



**WATFORD
BOROUGH
COUNCIL**

CABINET

6 January 2020

7.00 pm

Town Hall Watford

Contact

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Publication date: 20 December 2019

Cabinet Membership

Mayor	P Taylor	(Chair)
Councillor	K Collett	(Deputy Mayor)
Councillors	S Johnson, I Sharpe, M Watkin and T Williams	

Agenda

Part A – Open to the Public

1. **Apologies for absence**
2. **Disclosure of interests (if any)**
3. **Minutes of previous meeting**

The [minutes](#) of the meeting held on 2 December 2019 to be submitted and signed.

4. **Waste and Recycling contract variations (Pages 3 - 97)**

Report of the Group Head of Community and Environmental Services

Part A

Report to: Cabinet

Date of meeting: Monday, 6 January 2020

Report author: Group Head of Community and Environmental Services

Title: Waste and Recycling contract variations

1.0 Summary

- 1.1 On 12 November 2018, Cabinet approved, in relation to the waste, recycling, streets and parks contract with Veolia, that we should request a contract extension for a further eight years from 1 July 2020, subject to detailed discussions on the contract and all other related matters, including budget implications. These detailed discussions have been concluded and consideration has also been given to the published national 'Our Waste, Our Resources: A Strategy for England'; the Watford BC Climate Emergency declaration; the community engagement exercise Watford BC has undertaken; a report from Veolia (see Appendix 1) and the council's overall budget position.
- 1.2 The council recognises that it is important to ensure residents have the opportunity to recycle as much of their household waste as possible, so that as little as possible is disposed of using less environmentally beneficial methods. This needs to be balanced with the cost of providing suitable statutory services for residents as well as complimentary services that are not statutory.
- 1.3 This report sets out the proposals, agreed with Veolia, for varying the contract and providing a different service delivery model for household recyclable and residual waste including the introduction of a subscription service for garden waste.
- 1.4 Research shows that around 70% of household waste can be recycled and, to help improve recycling rates, 248 out of 326 local authorities (76%) across England now collect residual waste fortnightly or less frequently.
- 1.5 The Budget report that has been prepared for Finance Scrutiny Committee and Budget Cabinet in January will highlight that the council's cumulative overall gap for the next three years amounts to approximately £3.2 million. After taking account of proposed funding changes, such as the introduction of a garden waste subscription service, the cumulative gap reduces to £2.0 million. It is therefore essential that the council considers all of its income generating options.

1.6 The introduction of garden waste subscription is a response to the financial challenges the council faces. By charging those who receive it, the council is protecting the service for those who want to use it whilst also protecting the delivery of other service areas for which it is responsible.

2.0 Risks

2.1

Nature of risk	Consequence	Suggested Control Measures	Response (treat, tolerate, terminate or transfer)	Risk Rating (combination of severity and likelihood)
Reputational risk to the council linked to service changes	Failure to understand the reasons for the change linked to the need to improve recycling rates, reduce waste sent for disposal and landfill (particularly food waste) and secure the council's financial model by ensuring the waste and recycling service is affordable.	Effective and robust communications to explain the changes to residents and ensure responsive and timely responses to any resident enquiry or issue.	Treat	Unlikely (3) x High (3) = rating of 9
Contractor does not deliver to the contract and service specification	The service is not available for residents and customers to use	Regular contract monitoring by the council to review the contract and KPI's requirements are being met by the contractor alongside and scrutiny by elected members	Treat	Unlikely (2) x High (3) = rating of 6
Contractor goes into administration	As above	As above Regular review of contractors accounts	Tolerate	Unlikely (2) x High (3) = rating of 6

Nature of risk	Consequence	Suggested Control Measures	Response (treat, tolerate, terminate or transfer)	Risk Rating (combination of severity and likelihood)
Contractor is taken over by another company	Could have no impact on the service Or New company tries to alter the management fee, contract/SLA and KPI's which impacts on the service	As above Option to terminate the contract early	Tolerate	Unlikely (2) x High (3) = rating of 6
Implementation of new contract arrangements and service specification requirements not fully understood or comprehended by the council and operator	The existing staff and partnership team continue following the old contract arrangements	Officers to set up a series of workshops for WBC and operator to develop the practical translation and implementation of the contract, service specification and KPI's framework before the start of the new service	Treat	Unlikely (2) x High (3) = rating of 6

3.0 Recommendations

3.1 That the contract with Veolia be varied with effect from 1 July 2020 in relation to waste and recycling services provided in Watford as set out below:

- a) The introduction of a weekly collection of food waste (with a new 23 litre kerbside brown bin provided to all households identified).
- b) Retention of a weekly collection of fully commingled recycling (using a blue-lidded bin).
- c) The introduction of a fortnightly collection of non-recyclable waste (using existing black bin)
- d) The introduction of a chargeable fortnightly collection of garden waste (using existing green bins), which is accessed via a yearly subscription.

- 3.2 That the charges for the fortnightly collection of garden waste is as set out below, the same charges also apply to each additional green bin. Residents are able to have up to a maximum of seven green bins per household:
- Standard annual charge of £45.00
 - Standard annual charge reduced to £40.00 if paid by direct debit
 - Customers in receipt of certain income based benefits will be entitled to a concessionary rate of £35 (no further reduction if paid by direct debit)
- 3.3 That agreement of the detailed operational changes required and agreement to the final terms relating to the variation of the contract with Veolia and all other matters arising from this service change be delegated to the Group Head of Community and Environmental Services.

Further information:

Alan Gough

alan.gough@watford.gov.uk

Report approved by: Manny Lewis, Managing Director

4.0 Detailed proposal

- 4.1 Watford Borough Council is the Waste Collection Authority for the Borough and has a legal duty under the Environmental Protection Act 1990 (as amended) (EPA) to make arrangements for the collection of household waste free of charge. Household waste is defined in section 75 of the EPA as waste from a building used wholly for the purpose of living accommodation. Any other waste that a householder generates such as garden waste the Waste Collection Authority is not legally obliged to collect and if requested by the householder to collect can levy a charge for that collection.
- 4.2 The council entered into a contract with Veolia in 2013 for Veolia to operate its waste, recycling, street cleaning and parks service. The contract was for seven years with the option to extend by agreement for a further eight years, which would commence in July 2020. In 2018 Cabinet agreed that the council should seek to agree to exercise that extension subject to suitable terms being agreed. As members are aware the financial climate of austerity continues to impact and the council's budget has reduced by 70% over the last decade, primarily as a result of the abolition of the rate support grant from government. The council, like all other local authorities, has had to make savings and look at ways to ensure statutory services can continue to be delivered and provide value for money for its residents.
- 4.3 The council also has a strong commitment to sustainability and full Council unanimously passed a climate change emergency motion in July 2019 that

committed the council to taking action to reduce its carbon footprint. The operation of its waste service has a part to play in furthering that agenda by encouraging recycling and sending less waste to landfill and other less environmentally beneficial disposal routes.

- 4.4 The council also recently undertook community engagement about the waste service and resident views on recycling. The main conclusions from the engagement are that local residents are keen to recycle, acknowledging its benefits to the local environment, the use of limited natural resources and generally seeing it as ‘the right thing to do’. Overall, there is a willingness to try to increase food waste recycling through the introduction of a dedicated bin for households to recycle this waste and a weekly collection of mixed dry recyclables. There was a more mixed response to the introduction of a subscription charge for the collection of green waste; not surprisingly those that use the service are less willing to see this proposal implemented than those who do not, who are predominantly younger people living in properties, many living with shared communal facilities and, therefore, no access to an individual green bin. Details of the results of the community engagement are set out in Appendix 3.
- 4.5 The council, for an urban authority, has been very successful in achieving over 44% of all household waste being recycled, which is higher than several other Hertfordshire local authorities. As the recycling rate has increased, the borough has also reduced the amount of residual waste per household, see tables below:

Table 2: Changes in recycling and composting 2017/18

Authority	2016/17	2017/18	Change
Broxbourne	41.1%	41.8%	0.7%
Dacorum	51.1%	52.5%	1.4%
East Herts	51.2%	49.4%	-1.8%
Hertsmere	43.4%	43.6%	0.2%
North Herts	58.9%	57.5%	-1.4%
St Albans	57.5%	59.5%	2.0%
Stevenage	39.8%	38.3%	-1.5%
Three Rivers	61.9%	62.4%	0.5%
Watford	42.9%	44.3%	1.4%
Wel/Hat	53.0%	43.4%	-9.6%
Herts CC	60.8%	56.3%	-4.5%
HWP	52.2%	50.9%	-1.3%

(source: Hertfordshire Waste Partnership)

Table 4: Residual waste per household (kgs)

Year	Broxbourne	Dacorum	East Herts	Hertsmere	North Herts	St Albans	Stevenage	Three Rivers	Watford	Wel/Hat	Herts CC	H W P	WCA Average
2017/18	534	414	461	507	368	348	522	338	468	446	63	497.29	441
2016/17	544	438	434	512	358	369	519	346	491	386	57	489.68	440
2015/16	541	455	467	528	371	416	534	377	514	449	52	511.75	465
2014/15	604	476	458	522	359	431	550	350	499	484	67	534.47	473
2013/14	597	483	465	524	367	459	536	358	502	514	60	535.67	480
2012/13	608	477	474	535	458	505	532	353	500	523	47	542.33	496
2011/12	578	486	471	504	451	451	508	385	506	478	49	528.64	482

(source: WasteDataFlow – includes updated figures for previous years where available)

- 4.6 Whilst this is a very positive picture, there is more that can be achieved that would be beneficial for the environment. The council has explored proposals including: the introduction of a weekly food waste collection, the encouragement to recycle more of the dry recyclables, which are currently still disposed of in the residual waste bin and the collection of residual waste on a fortnightly basis. A recent analysis of Watford’s waste (see Appendix 2) showed that food waste was found to be the major component of residual waste (black bin) forming 30.5% of the total. 12.6% of collected residual waste could have been placed into the blue lidded recycling bins available. This means that 43.1% of the current waste in the residual bin could have been recycled under the proposed new service arrangements.
- 4.7 Research shows that around 70% of household waste can be recycled and, to help improve recycling rates, 248 out of 326 local authorities (76%) across England now collect residual waste fortnightly or less frequently. Households in Watford currently recycle over 44% of the waste they generate, and although not guaranteed, we envisage a significant improvement when the residual waste becomes fortnightly and weekly food recycling collections are introduced.
- 4.8 As stated above the collection of garden waste is not a statutory service the council has to provide. There are currently approximately 25 % of households in Watford that do not have sole responsibility for a garden. Also, as stated there has been reduced funding from central government to local authorities. Recent research (September 2019) shows that 311 local authorities in England currently offer a garden waste service, of which 65% charge an annual fee, with the average annual subscription fee being £44. To that end it is recommended that a fair approach would be to introduce an annual subscription. This would protect the service in

terms of still making it available to Watford residents, with those who want to use this service paying for it. The charge for this service should be set as described in paragraph 3.2 above. This charge is lower than the England average (when direct debit is taken into account) and lower than the East of England average, for those that charge an annual fee, of £48.

- 4.9 Officers have undertaken an equalities impact analysis (EIA) as this will be a change to the current way the waste collection service operates. The full EIA is set out in Appendix 4. Overall, the council believes that the changes will support an increase in recycling across the borough, which is of benefit to everyone given the acknowledged impact on the environment of items such as single use plastics and landfill. Further details of the EIA are in section 5.3.
- 4.10 For all the above reasons the council has concluded that, in order to encourage recycling, meet its sustainability objectives and also to assist the council to be able to balance its budget that it should ask Veolia to modify its current operation to introduce the changes set out in recommendation 3.1 with effect from 1 July 2020 when the contract extension period commences.

5.0 Implications

5.1 Financial

- 5.1.1 The Shared Director of Finance comments that there is £300k additional cost annually built into the MTFS in respect of the contract extension for Veolia.

Year	Additional Cost/(Saving) £'000	Within Current MTFS £'000	Change on Current MTFS
1	415	300	115
2 onwards	(35)	300	(265)

In addition there are £300k of one off additional costs that will need to be funded across 2019/20, which has been included in budget monitoring.

Garden Waste Charging

The table below shows the financial impact of introducing the annual charge.

Garden Waste	2020/21	2021/22	2022/23	Total
	£000	£000	£000	£000
Net income	(295)	(445)	(445)	(1,185)

- 5.1.2 The Budget report that has been prepared for Finance Scrutiny Committee and Budget Cabinet in January will highlight that the council's cumulative overall gap for the next three

years amounts to approximately £3.2 million. After taking account of proposed funding changes, such as the introduction of green waste charging, the cumulative gap reduces to £2.0 million. It is therefore essential that the council considers all of its income generating options.

5.2 **Legal Issues** (Monitoring Officer)

5.2.1 The Group Head of Democracy and Governance comments that the contract with Veolia allows for an extension for a further 8 years with effect from 1 July 2020. As the Waste Collection Authority the council is under a statutory duty to make suitable arrangements to collect household waste free of charge. Household waste does not include waste from gardens and as such the council can, if it wishes, seek to charge for the collection of garden waste.

5.3 **Equalities, Human Rights and Data Protection**

5.3.1 An EIA is appended to this report (see Appendix 4). The EIA addresses the council's public sector equality duty under s149 of the Equality Act 2010 and is intended to assist the council to have due regard in the exercise of its functions to: eliminate discrimination, harassment, victimisation and any other conduct that is prohibited by or under the Act, advance equality of opportunity between people who share a relevant protected characteristic and people who do not share it and foster good relations between people who share a relevant protected characteristic and people who do not.

5.3.2 The EIA considers a range of potential negative impacts of the proposals that might be experienced by members of the community that share a protected characteristic. These include: the impact on households with larger families, parents with babies / children in nappies, those older members of the Watford community or with relevant disabilities who might find it difficult to access the online process for subscribing to the green waste service. The EIA acknowledges the mitigations the council has in place for the identified impacts and recommends that it keeps these under review during the implementation of the changes to assess whether the impacts are sufficiently mitigated or whether it needs to assess if further interventions are required.

5.3.3 The EIA does, however, note that the changes will have wider benefits to the community as they support the council's ambition to increase recycling across the borough and will help move Watford to becoming a more sustainable town. The introduction of garden waste subscription is a direct response to the financial challenges the council faces. By charging those who receive it, the council is protecting the service for those who want to use it whilst also protecting the delivery of other service areas for which it is responsible.

5.3.4 Data Protection Impact Assessment - as this is a new policy regarding the green waste service and a change to an existing policy delivery involving processing likely to result in a high risk to the rights and freedoms of individuals, a Data Protection Impact Assessment (DPIA) will be undertaken. The analysis of this assessment will be published on the council website before the start of the contract in 1 July 2020.

5.4 **Staffing**

5.4.1 The introduction of a chargeable garden waste service will require additional staff to manage these arrangements. This has been factored into the estimated net income from the garden waste service.

5.5 **Accommodation**

5.5.1 There are no accommodation issues arising from this report

5.6 **Community Safety/Crime and Disorder**

5.6.1 Having had due regard to Section 17 of the Crime and Disorder Act 1998 it is considered there is likely to be a potential minor negative impact on crime and disorder in Watford due to these service changes e.g. possible increase in fly tipping incidents of garden waste across the borough. The council and its partner (Veolia) will monitor the reporting of fly tipping linked to garden waste over the next 12 months and put appropriate plans in place to mitigate these events.

5.7 **Sustainability**

5.7.1 The introduction of a weekly food waste collection and the encouragement to make the recycling bin the bin of choice can only be beneficial for the environment.

Appendices

Appendix 1. Watford: Waste Service Changes - Veolia

Appendix 2. Watford Waste Analysis - MEL

Appendix 3 Waste and recycling engagement overview. September 2019

Appendix 4 Waste and recycling contract variations EIA

Background papers

The following background papers were used in the preparation of this report. If you wish to inspect or take copies of the background papers, please contact the officer named on the front page of the report.

Our Waste, Our Resources: A Strategy for England – HM Government

Watford: Waste Service Changes

Benefits, challenges and opportunities

This paper outlines the benefits of the new waste collection service in Watford, supported with industry best practices, successes, challenges and opportunities.

1. Background

The new waste service configuration proposed by Watford Borough Council in 2019 with a view of implementing the changes from July 2020. The waste and recycling collection method in the Watford borough for households will be:

- Introduce a weekly collection of food waste (with a new 23 litre kerbside caddy).
- Retain a weekly collection of fully commingled recycling (using a blue-lidded bin).
- Move to a fortnightly collection of non-recyclable waste (using existing black bin).
- Move to a chargeable fortnightly collection of garden waste (using existing green bins).

2. Industry best practice and success

2.1 Introduce a weekly collection of food waste (with a new 23 litre kerbside caddy).

The move to a separate food waste collection from a commingled garden waste bin is an industry standard which delivers improved capture of food waste for recycling which is better both environmentally and economically. Where separate food waste collections are rolled out successfully they also improve resident satisfaction due to improved ease of use.

Veolia recognises the benefits of a weekly separate food waste collection as it is one of the key concepts going through consultation from the published national Resources and Waste Strategy for England (December 2018). The Strategy sets out how the country will 'preserve material resources by minimising waste, promoting resource efficiency and moving towards a circular economy.'¹

WRAP in their Household Food Waste Collections Guide have highlighted that food waste typically makes up about a third of the residual waste stream.² Veolia in partnership with Watford Borough Council recently produced a Waste Compositional Analysis in July 2019 which supports this strategy as food waste was seen to be the major component of residual waste forming 30.5% of the total, equating to 1.4kg/hh/wk. By introducing a weekly separate food waste collection, food waste is encouraged to be diverted from the residual waste bin and into the correct stream for treatment.

Benefits of separate food waste collections:

- Contributing to targets for diverting organic waste from incineration treatments to Anaerobic Digestion (AD) facilities where the carbon footprint is greatly improved.
- Reduction of environmental impacts associated with landfill (toxicity in leachate and methane production). A small percentage of Watford's residual waste still enters this stream.
- Reduced disposal costs.
- Greater acceptance of fortnightly residual collection.
- Separately collected food and other bio-waste significantly reduces the weight of general waste collections, which in turn reduces the cost of disposing of general waste in landfill or Energy from waste (EfW) (lower weight reduces gate fee charges by landfills),
- Gate fees for the separately collected food waste are significantly lower at anaerobic digestion or composting facilities compared to landfill sites or EfW.³

2.2 Retain a weekly collection of fully commingled recycling (using a blue-lidded bin).

Retaining the recycling collection weekly in a 240l bin and moving the non-recyclable collection to fortnightly in a 140l bin will encourage residents to use their recycling bin more often as it has a bigger capacity and it is collected more frequently. This change in the collection service has the potential to increase recycling rates, but needs to be closely monitored as it can also lead to higher contamination rates. It has been widely recognised that by restricting the residual waste capacity through less frequent collections/and or smaller containers, is the key to driving up recycling performance.

¹ Local Government Association, 'Resources and Waste Strategy summary' <https://www.local.gov.uk/sites/default/files/documents/LGA%20briefing%20-%20RW%20strategy%2020122018.pdf> 20 December 2018 (accessed 2 October 2019)

² WRAP, 'Household food waste collections guide' <http://www.wrap.org.uk/content/household-food-waste-collections-guide> (accessed on 2 October 2019)

³ WRAP, 'Gate Fees Report 2018: <http://www.wrap.org.uk/collections-and-reprocessing/recovered-materials-markets/reports/gate-fee-reports/2018-report-map> Page 13' 8 (accessed 2 October 2019)

2.3 Move to a fortnightly collection of non-recyclable waste (using existing black bin).

Veolia have found that “well run” alternate weekly collection (AWC) schemes not only encourage recycling, but can also reduce the overall amount of waste produced as residents seek to avoid waste generation.⁴

Alternate weekly collections can produce behavioural change as it raises awareness of the volumes of waste generated, prompting the segregation of materials for recycling and composting; and further leading to an overall reduction in waste arising at the kerbside. The reduction is likely to be brought about by residents changing their habits regarding the amount of material they manage via other means (e.g. home composting) or by changing shopping habits to reduce e.g. food and packaging waste.

The top five high recycling councils in terms of household and recycling rates all offer AWC with weekly food waste collections. Eight of ten of the lowest performing councils have weekly domestic waste collections.⁵

Separate food and other bio-waste collections require fewer general waste collections (once the putrescible material has been removed on a weekly basis).

Research shows that as much as 80%⁶ of household waste can be recycled and, to help improve recycling rates, 248 out of 326 local authorities (76%) across England now collect residual waste fortnightly or less frequently.⁷ Households in Watford currently recycle around 45% of the waste they generate, and although not guaranteed, we hope to see an improvement when the residual waste becomes fortnightly.

Watford’s Waste Compositional Analysis highlighted that 43.9% of residual waste collected could have been recycled alternatively at the kerbside.

By embarking on AWC, Watford has the opportunity to encourage residents to not only recycle but also to think further up the waste hierarchy of reducing and reusing waste.

⁴ WRAP, ‘Alternate weekly collections guidance.’

<http://www.wrap.org.uk/sites/files/wrap/AWC%20Revised%20Final%20Report%20-%20130707.PDF> 13 July 2007 (accessed on 3 October 2019).

⁵ O.Bennett, House of Commons library, ‘Bin collection—Alternate weekly collection.’ 4 February 2013

⁶ Recycling bins, ‘Recycling Facts’ <https://www.recyclingbins.co.uk/recycling-facts/> (accessed on 3 October 2019).

⁷ Press Association, ‘Three quarters of councils collect general waste once a fortnight’

<https://www.theguardian.com/environment/2017/oct/09/three-quarters-of-councils-collect-general-waste-once-a-forenight> 9 Oct 2017 (accessed on 3 October 2019).

2.4 Move to a fortnightly chargeable collection of garden waste (using existing green bin).

Watford residents have for many years enjoyed a free garden waste collection service, however with significant reduction in funding from Central Government over the last ten years, the majority of councils in England now charge for collecting garden waste to cover the cost of the service and this will be the case for Watford. The collection of garden waste is not a statutory service (i.e. one the council has to provide). It's also a service a number of people do not use, due to living in places without a garden.

It is known that 48% of the local authorities in England now charge for the collection of garden waste with the average annual subscription fee being £41.64.⁸ Watford's proposed annual subscription fee is £50 per bin (£0.96p per week). This is discounted to £45 if paying by direct debit and £40 if on certain income related benefits. The pricing margin falls in line with the country's subscription scheme average.

The below table shows the growth of local authorities charging for garden waste.



Source: mantis.co.uk

Watford's Waste Compositional Analysis showed that 0.6% of residual waste was found to be garden waste and whilst this might be a small amount; over the course of the year this adds up, and is costly to the Council as a disposal route. The restricted waste capacity will prevent residents from using the residual bin for garden waste as it will use more space in the bin and it is collected fortnightly.

⁸ Mantis, ;Garden bin tax: How does your council compare? <https://mantis.uk.com/garden-bin-tax-how-does-your-council-compare-2/> (accessed on 3 October 2016) Page 15

In Brent, where Veolia run the waste and recycling services, the following was achieved after the first year which the authority was very pleased with (London Borough of Brent).

	Brent
Date commenced	April 2015
Service offered	Fortnightly with one collection per month in Jan and Feb
Subscriptions managed	By Council
Disposal route	Separate food waste and garden waste disposal routes
Current cost	£60 per bin (with a £10 discount for early sign up and 20% discount for those on benefits)
No. target low rise properties	80,000
% sign up (of those with gardens)	22.5% - 23.8% (year 1 cost was £40 achieved 25% sign up)

Veolia will update Watford Borough Council on any new industry developments relating to the new waste collection service changes.



m.e.l
waste insights

Watford Kerbside Waste Composition Analysis

Watford Borough Council

Summary Report
July 2019



**WATFORD
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Project details and acknowledgements

Title	Watford Kerbside Waste Composition Analysis
Client	Watford Borough Council
Project number	W19015
Client reference	-
Author	Philip Wells
Research Manager	Philip Wells

Acknowledgements

M-E-L waste insights would like to thank Local Authority officers and staff who participated and helped in the setup and fieldwork stages of the project, and those who provided additional data and other information to inform the project. This report highlights key results, presents the results in tables and charts and discusses the findings. The views and opinions expressed in this report are those of M-E-L waste insights and are not necessarily shared by officers from Watford Borough Council.

Accuracy Statement

Results from the standard M-E-L sampling protocol for compositional analysis can be taken as accurate for each material category to within error bands of +/-10% at the 95% confidence level (2 standard deviations), assuming a normal statistical distribution. At the data entry stage, 1 in 10 parts of data that is inputted are checked with the data sheets and if errors are found all the data is then rechecked.

Introduction

Background

The London Borough of Watford currently has a combined recycling and composting rate of 44.3% (2017/18) and now wishes to study the composition of the domestic kerbside collected residual and recycling waste streams to provide current baseline data and to help inform future communication campaigns. As well as giving indications as to the current levels of waste and recycling being generated, this report also provides observations on the levels of materials that are currently recyclable at the kerbside and those which could potentially be recyclable via future schemes.

This report presents results from an analysis of kerbside collected residual and recycling waste collected during a two week period in June 2019. The survey follows on from a previous survey undertaken in 2014 and focusses on the levels and composition of residual bins, kerbside recycling containers and food and garden waste bins that are currently available for residents to place out for collection. The sampling regime involved the direct collection and compositional analysis of waste from a target of 160 properties representing four of the five main socio-demographic categories (Acorns). Results could therefore be weighted to give a better picture of the waste being collected within the Borough as a whole. Knowledge of the waste in these differing areas will help develop strategies to increase the efficiency with which its residents are recycling their waste.

Objectives

Specific aims of the work were to:

- Understand, using socio-demographic profiling which sectors of the community are producing which types of waste and which are using the recycling provision most effectively
- Detect capture rates for individual materials which are already collected separately for recycling
- Determine the amount of overall waste diverted by each recycling collection and overall
- Evaluate the amount of specific materials collected in the residual bins that could potentially be collected separately for recycling
- Evaluate the use of the receptacles used for collecting waste and recycling
- Compare figures for residual and mixed recycling containers with results from the 2014 survey.

Executive Summary

Key findings

Kerbside residual waste

- Weighted across all Acorn samples, 66% of households sampled throughout Watford presented residual waste for collection.
- In terms of waste generation, households were setting out an average of 4.7kg/hh/wk (7.0kg/hh/wk for those presenting bins).
- Food waste was seen to be the major component of residual waste forming 30.5% of the total, equating to 1.4kg/hh/wk. Of this food waste 79% is deemed to be avoidable with 25% packaged.
- Paper items made up 9.7% of the residual waste; 29% of this (0.13g/hh/wk) was alternatively recyclable at the kerbside.
- Card and cardboard made up around 3.6% of collected residual waste; 85% of this (0.14kg/hh/wk) was alternatively recyclable at the kerbside.
- Plastics formed 16.6% of the residual waste; 23% of all plastic waste (0.18kg/hh/wk) was due to recyclable plastic bottles and containers.
- 2.6% of residual waste was metallic; 73% of this (0.09kg/hh/wk) was recyclable.
- Around 1.6% of residual waste was seen to be glass; 67% of this (0.05kg/hh/wk) was due to glass bottles and jars.
- 0.6% of residual waste was found to be garden waste
- Overall, 12.6% of collected residual waste could have been placed into the blue lidded recycling bins available– the equivalent of 0.59kg/hh/wk.
- Overall, 31.3% of collected residual waste could have been placed into the food and garden recycling bins available– the equivalent of 1.46kg/hh/wk.
- In total 43.9% of residual waste collected could have been recycled alternatively at the kerbside – 2.0kg/hh/wk.

Kerbside mixed recycling – Blue lidded bins

- Over the survey, an average of 64% of households presented recycling bins out for collection.
- In terms of waste generation, all kerbside households were setting out an average of 3.7kg/hh/wk of mixed recycling.
- Overall, 5.8% of recycling waste collected from all properties was classified as contamination – the equivalent of 0.21kg/hh/wk.
- 26% of contamination was due to liquids with 24% being non-recyclable paper and card and 17% non-recyclable plastics.
- Around 89% of recyclable paper and 90% of recyclable card was correctly captured

- 80% of plastic bottles were recycled along with 41% of plastic containers
- 53% of recyclable metals were captured
- 93.5% of glass bottles and jars were recycled
- Overall, 85.5% of all materials compatible with blue lidded bins were correctly recycled.
- Kerbside properties diverted around 30.4% of their total waste through mixed recycling collections.

Food and Garden Recycling

- Over the survey, an average of 43% of households presented food and garden bins for collection
- In terms of waste generation, all kerbside households were setting out an average of 3.10kg/hh/wk of organic recycling.
- Overall 7.5% of food and garden recycling waste collected from all properties was classified as contamination – the equivalent of 0.23kg/hh/wk.
- Practically all contamination was soil and turf
- 32% of all food waste was correctly captured using the supplied container along with 99% of garden vegetation.
- Kerbside properties diverted around 25.1% of their total waste through food and garden recycling collections.

Residual Waste

Set out rates and waste generation levels

Table 1 and Figure 1 highlight the average set out rates for residual waste observed at the time waste was collected for compositional analysis. Table 2 and Figure 2 show the average amount of residual waste generated in kg/hh/wk. Each of the four Acorn samples was formed from 40 households of the dominant Acorn type. Therefore 160 households were selected to represent Watford with the set out relating to the proportion of these households actively placing out their waste.

The amount of waste in kilograms per household per week is collected from each sample of 40 households, not just those that are participating. The number of households setting out each waste container across all 40 households is recorded with the aim of collecting all presented waste and recycling. In some instances, it is not possible to collect all presented waste (resident refuses, bins have H&S issues or total collected waste exceeds vehicle capacity). The collected waste is bulked for sorting as a single sample. The amount of collected waste can then be adjusted by the set out rate for any sample where not all presented waste was collected. A table giving a brief description of the types of households typical for each Acorn category is shown in the appendix section.

Watford residents have access to a weekly collection of residual waste using wheeled bins. From this survey between 53% (Acorn 4) and 85% (Acorn 1) of households presented residual waste for collection at an average of 66%.

Table 1: Kerbside residual waste set out rates for each Acorn sample

SAMPLE	% SET OUT
ACORN 1	85.0%
ACORN 3	66.7%
ACORN 4	52.5%
ACORN 5	75.6%
WEIGHTED AVERAGE	66.1%

Figure 1: Kerbside residual waste set out rates by Acorn (%)

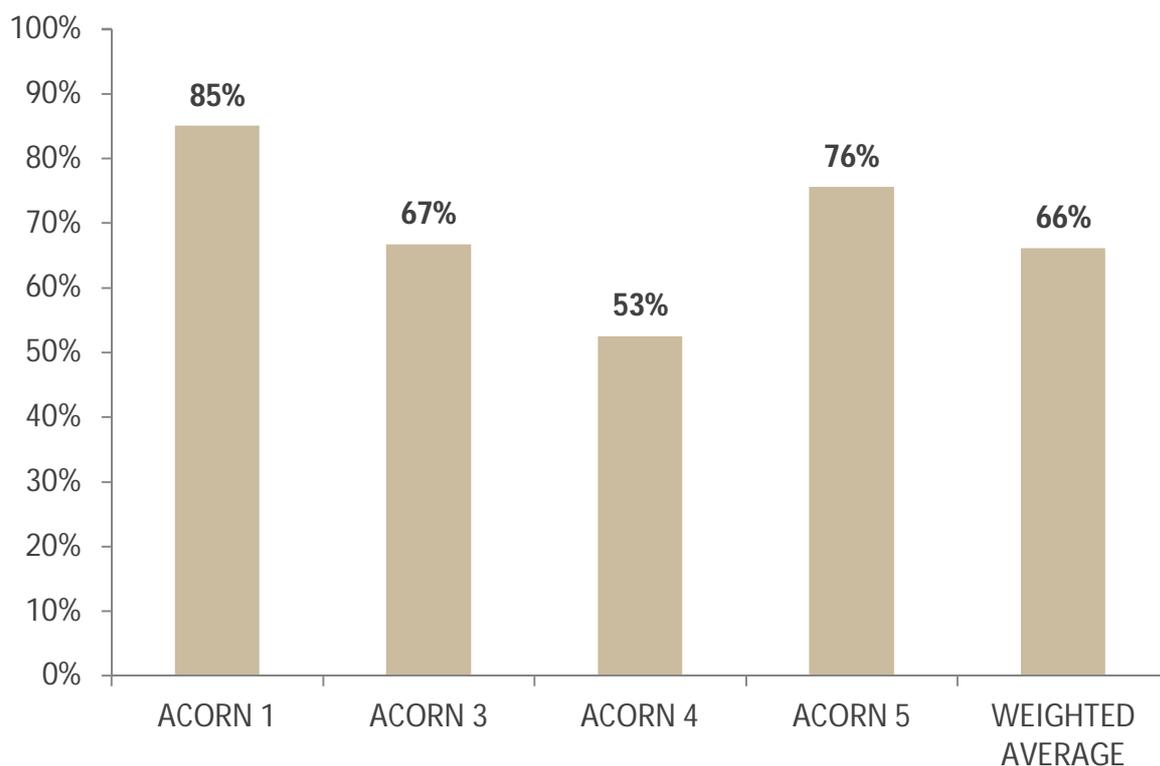
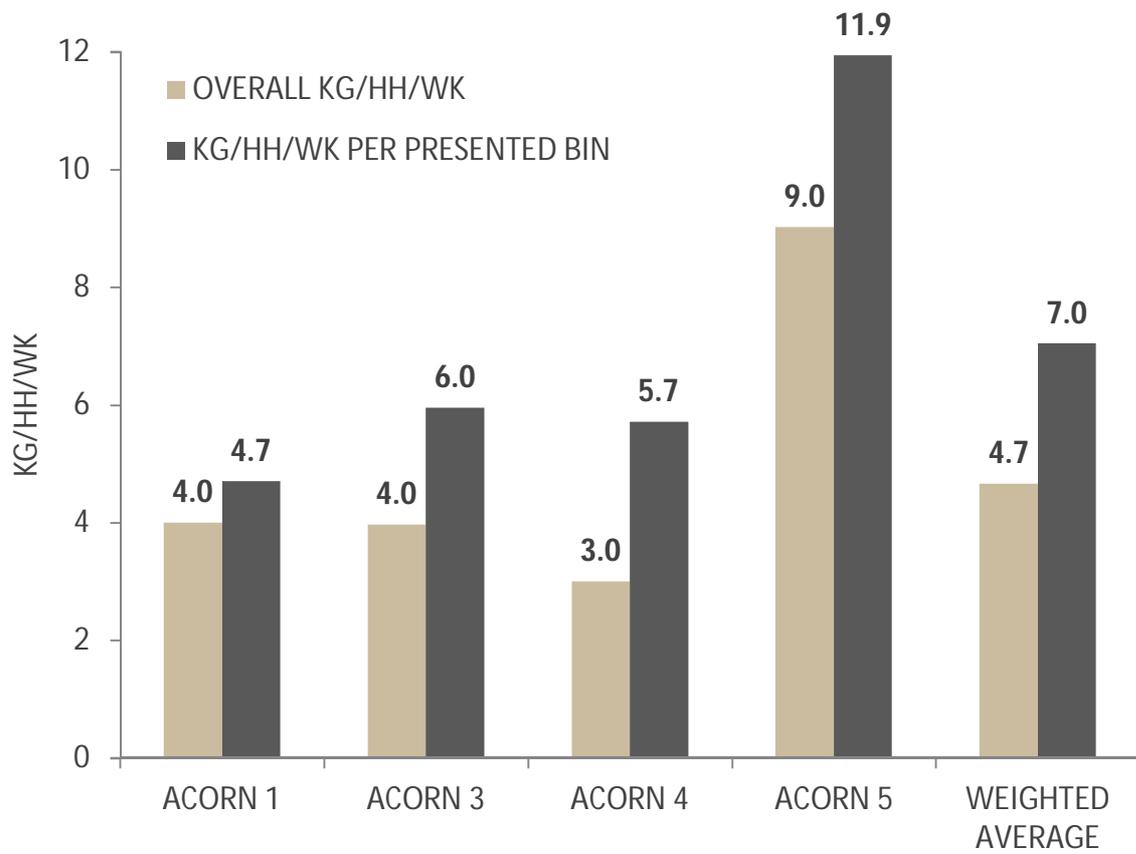


Table 2: Kerbside residual waste generation rates for each Acorn sample (kg/hh/wk)

ACORN	OVERALL KG/HH/WK	KG/HH/WK PER PRESENTED BIN
ACORN 1	4.00	4.71
ACORN 3	3.97	5.95
ACORN 4	3.00	5.71
ACORN 5	9.02	11.94
WEIGHTED AVERAGE	4.66	7.04

From observed results, the level of residual waste being disposed of at the kerbside ranged between 3.00kg/hh/wk in Acorn 4, to 9.02kg/hh/wk in Acorn 5. On average 4.66kg/hh/wk of residual waste is being disposed of by households throughout Watford. Solely considering presented bins, the average amount of waste generated is 7.04kg/hh/wk.

Figure 2: Average residual waste generation rates by Acorn



Compositional analysis of residual waste

This section looks at the average amount and composition of the residual waste presented by various socio-demographic households sampled throughout Watford. Hand sorting of the residual waste gave concentration by weight figures for the fifteen main categories of waste as well as the more detailed sub-categories. Looking at the concentration percentages gives an indication as to the proportions of each waste category. This can be translated into a figure relating to the average waste generation expected for each waste category; this is given in kilograms per household per week (kg/hh/wk). By knowing the composition of waste from the various Acorn samples it is possible to gain an insight into the make-up and volumes of the residual waste that can be expected as a whole. Detailed residual composition tables can be found in a separate data appendix. Table 3 and Figure 3 show residual waste data in terms of percentage composition with Table 4 and Figure 4 showing generation rates for major materials in terms of kg/hh/wk. All residual waste will contain a proportion that is classified as potentially recyclable. That is to say that it should have been placed into one of the recycling receptacles provided:-

Residents currently have a blue lidded bin for the collection of mixed dry recycling. This is collected on a weekly basis and acceptable items include:-

- Newspapers
- Magazines
- Directories
- Plain paper
- Wrapping paper (plain only, no glitter or foil)
- Greetings cards (plain only, no glitter or badges)
- Clean aluminium foil
- Plastic bottles
- Cardboard
- Food tins
- Drinks cans
- Aerosols
- Food and drink cartons (Tetrapak)
- Plastic pots, tubs and trays
- Glass bottles and jars

Residents have a green lidded bin for the collection of all food and garden waste. Compostable liners can be used to wrap food. Acceptable items include:-

- Grass clippings
- Prunings
- Leaves
- Tea bags and coffee grounds
- Fruit and vegetable peelings
- Meat and fish bones
- Plate scrapings

Table 3: Average residual waste composition weighted by Acorn (%)

WASTE MATERIAL (%)	ACORN 1	ACORN 3	ACORN 4	ACORN 5	WEIGHTED AVERAGE
PAPER	13.3%	8.0%	11.5%	8.0%	9.7%
CARD	3.2%	2.3%	4.5%	3.7%	3.6%
PLASTIC FILM	10.0%	8.9%	13.8%	9.6%	10.6%
DENSE PLASTIC	7.8%	4.6%	8.3%	4.3%	5.9%
TEXTILES	1.6%	1.6%	1.6%	4.6%	2.9%
MISC COMBUSTIBLES	7.1%	38.5%	22.9%	18.5%	21.4%
MISC NON-COMBUSTIBLES	19.6%	1.8%	4.1%	2.7%	5.5%
GLASS	4.7%	2.5%	0.5%	0.8%	1.6%
FERROUS METAL	1.0%	0.2%	2.5%	0.6%	1.1%
NON-FERROUS METAL	1.2%	1.5%	1.4%	1.7%	1.5%
GARDEN WASTE	0.0%	0.5%	0.7%	0.7%	0.6%
PUTRESCIBLES	23.8%	27.3%	26.3%	40.4%	31.9%
FINES	5.3%	2.0%	0.0%	3.5%	2.6%
HHW	0.0%	0.0%	0.2%	0.0%	0.0%
WEEE	1.3%	0.1%	1.8%	0.9%	1.1%
TOTAL	100.00%	100.00%	100.00%	100.00%	100.00%

Table 4: Average residual waste generation weighted by Acorn (kg/hh/wk)

WASTE MATERIAL (KG/HH/WK)	ACORN 1	ACORN 3	ACORN 4	ACORN 5	WEIGHTED AVERAGE
PAPER	0.53	0.32	0.35	0.73	0.45
CARD	0.13	0.09	0.13	0.34	0.17
PLASTIC FILM	0.40	0.35	0.41	0.87	0.50
DENSE PLASTIC	0.31	0.18	0.25	0.39	0.28
TEXTILES	0.06	0.06	0.05	0.42	0.13
MISC COMBUSTIBLES	0.28	1.53	0.69	1.67	1.00
MISC NON-COMBUSTIBLES	0.79	0.07	0.12	0.24	0.25
GLASS	0.19	0.10	0.01	0.07	0.08
FERROUS METAL	0.04	0.01	0.07	0.06	0.05
NON-FERROUS METAL	0.05	0.06	0.04	0.15	0.07
GARDEN WASTE	0.00	0.02	0.02	0.06	0.03
PUTRESCIBLES	0.95	1.09	0.79	3.64	1.49
FINES	0.21	0.08	0.00	0.31	0.12
HHW	0.00	0.00	0.01	0.00	0.00
WEEE	0.05	0.01	0.05	0.08	0.05
TOTAL	4.00	3.97	3.00	9.02	4.66

Figure 3: Average residual waste composition weighted by Acorn (%)

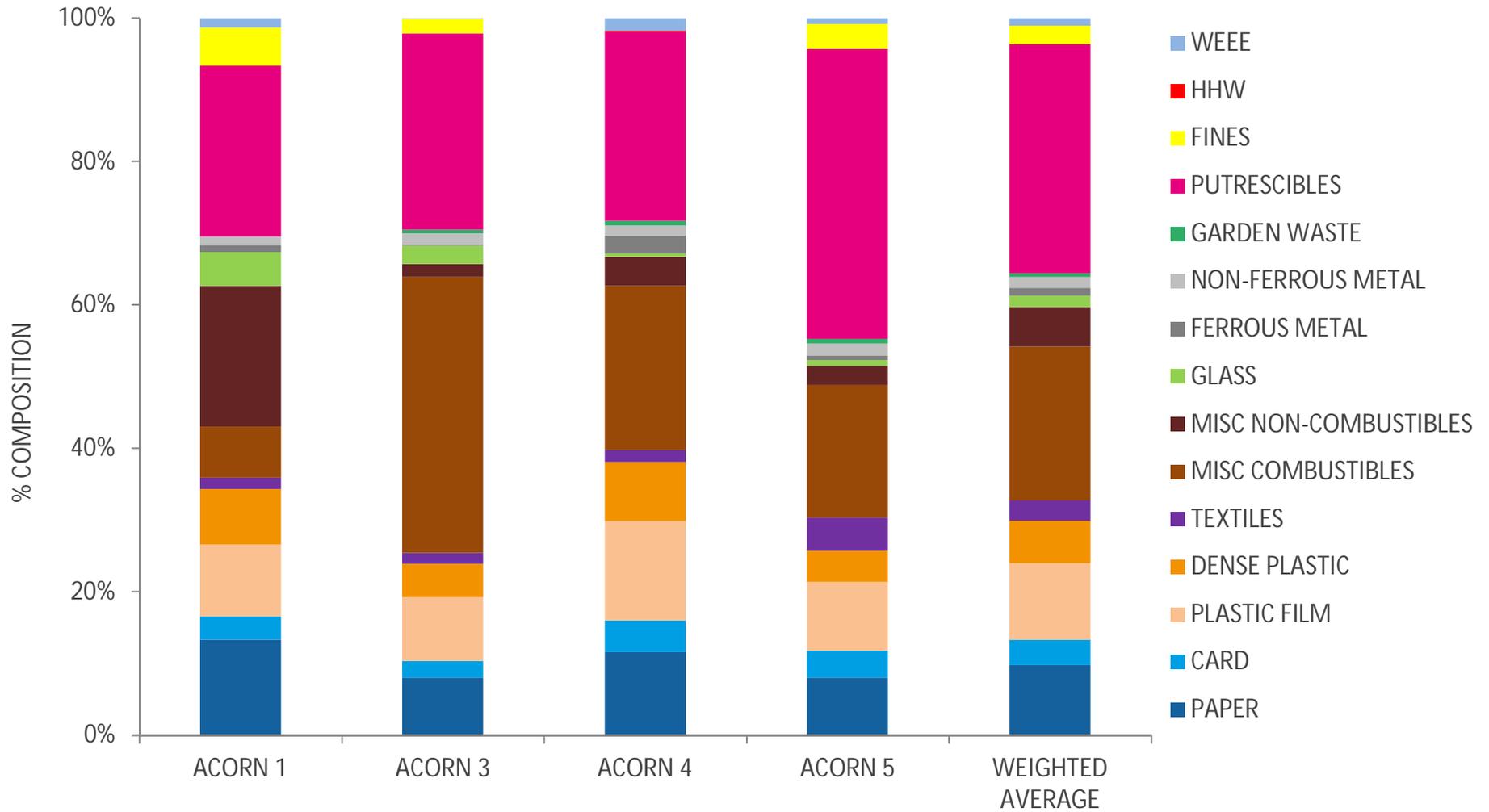
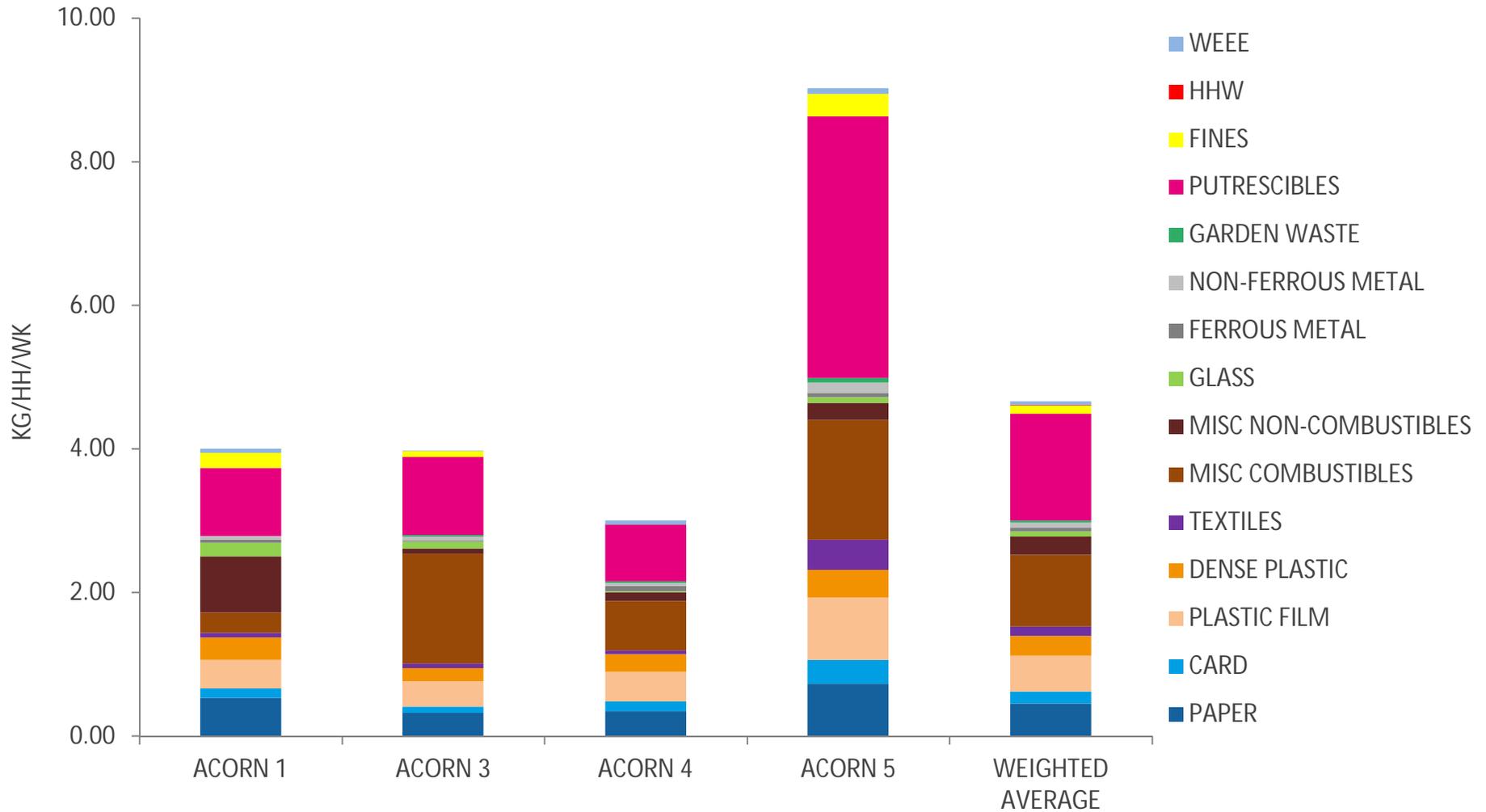


Figure 4: Average residual waste generation weighted by Acorn (kg/hh/wk)



Organic Waste

Organic waste, which includes garden and food waste (putrescibles), formed the greatest weight concentration of the primary waste categories for all Acorns. Ranges seen were from 23.8% from Acorn 1 households to 41.1% in Acorn 5 households. Across Watford as a whole around 32.5% of all residual waste (1.5kg/hh/wk) is classified as organic waste. Food waste accounted for between 22.2% (Acorn 1) and 39.1% (Acorn 5) of residual waste. As a whole, around 30.5% of all residual waste (1.42kg/hh/wk) is classified as food waste. Currently Watford residents are able to recycle food waste at the kerbside using their green lidded bins. Residents from Acorn 5 placed the most food into their residual bins at 3.53kg/hh/wk.

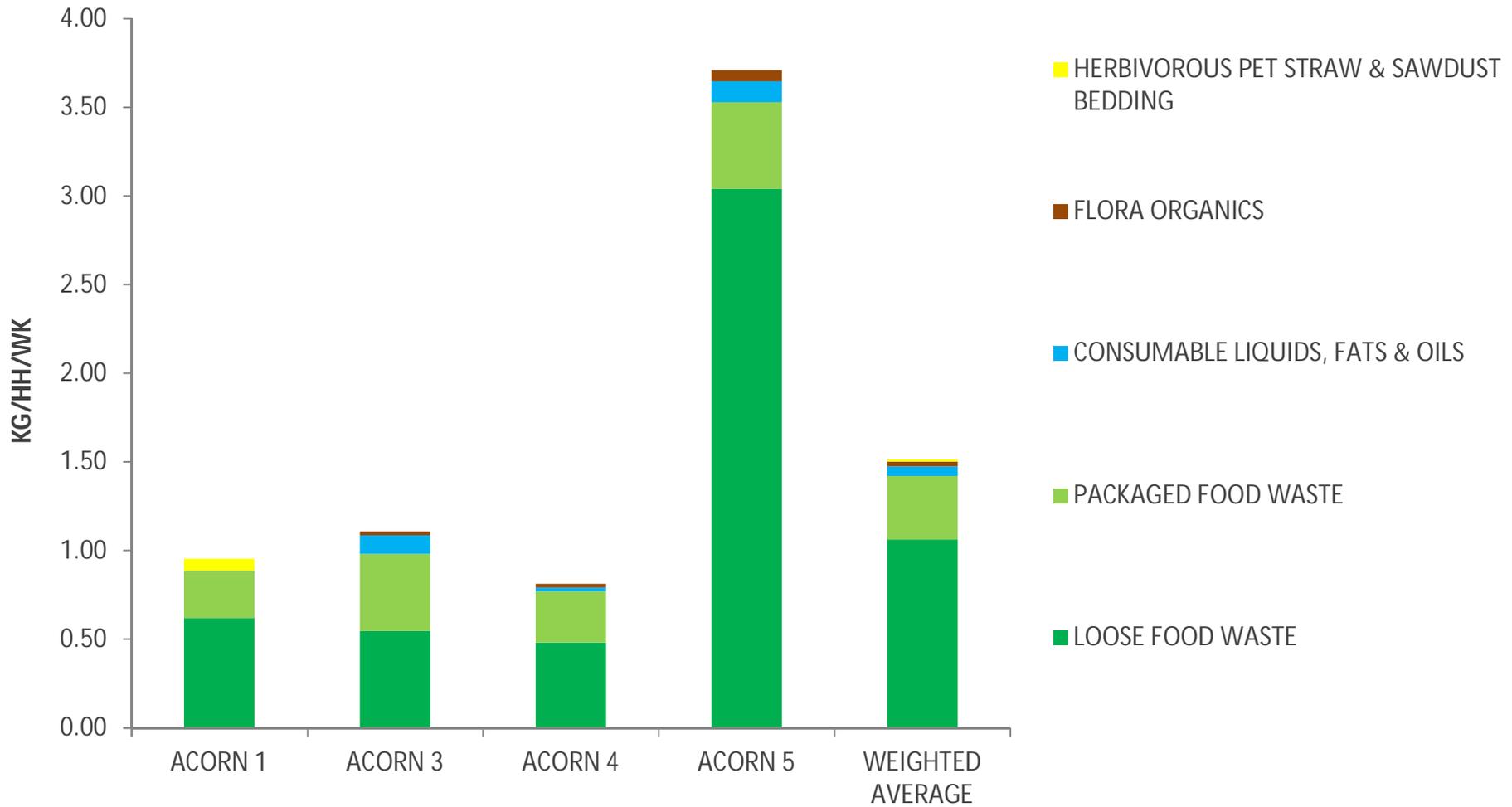
Food waste was further categorised as to whether it was avoidable (uneaten, unused or spoilt) or unavoidable (inedible by products such as shells, stones, skin etc). Overall around 47% of all food in the residual waste was deemed avoidable; this equates to 0.66kg/hh/wk. Around 53% of the avoidable food waste is due to packaged food which is therefore responsible for 25% of all the food in the residual bins.

Table 5: Levels of organic wastes within residual waste of each Acorn (kg/hh/wk)

RESIDUAL ORGANICS (KG/HH/WK)	ACORN 1	ACORN 3	ACORN 4	ACORN 5	WEIGHTED AVERAGE
FLORA ORGANICS	0.00	0.02	0.02	0.06	0.03
SOIL & TURF	0.00	0.00	0.00	0.00	0.00
LOOSE FOOD WASTE	0.62	0.55	0.48	3.04	1.06
PACKAGED FOOD WASTE	0.27	0.43	0.29	0.49	0.36
HERBIVOROUS PET STRAW & SAWDUST BEDDING	0.07	0.00	0.00	0.00	0.01
CONSUMABLE LIQUIDS, FATS & OILS	0.00	0.10	0.02	0.12	0.06
KG/HH/WK ORGANICS	0.95	1.11	0.81	3.71	1.51
% ORGANICS	23.81%	27.89%	27.02%	41.07%	32.46%
KG/HH/WK FOOD WASTE	0.89	0.98	0.77	3.53	1.42
% FOOD WASTE	22.15%	24.70%	25.60%	39.09%	30.46%

Residents throughout Watford can also use green lidded bins to recycle garden waste at the kerbside. Levels of garden waste in residual bins were low, averaging just 0.6% or 0.03kg/hh/wk. All of this was due to recyclable garden vegetation. All samples had concentrations of garden waste below 1%.

Figure 5: Levels of organics within residual waste of each Acorn (kg/hh/wk)



Paper

On average, Acorn 1 residents had the highest concentrations of this type of waste (13.3%), with Acorn 5 disposing of the most at 0.73kg/hh/wk. In comparison just 8.0% or 0.32kg/hh/wk of residual waste from Acorn 3 was due to paper based materials. Across Watford it was seen that around 9.7% or 0.45kg/hh/wk of residual waste consisted of discarded paper.

A proportion of this paper is available for recycling at the kerbside. Watford residents can use their blue lidded bins for recycling paper such as newspapers, junk mail, envelopes and directories. It was found that between 22.4% (Acorn 4) and 43.7% (Acorn 1) of paper could have been placed into recycling boxes as opposed to the residual bins.

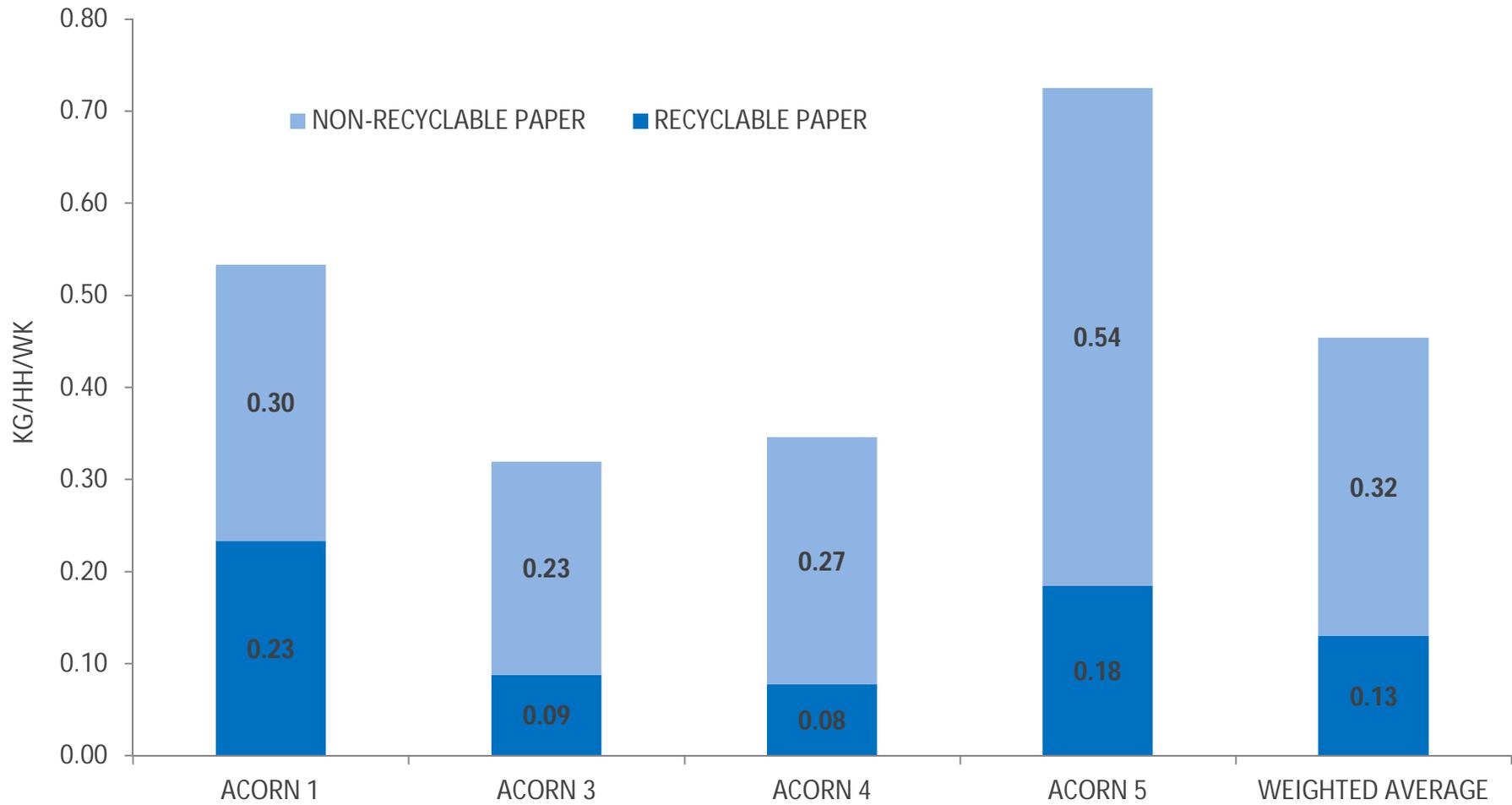
When accounting for all of the various types of paper within the residual waste, it is seen that 28.6% of residual paper was recyclable which accounted for 2.8% of all the residual waste or 0.13kg/hh/wk.

Table 6 and Figure 6 show the amounts of the different forms of paper waste for each Acorn.

Table 6: Levels of paper wastes within residual waste of each Acorn (kg/hh/wk)

RESIDUAL PAPER	ACORN 1	ACORN 3	ACORN 4	ACORN 5	WEIGHTED AVERAGE
RECYCLABLE PAPER	0.23	0.09	0.08	0.18	0.13
NON-RECYCLABLE PAPER	0.30	0.23	0.27	0.54	0.32
KG/HH/WK TOTAL PAPER	0.53	0.32	0.35	0.73	0.45
% PAPER RECYCLABLE	43.7%	27.6%	22.4%	25.4%	28.6%

Figure 6: Levels of paper wastes within residual waste of each Acorn (kg/hh/wk)



Card & Cardboard

On average, Acorn 4 residents had the highest concentrations of this type of waste (4.5%), with Acorn 5 disposing of the most at 0.34kg/hh/wk. In comparison 0.09kg/hh/wk of residual waste from Acorn 3 was due to card and cardboard based materials. Across Watford it was seen that around 3.6% or 0.17kg/hh/wk of residual waste consisted of discarded card and cardboard.

A proportion of this card & cardboard is available for recycling at the kerbside. Watford residents can recycle card and cardboard in (or alongside) their blue lidded bins. It was found that between 78.9% (Acorn 3) and 89.4% (Acorn 5) of card and cardboard could have been recycled rather than disposed of in residual bins. Across Watford, 84.5% of residual card and cardboard was compatible with recycling bins which accounted for 3.0% of all the residual waste or 0.14kg/hh/wk.

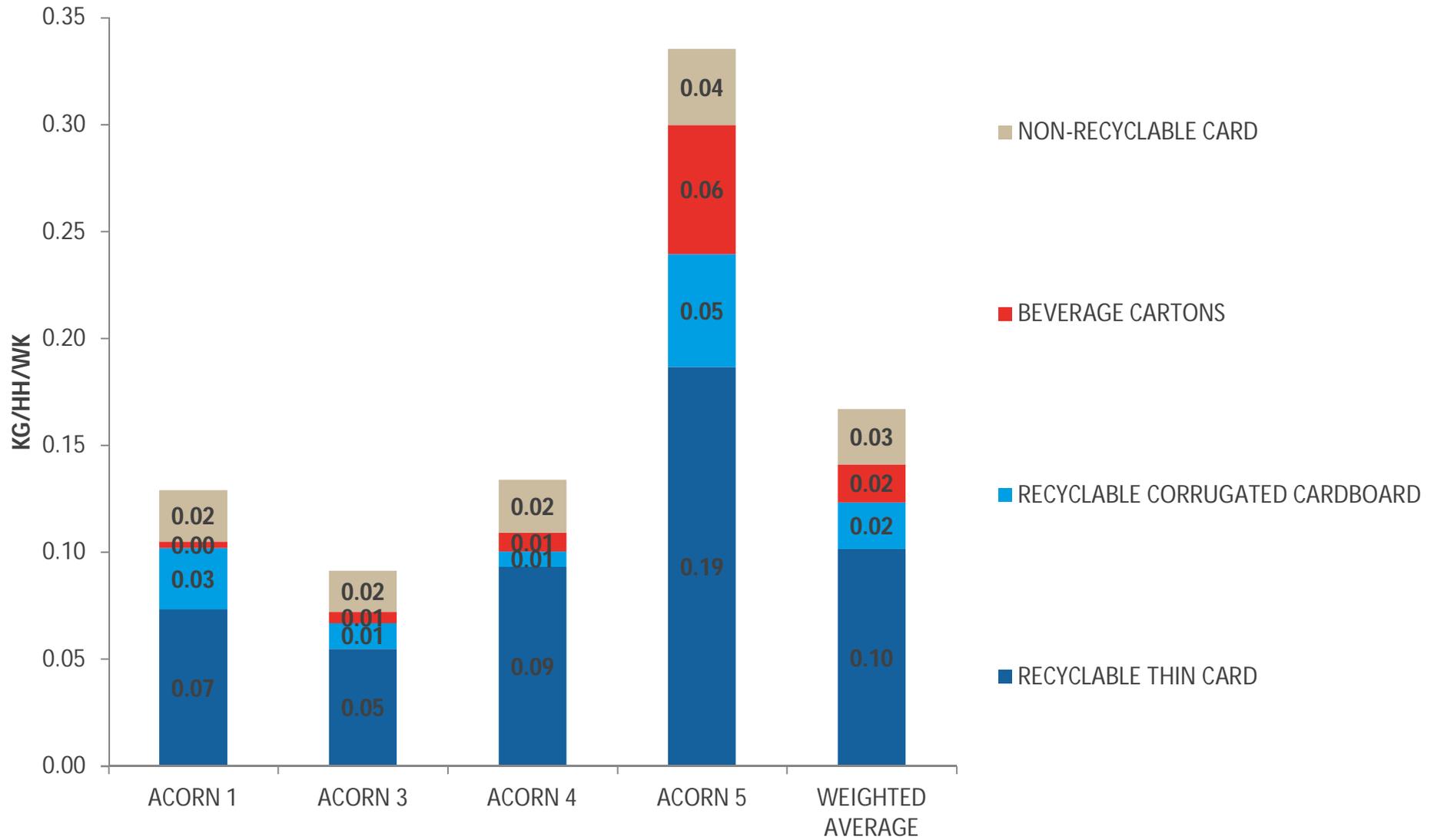
Table 7 and Figure 7 show the amounts of the different forms of card and cardboard waste for each Acorn.

When combining paper and card together it is estimated that 44% of that present in residual bins could have been recycled via kerbside recycling collections. This amounts to 5.8% of all the residual waste being collected – a total of 0.27kg/hh/wk.

Table 7: Levels of card wastes within residual waste of each Acorn (kg/hh/wk)

RESIDUAL CARD	ACORN 1	ACORN 3	ACORN 4	ACORN 5	WEIGHTED AVERAGE
RECYCLABLE THIN CARD	0.07	0.05	0.09	0.19	0.10
RECYCLABLE CORRUGATED CARDBOARD	0.03	0.01	0.01	0.05	0.02
BEVERAGE CARTONS	0.00	0.01	0.01	0.06	0.02
NON-RECYCLABLE CARD	0.02	0.02	0.02	0.04	0.03
KG/HH/WK TOTAL CARD & CARDBOARD	0.13	0.09	0.13	0.34	0.17
KG/HH/WK RECYCLABLE CARD & CARDBOARD	0.11	0.07	0.11	0.30	0.14
% CARD KERBSIDE RECYCLABLE	81.4%	78.9%	81.5%	89.4%	84.5%

Figure 7: Levels of card wastes within residual waste of each Acorn (kg/hh/wk)



Plastics

In this sampling campaign average ranges for waste plastics were 13.5% from Acorn 3 households to 22.1% in the waste from Acorn 4 households. Watford residents currently recycle plastic bottles and selected containers as part of their dry recycling. Across the area as a whole, 16.6% of residual waste was classified as plastic which equates to 0.77kg/hh/wk. On the whole plastic material, although not heavy in itself, can produce large volumes of waste.

Figure 8 clearly shows the levels of recyclable plastics within the residual waste. On average, around 23.0% of the plastic waste present in the residual was recyclable, equating to 0.18kg/hh/wk.

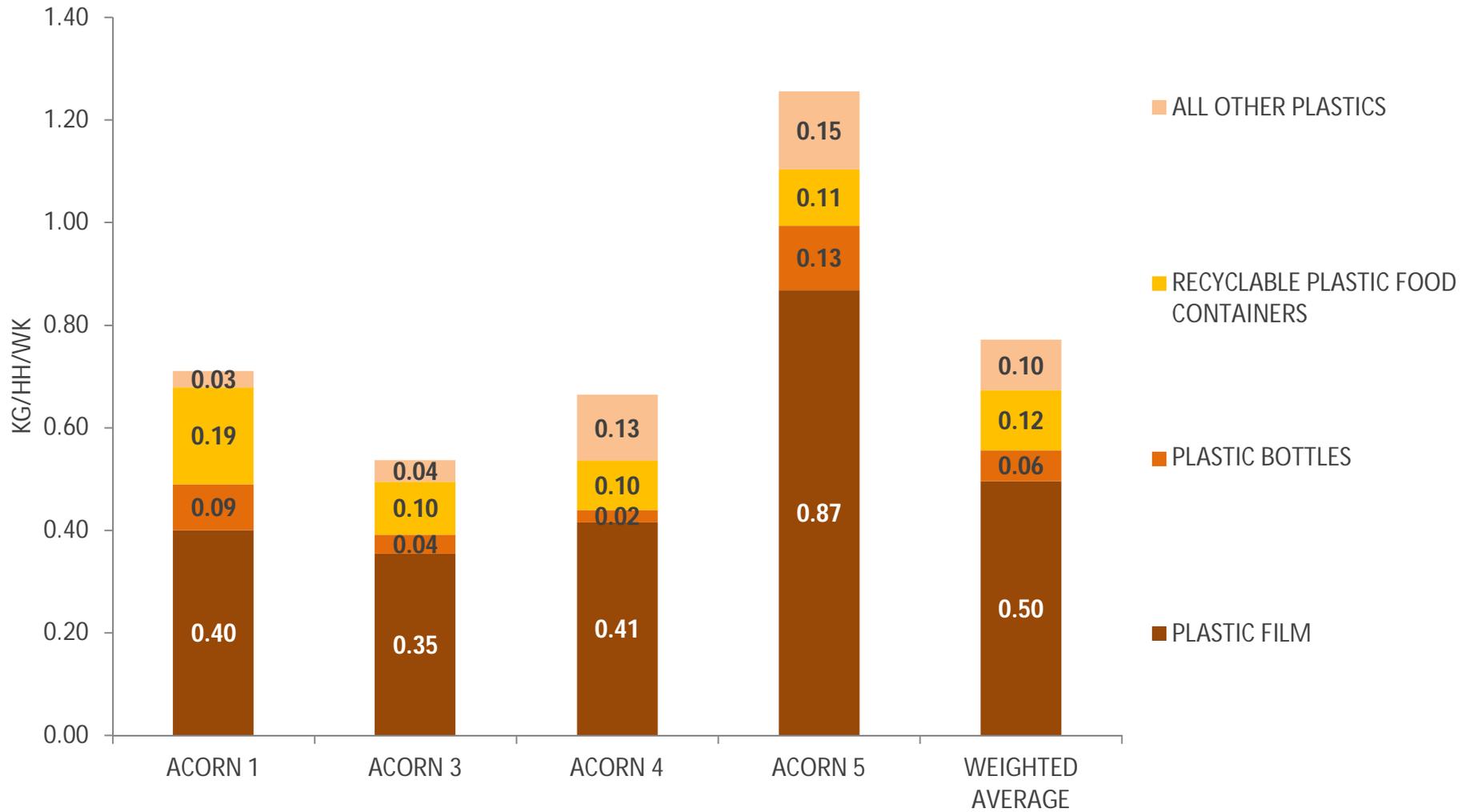
Plastic containers made up 66% of the recyclable plastics with bottles forming the remaining 34%.

Table 8 and Figure 8 show the amounts of the different forms of plastic waste found within the residual samples from each Acorn.

Table 8: Levels of plastics within residual waste of each Acorn (kg/hh/wk)

RESIDUAL PLASTICS	ACORN 1	ACORN 3	ACORN 4	ACORN 5	WEIGHTED AVERAGE
PLASTIC FILM	0.40	0.35	0.41	0.87	0.50
PLASTIC BOTTLES	0.09	0.04	0.02	0.13	0.06
RECYCLABLE PLASTIC FOOD CONTAINERS	0.19	0.10	0.10	0.11	0.12
ALL OTHER PLASTICS	0.03	0.04	0.13	0.15	0.10
KG/HH/WK TOTAL PLASTIC	0.71	0.54	0.66	1.26	0.77
KG/HH/WK RECYCLABLE PLASTIC	0.28	0.14	0.12	0.24	0.18
% PLASTIC RECYCLABLE	39.3%	26.1%	18.3%	18.8%	23.0%

Figure 8: Levels of plastics within residual waste of each Acorn (kg/hh/wk)



Metals

In this sampling campaign average concentrations of residual metals were seen to be 1.7% total metal by weight from Acorn 3 households to 3.8% in the waste from Acorn 4 households, averaging 2.6% overall. Watford residents have access to a recycling collection of food and drink cans as well as aerosols and clean foil via their mixed recycling collection. The average weight of metals in the residual waste from Acorn 3 was 0.07kg/hh/wk rising to 0.21kg/hh/wk in Acorn 5.

A proportion of this metal waste is available for recycling at the kerbside. It was found that 47% of Acorn 4 metals were recyclable rising to 100% for the metals in Acorn 3 residual waste. Across Watford an average of 72.5% or 0.09kg/hh/wk of residual metal is classified as recyclable, this equates to 1.9% of all collected residual waste.

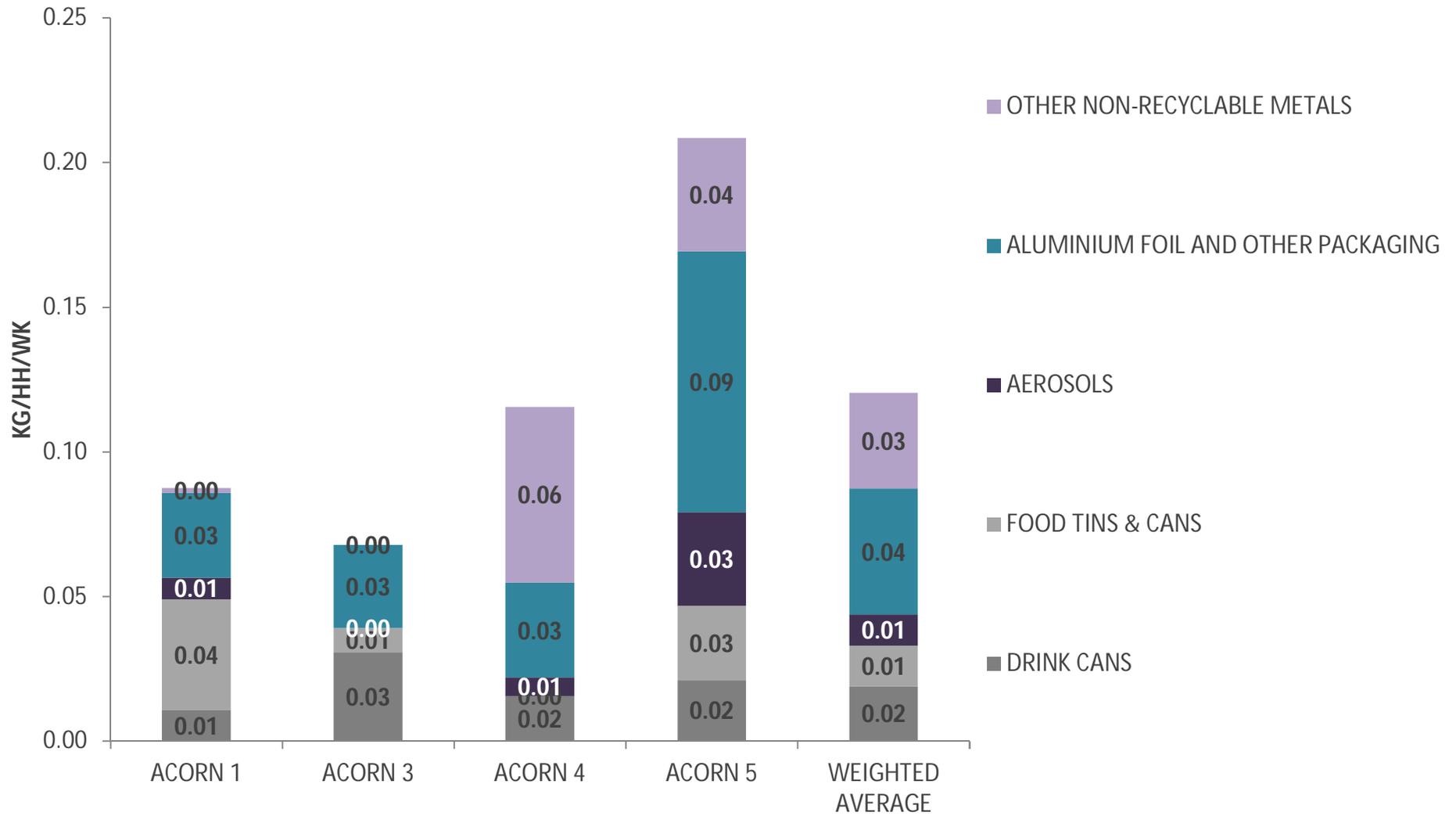
Less than half of residual metals were ferrous.

Table 9 and Figure 9 show the amounts of the different forms of metallic waste found within the samples from each Acorn. Food cans tend to require a degree of washing before being placed into recycling containers and as such are often less well diverted than cleaner drinks cans.

Table 9: Levels of metals within residual waste of each Acorn (kg/hh/wk)

RESIDUAL METALS	ACORN 1	ACORN 3	ACORN 4	ACORN 5	WEIGHTED AVERAGE
DRINK CANS	0.01	0.03	0.02	0.02	0.02
FOOD TINS & CANS	0.04	0.01	0.00	0.03	0.01
AEROSOLS	0.01	0.00	0.01	0.03	0.01
ALUMINIUM FOIL AND OTHER PACKAGING	0.03	0.03	0.03	0.09	0.04
OTHER NON-RECYCLABLE METALS	0.00	0.00	0.06	0.04	0.03
RECYCLABLE METALS	0.09	0.07	0.05	0.17	0.09
TOTAL METALS	0.09	0.07	0.12	0.21	0.12
% FERROUS	44.0%	12.4%	64.8%	27.6%	42.3%
% RECYCLABLE	98.0%	100.0%	47.4%	81.2%	72.5%

Figure 9: Levels of metals within residual waste of each Acorn (kg/hh/wk)



Glass

In this sampling campaign the average concentration of residual glass was seen to be 0.5% total glass by weight from Acorn 4 households, rising to 4.7% in the waste from Acorn 1 residual bins. Watford residents are able to recycle glass bottles and jars at the kerbside in their mixed recycling bins. The weight of glass in the residual waste from Acorn 4 was just 0.01kg/hh/wk rising to 0.10kg/hh/wk for Acorn 3. This represented a Borough wide average of 1.6% or 0.08kg/hh/wk.

A proportion of this glass consists of bottles and jars which could have been recycled rather than placed into residual bins. It was found that across Watford an average of 67.2% or 0.05kg/hh/wk of residual glass is classified as recyclable, this equates to 1.1% of all collected residual waste.

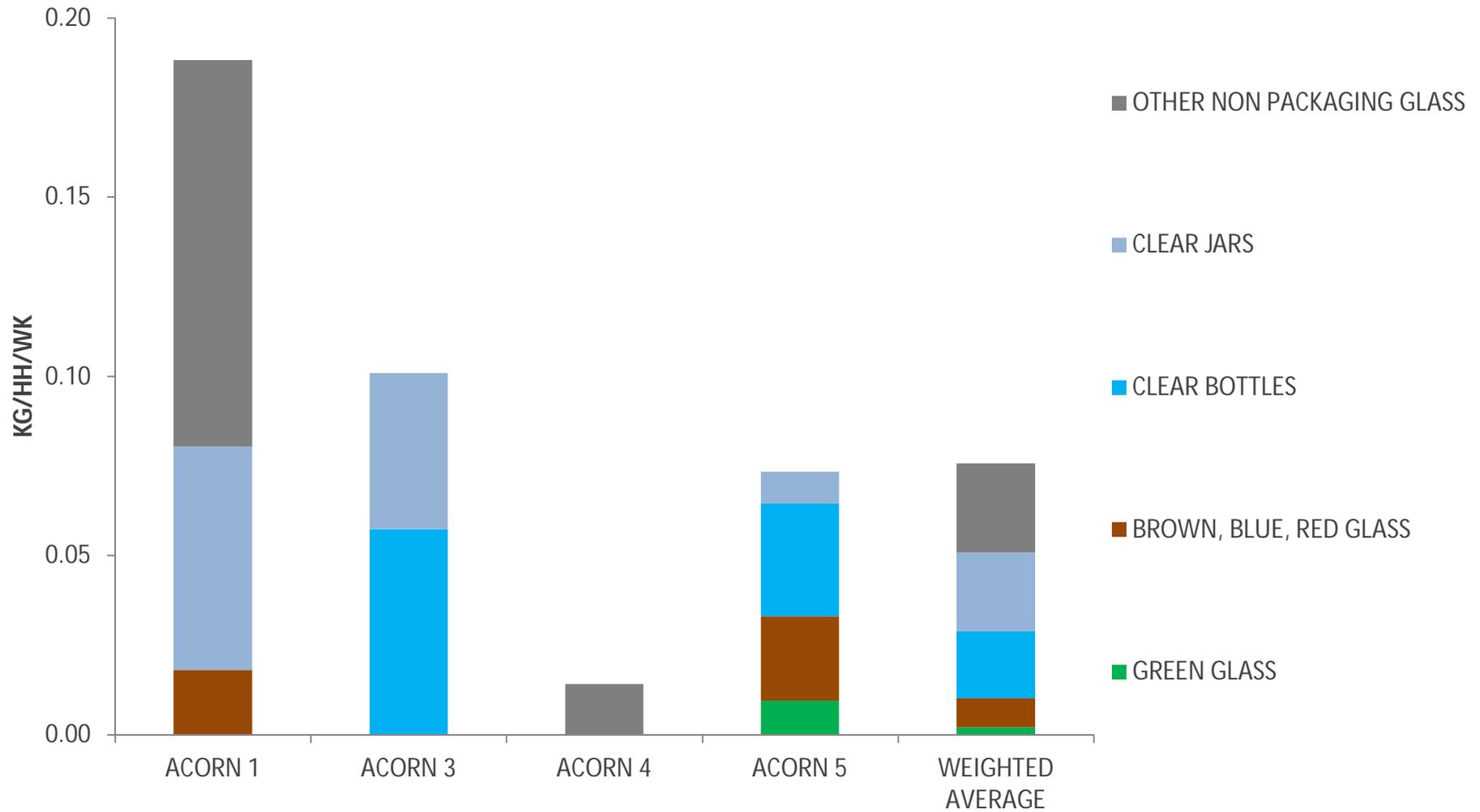
Overall, 79.9% of recyclable glass was clear, accounting for 0.04kg/hh/wk of residual waste. Over half of the clear glass was due to jars as opposed to bottles. Jars often need more cleaning than bottles and are generally less effectively recycled.

Table 10 and Figure 10 show the amounts of the different forms of glass waste found within the samples from each Acorn.

Table 10: Levels of glass within residual waste of each Acorn (kg/hh/wk)

RESIDUAL GLASS	ACORN 1	ACORN 3	ACORN 4	ACORN 5	WEIGHTED AVERAGE
GREEN GLASS	0.00	0.00	0.00	0.01	0.00
BROWN, BLUE, RED GLASS	0.02	0.00	0.00	0.02	0.01
CLEAR BOTTLES	0.00	0.06	0.00	0.03	0.02
CLEAR JARS	0.06	0.04	0.00	0.01	0.02
OTHER NON PACKAGING GLASS	0.11	0.00	0.01	0.00	0.02
KG/HH/WK TOTAL GLASS	0.19	0.10	0.01	0.07	0.08
KG/HH/WK RECYCLABLE GLASS	0.08	0.10	0.00	0.07	0.05
% RECYCLABLE	42.7%	100.0%	0.0%	100.0%	67.2%
% OF RECYCLABLE GLASS - CLEAR	77.6%	100.0%	N/A	55.0%	79.9%

Figure 10: Levels of glass within residual waste of each Acorn (kg/hh/wk)



Other notable materials within the residual waste

Textiles - From the survey, around 4.6% of the residual waste from Acorn 5 was seen to consist of textiles, this compares with levels of 1.6% for all other samples. The residual waste from Acorn 5 households contained the most textile waste at 0.42kg/hh/wk.

Watford households do not currently have provision to recyclable bagged textiles at the kerbside. Overall, an average of 2.9% or 0.13kg/hh/wk of residual waste across all households consisted of textile waste. Of the textiles present, around 55% were potentially recyclable and these accounted for 1.6% of the residual waste – 0.07kg/hh/wk.

Disposable Nappies & AHP (Absorbent Hygiene Products) -The profile of this type of waste has increased in recent years and nappy levels within the residual bins of households with babies can be extremely high. In this survey, the concentrations of disposable nappies and AHP averaged 9.7% or 0.45kg/hh/wk. In Acorn 3 samples the average was 3.5% or 0.14g/hh/wk with levels of over 12.5% recorded for Acorn 4 and 5 residual waste. In Acorn 5 around 1.13kg/hh/wk of disposable nappies are being disposed of. Generally, a small number of individual households are largely responsible for increasing this type of waste collected from a sample area.

Inert rubble – This type of waste is generally one of the densest materials placed into residual bins. Although more suited for disposal at HWRC's small amounts mixed with general residual waste are to be expected. Often it is seen that a small number of individual houses may place increased levels of construction / clearance type waste into their bins. On average 5.5% or 0.25kg/hh/wk consisted of mixed non-combustible waste. Around 19.6% (0.8kg/hh/wk) of the residual waste in the Acorn 1 sample consisted of these inert materials compared with 1.8% for the Acorn 3 residual waste.

Hazardous waste and WEEE – On average just 1.1% or 0.05kg/hh/wk of residual waste consisted of hazardous waste and WEEE . Levels were highest at 2.0% for the Acorn 4 sample.

Potential recyclability of the residual waste

The overall recyclability of the residual waste relates to all the items present that could have been accepted into the kerbside recycling schemes currently running in Watford. Results from the survey showed that the overall recyclability of the residual waste was highest in Acorn 5 households at 50.5%, and lowest in Acorn 3 at 37.1%. Across Watford it is expected that 43.9% of all residual waste being disposed of is recyclable at the kerbside.

Overall around 31.3% of residual waste was compatible with food and garden collections with a further 12.6% acceptable in mixed recycling bins

Table 11: Proportion of residual waste currently recyclable relative to current schemes (%)

% RECYCLABLES IN RESIDUAL WASTE	ACORN 1	ACORN 3	ACORN 4	ACORN 5	WEIGHTED AVERAGE
MIXED DRY RECYCLABLES	19.57%	11.81%	12.07%	10.66%	12.59%
FOOD & GARDEN RECYCLABLES	23.81%	25.25%	26.29%	39.79%	31.28%
TOTAL RECYCLABLE	43.38%	37.06%	38.36%	50.45%	43.87%

In terms of the amount of recyclables disposed of it is seen that Acorn 5 householders place 4.55kg/hh/wk of materials in residual bins that could be placed into the various kerbside recycling containers. This is far higher than any of the other samples which are between 1.2kg/hh/wk and 1.7kg/hh/wk. Across Watford around 2.04kg/hh/wk of recyclable material is being disposed of in the residual waste.

Table 12: Kg/hh/wk of residual waste currently recyclable relative to current schemes

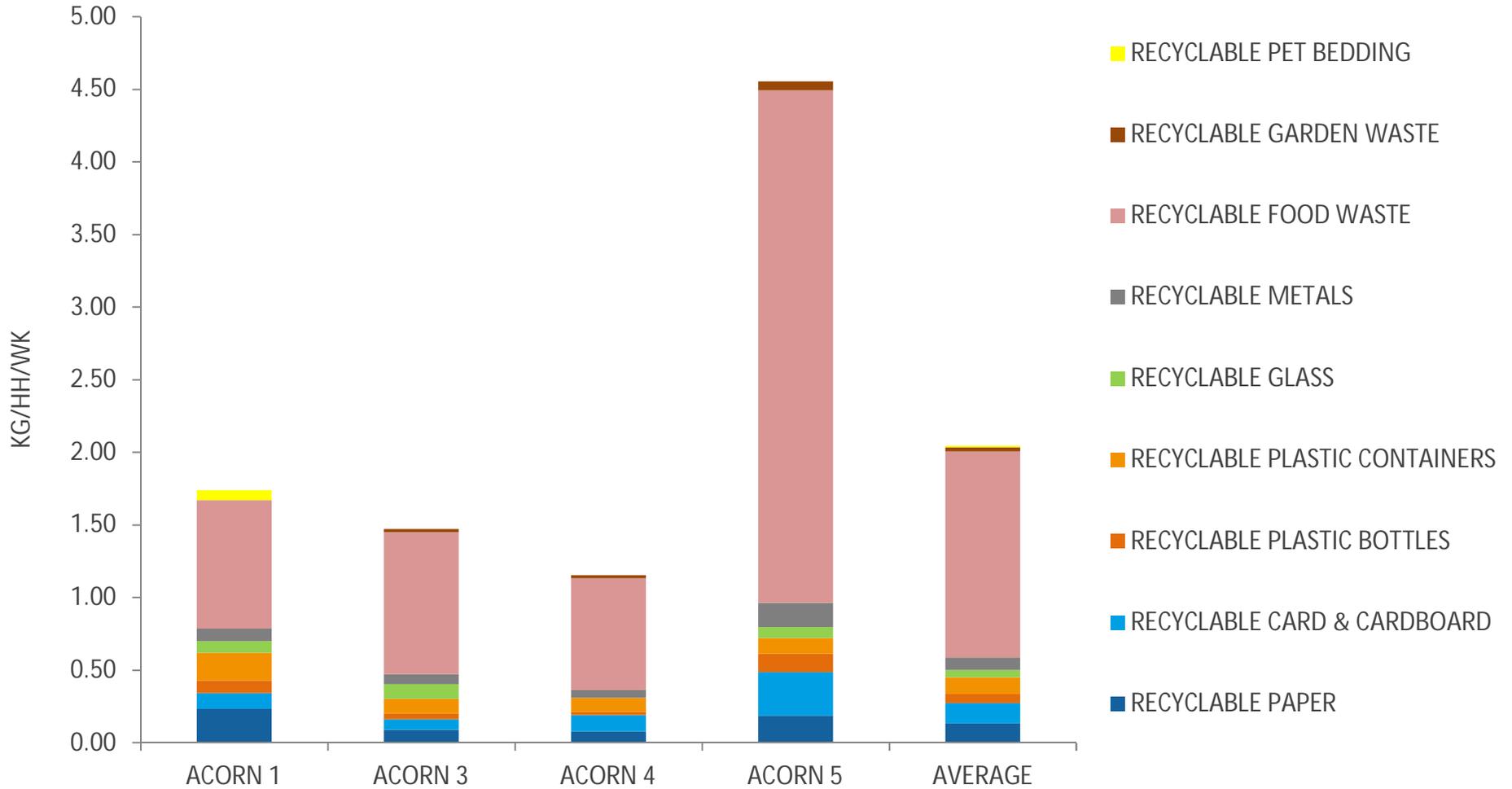
KG/HH/WK RECYCLABLES IN RESIDUAL WASTE	ACORN 1	ACORN 3	ACORN 4	ACORN 5	WEIGHTED AVERAGE
MIXED DRY RECYCLABLES	0.78	0.47	0.36	0.96	0.59
FOOD & GARDEN RECYCLABLES	0.95	1.00	0.79	3.59	1.46
TOTAL RECYCLABLE	1.74	1.47	1.15	4.55	2.04

Figure 12 clearly shows the levels of residual materials currently collectable in the recycling collections available in Watford. Different households were seen to dispose of differing levels of recyclable materials, both in terms of volume and composition (Table 15).

Table 13: Kg/hh/wk of residual waste potentially recyclable relative to Acorn (Kg/hh/wk)

KG/HH/WK MATERIALS WITHIN RESIDUAL WASTE	ACORN 1	ACORN 3	ACORN 4	ACORN 5	WEIGHTED AVERAGE
RECYCLABLE PAPER	0.23	0.09	0.08	0.18	0.13
RECYCLABLE CARD & CARDBOARD	0.11	0.07	0.11	0.30	0.14
RECYCLABLE PLASTIC BOTTLES	0.09	0.04	0.02	0.13	0.06
RECYCLABLE PLASTIC CONTAINERS	0.19	0.10	0.10	0.11	0.12
RECYCLABLE GLASS	0.08	0.10	0.00	0.07	0.05
RECYCLABLE METALS	0.09	0.07	0.05	0.17	0.09
RECYCLABLE FOOD WASTE	0.89	0.98	0.77	3.53	1.42
RECYCLABLE GARDEN WASTE	0.00	0.02	0.02	0.06	0.03
RECYCLABLE PET BEDDING	0.07	0.00	0.00	0.00	0.01
TOTAL RECYCLABLE	1.74	1.47	1.15	4.55	2.04

Figure 11: Kg/hh/wk of residual waste potentially recyclable relative to Acorn (Kg/hh/wk)



Dry recycling waste

Set out rates and waste generation

Table 14 and Figure 12 highlight the set out rates for mixed kerbside recycling (blue lidded bins) observed at the time waste was collected for compositional analysis. Table 15 and Figure 13 show the amount of this recycling waste generated in kg/hh/wk. The same houses were sampled as those included in the residual survey above. As for the residual waste analysis, the overall amount of waste in kilograms per household per week is derived from the number of households who could set out waste and not just those that are participating. These aggregated figures for the recycling waste are shown in tables and figures with additional information relating to individual household samples given where relevant.

An average of 63.6% of households across the Watford samples set out blue lidded recycling bins for collection. This ranged between 50% for Acorn 4 up to 82.5% for Acorn 1.

Table 14: Average Set Out for kerbside recycling waste (%)

% SET OUT RATE	MIXED RECYCLING
ACORN 1	82.5%
ACORN 3	66.7%
ACORN 4	50.0%
ACORN 5	70.7%
WEIGHTED AVERAGE	63.6%

An average of 3.69kg/hh/wk of mixed recycling is being generated, this ranged between 3.05kg/hh/wk for Acorn 5 up to 4.09kg/hh/wk for Acorn 3. Solely considering presented bins the average level is 5.80kg/hh/wk.

Table 15: Average Kerbside Recycling generation rates (kg/hh/wk)

ACORN	OVERALL KG/HH/WK	KG/HH/WK PER PRESENTED BIN
ACORN 1	3.88	4.70
ACORN 3	4.09	6.14
ACORN 4	3.75	7.50
ACORN 5	3.05	4.31
WEIGHTED AVERAGE	3.69	5.80

Figure 12: Average Set Out for mixed recycling waste (%)

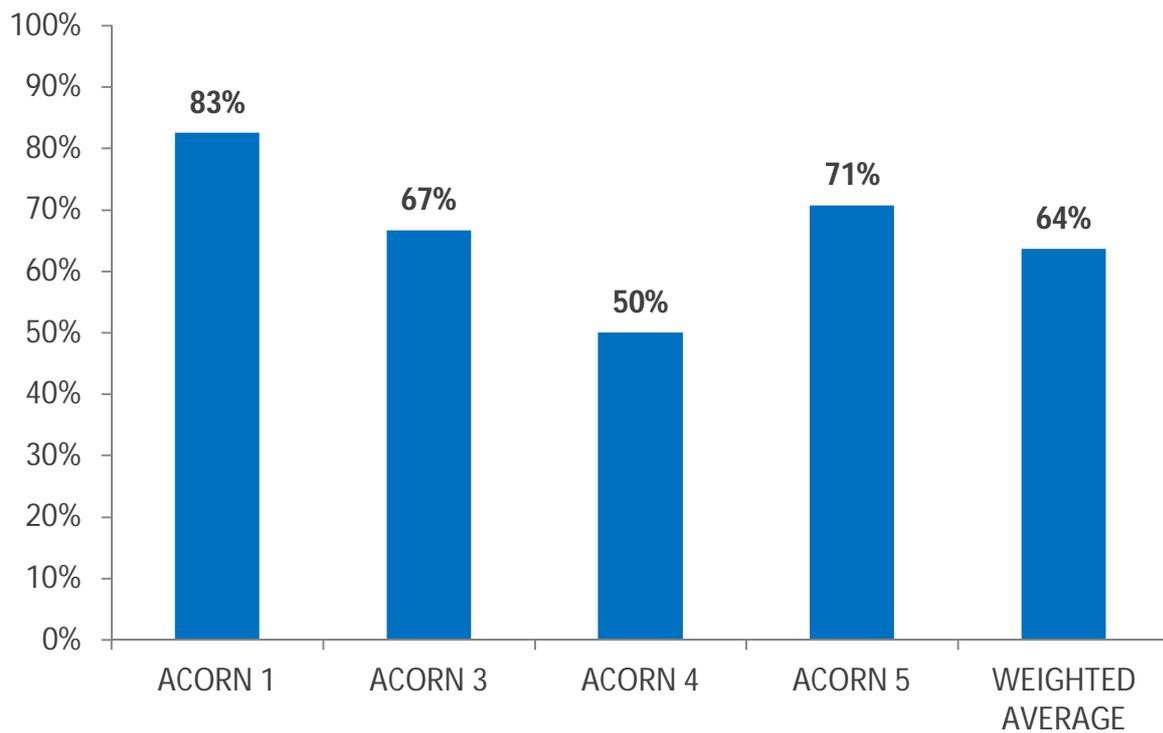
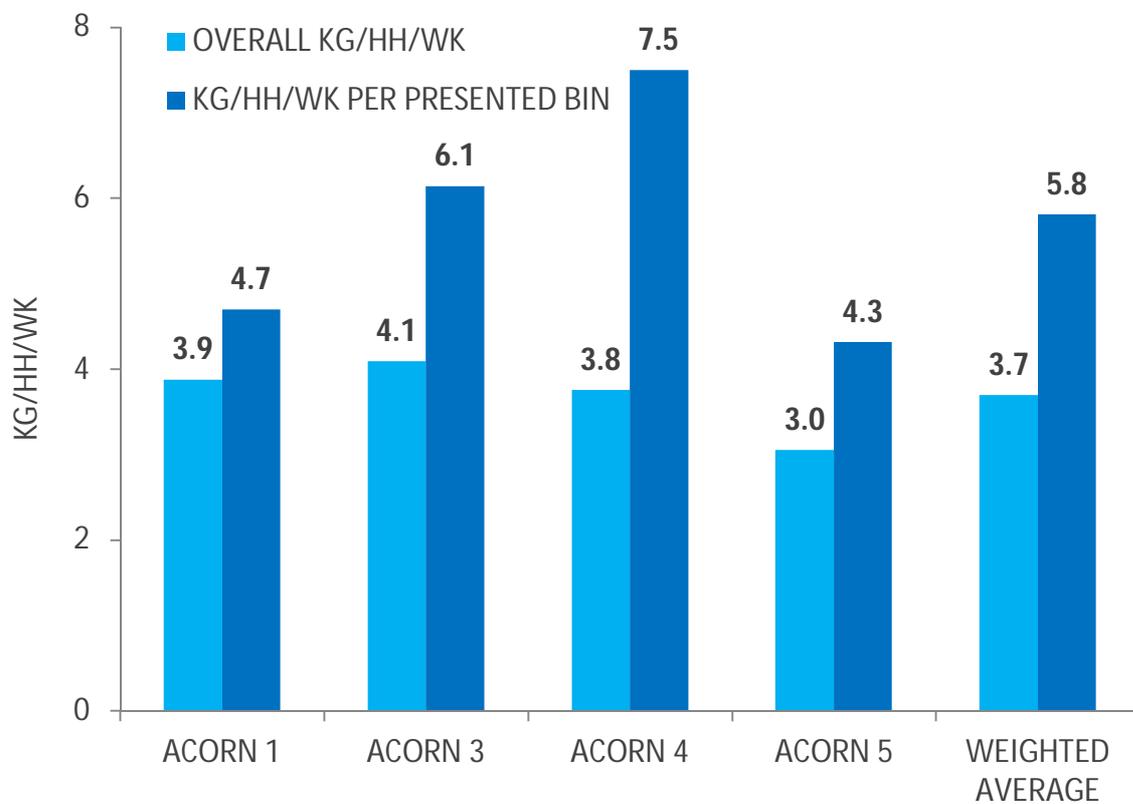


Figure 13: Average kerbside recycling waste generation rates (kg/hh/wk)



Compositional analysis of mixed recycling bins

This section looks at average amounts and composition of the blue lid recycling bins presented by households sampled throughout Watford. Hand sorting of the recycling waste gave concentration by weight figures for the fifteen main categories of waste as well as the more detailed sub-categories. Results can again be expressed in terms of percentage concentration and kg/hh/wk for individual samples and in relation to the household Acorn type surveyed. Table 16 and Figure 14 show recycling data in terms of percentage composition with Table 17 and Figure 15 showing generation rates for major materials in kg/hh/wk across all households in each sample area.

As residual waste will contain a proportion that is classified as recyclable; then recycling waste will contain a fraction that is deemed to contamination. That is to say that it is not compatible with the materials currently acceptable to the recycling container it is placed into.

Table 16: Composition of mixed recycling (% concentration) by Acorn

MIXED RECYCLING (%)	ACORN 1	ACORN 3	ACORN 4	ACORN 5	WEIGHTED AVERAGE
RECYCLABLE PAPER	35.13%	35.86%	29.29%	8.74%	28.30%
RECYCLABLE CARD & CARDBOARD	36.28%	29.62%	36.36%	34.71%	34.50%
RECYCLABLE PLASTIC BOTTLES	4.80%	4.60%	5.34%	14.80%	6.72%
RECYCLABLE PLASTIC CONTAINERS	0.47%	4.01%	2.42%	1.09%	2.19%
RECYCLABLE GLASS	13.48%	21.76%	22.19%	18.46%	19.81%
RECYCLABLE METALS	2.13%	0.73%	2.89%	5.48%	2.70%
TOTAL MIXED RECYCLABLES	92.30%	96.57%	98.49%	83.29%	94.23%
TOTAL CONTAMINATION	7.70%	3.43%	1.51%	16.71%	5.77%

Table 17: Composition of mixed recycling (kg/hh/wk) by Acorn

MIXED RECYCLING (KG/HH/WK)	ACORN 1	ACORN 3	ACORN 4	ACORN 5	WEIGHTED AVERAGE
RECYCLABLE PAPER	1.36	1.47	1.10	0.27	1.05
RECYCLABLE CARD & CARDBOARD	1.41	1.21	1.36	1.06	1.27
RECYCLABLE PLASTIC BOTTLES	0.19	0.19	0.20	0.45	0.25
RECYCLABLE PLASTIC CONTAINERS	0.02	0.16	0.09	0.03	0.08
RECYCLABLE GLASS	0.52	0.89	0.83	0.56	0.73
RECYCLABLE METALS	0.08	0.03	0.11	0.17	0.10
TOTAL MIXED RECYCLABLES	3.58	3.95	3.69	2.54	3.48
TOTAL CONTAMINATION	0.30	0.14	0.06	0.51	0.21

Figure 14: Composition of mixed recycling (%) by Acorn

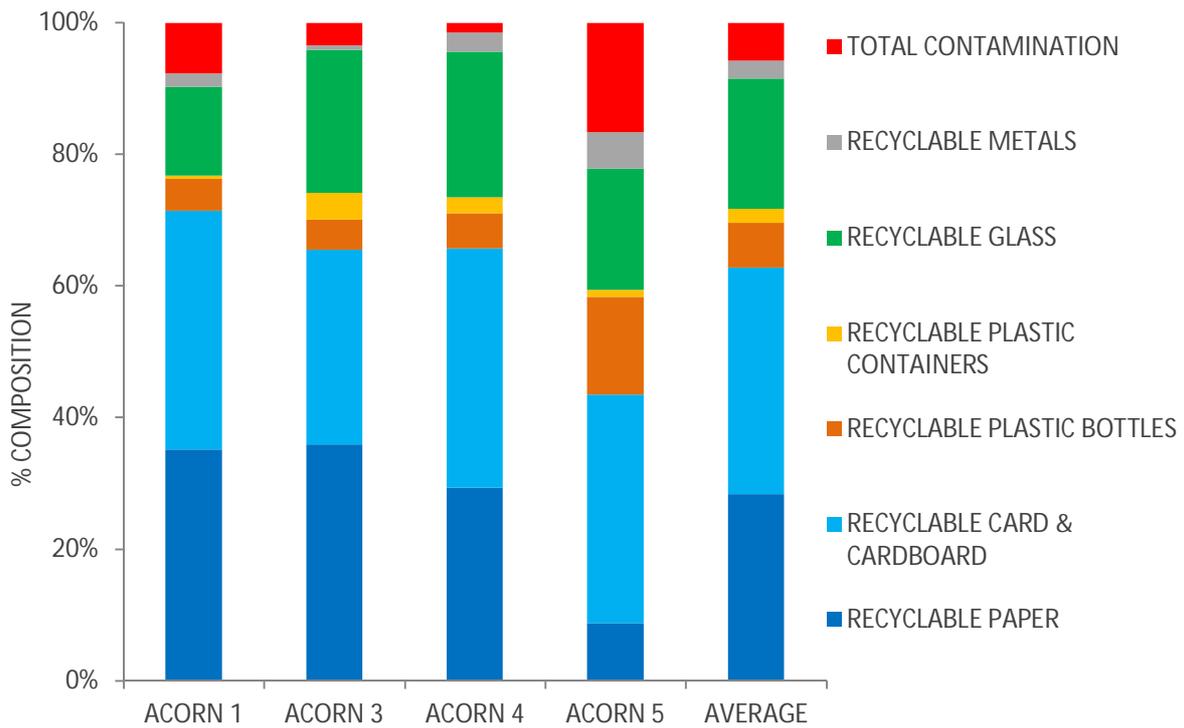
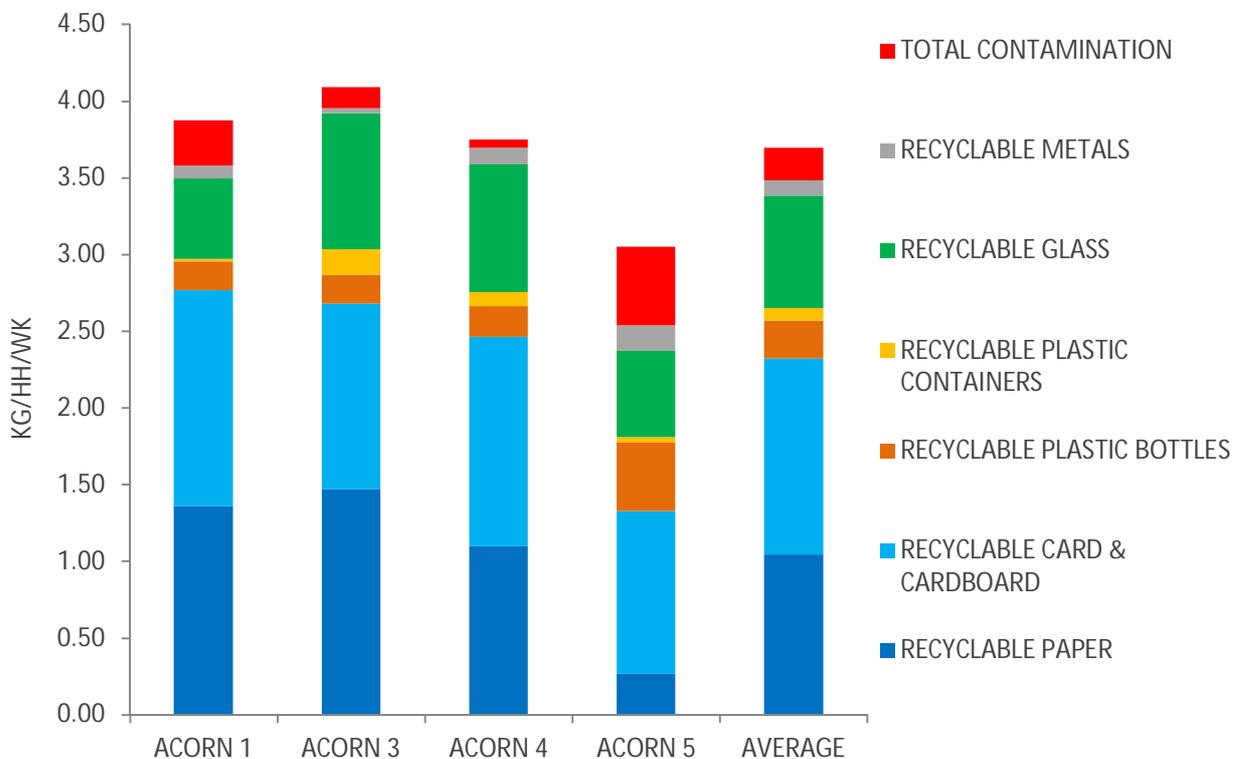


Figure 15: Level of mixed recycling (kg/hh/wk) by Acorn



This section looks in more detail at the individual materials placed out for mixed recycling collections and highlights the effectiveness with which this scheme is capturing these items. Looking at the relationship between the residual and recycling waste streams presented will additionally give indications as to the overall diversion being achieved in the Watford samples.

Table 18 summarises the capture rates seen for the range of materials collected in mixed recycling bins. These figures are calculated by determining the distribution of recyclables across all waste streams for all households surveyed.

It can be seen that households are recycling 89% of their recyclable paper and 90% of their recyclable card and cardboard using their blue lidded bins.

Whereas 80% of plastic bottles are being recycled, just over 40% of recyclable plastic tubs, pots and trays are captured.

Glass bottles and jars are the most effectively recycled material with 93.5% placed into recycling bins.

Just over half (53%) of recyclable metals are captured.

Table 18: Summary table for material capture rates (%) mixed recycling

% CORRECTLY RECYCLED	ACORN 1	ACORN 3	ACORN 4	ACORN 5	AVERAGE
RECYCLABLE PAPER	85.39%	94.35%	93.42%	59.10%	88.95%
RECYCLABLE CARD & CARDBOARD	93.05%	94.38%	92.60%	77.93%	90.03%
RECYCLABLE PLASTIC BOTTLES	67.43%	83.36%	88.82%	78.21%	80.39%
RECYCLABLE PLASTIC CONTAINERS	8.84%	61.47%	47.39%	23.21%	40.52%
RECYCLABLE GLASS	86.67%	89.83%	100.00%	88.47%	93.51%
RECYCLABLE METALS	49.04%	30.68%	66.47%	49.69%	53.40%
TOTAL MIXED RECYCLABLES	82.05%	89.39%	90.96%	72.51%	85.54%

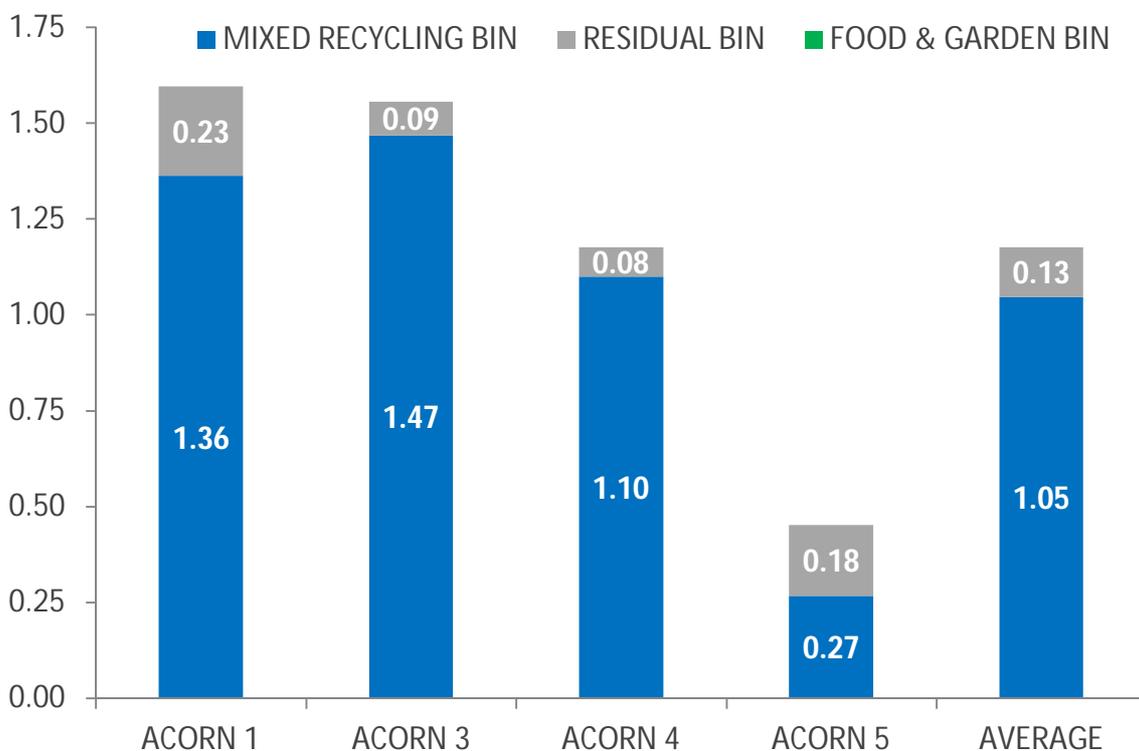
Paper Capture

Acorn 3 residents captured the highest proportion of their recyclable paper with 94.4% correctly being recycled in blue lidded bins. Acorn 1 households also generated the most recyclable paper at 1.59kg/hh/wk. Residents in Acorn 5 areas captured the least at 59.1%, also disposing of the smallest amount at 0.45kg/hh/wk.

Across Watford it is estimated that 1.18kg/hh/wk of recyclable paper compatible with recycling collections is generated with around 89% being correctly recycled.

There are many different forms of paper and therefore decisions have to be made by residents as to whether a particular piece is to go into the recycling or residual waste. In all sample areas, the majority of all recyclable forms of paper are being correctly diverted in each sample area. There is, however, around 0.13kg/hh/wk of potentially recyclable paper not disposed of in recycling bins. Figure 16 shows the distribution of recyclable paper throughout the residual and recycling waste by Acorn category.

Figure 16: Distribution of recyclable paper within residual and recycling samples (kg/hh/wk)

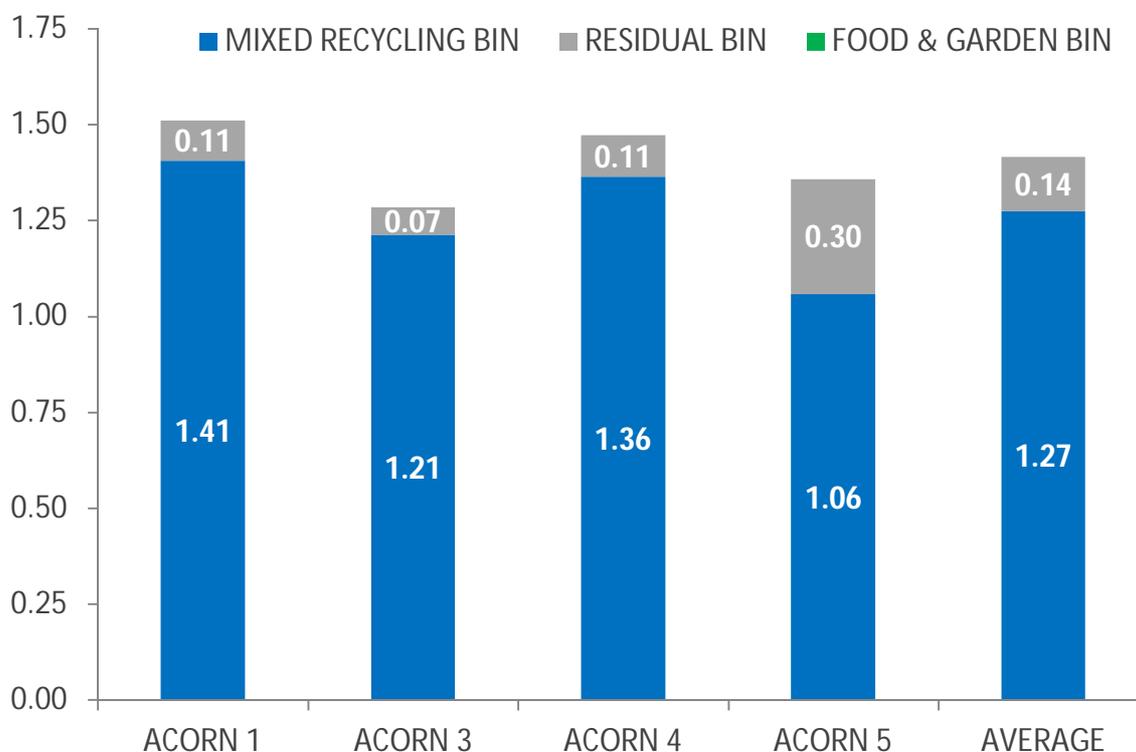


Card & Cardboard Capture

Acorn 3 residents captured the highest proportion of their recyclable card & cardboard with 94.4% correctly being recycled. Residents in Acorn 5 areas captured the least at 77.9% with Acorn 3 generating the lowest amount of recyclable card & cardboard at 1.30kg/hh/wk. Across Watford it is estimated that 1.42kg/hh/wk of recyclable card & cardboard is generated with around 90% being correctly placed into (or alongside) blue lidded recycling bins.

There are many different forms of card & cardboard and therefore decisions have to be made by residents as to whether a particular piece is to go into the recycling or residual waste. The majority of all recyclable forms of card & cardboard are being correctly diverted by the residents surveyed although there is around 0.14kg/hh/wk of potentially recyclable card & cardboard not being recycled with the majority in the residual bins. Results from this survey indicated that corrugated cardboard is recycled most efficiently with 97% captured. In comparison 80% of thin card is recycled along with 67% of Tetrapak cartons. Figure 17 shows the distribution of recyclable card & cardboard throughout the residual and recycling waste by Acorn category.

Figure 17: Distribution of recyclable card within residual and kerbside recycling samples (kg/hh/wk)



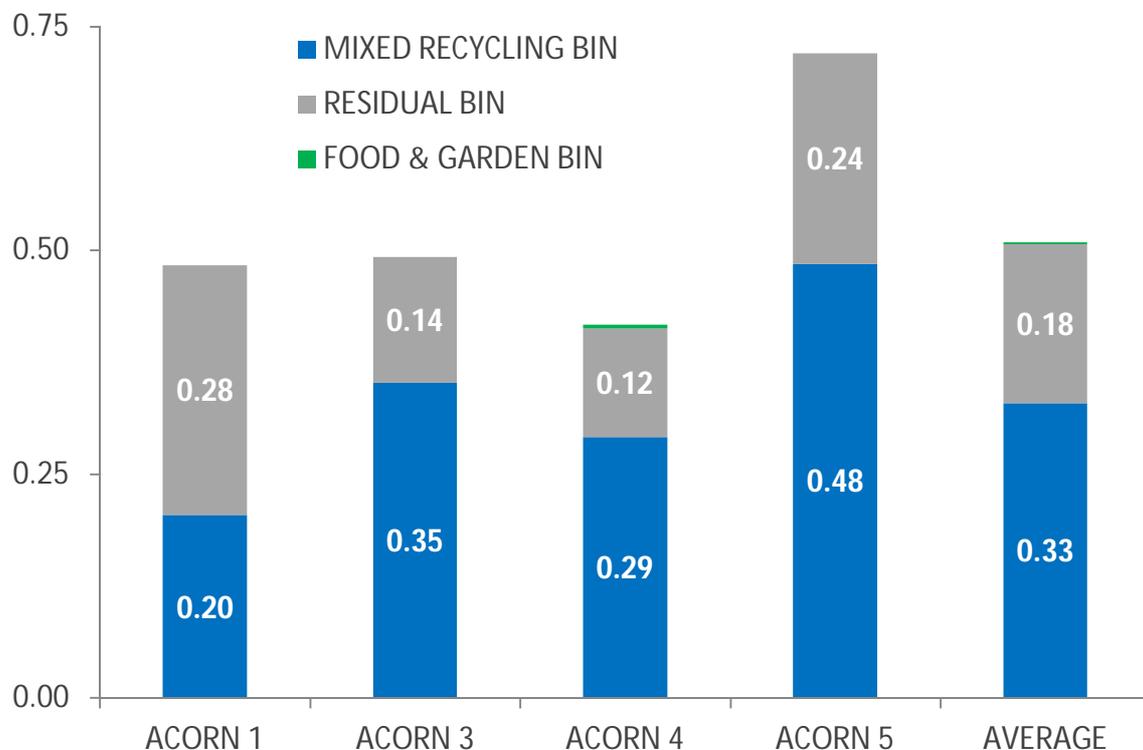
Plastics Capture

Acorn 3 residents captured the highest proportion of their recyclable plastics with 71.5% correctly being recycled. Acorn 5 households generated the most at 0.72kg/hh/wk of this material. Acorn 1 captured the lowest proportion at 42.3%. Across Watford it is estimated that 0.51kg/hh/wk of recyclable plastics are generated with around 64.7% being correctly placed into recycling bins

There are many different forms of plastic waste and therefore decisions have to be made by residents as to whether a particular piece is to go into the recycling or residual waste. The majority of all recyclable forms of plastic are being correctly diverted by most residents surveyed, however, 0.33kg/hh/wk remains unrecycled and is mainly in residual bins.

Results from this survey indicated that plastic bottles are recycled most efficiently with 80% captured. Ranges were 67% for Acorn 1 up to 88% for Acorn 4. In contrast just 40.5% of recyclable tubs, pots and trays were captured. Acorn 3 were the only sample to recycle the majority at 61.5% with Acorn 1 capturing less than 9%.

Figure 18: Distribution of recyclable plastics within residual and kerbside recycling samples (kg/hh/wk)

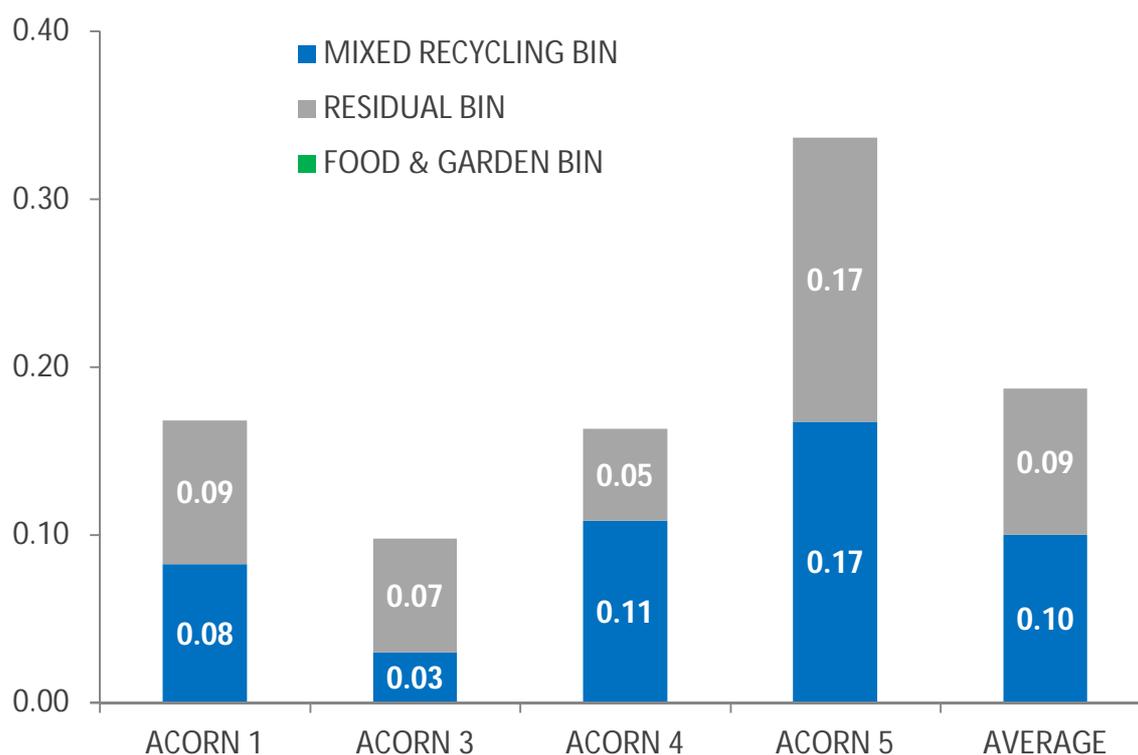


Metals Capture

Acorn 4 residents captured the highest proportion of their recyclable metals with 66.5% correctly being recycled. All other sample areas capture was between 31% and 50% with Acorn 5 generating the most at 0.34kg/hh/wk. On average, 53.4% of all recyclable metals are being correctly diverted by Watford residents sampled with around 0.19kg/hh/wk being generated.

The majority of all recyclable forms of metal are being correctly diverted by most residents surveyed with 0.10kg/hh/wk in residual bins. Results from this survey indicated that food tins are recycled most efficiently with 82% correctly captured. In comparison 61% of drink cans are recycled along with 39% of aerosols and just 4% of foil and other packaging. Figure 19 shows the distribution of recyclable metals throughout the residual and recycling waste by Acorn category.

Figure 19: Distribution of recyclable metals within residual and kerbside recycling samples (kg/hh/wk)

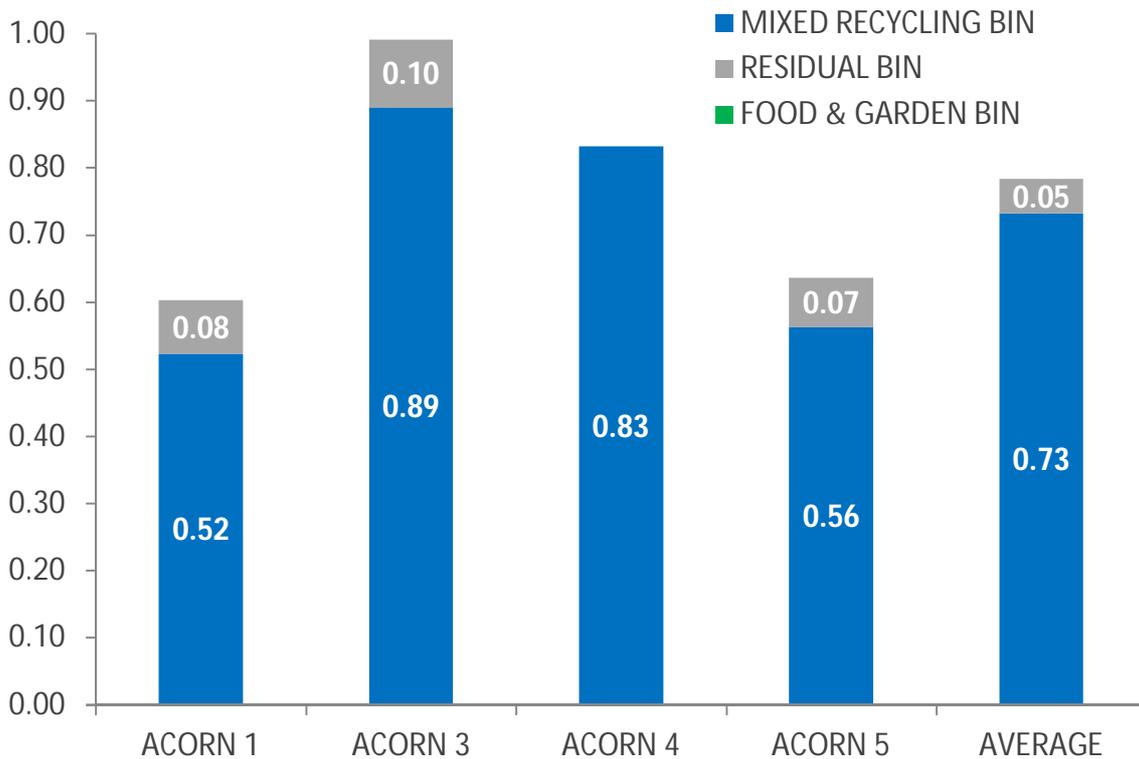


Glass Capture

Acorn 4 residents captured the highest proportion of their recyclable glass with 100% correctly being recycled, while residents from Acorn 1 captured 87%. Acorn 3 users produced the most recyclable glass in their combined kerbside waste at 0.99kg/hh/wk compared with 0.60kg/hh/wk from Acorn 1. On average, 93.5% of all recyclable glass is being correctly diverted by Watford residents sampled with around 0.78kg/hh/wk being generated.

The majority of all recyclable forms of glass are being correctly diverted by the residents surveyed with 0.05kg/hh/wk of in the residual waste. Results from this survey indicated that glass bottles are recycled most efficiently with 95% correctly captured compared with 85% of glass jars. Whereas bottles tend mainly to contain liquids that leave the bottle clean once empty; jars often contain sauces and preserves etc. These require cleaning once empty which often impacts on the efficiency of recycling. Figure 20 shows the distribution of recyclable glass throughout the residual and kerbside recycling waste.

Figure 20: Distribution of recyclable glass within residual and kerbside recycling samples (kg/hh/wk)



Recycling Contamination

Table 19 shows that on average 0.21kg/hh/wk of the items present in recycling bins are made up of contamination. This equates to around 5.8%. This section looks to breakdown the amounts and concentrations of various contaminants being placed into the recycling in Watford.

Some forms of contamination may be due to residents' lack of knowledge in relation to the recycling scheme. For example, a householder may believe anything metallic is acceptable with tins and cans. Other contamination will be formed from waste that is totally unrelated to the materials collected (i.e. disposable nappies, wood or food waste). Table 19 and Figure 21 show the amounts of contamination materials recovered from the recycling bins

Across the samples the collected recycling contained between 0.06kg/hh/wk, 1.5% (Acorn 4) and 0.51kg/hh/wk, 16.7% (Acorn 5) of contamination.

Table 19: Unacceptable materials within in the mixed recycling bins (kg/hh/wk)

CONTAMINATION (KG/HH/WK)	ACORN 1	ACORN 3	ACORN 4	ACORN 5	WEIGHTED AVERAGE
NON-RECYCLABLE PAPER & CARD	0.02	0.08	0.04	0.07	0.05
NON-RECYCLABLE PLASTICS	0.01	0.03	0.02	0.10	0.04
NON-RECYCLABLE METALS	0.00	0.03	0.00	0.00	0.01
NON-RECYCLABLE GLASS	0.10	0.00	0.00	0.00	0.02
LIQUIDS	0.10	0.00	0.00	0.19	0.06
FOOD & GARDEN WASTE	0.04	0.00	0.00	0.11	0.03
ALL OTHER MATERIALS	0.03	0.00	0.00	0.05	0.02
TOTAL CONTAMINATION	0.30	0.14	0.06	0.51	0.21

Table 20: Breakdown of mixed recycling bin contaminants (% of contamination)

MIXED RECYCLING CONTAMINATION (%)	ACORN 1	ACORN 3	ACORN 4	ACORN 5	WEIGHTED AVERAGE
NON-RECYCLABLE PAPER & CARD	0.58%	2.07%	0.95%	2.34%	1.38%
NON-RECYCLABLE PLASTICS	0.29%	0.68%	0.56%	3.16%	0.99%
NON-RECYCLABLE METALS	0.00%	0.67%	0.00%	0.00%	0.15%
NON-RECYCLABLE GLASS	2.53%	0.00%	0.00%	0.08%	0.49%
LIQUIDS	2.46%	0.00%	0.00%	6.07%	1.52%
FOOD & GARDEN WASTE	1.12%	0.00%	0.00%	3.49%	0.82%
ALL OTHER MATERIALS	0.72%	0.00%	0.00%	1.56%	0.41%
TOTAL CONTAMINATION	7.70%	3.43%	1.51%	16.71%	5.77%

Figure 21: Breakdown of contamination materials present within mixed recycling bins (kg/hh/wk).

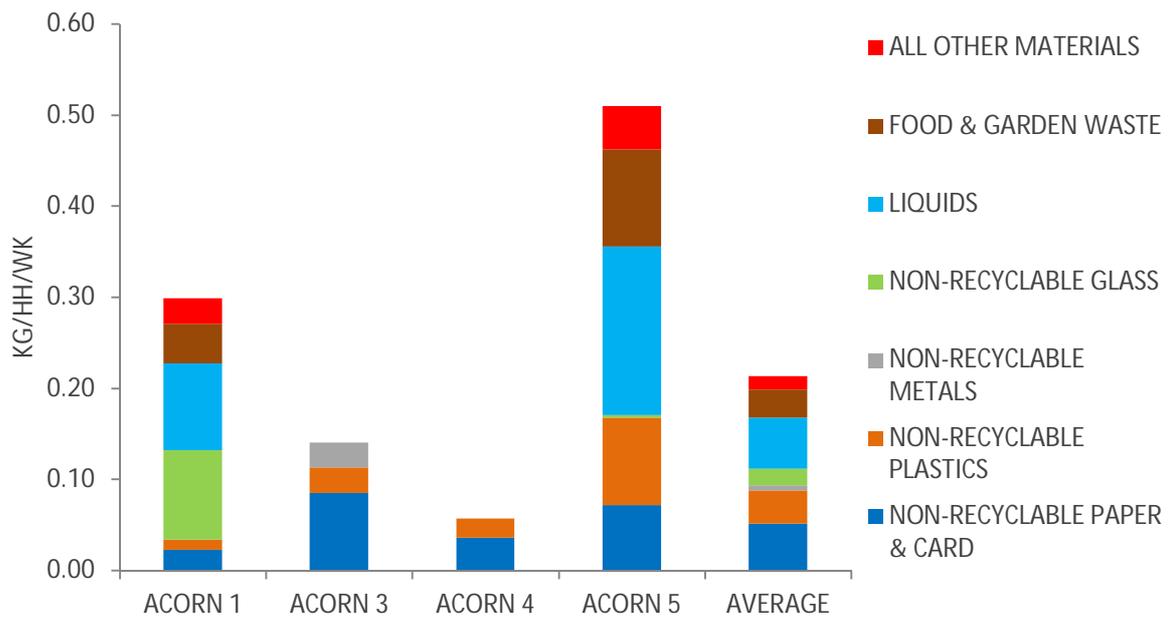
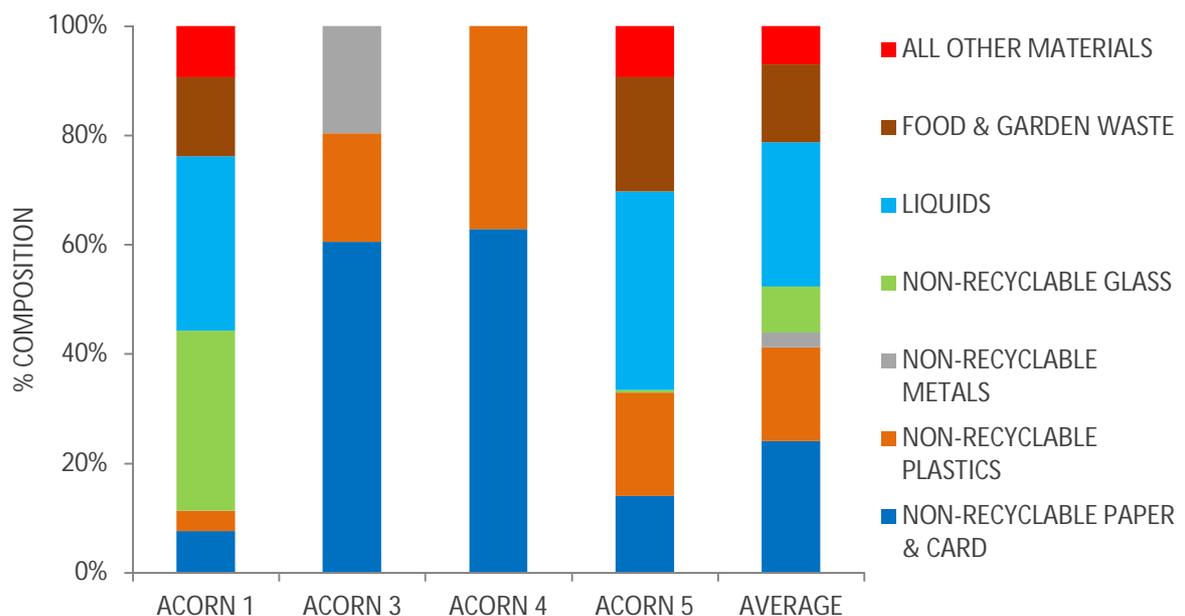


Figure 22: Breakdown of contaminants present within mixed recycling bins (% of contamination).



- Overall, it was seen that the most prevalent single contaminant in the recycling bins was liquids contained mainly in plastic bottles. This formed around 26% of the contamination (0.06kg/hh/wk or 1.5% of recycling).
- Non-recyclable paper and card formed 24% of the contamination; accounting for 0.05kg/hh/wk or 1.4% of recycling.
- Non-recyclable plastics accounted for 17% of contamination
- Food and garden waste 14% of the contamination.

Food and Garden recycling waste

Set out rates and waste generation

Table 21 and Figure 23 highlight the set out rates for kerbside food recycling observed at the time waste was collected for compositional analysis. Table 22 and Figure 24 show the amount of this recycling waste generated in kg/hh/wk. The same houses were sampled as those included in the residual and recycling bin survey. The overall amount of waste in kilograms per household per week is derived from the number of households who could set out waste and not just those that are participating. These aggregated figures for the recycling waste are shown in tables and figures with additional information relating to individual household samples given where relevant.

Acorns 5 had average set out rates of 19.5% compared with 85% for Acorn 1; an average of 43%

Table 21: Average set out for food and garden recycling waste (%)

% SET OUT RATE	FOOD & GARDEN RECYCLING
ACORN 1	85.0%
ACORN 3	48.5%
ACORN 4	35.0%
ACORN 5	19.5%
WEIGHTED AVERAGE	43.4%

At an average of 6.1kg/hh/wk, Acorn 1 households generated by far the most food and garden recycling. This compares with 1.9kg/hh/wk in Acorn 5. On average Watford households generated 3.1g/hh/wk of food and garden recycling. Solely considering set out bins and average of 7.1g/hh/wk is presented. Even though Acorn 5 households generated the lowest levels of food and garden recycling; they set out the heaviest bins. This suggests the few households that are using this service build up waste and present infrequently.

Table 22: Average kerbside recycling generation rates (kg/hh/wk)

KG/HH/WK	OVERALL KG/HH/WK	KG/HH/WK PER PRESENTED BIN
ACORN 1	6.08	7.15
ACORN 3	2.73	5.63
ACORN 4	2.62	7.48
ACORN 5	1.89	9.69
WEIGHTED AVERAGE	3.10	7.14

Figure 23: Average set out for food and garden recycling waste (%)

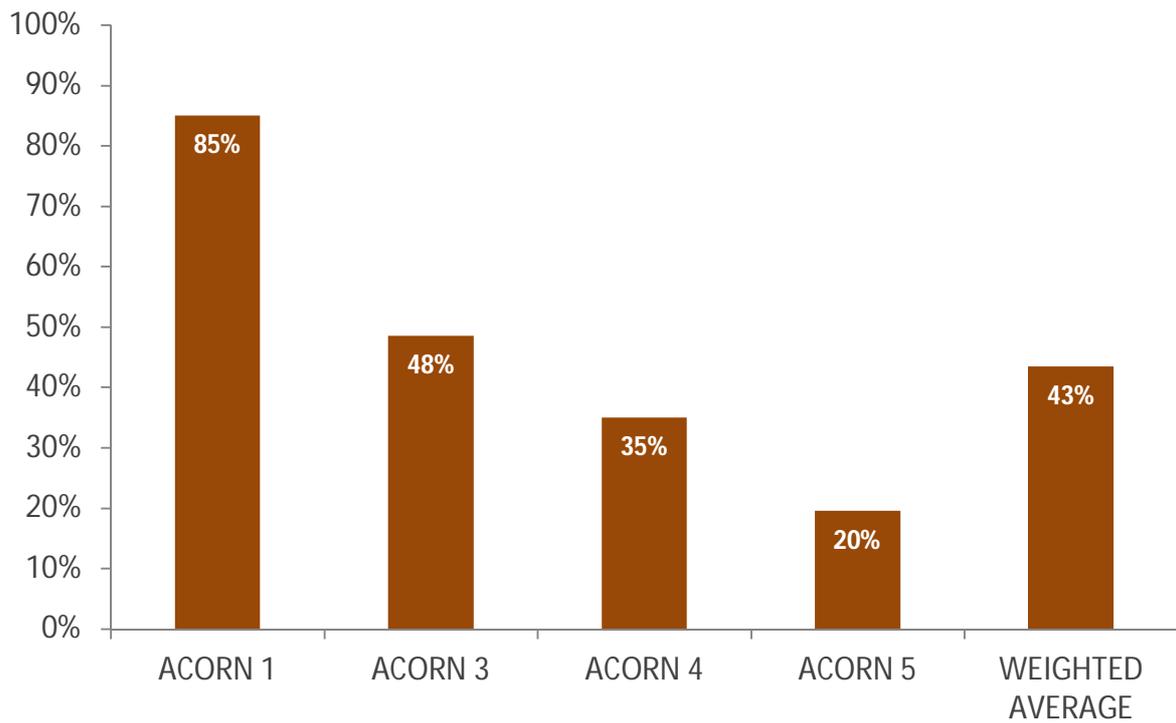
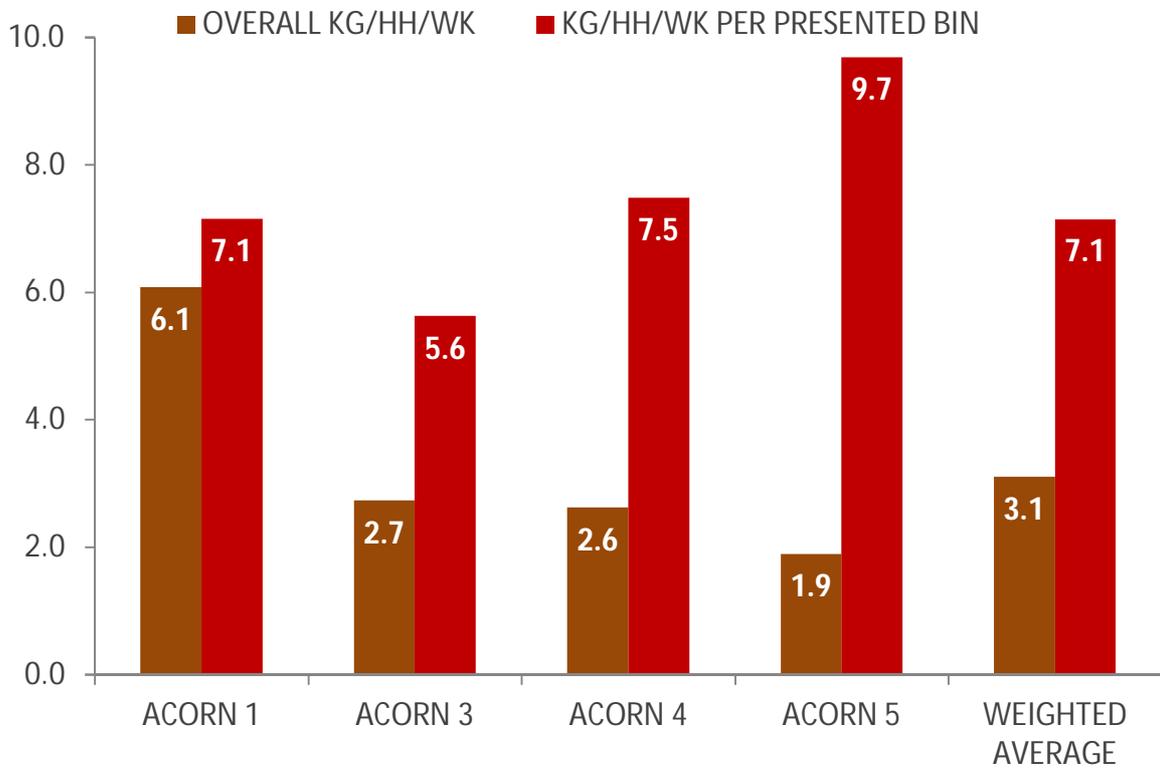


Figure 24: Average food and garden recycling waste generation rates (kg/hh/wk)



Compositional analysis of food and garden recycling

This section looks at average amounts and composition of the food and garden recycling waste presented by households sampled throughout Watford. Hand sorting of the recycling waste gives concentration by weight figures for the fifteen main categories of waste as well as the more detailed sub-categories. Results can again be expressed in terms of percentage concentration and kg/hh/wk for individual samples and in relation to the household Acorn type surveyed. Table 23 and Figure 25 show food recycling data in terms of percentage composition with Table 24 and Figure 26 showing generation rates for major materials in kg/hh/wk across all surveyed households.

As residual waste will contain a proportion that is classified as potentially recyclable; then food and garden recycling waste will contain a fraction that is deemed to be contamination. That is to say that it is not compatible with the materials currently acceptable to the recycling containers it is placed into.

Table 23: Composition of food and garden recycling (% concentration) by Acorn

FOOD AND GARDEN RECYCLING (%)	ACORN 1	ACORN 3	ACORN 4	ACORN 5	WEIGHTED AVERAGE
GARDEN CLIPPINGS & PRUNINGS	91.57%	95.74%	20.45%	96.96%	68.90%
SOIL & TURF	0.00%	0.00%	20.52%	0.00%	6.96%
ALL UNAVOIDABLE FOOD WASTE	8.19%	1.21%	28.73%	0.72%	12.92%
AVOIDABLE FOOD WASTE - LOOSE	0.24%	2.92%	19.55%	2.33%	7.55%
AVOIDABLE FOOD WASTE – PART USED IN OPEN PACKAGING	0.00%	0.13%	4.24%	0.00%	1.46%
AVOIDABLE FOOD WASTE – FULLY UNOPENED & PACKAGED	0.00%	0.00%	0.00%	0.00%	0.00%
INSEPARABLE INC STRAW / SAWDUST PET BEDDING	0.00%	0.00%	4.96%	0.00%	1.68%
ALL OTHER WASTE	0.00%	0.00%	1.55%	0.00%	0.53%
TOTAL CONTAMINATION	0.00%	0.00%	22.07%	0.00%	7.49%

Table 24: Composition of food and garden recycling (kg/hh/wk) by Acorn

FOOD AND GARDEN RECYCLING (KG/HH/WK)	ACORN 1	ACORN 3	ACORN 4	ACORN 5	WEIGHTED AVERAGE
GARDEN CLIPPINGS & PRUNINGS	5.56	2.61	0.54	1.83	2.14
SOIL & TURF	0.00	0.00	0.54	0.00	0.22
ALL UNAVOIDABLE FOOD WASTE	0.50	0.03	0.75	0.01	0.40
AVOIDABLE FOOD WASTE - LOOSE	0.01	0.08	0.51	0.04	0.23
AVOIDABLE FOOD WASTE – PART USED IN OPEN PACKAGING	0.00	0.00	0.11	0.00	0.05
AVOIDABLE FOOD WASTE – FULLY UNOPENED & PACKAGED	0.00	0.00	0.00	0.00	0.00
INSEPARABLE INC STRAW / SAWDUST PET BEDDING	0.00	0.00	0.13	0.00	0.05
ALL OTHER WASTE	0.00	0.00	0.04	0.00	0.02
TOTAL CONTAMINATION	0.00	0.00	0.58	0.00	0.23

Figure 25: Composition of food and garden recycling (%) by Acorn

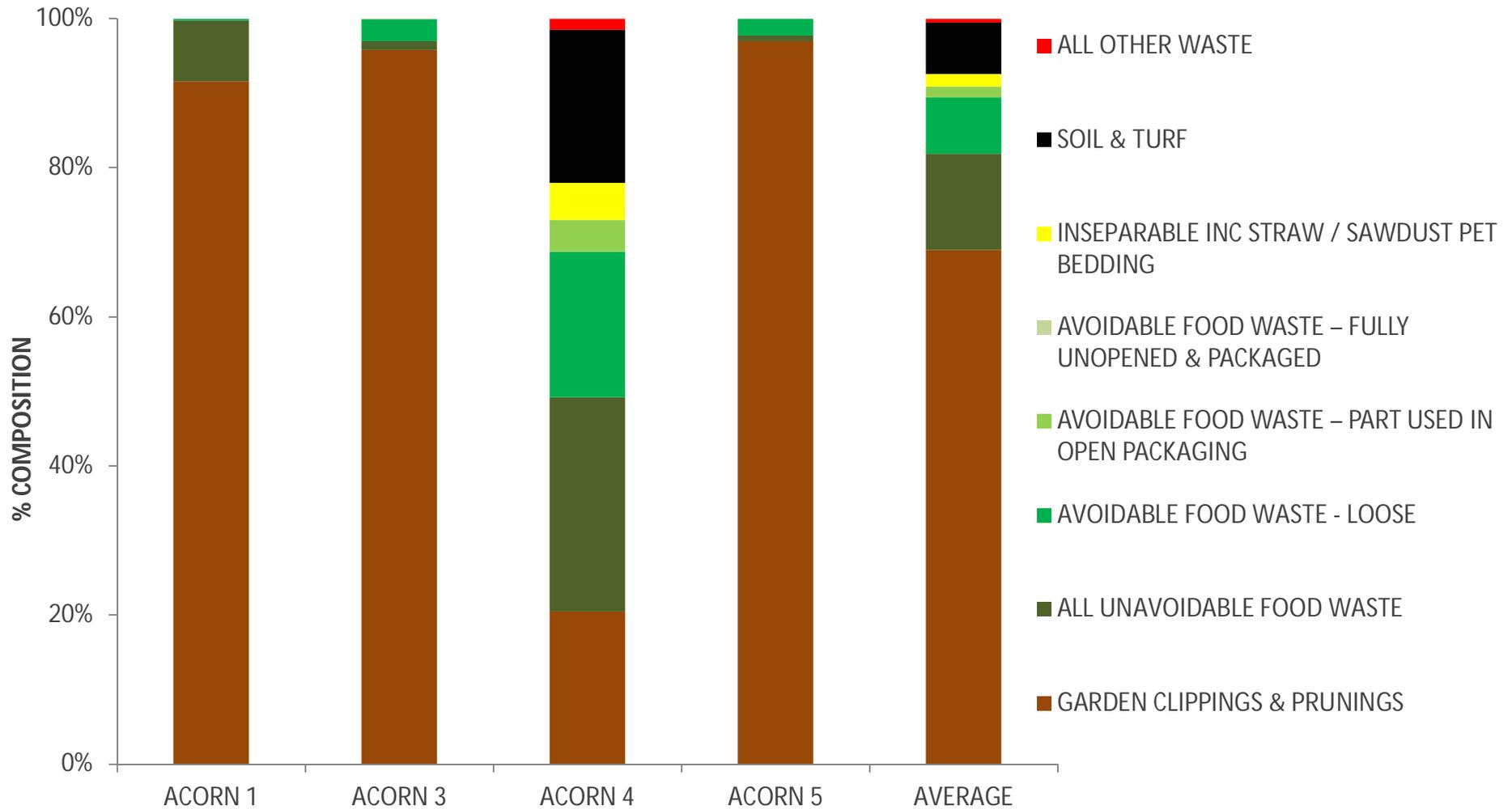
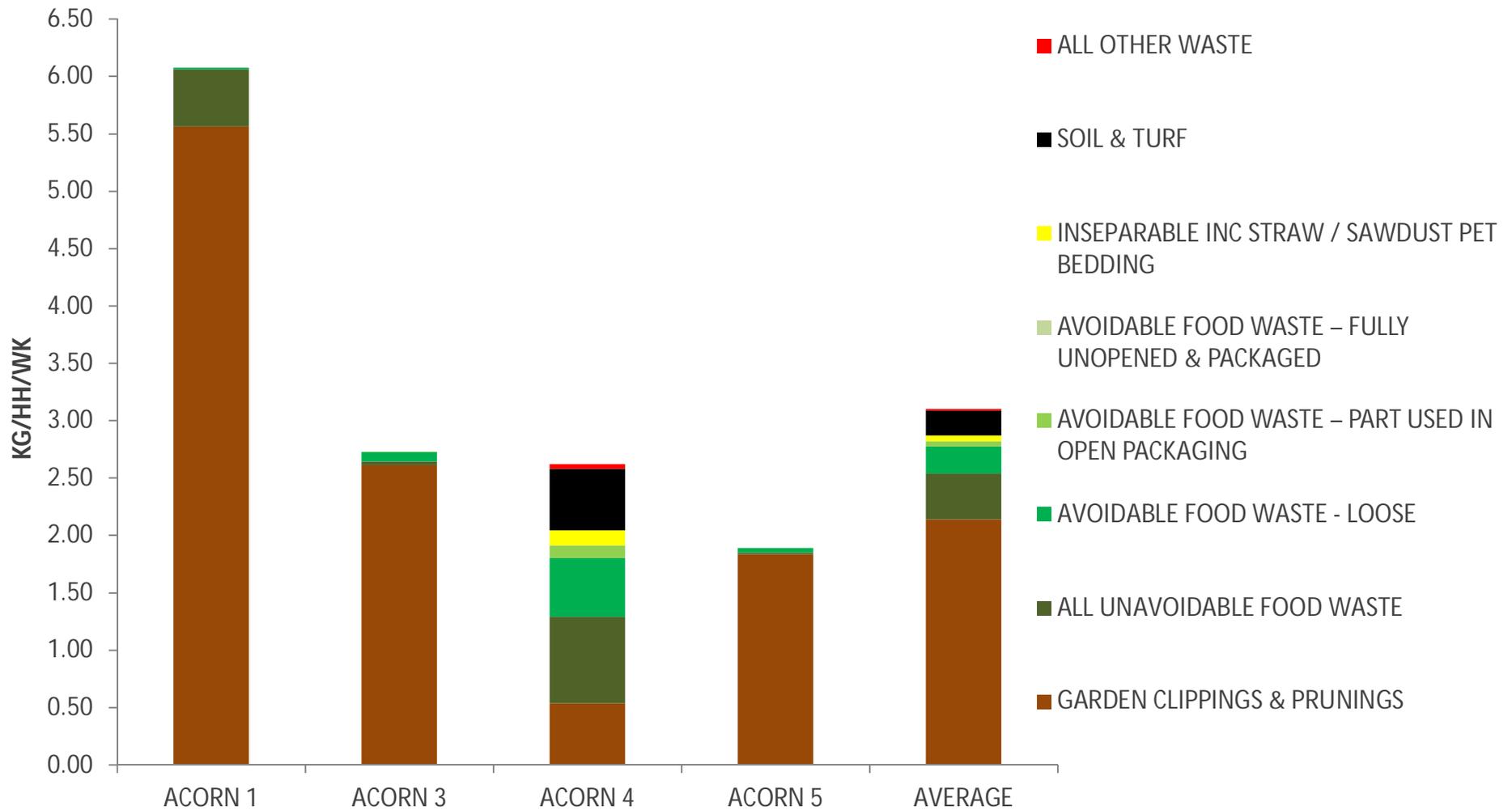


Figure 26: Composition of food and garden recycling (kg/hh/wk) by Acorn



Materials placed in food and garden recycling bins

This chapter looks in more detail at the individual materials placed out for food and garden recycling collections and highlights the effectiveness with which the scheme is capturing these items. Looking at the relationship between the residual and recycling waste streams presented will additionally give indications as to the overall diversion being achieved in the Watford samples.

Table 25 summarises the capture and diversion rates seen for the organic materials collected in the food and garden bins. These figures are calculated by determining the distribution of recyclables across all waste streams for all of the households selected for survey within each sample.

Across Watford around 32.1% of all acceptable food is being correctly recycled at the kerbside. Acorn 5 households recycled just 1.6% of their recyclable food. In comparison Acorn 4 households recycled around 64%. Unavoidable food waste was recycled more efficiently (35%) than avoidable food waste (29%).

All sample areas captured the vast majority of their recyclable garden waste at between 96.3% and 99.8% - an average of 98.7%. Around three quarters of biodegradable pet bedding was recycled – all by Acorn 4 households.

Overall it is estimated that 66% of all acceptable organics are recycled by Watford households.

Table 25: Summary table for material capture and diversion rates (%) for food recycling

FOOD CAPTURE RATES (%)	ACORN 1	ACORN 3	ACORN 4	ACORN 5	AV.
AVOIDABLE FOOD WASTE	63.8%	12.9%	75.6%	0.5%	34.6%
UNAVOIDABLE FOOD WASTE	2.4%	9.9%	54.3%	4.3%	29.0%
ALL FOOD WASTE	36.64%	10.60%	64.17%	1.56%	32.06%
GARDEN VEGETATION	99.75%	99.17%	96.25%	96.68%	98.67%
PET BEDDING	0.00%	N/A	100.00%	N/A	75.42%
CAPTURE ALL ORGANICS	85.92%	73.13%	72.13%	33.83%	65.86%

Food Waste Capture

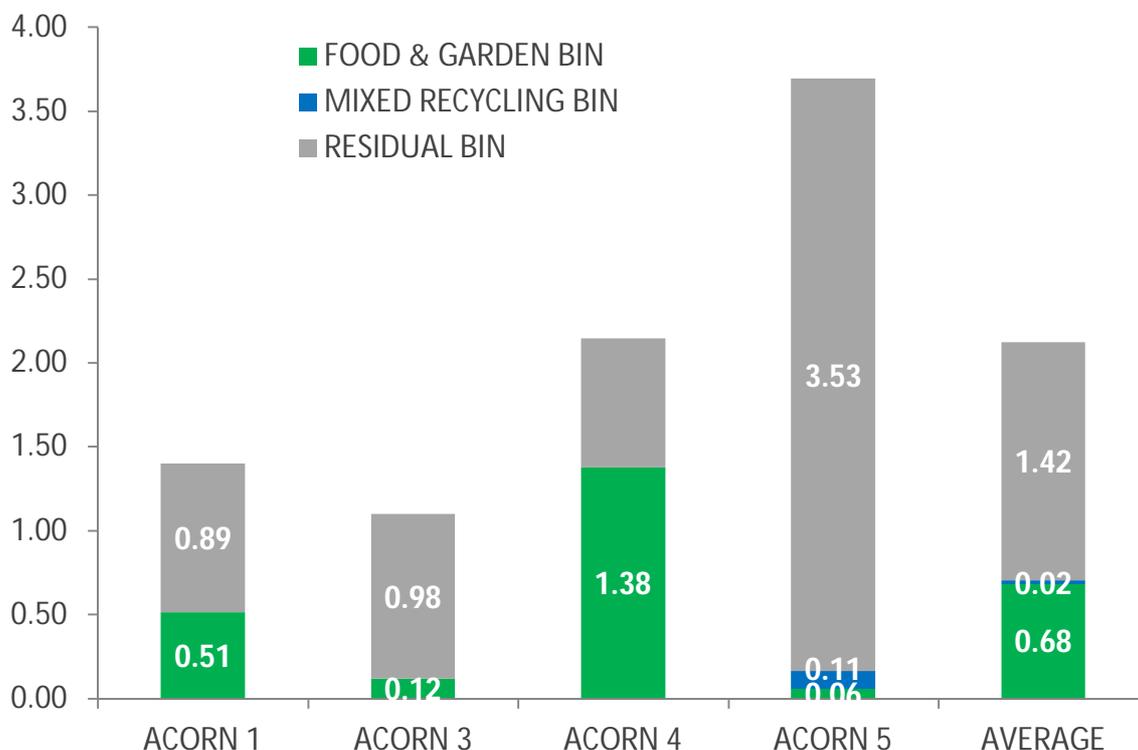
Acorn 4 residents captured the highest proportion of their recyclable food waste with 64% correctly being recycled. Acorn 3 disposed of the smallest amount of waste food overall at 1.10kg/hh/wk. Acorn 5 generated the most food waste at 3.69kg/hh/wk but were seen to recycle the lowest proportion at 1.6%.

Across Watford it is estimated that 2.12kg/hh/wk of recyclable food waste compatible with recycling collections is generated with around 32% being correctly recycled.

Capture rates for unavoidable food waste such as skin, peel, shells and bone were seen to be higher than those seen for avoidable (i.e. uneaten) food waste. Results showed that between 0.5% (Acorn 5) and 76% (Acorn 4) of unavoidable food waste, and between 2.4% (Acorn 1) and 54.3% (Acorn 4) of avoidable food waste was recycled.

Overall 8% of all food based waste in the recycling bins was packaged. Figure 27 shows the distribution of recyclable food waste throughout the residual and recycling waste by Acorn category. On average, 1.44kg/hh/wk of food waste remains unrecycled.

Figure 27: Distribution of recyclable food within residual and recycling samples (kg/hh/wk)

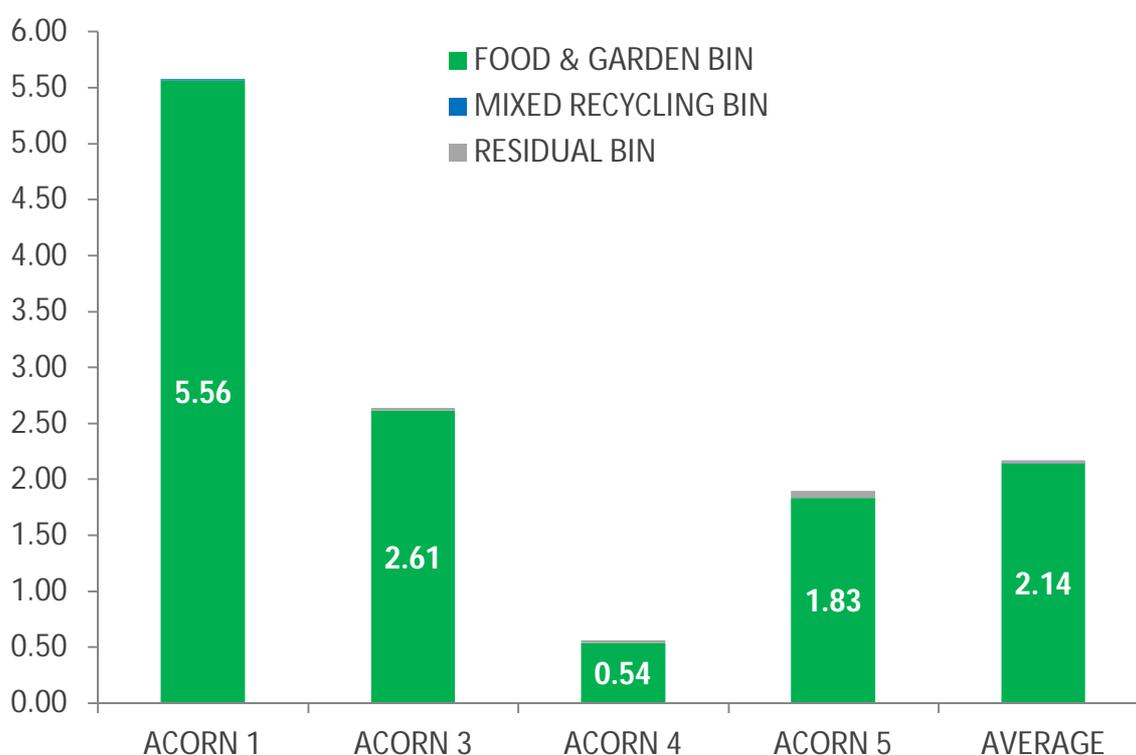


Garden Waste Capture

Acorn 1 residents captured the highest proportion of their recyclable food waste with 99.8% correctly being recycled. These households created the most garden waste at 5.6kg/hh/wk. Acorn 4 disposed of the smallest amount of waste food overall at 0.56kg/hh/wk.

Across Watford it is estimated that 2.17kg/hh/wk of recyclable garden waste compatible with recycling collections is generated with around 98.7% being correctly recycled.

Figure 28: Distribution of recyclable garden waste within residual and recycling samples (kg/hh/wk)



Food Recycling Contamination

From Tables 23 and 24 we can see that overall contamination within the food and garden waste containers was fairly low averaging just 7.5% or 0.23kg/hh/wk. This was exclusively due to contamination from the Acorn 4 sample which was 20.5% soil and turf and also had trace levels of paper and wood waste.

Overall Waste Generation & Diversion

Total waste generation levels & diversion

Capture rates determine how much of a material that should be recycled actually is being recycled. Diversion rates show the percentage of total generated waste produced from an area that is being 'Diverted' via the available recycling stream(s). Table 26 and Figure 29 show the total waste generation (residual, dry recycling and organic recycling) for each of the areas sampled. Table 27 and Figure 30 show the overall proportion of material that is being correctly diverted. Acorn 4 produced the lowest levels of total waste at 9.37kg/hh/wk with the households from Acorn 1 and 5 generating the most at 14.0kg/hh/wk. Across Watford it is estimated that the weekly output of kerbside is 11.5kg/hh/wk.

Table 26: Average waste generation levels by Acorn (kg/hh/wk) and overall diversion

TOTAL WASTE KG/HH/WK	ACORN 1	ACORN 3	ACORN 4	ACORN 5	AV.
RESIDUAL	4.00	3.97	3.00	9.02	4.66
RECYCLING	3.88	4.09	3.75	3.05	3.69
FOOD & GARDEN	6.08	2.73	2.62	1.89	3.10
TOTAL	13.95	10.79	9.37	13.96	11.45

Table 27: Overall % diversion by Acorn

% DIVERSION RATES	ACORN 1	ACORN 3	ACORN 4	ACORN 5	AV.
RECYCLING	25.64%	36.62%	39.42%	18.18%	30.39%
FOOD & GARDEN	43.55%	25.28%	21.78%	13.54%	25.05%
TOTAL	69.19%	61.90%	61.20%	31.72%	55.44%

When combining the diversion achieved from all recycling streams it is estimated that households within Watford are diverting around 55.4% of their kerbside waste. This represents around 6.4kg/hh/wk of the 11.5kg/hh/wk being generated. Acorn 1 households divert over two thirds (69.2%) of kerbside waste compared with 31.7% for Acorn 5. Around 30.4% of diversion is via blue lidded bins with 25.1% via food and garden collections. Were all of the recyclable materials disposed of in the desired recycling container the maximum achievable diversion would be 73.6%. Data from this survey suggests a level of 243kg/hh/yr for residual waste and 598kg/hh/yr for total kerbside waste.

Figure 29: Total waste generation levels by Acom (kg/hh/wk)

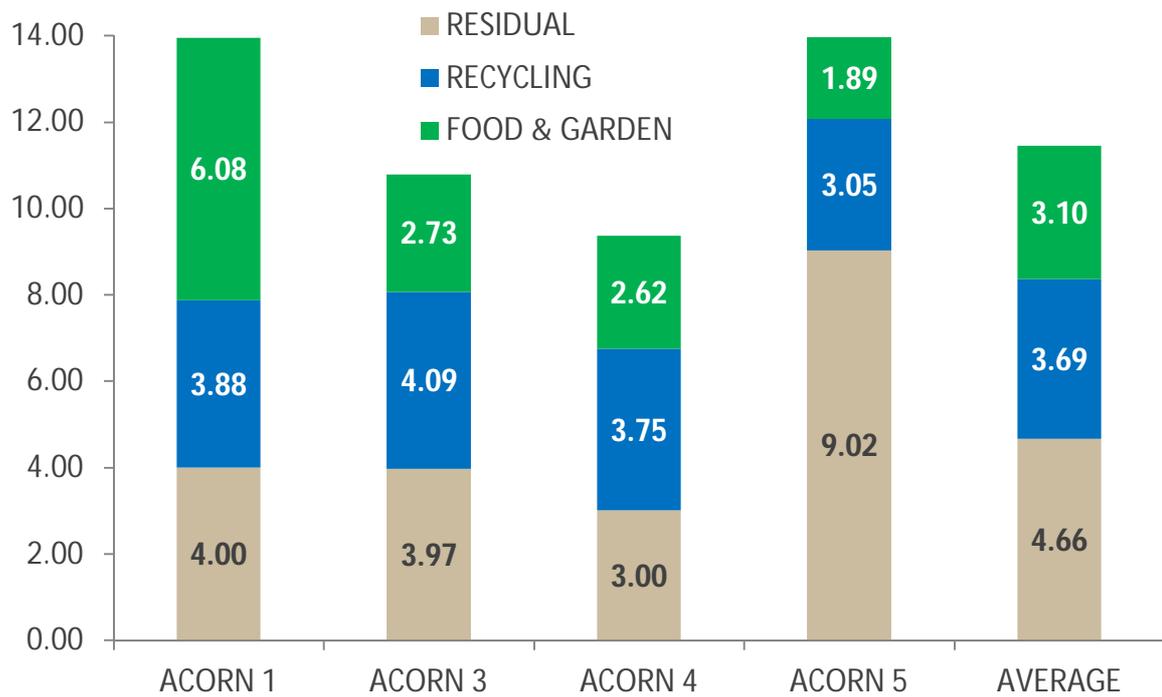
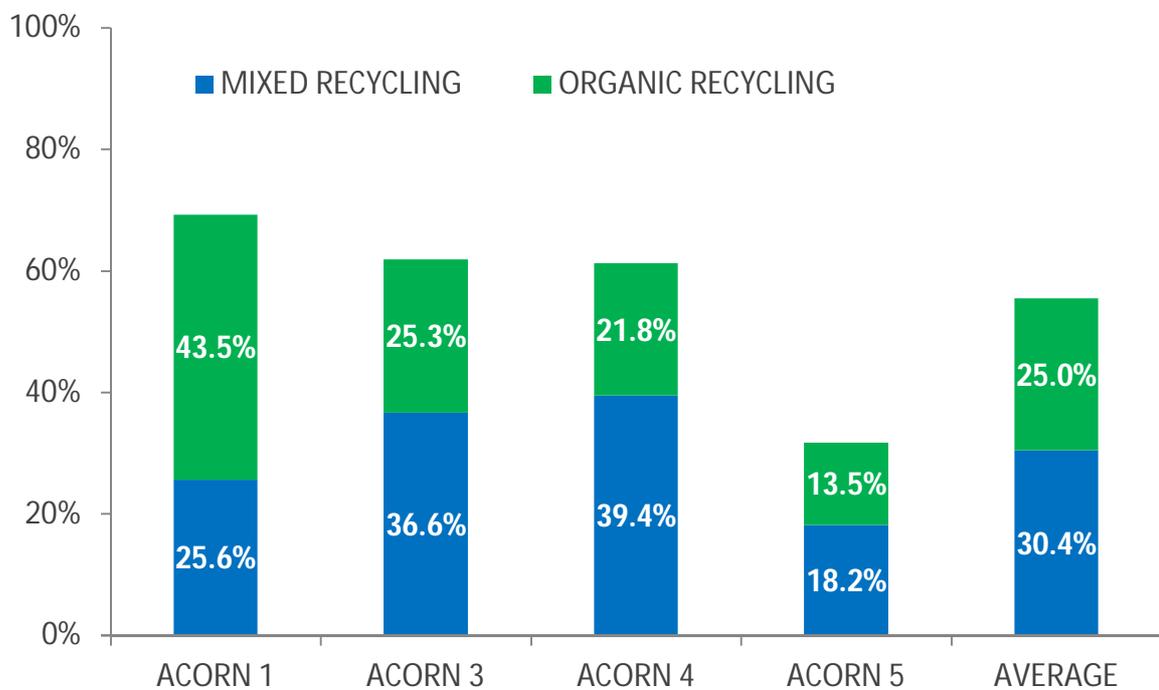


Figure 30: Overall % diversion by Acom



Appendix 1: ACORN Category Classification

1	Affluent Achievers
1.A	Lavish Lifestyles
1.A.1	Exclusive enclaves
1.A.2	Metropolitan money
1.A.3	Large house luxury
1.B	Executive Wealth
1.B.4	Asset rich families
1.B.5	Wealthy countryside commuters
1.B.6	Financially comfortable families
1.B.7	Affluent professionals
1.B.8	Prosperous suburban families
1.B.9	Well-off edge of towners
1.C	Mature Money
1.C.10	Better-off villagers
1.C.11	Settled suburbia, older people
1.C.12	Retired and empty nesters
1.C.13	Upmarket downsizers
2	Rising Prosperity
2.D	City Sophisticates
2.D.14	Townhouse cosmopolitans
2.D.15	Younger professionals in smaller flats
2.D.16	Metropolitan professionals
2.D.17	Socialising young renters
2.E	Career Climbers
2.E.18	Career driven young families
2.E.19	First time buyers in small, modern homes
2.E.20	Mixed metropolitan areas
3	Comfortable Communities
3.F	Countryside Communities
3.F.21	Farms and cottages
3.F.22	Larger families in rural areas
3.F.23	Owner occupiers in small towns and villages
3.G	Successful Suburbs
3.G.24	Comfortably-off families in modern housing
3.G.25	Larger family homes, multi-ethnic areas
3.G.26	Semi-professional families, owner occupied neighbourhoods
3.H	Steady Neighbourhoods
3.H.27	Suburban semis, conventional attitudes
3.H.28	Owner occupied terraces, average income
3.H.29	Established suburbs, older families
3.I	Comfortable Seniors
3.I.30	Older people, neat and tidy neighbourhoods
3.I.31	Elderly singles in purpose-built accommodation
3.J	Starting Out
3.J.32	Educated families in terraces, young children
3.J.33	Smaller houses and starter homes
4	Financially Stretched
4.K	Student Life
4.K.34	Student flats and halls of residence
4.K.35	Term-time terraces
4.K.36	Educated young people in flats and tenements
4.L	Modest Means
4.L.37	Low cost flats in suburban areas
4.L.38	Semi-skilled workers in traditional neighbourhoods
4.L.39	Fading owner occupied terraces
4.L.40	High occupancy terraces, many Asian families
4.M	Striving Families
4.M.41	Labouring semi-rural estates
4.M.42	Struggling young families in post-war terraces
4.M.43	Families in right-to-buy estates
4.M.44	Post-war estates, limited means
4.N	Poorer Pensioners
4.N.45	Pensioners in social housing, semis and terraces
4.N.46	Elderly people in social rented flats
4.N.47	Low income older people in smaller semis
4.N.48	Pensioners and singles in social rented flats
5	Urban Adversity
5.O	Young Hardship
5.O.49	Young families in low cost private flats
5.O.50	Struggling younger people in mixed tenure
5.O.51	Young people in small, low cost terraces
5.P	Struggling Estates
5.P.52	Poorer families, many children, terraced housing
5.P.53	Low income terraces
5.P.54	Multi-ethnic, purpose-built estates
5.P.55	Deprived and ethnically diverse in flats
5.P.56	Low income large families in social rented semis
5.Q	Difficult Circumstances
5.Q.57	Social rented flats, families and single parents
5.Q.58	Singles and young families, some receiving benefits
5.Q.59	Deprived areas and high-rise flats



Watford Borough Council

Waste and recycling engagement

Report

September 2019

1.1 Background to the engagement

Over the summer of 2019, the council undertook engagement to ascertain the views of local residents on recycling, given the recent national publicity on the environmental impacts of the waste we are producing and the unchecked use of natural resources. The engagement also aimed to explore people’s current propensity to recycle and the willingness to change current habits in order to recycle more and reduce the volume of waste sent for disposal. In addition, the council was keen to learn what people thought of charging for a garden waste service – given that the majority of English councils now do charge for collecting garden waste.

1.2 Engagement approach

The council undertook two engagement exercises, both supported by social media advertising. The reason for undertaking the two different approaches was to reach different audiences.

The nature of the channels – online engagement software compared with Facebook messenger – means the survey have to be designed differently, with a chatbot using more informal / chatty language and containing fewer questions overall.

Online surveys tend to be answered by an older profile from certain areas of the borough. Experience to date with chatbot surveys shows that they reach a much younger profile. This was borne out by the data collected as part of both surveys.

1. ONLINE SURVEY

IN FIELD: 30 July – 10 September 2019
RESPONSES: 398

2. CHATBOT SURVEY (DEPLOYED THROUGH FACEBOOK MESSENGER)

IN FIELD: 27 August – 6 September 2019
RESPONSES: 547



1.3 Engagement results

Overall

As expected, there were very different results between the two engagement exercises; this is likely to be linked to the different profiles of those responding.

Type of waste and recycling service received

Although the council undertook Facebook boosts to raise the profile of the online survey to those living in areas of the borough who often don't engage in online consultations and engagement, which are characterised by a higher proportion of flatted living and rental properties, very few responses were received from those living in flats / apartments / homes with communal recycling facilities (just 10%). In comparison 36% of those responding to the chatbot survey lived in homes with communal recycling facilities.

Age profile of respondents

The online survey received the most responses from those in the 35-44 age range (26%), followed by 45 -54 years at 24% whilst the chatbot survey received most responses from those in the age group 18-30 years.

Sex of respondents

Unexpectedly, there was a very significant difference in the profile of those answering the online survey – with 75% of respondents coming from women. In contrast, the chatbot survey was much more in line with the profile of the Watford population – with 52% male (slightly high) and 48% female (slightly low).



1.3.1 COMMITMENT TO RECYCLING

As a 'warm up' question, the chatbot survey asked people what percentage of waste people thought the council currently recycles. Interestingly only 23% thought it was 45% (which is the correct percentage); , by far the most popular answer – with over half of the respondents (51%) choosing this response – was 25%.

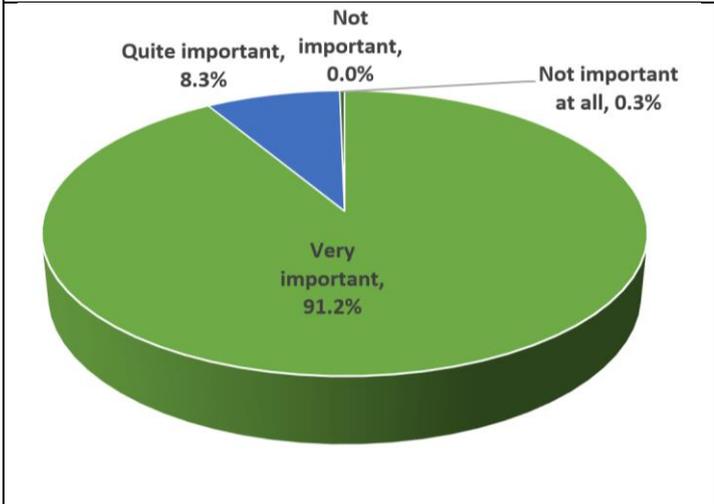
This would indicate that the council has more work to do in terms of informing people about recycling and its work in this area.

Both surveys returned extremely strong responses around the commitment to recycling with both showing little disagreement that it is important for residents to recycle.

ONLINE SURVEY	CHATBOT SURVEY
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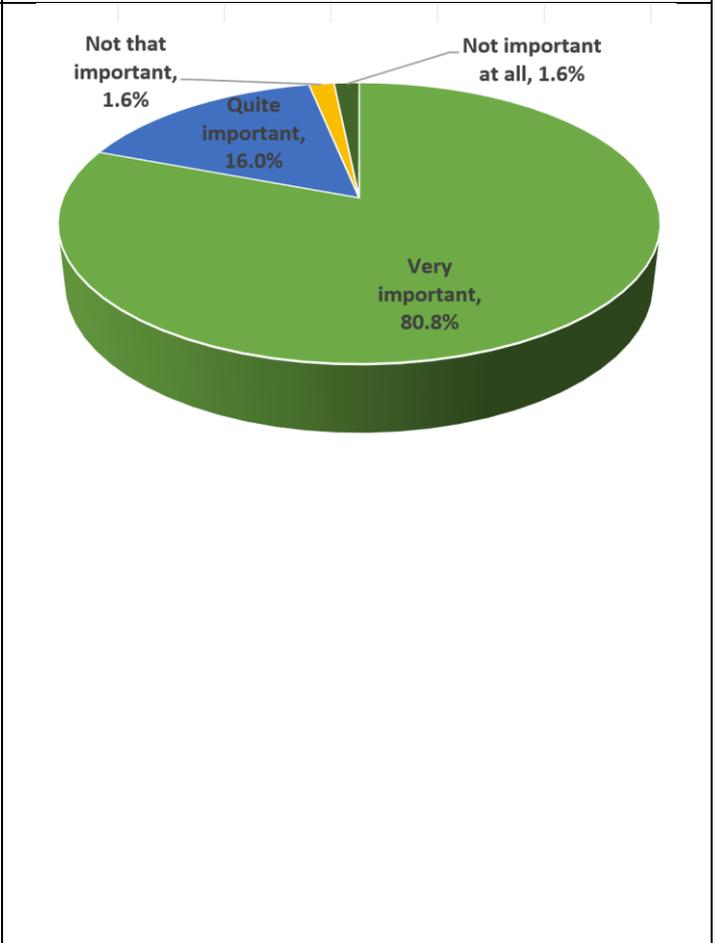
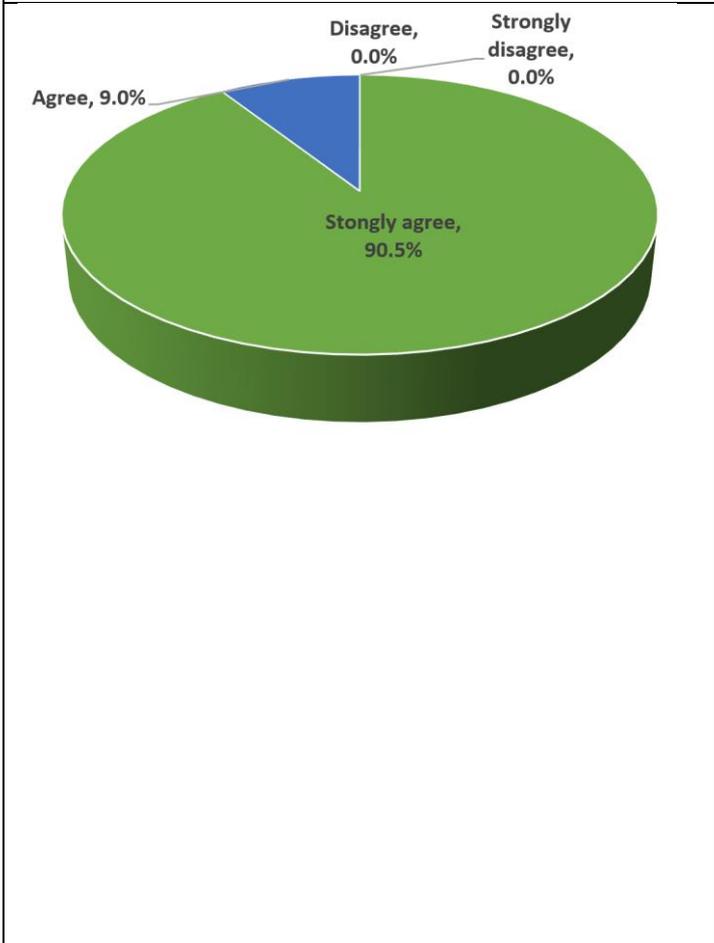
The importance of recycling

Q. Thinking about people’s current concern with environmental issues, how important for you is the council helping local people recycle their waste / rubbish?



Q. How far do you agree that it is important for you to recycle your rubbish?

Q. How important do you think rubbish-recycling is?



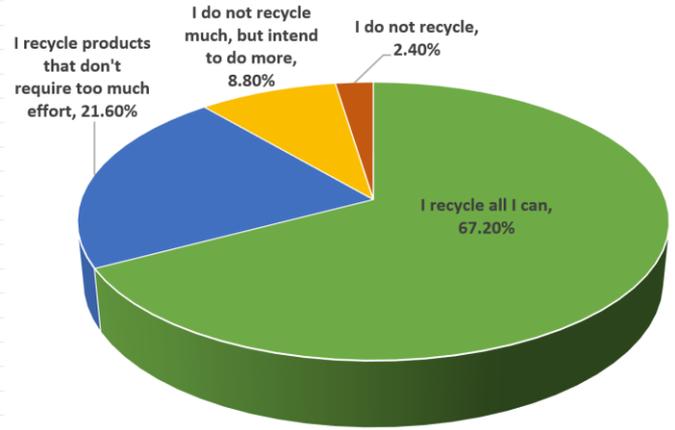
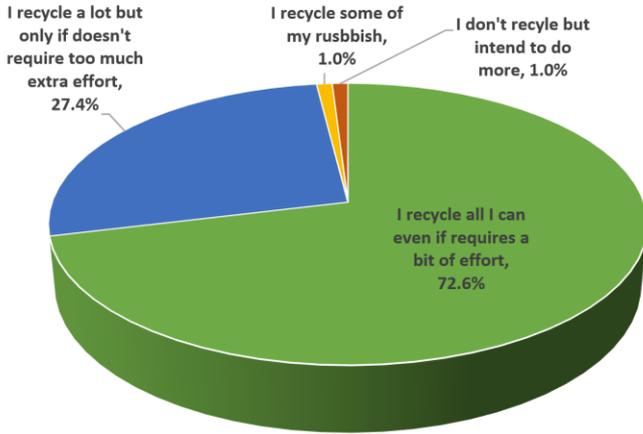
ONLINE SURVEY

CHATBOT SURVEY

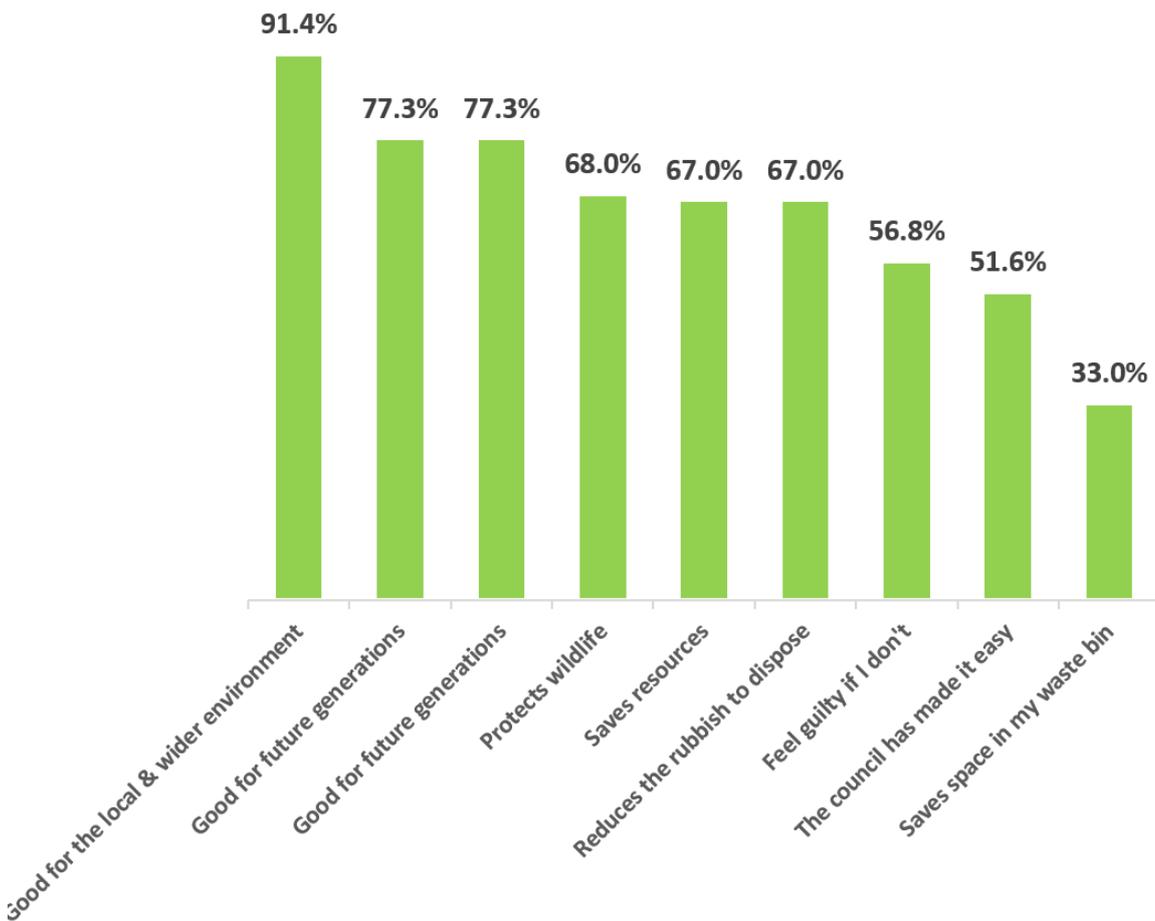
The importance of recycling

Q. Which of these statements best describes how much you currently recycle?

Q. Which of the following statements describes you best?

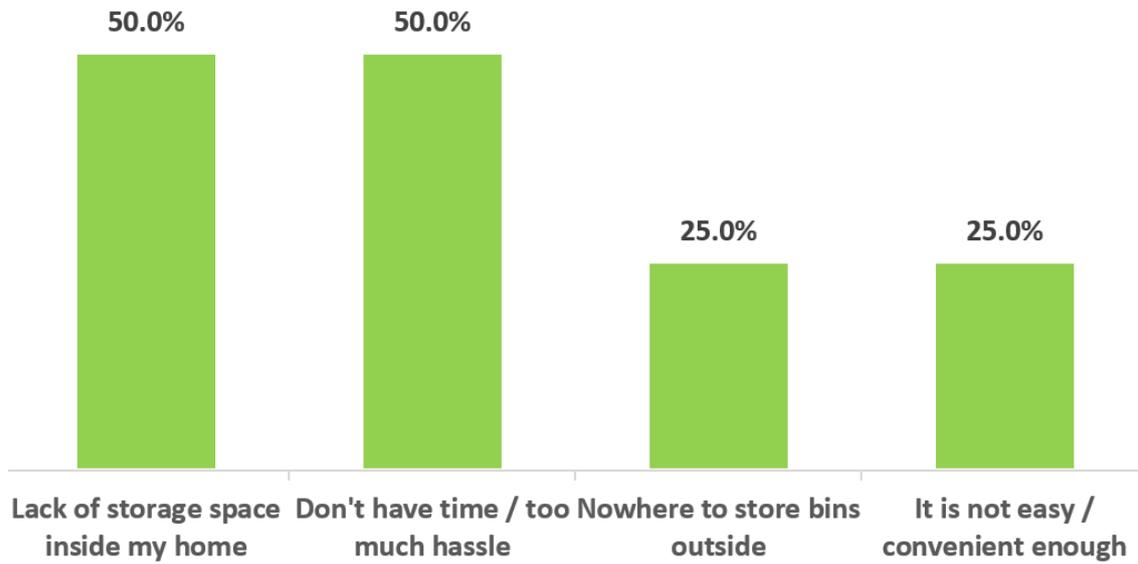


Q. Why do you recycle? (online survey only)



The importance of recycling

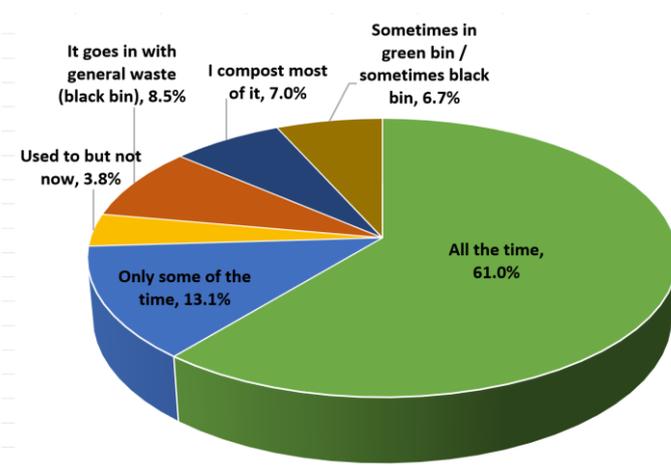
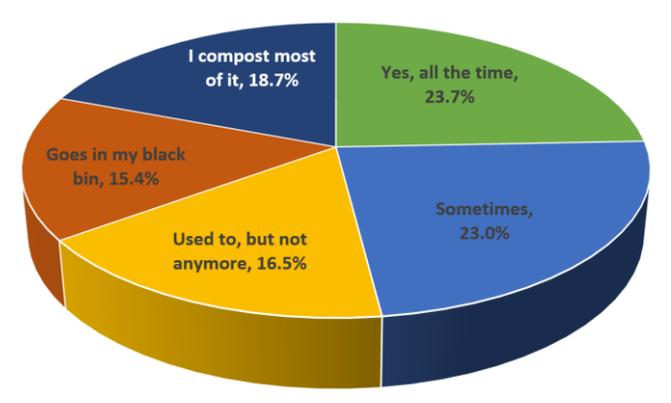
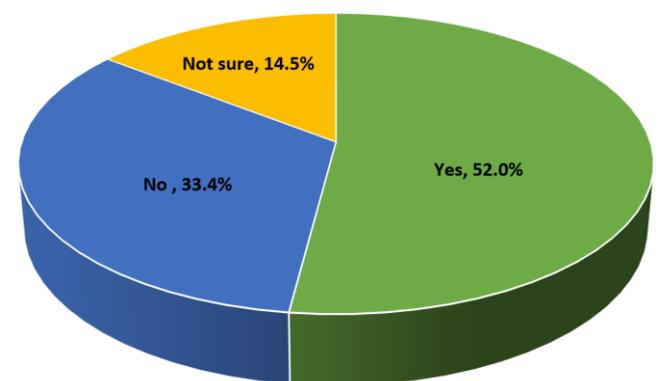
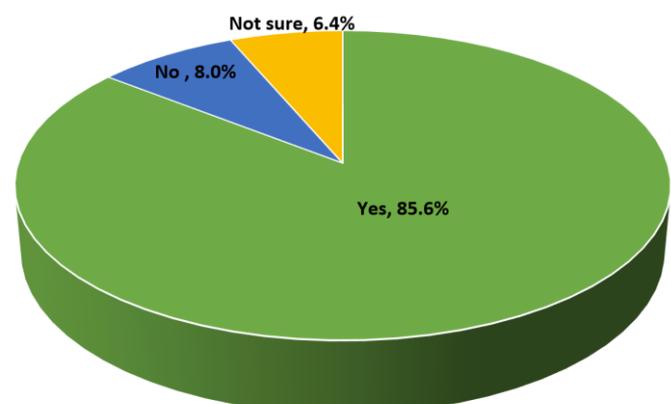
Q. Why don't you recycle? (online survey only)



1.3.2 FOOD WASTE RECYCLING

There was significant difference between people’s propensity to recycle food waste between the two surveys (61% in the online survey and 23.7% in the chatbot survey). This is likely to be the result of the number of people living in homes with communal recycling in the chatbot survey, which means it is more difficult to recycle food waste. For the council, there is definitely scope to increase people’s food waste recycling activity – which may well be achieved through a weekly recycling service.

There was also a significant difference in the responses to whether a separate, weekly food waste collection would encourage people to recycle more. This proposal was met a lot more positively by those completing the chatbot survey but, interestingly, less positively by younger people – just 55% of 18-30 years said it would compared with 85.6% overall.

ONLINE SURVEY	CHATBOT SURVEY																										
Food waste recycling																											
<p>Q. Do you recycle your food waste in your GREEN bin?</p>  <p>A 3D pie chart showing the distribution of responses for the online survey. The largest slice is 'All the time' at 61.0%. Other categories include 'Only some of the time' (13.1%), 'Used to but not now' (3.8%), 'It goes in with general waste (black bin)' (8.5%), 'I compost most of it' (7.0%), and 'Sometimes in green bin / sometimes black bin' (6.7%).</p> <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>All the time</td> <td>61.0%</td> </tr> <tr> <td>Only some of the time</td> <td>13.1%</td> </tr> <tr> <td>Used to but not now</td> <td>3.8%</td> </tr> <tr> <td>It goes in with general waste (black bin)</td> <td>8.5%</td> </tr> <tr> <td>I compost most of it</td> <td>7.0%</td> </tr> <tr> <td>Sometimes in green bin / sometimes black bin</td> <td>6.7%</td> </tr> </tbody> </table>	Response	Percentage	All the time	61.0%	Only some of the time	13.1%	Used to but not now	3.8%	It goes in with general waste (black bin)	8.5%	I compost most of it	7.0%	Sometimes in green bin / sometimes black bin	6.7%	<p>Q. Do you recycle your food waste in your GREEN bin?</p>  <p>A 3D pie chart showing the distribution of responses for the chatbot survey. The largest slice is 'Yes, all the time' at 23.7%. Other categories include 'Sometimes' (23.0%), 'Used to, but not anymore' (16.5%), 'Goes in my black bin' (15.4%), and 'I compost most of it' (18.7%).</p> <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes, all the time</td> <td>23.7%</td> </tr> <tr> <td>Sometimes</td> <td>23.0%</td> </tr> <tr> <td>Used to, but not anymore</td> <td>16.5%</td> </tr> <tr> <td>Goes in my black bin</td> <td>15.4%</td> </tr> <tr> <td>I compost most of it</td> <td>18.7%</td> </tr> </tbody> </table>	Response	Percentage	Yes, all the time	23.7%	Sometimes	23.0%	Used to, but not anymore	16.5%	Goes in my black bin	15.4%	I compost most of it	18.7%
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<p>Q. Do you think that having a weekly separate food waste collection would encourage you to recycle food waste or even more of your food waste than you do at present?</p>  <p>A 3D pie chart showing the distribution of responses for the online survey. The largest slice is 'Yes' at 52.0%. Other categories include 'No' (33.4%) and 'Not sure' (14.5%).</p> <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>52.0%</td> </tr> <tr> <td>No</td> <td>33.4%</td> </tr> <tr> <td>Not sure</td> <td>14.5%</td> </tr> </tbody> </table>	Response	Percentage	Yes	52.0%	No	33.4%	Not sure	14.5%	<p>Q. Do you think that having a weekly separate food-recycling bin would encourage you to recycle food-waste more?</p>  <p>A 3D pie chart showing the distribution of responses for the chatbot survey. The largest slice is 'Yes' at 85.6%. Other categories include 'No' (8.0%) and 'Not sure' (6.4%).</p> <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>85.6%</td> </tr> <tr> <td>No</td> <td>8.0%</td> </tr> <tr> <td>Not sure</td> <td>6.4%</td> </tr> </tbody> </table>	Response	Percentage	Yes	85.6%	No	8.0%	Not sure	6.4%										
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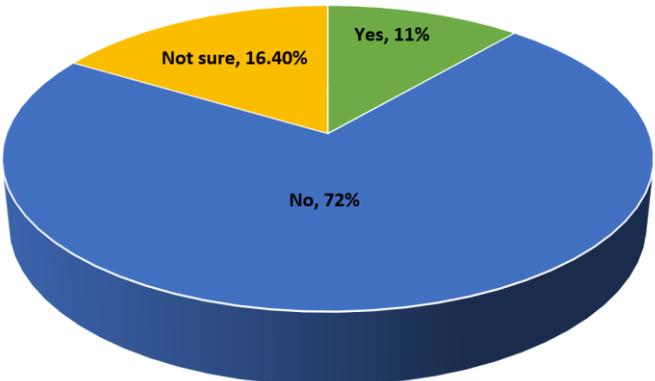
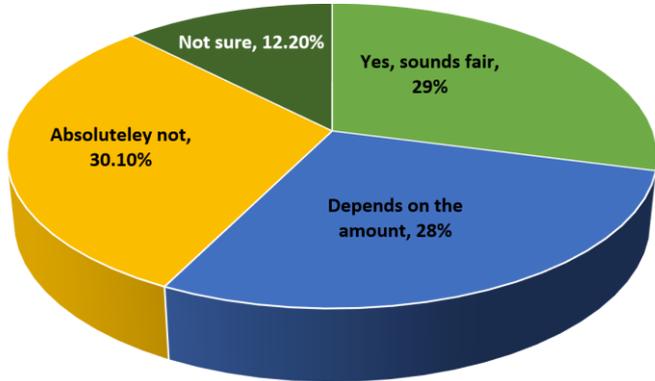
1.3.3 GARDEN WASTE RECYCLING

There was also a significant difference between people’s views on introducing a charge for collecting green waste.

The chatbot survey did include a more nuanced question (adding ‘depends on the amount’, which might have made some respondents less against the proposal than in the online survey, which was a straight yes / no / not sure question.

The difference can in part be explained by the different demographics responding to the survey. Further analysis of the chatbot results shows that the younger respondents (18-30 years) are more open to paying for the service – the older respondents feel the strongest about not paying to have their garden waste collected. In addition, those with communal recycling facilities and, therefore, without access to their own green bin are also more open to a subscription being introduced, which is not surprising. Those that use the service would prefer not to pay, those that don’t would be happy to see those that use it pay for it.

Interestingly, both surveys reported that around 20% of respondents would consider paying for the garden waste service. The online survey allowed an ‘other’ option and nearly a third of people chose this, citing putting the garden waste into the black / residual bin as the way they would dispose of it in future. A number also commented that they felt their council tax should cover the cost of the service, rather than a separate charge.

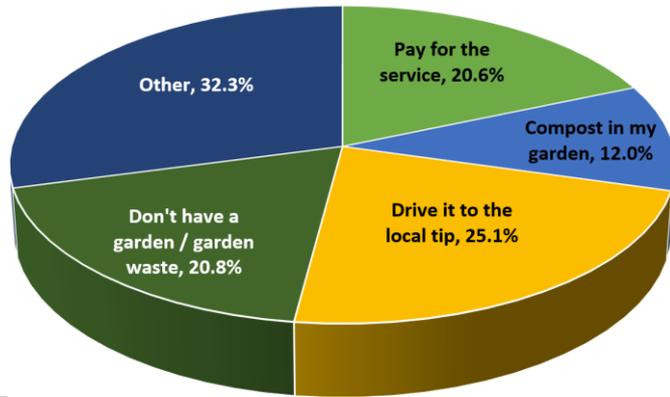
ONLINE SURVEY	CHATBOT SURVEY																		
Garden waste recycling																			
<p>Q. Do you think that Watford should introduce a charge for a separate garden waste service so that the cost of the service is covered by those who use it?</p>  <table border="1" data-bbox="119 1187 774 1568"> <caption>Online Survey Results</caption> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>No</td> <td>72%</td> </tr> <tr> <td>Not sure</td> <td>16.40%</td> </tr> <tr> <td>Yes</td> <td>11%</td> </tr> </tbody> </table>	Response	Percentage	No	72%	Not sure	16.40%	Yes	11%	<p>Q. Should Watford introduce a charge for collecting garden-waste, so that this service is covered only by those who use it?</p>  <table border="1" data-bbox="829 1187 1484 1568"> <caption>Chatbot Survey Results</caption> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Absolutely not</td> <td>30.10%</td> </tr> <tr> <td>Not sure</td> <td>12.20%</td> </tr> <tr> <td>Yes, sounds fair</td> <td>29%</td> </tr> <tr> <td>Depends on the amount</td> <td>28%</td> </tr> </tbody> </table>	Response	Percentage	Absolutely not	30.10%	Not sure	12.20%	Yes, sounds fair	29%	Depends on the amount	28%
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ONLINE SURVEY

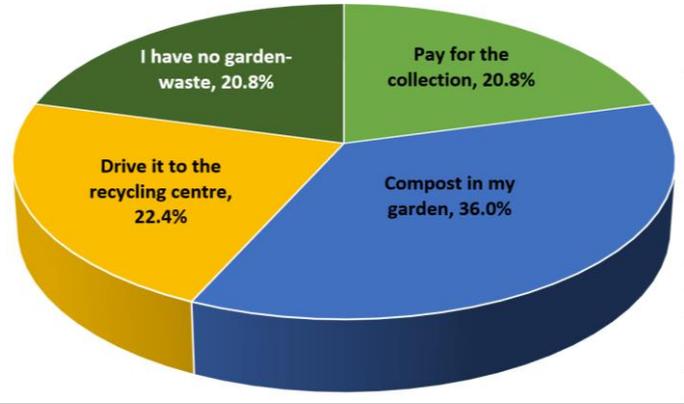
CHATBOT SURVEY

Garden waste recycling

Q. If a charge was introduced for the garden waste collection service, how would you dispose of your garden waste?



Q. If we introduced a collection fee for garden-waste, how would you choose to dispose of your garden-waste?



We would like your opinion on the **waste & recycling services** in Watford!





**WATFORD
BOROUGH
COUNCIL**

Equality Impact Analysis

Title of policy, function or service	Waste and recycling contract variations
Lead officer	Alan Gough
Person completing the EIA	Kathryn Robson
Type of policy, function or service:	Existing (reviewed) <input type="checkbox"/> New/Proposed <input checked="" type="checkbox"/>
Version & Date	10 October 2019 V1 17 December 2019 V2

1. Background

Watford Borough Council undertakes Equality Impact Analyses (EIAs) to assess the impact of its decisions and potential changes to service delivery on its communities. The EIAs have particular reference to the council's duties under the Equality Act 2010 as a public sector organisation and the potential impact on those members of our communities with a protected characteristic (or characteristics). Furthermore, the council is committed to advancing equality of opportunity, removing barriers to accessing services and fostering relations that support and enhance the diverse and cohesive communities of Watford and recognises the importance that the challenge and insight of a robust EIAs plays in achieving this.

Waste and recycling contract variations

A report is to be presented to Watford Borough Council's Cabinet in January 2020. This report outlines proposals for change to the council's waste and recycling service. This EIA, therefore, considers these proposed changes in the context of the requirements of the Equality Act 2010 for the council to consider the following three areas:

1. **eliminate** discrimination, harassment, victimisation and any other conduct that is prohibited by or under the Act
2. **advance** equality of opportunity between people who share a relevant protected characteristic and people who do not share it
3. **foster** good relations between people who share a relevant protected characteristic and people who do not

Overview of the proposals

i. The council's waste and recycling duties

Watford Borough Council is the Waste Collection Authority for the Borough and has a legal duty under the Environmental Protection Act 1990 (as amended) (EPA) to make arrangements for the collection of household waste free of charge. Household waste is defined in section 75 of the EPA as waste from a building used wholly for the purpose of living accommodation.

Any other waste that a householder generates, such as garden waste, the Waste Collection Authority is not legally obliged to collect and, if requested by the householder to collect, can levy a charge for that collection.

ii. Proposals for change

The proposed changes to the waste and recycling service to Watford households comprise:

1. The introduction of a weekly food waste collection – based on recent sample analysis of residual waste from households in Watford which showed around 30% of the waste was food waste. A weekly food waste collection would remove the most unpleasant and potentially smelly waste and recent engagement indicates people are likely to recycle more if their food waste is taken away on a weekly basis
2. The introduction of a charge for a garden waste service – this is in recognition of the cost of the service, which, as outlined above, is not part of the council's statutory waste duties. The

council has faced a 70% reduction in government spending over the last decade and is having to take difficult decisions on service delivery. In terms of garden waste, only a proportion of households in Watford use the service (those in flats and without gardens currently subsidise those that use the service through their council tax) and, given its financial pressures, the council believes it should retain the service but that it is fairer to charge for it. Separating garden waste means that it is easier to process it for either compost or electricity. Research has shown that around two thirds of local authorities now charge to collect garden waste, helping to cover the cost of service delivery.

3. To encourage greater recycling of those items that can be recycled rather than thrown away, the residual waste collection will move to fortnightly. This aligns with the council's commitment to respond to the climate change emergency and feedback from residents that they value the opportunity to recycle to help both the local and global environment. Research has shown that over 75% of local authorities in England collect residual waste on a fortnightly (or even less frequent) basis.

lii **Who has been identified as potentially being impacted by the proposals?**

- All residents in Watford will be impacted
- Residents in the borough who currently use the service to dispose of their garden waste

2. Focus of the Equality Impact Analysis

This EIA, therefore, considers the potential equality related impacts, both positive and negative of the proposals for changes to the waste and recycling service for on the people in the groups or with the characteristics protected in the Equalities Act 2010.

These are:

1. Age
2. Disability
3. Gender Reassignment
4. Pregnancy and maternity
5. Race
6. Religion or belief
7. Sex (gender)
8. Sexual Orientation
9. Marriage and Civil Partnership.

3. Engagement and consultation

Over the summer of 2019, the council undertook two engagement exercises to gauge people's current perceptions of waste and recycling services. The engagement channels were an online survey (a more traditional approach) and a chatbot survey, through Facebook messenger. The reason for undertaking the two exercises was to reach a wider range of local people than a single approach would have achieved – with the relatively new chatbot approach consistently reaching a younger audience than that reached through an online survey. This was borne out by the demographics collected through both engagement exercises.

1. ONLINE SURVEY

IN FIELD: 30 July – 10 September 2019

RESPONSES: 398

2. CHATBOT SURVEY (DEPLOYED THROUGH FACEBOOK MESSENGER)

IN FIELD: 27 August – 6 September 2019

RESPONSES: 547

Age profile of respondents

The online survey received the most responses from those in the 35-44 age range (26%), followed by 45 -54 years at 24% whilst the chatbot survey was in the age group 18-30 years.

Sex of respondents

Unexpectedly, there was a very significant difference in the profile of those answering the online survey – with 75% of respondents coming from women. In contrast, the chatbot survey was much more in line with the profile of the Watford population – with 52% male (slightly high) and 48% female (slightly low).

Ethnicity of respondents

Only the online survey asked regarding people's ethnicity. 79% of respondents were White British, which is a higher percentage than in the population with the next highest category being 'White Other'. The EIA, therefore, needs to take into account what is known of the Watford population (see below) in considering ethnicity impacts as these will not necessarily be picked up through the views shared in the survey.

Health of respondents

15% of respondents declared their day to day activities are limited by disability / health related issues. Again, this EIA needs to take into account what is known of the Watford population (see below) in considering disability related impacts as these will not necessarily be picked up through the views shared in the survey.

4. What we know about the Watford population

Overall, Watford has a diverse, relatively young population who live in a variety of household types across the borough but with a noticeably large number living in rented accommodation. Whilst it is a prosperous town, it does, like most areas, have pockets of relative deprivation.

The waste and recycling service is what is known as a 'universal' service, one that all households receive. In terms of the current proposals, the changes are directed predominantly at 'low rise' households (i.e. not flats / apartments that have communal facilities) but the changes to garden

waste do impact all properties. Understanding the Watford population provides guidance on how the proposals will impact both positively and negatively.

Population

The current population of Watford is 96,800 (mid 2018 estimate). Government population growth estimates expect Watford to reach 100,000 by the end of 2025. From this date, it is expected to grow by about 500 people per year.

The population density for Watford is circa 4,500 people per square kilometre. This makes it the most densely populated district area in England and Wales. However, in comparison with some metropolitan boroughs, particularly those in and around the outskirts of London, the density is relatively low.

Ward level populations

Mid 2017 year population estimates show Central has the highest population of any ward in Watford and Tudor the lowest at 6,059 (mid 2018 estimates are due for publication in October 2019 but were not ready in time for this analysis).

	2017
Callowland	8,075
Central	9,201
Holywell	8,542
Leggatts	7,864
Meriden	7,944
Nascot	8,779
Oxhey	6,734
Park	8,731
Stanborough	7,488
Tudor	6,894
Vicarage	8,777
Woodside	7,646

This is ONS experimental data (Ward Level Mid-Year Population Estimates (experimental), Mid-2017)

Population projections

The 2016-based subnational population projections for local authorities are an indication of the future trends in population to 2041 – looking forward by 25 years.

- Watford’s population is projected to be 99,400 by 2024 (the next five years) with the population reaching 100,000 in 2025 and 107,400 by 2041. This is lower than previous government projections (2014) but still a significant challenge for a borough of the size of Watford

- The bulk of the estimated % increase for Watford until 20141 is expected to stem from natural change - more births than deaths - with a small increase due to net migration within the UK and net international migration. The level of natural change can be attributed to the relatively young age structure of the current population, with a high proportion of residents within the child bearing age ranges.

Households

The average household size in Watford is currently 2.45. This is average for the Eastern region.

Number of households

The ONS data, based on the census, says that there were 36,681 households in Watford at the time of the Census; as of 31 January 2019 the figure was 39,052, reflecting the growth in housing in the borough over this time period. This in itself is a significant challenge for the waste and recycling service and, for a district authority, it is known that the biggest pressure on future budgets is the need to deliver the service to a growing number of households

Household size

The 2016 projections estimate that, between 2016 and 2041:

- Watford's average household size will decrease from 2.45 to 2.33
- England's average household size will decrease from 2.37 to 2.26

Household Composition

From the 2014 household projections, one person households see the biggest increase in household growth in Watford, representing 44% of the total household growth. Smaller households will generate less waste on average.

However, households with dependent children see the next biggest rise, with 35% of household growth; couples with other adults make up 9%; other (multi-person adult) households make up 7% and couple households (without children or other adults) make up the remaining 6% of all estimated growth.

Sex / gender of population

In terms of gender breakdown, there are estimated to be fractionally more female than male residents but the difference is not significant. Research tends to show females recycle more than males.

Ethnicity

Watford has a very diverse population, more so than the rest of Hertfordshire.

For Watford, the Census 2011 shows the following breakdown in terms of ethnicity: White British (61.9%), White other (7.7%), Pakistani (6.7%), British Indian (5.5%) and British other Asian 4.4%). Census information is now nearly 10 years old and it is likely that the ethnic profile of the borough has changed during this time. For example, it would not have captured the more recent EU arrivals to the borough (EU2 countries – Romania and Bulgaria, who were given residency rights in 2014).

National insurance registration: Census information is now nearly 10 years old and it is likely that the ethnic profile of the borough has changed during this time. For example, it would not have captured the more recent EU arrivals to the borough (EU2 countries – Romania and Bulgaria, who were given residency rights in 2014). We know from other data such as National Insurance Registration that Watford has experienced a relatively high increase in nationals from the EU2 countries applying for National Insurance registrations as Watford residents. This follows a period of a high number from EU8 countries (including Poland, Latvia, Lithuania) who were given freedom of movement to the UK from 2004. Throughout the period the arrival of new residents from south Asia (e.g. Pakistan / India) has remained relatively constant.

The statistics for 2019 – up to June 2019 – showed 2,141 registrations (the second highest in Hertfordshire). Of these: 661 of the registrations were from EU2 countries (Bulgaria and Romania) and 489 from South Asia. By comparison, EU8 countries had 192 registrations.

Language spoken at home: Other data sources, including school language survey on the languages spoken by Watford school children at home, endorse the National Insurance findings with English still the predominant language (at around 60%) followed by (in order of selection): Urdu, Polish, Tamil, Romanian, Gujarati, Pahari, Gujarati and Hindi.

Births and origin of parents: In 2018, nearly 60% (59.6%) of children born to Watford based parents, had one or both parents born outside of the UK, with 41.7% having both parents born outside of the UK. 52.3% of new mothers in Watford were born outside of the UK (1397 births in total, with 667 to mothers born in the UK and 73 born outside of the UK. Of these 252 mothers had been born in the Middle East and Asia and 257 in the ‘new’ EU countries – those that had joined since 2004, including Poland, Rumania and Bulgaria).

Electorate: The electorate on the electoral register (as published on 1 December 2018 was 70,544, with a further 3,642 identified as potential electors. The main ethnicity groups were identified as:

Ethnicity	2018/19
British	58,329
Romanian	1,842
Polish	1,560
Rep of Ireland	1,289
Indian	1,062
Italian	805
Portuguese	703
Pakistani	652
Sri Lankan	418
Spanish	364
French	337
Bulgarian	215

Numerous other nationalities with electorates totalling 1 or more but less than 200.

Age

The largest populations by age band in Watford in 2018 were:

- 35-39 (8,681)
- 30-34 (8,169)

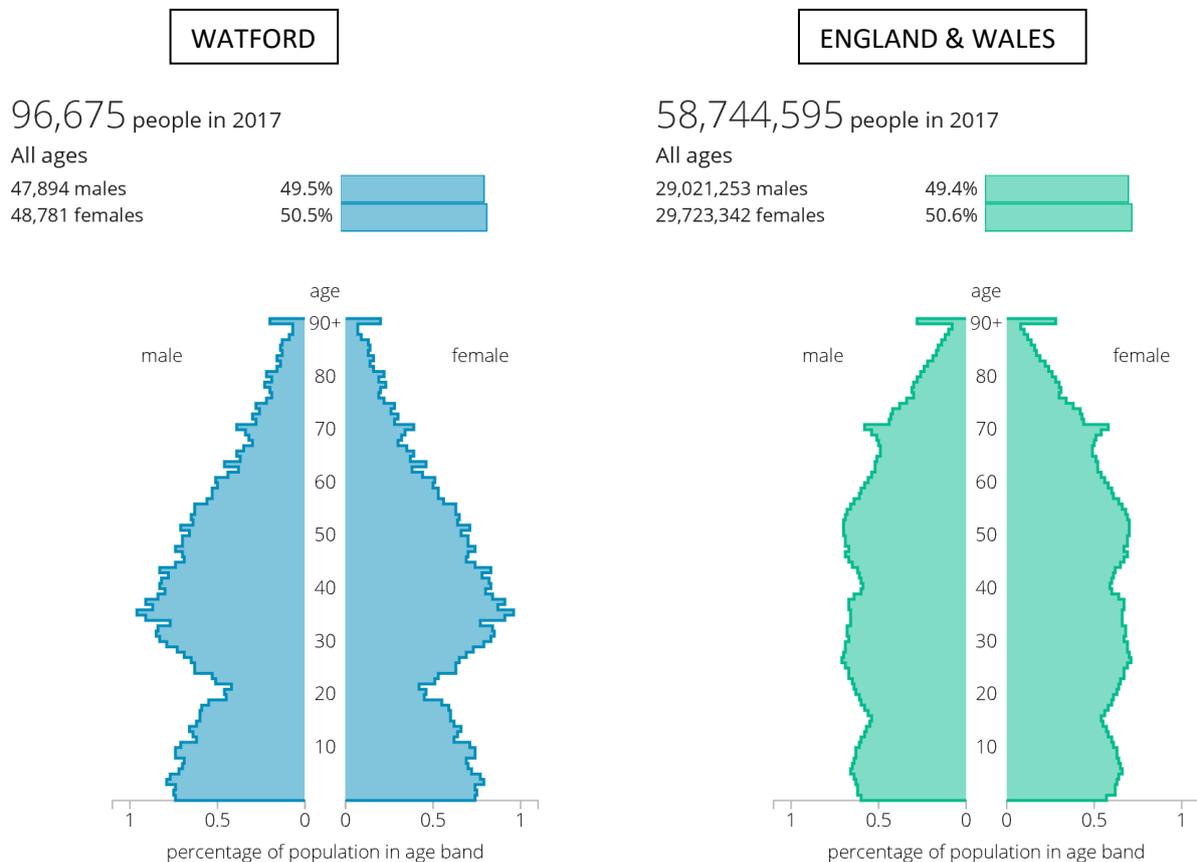
Age	Total
Age 0 - 4	7,108
Aged 5-9	7,082
Aged 10-14	6,247
Aged 15-19	5,194
Aged 20-24	4,820

Age	Total
Aged 30-34	8,169
Aged 35-39	8,681
Aged 40-44	7,445
Aged 45-49	6,756
Aged 50-54	6,315
Aged 55-59	5,325
Aged 60-64	4,296
Aged 65-69	3,467
Aged 70-74	3,132
Aged 75-79	2,285
Aged 80-84	1,861
Aged 85+	1,906

The numbers in each successive age-band fall progressively until there are estimated to be circa 7,000 who are 75+.

The average age in Watford in mid-2018 (ONS estimates) was 36.7. This is the second lowest in Hertfordshire after Welwyn Hatfield (35.9 years) but this would be expected given their student population. This compares to 39.9 years for England and 41.6 years for the East of England.

The graphic below shows Watford's population far more skewed toward 40 years and younger than England and Wales overall. Whilst single person households are increasing faster than households with families, there are a larger proportion of Watford residents in the ages where people are likely to be having families than in England and Wales overall.



Disability / Health

Around 85% of the population of Watford state that they have 'good health' and just under 14% record a disability. We do not have details as to what these disabilities are but they will include a wide range of physical and mental health disabilities or impairment.

The 2018 NHS Health Profile's summary conclusion is that the health of people in Watford is 'varied' compared with the England average. About 12% (2,300) of children live in low income families – this is an improvement on 2016 (14% / 2,700). Life expectancy for both men and women is similar to the England average, although life expectancy is 6.6 years lower for men and 3.4 years lower for women in the most deprived areas of Watford than in the least deprived areas.

The profile also shows that physically active adults (19 years +) is 68% for Watford compared to the England average of 66%. There has been a decrease from the 2017 profile in the percentage of adults classified as overweight / having excess weight from 60% to 55%, which is better than the England average of 61%. The percentage of obese children in Year 6 (aged 10-11) at 21% is significantly worse than in the 2017 Health Profile; the England average is 20%.

Religion / belief

The religious breakdown in the Census 2011 of the main religions in Watford was: Christian (54.1%), Muslim (9.8%), Hindu (4.8%), with no religion stated at 21.4%.

Sexual orientation / Transgender

- In 2014, 1.6% of adults in the UK identified their sexual identity as lesbian, gay or bisexual
- The likelihood of an adult identifying as lesbian, gay or bisexual decreased with age. Around 2.6% of adults aged 16 to 24 years identified themselves as lesbian, gay or bisexual. This decreased to 0.6% of adults aged 65 and over

Watford currently has no specific data on the LGBT community within the borough

Deprivation

The English Indices of Deprivation 2019 was published by the Government in September 2019, and updates the previous 2015 Indices, published in September 2015. The Indices of Deprivation measure relative levels of deprivation in 32,844 small areas or neighbourhoods, called Lower-layer Super Output Areas, in England

The IoD2019 is based on 39 separate indicators, organised across seven distinct domains of deprivation which are combined and weighted to calculate the Index of Multiple Deprivation 2019

The IoD2019 uses 39 separate indicators, grouped into seven domains (three of which contain sub-domains); the domains are Income; Employment; Health and Disability; Education, Skills and Training; Crime; Barriers to Housing and Services; and Living Environment. These are weighted to calculate the Index of Multiple Deprivations (IMD) 2019. In addition to the domains and their sub-domains there are two supplementary income deprivation Indices: Income Deprivation Affecting Children Index (IDACI) and Income Deprivation Affecting Older People Index (IDAOPI).

In the IMD 2019, Watford is ranked 195 out of 317 authorities, putting it in the 7th decile nationally. This means that, overall, Watford is less deprived than half the authorities in England.

Watford is the third most deprived authority in Hertfordshire. (Stevenage and Broxbourne are the most deprived.) However, three Hertfordshire authorities are among the 10% least deprived authorities in England (Three Rivers, East Herts and St Albans).

Overall, Watford is not an area with significant deprivation issues and the majority of the LSOAs

within the town are in the bottom 50% of LSOAs nationally for deprivation; the borough's position has improved relative to that of 2015.

The combined deprivation index, which weights income and employment more heavily than the other domains, obscures the more deprived areas in Watford, which are affected by crime, living environment deprivation and education, skills and training deprivation in particular. This is, at least in part, because income and employment deprivation are less of an issue for Watford than for other areas.

The ten most deprived LSOAs in Watford, as ranked in the IMD 2019 are as follows:

Watford rank	Ward	LSOA code	Hertfordshire		England	
			Rank	Decile in Herts (1st = most deprived)	Rank	Decile (1st = most deprived)
1 (1)	Central (Water Lane, Gladstone Road, Grosvenor Road, part of Radlett Road, Brockleberry Close, Raphael Drive, top part of Queens Road)	E01023860 (009B)	5 (5)	1st (1st)	5055 (5005)	2nd (2nd)
2 (3)	Holywell (Caractacus Green, part of Charlock Way, Moor View, Jellicoe Road, Stripling Way, Rose Gardens)	E01023865 (011C)	21 (22)	1st (1st)	7239 (7800)	3rd (3rd)
3 (2)	Meriden (Garsmouth Way, Aldbury Close, Harvest End, part of York Way)	E01023876 (003D)	26(19)	1st (1st)	7924 (7590)	3rd (3rd)
4 (4)	Holywell (Ascot Road, Greenhill Crescent, Caxton Way, Croxley View)	E01023866 (011D)	27 (30)	1st (1st)	8294 (9203)	3rd (3rd)
5 (7)	Woodside (Haines Way, Queenswood Crescent, Sheriff Way, Nottingham Close)	E01023906 (001C)	61 (41)	1st (1st)	10719 (10062)	4th (4th)
6 (10)	Oxhey (Deacons Hill, Blackwell Drive, Riverside Road, Eastbury Road, Thorpe Crescent)	E01023883 (012B)	62 (49)	1st (1st)	10758 (10710)	4th (4th)
7 (13)	Callowland (Maude Crescent, St George's Road, Breakspeare Close, Nicholas Close)	E01023857 (006C)	67 (56)	1st (1st)	10894 (10812)	4th (4th)
8 (9)	Meriden (Gaddesden Crescent, Bovingdon Crescent, Garston Lane)	E01023877 (003E)	73 (75)	2nd (2nd)	11225 (11837)	4th (4th)
9 (12)	Leggatts (The Harebreaks, Chestnut Walk, Foxhill, Brushrise, Elm Grove)	E01023870 (004C)	78 (52)	2nd (1st)	11515 (10734)	4th (4th)
10 (5)	Stanborough (Clarke Way, Rushton Avenue, Orbital Crescent, Harris Road)	E01023891 (002B)	92 (31)	1st (1st)	11970 (9377)	4th (3rd)

MOSAIC profile

Our MOSAIC profiling of the borough enhances our understanding of our population and provides valuable context for our decision-making. MOSAIC types have different propensities in terms of recycling, with some types far more active recyclers than others

	Mosaic Code	Name	Description	Number of Household	2017 Watford %	2016 Watford %	Difference	Trend	Rank (last year)
1	J40	Career Builders	Singles and couples in their 20s and 30s progressing in their field of work from commutable properties	4,045	12.5%	11.9%	0.6%		1
2	I36	Cultural Comfort	Thriving families with good incomes in multi-cultural urban communities	3,321	10.3%	8.7%	1.6%		2
3	D14	Cafes and Catchments	Affluent families with growing children living in upmarket housing in city environs	2,499	7.7%	8.0%	-0.3%		3
4	D17	Thriving Independence	Well-qualified older singles with incomes from successful professional careers living in good quality housing	2,422	7.5%	5.4%	2.1%		7
5	M56	Solid Economy	Stable families with children renting better quality homes from social landlords	2,172	6.7%	6.4%	0.3%		6
6	J44	Flexible Workforce	Young renters ready to move to follow worthwhile incomes from service sector jobs	1,954	6.0%	7.0%	-1.0%		4
7	H35	Primary Ambitions	Forward-thinking younger families who sought affordable homes in good suburbs which they may now be out-growing	1,550	4.8%	6.8%	-2.0%		5
8	808	Premium Fortunes	Influential families with substantial income established in large, distinctive homes in wealthy enclaves	1,237	3.8%	3.2%	0.6%		10
9	I37	Community Elders	Established older households owning city homes in diverse neighbourhoods	1,128	3.5%	4.1%	-0.6%		8
10	I39	Ageing Access	Older residents owning small inner suburban properties with good access to amenities	1,099	3.4%	3.4%	0.0%		9

Watford's MOSAIC profile (2018)

Career Builders tend to have less propensity to recycle than average as do Cultural Comforts, whereas Cafes and Catchments have a greater propensity. This provides useful insight into both the challenges the council faces in terms of encouraging greater recycle but also the opportunities in terms of increasing its current recycling rate of 45% and reducing the amount of waste that could be recycled that is being disposed of in black bins.

5. How will the council ensure equality is promoted through the proposed changes to the waste and recycling service in Watford

Under the Equality Act 2010, three areas need to be considered when analysing the equality impact of the Statement of Community Involvement:

4. **eliminate** discrimination, harassment, victimisation and any other conduct that is prohibited by or under the Act
5. **advance** equality of opportunity between people who share a relevant protected characteristic and people who do not share it
6. **foster** good relations between people who share a relevant protected characteristic and people who do not

A. Positive impacts

- The council is clear that it needs to encourage more recycling and reduce the amount of waste and rubbish that currently needs to be disposed of or sent to landfill. Reducing the borough's impact on the environment and use of natural resources is beneficial to all our population and is a positive response to the council's declaration of a climate emergency
- Facilitating easier recycling of food waste will have a positive impact on all households as it ensure that this type of waste, that tends to be more unpleasant / smelly and prone to rotting is removed on a weekly basis. Research also shows that when people realise how much food waste is being disposed of, they tend to take steps to reduce how much their household is throwing away – which is beneficial in terms of the environment but also people's personal spending. This could be of particular benefit to those with larger households / families and greater call on their disposable income
- Separating garden waste means that it will be processed for compost and / or electricity – again a positive benefit to the local environment
- It is expected that most residents will be positively affected by the introduction of a subscription charge. A direct charge so that only those that use the garden waste collection service pay for it will prevent a scenario where an increase in council tax for all residents is required for the service to continue. Given the pressure on council budgets, the current service is unaffordable and unsustainable

B. Negative impacts

The analysis of the Watford population shows the diversity of the borough and highlights a number of potential impacts the changes could have on Watford residents. In addition, the responses to the engagement activities shows that there is less positive feedback about some of the proposals from different parts of the Watford community. In particular, there is a correlation between age and the responses to change, with those of a younger profile more open to change.

In response to the needs of its communities and the feedback on the changes, the council has in place a range of support for those who might be more significantly impacted.

- Larger families with children
There is a potential negative impact on those with larger families with children in relation to the move to a fortnightly residual collection. This is because the council acknowledges that the more people in a home, the more waste is generated. In these cases the council offers: larger bins on proof of a household of five or over, excess waste sacks and nappy sacks
- Families with babies / children in nappies
The protected characteristic of pregnancy and maternity could be negatively impacted given the additional waste that is generated by disposable nappies. The council does offer nappy sacks in these circumstances and can advise on the use of more eco-friendly alternatives to disposable nappies if required
- Older people and people with disabilities
The proposed garden waste service will be by subscription and so no one needs to pay for it unless they choose to do so. For those with garden waste that do not wish to pay for the

service, there are alternatives. Garden waste can be composted within their gardens (and a subsidised compost bin is offered for those wanting to pursue this option) or it can be driven to a waste disposal site. We acknowledge that older people and people with a disability are less likely to drive and so the option of the waste disposal site may not be open to everyone – a potential negative impact. However, the council is offering a reduced cost for the green bin for those on council recognised concessions which include: Housing Benefit, or Rent Allowance/Local Housing Allowance for people living in rented accommodation, Council Tax Benefit, Income Support, Job Seekers Allowance (income based), Working Tax Credit, Child Tax Credit, Guaranteed Pension Credit (not 'Savings Pension Credit'), Employment and Support Allowance (income based) and Universal Credit. In addition, the council is encouraging people to share the green bin if they do not feel they will fill a bin every fortnight – this could help with the cost and with managing the bin / service if this is difficult for a householder.

The council also offers an assisted waste collection and this will continue to apply to the garden waste bin.

The garden waste subscription service will, predominantly, be accessed online and there will be a focus on electronic payments. However, to respond to the needs of those who do not have access to online technology or who are less comfortable with using it (which tends to be older people or people with some specific disability related issues) telephone payments will also be taken. Wherever possible, adjustments will be made for customers having particular difficulties with these payment methods.

Clinical waste collections will also continue for those with needs around items such as incontinence pads / needles etc.

- BAME communities

Standard bins may not be large enough larger households / families. Certain BAME families have a higher likelihood of living in a larger family. Therefore, a change in collection frequency may impact negatively on some of Watford BAME communities.

The diversity of Watford means that for a significant proportion of the Watford community, English is not the first language. This could be a barrier to understanding the service changes should they be endorsed. We will ensure that communication and publicity materials illustrate diversity in a positive way and promote participation across all ethnic groups. The communications will be highly visual to reduce the need for large explanatory notes and the council's own website will offer the basic information on service changes – this features the browsealoud function that translates information into a variety of languages. The dedicated website also allows for some translation functionality, although does not offer the variety of languages available on browsealoud.

- Females

It is recognised that females / women within certain age parameters may be negatively impact because of the need to dispose of sanitary waste products, which are disposed of in residual waste. The aim of the service change is to reduce the amount of recycled waste that is put in the black bin, leaving more space for items that cannot be recycled. Where women

have a significant issue they can contact the council for advice on other ways of getting rid of sanitary waste e.g. excess waste sacks (albeit this would be at a charge)

- People in flats of blocks of six properties or above

There is a potential for those living in flats of blocks of six properties or above to be disadvantaged through the proposed changes if the managing agents do not engage and fully understand and act on the information they are provided. Data shows that these properties tend to be occupied by younger residents. The council is actively working with all known managing agents to keep them informed of the changes and to encourage them to communicate with their tenants.

6. Overall conclusion

The changes to the waste and recycling service have both positive and negative impacts for those affected residents.

Overall, the council believes that the changes will support an increase in recycling across the borough, which is of benefit to everyone given the acknowledged impact on the environment of items such as single use plastics. The introduction of garden waste subscription is a direct response to the financial challenges the council faces and, by charging those who receive the service, protects it for those who want it but also other service areas which the council is responsible for delivering.

There are negative impacts of the changes, which the council is taking steps to mitigate through careful targeting of support and advice. It is recommended the council keeps these under review during the implementation of the changes to assess whether the impacts are sufficiently mitigated or whether it needs to assess if further interventions are required.

Summary of potential positive impacts and ways in which they can be ensured

Positive Impact	Protected characteristics	Ways to ensure the positive impact
Increased recycling and reduction in the waste and rubbish that needs disposal or sending to landfill	All	<p>Maintain a positive and engaging communications and engagement campaign for residents to highlight the benefits of recycling more for them and the wider, global community.</p> <p>Undertake targeted campaigns in areas where recycling rates are known to be lower.</p>
Separate food waste collection	All	<p>Maintain a positive and engaging communications and engagement campaign for residents to embed the positive outcomes of food waste recycling – including the use made of the recyclable material.</p>
Impact on council budget of not subsidising the garden waste service	All	<p>Ensure that people understand the council’s financial pressures and how the subscription service reduces this pressure (particularly given it is not a statutory service).</p>

Summary of potential negative impacts and ways in which they can be removed or mitigated

Negative Impact	Protected characteristics	Ways to mitigate the negative impact
<p>Alternatives to subscription service for garden waste might not be available to some households (particularly if they cannot drive)</p>	<p>Disability Age (older people)</p>	<p>Ensure people are aware of composting as an alternative solution + the availability of subsidised compost bins.</p> <p>Promote the concessions available to those on income related benefits</p>
<p>Larger families / individuals generating more residual waste over the fortnight collection period</p>	<p>Age (those with families) BAME Pregnancy and maternity Females Disability</p>	<p>A larger bin is available for households of five plus (on submission of proof)</p> <p>Nappy sacks are available for those producing a large number of disposable nappies or people can use more eco-friendly alternatives</p> <p>Excess waste sacks are also available</p> <p>Clinical waste collections are unchanged</p> <p>Maintain a positive and engaging communications and engagement campaign for residents to embed the positive outcomes of recycling to reduce the amount of residual waste that is put in the black bin</p>

Negative Impact	Protected characteristics	Ways to mitigate the negative impact
Lack of understanding / confusion about the service changes	All but possibly more likely to be: Ethnicity Disability (learning related)	Ensure the communications and engagement campaigns are attractive, very visual and target areas where we know there might be more people where English is not a first language – directing them to the council’s website where translations are available
Managing agents not engaged with the changes	Age (those in their 20’s and 30’s who are more likely to be part of Watford’s rental community in flats / apartments)	Early and ongoing engagement with managing agents to keep them informed and to encourage them to deliver a positive and sustainable recycling solution for their properties.

This EIA has been approved by:

Kathryn Robson Date 17 December 2019