Written submissions received for the London Assembly's Environment Committee investigation into Food Waste in London

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Ref	Organisation	Position/Title
FW001	Wandsworth Borough Council	
FW002	London Borough of Sutton	*Matt Clubb*- Head of Waste Management and Fleet Services
FW003	Biogen (UK) Ltd	
FW004	Environment Agency	*David Elphick*
FW005	London Councils	*John O'Brien*- Chief Executive
FW006	WRAP	*Marcus Gover*- Director for England, Wales and Northern Ireland
FW007	London Waste and Recycling Board	
FW008	Organic Resource Agency	*Anna Tiefenbacher MSc* and *Hugh Bulson PhD*
FW009	LARAC	*Tom Lawrence*- LARAC Policy Team
FW010	SITA UK	
FW011	West London Food Waste Authority	*Jim Brennan*- Director
FW012	Greater London Authority (GLA)	*Doug Simpson*- GLA Principal Policy Officer- Waste and Energy
FW013	London Borough of Bexley	*Stephen Didsbury*- Head of Waste & Street Services
FW014	Environmental Services Association	
FW015	North London Waste Authority	*Barbara Herridge*- External Relations Manager
FW016	City of London Corporation	

April 2014

Food waste management in London- response on behalf of Wandsworth Borough Council

Part I – Establishing the baseline

1. Does your organisation collect domestic food waste? If so, how often (eg weekly or fortnightly)? And through what mechanism (eg from homes or a central collection point)

   Response: Yes, it is collected at least weekly from all domestic premises mixed with other general refuse. Some purpose built blocks with inadequate space to store refuse receive twice or even thrice weekly collections (c. 24,000 premises or 18% of the total). We do not provide a separate collection service for food waste.

2. What progress has the Mayor made with his food waste-related programmes?

   Response: Since setting his programmes, Wandsworth has diverted all residual waste including food waste from landfill to incineration with energy recovery at the Riverside Resource Recovery plant in Belvedere, Bexley. The only residual waste now sent to landfill occurs when this plant is unable to accept deliveries- This accounted for only 3% of all household waste during 2013/14. This switch has been combined with significant reductions in household waste arisings despite total households increasing at around 1% annually and has led to substantial reductions in the carbon equivalent impacts of Wandsworth's waste.

3. How has food waste management changed in London over the past 5-10 years? How much has the industry grown?

   Response: See 2. above.

4. How is your organisation, or any other organisation that you are aware of, promoting food waste reduction, and what has been achieved so far?

   Response: We promote food waste reduction on our web site (at: http://www.wandsworth.gov.uk/info/524/rubbish/463/reducing_waste) and home composting at http://www.wandsworth.gov.uk/info/10070/recycling/265/home_composting. We also encourage the usage of food waste macerators, especially in new developments. We know that our household waste arisings per person, at 314kg/head in 2012/13 are relatively low (8th lowest in London) and have fallen but as we haven't analysed the contents of waste since 2009 we can't say by how much reduced food waste arisings have contributed towards this.

Part II – Extending and improving food waste collection

5. What are the current barriers to managing domestic food waste effectively in London, particular with regard to blocks of flats on estates?

   Response: Improving the management of food waste in Wandsworth through promoting waste reduction and home composting, leaving any that does require it mixed with other residual waste and diverting all residual waste from landfill to incineration with energy recovery is an approach that has worked well for Wandsworth.

   The main barriers to diverting food waste from low-rise households to a composting or anaerobic digestion (AD) process include high set up costs and increased collection costs, an unrealistically high capture rate required to offset these costs through waste disposal savings, inconvenience to householders (who may not want "slop buckets") and small or possibly non-existent carbon impact reductions associated with diverting food waste from incineration with EfW to a composting or AD process. For high-rise premises, barriers also include difficulties associated with finding acceptable locations for communal food waste

banks on estates. Participation rates would also be likely to be lower as they are for dry recycling.

In practice, a separate food waste collection service is unlikely to make sense for Wandsworth unless combined with other significant service changes such as the introduction of wheelie bins and fortnightly residual waste collections. However, the borough is committed to weekly collections for 5 years having received a grant from the Weekly Collections Support Scheme.

6. How do you plan or hope to introduce, extend or improve domestic food waste recycling? What specific barriers have you identified? What support (eg financial or technical) would you require to overcome these?

   Response: We currently have no plans to significantly change existing services but will continue to promote food waste reduction and home composting. Given the continuing financial pressure on the Council, it is reluctant to do anything that would increase the cost of waste management in the borough but if external funding was available to e.g. set up a food waste bank service on estates that could be run at no net cost or achieve net savings, that would be seriously considered.

7. Following LWARB's flats recycling programme, how can those managing estates and large blocks of flat continue to introduce and improve food waste recycling? What other funding and guidance is still available now and how can boroughs and others access it?

   Response: The current priority for estates is to improve the quality of mixed recycling collected from them in order to ensure that it is suitable for high quality recycling. Around five years ago, the Council teamed up with PyroPure to investigate the practicality of pyrolysising combustible residual waste from blocks of flats in-situ. Whilst this was successful and an option for implementing something similar was included in the Council's housing maintenance contract tender documents, no tenders pricing this option were received, leading to the conclusion that this option was not economically viable.

   Clearer guidance would be useful on whether / in what circumstances food waste management can be improved through using food waste macerators, particularly in new developments where they could be designed in and/or made a hard requirement. In larger developments, on-site small scale anaerobic digestion facilities with methane recovery might be an increasingly viable option.

8. Are there any national or international examples of good practice for managing domestic food waste in densely-built, urban environments from which London could draw lessons?

   (No response)

9. How can the Mayor and local authorities use their investment and planning powers to promote better collection and handling of food waste?

   Response: By ensuring that food waste macerators and/or small scale on-site AD are properly considered and implemented if and where they represent the best practicable option for managing food waste in developments.

Part III – Processing food waste

10. What happens to the domestic food waste that you collect? o Name of the company that treats the food waste.
    - o Location of treatment facility (within, near or outside London)
    - o Type of facility (eg composting plant, anaerobic digestion plant etc)

    Response: Riverside Resource Recovery EfW incineration plant
    (see: http://www.coryenvironmental.co.uk/page/riversideresourcerecovery.htm)

11. What are the benefits and difficulties of different ways of processing food waste, for example composting or anaerobic digestion, in an urban environment?

Response: Many composting and AD processes may demand a quality of food waste that would be hard to achieve in practice (e.g. free of contamination with plastic films). Given that the carbon benefits of diverting food waste from incineration with EfW to composting or AD are small or non-existent, this should only be considered desirable if it can be achieved at little or no net cost or is associated with a net saving.

12. In what ways is recycling food waste beneficial to London's environment?

Response: It is only beneficial where it leads to lower net costs and/or carbon impacts and/or other environmental benefits such as producing home compost and reducing reliance on peat-based ones.

13. What opportunities do you see for the waste management industry to expand or optimise its activities in London? What are the key factors involved (eg minimum amount of feedstock for processing)?

(No response)

14. How do savings in landfill tax relate to possible investment into recycling and composting? What is the role of gate fees in this respect?

Response: In Wandsworth, landfill tax is not a consideration as residual waste in sent for incineration with energy recovery. Gate fees are however a big factor as every tonne of food waste avoided saves £143 and every tonne diverted for composting or AD would save £143 less the gate fee charged for that process (typically c. £50). However, additional costs relating to the separate collection of food waste, separate food waste containers and associated publicity would also be big factors affecting any decisions.

London Borough of Sutton
Environment & Neighbourhoods Directorate
Executive Head of Commissioning -
Brendon Hills

Your Ref: *Direct Line:* [redacted]
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e-mail: [redacted] *Date:* 06 June 2014

Please ask for *Matt Clubb*

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Rachel Roscow
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Dear Rachel,

Food waste management in London

Thank you for inviting us to provide our views on the management of food waste in London. I am pleased to present the London Borough of Sutton's response to the call for evidence questions.

Sutton is a unitary authority and therefore responsible for the collection and disposal of municipal waste. Reducing the carbon footprint of the waste management in Sutton is one of our priorities. One of the targets in the One Planet Action Plan for Sutton is to achieve the Mayor of London's 2017 Emissions Performance Standard of -0.154 tonnes of CO_2^{eq} emissions per tonne of waste managed.

Food waste makes up approximately 43% of Sutton's residual waste therefore we welcome your investigation into the management of London's food waste.

Our responses to your specific questions are below.

Part I – Establishing the baseline

Question 1 - Does your organisation collect domestic food waste?
Residents are asked to place food waste in their brown waste bin, which is for residual waste. This is collected on a weekly basis. Food waste is not collected separately in Sutton.

Question 2 - What progress has the Mayor made with his food waste-related programmes?
Having a pan London Love Food Hate Waste (LFHW) meant that the impact of individual boroughs was amplified across London. Residents that live and work in different London boroughs were provided with a consistent message around reducing food waste. This regional campaign provided the foundations for borough specific activity.

Strategic Director - Environment & Neighbourhoods Directorate
Mary Morrissey

Chief Executive
Niall Bolger

With the dissolution of Recycle for London the pan London campaign activity has been reduced although individual boroughs are still promoting the message.

Question 4 - How is your organisation, or any other organisation that you are aware of, promoting food waste reduction, and what has been achieved so far?
We know that preventing food waste avoids emissions associated with farming and the manufacture, transport, cooking and disposal of food. Therefore, Sutton is committed to promoting the national LFHW campaign. We ran some LFHW workshops, and put leaflets/ posters in public buildings. Our total waste arisings reduced during the campaign but it would be difficult to attribute this entirely to the LFHW activity.

We have recently been awarded some DCLG funding and plan to use some of this to further promote the LFHW message during 2014/15.

Details of the Mayors FoodSave scheme was publicised to businesses in Sutton.

Part II – Extending and improving food waste collection

Question 6 - How do you plan or hope to introduce, extend or improve domestic food waste recycling? What specific barriers have you identified? What support (eg financial or technical) would you require to overcome these?
In January 2013, our Environment and Neighbourhoods Committee made the decision not to roll out a borough wide food waste scheme following a review of the environmental, economic and social information.

The capital and revenue costs of collecting food waste separately are high. Residents in Sutton do not want food waste to be collected separately if it would increase council tax or take resources away from other services.
The greenhouse gas conversion factor data from DECC and Defra indicates that there is only a small difference in the environmental benefit that Anaerobic Digestion has over Energy Recovery Facility and communal composting actually increases carbon dioxide emissions. Under the South London Waste Partnership recycling contract, we would be committed to sending separately collected food waste for in vessel composting until 2022.

To incentivise separate food waste collections in Sutton in the future the costs of operating a separate collection plus anaerobic digestion gate fee would need to be lower than the cost of collecting food waste within the residual waste and the Energy Recovery Facility gate fee.

Since the benefits of collecting food waste depend on contracts that have already been agreed and local circumstances we do not support the introduction of mandatory food waste collections. Instead we believe the focus needs to be on reducing food waste through behavioural change.

Question 7 - How can those managing estates and large blocks of flat continue to introduce/ improve food waste recycling? What funding and guidance is available now and how can boroughs and others access it?
We are unaware of further funding for introducing or improving food waste schemes. However, there is guidance available in the form of a best practise document from LWARB that's easy to download and WRAP has a flats recycling guidance document that includes food waste collections for flats.

Question 9 - How can the Mayor and local authorities use their investment and planning powers to promote better collection and handling of food waste?

Investment in the right technologies for treating food waste i.e. anaerobic digestion facilities but also ensuring these are in the right places.

With new developments there is an opportunity for them to be built with fitted food waste disposal units or better storage capacity for additional recycling bins.

Part III – Processing food waste

Question 11 - What are the benefits and difficulties of different ways of processing food waste, for example composting or anaerobic digestion, in an urban environment?

In 2012, we considered the environmental benefits of different treatment methods for processing food waste. In order to assess and compare the carbon footprints of the different options to deal with food waste the '2011 Guidelines to Defra/ DECC's Greenhouse Gas Conversion Factors for Company Reporting' tool was applied. This tool clearly indicated that there is a hierarchy of technologies for treating food waste in order to reduce/ avoid the carbon impact, with Anaerobic Digestion the preferred option. The ranking of these technologies are as follows.

1. Anaerobic Digestion Plant (AD)
2. Energy Recovery Facility (ERF)
3. Composing Plant
4. Landfill

There are also other benefits from the production of biochar and soil improver from anaerobic digestion and composting. However, there are difficulties of marketing and transporting these materials from an urban setting.

Question 12 - In what ways is recycling food waste beneficial to London's environment?

Please see responses to Questions 6 and 11.

14. How do savings in landfill tax relate to possible investment into recycling and composting? What is the role of gate fees in this respect?

Landfill savings do not cover the cost of providing a separate collection of food waste. When we considered introducing a borough wide food waste service the annual cost of the service would have been at least £600k more in revenue costs than our existing service even when the disposal savings were taken into account.

With the current budget reductions that local authorities are facing funds raised through landfill tax should be diverted to encourage more sustainable management of waste. Investment should be in the technologies and local authority services that most reduce CO_2 emissions not just those that help to increase recycling rates.

Kind Regards

Matt Clubb
Head of Waste Management and Fleet Services

1 BIOGEN RESPONSE TO LONDON ASSEMBLY

1.1 Introduction

1.1.1 Biogen is extremely grateful for the opportunity to respond to the Environment Committee of the London Assembly and its investigation into the management of the capital's food waste.

1.1.2 Biogen is a leading operator of food waste recycling plants that recover electricity and heat from food waste and recycle it into a fertiliser through anaerobic digestion (AD).

1.1.3 In 2013 Biogen recycled 105,000 tonnes of food waste from food processors, retailers, the hospitality sector and households through its network of AD sites. The company is currently building a further four food waste recycling plants, so that by the end of 2015, it will be able to recover energy and divert from landfill, 250,000 tonnes of food waste each year.

1.1.4 In Biogen's response below, the company has only responded to the questions which are relevant to its area of expertise, which is the processing of food waste.

1.2 Processing Food Waste

What happens to the domestic food waste that you collect?

1.2.1 Biogen currently operates three AD plants which are located in Bedfordshire, Northamptonshire and North Wales, with a combined food waste recycling capacity of 111,000 tonnes per year.

1.2.2 In 2013, through its Bedfordshire and Northamptonshire sites, Biogen recycled 21,500 tonnes of household food waste from London councils. Additionally, Biogen recycled a further 8,320 tonnes from businesses in the capital, including pubs, hotels and restaurants.

1.2.3 The food waste is collected from households and businesses and delivered to local waste transfer stations near to where the food waste is produced. Here it is bulked up in larger quantities and loaded onto vehicles for delivery to one of Biogen's facilities.

1.2.4 The waste is then processed through Biogen's AD technology, which recycles it into a beneficial fertiliser that is spread onto nearby agricultural land within a five mile radius of the facility. The digestion of the food waste also produces a methane rich biogas that Biogen recovers renewable energy from, generating enough electricity in 2013 to power 10,000 homes. Heat recovered from the process is used within the facility itself to maintain the temperature of several digestion tanks.

1.2.5 Biogen is currently developing an AD facility in Hertfordshire that will increase the company's ability to recycle both household and business food waste from London. The facility is being built on agricultural land with the majority of the digestate being used by local farmers within 5 miles of the plant.

What are the benefits and difficulties of different ways of processing food waste, for example composting or anaerobic digestion, in an urban environment?

1.2.6 The main difficulty with the processing of food waste in an urban environment is finding suitable agricultural land onto which the fertiliser can be recycled. Urban areas will generally have a limited market for fertilisers and will be restricted to parks and gardens. Fertilisers from recycled food waste will therefore need to be transported from urban locations to rural farms.

1.2.7 Biogen's approach to the processing of food waste is to develop facilities in agricultural areas that benefit from the application of the nutrient rich fertiliser that the AD process produces. Biogen as a company has a strong agricultural background and works closely

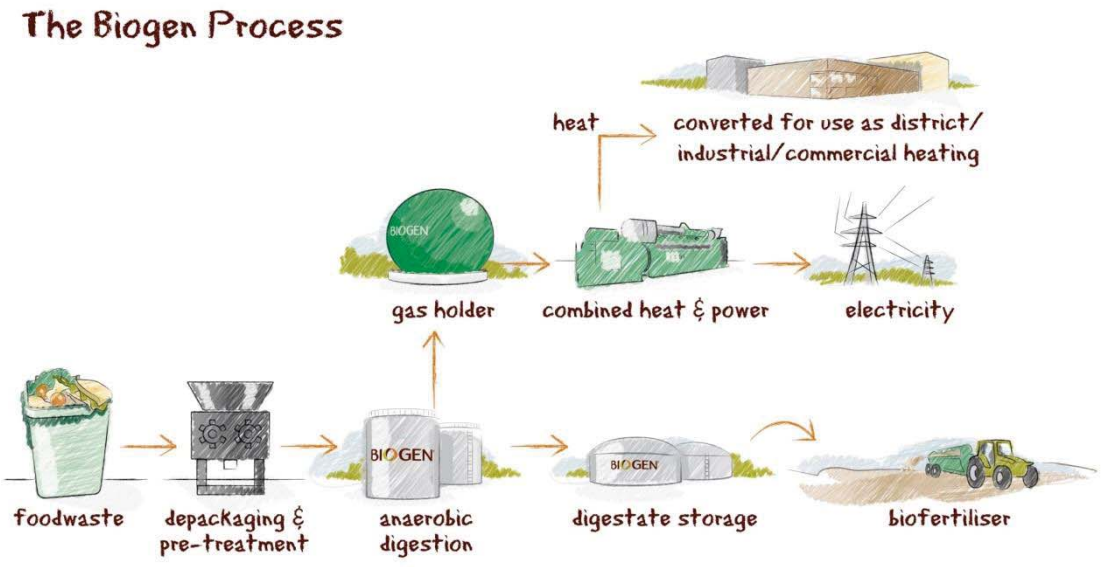
with local farmers where its facilities are located to help them understand the benefits of using a fertiliser that has been derived from food wastes.

1.2.8 The main benefit of processing food waste in an urban environment is the close proximity of the facility to where the waste is produced in households and businesses throughout London. Therefore the distance the food wastes need to travel to be recycled will be minimised. However, this will be offset by the transportation impact associated with the haulage of the fertiliser to agricultural land.

In what ways is recycling food waste beneficial to London's environment?

1.2.9 The recycling of food waste through AD benefits the environment in three main ways:

- *Diversion from landfill*: food waste generated by households and businesses that is sent to landfill rots and results in the emission of methane, a greenhouse gas that contributes to global warming. Recycling this food waste through AD allows for the methane to be captured in a controlled process, from which renewable energy can be generated
- *Renewable energy*: Unlike composting processes, the recycling of food waste through AD generates renewable heat and electricity. Digesting food waste in enclosed tanks produces a methane rich biogas that can be combusted in engines to produce power that is fed into the national grid. The biogas can also be cleaned to remove impurities, allowing the gas to be injected directly into the national grid as a more sustainable alternative to fossil-derived natural gas. It is also possible for the biogas to be used in vehicles as a fuel.
- *Fertiliser production*: AD is a closed loop solution to the processing of food wastes. Biogen produces a nutrient rich fertiliser product from recycled food waste that is supplied to local farmers. This product is then spread onto agricultural land that is used to grow food crops and the cycle continues.



What opportunities do you see for the waste management industry to expand or optimise its activities in London? What are the key factors involved (eg minimum amount of feedstock for processing)?

1.2.10 The main opportunity for the waste management industry in London is the separate collection of food wastes from pubs, restaurants, hotels and other businesses. Biogen feels

this is an underserved market and would welcome any London Assembly initiatives that would encourage businesses to separate their food waste for recycling through AD and divert it from landfill. This could include a joint marketing campaign with the waste management industry to promote the benefits of food waste recycling, which is now increasingly a more cost effective alternative to landfill disposal.

1.2.11 Biogen also recognises that support needs to be provided to those London councils that collect food waste separately. Improving resident participation in food waste collection services will deliver the environmental benefits outlined above without any additional expenditure required for vehicles, staff and labour as the current service being delivered is underutilised. In fact, by diverting food waste from landfill disposal to AD, London councils will make a significant saving.

How do savings in landfill tax relate to possible investment into recycling and composting? What is the role of gate fees in this respect?

1.2.12 Biogen charges all of its customers a gate fee per tonne for the recycling of food waste through one of its AD facilities. This gate fee is considerably less than what the customer would pay if it didn't separate out the food waste and it was instead sent to landfill or incineration for disposal.

1.2.13 This saving that has been accrued by the customer can be used to invest in the additional bins that will be required to separately collect the food waste and the extra collection costs. However it is crucial to bear in mind that AD gate fees have been falling as operators improve their technologies and wholesale electricity prices increase. At the same time, landfill gate fees have been increasing due to a combination of landfill tax and decreasing void space. Therefore the gap between landfill and AD gate fees will only widen, ensuring greater savings for businesses and councils that choose to separate their food waste for recycling.

Food Waste in London; the London Team's response to the call for evidence on food waste by the London Assembly.

The benefits of better food waste management

June 2014

Londoners produce a huge amount of food waste every year much of it avoidable. By reducing the amount we produce, and by collecting and managing our food waste more sustainably, we can; reduce our carbon footprint, increase recycling levels, generate green energy from surplus waste, and save resources.

Food waste; the context

The Environment Agency is England's regulatory body for the Environment. As wells as our regulatory role we are a statutory consultee on major planning proposals, and take an active role in the assessment of waste treatment needs and opportunities. We work with major stakeholders such as the GLA, the Regional Technical Advisory Board (RTAB) for waste, and many others.

According to research conducted by WRAP[1] each household in the UK produces on average 260kg of food waste each year - this equates to 5kg of food waste every week. Just over 3kg of this waste is 'avoidable' food waste (food that could have been eaten).

In London this means that over 809,000 tonnes of food waste are produced every year. The introduction of food waste collection by some of the local authorities meant that in 2012-13, for the period for which the latest data is available[2], just over 43,000 tonnes of food waste was collected, which was treated mainly via in-vessel composting and some anaerobic digestion. Much of the remainder ended up in household residual waste which was either burnt or landfilled.

A Wasted Resource

This represents a tremendous waste of resources. It is estimated[3] that producing each tonne of food that we waste releases 3,590kg of CO_2 - the avoidable food waste alone in London equates to an additional 1.78 million tonnes of CO_2 to London's carbon footprint each year.

In other words each 1kg reduction of food waste produced by each household per week would benefit London's carbon footprint by just over 500,000 tonnes each year.

Waste Avoidance

The most sustainable way of dealing with food waste is to avoid it being produced in the first instance. Much work is being done by WRAP through their 'Love Food Hate Waste' campaign and by major private sector companies. This has included the use of donations to food banks and in trying to change consumer behaviour, such as trying get people to make more informed decisions when buying groceries.

Food waste Collection in London

Separate collection of food waste from households in London is gradually becoming more common. Unlike other parts of the UK such as Wales source segregated food waste collection it is compulsory, the uptake of separate food waste collection needs the right mix of economic conditions and local policies to make it happen. According to the Environment Agency's 'wastedataflow' database in the period 2012/13, ten London authorities had dedicated food waste collections from households, in total they collected;

Table 1; Food Waste Collected by London Local Authorities

Authority	Tonnes collected	Number of households with food waste collection	kg/hh/wk
Ealing LB	4,779	95,502	0.96
Hounslow LB	2,964	69,595	0.82
Bromley LB	11,016	135,600	1.56
City of London	108	3,918	0.53
Croydon LB	10,376	147,158	1.36
Richmond upon Thames LB	3,748	65,000	1.11

1 WRAP: Household Food and Drink Waste in the United Kingdom 2012

2 WasteDataFlow July 2012 – June 2013. This is data that local authorities collect and submit for statutory purposes, for the calculation of national recycling rates, etc

3 2011 Guidelines to Defra / DECC's GHG Conversion Factors for Company Reporting - Annexe 9

Sutton LB	92	2,500	0.71
Merton LB	3,989	50,005	1.53
Hackney LB	1,658	70,215	0.45
Royal Borough of Kingston upon Thames	4,477	62,449	1.38
Total (Average)	**43,205**	**701,942**	(1.18)

NB: Data covers the period July 2012 - June 2013

The data shows that the amount collected each week varies considerably. According to a report on food waste collections by WRAP[4], the average amount collected from a household is approximately 1.5kg/hh/wk (kilogrammes per household per week). Only Merton of the London authorities achieved this so far.

Of the others, Hackney collected the lowest per household at 0.45 kg/hh/wk. It is worth bearing in mind that the average figure in the WRAP report is an average for the whole of the country, and some of the boroughs in London are amongst the most deprived, have difficult to reach communities and a high proportion of multi occupied and high rise residences. The average amount reported per week for a high rise development is 0.5 kg/hh/wk, which compares well with Hackney's figure.

Clearly it is not feasible to expect all of the councils in London to collect at the same rate, due to the differences in housing stock and socio-economic background. However if the average for London overall remained at 1.18 kg/hh/wk, for an expanded 'whole London' food waste collection, there would be a potential extra 148,000 tonnes of food waste in addition to the tonnage already collected bringing the total to 191,000 tonnes.

Feasibility Study

By making allowances for the variation in the make-up of the boroughs that don't yet collect food waste separately it is possible to assess what may be a baseline for a 'pan-London' domestic food waste collection system. The methodology for this is set out below, together with the key data from a study undertaken for this consultation.

In the table below the data from the authorities collecting food waste already is placed alongside the rest of the London authorities, and listed in order from the least deprived to the most deprived areas. The number of councils already adopting food waste collection is not evenly spread, there are however examples in the top, bottom and middle tiers of the deprivation data.

This has been sub-divided so that authorities with comparable deprivation levels are divided into 4 groups (indicated by the shading), the idea being that by assuming that similar boroughs can achieve the same collection rate as the 'exemplar' within their particular group (highlighted in yellow), the amount of food waste collected by a 'pan-London' food waste collection system can be estimated.

This means that unrealistically high collection rates are not assumed for boroughs that would not be able to deliver the same rate as a more prosperous/ low rise area. On this basis a total of 175,297 tonnes could be collected annually. The figure of 191,000 tonnes could be achieved through higher collection rates in the low/median groups and by increases in the housing stock anticipated in the London Plan which estimates up to 40,000 households extra per year – which approximates to 2,000 tonnes of food waste additionally per year using the collection rate scenario listed below.

The table below shows how this may be achieved;

Table 2; London Authorities and the capture Index of Deprivation vs. Capture Rate Scenarios

Authority	Index of Deprivation*	Number of Households*	kg/hh/wk (actual)	target kg/hh/wk	tonnage/yr
Richmond upon Thames LB	10.118	80,000	1.11	1.56	6,490
City of London **	11.147	5,000	0.53	1.56	406
Royal Borough of Kingston upon Thames	11.665	63,000	1.38	1.56	5,111
Merton LB	14.556	81,000	1.53	1.56	6,571

4 WRAP: Evaluation of the WRAP Separate Food Waste Collection Trials (updated 2009)

Bromley LB	14.951	129,000	1.56	1.56	10,464
Sutton LB	15.427	76,000	0.71	1.56	6,165
Harrow LB	15.495	80,000		1.56	6,490
Havering LB	16.629	93,000		1.36	6,557
Barnet LB	16.636	131,000		1.36	9,236
Bexley LB	16.711	91,000		1.36	6,416
Hillingdon LB	19.807	99,000		1.36	6,980
Redbridge LB	20.369	95,000		1.36	6,698
Wandsworth LB	21.463	122,000		1.36	8,602
Hounslow LB	21.84	84,000	0.82	1.36	5,923
Croydon LB	22.755	144,000	1.36	1.36	10,153
Royal Borough of Kensington and Chelsea	23.309	88,000		1.36	6,205
Westminster City Council	24.594	111,000		0.96	5,554
Ealing LB	25.009	118,000	0.96	0.96	5,904
Camden LB	25.43	98,000		0.96	4,903
Enfield LB	26.058	112,000		0.96	5,604
Hammersmith and Fulham LB	27.477	79,000		0.96	3,953
Southwark LB	29.726	110,000		0.96	5,504
Brent LB	30.501	101,000		0.96	5,054
Lewisham LB	30.969	107,000		0.96	5,354
Lambeth LB	31.239	118,000		0.96	5,904
Greenwich LB	31.937	99,000		0.96	4,954
Barking and Dagenham LB	34.2	67,000		0.45	1,582
Waltham Forest LB	35.439	91,000		0.45	2,149
Islington LB	35.874	83,000		0.45	1,960
Haringey LB	36.096	94,000		0.45	2,220
Tower Hamlets LB	39.588	84,000		0.45	1,983
Newham LB	41.838	93,000		0.45	2,196
Hackney LB	42.886	87,000	0.45	0.45	2,054
Total		3,113,000		Total	175,297

* - figures as reported in wastedataflow; these may vary with those reported in ONS statistics
** - due to the nature of the City of London's population it is appreciated that the target level may not be achieved, however, 1.56 has been used for consistency of methodology

The Benefits of Better Food Waste Management

At the moment much of our food waste ends up in landfill where this breaks down into methane, a powerful greenhouse gas. There are, however, several options for food waste management that would lower our carbon footprint, these are; anaerobic digestion (AD), in-vessel composting (IVC) and incineration. The carbon benefits of each of these are shown in the table below.

Table 3; Carbon Emissions from Food Waste Treatment Options

	Energy from Waste (kg/tonne)	Anaerobic Digestion (kg/tonne)	In-Vessel Composting (kg/tonne)	Landfill (kg/tonne)
Carbon Emissions	-89	-162	-39	450
Carbon Emissions Compared with Landfill	-539	-612	-489	0

NB – Positive numbers indicate CO_2 produced, negative numbers indicate CO_2 saved

If London collected household waste at the average rate of 1.18 kg/hh/wk the benefits would be;

Table 4; The Carbon Benefits of Food waste Management Options

	Energy from Waste (kg/tonne)	Anaerobic Digestion (kg/tonne)	In-Vessel Composting (kg/tonne)	Landfill (kg/tonne)
Carbon Emissions	-17,053	-31,040	-7,473	86,223
Carbon Emissions Compared with Landfill	-103,276	-117,263	-93,696	0

The Waste Hierarchy

The table above shows that there are clear benefits from better management of our food waste. However not all waste treatment types are equal when it comes to the waste hierarchy;

Energy from waste most commonly is a form of disposal. If it is a very efficient plant then it can be classed as 'recovery'[5]. In the list above only Anaerobic Digestion and In-Vessel composting can be classed as recycling[6].

One of the reasons why AD scores so highly is because of its ability to generate renewable electricity in addition to producing a soil improver/ fertiliser. For this reason it could help fulfil the demand for a more decentralised energy supply which is one of the cornerstones of the Mayor's energy strategy. This includes a goal to generate one third of the decentralised supply from waste materials.

AD therefore would help to manage our food waste better, generate electricity and increase London's recycling rate. In addition it is was identified in the 2011 waste policy review as a key technology for managing organic wastes[7]

According to figures from the AD association[8], if London treated its food waste by AD at the rate of 1.18 kg/hh/wk this could generate around 44 MWh (Megawatt hours) of electricity per annum – enough to provide the electricity for 17,400 households at the national average rate[9].

Conclusions

London produces an enormous amount of food waste that at the present time has considerable potential to benefit the environment through better management. . Better use of its resource potential could significantly improve London's carbon footprint, increase its recycling rate, and help to supply decentralised renewable electricity.

However, in terms of resource conservation the benefits of waste reduction are nearly twenty times more effective per kilogramme than better food waste management can achieve - even at its most efficient. In order to gain the maximum benefits from our food waste we should;

- Reduce the amount that we produce per household
    - This could be achieved through behavioural change and communications campaigns. This has been evidenced by WRAP's 'Love Food Hate Waste' campaign and others
    - Working with the retail sector to help consumers to make better decisions when buying food
- Manage what is left in the most sustainable manner possible
    - By helping to develop drivers and incentives to help the adoption of source segregated food waste collection from households across London
    - By making sure that the drivers and incentives are in place to build the infrastructure that is needed to treat the waste that is collected

5 If the plant is R1 compliant

6 If the treatment conforms to PAS110 or PAS100 and the relevant quality protocol

7 Government Review of Waste Policy in England 2011

8 http://www.biogas-info.co.uk/faqs.html

9 https://www.ofgem.gov.uk/ofgem-publications/64026/domestic-energy-consump-fig-fs.pdf

For further information contact;

[redacted]

FW005

Ms Rachel Roscow
London Assembly, City Hall,
The Queen's Walk,
London SE1 2AA

Contact: John O'Brien
Direct line: [redacted]
Email: [redacted]
Date: 13 June 2014

By email: [redacted]

Dear Ms Roscow,

LONDON ASSEMBLY'S ENVIRONMENT COMMITTEE INVESTIGATION INTO FOOD WASTE MANAGEMENT – LONDON COUNCILS' SUBMISSION

London Councils represents London's 32 borough councils and the City of London. It is a cross-party organisation that works on behalf of all of its member authorities regardless of political persuasion.

London Councils makes the case to government, the Mayor and others to get the best deal for Londoners and to ensure that our member authorities have the resources, freedoms and powers to do the best possible job for their residents and local businesses.

The strategic direction of London Councils is set by the Leaders' Committee comprising of the Leaders of all of London's local authorities. London Councils also has a Transport and Environment Committee consisting of elected representatives from each of London's local authorities with statutory duties and responsibilities for transport and environment matters.

Our response to the London Assembly's Environment Committee investigation into food waste management has been developed following consultation with London's local authorities. It includes key considerations regarding food waste management including local decision-making and priorities, financial pressures, pan-London approaches to food waste prevention and proposals for the devolution of the landfill tax to London. Detailed responses to the investigation's questions are also provided.

Yours sincerely

John O'Brien

John O'Brien
Chief Executive

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London Assembly's Environment Committee investigation into food waste management – Call for Evidence

Executive Summary

1. Each year, London local authorities spend £720m in waste management services, making it the third largest area of local authority expenditure after social care and education[1]. The on-going pressures on local authorities' finances diminish their capacity to expand or improve some services as councils are having to focus on finding efficiencies that enable them to secure front-line services.
2. Therefore naturally, in this context, the overall picture of food waste management varies across London. Currently, about 51 per cent of London's households have separate food or mixed organics waste collections[2]. In some boroughs, the service is offered to kerbside properties only or to properties with gardens which mix food and garden waste together. Separate food waste collections are also offered to flats and estates through communal bins and bring banks.
3. Separate food waste collection services are in addition to the statutory collections of refuse waste and dry recycling, therefore it is up to each individual local authority to decide whether to offer separate food or organics waste collections to their residents or continue to mix food with general refuse collection. For boroughs opting for mixing food with general refuse waste, the environmental benefits of separate food waste collections may not be significant enough to outweigh the costs of the additional collection, especially if compared with the option of sending refuse waste to an energy-from-waste (EfW) facility. London Councils believes local-decision making should be widely acknowledged and respected.
4. For those boroughs which offer separate food or organics waste collections, the introduction of this service has been incremental. After successful trials, councils are expanding this service, in some cases reaching 80-100 per cent of households. Many of them are making use of the limited funding available at pan-London level, through the London Waste and Recycling Board (LWARB), and at national level to introduce or further expand domestic food waste recycling.
5. With a forecast to reach 10 million people by 2031, London's demographic pressures are increasing the demand for housing. To avoid future under-performance in recycling, it is crucial that new buildings are designed with the appropriate facilities for storing domestic waste, including food waste, both inside the flats/houses and in the adjacent areas.
6. However, currently residents' participation levels are not very high. This is partly due to public perception of food waste (smells, flies and vermin), and due to the increasing 'green fatigue' and public scepticism towards recycling, including food waste. To increase performance, more communications and repeated engagement is required. However, in the current financial climate, councils do not have the resources to implement large campaigns without additional funding from LWARB or national government. In our recent response to the EFRA Select Committee inquiry on waste management in England[3], London Councils has asked for the government

[1] London Councils, 2014
[2] WRAP 2014 Survey on local authorities' waste collections schemes. The results of this survey are not publicly available yet.
[3] http://www.londoncouncils.gov.uk/policylobbying/environment/waste/EFRAinquiryresponse.htm

to provide further support for domestic separate food and organic waste collection services.

7. The Mayor, LWARB and London boroughs can all play their part in supporting investment in the right technologies for treating food waste such as anaerobic digestion facilities and in-vessel composing, especially in those areas which are still reliant on landfill disposal. At the moment, there is no direct link between any savings made in landfill tax and investments into recycling and composting. The landfill tax, has proved successful in reducing the amount of waste sent to landfill but it has also become a revenue raising mechanism for the Treasury. Following the example of devolved administrations, London Councils has asked for the government to consider devolving the landfill tax to London in a similar way to the new Scottish landfill tax and the proposed Welsh landfill tax. London boroughs generate c. £60m in landfill tax each year[4], the devolution of which would be a huge boost for the much needed investment for waste infrastructure in the capital.

8. Finally, whilst food and organics waste collections deliver environmental benefits, the potential of reducing food waste through waste prevention initiatives is much higher and also delivers greater savings for both residents and councils. In London, 60 per cent of the food waste generated each year is avoidable[5]. The impact of Love Food Hate Waste campaign aimed at tackling food waste in households has demonstrated the potential for behaviour change. Therefore supporting food waste prevention initiatives needs to be prioritised, as well as looking at food waste recycling.

9. To conclude, London Councils asks the London Assembly's Environment Committee to:

    - Acknowledge boroughs are best placed to make local decisions that best serve the needs of their residents, including in relation to waste management;
    - Recognise the efforts London boroughs are making to continue to improve waste management, in particular food waste, within the context of the current difficult financial climate;
    - Emphasise the importance of more pan-London approaches in waste prevention which London boroughs can capitalise at local level; and
    - Support the proposals for devolution of the landfill tax to London, so that it can be reinvested in infrastructure which can help improve the management of domestic waste in the Capital.

10. Detailed responses to the London Assembly's Environment Committee investigation are provided below.

[4] https://www.gov.uk/government/publications/local-authority-revenue-expenditure-and-financing-england-2012-to-2013-individual-local-authority-data-outturn
[5] The impact of Love Food Hate Waste in West London case study, WRAP

Questions

Establishing the baseline

Overview of domestic organic and food waste collections in London:

11. There is a wide variation in separate food or organic waste collections across London. This service is in addition to the statutory collections of refuse waste and dry recycling, therefore it is for each individual local authority to determine whether they wish to offer separate food or organics waste collections.
12. Data provided by WRAP (Waste and Resource Action Programme)[6] from their 2014 survey on local authorities' waste collections schemes, yet to be published, indicates that 1.7 million (51 per cent) households in London have separate food or mixed organics[7] waste collections, a 14 per cent increase since 2011/12.
13. Following successful trials, those boroughs which have opted for separate food or organic waste collections have been able to expand this service to more properties. The type of service offered adapts to each boroughs' local circumstances:

Type of collection scheme	Number of boroughs
Separate food waste collections to all/some of both kerbside properties and flats	9
Mixed organics waste collections to all properties with garden and separate food collections to all/some of flats	3
Separate food waste collections to kerbside properties only	5
Mixed organics waste collections to kerbside properties only	6
No separate food collections of mixed organics waste collections	10

Table 1. Food waste collections' schemes in London. Source: WRAP 2014 Survey

14. The coverage of the services is also varied. In some boroughs, the service is offered to a 100-80 per cent of households whilst in others, the coverage is much lower. Ten boroughs have not introduced separate food or organics waste collections. In these cases, the environmental benefits of separate food waste collections do not appear to be significant enough to outweigh the costs of the additional collection, especially if compared with the option of sending refuse waste to an EfW.

How has food waste management changed in London over the past 5-10 years? How much has the industry grown?

15. The management of municipal waste in London and the UK has changed significantly over the last years. In 2000/01, London used to recycle 9 per cent of its household waste, 19 per cent was sent to incineration and 72 per cent to landfill. In

[6] http://www.wrap.org.uk/
[7] Mixed garden and food waste.

2012/13, the amount of waste sent to landfill reached a minimum low of 25 per cent, with recycling up at 34 per cent and incineration at 41 per cent[8].

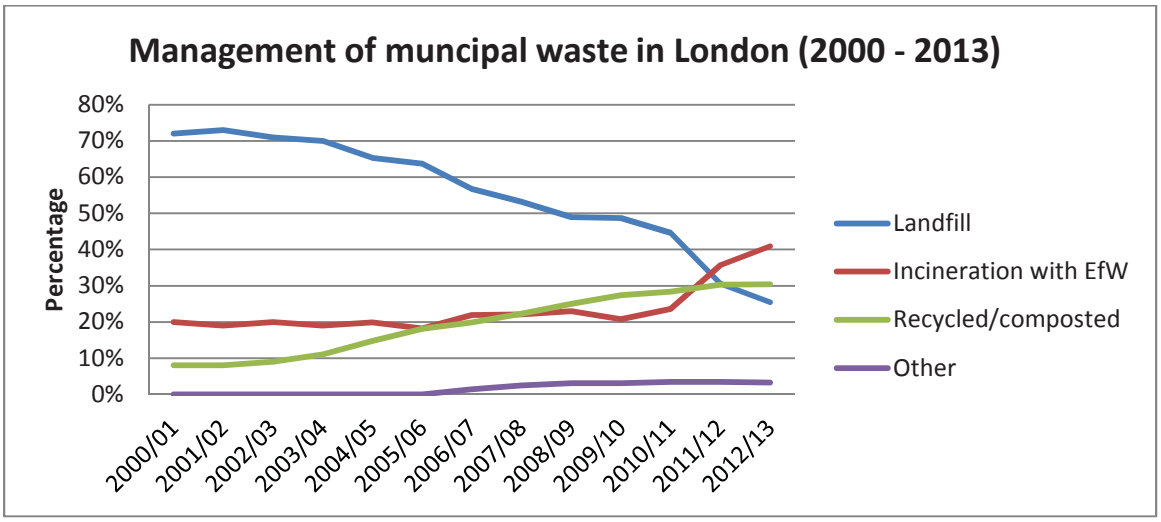


Figure 1. Management of municipal waste in London 2000/01 – 20012/13[9].

16. In recent years, many London boroughs have introduced separate food waste collections firstly to street level properties and gradually to flats. Councils have also been actively promoting home composting to those households with gardens and to some estates through community composting schemes. The home compost is used in the residents' gardens or communal areas and there is no need for councils to collect it. Two examples of separate food waste collection services in Hackney and Bromley are described below.

17. In 2007, Hackney introduced weekly food waste collections across all street level properties and communal food waste bins in a small number of estates covering 5,000 properties. Since then, the council has carried out trials on provision of free liners, door-knocking campaigns and has also revised the collection schedules in street level properties so that each household received its residual, commingling and food waste collections on the same weekday. In autumn 2013, with the support of LWARB and Department for Communities and Local Government (DCLG) funding, the service was rolled out to 30,000 flats. Currently, the service has 90 per cent coverage and participation levels of 31 per cent (with a 40 per cent rate being deemed to be excellent performance). Hackney has also set up community composting in five estates and has been collecting food waste from a number of schools. A borough-wide food waste communications campaign is being planned for autumn 2014 (Annex 1 includes a detailed case study on Hackney's food waste collection services).

18. In 2010, Bromley introduced a borough-wide food waste collection service for all street level properties. At the same time, the council changed the frequency of the paper collection to weekly, and reduced the frequency of the residual collection to every other week. A year later, the service was expanded to include all flat properties. In 2008, prior to introducing the service, the council had implemented several trials which explored different frequencies of collection for residual waste, and options of co-collecting food waste and garden waste together. Customer

[8] Local authority collected waste statistics 2012/13, Defra
[9] Ibid.

satisfaction surveys were also carried out at the time when the service was introduced. As a result of the introduction of separate food waste collections, Bromley has experienced a 35 per cent fall in the tonnage of residual waste collected and a 9 per cent fall in total waste arisings.

19. In 2011, Wandsworth considered the option of introducing separate food waste collections when the council was tendering its waste collection contract. The council asked tenderers to consider in their bid a separate food waste collection service for 85,000 properties. In Wandsworth all residual waste is already diverted from landfill and sent to EfW facility in Belvedere. They concluded the carbon measurements indicated very small or non-existent benefits, depending on whether the material was composted or anaerobically digested. The economic analysis showed that to offset the annual collection cost with disposal savings, a 70 per cent capture rate would have been necessary, a rate unlikely to be achieved when 40 per cent is already considered to be excellent performance. Also, 55 per cent of residents consulted in advance did not support the implementation of this service.

20. In 2013, Sutton also concluded the capital and revenue costs of collecting food waste separately were too high compared to the environmental benefit that anaerobic digestion had over energy recovery and communal composting. To consider introducing separate food waste collections in Sutton in the future, the costs of operating a separate collection plus anaerobic digestion gate fee will need to be lower than the cost of collecting food waste within the residual waste and the EfW facility gate fee. Sutton has received funding from DCLG's weekly collections fund to further promote the Love Food Hate Waste campaign and subsidise up to 20,000 home compost bins.

21. The East London Waste Authority (ELWA) PFI[10] contract with Shanks led to the construction of two Bio-MRF mechanical-biological treatment facilities. This technology facilitates major diversion from landfill, without the boroughs/ELWA having direct access to their own EfW facility. The process involves the waste being shredded before it is put into drying halls. As the organic material decomposes, it enables a 30 per cent reduction in weight to be achieved through moisture loss. The Bio-MRF produces two main products: the lightest, best-quality fuel is classified as Solid Recovered Fuel, and it is used in cement kilns. The bulk of what is produced is classified as Refuse Derived Fuel, and it is exported to Europe for use in EfW facilities. In addition to that, there is some extraction of glass and stones for use as aggregate, as well as metals for recycling. There are also some residues from the process, including a 'compost-like output' (CLO), which currently is sent to landfill but Shanks are looking into exploiting it in the market. If Shanks finds a market for the CLO, the bulk of food waste from its' constituent boroughs will actually be recycled, albeit after a significant reduction in weight through the drying. Therefore currently, the four London boroughs which make up ELWA - Barking and Dagenham, Havering, Newham and Redbridge – do not offer separate food waste collections as the technology for treating refuse waste, in their area, requires food waste to be present in the residual waste mix.

22. These examples show that there are different approaches to food waste collection and treatment in London, reflecting specific local circumstances and priorities. They also indicate that the environmental and economic case for introducing separate food collections is unclear when refuse waste is sent to EfW facilities, compared to landfill. London Councils believes local-decision making should be widely acknowledged and respected.

[10] PFI – Private Finance Initiative.

Food waste reduction initiatives in London:

23. In our recent response to the EFRA Select Committee inquiry on waste management in England[11], London Councils has asked the government to place greater emphasis on waste minimisation as reducing waste in the first place is the best environmental and cost-effective option, rather than recycling.

24. It can be argued that local authorities have little leverage in getting their residents to produce less waste and that businesses, in particular the grocery sector, are the only ones who can effectively reduce waste through product design, less packaging or the promotion of re-usable bags. However, the impact of WRAP's Love Food Hate Waste campaign (LFHW)[12] aimed at tackling food waste in households has demonstrated the potential for attitude and habit change.

25. The Love Food Hate Waste campaign (LFHW) was launched by WRAP in 2007. Its aim was to raise awareness on food waste prevention and give practical advice on how to reduce food waste and save some cash in the process.

26. Between October 2012 and March 2013, Recycle for London (RfL)[13], a programme delivered in partnership between the Greater London Authority (GLA) and WRAP, and funded by LWARB, delivered a pan-London LFHW campaign. The campaign included radio, digital and print advertising along with supporting PR activity. The campaign was supported at borough level by community engagement activities such as cookery classes, food waste presentations and engagement through a network of volunteers. Some of these were coordinated at sub-regional level through the joint waste disposal authorities.

27. In some boroughs, such as Newham, where many residents shop in markets or high-street shops, rather than in big supermarkets, the campaign was not perceived as effective as residents were not exposed to the main advertising areas. The council has suggested to WRAP developing some resources that could be used in markets and smaller shops.

28. An in-depth evaluation[14] undertaken in west London proved that LFHW helped reduce avoidable food waste by 14 per cent, from 2.6kg per household per week pre-campaign to 2.2kg post-campaign. The reduction in avoidable food waste would save the boroughs of West London £559,000 per annum in disposal costs (including gate fees and landfill tax). The costs associated with delivering the campaign were around £170,000, so for every £1 invested, west London boroughs saved up to £85.

29. Having a pan-London LFHW meant that the impact of the campaign was amplified across London. Residents that live and work in different London boroughs were provided with a consistent message around reducing food waste. Several councils continue to support LFHW via event engagement, social media and adverts in local newspapers, even if the pan-London campaign activity has been reduced.

30. Some boroughs are also encouraging donations of unwanted food to food banks and actively promoting food waste disposers/macerators in developments to reduce the quantity of food waste requiring collection and to reduce odour and fly issues related to waste storage. In the past, the "Recycle Western Riverside" campaign across the Western Riverside Waste Authority area used to arrange occasional

[11] Ibid3.
[12] http://www.lovefoodhatewaste.com/
[13] http://www.recycleforlondon.com/
[14] Ibid5.

outreach events like “Feeding the 5,000”[15] at Roehampton University. More recently, London boroughs are promoting the Mayor’s FoodSave[16] scheme to their local businesses.

Extending and improving food waste collection

What are the current barriers to managing domestic food waste effectively in London, particular with regard to blocks of flats on estates?

31. Many boroughs have the collection systems, facilities and equipment in place to manage food waste better, however, in some cases, the take-up of food waste recycling services is very low amongst residents. This is partly due to public perception of food waste (smells, flies and vermin), but more importantly, the increasing ‘green fatigue’ and public scepticism towards recycling17, including food waste. WRAP is currently undertaking research which aims to understand the reasons why residents do not recycle correctly.
32. LWARB’s programmes aimed at boosting recycling such as the Flats Recycling Programme in 2010 or the Driving Up Performance Fund in 2013 prove that communications and education is crucial to increase performance. For food waste collections, the key lessons learned from LWARB’s Flats Recycling Programme showed that:
    - Provision of free liners and higher investment in communications can result in higher performing schemes.
    - Delivering communal bins, caddies and liners at the same time as communications materials ensures that residents understand how to correctly participate in food waste schemes from the outset. Combining door to door canvassing with delivery of equipment and communication materials in particular seems to be a sensible approach.
33. To increase performance, more communications and repeated engagement is required. However, in the current financial climate, councils do not have the resources to implement large campaigns without additional funding.
34. Similarly, for separate food waste collections to be more widely accepted, the same practices of food waste separation at home should be applied and mainstreamed elsewhere, whether it is at work, in schools and universities, in hospitals or on the streets.

How do you plan or hope to introduce, extend or improve domestic food waste recycling? What specific barriers have you identified? What support (e.g. financial or technical) would you require to overcome these?

35. The key challenge boroughs face in introducing, expanding or improving domestic food waste recycling is finance. Some are making use of the limited funding available at pan-London and national level to do so, but the funding available is not enough to create a real step change.

[15] http://www.feeding5k.org/
[16] http://www.london.gov.uk/priorities/environment/putting-waste-good-use/foodsave
[17] Unpacking the Household: Exploring the dynamics of household recycling, Coca-Cola Enterprises, 2013

36. In several cases, where boroughs have considered the option, the benefits of introducing new separate food waste management become marginal and therefore difficult to justify in economic terms, given the current pressures on borough budgets. As highlighted in the previous section, there are significant barriers to increasing residents' participation in food waste collections and more targeted messages to individuals and innovative approaches are necessary to change behaviour.

37. However, boroughs do not have the funding and resources to invest in large behaviour change campaigns. If the landfill tax were to be returned to London, following the example from Scotland and Wales, the extra £60m London local authorities generate each year in landfill tax could support investment in waste infrastructure and more experimental approaches in waste management which are not economically viable at the moment.

38. As of April 2014, Defra is 'stepping back' in areas of waste management, significantly reducing the funding available for WRAP, therefore it is unlikely that new funding will be made available at national level for improving food waste recycling. Currently guidance best practice documents and online tools on food waste prevention are available at WRAP's website[18], however, funding cuts to WRAP will reduce the technical support that they are able provide in the future.

Following LWARB's flats recycling programme, how can those managing estates and large blocks of flat continue to introduce and improve food waste recycling? What other funding and guidance is still available now and how can boroughs and others access it?

39. To address the challenge highlighted above, in our recent response to the EFRA Select Committee inquiry on waste management in England, London Councils has asked for the government to provide further support for separate organic waste collection services as a means to increase recycling and support alternative food waste reprocessing technologies such as anaerobic digestion and in-vessel composting.

40. On 3 June 2014, LWARB re-launched its Borough Communication Support programme. £100,000 of funding has been made available to boroughs to support communication activity aimed at improving the performance of recycling and re-use services. One of the priority areas for this new fund is low performing areas such as estates and large blocks of flats. Whilst any additional funding provided by LWARB is good news, London boroughs would benefit from a larger more continuous fund that enables them to plan their communications activities accordingly.

41. Apart from this new funding from LWARB, London Councils is not aware of any other funding streams which would facilitate the introduction and improvement of food waste collections and further bidding for pockets of funding is quite time consuming for boroughs, especially as staff resources are being reduced as a result of budget cuts.

[18] http://www.wrap.org.uk/

Are there any national or international examples of good practice for managing domestic food waste in densely-built, urban environments from which London could draw lessons?

42. Earlier this year, the House of Lords EU Agriculture, Fisheries, Environment and Energy Sub-Committee conducted an inquiry into the EU's contribution to food waste prevention. The report, 'Counting the Cost of Food Waste: EU Food Waste Prevention'[19], published on 6 April 2014, includes a list of food waste initiatives and programmes across the EU. However, these examples focus on food waste prevention and do not make any references to densely-built urban environments.

43. A widely-recognised European best practice case study on waste management in urban areas is the Augustenborg Eco-City in Malmo (Sweden)[20]. This project aimed to regenerate a low-income residential area built in the 1950s. Improving waste management was part of an integrated project which addressed issues such as water management, eco-building, sustainable mobility and green areas. The City of Malmo installed 15 recycling houses with full recycling and composting facilities for the 1800 inhabitants of Augustenborg. Their recycling rate is now 70 per cent, including food waste which is used for home composing and to generate biogas[21].

44. Hackney's Zero Waste Place Path Finder Project[22] has also received ample international recognition. In 2009, the residents in Follingham Court Estate successfully implemented a number of waste reduction measures with support from Hackney Council and LCRN (London Community Resource Network). Following the project, recycling increased from 0.5 to 2 tonnes per year and refuse was reduced by 16 tonne per year. Such schemes are heavily reliant upon key individuals within the community. However, with a high level of transient population in the borough, the sustainability and longevity of such schemes are often at risk.

How can the Mayor and local authorities use their investment and planning powers to promote better collection and handling of food waste?

45. The Mayor, LWARB and London boroughs can all play their part in supporting investment in the right technologies for treating food waste such as anaerobic digestion and in-vessel composing, especially in those areas which are still reliant on landfill disposal.

46. There are also ample opportunities to use planning powers to promote better collection of food waste, especially in new developments. To avoid future under-performance in recycling, it is crucial that new buildings are designed with the appropriate facilities for storing domestic waste, including food waste, both inside the flats/houses and in the adjacent areas. The buildings also need to ensure waste collection vehicles can easily access waste storage areas.

47. Several boroughs have a well-established refuse and recycling storage guidance for planners and architects submitting planning applications. The boroughs' waste advisors review all applications to ensure all new developments meet the waste and recycling storage requirements. Councils also promote the use of the Code for

[19] http://www.parliament.uk/documents/lords-committees/eu-sub-com-d/food-waste-prevention/154.pdf
[20] http://www.malmo.se/English/Sustainable-City-Development/Augustenborg-Eco-City/Waste-management.html
[21] http://knowledge.allianz.com/environment/energy/?514/how-malmoe-recycles-waste
[22] http://www2.wrap.org.uk/downloads/Hackney_case_study__v4.477397bb.11299.pdf

Sustainable Homes (the code) and BREEAM (Building Research Establishment Environmental Assessment Method) schemes to encourage better waste facilities in new developments.

48. However, as proposed by the government in the Housing Standards Review consultation[23] which took place in October 2013, the Code is likely to be dissolved or severely curtailed, in favour of encouraging new development.

49. Some boroughs are also keen on exploring the possibility of diverting food waste to the sewerage system via food waste macerators in kitchens. The food waste collected can then be sent to an anaerobic digestion plan. However, Thames Water remains strongly opposed, fearing this practice will cause sewer blockages. Councils are monitoring trials in Shropshire and the Cotswolds.

Processing food waste

What happens to the domestic food waste that you collect?

50. The food waste collected separately or mixed with garden waste is usually sent to anaerobic digestion (AD) or in-vessel composting (IVC) plants. Data on disposal routes is available on WasteDataFlow[24], the web based system for municipal waste data reporting by UK local authorities to government.

51. Data from London's local authorities show the following destinations:

- A D A S Holdings Ltd;
- Biffa Waste Services Ltd;
- Biogen (U K) Ltd;
- Cannington Enterprises Ltd;
- New Earth Solutions (Kent) Ltd;
- Countrystyle Recycling (Suffolk) Ltd;
- Country Compost Ltd;
- County Mulch Ltd;
- Envar Ltd;
- F C C (UK) Limited;
- Laverstoke Park Produce Llp;
- LondonWaste Ltd;
- Material Change Corby Limited;
- Reviva Composting Ltd;
- Sita Surrey Ltd;
- TEG Energy Ltd;
- Vertal Ltd;
- Veolia Es Cleanaway;
- Veolia Environmental Services West Berkshire Ltd;
- Viridor Waste Management Ltd;
- Viridor Waste Suffolk Ltd;
- Waste Recycling Group (Central) Ltd;
- West London Composting Ltd.

[23] https://www.gov.uk/government/consultations/housing-standards-review-consultation
[24] http://www.wastedataflow.org/

52. In many cases, the nutrient rich compost is then used in agriculture, allotments, community growing projects, parks and green spaces, including back to the boroughs which have collected the food waste in first instance.

What are the benefits and difficulties of different ways of processing food waste, for example composting or anaerobic digestion, in an urban environment?

53. Boroughs use different tools to assess and compare the carbon footprints of different treatment options. The most commonly used are the 'Government conversion factors for company reporting' tool[25] and the Mayor's Greenhouse Gas Calculator[26], a free tool that can be used to determine the emissions of an authority's unique waste management solutions.
54. Based on these assessments, AD seems to be the preferred option, as it is a completely enclosed system, which minimises odour issues and produces biogas. Composing is not as beneficial in carbon terms although it achieves significant carbon savings if waste is diverted from landfill.

In what ways is recycling food waste beneficial to London's environment?

55. Food waste recycling helps to reduce CO2 emissions. WRAP has estimated that in London alone, 890,000 tonnes of food is thrown away per year, of which 540,000 tonnes is avoidable. The cost to London boroughs of reprocessing/disposing of this food waste is estimated at over £50million per annum. It costs consumers £1.4billion per year to purchase the food and drink thrown away in London, and generates the equivalent of 2.1 million tonnes of CO2e[27].
56. According to the latest WRAP survey on household food and drink waste in the UK[28], two thirds of the household food and drink waste in the UK gets collected by local authorities.
57. As stated above, 540,000 tonnes of food that is thrown away each year (61 per cent) is avoidable. Hence the importance of supporting food waste prevention initiatives, as well as food waste recycling.

What opportunities do you see for the waste management industry to expand or optimise its activities in London? What are the key factors involved (e.g. minimum amount of feedstock for processing)?

58. There is a need to make the correct strategic decisions at both national and subnational level to provide the right mix of treatment infrastructure and therefore avoid future overcapacity. Localism-based approaches to dealing with waste generate benefits (jobs, income, and energy recovery) to the local community which can lead to a sense of ownership and result in greater recycling. However, investment in waste infrastructure is significantly dependant on guaranteed input tonnages, and this will be difficult to achieve without a robust strategy.

[25] http://www.ukconversionfactorscarbonsmart.co.uk/
[26] https://www.london.gov.uk/priorities/environment/putting-waste-good-use/making-the-most-of-waste
[27] http://www.wrap.org.uk/content/west-london-food-waste-campaign
[28] http://www.wrap.org.uk/content/household-food-and-drink-waste-uk-2012

59. The London Plan provides a list of 'Opportunity and Intensification' areas. Consideration needs to be given to waste management at the early stages of planning for new developments, including discussions with the waste management industry about where the additional waste will be processed and potential locations for new facilities.

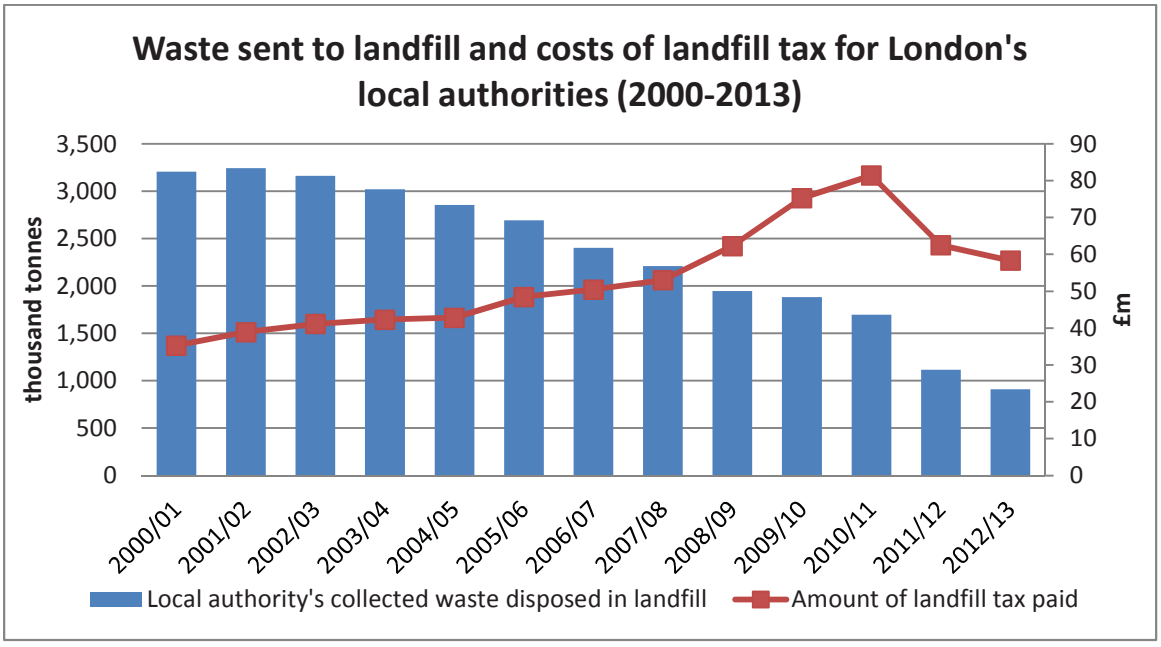
How do savings in landfill tax relate to possible investment into recycling and composting? What is the role of gate fees in this respect?

60. At the moment, we are not aware of a direct link between savings made in landfill tax and investments into recycling and composting

61. The landfill tax was introduced in 1996 and has been escalating at a rate of £8 per tonne, making alternative technologies more competitive. In April 2014, the tax reached a limit of £80 per tonne. Earlier this year, the government confirmed that this tax would continue to rise in line with inflation, from April 2015 onwards.

62. The landfill tax was originally designed as a means of reducing the amount of waste being sent to landfill by using the revenue to reinvest in waste infrastructure. However, there is no clear evidence that this has been the case to date and landfill tax now appears to be a revenue raising mechanism for the treasury.

63. Whilst the amount of waste London boroughs send to landfill has substantially decreased, the cost of landfilling continues to rise as a result of the landfill tax and gate fees. The following graphs shows the reduction in the amount of waste sent to landfill by London's local authorities and the costs associated to the landfill tax since 2000/01.



Source: ENV 18: Local authority collected waste management dataset - 2012/13, Defra.

64. The costs associated with the landfill tax peaked in 2010/11 with £81m paid to the treasury and since then, this amount has been decreasing due to a reduction on the overall amount of waste generated and more waste being diverted from landfill towards incineration and recycling. The latest figures from 2012/13 show that London paid £58m in landfill tax. Adding the cost of gate fees (a levy charged upon

a given quantity of waste received at a waste facility), the cost for landfilling rises to £77.5m[29].

65. With regard to the future of the landfill tax, changes are being made with relation to the devolved administrations, with Scotland retaining the landfill tax from 2015[30] and Wales from 2018[31]. The devolved tax is regarded as a means to further support the ambitious zero waste strategies and targets being pursued in Scotland and Wales.

66. In order to support London's continued population and economic growth, the London Finance Commission[32] has made the case for more financial and fiscal control for London. One of its recommendations suggests the possibility of devolving the landfill tax to London. As stated above, in 2012/13 London generated £58m in landfill tax, the devolution of which would be a huge boost for the much needed investment for waste infrastructure in the capital. This investment should be in the technologies and local authority services that most reduce CO2 emissions not just those that help to increase recycling rates.

67. In our recent response to the EFRA Select Committee inquiry on waste management in England[33], London Councils has asked for the government to consider devolving the landfill tax to London in a similar way to the new Scottish landfill tax and the proposed Welsh landfill tax.

[29] WRAP Gate Fees report 2013, calculations are made using the median for non-hazardous gate fee.
[30] From April 2015, the Scottish Government will be fully responsible for setting levels of taxation and for the revenue generated from the tax. The Office for Budgetary Responsibility (OBR) forecasts assume a tax receipt for Scotland of £105m in 2015/16.
[31] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/294470/Wales_Bill_Command_Paper_-_English.pdf
[32] http://www.london.gov.uk/priorities/business-economy/championing-london/london-finance-commission
[33] Ibid2.

ANNEX 1 - Case study: Hackney

68. Hackney has a total housing stock of 105,342 properties comprising of 50,193 low rise/street level properties, 50,567 purpose-built blocks (estates) and 4,582 flats above shops.

Introduction of separate food waste collections in street level properties

69. A weekly food waste collection was introduced across all street level properties in 2007. Each household was provided with two blue bins – a 7 litre internal caddy and a 21 litre external bin. No liners were provided.

70. In September 2010, two food waste liner trials were carried out to the street level properties. Findings from these trials demonstrated that the provision of free liners resulted in an increase in performance, with participation increasing by 7.5 per cent, as well as a 24 per cent increase in the tonnage of food waste recycled. Results from the trials also found that communications alone (with no liners) proved to have a negligible impact.

71. In February 2012, the council launched a door knocking campaign. Residents were visited by trained door knockers, provided with a six month supply of liners, given the opportunity to order indoor and/or outdoor food waste caddies and respond to a questionnaire. Unfortunately, following the campaign, no significant increase in tonnage was recorded. Possible reasons for this included a significant delay in deliveries of the caddies ordered (due to problems with receptacle supply and suppliers).

72. In November 2013, Hackney revised collection day schedules so that each street level household received its residual, commingling and food waste collections on the same weekday. The communication material produced a spike in requests for food waste caddies and containers, resulting in an increase in collected food waste tonnage.

73. A participation monitoring project of all street level properties has been carried out in March 2014. The results show that the current food waste participation rates are at 31 per cent, with rates by collection round ranging from 18 per cent to 47 per cent. Following consultation with WRAP, a targeted food waste campaign was suggested with the aim of increasing participation rates to 40 per cent (with a 40 per cent rate being deemed to be excellent performance). In comparison, participation rates across the same properties for the dry recycling service showed a rate of 84 per cent, with WRAP recommending rates in excess of 80 per cent being excellent. In response to these recommendations, a borough-wide food waste communications campaign is being planned for autumn 2014.

Separate food waste collections in estates:

74. In 2007, parallel to the introduction of separate food waste collections across all street level properties, communal food waste bins were introduced in a small number of estates covering 5,000 properties. Initially the bins were emptied twice weekly due to concerns of overflowing food waste and hygiene but this proved not to be necessary and therefore the collection was reduced to once a week.

75. Funding from a range of sources (including LWARB and DCLG) enabled the estates' food waste service to gradually expand to 90 per cent of all estate properties, with a significant roll out to 30,000 properties in autumn 2013. At each

phase of the roll out, the residents were door knocked and provided with an internal 7 litre caddy. A six month supply of liners was provided to all properties in a blanket roll out which coincided with the 2010 street level food waste trials. There are plans to further expand this service to reach 100 per cent coverage by using new slim line communal food waste bins (140litre) more suited to the remaining smaller blocks, many of which have limited storage capacity.

76. Since March 2013, residents have been able to order receptacles and liners online through Hackney Council's website. This has enabled a much greater proportion of residents to access these services in a quick and efficient manner. Compostable liners are also available to collect from neighbourhood housing offices and a number of blocks. In addition, blanket deliveries have continued to all street level properties to date, through DCLG funding.

77. In addition to separate food waste collections, in 2010/11, five estates in Hackney set up community compost schemes. Food waste from these estates is composted on site and therefore diverted away from landfill without the need for a food waste collection.

78. Separate food waste collections for street level properties and estates were supported by a significant level of service publicity and communication, through leaflets, newspaper advertising, face-to-face engagement, website and social media. In addition a promotional service video[34] was produced in 2013, which has been used to inform and educate residents about how to use the service, why and end destinations.

Separate food waste collections in schools and businesses

79. Since 2013, Hackney has also been collecting food waste twice a week from a number of schools in the borough. This service is continually expanding due to its high performance (high food waste tonnage collected) of the schools currently on the service.

80. Food waste collections are also in operation for food waste from Hackney's large markets, namely Ridley Road. A food waste collection service is also being trialled for businesses in the borough.

[34] http://www.hackney.gov.uk/recycling-bluebin.htm#.U5GQRHJdVeg

Food Waste Management in London

Call for evidence by the London Assembly's Environment Committee

Memorandum by WRAP

Executive Summary

1. WRAP welcomes the opportunity to provide written evidence to the London Assembly's call for evidence regarding food waste management in London.
2. WRAP is the UK government's delivery body for waste and resource efficiency issues. We work very closely with Defra to implement their waste and resources policy agenda, and with the London Waste and Recycling Board to support their Efficiency's Programme.
3. The key points we make in this memorandum of evidence are as follows:
    - The barriers to effectively managing food waste are complex and interrelated. Key barriers are associated with the cost of implementing and delivering services; a range of housing types in London, often leading to variations in service delivery; high levels of transience in London's population and a lack of awareness amongst consumers about how much food is wasted and the benefits of reducing/recycling it.
    - Food waste prevention activities, such as Love Food Hate Waste, can lead to a significant reduction in the amount of food waste disposed of by consumers (21% reduction in food waste since 2007). There is a strong argument for London Boroughs and organisations such as the GLA and LWARB to continue supporting such activities. Evaluation of the Love Food Hate Waste campaign in West London (part of the London wide Recycle for London campaign) demonstrates the impact of combined awareness raising and community engagement activity. A 14% reduction in avoidable food waste was achieved as a result of a six month campaign, leading to financial savings for West London boroughs of £8 for every £1 invested.
    - Food waste is a key material that could contribute significantly to London's ability to achieve a 50% recycling rate as outlined in the Mayor's Municipal Waste Management Strategy. However, there is a need to increase participation rates in existing services to ensure that services are delivered efficiently and lead to the highest levels of diversion. Reviewing service provision and delivering communication campaigns can contribute to increased participation.
    - There are several challenges associated with processing food waste in an urban environment, in particular, difficulties accessing suitable sites for large scale solutions due to high land prices and planning restrictions. These challenges make it difficult to grow reprocessing capacity in cities, and therefore it may be

advantageous to consider opportunities for increased bulking and haulage to utilise spare capacity in reprocessing facilities sub-regionally.

4. We hope that this evidence will be of use to the London Assembly, and would be happy to expand upon it further in oral evidence.

Response to the Call for Evidence

- We have responded to 10 of the questions raised in the London Assembly's call for evidence below. The remaining 4 questions raise issues that are outside of WRAP's remit.

Q2. What progress has the Mayor made with his food waste related programmes?

The London Waste and Recycling Board (LWARB) has provided significant opportunity for London Boroughs to reduce food waste arising's and increase the amount of food waste collected.

Through the Mayor's Recycle for London campaign (funded by LWARB), WRAP provided communications advice and funding to 19 food waste projects, benefiting 20 London Boroughs and 2 Waste Disposal Authorities (a full list of Boroughs that received support can be found in the Recycle for London report[1], available from LWARB). In total, Boroughs received £278,000 between 2010 and 2013 in communications funding for food waste projects.

In addition, the Recycle for London programme delivered a London wide Love Food Hate Waste Campaign in 2012/13 to drive consumer behaviour change. Recycle for London spent£420,000 in funding to deliver this campaign.

In 2010, LWARB launched a Flats Infrastructure Fund, which provided £1.6m in funding support to 7 Boroughs for the roll out of new or expansion of existing food waste collection services to flats. This support contributed to a significant expansion of food waste services in London, providing new services to approximately 80,000 households and contributing to the diversion of over 8,000 tonnes of food waste (more information is available in the Flats Recycling Programme final report, available from LWARB[2]).

WRAP, through the LWARB Borough Communications Support programme, is currently providing communications advice and funding to 4 Borough projects[3] to support local food waste collections.

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1 http://www.lwarb.gov.uk/UserFiles/File/Efficiencies/RfL_programme_report_Sept_2013_A4_v7%20FINAL.pdf

2 http://www.lwarb.gov.uk/UserFiles/File/Flats%20Recycling%20Programme%20/LWARB_Review_final_email.pdf

3 Boroughs currently benefiting from communications support for food waste services are: London Borough of Bexley, London Borough of Merton, London Borough of Hounslow and London Borough of Waltham Forest

LWARB, through their recent Driving up Performance Fund, are supporting 3 Boroughs [4]to introduce or expand food waste collection services.

Q3. How has food waste management changed in London over the past 5-10 years? How much has the industry grown?

Food waste collections were initiated in London over 10 years ago. Initially, all schemes were either small scale roll outs or pilots, and were predominantly led by the community sector. Examples of community composting schemes include: East London Community Recycling Partnership (ELCRP) in Hackney, Haringey Works and Aardvark in Lambeth. The schemes were considered pioneering in that they combined community sector engagement and transparent benefits for local residents through employment, training or compost for local properties. The majority of these schemes were door to door collections from flats and ground level properties. The performance levels of many of these schemes were high due to high levels of engagement, the direct community benefits and local knowledge of the sites.

Over the last 5 years, food waste collection services have been introduced by Local Authorities and their contractors. In the same time frame, collections, particularly in flats, have changed from door to door to bring style collections where residents are required to deposit food waste into communal containers on their way out of the building. The London Fire Brigade's requirement that containers do not block fire escape routes and the high cost in labour of door to door collections has driven a shift towards communal collections. The collection infrastructure is largely the same and has not developed significantly in design, although there have been improvements to designs of communal bins. More recently pressure on Local Authority finances has meant that expansions and communications support have reduced impacting on the overall potential diversion of food waste from residual stream. Communication is key in helping to overcome the barriers to recycling (such as transient populations lacking awareness of services, a lack of understanding about how to use services) and a reduction in communications spend can have a significant impact on participation in services. There has been a growth in the number of people with access to a food waste collection service, but generally participation levels and performance remain low.

Q4. How is your organisation, or any other organisation that you are aware of, promoting food waste reduction and what has been achieved so far?

WRAP has been working since 2005 through the Courtauld Commitment, and since 2007 thorough the Love Food Hate Waste Campaign to reduce food waste across the supply chain. Millions of people have benefited from implementing the changes suggested by Love Food Hate Waste, by throwing away less food and saving money. The key achievements of the Love Food Hate Waste campaign are:

- Avoidable food waste in the UK has reduced by 21%. This is a decrease of 1.1 million tonnes, which would have cost £3.3 billion to purchase.

[4] Boroughs receiving funding through the LWARB Driving up Performance Fund for food waste collections are: London Borough of Hounslow, London Borough of Merton, and London Borough of Brent.

- This means on average every household in the UK no longer spends £130 per year on food that they would throw away, helping to mitigate the impact of rising food prices.
- Preventing 4.4 million tonnes of carbon dioxide emissions a year and saving a billion tonnes of water.
- Local authorities will have saved around £85 million in avoided gate fees and landfill charges.[5]

The London wide Love Food Hate Waste campaign (funded by Recycle for London), was supported by local Borough campaign activity. One of the local campaigns was carried out in the six Boroughs of the West London Waste Authority area. This local campaign was thoroughly evaluated to further understand the impact of Love Food Hate Waste (using funding available from DEFRA).

The results of the West London campaign show that in just six months

- The amount of avoidable food waste decreased by 14% (total food waste decreased from 2.6kg per household per week pre campaign to 2.2.kg post campaign).
- The reduction in the amount of avoidable food waste is equivalent to 5,250 tonnes per annum for households in West London.
- Those households who had reported to have seen the Love Food Hate Waste campaign (for example, through seeing adverts on the underground or visiting the website) and to be doing something different as a result, reduced their avoidable food waste by 43% (as measured through waste composition analysis).
- West Londoners saved £14million by not wasting this good food and drink.
- 20,000 tonnes of greenhouse gas emissions been prevented.
- For every £1 invested, West London Boroughs saved up to £8[6] through avoided disposal costs.

While London Boroughs continue to deliver the Love Food Hate Waste campaign locally to encourage residents to waste less food, communications activity in this area has significantly reduced due the lack of resources available to deliver it. Where food waste reduction remains a priority, and Boroughs also wish to help householders save money, delivering Love Food Hate Waste as an intervention represents good value for money due to the potential for costs savings to be made by Boroughs and consumers.

[5] http://www.wrap.org.uk/sites/files/wrap/Information%20sheet%20-%20reducing%20household%20food%20waste%20in%20the%20UK%202012_0.pdf

[6] Household food waste prevention case study: WLWA in partnership with Recycle for London. The impact of Love Food Hate Waste; WRAP, 2013.

Part II: Extending and improving food waste collection

Q5. What are the current barriers to managing domestic food waste effectively in London, in particular with regard to blocks of flats on estates?

The principle barriers to managing domestic food waste effectively relate to data quality, overall scheme cost, building design and engagement issues; all of which are interrelated.

Engagement

Communicating with householders and other key stakeholders is vital in helping to overcome some of the key barriers associated with managing food waste:

- Communications can help to motivate individuals to change their behaviour, through demonstrating the personal benefits and the benefits to local communities associated with specific activities.
- A key barrier to recycling is a lack of awareness about services and how to use them. This is particularly an issue where populations are more transient, such as in London. Communications can help to overcome this barrier by providing instructional information about services.
- Consumers have low levels of awareness of food waste and the benefits of reducing/recycling it. Communication strategies that combine food waste prevention and recycling messages can be an effective way of both increasing participation in collection services (for unavoidable food waste) and reducing the amount of avoidable food waste that is created.
- Engaging a wider range of stakeholders including housing associations, residents/tenants associations and caretakers can be an effective way of communicating key messages to communities on estates. The design of estates often makes access for direct communication with residents more difficult, and engaging other stakeholders can provide alternative routes to communicate key messages.

Building Design

The large variation in housing types across London means that it is difficult for boroughs to standardise food waste collections on offer to households. With specific regard to flats, some may be offered a kerbside service, where households are expected to present individual containers in a designated area outside their property. Others are offered a communal collection where households are expected to present food waste at a communal storage point. Proximity to recycling points and the time taken for residents to transport their recycling is a limiting factor on participation, particularly for residents living on higher floors. Communal sites may also need to be secured to prevent theft or vandalism.

Design of the flat itself may also present a barrier to participation. Recent WRAP research has identified that some residents living in open plan properties often say that they have limited space to keep food and recycling containers indoors, which discourages the separation of waste.

To address these issues WRAP is currently working on alternative container designs and good practices in home storage to help communicate to households living in high density properties.

Cost

Given the variations in the design, layout and size of flats across London, it is difficult to directly compare schemes in terms of costs. However, WRAP studies have demonstrated that typical flats collections are likely to be more expensive, when comparing the cost per household for delivering services on estates with kerbside collections. The increase in cost is partly related to the lower levels of participation experienced in flats and estates, but principally related to the time taken to service properties in comparison to ground level properties.

Capital costs for the set-up of schemes for flats are high, when compared to the costs for ground level properties, due to additional costs associated with additional infrastructure, such as communal bins and signage, as well as on-going site maintenance and the potential clearance of fly-tipping.

Key areas where costs can be reduced relate to rationalising round sizes, allocating resources effectively, and shared or co-collection with other services. The free supply of caddy liners by Councils generally has been declining due to budgetary pressures. A key personal barrier for residents relates to their ability or willingness to purchase liners and participate in the food recycling service. Organising for liners to be supplied and distributed through Housing offices or with caretakers on estates, can significantly reduce delivery costs and increase access for residents.

Data quality

For Local Authorities and their partners delivering services to high density housing, which often vary in design and tenure, data quality (including the number of households and types of housing, waste composition, tonnage data) is very important in enabling informed decisions on scheme design and delivery. WRAP's experience of working with Local Authorities on LA support projects has been that data quality varies significantly between boroughs on the number of high density properties, their size and tenure.

Q7. Following LWARB's flats recycling programme, how can those managing estates and large blocks of flats continue to introduce and improve food waste recycling? What other funding and guidance is still available now and how can Boroughs and others access it?

WRAP has published guidance to help local authorities introduce and improve food waste recycling. Relevant guidance includes:

- Food waste Collection guidance, 2009[7]
- Recycling collections from flats[8]

[7] http://www.wrap.org.uk/sites/files/wrap/food%20waste%20collection%20guidance%20-%20amended%20Mar%202010_1.pdf

- Improving recycling through effective communications[9]
- Food waste messages for maximum impact – how to engage your residents in prevention and collections[10]

Communications advice and funding support is currently available to London boroughs to improve the performance of borough recycling and re-use services, through the LWARB Borough Communications Support programme. This programme is seeking to allocate approximately £100,000 in funding to communication projects by August 2014, through a competitive process. Boroughs are able to submit an application for communications funding until 30 June 2014. [11]

A reduction in the cost of implementing and operating food waste collection services can be achieved through designing efficient collection systems and effectively allocating resources (as explained in our response to Q5). Through filming studies of food collection operations in flats, WRAP have identified the levels of productivity and design of services required to achieve high levels of efficiency and lower costs. Site inventories are important in understanding the potential opportunities to maximise access to residents and crews. Engagement strategies, and in particular those that consult and involve residents in the planning process, are critical in encouraging residents to participate. Our experience shows that taking time to plan and roll out services in phases can produce significantly greater yields per site compared to large scale roll-outs where residents are not involved.

Q8. Are there any national or international examples of good practice for managing domestic food waste in densely built, urban environments from which London could draw lessons?

Having reviewed practice across the UK and internationally WRAP would consider many of the earlier London examples as leading in good practice and containing considerable lessons to draw from. Some schemes such as ELCRP, City of London and Aardvark, Tower Hamlets, have not been fully rolled out due to cost or a lack of resources. Reviewing the good practice demonstrated in London and continuing to refine, develop and reduce costs would be beneficial.

There are however good examples in both Milan and Swansea[12] where residents living in flats use communal set out points within or close to the building to present food waste caddies on collection day. Presenting a caddy, as opposed to depositing sacks, helped to secure food waste and prevent flytipping. However, the examples using this approach tend to focus on low rise flats, and are not normally associated with high rise blocks.

[8] http://www.wrap.org.uk/content/recycling-collections-flats-introduction
[9] http://www.wrap.org.uk/content/improving-recycling-through-effective-communications
[10] http://www.wrap.org.uk/content/food-waste-messages-maximum-impact-uk
[11] http://www.wrap.org.uk/content/local-authority-support-london
[12] Recycling Collections for Flats – Food Waste Collections, WRAP

Part III: Processing food waste

Q11. What are the benefits and difficulties of different ways of processing food waste, for example composting or anaerobic digestion, in an urban environment?

There are several challenges associated with processing food waste in an urban environment:

1. The tendency to focus on large-scale centralised solutions – this specifically relates to the difficulty of accessing suitable sites for the development of these solutions and subsequently the impact of location on site design. Issues such as odour management and vehicle access are important, particularly in an environment like London where congestion negatively impacts on travel time and consequently the costs of collection.
2. Smaller scale local solutions are rare, although some good examples do exist. Unfortunately poor understanding of the regulatory environment can be a barrier to this kind of local activity.
3. Given high land prices and planning restrictions, it's unlikely that the density of food recycling facilities will be able to grow significantly in the short term. Even where facilities are developed the gate fees are likely to be less attractive than for plants out of the capital. There are significant benefits and opportunities and a good environmental argument in increasing the emphasis on localised bulking and haulage of food waste out of London to more beneficial end uses.
4. Some residual waste contracts appear more financially attractive than others, particularly where local food treatment costs are comparatively high. Life cycle assessment studies show the strong case for Anaerobic Digestion even over upgraded energy from waste and combined heat and power systems[13].
5. There is a general lack of understanding about the benefits of food waste recycling for the wider environment, in particular the downstream benefits for food production in reducing the reliance on conventional fertilisers. Agriculture is the main outlet for digestate, and the cost of transporting digestate to farm land can make the operation of AD plants in urban environments uneconomical.

Q12. In what ways is recycling food waste beneficial to London's environment?

The ability to reach high recycling levels in London is compromised by the limited contribution garden waste diversion might make in comparison to authorities outside of London (due to a lack of space for gardens). Food waste recycling therefore represents a key process which will influence whether the capital meets its recycling targets.

With regard to the environmental benefits of processing food waste, anaerobic digestion qualifies as the most preferable option, particularly when considering climate change potential and

[13] Environmental Benefits of Recycling – 2010 Update, WRAP

depletion of natural resources[14]. There are also environmental benefits associated with substituting peat or fertilisers with compost.

Q13. What opportunities do you see for the waste management industry to expand or optimise its activities in London? What are the key factors involved (e.g. minimum amount of feedstock for processing)?

In accordance with the waste hierarchy, WRAP is working with a range of partners through the Courtauld Commitment and Love Food Hate Waste to prevent food waste. Waste prevention should be a the heart of any strategy to deal with food waste, and there are opportunities for London to deliver food waste prevention activity (for example through continued support for Love Food Hate Waste) before considering recycling and disposal options.

There are potential opportunities for the waste management industry to help expand or develop increased bulking and haulage opportunities to transport food waste to cost-effective and environmentally beneficial processing outlets. There is spare capacity sub-regionally, so minimum feedstock levels are not seen as a particular issue.

Q14. How do savings in landfill tax relate to possible investment into recycling and composting? What is the role of gate fees in this respect?

The savings in landfill tax regionally may not present a significant re-investment stream over time. The bulk of the food service cost is with the collection system and not with the treatment element. Therefore, savings in landfill are unlikely to make a significant contribution to offsetting the delivery costs in the service.

The issue is not with the gate fees per se but the difference between residual treatment costs and food recycling gate fees. In London for some Authorities this gap is relatively small, compared to the average £65/tonne gap across the rest of the country, presenting limited incentive in diversion. The residual treatment prices are not significantly high because of historic investment by Disposal Authorities in long term residual treatment options.

Marcus Gover, Director for England, Wales and Northern Ireland

[14] Environmental benefits of recycling – 2010 update

London Assembly – Food Waste management in London

Views Submitted by the London Waste and Recycling Board (LWARB)

Introduction

1. LWARB is a body established by the Greater London Authority Act 2007 (the Act) with the statutory objectives to promote and encourage within London, i) the production of less waste; ii) an increase in the proportion of waste that is re-used or recycled; and iii) the use of methods of collection, treatment and disposal of waste which are more beneficial to the environment.

2. The Act states that, for the purpose of achieving its objectives, LWARB may provide financial assistance to any person for the provision of facilities for the collection, treatment or disposal of waste produced in London; conduct research into new technologies or techniques for the collection, treatment or disposal of waste; and secure, or assist in securing, the performance of any function of a London borough council or the Common Council relating to waste.

3. The Government decided to create the London Waste and Recycling Board following calls from London Councils (at that time the Association of London Government), in order to provide a forum, underpinned through statute, to bring the regional and local tiers of government together. The creation of LWARB left existing waste governance arrangements largely intact except for minor changes to Mayoral powers and the obligation for boroughs to act in general conformity with the Mayor's Municipal Waste Management Strategy. The establishment of LWARB was welcomed by London Councils and the current Mayor, who became its first Chairman.

4. LWARB is currently chaired by Richard Tracey AM.

Submission

5. Does your organisation collect domestic food waste? If so, how often (eg weekly or fortnightly)? And through what mechanism (eg from homes or a central collection point)

5.1. Over the past 4 years LWARB has supported both prevention/reduction, collection and processing solutions for domestic and commercial food waste, these include:-

At the top of the Mayor's Food Waste Pyramid, reduction:

- Funding and support to local authorities to promote food waste prevention, through up-weighting the national 'Love Food Hate Waste' Campaign; and

- Part funded (along with the EU and the GLA) the FoodSave programme aimed at providing support to food businesses to help reduce avoidable food waste, divert surplus food to those who need it, or (where permissible) to livestock, and finally increase food waste to anaerobic digestion or composting..
- Funded the expansion of Fareshare's London operations. Fareshare is a community based charity that distributes fit for purpose food to those in need.

Composting and Renewable energy

- Funding and support to local authorities to promote food waste collection services to households.
- £2m of funding and support to local authorities to allow the roll out of new food waste collection infrastructure to c.100,000 flatted and street level properties and schools.
- Provision of finance to TEG Environmental Ltd to build the first AD facility in London which opened in Dagenham in at the end of February 2014.
- Provision of finance to Willen Biogas Ltd to enable the development of an AD facility just north of Enfield, which reached financial close in May 2014.

6. What progress has the Mayor made with his food waste-related programmes?

6.1. FoodSave is a project delivered by the GLA and with additional funding provided by the EU and LWARB. The project workings with small and medium sized (SMEs) food businesses in London to enable them to reduce waste, manage their food waste more sustainably and achieve environmental and financial benefits by doing so. FoodSave was launched in November 2013 and is now in delivery phase and is successfully support businesses across London. By March 2015 the project aims to support 240 food businesses in London. FoodSave aims to achieve the following:

- Over 1,000 tonnes of food waste diverted from landfill and put to good use as far up the Food Waste Pyramid as possible;
- An overall reduction of over 150 tonnes of food related waste such as food packaging, and;
- Total savings associated with waste disposal to businesses of over £350,000.

7. How has food waste management changed in London over the past 5-10 years? How much has the industry grown?

7.1. The Animal By Products Regulations, introduced in 2003, required investment in infrastructure to manage the composting of food waste. Food waste composting at this period was typically done through pilot or community projects that were typically estate based, or through the promotion of home

composting. It also halted the well establish business of surplus food and commercial food waste being used to feed livestock. Over time, a number of in-vessel composting facilities developed in and around London to treat this waste stream.

7.2. The availability of new treatment capacity through in-vessel composting has promoted the adoption in many authorities of mixed food and green waste collections. In recent years there has also been a trend to introduce food waste collections to flat dwellers, who, having no gardens, produce no green garden waste. This trend has been led by LWARB, through the Flats Recycling Programme and Driving Up Performance Fund, which helped extend food waste collections to around 95,000 households across 7 boroughs as well as extending collections into schools in two boroughs. The deployment of funds from DCLG's Weekly Collection Support Scheme provided four boroughs with funding to extend food waste collections and three more to extend mixed food and green waste collections.

8. How is your organisation, or any other organisation that you are aware of, promoting food waste reduction, and what has been achieved so far?

8.1. LWARB provided funding for the delivery of the Love Food Hate Waste messages in London. In particular LWARB funded the successful West London Love Food Hate Waste campaign, delivered by the LWARB funded Recycle for London Programme (delivered through a partnership of the GLA and WRAP). This campaign resulted in an estimated reduction of food waste the equivalent to 5,250 tonnes per annum for households in West London, with associated disposal savings in West London of £551,000 per annum, based on the reduction of avoidable food waste.

8.2. As detailed earlier LWARB has part funded the Mayor's FoodSave initiative which by spring 2015 is aiming to have to supported over 240 food sector small and medium-sized enterprises (SMEs) in London to reduce their food waste, divert surplus food to good causes and manage their unavoidable food waste more sustainably. Businesses, particularly those in the hospitality trade, can save quite significant sums of money around waste reduction but it's also about improving environmental performance and efficiency. The initiative is funded by the Mayor of London, the European Regional Development Fund (ERDF) and the LWARB.

9. What are the current barriers to managing domestic food waste effectively in London, particular with regard to blocks of flats on estates?

9.1. The biggest barrier to the collection of food waste is cost. Whilst the cost of treatment is significantly cheaper (c. half the cost of incineration or landfill) the costs of collection often make it uneconomical to collect. This is due to the small amounts that are generated for collection per household. In fact, it appears that some local authorities are now considering removing food waste collections on grounds of cost.

9.2. In relation to food waste collection from flats, one of the biggest barriers from the current building stock is lack of suitable recycling facilities that have been built into flats. The Flats Recycling Fund demonstrated that retrofitting can be uneconomic and so food waste receptacles have to be placed in suitable locations near entrances. This will inevitably limit participation. Consideration should be given to the design of new domestic blocks in London to adequately provide sufficient space for the storage and collection of recyclable waste.

9.3. The method of containment should also be given consideration, both in terms of containers used in the household and communal containers. Getting these right can have a significant impact upon participation. For example communal containers should be well sited, easy to use and cleaned regularly.

10. How do you plan or hope to introduce, extend or improve domestic food waste recycling? What specific barriers have you identified? What support (eg financial or technical) would you require to overcome these?

10.1. LWARB will continue to support boroughs to help them get the best performance possible from their schemes through advising them on best practice, delivering service improvements, getting value from their services and helping them to communicate with their residents to improve participation.

10.2. A key driver for residents participating is making it easy to do so. Many boroughs have rolled out food waste services and from our knowledge and experience of working with many of these authorities, participation rates remain much lower (c.25%) compared to dry recycling services. Fairly simple measure like the provision of liners or the choice of caddys can have big impacts on participation.

10.3. Advice and support to local authorities is extremely useful and this can be done through LWARB's good and best practise sharing workshops. For example LWARB has held workshops on improving recycling from flats, and improving cost efficiencies, participation rates and capture of food waste.

10.4. In addition, LWARB has provided commercial finance to enable the development of two AD/composting plants in or around London, which will provide a further 85,000 tonnes of treatment capacity.

11. Following LWARB's flats recycling programme, how can those managing estates and large blocks of flat continue to introduce and improve food waste recycling? What other funding and guidance is still available now and how can boroughs and others access it?

11.1. LWARB offers communications support to London boroughs and has recently launched a £100,000 fund to support local borough recycling communications. Advice and guidance is available primarily through WRAP. Examples of good

practise in London can be found in the Final Report on the Flats Recycling Programme. Additionally through LWARB existing Efficiencies Programme LWARB offers boroughs efficiency reviews to optimise service delivery; and is working with London Councils to look at opportunities for service sharing where significant economies of scale can be achieved.

11.2. LWARB is developing a new programme of London Waste Authority Support to be delivered from 2015. This programme will not be providing funding for further capital deployment but is likely to contain support for communications; dissemination of best practise; and helping waste authorities to get better value from their services.

12. Are there any national or international examples of good practice for managing domestic food waste in densely-built, urban environments from which London could draw lessons?

12.1. London has an abundance of best and good practice examples. Some examples are detailed on the WRAP website and there are also examples in the Flats Recycling Programme Evaluation Report.

13. How can the Mayor and local authorities use their investment and planning powers to promote better collection and handling of food waste?

13.1. The London Plan requires (policy 5.17 (E)) that “suitable waste and recycling storage facilities are required in all new developments.” Given the greater than expected growth that is now predicted for London, it might be appropriate to expand upon this with some form of advice on how this is to be implemented. LWARB will be looking to provide some form of help to planners on this, probably in the form of standard policies that can be used in planning consents for new residential developments.

13.2. Boroughs could look to offer a “recycling guarantee” to all London residents to commit to the collection and recycling of a consistent set of core materials. The inclusion of food waste in this core set would increase the amount of food waste collected and act as an incentive for developers to introduce more AD plants in and around London.

14. What happens to the domestic food waste that you collect?

N/A

15. What are the benefits and difficulties of different ways of processing food waste, for example composting or anaerobic digestion, in an urban environment?

15.1. The is a complex area and one that cannot be adequately covered within the limitations of this format. Aside from the composting of mixed green and food

waste, the two main ways of managing food waste are through Anaerobic Digestion (AD) and through a process called Autothermal Thermophilic Aerobic Digestion (ATAD). The essential difference is that AD is primarily used to generate energy, with a liquid and solid digestate, while ATAD is primarily designed to produce a liquid and solid fertiliser. Of the two, AD is the prevalent technology.

15.2. London's first (and only) AD plant is the LWARB (et al) financed TEG Biogas facility on the Mayor's London SIP in Dagenham. This plant started full operations earlier this year with capability to process 50,000 tonnes per annum (tpa) of food and green waste via a 30,000 tpa Anaerobic Digestion (AD) plant and a 20,000 tpa In-vessel composting (IVC) plant. LWARB has also provided finance to Willen Biogas Ltd to develop a plant just north of Enfield. The plant will take a mixture of food and mixed food and green waste and has a capacity of 35,000 tonnes per year. A planning application from PDM has been approved for a large AD plant, also in Dagenham. London has an ATAD plant in Sutton, formerly operated by VERTAL and now operated by BioCollectors.

15.3. Both technologies require offtake markets for liquid digestate and compost. AD usually produce electricity through CHP engines, alternatively gas can be injected direct to the grid. There is also the opportunity to produce hydrogen, although this is still an emerging technology. Ideally waste heat would be utilised.

15.4. Issues to consider for the Urban environment include: normal noise, smell, transport impacts, but also:

- Access to markets for digestate
- Proximity to markets for digestate
- Technology issues
- Land values in London vs outside London

16. In what ways is recycling food waste beneficial to London's environment?

16.1. In general, the avoidance of food waste to landfill is beneficial due to the avoidance of methane generation within landfills. Food waste managed in London could be used to provide local energy. This could be in the form of heat or electricity, or could be as a transport fuel or as biogas for injection into the gas grid. Digestate could be used within London as a compost, although due to the quantity it is typically used in agriculture outside London. Some food wastes offer particular opportunities for better management. For example, used cooking oil can be used to manufacture biodiesel.

17. What opportunities do you see for the waste management industry to expand or optimise its activities in London? What are the key factors involved (eg minimum amount of feedstock for processing)?

17.1. There would appear to be a significant opportunity for development of food and organic waste recycling infrastructure within London. A recent study undertaken by Imperial College for Veolia[1] suggests that there is a capacity need for c.1 million tonnes of food waste and green waste infrastructure. However, aside from the planned ReFood plant in the London SIP (which will replace PDM's Silvertown operations) and the existing undeveloped but consented SITA AD proposal in Sutton, LWARB is unaware of any other well developed AD proposals within London. In general there appear to be a number of factors that may explain this, given the apparent opportunity:

- Land values in London are high compared with just outside London
- Proximity to market for digestate / compost
- Perceptions that London is a complicated place to do business

18. How do savings in landfill tax relate to possible investment into recycling and composting? What is the role of gate fees in this respect?

18.1. Landfill tax is a significant factor to the extent that it should make more feedstock available for composting and AD as the price of landfill increases. In reality it is more complex. The availability of feedstock from businesses may well be on the rise, but contracts with food waste collectors are normally short term in nature and as such it can be difficult to get sufficient bank debt in place to finance a project. LWARB has played a role here by providing finance to projects without longer term contracts in place up front, thereby taking a merchant risk. Local authority collected food waste is still in relatively short supply. This is because, except from flatted properties, it is more cost efficient to collect green waste and food waste mixed together. Some local authorities in London still do not provide organic waste collections.

[1] Centre for Environmental policy, Imperial College London, Waste Infrastructure Requirements for England,March 2014

Improving food waste management in urban areas based on the experience of cities across Europe

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1 Introduction

The Organic Resource Agency (ORA) were asked by the London Assembly to respond to their "Call for views and information: Food waste management in London". In consultation with its colleagues in IGLux in Luxembourg and Germany, ORA have responded by supplying contact details of potential speakers from other European cities and the provision of published papers from across Europe. ORA have also prepared the following paper which identifies common barriers to the successful collection of food waste from urban areas and the various ways that have been identified to overcome these barriers. This includes the first-hand experience of ORA working in London and ORA's colleagues working in other parts of Europe.

This is a particularly important issue with increasing focus on reducing food waste, pressure to increase recycling rates across Europe and reduce greenhouse gas emissions from landfill. If the EU recycling targets were to be increased to 70% (Let's Recycle, 2014a), additional effort will be required across the UK, including London, to achieve this level of performance.

2 Improving food waste recycling

2.1 Information

The first priority should always be to find methods of minimising the waste food. In order to improve the recycling performance of the waste that is produced, it is necessary to investigate the current situation, including current capture and participation rates, to provide a basis for evaluating whether target capture and participation rates are achievable and realistic.

Collecting data on the current status of waste collection includes waste quantities, types of waste e.g. food waste or garden waste (green waste), or both, capture and participation rates, seasonal variations in the waste arising and the number of unoccupied properties. Primary data collection can involve conducting waste audits and pilot schemes. For example pilot schemes were undertaken for the separate collection of food waste from apartment blocks in Hamburg, Germany (Hoeft, 2014) and Milan (Petrone and Vismara, no date) and from households and UK supermarkets in London (Pickering, 2004). An upcoming waste collection trial in Luxemburg will use heavy duty biodegradable bags to put bagged food waste on the kerbside for collection without an additional collection receptacle (Groell IGLux, personal communication 2014).

Furthermore, to share information it might be advantageous for waste disposal authorities to work together and jointly inform residents, e.g. if the collected waste is treated in the same facility.

Moreover, regularly providing residents with information on recycling is crucial for the success of a waste recycling scheme. It is essential to explain the purpose of waste separation, waste treatment and recovery paths. Information on the residents' benefits from separating waste, e.g. the use of locally produced compost and (composted) digestate and their use, can contribute to overcome

barriers such as behaviour and lack of knowledge as well as attitude and perception. A high turnover of residents (e.g. students, house sharers, sheltered accommodation) is likely to negatively impact participation and capture rates. Timlett and Williams (2009) found that for new occupants recycling becomes "normal" after living in a household for 3 years. Furthermore, the recycling performance can be affected by language barriers, for example in London if residents speak a language other than English and do not understand the information provided on recycling. Generally, residents can be informed by providing (translated) instruction leaflets, newsletters, collection calendars, pictorial information and door-to-door knocking.

2.2 Method of separating food waste

Situational and behavioural barriers are often related to the inconvenience of separating food waste from other waste streams. One option to overcome these barriers is to provide small kitchen caddies and compostable liners (biopolymers) which are emptied into bigger (communal) bins which could also be lined with biodegradable bags. The liners help to keep the caddies clean and contribute to reducing odours and therefore may contribute to increased capture rates of food waste (Petrone and Vismara, no date). Using biopolymers can raise awareness of separate food waste collection and thus reduce the amount of contamination in the food waste stream (Petrone and Vismara, no date). It was found that aerated kitchen caddies combined with biodegradable liners can prevent odours (Puyuelo et al., 2013) and therefore encourage recycling. However, this needs to be balanced against evidence suggesting that biopolymers may cause problems in subsequent waste treatment processes if they do not degrade quickly enough, e.g. during wet anaerobic digestion (AD), and therefore contaminate the plant output material i.e. digestate (Pickering, 2013) and lower the plants' performance. The ongoing cost of supplying and distributing the biodegradable bags also need to be factored in.

The types of waste collected i.e. food waste and/or garden waste, or both, affect which waste treatment technology is suitable for the respective waste stream generated. Collecting food waste and grass cuttings together has shown to be a suitable feedstock for dry AD as deployed in Erfurt and Niddatal Ilbenstadt, Germany (UBA, 2012) and Luxemburg (Turk, 2014).

2.3 Frequency and method of collection

Where space is limited to store waste and/or temperatures are high, the collection of food waste more than once per week is often considered by many cities. A higher frequency in food waste collection e.g. two times per week may allow less frequent collection of residual waste as the putrescible waste fraction is diverted. Moreover, it may allow the use of smaller collection vehicles, which may be easier to manoeuvre in narrow city streets.

It is crucial for the success of a recycling scheme to avoid overflowing and contaminated containers which will prevent residents from using them. In order to avoid this, method statements for crews/caretakers need to be ensured in order that they are clear on whose responsibility it is to clear litter, fly tipping and report overflowing containers. Also, residents need to be informed on who to contact in case of problems.

To decrease the carbon footprint of food waste collection, the collection vehicles could run on biomethane produced from the collected waste as demonstrated in Berlin (Ruecker, 2011).

2.4 Incentives and application of the "polluter pays" principle

Incentives to encourage recycling include promoting local energy supply companies which generate renewable energy from locally produced waste, "loyalty card" type schemes, providing residents with compost and advice on how to use it.

In other countries such as Germany and Luxemburg an economic incentive was created to separately collect food waste. In these countries waste collection is charged separately and individually to householders. In Hamburg charges for residual waste are higher than for organic waste collection and vary according to receptacle volume and collection frequency (Hoeft, 2014). In Luxemburg, there are no charges for the collection of organic waste and dry recyclables whereas residual waste is charged for according to the weight of volume of waste collected (Groell, 2014).

It must be noted that an introduction of direct charging for waste collection needs to be tackled very carefully to avoid political and civil problems. This can be seen by the recent events in Birmingham leading to non-compliance by the public and potential strikes from the waste collection crews (Let's Recycle, 2014b).

2.5 Urban Infrastructure

In densely populated urban areas situational barriers often arise such as limited space for the storage of separated waste fractions both in flats and communal areas. Remodelling of buildings may be necessary to create space for additional waste containers, as was undertaken during a food waste collection pilot scheme in apartment blocks in Hamburg, Germany (Hoeft, 2014). Providing signage on the bins and signposts to communicate the location of recycling bins in buildings can facilitate recycling. Waste collection containers should look clean and appealing to use. Therefore competencies may need to be assigned in case waste bins need to be exchanged to get washed.

New building developments could consider including automated waste collection systems such as vacuum waste collection (Kogler, 2007, Envac, no date, Nakou et al., 2014, Teerioja et al., 2012). Section 0 describes the processes and advantages of this system.

2.6 Method and location of food waste treatment

It is essential to select a method of waste treatment which is appropriate for the waste that is to be treated and which produces outputs that are in demand. These typically include the following technology types:

- Wet AD – food waste only, this is the most common form of AD in the UK at present
- Dry AD – food and garden waste combined, this method of AD can be more resistant to impurities such as plastic film, biopolymers, ligneous and fibrous materials; dry AD operating plant in Erfurt, D and Niddatal Ilbenstadt, D (BMU, 2012)
- In vessel composting (IVC) – food and garden waste combined
- Gasification/ pyrolysis/ incineration – food and garden waste combined, current research is investigating the suitability of residues from AD plants (digestate) as feedstock for pyrolysis (EBRI, no date).

It is also important to achieve an affordable and environmentally sound balance between locating the facility as close as possible to both the source of the waste and the end use of the outputs, whether this is compost, digestate, electricity, heat, biomethane, syngas, biochar etc. This is a difficult balance to achieve in practice. Furthermore, locating a waste treatment facility close to the origin of domestic waste can lead to problems with emissions to the environment that needs to be addressed with more sophisticated and often more expensive technology and/or applying restrictions on the times and methods of operating the facility.

Where possible home composting or community composting should also be considered as this can represent a low cost, sustainable and local solutions to food and garden waste management.

3 Holistic approach to waste and resource management

While each of the above barriers need to be addressed and potential solutions need to be identified, it is important to emphasise that the waste management system needs to be thought of as a whole for any scheme to succeed.

As indicated above, it is important to obtain good data on the waste arising in order to define an appropriate method of collection and an appropriate waste treatment technology. For example, if food waste is to be collected separately this will affect the frequency of collection e.g. at least weekly and also the most appropriate waste treatment technology is likely to be wet AD. Whereas if food and garden waste are to be collected together then fortnightly collection may be more appropriate in larger bins and dry AD or IVC are likely to be the preferred treatment technologies. Furthermore, if there is a political will to incentivise public participation via sharing in the performance of the waste treatment technology, then a community renewable energy project would favour AD or possibly gasification/pyrolysis; if renewable energy was less of a priority, IVC could be used to provide discounted or free compost to the local public.

These combinations of the above factors will also affect the total cost of the proposed scheme. Only by holistically considering the likely cost per kg of waste collected combined with the treatment cost will the true cost of the food waste collection and treatment options be properly understood.

Summary of best practice examples of food waste collection in urban areas in other European cities

Hamburg, Germany (Hoeft, 2014):

- Urban structure: apartment blocks
- Use of 10L kitchen caddies with compostable liners and 240L and 500L communal containers
- Separate charging for waste collection: charges for residual waste are higher than for organic waste and vary according to receptacle volume and collection frequency

Luxemburg (Groell, 2014):

- Urban structure: kerbside properties – space for collection receptacles is a main barrier
- Collection of kitchen and green waste together; woody green waste is collected separately
- Collection frequency: weekly in summer, every fortnight in winter
- Participation rate: 70%; capture rate: 45% which suggests that there is more room for improvement
- Incentives: no charges for collection of organic and dry recyclable waste, charges apply for collection of residual waste according to weight of volume collected
- Waste treatment: dry AD of food waste and grass cuttings and composting of woody green waste
- Biomethane injection into the grid – during the winter months energy crops are added into AD to homogenise the biogas
- Upcoming trial scheme: using heavy duty biodegradable bags for food waste kerbside collection without any additional receptacle

Milan, Italy (Petrone and Vismara, no date):

- Urban structure: apartment blocks
- Use of 7L to 10L vented kitchen bins with compostable liners and bigger communal bins (120L)
- Collection frequency: twice per week
- Waste treatment: anaerobic digestion and composting (incl. composting of digestate)
- Capture rate: 86%

Copenhagen, Denmark and Stockholm, Sweden (Envac, no date; Kogler, 2007):

- Implementation of an automated vacuum waste collection system
- Transportation and collections are combined by sucking the waste through an underground pipe system into collection stations.
- Can be applied to collect household, hospital, kitchen and office waste
- Different waste fractions can be collected using the same underground pipe system. In Copenhagen two waste fractions and in Stockholm three waste fractions are collected separately. Using one inlet and different coloured bags for the respective waste fractions needs subsequent sorting of the bags via optical measuring. When using different inlets for the respective waste fractions, the waste is then stored a short time above a valve before each waste fraction is sucked through the pipe system individually.
- The investment costs are estimated to be 0.5% to 1% of the building construction costs (Envac, 2012). The operational costs of a pneumatic waste collection system are estimated to be 40% lower than the operational costs of a conventional system using bins and lorries (Nakou et al., 2014).

4 References

EBRI – European Bioenergy Research Institute (no date), Pyrolysis, available at: http://www.aston.ac.uk/eas/research/groups/ebri/research-areas/pyrolysis/ (accessed 13 June 2014).

Envac 2012, FAQ – The Stationary Vacuum System, available at: http://www.envacgroup.com/MediaBinaryLoader.axd?MediaArchive_FileID=06b88c4f-5764-43f7-8f14-e86e31483755&FileName=FAQ+Stationary+vacuum+systems+March+2012.pdf&MediaArchive_ForceDownload=True&Time_Stamp=635376734362091781 (accessed 6 June 2014).

Envac (no date), Envac's guide to Hammarby Sjostad – Waste solutions in a sustainable urban development, available at: http://www.envacgroup.com/MediaBinaryLoader.axd?MediaArchive_FileID=beee3af8-d215-469f-9e11-e6c86fcdf9b4&FileName=HammarbySjostad_Brochure_ENG.pdf&MediaArchive_ForceDownload=True&Time_Stamp=635117422784271834 (accessed 6 June 2014).

Hoeft, M. (2014), Measures to increase the potential use of organic wastes from communities and businesses [Maßnahmen zur besseren Potenzialerschließung kommunaler und gewerblicher Bioabfälle], available at: http://www.hamburgtrend.info/fileadmin/user_upload/pdf/Langfassungen_Vortraege/Hoeft.pdf (accessed 11 June 2014).

Kogler, T. (2007), ISWA Working Group on Collection and Transportation, available at: http://www.iswa.org/uploads/tx_iswaknowledgebase/ctt_2007_2.pdf (accessed 12 June 2014).

Let's recycle (2014a), EU paper points to 70% by 2030 recycling target, available at: http://www.letsrecycle.com/news/latest-news/legislation/eu-papers-point-to-70-by-2030-recycling-target (accessed 12 June 2014).

Let's recycle (2014b), Strike action threat in Birmingham green waste row, available at: http://www.letsrecycle.com/news/latest-news/compost/strike-action-threat-in-birmingham-green-waste-row (accessed 13 June 2014).

Petrone, P. and Vismara, D. no date, The separate collection of residential food waste in the city of Milan (Italy)

Nakou, D., Benardos, A. and Kaliampakos, D. (2014), Assessing the financial and environmental performance of underground automated vacuum waste collection systems, Tunnelling and Underground Space Technology, 41, 263-271.

Pickering, J. (2004), Recycling Organics in West London (OWL) Project – Phase 1 Final Report 20/9/02-31/12/03, available at: http://www.o-r-a.co.uk/reports/owl_part1.pdf (accessed 13 June 2014).

Pickering, J. (2013), Blaise Facility Technical Support – Phase 1 and 2: Food Waste Assessment.

Puyuelo, B., Colon, J., Martin, P. and Sanchez, A. (2013), Comparison of compostable bags and aerated bins with conventional storage systems to collect the organic fraction of municipal solid waste from homes. A Catalonia case study, Waste Management, 33, 1381-1389.

Ruecker, T. (2011), The biogas project of BSR – Fermentation of bio-waste for energy generation [Das Project Biogas der BSR – Vergarung von Bioabfall zur Energiegewinnung], available at: https://www.berlin.de/imperia/md/content/baspandau/verwaltung/2011_07_22_biogasprojekt_der_bsr_pr__sentation_spandauer_energiespartag.pdf?start&ts=1312806844&file=2011_07_22_biogasprojekt_der_bsr_pr__sentation_spandauer_energiespartag.pdf (accessed 11 June 2014).

Teerioja, N., Moliis, N., Kuvaja, E., Ollikainen, M., Punkkinen, H. and Merta, E. (2012), Pneumatic vs. door-to-door waste collection systems in existing urban areas: a comparison of economic performance, Waste Management, 32, 1782-1791.

Timlett, R.I. and Williams, I.D. (2009), The impact of transient populations on recycling behaviour in a densely populated urban environment, Resources, Conservation and Recycling, 53, 498-506.

UBA – Umwelt Bundesamt (2012), Ecologically sustainable recovery of bio-waste – Suggestions for policy-makers at local authorities, available at: http://www.bmub.bund.de/fileadmin/Daten_BMU/Pools/Broschueren/bioabfaelle_2012_en_bf.pdf (accessed 13 June 2014).

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12.06.14

Dear Rachel,

Food Waste Management in London

Thank you for the opportunity to respond to this consultation. The LARAC response is contained below.

The responses below are sent on behalf of the Local Authority Recycling Advisory Committee (LARAC). LARAC is an association of around 75% of local authorities across England, Scotland, Wales and Northern Ireland whose membership of waste management and recycling professionals co-ordinate and operate waste management services. Membership is drawn from all types of authority including statutory Waste Collection (WCA), Waste Disposal (WDA) and Unitary.

Our response has been peer reviewed by members of LARAC's policy team and executive committee. LARAC members have also been invited to comment on the consultation through the members' discussion forum on our website. All contributions received have been taken into account in drafting the response attached.

If you have any queries on this response then please contact me at [redacted] or [redacted]

Yours sincerely,

Tom Lawrence

LARAC Policy Team

SUMMARY OF CONSULTATION QUESTIONS

LARAC Response

Part I – Establishing the baseline

In the first part of the review, the Committee would like to explore how the agencies in London responsible for food waste collection and/or management are performing, and to map food reduction initiatives in the capital.

1. Does your organisation collect domestic food waste? If so, how often (eg weekly or fortnightly)? And through what mechanism (eg from homes or a central collection point)

No. LARAC is a representative body for local authorities. LARAC membership includes 28 local authorities in London, 2 waste disposal authorities, the GLA and LWARB.

3. How has food waste management changed in London over the past 5-10 years? How much has the industry grown?

Currently 23 London Boroughs have a doorstep collection of food waste with 10 of the London Boroughs who were successful in receiving DCLG funding having used the money to either introduce or extend existing food and organic waste collections.

With 40% of London's municipal waste coming from flats and estates, there is still scope for increasing accessibility to food waste recycling facilities and improving participation/capture rates amongst those with the service.

4. How is your organisation, or any other organisation that you are aware of, promoting food waste reduction, and what has been achieved so far?

One of LARAC's key roles is to shape policy and legislation through advising government and industry and inform and lobby key opinion formers and policy makers on LARAC members' behalf, ensuring they are consulted on a regular basis

To progress the food recycling agenda we respond to Government and EU consultations on our members behalf, influence Government policy development, represent Local Government views at meetings with government, industry and other bodies all over the country and develop partnerships and policy alliances with other organisations including the Unilever Round Table on Food Waste, Defra's waste prevention stakeholder event and the LGA waste panel.

Part II – Extending and improving food waste collection

In the second part, the Committee wishes to explore how the household food that does reach the waste stream can be collected and handled more effectively, particularly from flats.

5. What are the current barriers to managing domestic food waste effectively in London, particular with regard to blocks of flats on estates?

The first step is reducing waste at source and WRAP's research indicates that money is the main motivator in encouraging this. At the same time, the economic benefits (e.g. savings in disposal charges) from recycling this waste rather than landfilling need to be translated into tangible savings for residents.

In general, more work is needed to explain to residents what happens to the food waste once it is collected and dispel scepticism that food waste 'goes into the same hole in the ground' as residual waste.

Rising property prices and the expanding buy-to-let market has resulted in fewer owner occupiers in flatted properties, and there is a 'churn' of residents, who do not perhaps have an affiliation or sense of identity with their locality.

London's transient population means that people are frequently moving into and out There is therefore a need to constantly inform and reinforce messages with new residents who do not speak English as a first language.

With particular regard to flats and estates, barriers include: lack of storage space, difficulty transporting the material, confusion about how the scheme works (leading to contamination or non participation) and inconvenience when compared to simply throwing residual waste down a chute or a black bag.

Less affluent people, and those coming to London as economic migrants are less likely to prioritise recycling as an important activity, especially when doing so is less convenient than disposing of residual waste, so more needs to be done to make food waste recycling 'less difficult' e.g. placing residual waste bins further from recycling ones.

6. How do you plan or hope to introduce, extend or improve domestic food waste recycling? What specific barriers have you identified? What support (eg financial or technical) would you require to overcome these?

n/a

7. Following LWARB's flats recycling programme, how can those managing estates and large blocks of flat continue to introduce and improve food waste recycling? What other funding and guidance is still available now and how can boroughs and others access it?

Following funding from the DCLG and LWARB, communications support remains available from WRAP. Best practice is available from Love Food Hate Waste such as their campaign in the West London Waste Authority which covered 600,000 households and resulted in a reduction of 14% in avoidable food waste across the area. On the minimisation front, WRAP's Innovation in Waste Prevention Fund is open to local organisations working together, with innovative waste prevention ideas which can involve partnerships between businesses, councils, charities, educational establishments and voluntary groups.

8. Are there any national or international examples of good practice for managing domestic food waste in densely-built, urban environments from which London could draw lessons?

On the commercial scale, Westfield Stratford City, Europe's largest urban shopping centre, recently won the Sustainable Facilities award at the 2013 Chartered Institution of Wastes Management (CIWM) Awards for Environmental Excellence. All food waste is sent for anaerobic digestion and a special campaign was devised for the 82 food outlets, called the `Green Academy Take out Service.'

International

Toronto

Toronto in Canada introduced food waste collections between 2002 and 2005 which (alongside other policies eg education programmes) have helped reduce waste sent to landfill. When introducing food waste services they have accompanied this with a reduction in collection frequency to fortnightly. Although from what I've read I can't be clear as to the proportion of properties receiving food waste collections.

One interesting thing is that Toronto require the design of new 'multi-family buildings' or flats to provide one of the following options:

- No chute provided that there is a central solid waste collection and waste diversion facility on the ground floor and subject to the approval of the General Manager.
- Single chute with tri-sorter
- Two separate chutes with the capability of adding a dual sorter if and when the organic waste collection programme is implemented
- Three separate chutes with one closed off until the organic waste collection programme is implemented
- Collection capabilities on each floor provided all applicable regulations governing storage of waste and recyclables and the design of such storage are met

The City of Toronto has also introduced the 'Multi-Unit Residential Volume Based Solid Waste Management Fee' in 2008 providing a financial incentive for waste reduction and finance infrastructure requirements. There is private sector competition to the state provided service, the state provided services operate on an 'all or nothing' basis – so buildings receive all state recycling services or none at all and this is provided by the private sector.

They have historically encountered a lack of capacity for reprocessing, so were building a 75,000tpa anaerobic digester at the Disco Transfer Station in Toronto.

9. How can the Mayor and local authorities use their investment and planning powers to promote better collection and handling of food waste?

The House of Lords EU Committee report: 'Counting the cost of Food Waste' concluded that food waste is a 'data poor' area across the main sectors where it arises and that there was considerable room for improvement in data reporting of food waste across the life cycle. Building such an evidence base will be essential in better tackling London's waste at its various points of generation, hopefully leading to less waste requiring collection, as will working with planners to ensure new all new developments have provision for the collection and processing of food waste.

Part III – Processing food waste

In the final part of the investigation, the Committee would like to identify the preferred current and potential future options for London to process and recycle its household food waste, with a view to reducing to zero the amount that goes to landfill.

10. What happens to the domestic food waste that you collect?

n/a

11. What are the benefits and difficulties of different ways of processing food waste, for example composting or anaerobic digestion, in an urban environment?

Whilst LARAC fully supports the prevention of food waste in the first instance as much energy goes into food production and distribution, the preferred route of treating, vegetable and fruit waste is via home composting and for cooked food waste a home digester. For catering wastes and large amounts of domestic kitchen waste Anaerobic Digestion is considered the best route followed by in vessel composting

LARAC support the use of composting in all its forms and it is preferred to energy recovery. However the continued development of suitable standards and protocols that facilitate use of waste derived materials on land is of great importance to ensure material returned to land is suitable. Furthermore, this should encompass additional research into the risks and benefits associated with such activity and development of protocols and standards for compost in different applications. Standards should be “fit for purpose” for particular uses of compost.

Home composting is the best and preferred means of achieving this. Although emissions of carbon dioxide are only slightly reduced, the quality of soil is also an important environmental consideration. Compost is also a means of sequestering carbon in soil.

LARAC would support a phasing out of “compost like output” (CLO) as a substitute for daily landfill cover. This is in line with support for an overall reduction in the use of landfill.

Where biodegradable material is heavily contaminated/mixed with plastics, then valorisation as energy may be a better option. What do we say about the development of MBT processes?

12. In what ways is recycling food waste beneficial to London’s environment?

As food waste accounts for around 30% of all waste generated by households, diverting this waste from landfill has the potential to considerably improve London’s greenhouse gas emissions.

Disposal of food waste is estimated to generate the equivalent of 2.1m tonnes of CO2, so achieving a significant reduction in food waste to landfill would have considerable environmental advantages.

After waste prevention, from the view of the waste hierarchy the next best option is for residents to compost food waste on-site where it can be turned in to a soil improver. Most authorities sell

compost bins at a discounted rate to residents, although it is often difficult to quantify the amount of waste minimised.

Additionally there are a number of London boroughs who have successfully installed on site composting facilities such as the Ridan in estates for food waste. This allows residents to benefit directly from the end product, soil improver, which can be used on the communal grounds.

13. What opportunities do you see for the waste management industry to expand or optimise its activities in London? What are the key factors involved (eg minimum amount of feedstock for processing)?

WRAP estimates that 890,000 tonnes of food is thrown away per year, of which 540,000 tonnes is avoidable. There is currently potential to address the authorities in London who do not currently collect food waste for recycling. This may because of a lack of facilities or due to the cost of separately collecting the material is not necessarily being offset by disposal savings, or a combination of the two.

14. How do savings in landfill tax relate to possible investment into recycling and composting? What is the role of gate fees in this respect?

Despite local authorities in London significantly reducing the amount they send to landfill, the costs associated with landfilling continue to rise. Having reached £80/tonne the Government have confirmed that the tax will continue to rise at the rate of inflation.

At present, this money raised, is not returned to local authorities for re-investment in technologies to improve facilities to improve food waste recycling and other practices which would drive more sustainable waste management in London.

Food waste management in London

Response to the call for evidence from SITA UK

General

SITA UK Limited (SITA) is one of the largest waste and resource management companies in the UK, operating multiple facilities under relevant environmental and process based permits. SITA generates renewable energy from both raw and processed waste and landfill gas. SITA produces recycled materials from many sources and types of waste. We operate or have plans to develop a number of traditional and alternative treatment technologies from materials recycling, anaerobic digestion and In-vessel composting to pyrolysis, gasification and EFW with CHP.

SITA has been collecting, consolidating and treating food waste in London and elsewhere in the UK for many years. We expect through current firm plans and projected new developments to continue to increase the recovery of food waste through continuing to expand existing services, by providing new innovative services and through building new facilities in the London area and the rest of the UK.

SITA is a member of the Environmental Services Association, Anaerobic Digestion and Biogas Association [ADBA] and the Renewable Energy Association [REA]. SITA published a residual treatment capacity report, entitled 'Mind the Gap' earlier this year, which included an element on predicting future availability of waste food as a feedstock and the likely treatment capacity needed to treat that available feedstock.

Summary

SITA considers that the call for evidence in seeking views on food waste only could potentially fail to understand the integrated nature of some food waste collections with other waste streams. For instance SITA has a number of twin-body trucks that collect food waste in one container and glass in the other. Integrating collections, back-hauling of waste and other methods of collection and consolidation are being implemented or trialled to increase both the capture of food waste and reduce the cost in collection and transport.

In considering food waste on its own, the call for evidence may fail to fully capture the advantages of these forms of integrated collection and appreciate the potential benefits of new innovations.

In modelling available food feedstock SITA has used its own data from both municipal and commercial and industrial sources, combined with published data to determine the gross waste food feedstock potential (taking into account sensitivity

analysis of the success or not of minimisation campaigns such as 'Love food hate waste'), the available waste food feedstock (taking into account for instance contract renewal rates for municipal authorities and commercial tipping points for various industrial sectors) and providing some insight to the timing of those likely available waste food feedstocks.

Further, SITA has undertaken a series of sampling and analysis works from various locations around the UK but including sources in and around London which tested for and provided data on contamination levels and energy potential for each source.

SITA considers that the economic extraction of food waste from the general waste stream relies on a number of integrated factors and influences which must be considered together to fully understand the challenges and benefits.

Our detailed response to the consultation is given below.

Question 1 – Does your organisation collect domestic food waste?, if so, how often (eg weekly or fortnightly)? And through what mechanism (e.g from homes or a central collection point)

SITA collects food waste from a number of municipal sources through either completely source-separated or green and food comingled containers. In all cases the food is collected from the household on a weekly or fortnightly basis respectively. SITA through its international sister companies has some experience of collection of food waste from central collection points however this has generally required specialist infrastructure to be installed, such as vacuum pipe systems.

Question 2 – What progress has the Mayor made with his food waste-related programmes?

A number of new municipal contracts have been let that have introduced food waste collections and a range of new food collection services for commercial and industrial waste have also commenced operation. Some success has been achieved but a plethora of other constraints (cost, structural, etc) continue to constrain faster deployment.

Question 3 – How has food waste management changed in London of the past 5-10 years, how much has the industry grown?

Growth in waste food waste collection in the municipal sector is clearly measurable from the data collected from municipal sources. Information on food waste collection

from commercial and industrial sources is less extensive and available. However, judging from the deployment of new treatment infrastructure it can be seen that food waste collection has produced significantly more feedstock than was collected a few years ago. It is SITA's view that deployment of waste food collections is growing slowly but steadily.

Question 4 – How is your organisation, or any other organisation that you are aware of, promoting food waste reduction, and what has it achieved so far?

SITA has focussed on the development and deployment of food waste collection services for those sectors where the benefits are most apparent, for instance those commercial and industrial sectors where food waste production is a significant proportion of the general waste composition. We have developed sector-bespoke services (such as the combined glass and food waste collection vehicles) that lever further environmental and commercial benefits in particular sectors and aid deployment of these new services.

Question 5 – What are the current barriers to managing domestic food waste effectively in London, particular with regard to blocks of flats on estates?

UK housing stock, be it flats or houses have not generally been built with recycling in mind, as such from kitchen structures (space for internal bins) to house curtilage (space for external bins). Space and convenience are an issue.

London is no different in this respect but has the added complication of its inherent scale. These structural constraints provide significant challenges to householders, facility managers and waste collection organisations. Finding consumer convenient methods of food waste separation and collection should be a primary goal of the Mayor and local authorities.

Question 6 – How do you plan or hope to introduce, extend or improve domestic food waste recycling ? What specific barriers have you identified? What support (eg financial or technical) would you require to overcome these?

SITA continues to seek to innovate and import good practice examples to provide context and information to municipal bodies. Changing existing contracts or informing tenders is common and standard practice. However legal, financial and procedural constraints mean that implementation very much depends on the municipal body.

Question 7 – Following LWARB's flats recycling programme, how can those managing estates and large blocks of flats continue to introduce and improve food waste recycling? What other funding and guidance is still available now and how can boroughs and others access it?

It is clear that the solution to Question 7 involves solving the constraints identified in Question 5. Funding from national and local government and developers is either known by the municipal authorities or very project specific in the case of developers. SITA can add little to either aspect in this consultation.

On the general issue of raising recycling rates, SITA has commissioned a study from Keep Britain Tidy, based on convening citizens' juries, to explore this issue, focusing in particular on recycling challenges in the urban environment. A representative from the London Assembly was present at one of the sessions.

The study is due for completion in August/September 2014. SITA will be pleased to share its conclusions with the London Assembly.

Question 8 – are there any national or international examples of good practice for managing domestic food waste in densely-built, urban environments from which London can draw lessons?

Examples exist in a number of locations - they generally involve structural changes to the buildings through either new build or renovation. Vacuum pipe extraction is shown to work where the infrastructure is in place and the population is educated and motivated to participate. Both elements are essential for effective implementation.

A plethora of behavioural change examples exist which, within the correct context, could be employed. These are freely available.

In addition, SITA commissioned a study in 2010 entitled *Looking Up,* compiling and analysing international recycling experience for multi-occupancy households - a distinctive and often dominating feature in London. The report is available on SITA's website www.sita.co.uk.

Question 9 – How can the Mayor and local authorities use their planning and investment powers to promote better collection and handling of food waste.

Through the planning system the Mayor and Local Authorities can influence the development of building infrastructure that can facilitate food collection, overcoming gradually the current structural constraints. Information and educational campaigns

exist which can be used to inform each host population as these structural changes are implemented and deployed.

Question 10 – what happens to the domestic food waste that you collect?

SITA delivers its collected food waste to a number of different treatment locations - from SITA-owned and operated facilities through to audited third-party treatment facilities. These treatment locations vary from anaerobic digestion through to in-vessel composting.

Question 11 – what are the benefits and different ways of processing food waste, for example composting or anaerobic digestion, in an urban environment.

Source-separately collected food waste is fundamentally treated in anaerobic digestion or in-vessel composting facilities. Food waste collected with green waste is generally treated in in-vessel composting facilities, although the option of using dry anaerobic digestion technologies is available. Food waste retained in the residual waste stream is increasing treated through combustion techniques, either in UK-based facilities or through RDF/SRF exports to international waste to energy facilities.

Hosting any waste treatment facility in an urban environment needs careful attention to its design and operation such that is operated in an acceptable manner. When delivered to these facilities, food waste is often at least one week old and sometimes older than two weeks. The risk of odour and flies is therefore greater than with others waste and needs to be carefully considered and managed. Further, both anaerobic digestion and composting generate products (compost, digestate etc) that need to be removed from the site and are often placed to agricultural land. The logistics around collection and transport of food waste from source to treatment location and of products from treatment location to final placement is complex and should be considered on a case-by-case basis.

Question 12 – in what ways is recycling food waste beneficial to London's environment?

Done well, food waste collections, treatment and use of products can be beneficial to London's environment. Done badly, food waste collections could be a burden to the environment and add disproportionately to collection and treatment costs. The net benefit depends on a complex matrix of issues that would need to be considered on a case-by-case basis.

Question 13 - what opportunities do you see for the waste management industry to expand or optimise its activities in London? What are the key factors involved (eg minimum amount of feedstock for processing)?

It is SITA's view that the waste management industry is expanding its services gradually: the question is, what measures might increase the rate of expansion? To understand the potential rate of change, the net environmental benefits and burdens, the cost benefit and the behavioural changes necessary to increase the rate of expansion would need to be fully understood and applied.

Question 14 – How do savings in landfill tax relate to possible investment into recycling and composting? What is the role of gate fees in this respect?

Currently the cost of collection and treatment, the density of collection and levels of contamination present in the source separated food waste collections can in some cases lead to source-separated food waste solutions negating any landfill tax cost benefits. Using landfill tax receipts to invest in new infrastructure would require treasury agreement but would be welcomed if invested in a way that does not skew the market.

FW011

West London Waste Authority officer response to London Assembly's Environment Committee Investigation into food waste management

Please note that this is the officer level response of the Authority to this investigation. It will be considered by the elected members of the Authority at their next meeting on 27th June 2014. If you require any further information please contact the Director on [redacted]

Questions

1. Establishing the baseline

1.1. Overview of domestic organic and food waste collections in London:

All of the West London Waste Authority's constituent boroughs offer food waste collections to the majority of households in their areas. The method of collection varies with Ealing, Hounslow and Richmond collecting food waste only, whilst Brent, Harrow and Hillingdon comingle food waste with garden waste. The constituent boroughs arrange the collections based on the optimum methodology for their borough and the Authority put in place the required contracts to deal with the bulking, transfer and composting of both food waste streams.

1.2. How has food waste management changed in London over the past 5-10 years? How much has the industry grown?

The table below shows the date on which each constituent borough introduced its food waste collection to the majority of households. The roll out of food collections to flats followed later, and in some boroughs this is still on-going.

Borough	Collection type	Date introduced
Brent	Co-mingled with garden waste	2005
Ealing	Food only	2007
Harrow	Co-mingled with garden waste	2004
Hillingdon	Co-mingled with garden waste	2013
Hounslow	Food only	2008
Richmond upon Thames	Food only	2005

1.3. Food waste reduction initiatives in London:

Love Food Hate Waste

The Love Food Hate Waste campaign (LFHW)[1] was launched by Waste and Resource Action Programme (WRAP), the government's waste support programme, in 2007. Its aim was to raise awareness on food waste prevention and give practical advice on how to reduce food waste and save some cash in the process.

Between October 2012 and March 2013, Recycle for London (RfL)[2], a programme delivered in partnership between the Greater London Authority (GLA) and WRAP, and funded by the London Waste and Recycling Board (LWARB), delivered a pan-London LFHW campaign. The campaign included radio, digital and print advertising along with supporting PR activity. The campaign was supported at borough level by community engagement activities such as cookery classes and engagement through a network of volunteers.

[1] http://www.lovefoodhatewaste.com/
[2] http://www.recycleforlondon.com/

The Authority and its boroughs were strong supporters of the RfL scheme which enabled an in-depth evaluation undertaken in West London proved that LFHW helped reducing avoidable food waste by 14%, from 2.6kg per household per week pre-campaign to 2.2kg post-campaign. The reduction in avoidable food waste would save the constituent boroughs £559,000 per annum in disposal costs (including gate fees and landfill tax). The costs associated with delivering the campaign were around £170,000, which would meant that for every £1 invested, boroughs saved up to £85.

Based upon the success of this initiative the Authority's constituent boroughs have agreed an additional £100,000 budget to increase Love Food Hate Waste activities in 2014/15. More information on the proposed activities can be found here
http://democraticservices.hounslow.gov.uk/documents/s85570/Waste%20Prevention%20-%20progress%20in%202013-14%20and%20proposed%20action%20plan%20for%202014-15.pdf

2. Extending and improving food waste collection

2.1. What are the current barriers to managing domestic food waste effectively in London, particular with regard to blocks of flats on estates?

Since 2004 the WLWA boroughs have all introduced separate food and/or organic waste collections. The facilities and equipment are in place, however, in some cases, the take-up of food waste recycling services is very low amongst residents. This is partly due to public perception of food waste (smells, flies and vermin). Also, the misunderstanding of what happens to waste once it has been collected for recycling often leads to public 'scepticism' towards recycling[3], including food waste. WRAP is currently undertaking research which aims to understand the reasons why residents do not recycle correctly.

LWARB's programmes aimed at boosting recycling such as the Flats Recycling Programme in 2010 or the Driving Up Performance Fund in 2013 prove that communications and education is crucial to increase performance. LWARB is currently conducting research on the key barriers to recycling and how communications can be better targeted to low performing areas. For food waste collections, the key lessons learnt from LWARB's Flats Recycling Programme showed that:

- Provision of free liners and higher investment in communications can result in higher performing schemes.
- Delivering communal bins, caddies and liners at the same time as communications materials ensures that residents understand how to correctly participate in food waste schemes from the outset. Combining door to door canvassing with delivery of equipment and communication materials in particular seems to be a sensible approach.

Even though some of our boroughs have been collecting food waste for 10 years, evidence shows that separate food and organic waste collection are not yet regarded as the 'usual practice'. Therefore, to increase the performance of domestic food waste collections, it is necessary that the same practices of food waste separation at home are also applied and mainstreamed elsewhere, whether it is at work, in schools and universities, in restaurants and hospitals or on the streets.

2.2. How do you plan or hope to introduce, extend or improve domestic food waste recycling? What specific barriers have you identified? What support (e.g. financial or technical) would you require to overcome these?

[3] Unpacking the Household: Exploring the dynamics of household recycling, Coca-Cola Enterprises, 2013

Many local authorities in London are facing difficulties in introducing or expanding separate organic/food waste collections due to budget constraints. Some of them are making use of the limited funding available at pan-London and national level to introduce or further expand domestic food waste recycling.

This is the case of the Flats Recycling Programme, funded by LWARB in 2010. This £5 million programme aimed to address the low recycling performance in flats by funding collection infrastructure and communications. Seven out of the 29 projects funded under this programme focused on introducing, expanding or improving food waste collections in flats, serving 78,490 households in London[4].

Also, in 2012, the Department for Communities and Local Government (DCLG) set up a £250 million fund to support weekly collections of residual waste. This scheme was not specifically aimed at improving food waste collections, however, three of the Authority's boroughs received funding that enabled either the provision of food waste collections (in the case of Hillingdon) or the extention of food waste collections to flats (in Brent and Ealing).

In their recent response to the EFRA Select Committee inquiry on waste management in England, London Councils has asked for the government to provide further support for separate organic waste collection services as a means to increase recycling and support alternative food waste reprocessing technologies such as anaerobic digestion and in-vessel composting.

2.3. Following LWARB's flats recycling programme, how can those managing estates and large blocks of flat continue to introduce and improve food waste recycling? What other funding and guidance is still available now and how can boroughs and others access it?

2.4. Are there any national or international examples of good practice for managing domestic food waste in densely-built, urban environments from which London could draw lessons?

Earlier this year, the House of Lords EU Agriculture, Fisheries, Environment and Energy Sub-Committee conducted an inquiry into the EU's contribution to food waste prevention. The report, 'Counting the Cost of Food Waste: EU Food Waste Prevention'[5], published on 6 April 2014, includes a list of food waste initiatives and programmes across the EU. However, these examples focus on food waste prevention and do not make any references to densely-built urban environments.

A widely-recognised European best practice case study on waste management in urban areas is the Augustenborg Eco-City in Malmo (Sweden)[6]. This project aimed to regenerate a low-income residential area built in the 1950s. Improving waste management was part of an integrated project which addressed issues such as water management, eco-building, sustainable mobility and green areas. The City of Malmo installed 15 recycling houses with full recycling and composting facilities for the 1800 inhabitants of Augustenborg. Their recycling rate is now 70%, including food waste which is used for home composing and to generate biogas[7].

2.5. How can the Mayor and local authorities use their investment and planning powers to promote better collection and handling of food waste?

[4] The seven projects on food waste collection were in Bexley, Bromley, Croydon, Enfield, Hackney, Islington and Merton. Source: LWARB's Flats Recycling Programme Evaluation Report, August 2013.
[5] http://www.parliament.uk/documents/lords-committees/eu-sub-com-d/food-waste-prevention/154.pdf
[6] http://www.malmo.se/English/Sustainable-City-Development/Augustenborg-Eco-City/Waste-management.html
[7] http://knowledge.allianz.com/environment/energy/?514/how-malmoe-recycles-waste

In existing properties:
Retrospective changes to the existing waste infrastructure in flats can be difficult and costly, with changes to refuse chutes or the sacrifice of parking spaces to provide communal food bins. All of this requires the active support of the estate management company and preferably resident's champions to ensure use greatest use of the new facilities.

In new residential areas:
With a forecast to reach 10 million people by 2031, London's demographic pressures are increasing the demand for housing. To avoid future under-performance in recycling, it is crucial that new buildings are designed with the appropriate facilities for storing domestic waste, including food waste, both inside the flats/houses and in the adjacent areas. The buildings also need to ensure waste collection vehicles can easily access waste storage areas.

Therefore more consideration of this issue needs to be made when borough planning officers assess applications for new residential developments. This situation is likely to get worse if the Code for Sustainable for Sustainable Homes, the national standard for the sustainable design and construction of new homes, is dissolved, as proposed by the government in the Housing Standards Review consultation[8] which took place in October 2013. A response from DCLG is expected this summer.

London Councils is currently investigating how to better integrate the needs for waste storage and collection in planning enforcement practices in the boroughs.

3. Processing food waste

3.1. What happens to the domestic food waste that you collect?

Since the time that the first constituent boroughs put in place food waste collection services the Authority has arranged for composting of the organic waste collected. These services have been re-tendered a number of times, most recently in 2013, with new contracts operational since April 2014. When procuring these contracts, the Authority does not specify the treatment type, but allows companies to bid back solutions against the types of waste (food only or co-mingled food and garden waste). The contracts are offered in 10,000 tonne per anum lots to allow maximum use of any spare capacity in local plants. The recent tendering was very successful with competitive bids being received for both food waste streams and separately collected garden waste. The market identified Anaerobic Digestion as the most cost effective treatment for separately collected food waste, and in vessel composting for co-mingled food and garden waste. The contractors and plants used by the Authority are set out below:

Food waste, **Biogen - Westwood AD Plant,** Bedford Road, Rushden, Northamptonshire, NN10 0SQ. approximately 12,000 tonnes per anum

Mixed food and green waste, **Countrystyle Recycling Ltd - Ridham In-vessel Composting Facility**, Ridham Dock Road, Iwade, Sittingbourne, Kent, ME9 8SR (approx.. 22,000tpa) and **West London Composting Ltd - High View Farm**, New Years Green Lane, Harefield, Middlesex UB9 6XL,(approx. 25,000tpa)

The contracts are for two years with a possible extention for a further two years. The co-mingled waste treated at West London Composting is direct delivered by the collecting boroughs, whilst the remainder is bulked at transfer stations and transported by the contractor to their plant for treatment. All plants used are either PAS compliant or in the process of achieving PAS certification.

[8] https://www.gov.uk/government/consultations/housing-standards-review-consultation

The Authority charges the boroughs a blended cost which includes bulking, transport and treatment. The rates for 2014/5 are £26 per tonne for food only waste and £55 per tonne for co-mingled food and garden waste. These rates are a significant decrease for food only treatment, whilst the co-mingled waste treatment shows a slight increase compared to 2013/14 rates.

3.2. What are the benefits and difficulties of different ways of processing food waste, for example composting or anaerobic digestion, in an urban environment?

The Authority believes that the treatment technology should be market led, provided it meets the Authority's specification. However, in the future the Authority may offer longer term contracts and sites to try to encourage the development of sites in west London. It is presumed that it will be easier to secure planning consent for an AD plant in the Authority area than IVC on the basis that AD is more enclosed and less likely to cause odour nuisance. However, currently the Authority is not aware of any AD plants willing to treat co-mingled food and garden waste. A further challenge for in area plans is finding suitable outlets for the compost or digestate. The gate fee for the process will include for the transport of this digestate and compost to its point of use, however, as there should be less volume post treatment, an in area plant may still lead to cost savings.

3.3. In what ways is recycling food waste beneficial to London's environment?

Food waste recycling helps to reduce CO2 emissions. The latest WRAP survey on household food and drink waste in the UK [9] showed the following results:

- Households in the UK produced 7 million tonnes of food waste in 2012. When expressed per household, the total amount of food and drink waste is equivalent to 260 kg per household per year.
- Two thirds (4.7 million tonnes) of household food and drink waste was collected by local authorities. Of this, most was collected in kerbside 'residual' or general waste, although more than half a million tonnes (around 11% of that collected) was in targeted collections of food waste, meaning it could be treated to generate energy and useful digestate or compost.
- Around a fifth was disposed of via the sewer (1.6 million tonnes; the kitchen sink and other drains), with drinks and dairy products making up more than half of this. The remainder was either composted at home (0.51 million tonnes) or fed to animals (0.28 million tonnes).
- Out of the 7 million tonnes of food waste produced, 4.2 million tonnes (or 60% of the total) was considered to be avoidable. The greenhouse gas emissions associated with avoidable food and drink waste from UK homes accounted for approximately 17 million tonnes of CO2 equivalent. The carbon saving of preventing all avoidable food waste in 2012 would be equivalent to taking one in four cars off the road.
- Also, land is required to produce food and drink that is subsequently thrown away by UK households. For the first time, an estimate has been made of these land requirements: 19,000 square kilometres or an area about 91% the size of Wales.

3.4. What opportunities do you see for the waste management industry to expand or optimise its activities in London? What are the key factors involved (e.g. minimum amount of feedstock for processing)?

There is a need to make the correct strategic decisions at both national and subnational level to provide the right mix of treatment infrastructure and therefore avoid future overcapacity. Localism-based approaches to dealing with waste generate social and economic benefits (jobs, income, and energy recovery) to the local community which can lead to a sense of ownership and result in greater recycling. However, investment in

[9] http://www.wrap.org.uk/content/household-food-and-drink-waste-uk-2012

waste infrastructure is significantly dependant on guaranteed input tonnages, and this will be difficult to achieve without a robust strategy.

The London Plan provides a list of 'Opportunity and Intensification' areas. Consideration needs to be given to waste management at the early stages of planning for new developments, including discussions with the waste management industry about where the additional waste will be processed and potential locations for new facilities.

3.5. How do savings in landfill tax relate to possible investment into recycling and composting? What is the role of gate fees in this respect?

At the moment, there is no direct link between any savings made in landfill tax and investments into recycling and composting. In the current financial climate, councils have to focus on finding efficiencies that enable them to secure front-line services. And whilst savings may be achieved by diverting less waste to landfill/incineration, these contribute to balance out the councils' overstretched budgets, helping to achieve annual efficiencies' targets.

The landfill tax was introduced in 1996 and has been escalating at a rate of £8 per tonne, making alternative technologies more competitive. In April 2014, the tax reached a limit of £80 per tonne. Earlier this year, the government confirmed that this tax would continue to rise in line with inflation, from April 2015 onwards.

The landfill tax was originally designed as a means of reducing amount being sent to landfill by using the revenue to reinvest in waste infrastructure. However, there is no clear evidence that this has been the case to date and landfill tax now appears to be a revenue raising mechanism for the treasury.

Whilst the amount of waste London boroughs send to landfill has substantially decreased, the cost of landfilling continues to rise as a result of the landfill tax and gate fees.

Food waste can be considered in two ways. Unavoidable food waste includes bones, peelings, etc. that are organic, but cannot be consumed and will require disposal. However, a significant proportion of food waste resulting from people buying too much, not understanding best before and use by dates is avoidable. If residents can be encouraged to change their behaviour by better shopping practices, making more meals from leftovers, use of home freezing, etc. these savings can be realised by the residents themselves rather than waste authorities. This would result in savings on landfill tax and reduce the need for investment in food composting facilities.

Stephen Knight
Chair London Assembly Environment Committee
City Hall
London SE12AA

Our ref: Food Waste
Your ref: DS
Date: 13 June 2014

Dear Chair

Environment Committee call for evidence
GLA waste officers are pleased to provide evidence supporting the Committee's review of food waste management in London. The Mayor considers food waste, making up around 20 per cent (or 600,000 tonnes) of household waste each year, to be a priority waste stream that will play an important role in boosting London's recycling/composting rates and provide renewable fuel for local low carbon energy generation. I have prepared this letter by responding to the three information request areas as set out in Appendix 1 to this call for evidence. This should be considered alongside the discussion I held with Alex Beer in May on the Mayor's waste plans for London delivered through his municipal and business waste strategies and the London Waste and Recycling Board (LWARB) part funded by the Mayor. The Mayor's strategies can be found at http://www.london.gov.uk/priorities/environment/publications/the-mayors-waste-management-strategies

Part 1: Establishing the baseline
As you are aware the GLA does not provide or procure any food waste collection services. The number of London boroughs providing food waste collection services has steadily increased to around 20 over the last 10 years[1]. This is likely in response to the landfill tax escalator and increased competition in the organic waste industry evidenced by declining gate-fees for composting and anaerobic digestion facilities[2]. It is also worth noting that since 2008 the amount of London's local authority controlled waste sent to landfill has declined significantly with one million tonnes less sent to landfill in 2012/13 compared to 2008/09.

GLA waste officers work with local authorities to help them maximise value from their waste and procure waste and recycling contracts delivering value for money. We ask that boroughs consider food waste collection services where cost-effective to do so, and require such services to be included in tenders for local authority waste contracts. Boroughs are also encouraged to view waste as a resource and include revenue share clauses in their contracts to gain an income stream from their recyclables and food waste going for energy generation. Some boroughs have been successful in doing this.

The Mayor through LWARB's Efficiency Programme provides financial and communications support to boroughs wanting to introduce new recycling collection services (including food

[1] See WRAP's London borough portal http://laportal.wrap.org.uk/ for information on local authority waste and recycling services
[2] See WRAP annual gatefee reports

waste). More information can be found out about this support at www.lwarb.gov.uk. The Mayor is delivering a food waste reduction support programme (FoodSave) to local food businesses in partnership with LWARB and supported by the European Regional Development Fund. This project is helping SMEs receiving the full support to save over £5k on food management costs and avoid over a tonne of food waste to landfill per business per year. More information can be found at www.foodsave.org. Finally the Mayor supported food waste reduction through the Recycle for London programme, most recently through the Love Food Hate Waste campaign delivered in partnership with WRAP when we informed Londoners that they could save up to £50 per month per household by reducing the amount of edible food that they waste. See more at http://www.recycleforlondon.com/.

Part 2- Extending and improving food waste collection
Providing cost-effective, easily accessible and well used food waste and recycling collection services to flatted/multi-occupancy properties is a key challenge for local authorities improving their food waste management. Around half of London's housing stock is multi-occupancy, with much higher proportions experienced in inner London boroughs (eg 90% in Tower Hamlets and Westminster). Recycling performance in flats is around 10 per cent. Boosting recycling performance in flats is key to reaching the Mayor's 50% per cent recycling. Support for local authorities delivering food waste services to flats is available via LWARB as mentioned above.

In November 2010 the Mayor in partnership with SITA hosted an event on best practice recycling services in multi-occupancy flats. The event attracted local authority attendees from Europe and the USA and provided an excellent international exchange of ideas and success stories for London boroughs to learn from. A report was produced found here http://www.sita.co.uk/downloads/SITAUK-LookingUp-web.pdf

Planning: The Further Alterations to the London Plan
Provides the waste planning policy framework for London to be 100 per cent net self-sufficient for waste management by 2026. London boroughs are required to identify and safeguard sites to manage waste apportioned to them to meet the Mayor's overall net self-sufficiency target. This will help to encourage more waste facilities developed in London, namely composting and anaerobic digestion facilities supported in the Plan. Last year the Mayor supported planning approval for London's first operational anaerobic digestion facility in Dagenham. The Mayor also supported the second application for an anaerobic digestion plant on the Sustainable Industries Park and even called in and determined the application for an anaerobic digestion facility in Mitcham.

Part 3 – Processing food waste
The Mayor is technology neutral and takes an outcome based approach to waste management facilities, supporting processes achieving the greatest carbon and cost saving benefits. Anaerobic digestion of food waste generally achieves the greatest carbon savings over other processes along with the added benefit of renewable energy generation. The Mayor believes carbon to be a more appropriate metric for performance on waste than current weight based metrics alone. The Mayor has set a CO2 emissions performance (EPS) for London's local authority waste activities – a world city first. This has been developed to ensure London ceases to be a net contributor to climate change, and instead achieve significant climate change mitigation benefits through high reuse and recycling rates and low carbon energy generation. The Mayor has also set a separate CO2 emission performance for energy generated from London's waste supporting low carbon efficient energy generation. More information found in Policy 2 of the Mayor's municipal waste management strategy.

I hope you find this information to be useful. Please do not hesitate to contact me if you wish to discuss any of the points raised.

Yours sincerely

Doug Simpson
GLA Principal Policy Officer – Waste and Energy

Food waste management in London

Please find below the response to the request by the London Assembly's Environment Committee for help with the investigation of the management of London's food waste.

A focus on recycling and processing from the London Borough of Bexley.

1. *Does your organisation collect domestic food waste? If so, how often (eg weekly or fortnightly)? And through what mechanism (eg from homes or a central collection point)*

   Yes
   The London Borough of Bexley collects food waste from both domestic and commercial premises on a weekly basis. The collection process is adapted dependent on property type.
   a. For houses there is a mixed collection of food and garden waste in 140 litre wheeled bins
   b. For flats there is a mixture of food only bins, some in special food waste housings and others that do food and small amounts of garden waste in the normal household sized wheeled bins.
   c. All schools and some commercial food premises have a food only collection.

2. *What progress has the Mayor made with his food waste-related programmes?*

   The Mayor & the GLA have had two main schemes to assist with food waste composting.
   a. Recycle for London have assisted and provided funding for the implementation of WRAP's "Love Food Hate Waste" programmes in London Boroughs to supplement the national campaign.
   b. LWARB have provided funding for food waste collection schemes from flats, and also provided loans for treatment facilities.

3. *How has food waste management changed in London over the past 5-10 years? How much has the industry grown?*

   From our first recycling plan in 1991 Bexley had an objective to collect food waste. This objective was not met as there were no licenced facilities to process food waste.

   In 2000 Bexley & Cleanaway (now part of Veolia) successfully bid for research funding for the collection and treatment of food waste using a small in-vessel unit at the Rainham waste site which started work in early 2001. Shortly afterwards the Environment Agency advised that the then Animal by Product regulations did not permit the use of compost made from food waste

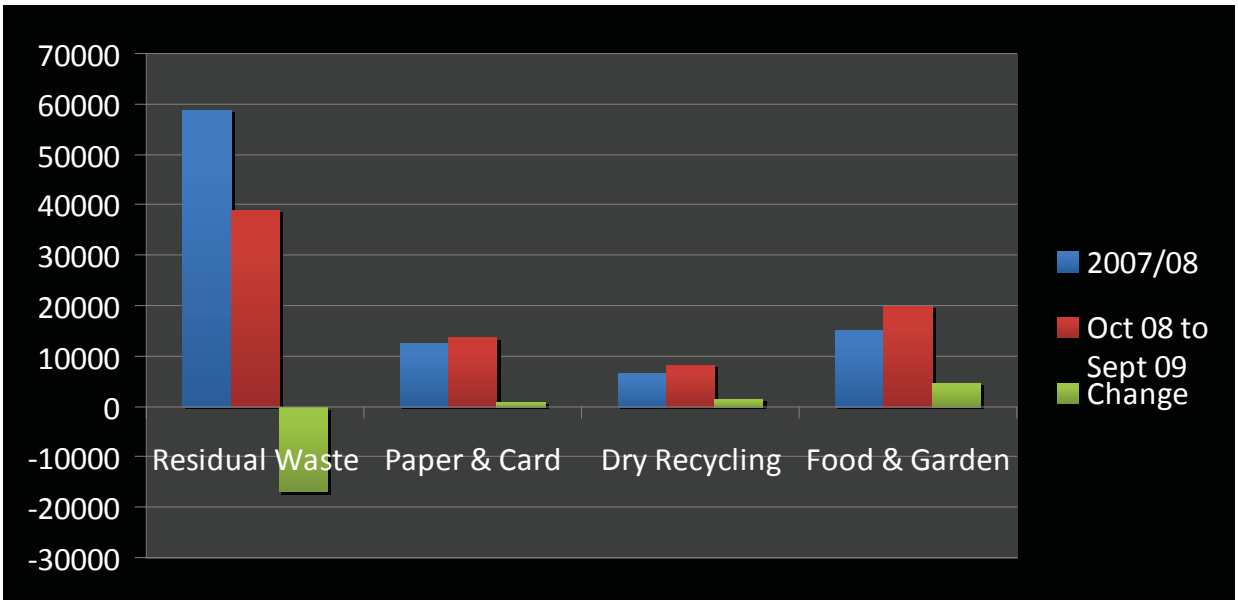
containing meat or fish. Following extended research it was agreed that food waste composting was a good method of treating food waste containing meat and fish, provided that the minimum time and temperature requirements were met during the process. This was then enshrined in European and UK regulations.

Bexley tendered for a contract to treat food and garden waste which was won by Cleanaway, who planned to build a full size in-vessel plant at Rainham. Due to planning issues the Rainham site was not built. In 2004 when the food & garden waste was rolled out Borough wide the material collected was bulked up at our transfer station and sent to a site near Bury St Edmunds as it had spare capacity.

In the last five years there have been a number of in-vessel composting facilities built in or near London plus some anaerobic digesters for food waste only treatment.

4. *How is your organisation, or any other organisation that you are aware of, promoting food waste reduction, and what has been achieved so far?*

Bexley found that a successful method of food waste reduction was the provision of a food, or food and garden waste collection, as the act of separating the food waste draws attention to how much food is being disposed of. Residents were further encouraged by the implementation of a fortnightly residual waste collection (where appropriate) as those wanting their food collected more frequently could use the weekly food and garden waste service. The chart below shows the effect that the introduction of alternate week residual collections had on waste streams in Bexley when introduced in the spring & summer of 2008.



5,000 tonnes transferred to the food & garden waste collections from residual waste. However 8,000 tonnes just disappeared, from waste analysis most of this was found to be food waste.

- Food waste reduction is currently being promoted in Bexley using the Love Food Hate Waste campaign. Promotion of this has included: Advertising on collection vehicles
- Cookery workshops
- Food waste roadshows in supermarkets
- Social media

More details of Bexley's food waste collections is on the following web link: http://www.bexley.gov.uk/index.aspx?articleid=11861

Part II – Extending and improving food waste collection

5. *What are the current barriers to managing domestic food waste effectively in London, particular with regard to blocks of flats on estates?*

   Compared with the collection of food waste from houses there are a number circumstances that make food collections from flats less effective:-

   - As with other recycling facilities most flats were not designed to have anything but bulk waste containers. Recycling containers including food waste are often located near the entry/exit of the block which may be at a different location to the residual waste and in some cases much further away.
   - Lack of ownership is an additional problem for food waste collections. To minimise smells and problems with flies food waste needs to be wrapped (newspaper, cereal box, paper or starch bag) otherwise liquid and food builds up in the bin. Households with their own bin quickly learn how to contain the food waste to stop any problems but with communal bins the actions of one resident affects everyone and can reduce participation.
   - As shown in the graph in question 4 individual households can be encouraged to reduce waste and recycle by making it easy to use and restricting residual waste. However, restricting waste in flats is not practical and recycling is always going to require more effect in a flat. .
   - In the kitchen the system for keeping food waste separate from other waste is the same as for houses. Each flat is provided with a small caddy, however the distance to communal bins is further in flats which means that the caddy is often emptied less frequently.
   - As often the containers are in areas open to non-residents there can be issues with contamination with litter from passers-by or residual waste from nearby properties.

6. *How do you plan or hope to introduce, extend or improve domestic food waste recycling? What specific barriers have you identified? What support (e.g. financial or technical) would you require to overcome these?*

   Currently 90,952 of the Boroughs 95,660 properties have either a food waste or food and garden waste collection; this includes 75% of the flats in Bexley.

Of the remaining 4,708 properties, 1,608 are flats above shops where storage and collection arrangements are very difficult. The remainder are nearly all flats. Each location needs a bespoke solution designed and agreed with residents, managing agents or housing associations. This takes time and extensive discussions to get agreement. Some locations, as with the flats above shops have limited space for additional containers.
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Financial support to provide housings (see photo) to store the wheeled bin for food waste would be of assistance, as the payback on the savings from disposal will take five to ten years to recoup depending on the work required.

7. *Following LWARB's flats recycling programme, how can those managing estates and large blocks of flat continue to introduce and improve food waste recycling? What other funding and guidance is still available now and how can boroughs and others access it?*

   No other external funding currently available.

8. *Are there any national or international examples of good practice for managing domestic food waste in densely-built, urban environments from which London could draw lessons?*

Following LWARB's flats recycling programme and action by individual Boroughs, London is itself an example of good practice. Bexley has had visits from Oslo and south Sweden in the last year and one of the objectives of the visits has been the food waste collections from flats.

Otherwise Turin and Milan have extensive food waste collection schemes.

9. *How can the Mayor and local authorities use their investment and planning powers to promote better collection and handling of food waste?*

   At the Planning stage developers are required to design in recycling and food waste storage. Often there are pressures to maximise the development of the sites which sometimes leads to waste and recycling storage being squeezed in the building stage. Most authorities provide guidance to developers on waste & recycling storage but it may be of assistance to review these and spread good practice. It is also important to ensure space is provided for separate food waste even if the service is currently not available.

   If the Mayor or Authorities have an investment in developments they should use their influence to ensure adequate provision and ease of access for all food waste, recycling and residual waste is made.

Part III – Processing food waste

10. *What happens to the domestic food waste that you collect?*
    - *Name of the company that treats the food waste*

      Envar Composting Limited (St. Ives), Envar is part of the ADAS group of companies

    - *Location of treatment facility (within, near or outside London)*

      Huntingdon, Cambridgeshire. PE28 3BS.

    - *Type of facility (e.g. composting plant, anaerobic digestion plant etc.)*

      In-vessel composting plant

11. *What are the benefits and difficulties of different ways of processing food waste, for example composting or anaerobic digestion, in an urban environment?*

    The advantage of in-vessel composting is that it is a robust system that can process a wide range of food and garden waste, and can cope with rapid changes in the materials inputs. It's a natural CO_2 neutral system that produces a range of products that can be sold to end users. The compost when used in agriculture improves the soil quality, thus meeting some of the requirements of the EU Soil Thematic Strategy & Directives.

Anaerobic Digestion (AD) has a smaller footprint for the initial processing and produces a fuel (methane gas) that can either be injected into the gas network or used to produce electricity. AD is a CO_2 reduction process. It's a more delicate processes and the material inputs have to be carefully mixed for maximum efficiency. The solid material produced requires aeration (short composting process) before it can be utilised as a soil enhancer.

12. *In what ways is recycling food waste beneficial to London's environment?*

Recycling of food waste has a number of benefits:-

- It makes residents see how much food waste they are disposing of.
- It is one of the few waste streams that people can reduce with only minor changes in their life style.
- The compost produced from the food waste improves the soil structure.
- By reducing and diverting residual waste it makes space available in the current London residual waste treatment facilities, thus reducing the need for more facilities and the amount of material going for landfill.

13. *What opportunities do you see for the waste management industry to expand or optimise its activities in London? What are the key factors involved (e.g. minimum amount of feedstock for processing)?*

The waste management industry is constantly optimising its activities in London. However there is often a "chicken and egg" stalemate in regards to new processes. The waste industry will not build a plant unless a material stream is collected and waste authorities and others cannot collect unless there is a plant to processes it. They will also be nervous of newer, less proven technology. It will often require funding from LWARB to get a plant built or waste authorities starting to collect and sending the material outside the London area for processing.

14. *How do savings in landfill tax relate to possible investment into recycling and composting? What is the role of gate fees in this respect?*

In 2013/14 Bexley sent 0.3% of it's waste to landfill, most of which was asbestos. However the gate fee for residual waste treatment is in excess of £100 per tonne. In comparison the gate fee for collection (from the Councils depot), transport and processing of the food & garden waste is £50 per tonne cheaper. So in Bexley's case the residual waste gate fee is the financial motivator for all our recycling and composting activities.

London Assembly Environment Committee

Food waste management in London

Written evidence submitted by the Environmental Services Association

The Environmental Services Association (ESA) is the trade body representing the UK's waste and secondary resource industry, which is leading the transformation of how the UK's waste is managed. An industry with an annual turnover of £11billion, our Members have helped England's recycling rate quintuple in the last decade and provide over a fifth of the UK's renewable electricity.

- The introduction of voluntary separate food waste collections should be welcomed since it helps drive food waste up the waste hierarchy and provide much needed feedstock security for treatment plants.
- Separate food waste collections can however lead to significant additional costs to local authority waste management systems. This makes them difficult to deliver in the current public sector spending environment.
- Some authorities took advantage of time-limited central government funding to introduce separate collections of food waste. This provides certainty of feedstock to facilities designed to recycle organic wastes, i.e. composting and anaerobic digestion (AD) plants, making them easier to deliver.
- Urban environments are not an ideal setting for organic waste treatment. Composting and AD plants can not be located in close proximity to households due to the spread of odours from the plants. Local planning policy therefore has to allow for such plants in more industrial areas.
- Food waste is heavy due to the water content and therefore relatively expensive to transport. London's congestion can add significantly to these costs.
- An additional challenge for composting, and AD plants in particular, is finding suitable market outlets for the offtakes (i.e. suitable outlets to receive the digestate as a fertiliser).
- The Committee should not overlook the fact that food waste generates renewable power when it is processed in a residual waste to energy facility. This may prove to be the most efficient means of treating food waste for some London authorities, although it should also be seen in a context where the European Commission is proposing to introduce much higher recycling targets. If such targets were to be introduced then separate food waste collections and treatment would become necessary to achieve those targets.

Part I – establishing the baseline

Does your organisation collect domestic food waste? If so, how often (e.g. weekly or fortnightly)? And through what mechanism (e.g. from homes or a central collection point)

1. ESA's Members provide the full range of services for local authorities within London, i.e. collection, transport, sorting at material recovery facilities, composting, AD, and the provision of residual waste treatment both though MBT and through energy from waste plants.
2. The risk of odours means that domestic food waste should ideally be collected weekly. This is generally the service level expected by the majority of residents.
3. Food waste tends to be collected from the kerbside, either separately or together with garden waste.

What progress has the Mayor made with his food waste-related programmes?

4. There have been several national initiatives which have helped drive recent increases in separate food waste collections and the take up of treatment options – AD in particular. The Weekly Collection Fund provided by DCLG helped to provide funding for the take up for weekly food waste collections by a large number of local authorities across the country. At the same time, generous incentives provided by Decc through the Renewables Obligation has helped to drive the development of new AD plants.
5. The Mayor's FoodSave Initiative aimed at London's hospitality sector has of course also been welcome.

How has food waste management changed in London over the past 5-10 years? How much has the industry grown?

6. The AD sector has grown rapidly in the last 5-10 years. The number of AD plants doubled nationally from 68 to 110 plants during the period 2011-2013 and there are twice as many facilities at the planning stage. AD plants are an even more recent phenomenon in London with its only two plants being built within the last few years.
7. There is also an increasing focus by retailers on recycling their food waste, predominantly also through AD.

How is your organisation, or any other organisation that you are aware of, promoting food waste reduction, and what has been achieved so far?

8. ESA and its Members were heavily engaged in the development of the UK's Waste Prevention Programme and the industry hopes that Defra will act on its proposals.
9. The Government sponsored Waste and Resources Action Programme (WRAP) has identified food waste as one of its key priorities and is actively promoting food waste reduction with reportedly quite successful results at a national level (21% fall in avoidable household food waste during the period 2007-2012).
10. Research has also shown that the introduction of separate food waste collections is a key driver of food waste reduction as householders are more easily able to identify their food waste and act to minimise it.

Part II – extending and improving food waste collection

What are the current barriers to managing domestic food waste effectively in London, particular with regard to blocks of flats on estates?

11. London has some particular challenges and barriers to managing its domestic food waste effectively. A relatively large proportion of high-density housing combined with transient populations make it difficult for London's inner city boroughs to raise their recycling rates to levels achievable elsewhere. A relatively high proportion of residents without English as their first language can also make communication efforts more difficult.

12. High density housing often means that there is less space available for the storage of additional waste containers, such as food waste caddies. London's narrow streets and relatively high levels of congestion also raise transport costs, while the high cost of land means that facilities often have to be located further from the source of the waste arisings.

13. In addition, food waste containers which are shared between residents in flats can easily become heavily contaminated if only a few residents are unaware or uninterested in what can or cannot be recycled using the facilities.

How do you plan or hope to introduce, extend or improve domestic food waste recycling? What specific barriers have you identified? What support (e.g. financial or technical) would you require to overcome these?

14. The introduction of weekly separate food waste collections incurs a significant additional cost to local authorities' environmental services budgets, which can act as a strong disincentive to authorities to bring them in. Additional funding could be usefully targeted in this area.

15. The Committee should not overlook the fact that food waste which is processed in residual waste to energy plants generates renewable power improving the overall environmental benefits of developing such facilities. Food waste can also usefully be treated as part of the residual waste stream in MBT facilities.

Following LWARB's flats recycling programme, how can those managing estates and large blocks of flats continue to introduce and improve food waste recycling? What other funding and guidance is still available now and how can boroughs and others access it?

16. Those managing estates should contact their local authority for assistance on communication opportunities, and also on how the local authority is working with their contracted waste management company to reduce and recycle food waste. Guidance and useful communication tools are also available via WRAP's Love Food, Hate Waste website

Are there any national or international examples of good practice for managing domestic food waste in densely-built, urban environments from which London could draw lessons?

17. A number of UK cities run separate food waste collections. Evaluation from trials (from 2007-2009) are available on the WRAP website, although not all of them focus on urban environments.

How can the Mayor and local authorities use their investment and planning powers to promote better collection and handling of food waste?

18. Local Authorities are best placed to evaluate how best to achieve their overlapping and sometimes conflicting waste management objectives. Their objectives are:
    a. maximise environmental performance through high recycling levels and maximising diversion from landfill;
    b. maximise the service levels they provide to their residents; and
    c. minimise the costs of providing those services.
19. Given that these objectives are sometimes conflicting and there are trade-offs involved in balancing them, it may not be immediately obvious what constitutes "better" collection and handling of food waste. For example, the separate collection and treatment of food waste may be deemed to involve an additional cost burden to an authority which outweighs any additional environmental benefits to those associated with diverting that material from landfill as part of the residual waste stream.

Part III – processing food waste

What happens to the domestic food waste that you collect?

- Name of the company that treats the food waste
- Location of the treatment facility (within, near or outside London)
- Type of facility (e.g. composting plant, anaerobic digestion plant etc)

20. ESA's Members collect and send food waste to the full spectrum of available treatment technologies. High land costs in London may incentivise the development of treatment facilities near but not within London. This may make the Mayor's self sufficiency objectives difficult to achieve.

What are the benefits and difficulties of different ways of processing food waste, for example composting or anaerobic digestion, in an urban environment?

21. Composting and AD plants need to be built at least 250 metres away from the nearest receptor (dwelling or workplace) due to the risk of odour. This obviously presents an immediate difficulty to processing food waste in an urban environment.
22. In addition, such facilities should also be placed in relatively close proximity to an available land bank (such as agricultural land or a land restoration project) for the outputs. This is due to the expense of transporting relatively heavy material for longer distances.
23. WRAP's updated report from 2010 on the environmental benefits of recycling suggests that sending food waste to AD may be the marginally preferred option to composting or combustion. This was also reiterated in Defra's waste hierarchy guidance. However, the context and whether the food waste is collected in conjunction with green waste have to be taken into account. There are large carbon savings associated with diverting this material from landfill (over 0.5 tonnes CO2e per tonne of waste diverted), although the government's most recent greenhouse

gas conversion factors suggest that the carbon savings from composting, AD and combustion are all broadly equivalent.

In what ways is recycling food waste beneficial to London's environment?

24. Recycling food waste provides an opportunity to produce a nutrient rich compost or digestate which can usefully be returned to land. In addition, AD can generate renewable power as well as potentially supply some heat to the local area.

25. Weekly separate food waste collections, when combined with less frequent residual collections, can also help to drive up recycling rates while reducing the potential for vermin.

What opportunities do you see for the waste management industry to expand or optimise its activities in London? What are the key factors involved (e.g. minimum amount of feedstock for processing)?

26. Feedstock security and market opportunities for the outputs are the two key challenges for investors in new AD plants in London. London's combination of scale of occupied housing stock and large-scale hospitality sector should provide a strong opportunity for AD plants which are able to secure a suitable location.

27. There may be green public procurement opportunities in London which could also help to incentivise and bring forward investment in the separate treatment of London's food waste. Examples could include using biogas from AD plants to fuel London's bus network, although the high levels of electricity subsidies available for AD plants may make this less attractive to investors currently.

How do savings in landfill tax relate to possible investment into recycling and composting? What is the role of gate fees in this respect?

28. High landfill tax rates are incentivising the development of new waste treatment facilities across the country for the purpose of landfill diversion. Commercial and industrial waste streams tend to be directed towards the least cost option, which is no longer landfill given current tax rates. For local authorities, this dynamic is complicated by authorities' need to meet government and European targets and objectives.

29. Gate fees for organic waste treatment plants are generally lower than for residual waste plants (in the case of AD this is supported by high subsidies for electricity generation). The effect of this though can be offset by the higher costs associated with separate collections.

APPENDIX 1

Draft Response to the London Assembly investigation into food waste management in London

1. Introduction

1.1 The NLWA is the second largest waste disposal authority in the UK in terms of the tonnage of waste managed and the Authority provides a service for approaching 1.9 million people in the capital. NLWA covers the London boroughs of Barnet, Camden, Enfield, Hackney, Haringey, Islington and Waltham Forest. Further information is contained in the Authority's Annual Monitoring Report of progress against the targets included in the jointly agreed (with the seven boroughs) 'North London Joint Waste Strategy' (NLJWS) which is available on our website http://www.nlwa.gov.uk/governance-and-accountability/annual-monitoring-reports.

1.2 This NLWA welcomes the London Assembly's investigation into this important waste stream.

Increased tonnages of organic waste

1.3 All the north London boroughs collect food waste separately at the kerbside although in some cases the food waste is mixed on the collection truck with green garden waste. Tables 9 and 10 of the Annual Monitoring Report show the increase in numbers of households served with a food and/or garden waste service in the past three years (to 2012/13) against a baseline year of 2006/07 and additionally the tonnage of household waste collected at the kerbside for composting and anaerobic digestion (this is both food and garden waste). See: http://www.nlwa.gov.uk/governance-and-accountability/annual-monitoring-reports. In overall terms, the tonnage of material collected for composting and anaerobic digestion increased by 10.5% between 2010/11 and 2011/12 and by 2.7% between 2011/12 and 2012/13. During the same period, the total tonnage of household waste collected at the kerbside increased by 0.8% between 2010/11 and 2011/2 and declined by 0.3% between 2011/12 and 2012/13. An increase is expected for 2013/14, but final figures are not yet available.

Challenges to service provision

1.4 In common with other parts of London, the NLWA is facing a number of challenges which affect wastes management, notably on-going pressures on local authority finances and unprecedented levels of population growth (see Table 2 of the Annual Monitoring Report). The area is also seeing an increase in the demand for housing and a change in the housing mix (more

multiple occupancy housing). As a consequence of these factors there may be an increased demand for the collection, treatment and disposal of household waste, and possibly for commercial waste too. Within this context it will be important to provide easy-to-use collection and recycling services and to encourage the use of the services in order to maximise participation.

1.5 Between 2006/07 (the baseline year for the NLJWS) and 2012/13, the population of the NLWA's area has increased by 11.5% and population density from 57 people per hectare to 64 people per hectare. Whilst this increase in population has not translated into an increase in past annual waste arising figures, we note that tonnages started to increase mid-2013/14 and we anticipate that as the economy improves and as further housing and population growth continues that the amount of waste that requires management in north London may increase in the future. The NLWA is in the process of updating its waste forecasts.

2. Call for evidence questions

Part I – Establishing the baseline

2.1 Does your organisation collect domestic food waste? If so, how often (e.g. weekly or fortnightly)? And through what mechanism (e.g. from homes or a central collection point)

2.1.1 The NLWA is the waste disposal authority for north London so does not collect food waste, but rather arranges the processing of the material collected by six of the seven north London boroughs. Figures 1 and 2 at the end of this response show the amount of material collected over the last seven years. Note that the 2013/14 figure includes some projected numbers based upon three quarters of completed data.

2.2. What progress has the Mayor made with his food waste-related programmes?

2.3. How has food waste management changed in London over the past 5-10 years? How much has the industry grown?

2.3.1 From a north London perspective the key changes are as follows:

- Levels of information have improved and the amounts of activity and promotion to residents about food waste prevention, particularly based upon WRAP's 'Love Food, Hate Waste' programme, have increased. The amount of information that WRAP has been able to provide about the costs of food waste for individual households has particularly

assisted in delivering positive messages about the benefits of food waste prevention which it has been possible to use at a local level.

- National level changes to food waste production arising largely from the national economic situation and knock on impact on awareness have probably had the biggest effect - WRAP estimates that arisings of food waste have declined by 21% between 2007 and 2012.
- Rising levels of general media coverage about the impact of food waste have been positive in terms of raising 'background' levels of awareness about the issue.
- Extending food waste collection services, particularly to multiple occupancy premises, has resulted in increasing demand for processing capacity for north London. See Table 26 of the Annual Monitoring Report.
- In addition borough councils can promote home composting to those households with gardens and to some estates through community composting schemes. See sections seven and eight of the Authority's Annual Monitoring Report.

2.3.2 However, NLWA also considers that some aspects of food waste management have not changed considerably in the last 5 – 10 years:

- We are still lacking clear national metrics for measuring the impact of food waste prevention activity.
- There is still uncertainty regarding the impact of providing compostable caddy liners on food waste collection services participation.
- More data is needed on the service specific barriers faced by different segments of the population and their motivations, including better data looking below borough wide or even round level tonnages and socio-demographic indicators.

2.4. <u>How is your organisation, or any other organisation that you are aware of, promoting food waste reduction, and what has been achieved so far?</u>

2.4.1 Food waste is one of the three priority waste streams included in the North London Waste Prevention Plan April 2014 – March 16 and it was a priority waste stream for the previous plan April 2012 – March 2014. As a result, a good proportion of NLWA's waste prevention budget is dedicated to food waste prevention work - £170,000 out of a total waste prevention budget of £465,300 in 2014/15 and £178,400 out of a total waste prevention budget of £450,200 for 2015/16.

2.4.2 The NLWA is promoting food waste reduction in a number of ways, which are detailed in the attached Waste Prevention Activity 2013/14 summary report and in the 2014-16 Waste Prevention Plan. The impact of the Authority's food waste prevention activity is detailed in the Waste Prevention Activity 2013/14 summary report which is attached to this response.

Impact of food waste prevention in north London

2.4.3 The Authority estimates that it will be able to divert 7,000 tonnes of food waste from recycling and disposal over the two years 1 April 2014 – 31 March 2016 as a result of its planned food waste prevention activities. This has to be estimated through metrics rather than via direct tonnage weighing.

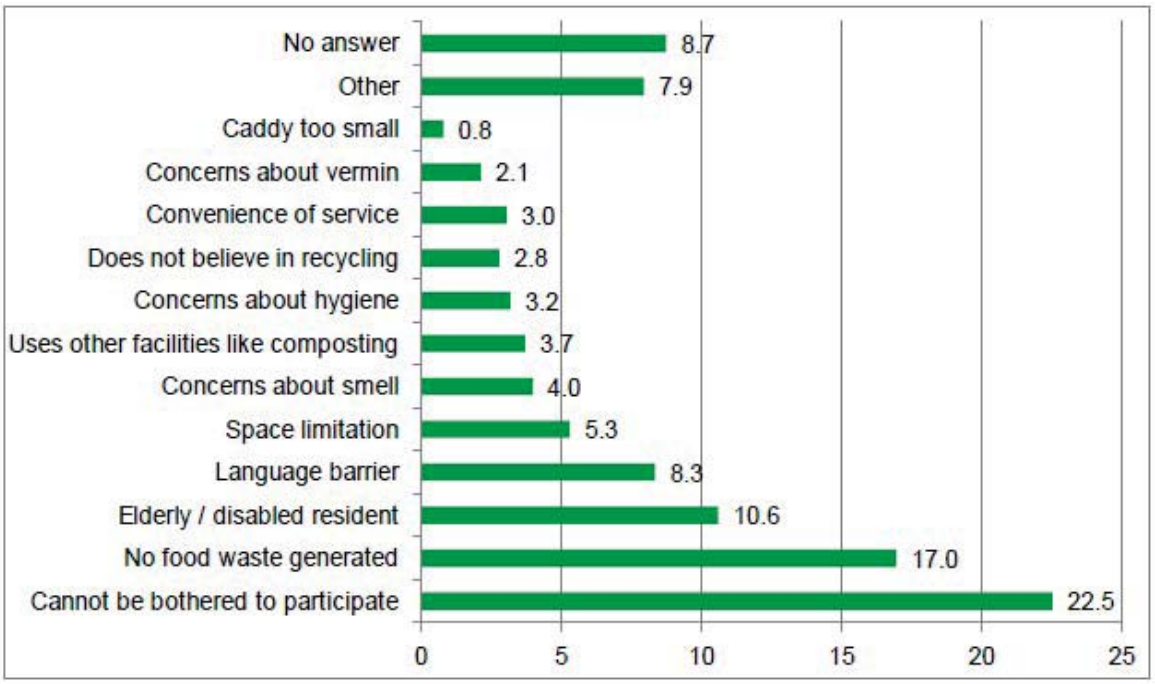
Part II – Extending and improving food waste collection

2.5. <u>What are the current barriers to managing domestic food waste effectively in London, particular with regard to blocks of flats on estates?</u>

2.5.1 The barriers include:

- A relatively poor financial case for making the additional communications and service commitments (e.g. with the provision of free caddy liners), to encourage further public participation.
- Anecdotal evidence (at national level), that there are negative perceptions about food waste collections which may prevent active participation in the service. NLWA is hoping to work with the University of Westminster psychology department this year to further explore some of these barriers and the motivations that might best be harnessed to encourage different population segments to use food waste services.
- In 2013, food waste focused door-knocking activity on estates properties in Hackney, one of the NLWA boroughs, highlighted the following barriers to recycling food waste (reasons residents stated for not intending to use the new service):

Figure 2: Main barriers to participating in the new food waste collection service (%)



- Also, NLWA's principal composting contractor has raised concerns about the possible contamination of food waste with plastic carrier bags, as residents may be tempted to use these rather than compostable liners.
- The difficulty of communicating the benefits of food waste collection services to residents in order to encourage greater participation. This barrier is similar to that experienced for dry waste recycling services – high population turnover, different services in different boroughs which makes standardised messages more difficult and the difficulty of communicating about the beneficial uses that the waste can be put to, when it is converted to compost or digestate. One of the aspects NLWA and the seven constituent Boroughs in north London are considering for further research is the role of housing operatives such as caretakers in the promotion of recycling services. There is potential for this work to be applicable for food waste collection services on estates too.
- A further issue in relation to the effective management of food waste in the capital is that the focus on tonnage targets ignores the carbon and nutrient value of food waste recycling. A change in the metrics by which the introduction of food waste services and their success were measured could go some way to improving the case for investment in these services.
- Finally, it is crucial that new buildings are designed with the appropriate facilities for storing domestic waste, including food waste, both inside the flats or houses as well as in the adjacent areas.

2.6. How do you plan or hope to introduce, extend or improve domestic food waste recycling? What specific barriers have you identified? What support (e.g. financial or technical) would you require to overcome these?

2.6.1 Paragraphs 2.4.1-2 provide some detail about NLWA's plans for further work in this area and paragraph 2.9 provides more detail about what types of support might assist in further developing domestic food waste recycling.

2.6.2 In 2012, when the Department for Communities and Local Government (DCLG) established a £250 million fund to support weekly collections of residual waste all seven north London boroughs were successful in bidding to this fund. Six out of the seven boroughs received funding for the introduction or extension of weekly organic/food waste collections. As noted elsewhere in this response (paragraph 2.14.1) by the end of 2014/15 it is anticipated that almost all of north London households will have access to a food waste collection service. Provisional figures for 2013/14 also suggest that provision had increased from 73% of north London residents with access to a service by the end of 2012/13 to 84% by the end of financial year on 31 March 2014.

2.6.3 However, funding for collection services will need to be sustained in order to maintain the level of services and associated support, such as communications to maximise continued participation even if new policy drivers are introduced to encourage more food waste recycling.

2.6.4 As of April 2014, DEFRA announced that it would be 'stepping back' in areas of waste management, significantly reducing the funding available for WRAP; the Authority therefore thinks it appears unlikely that new funding will be made available at a national level for improving food waste recycling. Best practice documents and online tools on food waste prevention are available on WRAP's website; however, in line with London Councils' comments, the Authority considers that funding restrictions at WRAP are likely to reduce the support that they are able provide in the future.

2.6.5 One opportunity for overcoming any funding barriers, which has been noted by London Councils, would be to consider devolving the landfill tax to London in a similar way to the new Scottish landfill tax. London Councils estimates that such devolution could provide in the order of £60m per year[4] to help fund much needed investment in London's waste infrastructure.

2.7. Following LWARB's flats recycling programme, how can those managing estates and large blocks of flat continue to introduce and improve food waste recycling? What other funding and guidance is still available now and how can boroughs and others access it?

[4] https://www.gov.uk/government/publications/local-authority-revenue-expenditure-and-financingengland-2012-to-2013-individual-local-authority-data-outturn

2.7.1 Food waste recycling can be improved by encouraging residents to use the service by ensuring that the bins are clean and the availability of compostable liners is promoted whether the free provision of liners from the council or to be bought from supermarkets. The above survey results from Hackney indicate clearly what the barriers are and therefore where the solutions must be found (assuming their survey results to be typical of other densely populated areas in London.

2.7.2 Due to the transient population in many parts of London it is also important to carry out regular food waste communications and engagement such as door-knocking and community events.

2.7.3 One of the aspects NLWA and the seven constituent boroughs in north London are considering for further research is the role of caretakers and other housing operatives in the promotion of recycling services. The NLWA will shortly commission some research to assess whether housing providers and managing agents and their caretakers would consider it useful if NLWA was to produce some support materials for caretakers to assist them in promoting recycling on estates. These materials might take the form of some training for caretakers, videos or other information about what happens to the recycling, how and where best to position containers on estates etc. Some of the north London housing providers have already provided written support for this piece of work, but it is not yet commissioned. Food waste collection services are not specifically excluded from this research brief so it may be useful to include food waste within the scope when the research is commissioned.

2.8. Are there any national or international examples of good practice for managing domestic food waste in densely-built, urban environments from which London could draw lessons?

2.8.1 There is a considerable weight of research and guidance in support of food waste minimisation and collection activities, so we know what best practice looks like. Some of this research and guidance is listed below:

- http://www.wrap.org.uk/content/food-waste-messages-maximum-impact-uk
- http://www.wrap.org.uk/sites/files/wrap/West%20London%20Food%20Waste%20Campaign%20Evaluation%20Report.pdf
- http://www.wrap.org.uk/sites/files/wrap/Barriers_to_Recycling_at_Home_Technical_Report.pdf
- http://www.wrap.org.uk/sites/files/wrap/Impact_of_collection_on_prevention_FINAL_v2_17_8_11.33a4f2d0.11159.pdf

2.8.2 Much can be achieved by applying food waste management best practice from elsewhere to the London context. In Haringey for example where fortnightly collections of residual waste were paired with weekly collections of dry recyclables and organic waste, dry recycling rates have increased from

19% (April to June 2011) to 27% in the same quarter in 2013. The collection of organic waste has increased from 5,103 tonnes during the year 1 April 2011 to 31 March 2012 to 5,325 tonnes in the first three quarters of the year 1 April 2013 to 31 March 2014. This approach is in line with best practice experiences from other parts of the country. Removal of food waste from the residual stream not only makes residual fortnightly collections more acceptable (as what remains is less odorous), but it additionally provides residents with the opportunity to see how much food waste they were previously consigning to disposal and may still be 'throwing away' albeit for recycling.

2.9. How can the Mayor and local authorities use their investment and planning powers to promote better collection and handling of food waste?

2.9.1 London Waste and Recycling Board (LWARB) funding can continue to be used to fund new food waste processing facilities *inter-alia* so that the cost of food processing becomes sufficiently attractive for local authorities that it makes more economic sense to incur the costs of separate food waste collections for recycling than not to do so. It is recognised however that achieving this in a free market environment presents a number of obstacles and limitations.

2.9.2 There may be opportunities for the Mayor to link the use of food waste services to local energy production and/or local use of soil conditioner to encourage better collection and handling of food waste (see paragraphs 2.10.1-2 below). Such investment could benefit both household and commercial food waste processing and would not in NLWA's view divert edible food from sale or use by those in need, toward energy production as some have suggested.

2.9.3 Although it is unproven it may also be the case that the local use of food waste products will help to overcome barriers to participation something which the NLWA's work with the University of Westminster could tease out, although such approaches to more localised use would need to be balanced with odour impacts.

2.9.4 It may also be the case that food waste prevention is going to be the least expensive option and offer the greatest return for any investment e.g. through a pan-London food waste prevention campaign. It is estimated that in London 60% of the food waste generated each year is avoidable.[5]

2.9.4 A useful piece of research would be to investigate the carbon and nutrient value of food waste recycling in London. A life cycle assessment of food waste recycling in London and a comparison of the nutrient and carbon value of for example compost and digestate would also assist in helping strategic decision making about this important waste stream.

[5] The impact of Love Food Hate Waste in West London case study, WRAP

2.9.5 It may also be helpful if research could be commissioned into the possibility of how local planning, trading standards and any other regulatory regimes might be brought together, particularly in relation to commercial and industrial food wastes, to identify how these might be reduced or better managed.

Part III – Processing food waste

2.10. What happens to the domestic food waste that you collect?
- o Name of the company that treats the food waste
- o Location of treatment facility (within, near or outside London)
- o Type of facility (e.g. composting plant, anaerobic digestion plant etc)

Edmonton EcoPark in-vessel composting plant

2.10.1 Six out of the seven north London boroughs[6] consign their food waste to the NLWA for management. In turn NLWA has a contract with LondonWaste Ltd to process the material into compost. LondonWaste's in-vessel composting plant is located at the Edmonton EcoPark in north London and is capable of processing some 35,000 tonnes of material each year. This is a mix of garden waste and food waste which is made into PAS 100 certified product, some of which is sold in a number of the north London HWRCs. Further detail about the compost facility is available on LondonWaste's website http://www.londonwaste.co.uk/community/ecopark-compost/ and further detail about the sale of compost at north London reuse and recycling centres is available on a separate webpage: http://www.londonwaste.co.uk/ecopark-compost-for-sale/

2.10.2 Compost is also used by local farmers and horticulturalists, or is provided to local community and allotment groups. In 2012/13, 45% of the compost made in north London from local authority collected garden and kitchen waste was returned for use by residents and boroughs in the NLWA area. Table 34 and figure 26 of the Annual Monitoring report provide further detail.

TEG in-vessel composting plant and AD facility

2.10.3 In addition to the EcoPark facility, during periods of high volumes any over-supply of material is sent by LondonWaste to TEG in Barking (http://theteggroup.plc.uk/about/overview/) a facility that was assisted by LWaRB.

2.11 What are the benefits and difficulties of different ways of processing food waste, for example composting or anaerobic digestion, in an urban environment?

[6] The London Borough of Enfield makes its own arrangements for food waste processing. Currently the material is bulked at Biffa in Edmonton and then sent outside of the capital for treatment.

2.11.1 In common with all waste facilities, whether in London or elsewhere food waste processing facilities can face difficulties during the planning process, and in particular residents are likely to express concerns about odour, noise, traffic and dust/pollution. In the relatively urban London environment residents are more likely to live closer to any proposed facility. An effective communications and engagement strategy can help to overcome resident concerns, coupled with a comprehensive management and operational plan which provides residents with the confidence that the facility will be operated within the regulatory parameters set by the Environment Agency. However, the location of waste processing operations is rarely welcomed as a new neighbour.

2.11.2 During the operational phase the difficulties of processing food waste in an urban environment tend to be no different to those encountered when operating a plant elsewhere. The exception again is the proximity of neighbours and the imperative to keep neighbours abreast of any changes to operational activities perhaps more than would be the case in a more rural environment where the neighbours are less 'on the doorstep' than they are in the city. As an example a change in traffic routing or delivery patterns of material might have considerably more impact in an urban environment than in a more rural setting.

2.11.3 A further consideration of operating a food waste processing facility in an urban environment is that the commercial users of any end product (digestate or compost) may be some distance away from the plant, thereby increasing transport costs 'to market'. There is however a strong domestic demand for much of the compost currently produced in north London, where the split of local users of compost compared to out-of-north-London users is 45:55.

2.11.4 However, the benefits of processing food waste in an urban environment can include proximity to the waste producers thereby minimising transport distances of material into the facility.

2.12. <u>In what ways is recycling food waste beneficial to London's environment?</u>

2.12.1 Recycling food waste provides a number of benefits to London's environment:

- Food waste recycling helps to reduce CO_2 emissions. WRAP has estimated that in London alone, 890,000 tonnes of food is thrown away per year, of which 540,000 tonnes is avoidable. The cost to London boroughs of reprocessing/disposing of this food waste is estimated at over £50 million per annum. It costs consumers £1.4billion per year to purchase the food and drink thrown away in London, and generates the equivalent of 2.1 million tonnes of CO_2e[7].
- If food waste is recycled in London, it reduces the distance that organic waste has to travel to remote reprocessing or landfill and therefore

[7] http://www.wrap.org.uk/content/west-london-food-waste-campaign

avoids the environmental impacts of further transportation and any associated traffic congestion.

- It produces either digestate or compost which can be put to beneficial use within the capital, thereby providing both a nutrient and carbon benefit to the city, although this may be more difficult with digestate, whereas god quality compost is more in demand.
- AD (anaerobic digestion) provides renewable energy and may provide heat of a suitable customer is nearby.
- The introduction of food waste recycling services also means that residents have to separate their food waste from the remainder of their rubbish and potentially see for the first time how much food they are throwing away. There is the potential for this then to have an awareness raising impact which is in turn beneficial to the promotion of food waste prevention, which again has a carbon benefit both from the product of the food waste prevention.

2.13. <u>What opportunities do you see for the waste management industry to expand or optimise its activities in London? What are the key factors involved (e.g. minimum amount of feedstock for processing)?</u>

2.13.1 One opportunity for the wider waste management industry may be to build facilities for taking commercial food waste, e.g. from restaurants and hotels etc, whether these facilities be for composting or AD. If it was a regulatory requirement for businesses producing over a certain amount of food waste in an urban area, like London, to present this waste separately for collection this could have both a beneficial environmental effect as well as creating opportunities for business and pushing overall costs down.

2.13.2 In Scotland for example it has been reported[8] that the amount of food waste treated at Scottish anaerobic digestion plants may have increased by as much 15,000 tonnes in the period since November 2013. The surge in tonnages, estimated to be between an increase of between 10-20% on that collected during the same period 12 months previously, has coincided with the roll out of the Waste (Scotland) Regulations, which came into effect on January 1 this year.

2.13.3 Under the legislation, Scottish businesses are expected to take 'all reasonable steps' to ensure separate collection of all dry recyclables, while those in urban areas producing over 50kg of food waste must also present it for collection.

2.13.4 Overall, a total of 91,500 tonnes of food waste is estimated to have been processed at Scotland's AD facilities since November. However, Zero Waste Scotland – the government-funded organisation that has played a key role in

[8] LetsRecycle.com "Scotland sees surge in food waste treatment", 04/06/14

developing and implementing the legislation – has said that the figure does not include AD plants that have opened in recent months, so the total figure may in fact be higher. Anecdotally, it also reports in-vessel composters in Scotland have seen a similar increase in the amount of waste received for processing.

2.13.5 The other opportunity (although the water industry has shown little interest in supporting it) is for investment in 'in sink macerators' which allow residents to put their food waste down the sink for maceration from where it goes into the sewerage system. As many more new properties are built in London is may be the case that new properties are built with in-sink-macerators installed, thereby bypassing the 'above ground' food waste collection service completely. It is possible however that further investment in the sewage network may be necessary, so this would have to be investigated in partnership with Thames Water.

2.13.6 Thinking more strategically, it may be possible for the GLA family to boost demand for food waste recycling if it is able to influence the use of waste-derived (PAS100) compost on land it controls or other public land, or if it is able to procure renewable energy or fuel in a way that might stimulate the anaerobic digestion (or other energy recovery) of food waste.

2.14. <u>How do savings in landfill tax relate to possible investment into recycling and composting? What is the role of gate fees in this respect?</u>

2.14.1 The NLWA and its constituent boroughs have a strong imperative (financial and policy related) to reduce waste and increase recycling/composting rates. Food waste comprises around 20-30% of the domestic waste stream and food waste collection services are currently subject to much lower participation rates than dry recycling services, so they provide an opportunity for improving performance. Waste composition analysis indicates that food waste is the largest single component of the residual waste stream in north London and by the end of 2014/15 almost all North London residents will have access to a food waste collection service in one form or another. Accordingly the Authority sees this as an important area in which to improve services.

Figure 1. Dry Recyclables and Organics from Household Kerbside Recycling

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Projected 2013-14
Organics	37,979	42,198	46,663	48,049	52,306	58,033	59,601	64,455
Commingled	42,078	49,780	53,667	55,882	58,929	75,462	88,960	114,137
Kerbside sorted	42,654	47,458	43,097	39,223	41,498	31,622	28,798	7,795

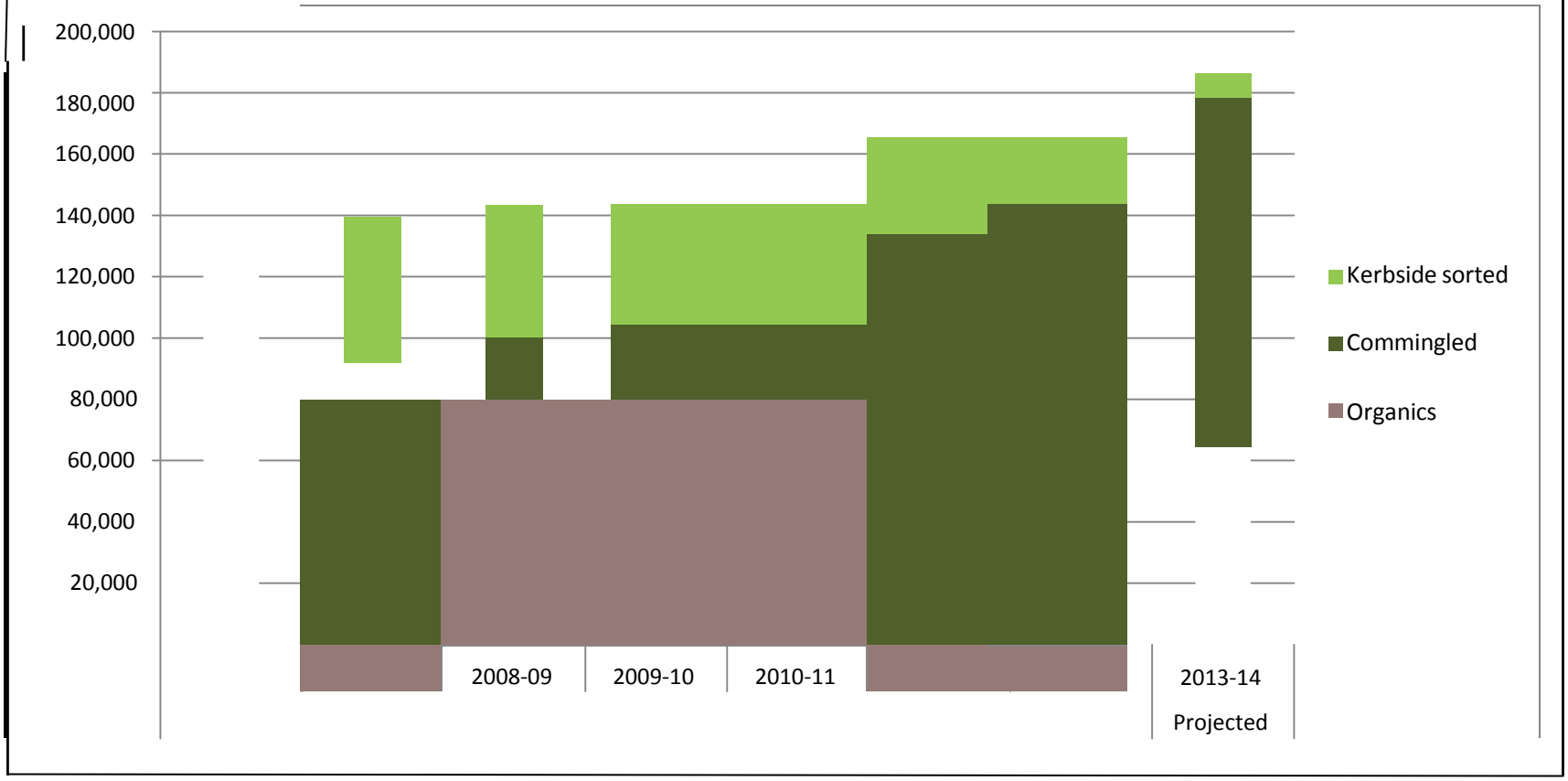
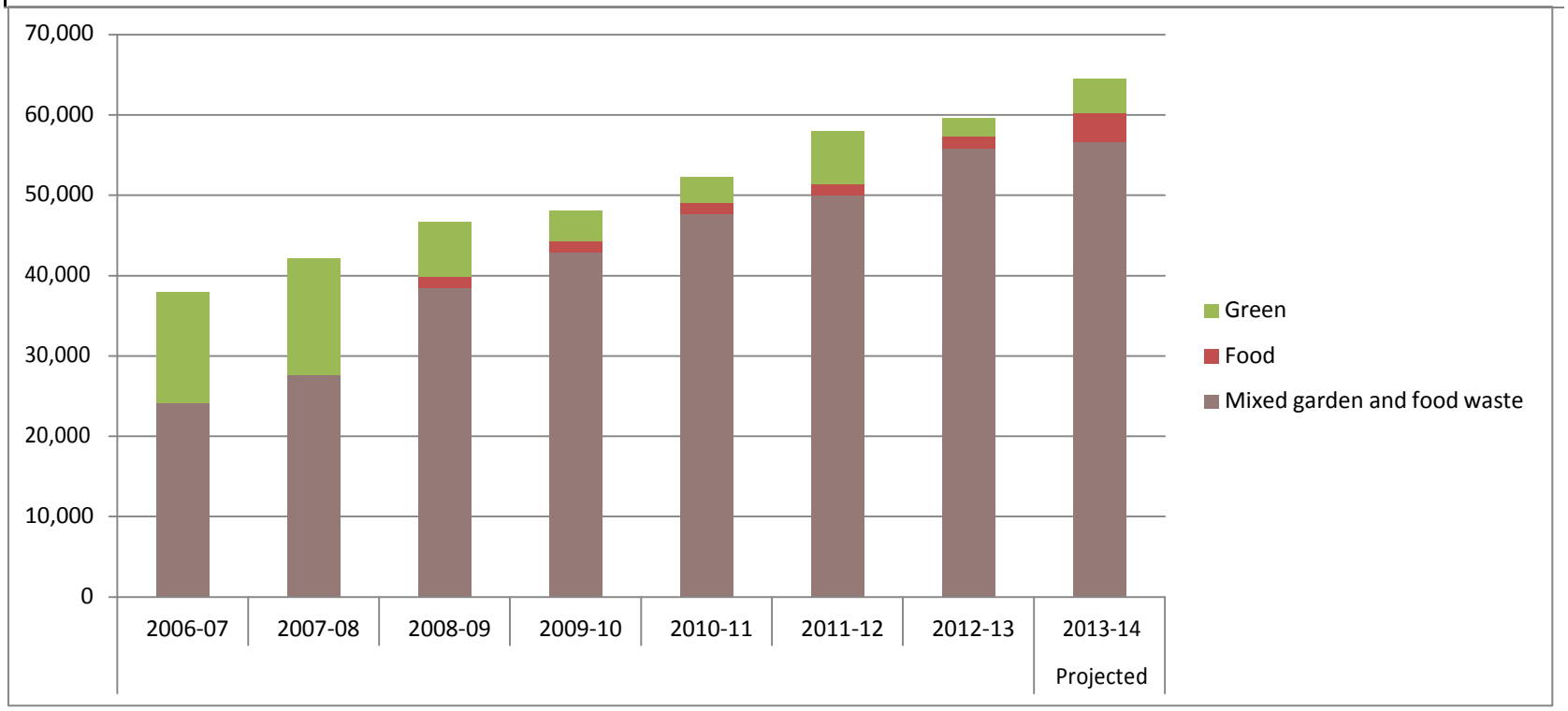


Figure 2. Breakdown of Organics from Household Kerbside Recycling

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Projected 2013-14
Mixed garden and food waste	24,146	27,656	38,414	42,817	47,677	50,004	55,730	56,660
Food	0	0	1,476	1,481	1,421	1,439	1,633	3,581
Green	13,833	14,542	6,774	3,751	3,208	6,590	2,238	4,213
Total	37,979	42,198	46,663	48,049	52,306	58,033	59,601	64,455



LONDON ASSEMBLY ENVIRONMENT COMMITTEE: INQUIRY INTO FOOD WASTE

Memorandum from the City of London Corporation
Submitted by the Office of the City Remembrancer

1. The City of London introduced food waste collections in 2009 on a trial basis in a single City estate. Following a successful trial, a food waste collection service was introduced in 2011 to all City estates and private blocks of flats. To enable residents to access the service and encourage participation, the City Corporation provides kitchen caddies and compostable liners free of charge. The provision of food waste collection services to residents is reviewed regularly. Where the service is available but uptake is low, the Corporation distributes promotional literature to residents in the property. On City estates and properties with a concierge service, a supply of food liners and caddies is available for residents on request.

2. The City encourages businesses to adopt sustainable waste management practices through the Clean City Awards Scheme. The scheme, now in its 20th year, rewards good practice by City businesses and includes quarterly environmental best practice meetings where speakers are invited to give presentations on topics related to waste management, including the management of food waste. The awards scheme also promotes the Mayor of London's FoodSave scheme, which works directly with businesses to help them reduce food waste.

3. The Corporation has participated in WRAP's (Waste & Resources Action Programme) Love Food Hate Waste (LFHW) campaign. Between October 2012 and March 2013, the Corporation ran a total of 21 events, including cookery demonstrations, workshops and training sessions for a variety of audiences, including businesses. A further 9 events were organised in 2013/2014. Although the City Corporation has received no external funding to promote LFHW in the current financial year, it continues to distribute the campaign's literature at City events.

4. The use of planning powers can be highly effective in securing adequate provision of food waste services. In the City, the provision of waste facilities is included in the Local Development Framework, and routinely features in pre-application discussions. Unlike many planning authorities, the City Corporation has a dedicated waste amenity planning officer who reviews building plans and assesses service provision on new builds. Applicants are referred to the officer early in the process, and efforts are made to hold meetings with architects at an early stage to discuss the provision of waste facilities. In most cases, a formal submission is made to the waste amenity planning officer for approval before a planning application is submitted. When a development is granted planning consent, the approved waste facilities are guaranteed by a condition which states that they must be provided for the lifetime of the building. This enables the Corporation to take enforcement action if facilities are not provided or are not as agreed. In the past, the threat of such action has been sufficient to remedy problems.

June 2014