBB Annual Recycling Performance %

LBBB Annual Recycling Performance %	
2011/2012	30.5%
2012/2013	25.7%
2013/2014	24.5%
2014/2015	23.4%
2015/2016	19.2%

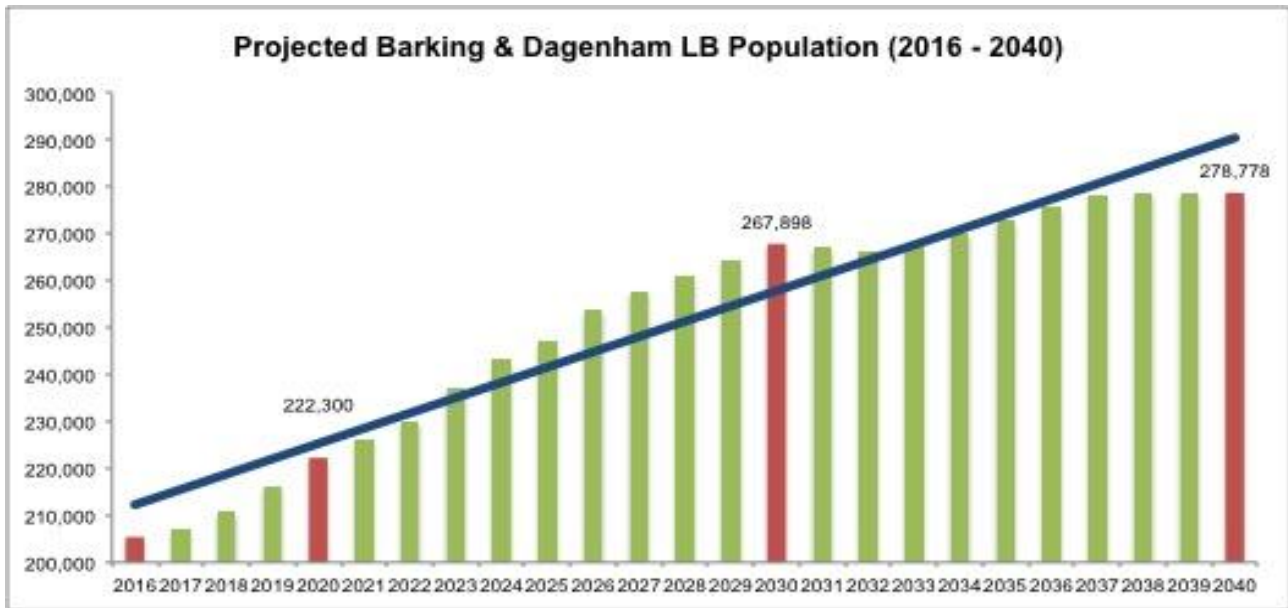
Due to contamination of recycling brown bins following the move from bag collection, combined recycling tonnage of LBBB and Newham, with Newham having the highest level of contamination in London, and the remove of Bring Sites have resulted in decreased recycling performance in LBBB.

Appendix F: Socio-Economic Factors Influencing LBBD’s Production of Household Waste

Population demographics

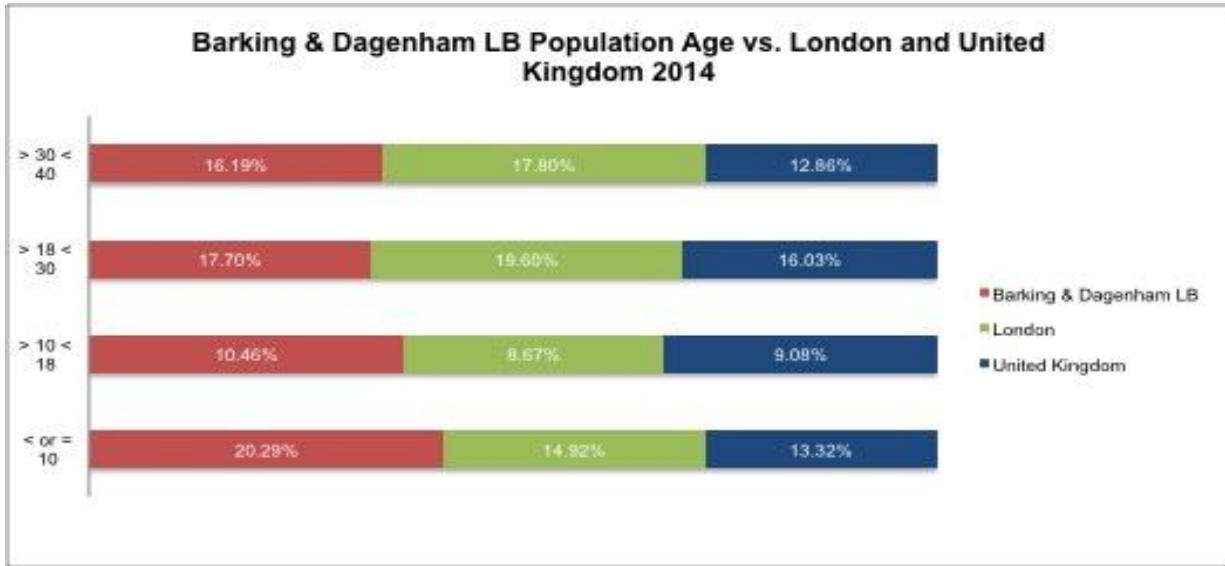
Barking and Dagenham is characterised by a diverse, young population, typical of London as a whole. The population has grown 7.58% since 2012, to 205,403 in 2016 and is predicted to grow by a further 8.23% by 2020 and 35.72% by 2040. This projected growth is demonstrated in *Figure 5* below.

Figure 5 - Projected LBBD Population (2016 - 2040)



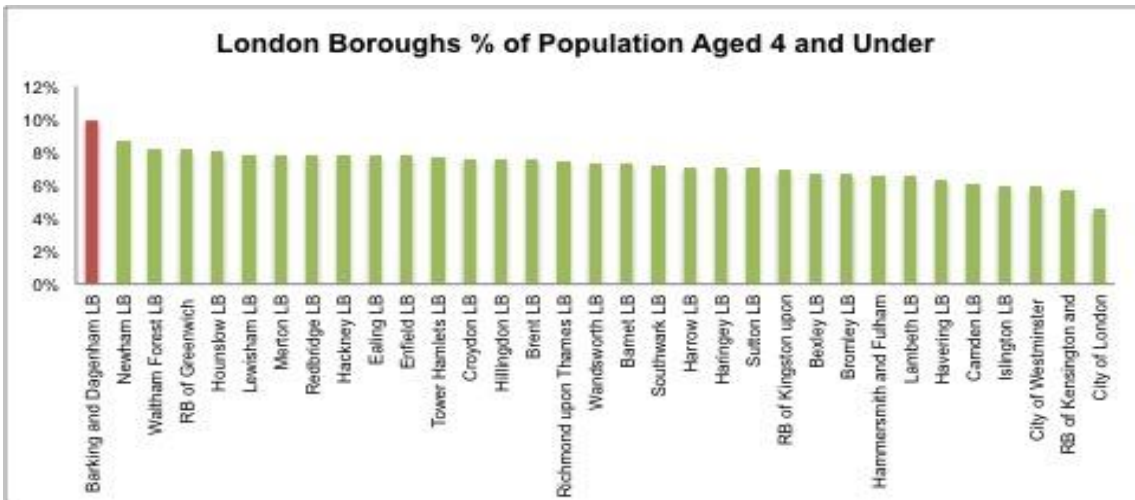
The age of the Barking and Dagenham population is significantly younger than the London and United Kingdom average, with 48.45% of the 2014 population being aged 30 or younger, compared to 43.19% and 38.43% respectively. 20.29% of the Barking and Dagenham population is aged 10 or under, which is represented in *Figure 6* below.

Figure 6 - LBBB Population Age vs. London and United Kingdom 2014



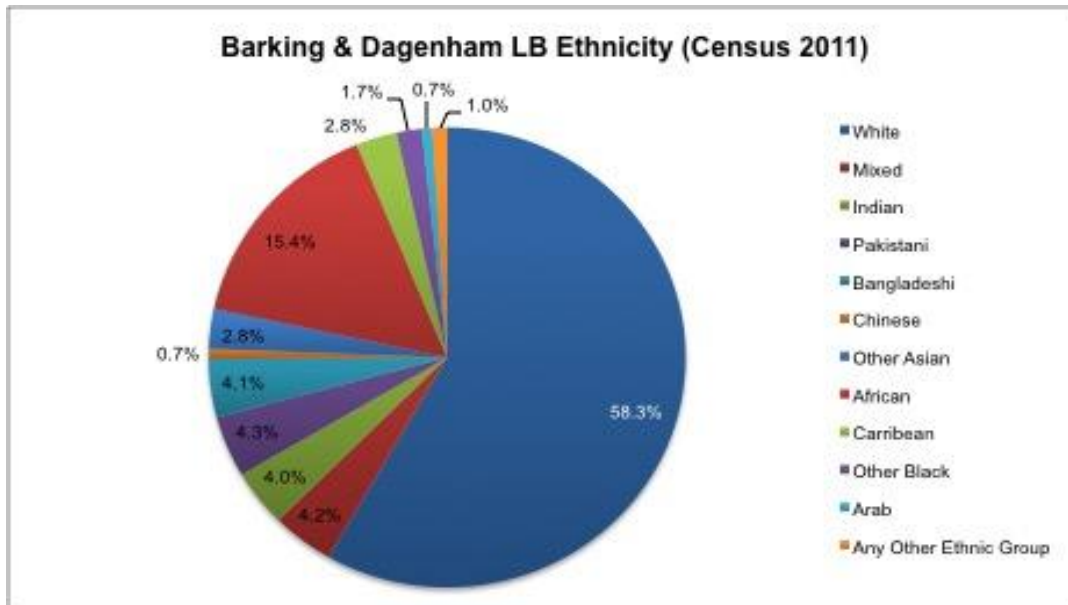
As of 2014, Barking and Dagenham had 9.92% of its population aged 4 or under, which coincides with a 50% growth in the population aged 4 and under in the 2011 Census. This is significantly greater than the 7.36% London average, and 14.11% greater than Newham, who has the second highest proportionate population in this age bracket, depicted in *Figure 7* below. The high growth of the population under 4 provides evidence as to a possible causal link to the high volume of residual waste per household.

Figure 7 - London Boroughs % of Population Aged 4 and Under



Represented in *Figure 8*, below, Barking and Dagenham has a highly diverse population with many different nationalities and cultures represented. As of the 2011 Census, Asian, African and Caribbean residents represented 34.10% of the borough's population. The level of population diversity places particular demands on the Council in communicating this strategy's message in a meaningful way.

Figure 8 - LBB Ethnicity (Census 2011)

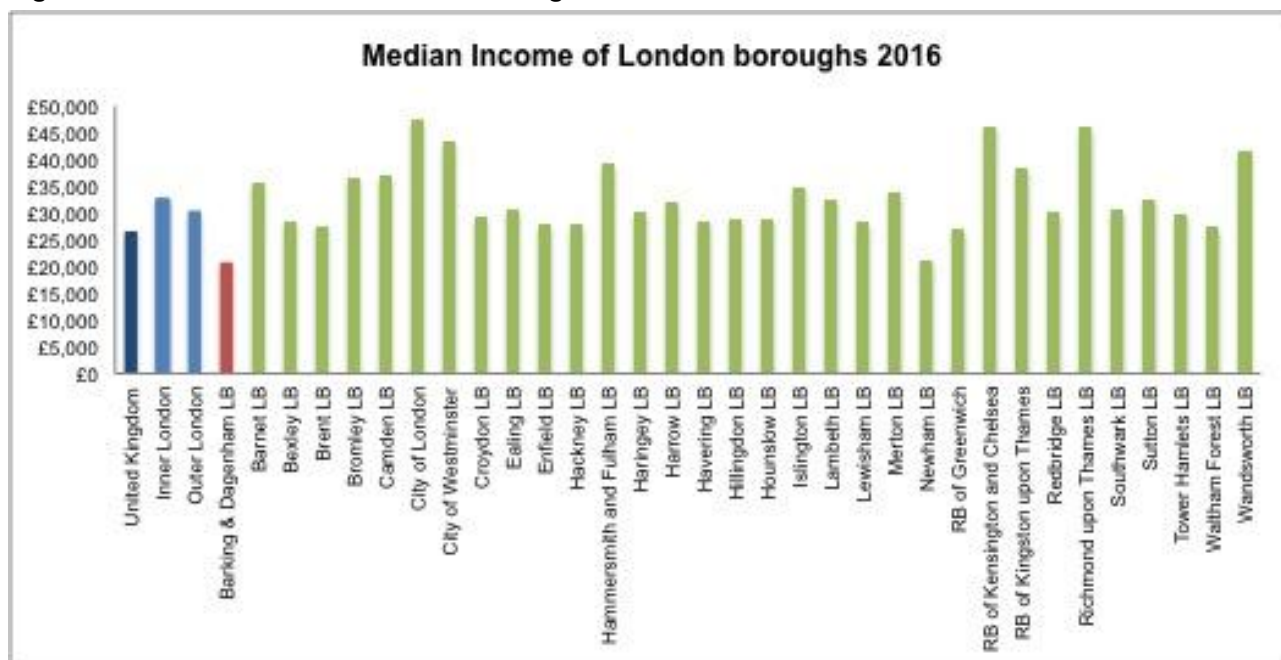


Financial demographics

A significant proportion of Barking and Dagenham residents still experience high-levels of deprivation, with Barking and Dagenham ranked 9th for income deprivation in the English Indices of Deprivation 2015, with 22.40% of residents living in income deprived households, a substantial increase from 20th in the 2010 report. Barking and Dagenham is ranked 11th for income deprivation effecting children, and 16th for income deprivation effecting older people with 31.9% and 27.9% respectively. This coincides with Barking and Dagenham having the highest percentage of lone parent households with dependent children in the country.

Represented in *Figure 9*, below, are the median incomes for all the London boroughs. Barking and Dagenham’s median income is the lowest, 27.73% lower than the United Kingdom median and 127.70% lower than the City of London median.

Figure 9 - Median Income of London boroughs 2016

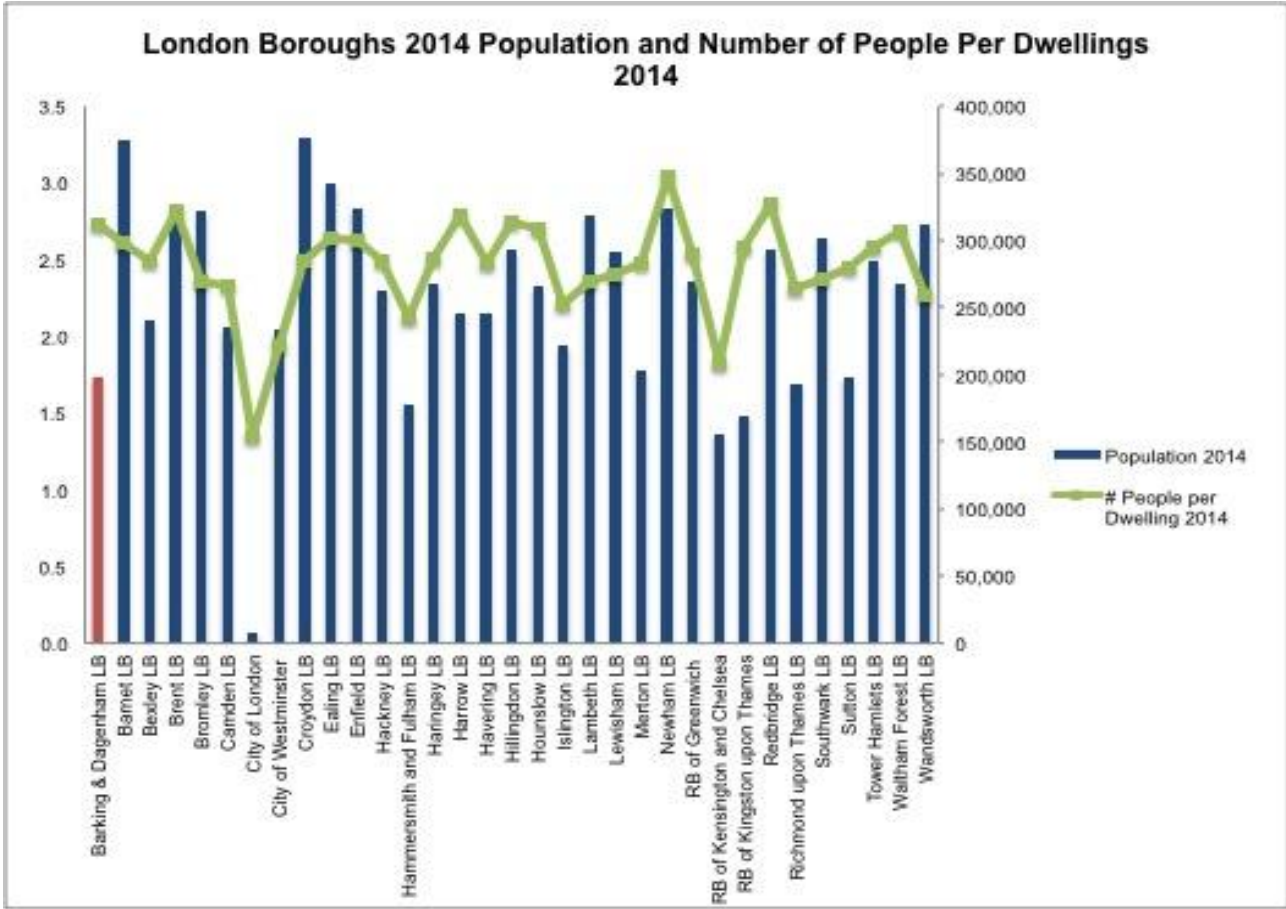


Housing demographics

A key factor affecting the volume of waste produced by Barking and Dagenham is the number of dwellings and the number of persons per household. Since 2010, there has been a 3.40% increase in the number of dwellings in Barking and Dagenham to 73,760 in 2015, compared to a 6.22% and 7.03% increase in Newham and Tower Hamlets respectively. However, Barking and Dagenham is anticipating the future development of 35,000 new residences, which will subsequently further increase the volume of waste produced.

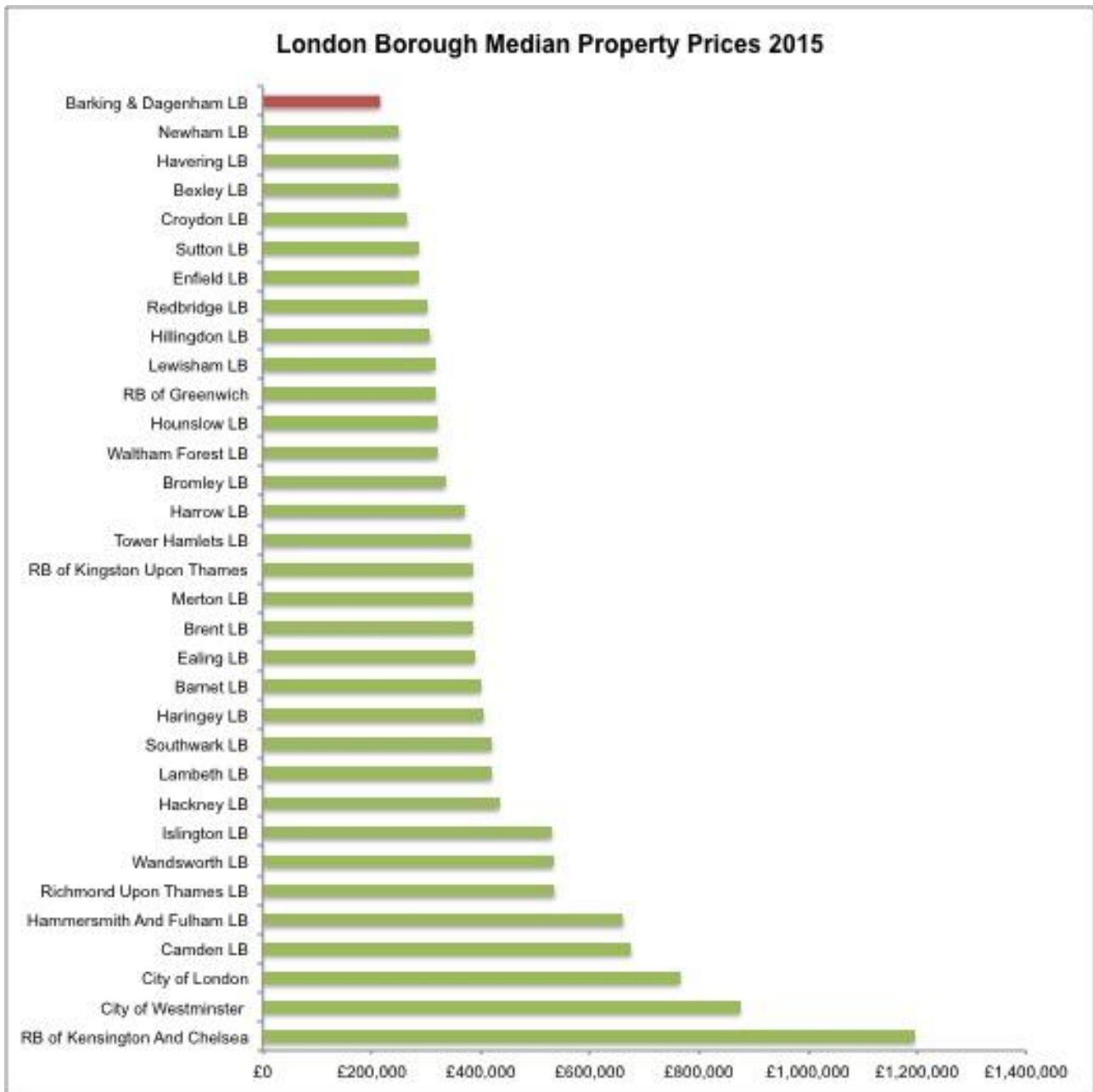
A significant cause of previous waste increases nationally has been a decrease in household size, which was largely due to a significant rise in the number of single person households. As of 2014, Barking and Dagenham had 2.73 persons per dwelling, which is greater than the London borough average of 2.46. However, Brent, Harrow, Hillingdon, Newham and Redbridge all have a greater person per dwelling, represented in *Figure 10* below and produce 40.33%, 43.09%, 48.08%, 5.81% and 221.87% less residual waste per household respectively.

Figure 10 - London Boroughs 2014 Population and Number of People per Dwellings 2014



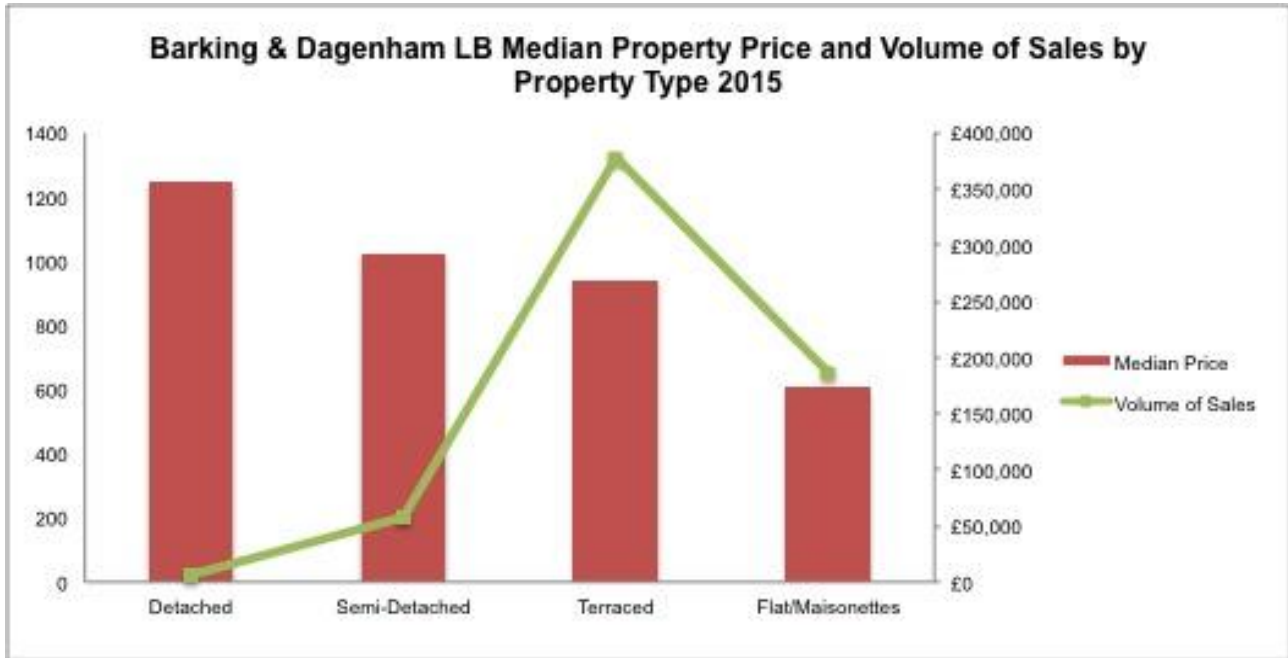
Barking and Dagenham has the lowest median property price of all the London Boroughs, at £215,000 in 2015, and is represented below in *Figure 11*. Property prices experienced an increase of 26.27% from 2010. This significantly outperforms Havering, Newham and Redbridge, which increased over the same period by 13.12%, 13.64% and 20.60% respectively, but significantly less than the 32.58% average growth of the London boroughs.

Figure 11 - London Borough Median Property Prices 2015



In 2015, a total of 2,193 properties were sold in Barking and Dagenham, with 60.24% of those being terraced properties and only 0.96% being detached properties, depicted in *Figure 12* below. The 2015 London Borough Stock of Properties further demonstrates the volume of low value property in Barking and Dagenham, having 84.67% of properties classified as either A, B or C of the Council Tax bands, with Newham having 78.45%, compared to the London borough average of 44.27%.

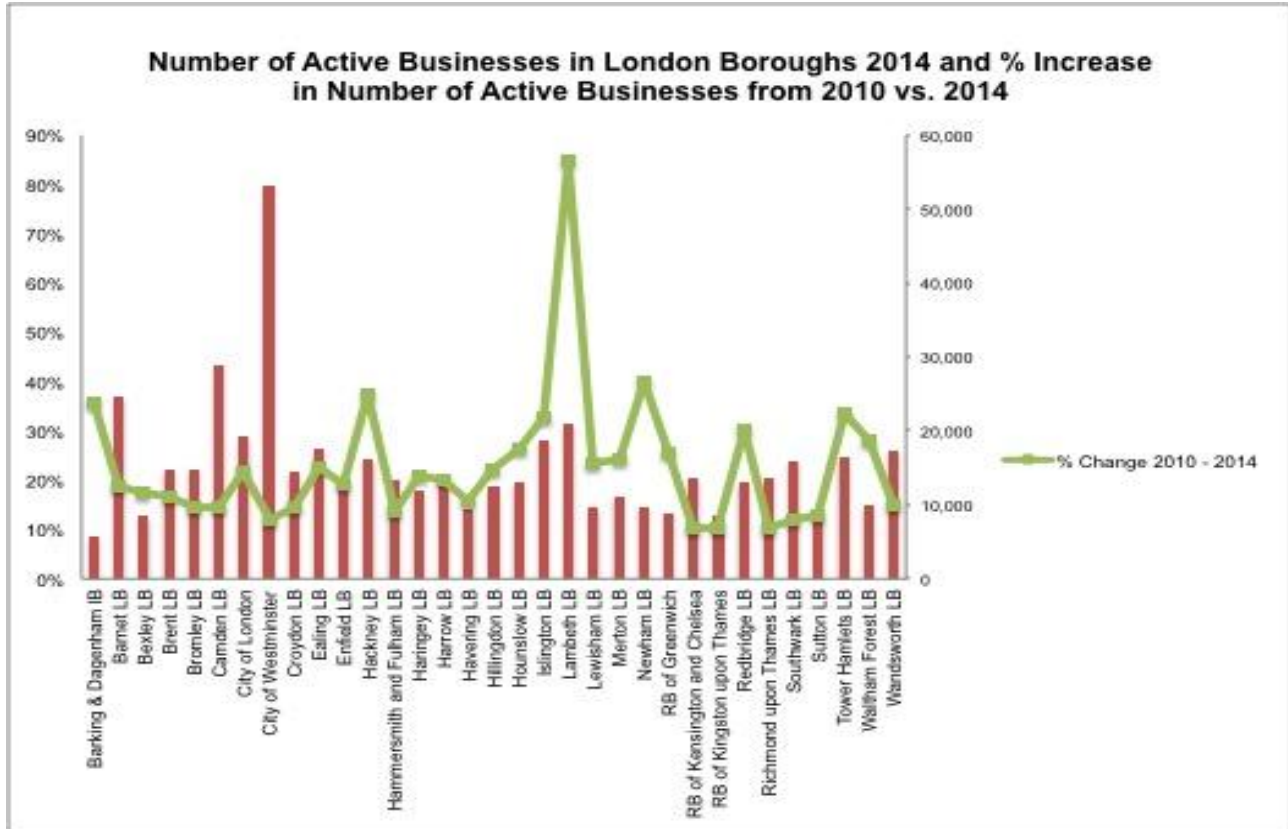
Figure 12 - LBBB Median Property Price and Volume of Sales by Property Type 2015



Commercial demographics

In the period from 2010 to 2014, Barking and Dagenham experienced a 35.80% increase in the volume of active businesses, from 4,190 to 5,690. This is the fourth highest increase of active businesses of all the London boroughs represented in *Figure 13* below, behind only Lambeth, Newham and Hackney with 84.71%, 39.78% and 37.56% respectively. The growth of the volume of active businesses in Barking and Dagenham represents an increase in the volume of trade waste produced and hence the possible contamination of the household waste stream as a factor in the volume of household residual waste produced.

Figure 13 - Number of Active Businesses in London Boroughs 2014 and % Increase in Number of Active Businesses from 2010 vs. 2014



Appendix G: European, National, Regional and Local Requirements

Table 8 - European, National, Regional and Local Requirements

Jurisdiction	Relevant legislation/act/regulation/strategy/plan
European Requirements (or future equivalent)	<ul style="list-style-type: none"> • The Revised Waste Framework Directive (2008/98/EC) • The Landfill Directive (1999/31/EC) • The Waste Electrical and Electronic Equipment Directive (2002/96/EC)
National Requirements	<ul style="list-style-type: none"> • The Waste Strategy for England 2007 (Revised 2011) • The Waste Minimisation Act 1998 • The Waste England and Wales Regulations 2011 (amended 2012)
Regional Requirements	<ul style="list-style-type: none"> • The London Mayor’s Municipal Waste Strategy (2011) • The London Mayor’s waste strategy provides the overarching waste management framework for London and the council has to be in general conformity with it. The Mayor’s targets are to: <ul style="list-style-type: none"> ○ Recycle or compost at least 50 per cent of municipal waste by 2020. ○ Recycle or compost at least 60 per cent of municipal waste by 2031. ○ Reduce the amount of total household waste produced from 970kg per household in 2009/10 to 790kg by 2020/21.
Local Requirements	<ul style="list-style-type: none"> • Joint Waste Development Plan for the ELWA Boroughs (Adopted February 2012). • The Planning and Compulsory Purchase Act 2004 requires local authorities to replace the existing Unitary Development Plan (UDP) with the Local Development Framework (LDF). The LDF includes Development Plan Documents (DPD), which must include specific waste policies, which are consistent with PPS10 and in General Conformity with the London Plan. • The purpose of the Joint Waste DPD is to set out a planning strategy to 2021 for sustainable waste management which enables the adequate provision of waste management facilities (including disposal) in appropriate locations for municipal and commercial and industrial waste, having regard to the London Plan Borough level apportionment and construction, excavation and demolition and hazardous wastes. The Joint Waste DPD forms part of the LDF for each borough and helps deliver the relevant elements of the Sustainable Community Strategy for each borough.

Appendix H: ELWA Infrastructure Constructed Since 2002

Table 9 ELWA Infrastructures Constructed Since 2002

Facility	Description of activities
<p>Frog Island Waste Management facility</p>	<ul style="list-style-type: none"> The Frog Island Waste Management facility handles household waste and recyclable materials from mainly Barking and Dagenham and Havering. After the recyclables are removed, the residual waste undergoes mechanical biological treatment. The treatment helps further separate materials for recycling and produces a solid recovered fuel that can be used to replace fossil fuels in the generation of energy.
<p>Jenkins Lane Waste Management facility</p>	<ul style="list-style-type: none"> The Jenkins Lane waste management facility is capable of processing up to 180,000 tonnes of waste per annum, is similar to the one at Frog Island and together they handle most of ELWA's waste. The facilities process the residual household waste from the London boroughs of Newham and Redbridge. A large materials recycling facility has also been constructed at Jenkins Lane to separate the recyclates in the orange bags collected at the doorsteps of over 250,000 households across East London.
<p>Reuse and Recycling Centres</p>	<ul style="list-style-type: none"> Reuse and Recycling Centres, are managed by Shanks on behalf of the constituent Councils are provided in each of the four boroughs and are available for local people to dispose of or, preferably, recycle their own waste. During 2003 Shanks implemented a wide range of improvements to the four sites, including better site layout, improved access, increased staffing and new recycling facilities.

Appendix I: Why Recycle?

Table 10 - Why Recycle?

Why Recycle?	What are the Benefits?
Environmental Reasons	<ul style="list-style-type: none"> When we recycle, recyclable materials are reprocessed into new products, and as a result the amount of rubbish sent to landfill sites reduces. There are over 1,500 landfill sites in the UK, and in 2001, these sites produced a quarter of the UK's emissions of methane, a powerful greenhouse gas. As recycling saves energy it also reduces greenhouse gas emissions, which helps to tackle climate change. Current UK recycling is estimated to save more than 18 million tonnes of CO2 a year – the equivalent to taking 5 million cars off the road. When we recycle, used materials are converted into new products, reducing the need to consume natural resources. If used materials are not recycled, new products are made through extracting fresh, raw material from the Earth, through mining and forestry. Recycling helps conserve important raw materials and protects natural habitats for the future.
To Save Money	<ul style="list-style-type: none"> Recycling is usually cheaper than sending waste to landfill and also reduces landfill costs - which as a result of Landfill Tax are expensive and will become increasingly so. Usually this is represented in local waste disposal arrangements. This would usually offset the cost of introducing and operating the relevant recycling collections.
To Comply with Statute and Avoid Fines	<ul style="list-style-type: none"> Under the Waste Regulations (England & Wales) 2011 Act Local Authorities are required to guarantee that they provide a collection of paper, metal, plastic and glass where it is technically, environmentally and economically practicable (TEEP) to do so. This legislation to place into statute the EU Waste Framework Directive (2008/98/EC) also requires the UK to achieve a 50% recycling rate nationally by 2020. Whilst the ramifications of failing to hit this target are not clearly defined, nation states that do fail to hit the European target could receive fines. There is also a mechanism within Localism Act 2011 to pass these fines down to Local Authorities. At the current time this can only be considered speculative though.