

Appendix A1 – The separate collection of glass waste- pilot

To improve the quality of recyclable material

Introduction

The Council currently collect glass within the mixed, dry recycling green bag. While this approach has served the public and the council well to date, the changing global recycling markets are now placing a challenge on this method.

In 2015, there was a significant shift in the glass market. A material that once produced an income now required a gate fee to process, and this is at a cost to the Council of £500,000 annually. The pressures on the global market also saw our re-processors stop taking glass for two months. The Council was able to identify space to stockpile Cardiff's glass but had space not been available, it would have been lost to disposal.

If the glass cannot be recycled, the gate fee for disposing of the glass will increase by a further +£40 per tonne, meaning the council will have to afford a further £320,000 annual bill in processing costs, plus the risk of fines.

Currently, the Council collects over 8000 tonnes of glass each year, which is sent to be recycled for aggregates. As the global markets demand higher quality year on year, the outlets for glass are reducing. Currently, the council only have one outlet for glass and if this were to cease, the material could not be recycled. A loss of over 8000 tonnes to recycling would mean the council would fail the recycling targets, and could equate to fines in excess of £1.6m.

Another consideration when reviewing potential service change is the waste (England and Wales) (Amendment) Regulations 2012 and Welsh Governments Collection Blueprint. These regulations were implemented to deliver high quality (separate) collections of waste paper, metal, plastic or glass, whilst also being the best technical, environmental and economically practicable solution (TEEP).

An analysis of our current recycling collection methods (co-mingled, in a single use bag collected weekly) and operating costs demonstrated that there are significant improvements to be made if the glass was removed from the co-mingled bag and collected separately at source.

Current position

Cardiff's co-mingled (mixed) recyclable material is delivered to our in house MRF (Materials Recycling Facility). The MRF receives and segregates all material, through a mixture of automated and manual sorting.



Picture 1- artist's impression of the MRF

At one of the initial stages of processing, small fragments of glass fall through a separating screen to a lower conveyor belt below. Larger pieces of glass will continue through the process; once passed through a magnet to remove steel, the remaining pieces of plastic, aluminium and glass pass through a glass breaker. The smaller pieces of glass again fall through a separating screen, to join the pieces separated at the start of the process.

The separating screens permit other smaller bits of material e.g. ripped paper, small pieces of plastic etc. to within the glass. Although every attempt is made to further clean the material, the Council have to pay for the material to be further cleaned and recycled, rather than gain an income for the material.

The Council currently only supply into one glass reprocessing market, which carries significant risk if this end market was to become further weakened or cease all together.

Of a sample load of glass recycled, 59% could be re-melted back into glass. 18% was used as aggregate/insulation manufacture and the remaining 22% was rejected as contamination.

In addition, fragments of glass cause a lot of damage to equipment in the MRF particularly hard rubber 'stars' which are used on the screens that separate different materials. The abrasive nature of glass causes erosion, at a much faster pace. Annually, this is an additional strain on the MRF maintenance costs.

For the reasons identified above, it is clear that there are potential improvements to be made.

In summary, removing glass from the co-mingled bag collection could result in:

- ✓ Better quality closed loop glass recycling i.e. recycled glass being turned back into new quality glass.
- ✓ Income rather than a cost for processing the glass (market dependant)
- ✓ Reduced operating costs in the Materials Recycling Facility (MRF).
- ✓ Better quality paper recycling – due to reduced contamination.
- ✓ Better quality of glass and paper will lead to better income generated from their sale.
- ✓ Improved compliance with the Waste Collections Blueprint.

Proposal

1) Pilot areas

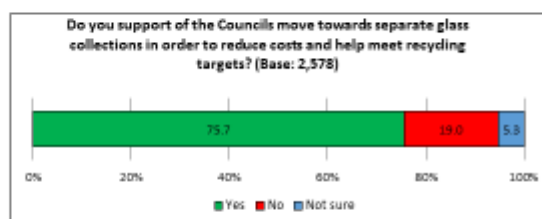
The Council is proposing an initial trial of 17, 164 properties to present their glass separately to the rest of their recycling. The initial pilot will enable us to fully identify the improvements made to the quality of the glass, the amount of glass that differing households present, the best collection method and identify the possible demand in terms of increased requests for assistance (registered collections), ordering of boxes/caddies etc.

Early consultation has suggested support for the scheme.

Waste Collection

76% of respondents supported the move towards separate glass collections in order to reduce costs and meet recycling targets.

Just 14% opposed the scheme in Cardiff South West compared to 24% in Cardiff South East.



Gweithio dros Gaerdydd, gweithio gyda'n gilydd
Working for Cardiff, working together

The pilot will be implemented over a period of at least 12 weeks. A minimum of 12 weeks will provide us with information required, to determine whether a citywide expansion will take place. Areas within the pilot would continue to take part in the separate collection of glass, until a scheme is rolled out across the City.

Collected once a fortnight, this will give residents the opportunity to present glass on at least 6 occasions throughout the pilot. To ensure maximum efficiency of vehicles, the trial would include 10 areas across the city allowing one area per day over a two-week period.

Areas selected would be based on the following criteria:

- Collection days – one on each day of the week is required
- High, medium and low performing recycling wards (1-4 scale, 1 = high, 4 = low)
- Average glass capture (1-4 scale, 1 = high, 4 = low)
- Housing type – high density flats, terraced houses, semi-detached houses and detached houses
- Segmentation data – demographic data, recycling behaviour and attitudes towards waste.

Main collection principles for properties on the glass pilot:

Traditional households Glass waste Collection Arrangements

- Glass will be collected on a fortnightly basis, on the same collection day
- Properties will initially receive 1 x box or caddy. 1 additional container can be ordered per property
- If properties request more than 2, the request will be considered by recycling communication officers
- Boxes/caddies will be replaced free of charge
- Food waste, garden waste, general waste and hygiene waste (where registered) collections will not be affected
- The following materials can be placed into a green bag, for a weekly collection
 - Paper
 - Tins/cans
 - Cardboard
 - Plastic
 - Aerosols
 - Shredded paper (in a single green bag separate to other material)
- There are a variety of containers that could be used. Officers have reviewed these options a number of types will be tested through the pilot period, box types will have a lid, or net to contain the material.

- For the duration of the initial phase, additional boxes/caddies can be ordered by contacting C2C. They can also be obtained from recycling communication officers during community engagement events.
- Collection crews will be told to considerately place containers back outside resident's properties
- The registered collection service remains for those who require assistance with placing out bins/sacks/bags for collection. The current service criteria will be reviewed, to accommodate the change
- There will be facilities to recycle glass only at any remaining bring banks across the City
- Residents can choose not to take part in the trial, but green bags containing glass will not be collected
- Collections of glass will take place between 8am-8pm; existing recycling and waste presentation rules apply
- Containers must be within the property boundary when not presented for collection
- Containers will be labelled with individual address details

Blocks of flats

- The Council will identify a block of flats within each trial area
- Before the trial, an assessment will identify whether there is sufficient space within the bin storage area for an additional communal bin
- We will provide a 140l or 240L bin, with an aperture (hole) for glass bottles/jars. The bin will have a gravity lock, so will be secure
- We will consider the benefits of providing residents with a sack, to enable them to safely transport glass to the communal bin area

Bring banks

Glass only bring banks can also be considered, but over recent years the use of bring banks has declined. Many banks have been removed due to abuse and contamination. Research shows this is not an issue specific to Cardiff, many authorities are moving away from bring banks due to the issues they attract. Consideration will be given to glass banks where it may suit a local community, but this will be after alternative solutions have been explored.

Monitoring and Evaluation

Monitoring will comprise of four separate components;

1. Public opinion surveys

A survey will be delivered to each property that will be participating in the trial. The initial survey can help in gauging the resident's current recycling habits, how much

glass they believe they place out for collection, container preference and their likelihood of participating in the trial

Residents would be able to send back a hard copy of the survey or complete online. In addition, we will monitor response levels and where response levels are particularly low, complete face-to-face interviews at resident's homes.

A further opportunity to take part in a survey could take place before the end of the trial. The same response methods would be available. This survey would identify whether the container provided was appropriate, whether the collection frequency is appropriate and the challenges and benefits of the scheme as a whole.

2. Participation monitoring

Ongoing participation monitoring will need to take place before, during and after the trial. The teams will be walking the streets in front of the collection crews noting:

- Pre- trial- number of households presenting green recycling bags, number of households presenting general waste
- During and post- trial- number of household presenting green recycling bags, number of households presenting general waste (and whether any additional bags are next to bins) and number of household presenting glass container on a fortnightly basis

Monitoring will need to take place over a 6-week period during the pilot to account for three separate opportunities to present the glass container for collection.

The participation monitoring will be able to determine the amount of glass we collect per participating property. We will be able to apply assumptions across the remainder of the City, to determine the likely amount of glass (by weight and volume) we will need to collect across the City to meet recycling targets.

3. Analysis of material within green bags

Teams will remove green bags from a sample number of properties within each of the trial areas. This will take place before, during and after the trial.

Bags will be taken back to the analysis compound, where the material will be separated into different material types. Initially, this will present the Council with information about how much glass is in the green bags before the trial. We can use this information to help determine how many separate glass containers households will need to contain their glass.

During the initial phase, it will be determined how much glass is still within the green bags, as the crews will not have the opportunity to reject the bags during the collection (analysis team will collect first).

The analysis of the contents within the green bags, and participation monitoring will also determine confidence in residents' responses to surveys e.g. residents state they use the glass collection separate service, but are placing glass into green bags

4. Analysis of end material within MRF

Green bags collected from within the trial areas will be tipped into a separate location within the reception hall. The material will be processed separately to the areas not part of the glass separation trial.

The quality of all end material will be analysed, to determine the effects on quality.

Waste education, communication and enforcement

The pilot will be supported by a wide communication and engagement strategy. Briefly, this will comprise of:

- Community outreach in all areas
- Door knocking in all areas, with particular focus on evenings and weekends
- Consideration of the likely impacts of the trial on all protected characteristics, and mitigation (Equality Impact Assessment attached as Appendix 2)
- Educational support in all areas on recycling collection days
- Information sticker left on green bags containing glass
- Regular social media updates, and responses to queries through social media platforms as well as traditional phone calls/emails/letters
- Leaflet delivered to all properties explaining the change
- Promotion of tours of the MRF to offer a first-hand experience of why glass causes such problems (arranged in advance, limited availability)
- Website updates
- Press release & press call visit to Lamby Way
- Information in local community hubs/libraries/leisure centres

Education will be the initial key focus of the trial for first 3 collection cycles. Any green bags containing glass will be targeted so residents can be given the opportunity to understand what they have done wrong.

Assuming the only contamination is glass; the bags will be returned to the MRF and processed with the bags from the remainder of the City not partaking in the trial.

The remaining three collection cycles may have a stronger enforcement focus. By this stage, householders should be aware of how they now need to present glass for collection. The same process of placing a sticker on the bag will occur. Bags will be removed. However, during the enforcement phase of the campaign where bags remain on the street, the property will receive a Section 46 Notice. This notice legally stipulates the correct way to present recycling and waste for collection.

Operational Arrangements

The service will provide a fortnightly collection service from a box with a netted cover or a lidded caddy (similar to the food caddy). This will be collected by glass only vehicles, to ensure the glass is kept separate from other materials.

Initially the service will pilot an 8am to 8pm collection window, based on two, six hours shifts. This collection pattern will be a new shift pattern, which requires additional new collection teams. The savings achieved from no longer having to process the glass through the MRF will fund the cost the extra vehicle and operatives, and the associated gate fee changes due to the increased quality.

The MRF will require little or no change, as the glass will be bulked separately with no need to be processed through the plant.

Appendix A2- Expansion of the provision of wheeled bins

Following the last wheeled bin roll out in 2015, there now remains a small number of properties that are deemed suitable for wheeled bins, but as yet have not been considered for wheeled expansion.

As wheeled bins provide safer and more robust storage for waste, they are the preferred container for general waste. They protect the waste so reducing issues of litter and pest attacks, so in turn leading to cleaner streets. In addition, they are safer for the operatives and residents to move to and from their property.

Overall, the provision of residual waste wheeled bins is more cost effective than the repeated, 6 monthly delivery of red striped bags. A wheeled bin can last more than 10 years; in the same period, it would cost significantly more to purchase and deliver bags.

There are also significant issues with the bi-annual delivery of red striped bags, which can be reduced by introducing wheeled bins wherever possible.

It is far more sustainable to have a re-useable container for residual waste, rather than single use plastic bags.

Officers carried out a physical, on street review of all properties with a red striped bag collection. The purpose of the review was to determine whether the properties would be suitable for a residual waste wheeled bins.

The general criteria for deciding whether a property should have a residual waste wheeled bin are:

- The property must have storage space within its boundary, which is off the public highway
- The storage space for the wheeled bin should be ground level (or risks appropriately evaluated)
- The implementation of bins will not cause any operational delays (e.g. all bag streets surrounding 1 street of bins)
- At least 80% of the properties within a street are suitable

Public opinion surrounding the aesthetics of bins in the area will not be considered, if all the above criteria are satisfied.

Conservation area status is a consideration; the general purpose of designating a street as a conservation area is to “preserve or enhance the character or appearance of an area”.

However, there is no specific schedule within conservation area legislation which relates to the provision of wheeled bins, so the argument will always be subjective. It can be argued that neatly stored bins can help improve the Local Environmental Quality of an area, by reducing the likelihood of split waste.

With this in mind, streets have been identified as being potentially suitable for wheeled bins. There are **3042** properties that could be changed to wheeled bins within the existing resources available.

A 140L black bin will be delivered as standard, free of charge. Green bins for garden waste may be explored where appropriate.

Replacements of lost/stolen bins will be charged at £25 in the future.

If a property has already been identified as requiring additional red striped bags due to their individual circumstances (very large families for example,) then they will be delivered a larger/additional bin as necessary.

Further discussions will take place with local ward councillors before bin(s) are issued to properties.

Each property to receive the new bin(s) will receive notification of the change, followed by their new bin and information on using them.

Appendix A3 – Minimisation, Education, Reuse and HWRC Recycling

Waste Minimisation

The recycling waste management strategy will seek to explore and enact approaches aimed at limiting the growth of waste collected by the Council.

It must be recognised that the main factors influencing consumer behaviour, and reducing waste at a producer level, are out of the control of Cardiff Council. Wider issues surrounding these challenges are being addressed through national campaigns delivered by Recycle for Wales and WRAP Cymru. The Council will continue to support their initiatives as well as deliver waste minimisation through a number of reuse schemes including the sale of compost bins, student campaigns and reuse at the HWRCs.

Education

Surveys and public engagement continue to show that educating on recycling matters needs to be a continuous process. Over the years, the public awareness and support for recycling is increasing, but more can be done. With each revised strategy, there have been citywide changes. With each change, there is a step change in people's awareness of recycling and the services that the Council offer.

Awareness of recycling goes hand in hand with correct waste presentation and social responsibility. The more people buy into recycling, the less they are likely to incorrectly present waste. By driving up recycling and waste awareness, the opportunities to deliver cleaner streets can be achieved.

Annual communication campaigns will use targeted information from segmentation data, which helps focus the type of messages to deliver in a format that is best received by the audience. The targeted campaigns will produce increased levels of recycling and clean streets, with the support of all media possible, plus the reinforcement through enforcement.

Community engagement is ongoing, through a variety of different formats. Recycling communication officers have spoken to 8000+ residents in 2017/18 through:

- Community outreach sessions
- tours of the Materials Recycling Facilities
- community group talks e.g. WI, refugee centre
- school workshops through the established 'Really Rubbish Campaign'
- targeted campaigns e.g. student volunteer walk arounds
- open days at Lamby Way

We will ensure that our waste education teams, and the community engagement sessions that can be offered, will become increasingly visible within the period of the recycling waste strategy. There will be at least 1 community outreach session per month, at various strategic locations across the City, and at differing times to

accommodate for residents with full time working patterns. The sessions will be advertised at www.keepcardiff tidy.co.uk, as well as listed on social media.

There will also be 1 school talk, and 1 community group talk (where requested) a month at a minimum.

In addition to education from recycling and waste education teams, our partner organisations can offer workshops on the Council's behalf. Viridor Energy from Waste plant have an education centre for schools, and community groups to visit and Dwr Cymru offer school workshops relating to the recycling of food waste.

In addition, teams will proactively target 'mid-performing' areas, with individual area plans which may include:

- door stepping
- leaflet and letter drops
- working with community groups and volunteers
- school talks
- outreach at local hubs/community centres
- engaging hyperlocal social media platforms
- providing information in alternative languages, where required

Where an area plan has identified the requirement for door knocking, consideration will be made as the most appropriate time to complete this exercise. Recent targeted campaigns, including student walk about and a community food waste campaign, have clearly identified that door knocking between traditional '9-5' working hours had a far lower response rate.

The student waste door knock, which took place between 5pm-6.30, had a response rate of 58.8%. In comparison, the day to day door knocks which took place between 10am-2pm had a response rate of 18.9%.

Similarly, the targeted food waste campaign had a response rate of no greater than 30% when completed between 9am-3pm.

This clearly identifies that all communication methods, and campaigns, must be fully evaluated to learn lessons for future interventions.

Communication methods

There are a wide range of methods used to communicate recycling and waste presentation information to our audiences. We still use a range of 'traditional' methods including hard copies of recycling Y/N lists, collection dates calendars, stickers attached to bins, issuing press releases to get information in local papers.

However, the Capital Ambition's commitment to moving towards increased digitalisation means that we are increasingly using electronic methods of communication. These methods are wide reaching, with negligible costs and include:

- core information at www.cardiff.gov.uk/recycling

- schools information, volunteering, recycling news stories and engaging recycling videos at www.keepcardifftidy.co.uk
- full use of social media council accounts on twitter @cardiffcouncil and facebook/Instagram
- Email/text message reminder service (11, 750 subscribers to emails and 8683 to Tidy Text)

Reuse

Towards Zero Waste identifies that Local Authorities should be aiming for a minimum amount of reuse as part of the overall Recycling and Reuse target. The recycling targets are well documented however, based on the overall tonnage collected during 15/16, approx. 1064T of which should have been from reuse.

The re-use performance for Cardiff in 2016/17 was 0.32%, below the recommended reuse targets as documented below:

Year	15-16	19-20	24-25
Minimum levels of preparing for reuse (excluding WEEE)	0.6%	0.8%	1%
<i>Equivalent</i> tonnage based on 15/16 data	1064	1419	1774

In order to address this, Cardiff is exploring opportunities to improve its overall performance.

Benchmarking

An analysis of how Cardiff's re-use rate compares with other Welsh Local Authorities was undertaken (2016/17):

Isle of Anglesey CC	0.00%
Blaenau Gwent CBC	0.10%
Gwynedd Council	0.18%
Vale of Glamorgan Council	0.26%
City and County of Swansea	0.30%
Caerphilly CBC	0.30%
Cardiff Council	0.32%
Carmarthenshire County Council	0.37%
Conwy CBC	0.48%

Monmouthshire CC	0.53%
Neath Port Talbot CBC	0.54%
Rhondda Cynon Taff CBC	0.64%
Pembrokeshire County Council	0.68%
Newport City Council	0.74%
Denbighshire County Council	0.83%
Merthyr Tydfil CBC	0.89%
Bridgend CBC	1.19%
Torfaen CBC	1.26%
Powys County Council	3.10%
Ceredigion County Council	3.90%
Flintshire County Council	16.23%
Wrexham CBC	20.52%

This identifies that 50% of all Welsh Local Authorities are currently falling short of the 0.6% re-use target set by Welsh Government. It is worth noting that Local Authorities with a particularly high re-use percentage are categorising rubble as re-use, which is very heavy by weight. This would be due to how they process this material; in Cardiff, our rubble is recycled.

Current position

The following schemes are already in place for reuse in Cardiff:

- YMCA work with Cardiff Council for the collection of textiles and bric-a-brac, predominantly during the annual 'Get it out for Cardiff' campaign but provide tonnage details throughout the year.
- Cycle Training Wales provide a collection of bikes at the Household Recycling Centres. The collected bikes are either checked, tested and re-sold or stripped for parts.
- British Heart Foundation (BHF) to increase the reuse capture at the Household Recycling Centres (HWRC). In summary, items donated by householders that are considered reusable will be segregated from the recycling streams for collection by BHF. These items will be checked and tested, and where possible sold on for reuse through their local retail units. Items deemed unusable will be returned to the HWRCs for recycling/disposal. In addition, we will promote the BHF as an alternative to our bulky waste collection service for items that can

be re-used. It is hoped that this partnership will deliver a significantly increased amount of reuse to contribute towards overall performance.

Plans

The Council are also looking at other charity groups to work with them on niche materials such as medical aids and tools

Longer term, we will again review the position of having a re-use shop located within the HWRC or alternative buildings. We will stock the shop with item/s from the bulky waste collection and the HWRC. It would be beneficial if the shop could provide training opportunities for upcycling/PACT testing etc.

The shop would need to be located in a position whereby quality stock is available, but also within the vicinity of those who may need the furniture.

Household Waste Recycling Centre – Recycling Improvements

The HWRC recycling performance across the two sites is currently below the 80% target set within the WG Collections Blueprint.

Improvements need to be made across a number of internal areas, which can be summarised as;

- Staff development
- Improved contract management
- Site equipment and layout
- Improved data analysis
- Understanding the composition of residual waste skips, so we can target specific materials
- Increased re-use opportunities for materials that cannot be recycled

Improvements in the above areas will contribute towards increased recycling performance. However, it is ultimately the users of the HWRCs, the residents of Cardiff that the Council need to engage in correctly separating materials before visiting the HWRCs. This can be achieved by:

- A strong 'no unsorted waste' policy, supported by "education stations"
- HWRC site layout clearly advertised, to assist users in loading their car in a logical manner
- Consideration of recycling only HWRCs

Internal improvements

Staff

- A review will take place of the optimum number of staff at HWRCs

- There will be a comprehensive staff training programme. Essentials to include customer care, dealing with conflict, 'meet and greet' skills and awareness of the overall waste strategy for Wales and recycling markets
- There will also be opportunities for further development for operating plant equipment, such as compaction machines, balers
- There will be opportunities to develop Welsh Language skills, to provide an improved experience for Welsh speaking customers
- Consider the benefits of a shift team leader, with additional responsibilities for the day to day running of the operations
- Monthly team briefs sharing performance figures and agreeing action plans
- HWRC staff visits to see other local authority's facilities

Contract Management

Improved contact management, to ensure contracts are being fulfilled e.g. contractors arriving to empty skips at scheduled times, achieving recycling rates offered in tenders, minimise rejected or part rejected loads for contamination

In house ability to exchange skips on site and transfer material to a storage facility, if an external contractor is delayed. Therefore, ensuring skip availability for customers is consistent

Recycling Materials

- Continue to explore new markets for recycling opportunities e.g. polystyrene
- Minimise contamination levels in current containers to maximise recycling and income streams
- Possible charging for DIY wastes e.g. rubble

Best practice research

Use of WRAP HWRC Guide – managing efficient and effective HWRC's, assessing and improving HWRC performance

Rhondda Cynon Taff

Rhondda Cynon Taff implemented a 'no unsorted waste' scheme at their Community Recycling Centre during June 2014.

Their HWRC recycling performance was averaging around 75% before this change was made.

In the year following, their recycling performance was consistently within the high 80-90% peaking at 93.7% in July 2014.

Swansea

Swansea Council has recently won an APSE award, for improvements made to recycling at their HWRC. They achieved this by:

- converting 3 of their HWRCs to 'Recycling only' and bag bans
- prohibiting recyclable items from the residual waste skip at remaining sites
- expanding their current re-use arrangements

Following changes and black bag bans Swansea reports their residual waste reduced by 80% on their HWRCs and recycling increased to over 90%.

Cardiff Proposed Bagged Waste Challenge

Cardiff Council's Household Waste Recycling Centres HWRC's have been working hard to drive up its recycling rates through the introduction of larger more effective sites and contracting additional recycling materials to the end markets. Almost 30 different recycling materials are accepted at the sites.

There is however, still a high level of mixed residual waste that is being received unsorted that currently runs at up to 30% of the incoming arisings.

To achieve and exceed the 80% recycling target for these recycling facilities, we are planning to introduce a Bagged Waste Challenge Policy. This will comprise of an area at Lamby Way and Bessemer close recycling facilities next to the existing residual waste skips.

These "education stations" will be located at the end of the site and will be dedicated to assist residents to sort any bagged waste.

Member of the public bringing black bags or mixed waste in bags will be directed to the sorting tables and will be supported to see if any of their waste could be recycled.

- The bags will be opened with them, the recycling elements identified by the staff and the member of the public demonstrated on what goes where into the appropriate recycling bins provided.
- For further education purposes, supply of recycling green bags, food caddies etc. will also be available
- Clearly marked containers will be available at the sorting station for recyclables to be placed in.
- Once all recycling is removed from the waste the member of the public will be directed to use the residual skip for the remaining items.

Comprehensive training will be issued to all recycling operatives in order for them to support the members of the public who are unwilling to go through this process. Training will focus on customer service, de-escalation, difficult conversations and breakaway skills.

The scheme will only begin after a comprehensive communications and media campaign including the website, Facebook, Twitter, press releases but most importantly flyers/banners and interaction with members of staff on site in the run up to commencement. This will encourage acceptance of the new process and reduce any delays to members of the public using the Challenge area at any one time.

The aim of the scheme is not only to make it easy to recycle, but make it difficult not to recycle.

Appendix A4 – Planning ahead – Infrastructure and Partners

Part 1 - Development of new processing facilities in North of Cardiff (including Household Waste Recycling Centre)

Evidence of requirements and location

1. Currently the city has two fit for purpose sites that remain under capacity, but as the city grows and the complexities and time it takes to develop a new licensed site, work should begin now to plan for the future.
2. The consideration of the third site is based upon providing the correct type of facility in an appropriate, fit for purpose location ahead of the existing sites reaching their current usage capacity. In 2018, the Council provided the required capital allocations to begin this new process.
3. Cardiff has identified several strategic sites for housing development in the LDP. The key areas that would impact on the HWRC usage requirements will be the north of junction 33 development (~2000 dwellings), North West (~5000 dwellings) and the North East (~4500 dwellings) strategic sites, plus large infill sites.
4. While the North East site will be serviced by Lamby way, the Junction 33 and North West sites will place too much pressure on the Bessemer Close facility.
5. Each of these dwellings will produce increased volumes of waste and recycling created for the city to manage. 23% of all waste created from a household will not be collected via the kerbside collection, and will require disposal at a household waste recycling facilities (compositional analysis data- Appendix A6)

Timings

6. Depending on the site, existing infrastructure, environmental impact assessments, planning and permitting, a new site could take 24 to 36 months to deliver.
7. Only after a site is secured can any site investigations begin; this will require 6-12 months transport and environmental impact surveys, prior to planning permission processes. Then, a potential build time and permit application of 12 months depending on the chosen site's existing infrastructure and engineering requirements.

Requirement Conclusion

8. With the anticipated growth of Cardiff, and the need to increase recycling, the Council are taking a longer term strategic view. Therefore, the Council will begin the planning and progressing of a third Household Waste Recycling/Re-

use, and commercial centre, ahead of the current infrastructure becoming over its capacity.

Infrastructure Development

9. The Council will firstly complete a review of all available Council land. Use of available Council land would be beneficial, as there would be no additional capital costs for the initial land purchase.
10. The site will need to be close to residential developments, but not directly within. It must be suitable to comply with all relevant planning and permit requirements.
11. It will be based on the successful, best practice design of the Modulo Beton split level HWRC at Lamby Way. Assuming the land will only house a HWRC, it should be a minimum of 1 hectare (2.5 acres) with ability to hold at least 20 skips.
12. The new HWRC is likely to cost in the region of £2.5 to £3m; The medium term Capital Programme has made an allocation of £3.325m over the next 3 years. The potential of claiming Section 106 monies from the new housing developments to part, or wholly fund the site will be explored.
13. Once a suitable site has been identified, there will be a number of further stages to complete before building work can begin. A number of these stages are time restricted, and will therefore impact on the overall delivery time of the project e.g. some Environmental Impact reports need to be completed at a certain time of year.
14. The Council would anticipate the new HWRC being completed in line with the completion of the new housing development work within the North of the City.



15. Example of a Modulo Beton raised level HWRC at Lamby Way

Part 2 - Development of Additional Material Recycling Facilities (MRF)

16. The current Materials Reclamation Facility (MRF) based at Lamby Way was opened in 2006. It is estimated that along with the remaining life span and the additional waste arisings that will occur as a result of population growth, an updated facility will be required.
17. The footprint of the existing MRF is no longer sufficient; there is a significant lack of storage space for materials at the front reception point and for product storage after sorting. This means that should recycling markets crash, we have little opportunity to store material until the values increase or a new market opens.
18. There may be an opportunity to join with our neighbouring local authorities, to secure a regional sized and funded recycling facility, in a similar arrangement to Prosiect Gwyrdd (residual waste partnership). There is appetite to progress; we are aware that some regional authorities are currently outsourcing their recycling processing to companies that are not within Wales. Far greater economies of scale could be secured by working together. The facility could be located within any of the participating authorities.
19. The size of the facility will be dependent on the number of authorities participating in a joint scheme and their collective incoming recycling tonnages. Cardiff's current MRF has a maximum operational capacity of 51,000 tonnes per annum working over three shifts, with a land area of 1.5 hectare (3.8 acres)
20. A new Cardiff MRF is likely to cost in the region of £15m; a larger regional facility would be based on collective tonnages and dependant on site location and land ownership.
21. The council should also consider the benefits of an additional commercial transfer station and weighbridge. This will allow the Council to receive recycling and waste from businesses, and obtain an additional income. However, the Council must identify the risk of obtaining additional residual waste, and ensure that the waste accepted would not count as additional Municipal Sector Waste (therefore reducing our overall recycling rates).
22. The potential location of the new larger facility will be dependent on the local authorities participating in a potential joint procurement. If Cardiff proceeds alone, the facility would be based within Cardiff.
23. To fully identify the Cardiff and wider regional Recycling Infrastructure opportunities, a feasibility study and Outline Business Case will be required. This will include identifying funding and economic opportunities to co-locate with reprocessing facilities to commence a circular economy for recovered glass, plastics or card to be directly supplied to a company – co-located - to

convert this material into a new product, all within the region. This would stabilise the market and generate an economic gain to the City Region.

Appendix A5: Service Standards

5.1 Current service standards

The below identifies the current service standards. The service standards are considered as a live document; to be reviewed annually, or where there is any change to customer requirements, legislation, working practices, technology or policy.

Area	What we will do:	What we expect from our customer	Service Standards
<p>Recycling and Waste Collections-traditional households</p>	<p>Collect your recycling and household rubbish on your scheduled day, between 6am-10pm in the specific container provided</p> <p>Be polite and courteous at all times</p> <p>Make full use of our in-cab reporting devices, to report on issues of customer concerns, contamination-requiring education support, access problems, incorrect presentation of waste etc.</p> <p>Sticker all containers with the correct address label and bin type. Only containers with the correct label will be collected.</p> <p>Return your containers to where we found them. This will be on the kerbside outside your property, an alternative agreed collection point or within your property boundary if a registered collection has been</p>	<p>To recycle as much as possible in line with our published guidance and education support</p> <p>To present your wheeled bin, dry recycling green bags, re-useable sacks and red striped bags by 6am on your scheduled day of collection and no earlier than 4.30pm the day before. Bring all containers back onto the property by 9am the following day</p> <p>Report any missed collections of your recycling and waste within 48 hours of collection, and not before 10pm on your scheduled collection day</p> <p>Place your containers on the nearest kerbside for collection at the above times, unless an alternative collection point has been agreed</p> <p>Only use the recycling and waste containers provided- failure to do so may result in a Fixed Penalty Notice of</p>	<p>We will return within 5 working days if you report that we have not collected your general waste or garden waste from your individual property, on the scheduled collection day. Vehicle CCTV and trackers are in use.</p> <p>We will attempt to return within 48 hours if we know that we have missed an entire street/round due to a service failure</p> <p>If we miss your hygiene waste, and it's as a result of service failure, we will attempt to recollect within 48 hours</p> <p>If your recycling or food waste is missed, we will</p>

	<p>arranged.</p> <p>Reserve the right to refuse the collection of any waste items that may cause harm or may have an effect on the health and safety of waste collection staff</p> <p>Collect a maximum of 5 re-useable garden sacks/ 2 green-wheeled bins (garden waste) per collection. Unless a recorded exemption is in place.</p> <p>Collect all (non-contaminated) green bags</p> <p>Place stickers onto your recycling or waste, letting you know if we can't collect them e.g. incorrect items</p> <p>Supply you with a roll of green recycling bags, if a re-order indicator is presented on your recycling bag</p> <p>Replace any wheeled bins that are damaged by our refuse collectors free of charge.</p> <p>If you have a front garden, return your re-useable garden sack to your property boundary</p> <p>Advertise, recommend and process all</p>	<p>up to £100 being issued.</p> <p>To not remove or replace your barcode label</p> <p>To leave your waste containers at your property, if you are moving to another address</p> <p>If you have a wheeled bin, all waste must fit inside your bin. Any bags outside your bin will not be collected, and may result in a Fixed Penalty Notice of up to £100 being issued.</p> <p>To make full use of the weekly recycling and food waste services available. To not abuse these services, by placing incorrect material into them to allow you a weekly collection of general waste. This may result in a Fixed Penalty Notice of up to £100 being issued.</p> <p>To maintain the condition of your wheeled bin and containers, and keep them within your property boundary at all times (except during your collection period)</p> <p>Not to compact waste tightly into your wheeled bin. Your waste may not empty into our vehicle. A re-collection would not be arranged</p>	<p>return to collect on your next scheduled collection. We will collect any loose bags outside of your food waste caddy in this instance.</p> <p>We will check the vehicle 360° CCTV cameras and trackers to establish genuine service failures or to investigate customer complaints</p> <p>We will clear up any litter which has been created as a result of waste collection. If there is too much to clear with the equipment available, communicate with our Neighbourhood Service teams to action</p> <p>Regularly stock our collection vehicles with a supplies of replacement green bags- if we run out, we will refer the need to our delivery teams</p> <p>Use in cab devices, to report any wheeled bins</p>
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	<p>applications for hygiene waste collections</p> <p>Offer an alternative collection point for hygiene bags, by agreement of customer and collection team</p> <p>Remove properties from the hygiene service if hygiene bags have not been placed out for 4 consecutive collections.</p> <p>Be polite and courteous at all times</p>	<p>If your wheeled bin, or re-useable garden sack, is too heavy for collection, remove the excess waste before presenting for your next collection. As a guide, your bin should weigh no more than 75KG.</p> <p>To identify your correct collection dates and methods, by looking at all information made available e.g. C2C call centre 029 2087 2087, website, sign up to reminder services, information at Hubs</p> <p>Ensure that no items of a hazardous nature are placed into your recycling and waste bags; consider the health and safety of our crews at all times e.g. wrap sharp objects before placing into your bags</p> <p>To place your hygiene bags kerbside, unless an alternative collection location has been agreed. This must be requested at the time of the initial application.</p> <p>To not put your hygiene bags in any type of container for collection.</p> <p>To put your hygiene waste in Council issue, yellow bags only for collection.</p>	<p>that we have damaged and need repairing or replacing.</p> <p>Replace your wheeled bin within 10 working days. If your black bin is not delivered before your next collection, we will collect bags from your property</p> <p>Investigate all reports of non-collections of hygiene waste, using all resources available.</p> <p>Deliver replacement hygiene bags through your letter box, unless an alternative location is requested. We will deliver as many replacement bags as you put out for collection</p>
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		<p>To securely tie your hygiene bags for collection.</p> <p>To put your hygiene waste into your black bin/red striped bag on the week that hygiene waste is not collected. Hygiene bags should not be used this week</p>	
<p>Recycling and Waste Collections- blocks of flats</p>	<p>Collect your household rubbish on the same day in the specific container provided and clear up any rubbish spilled during the collection. This does not include extra bags of waste or bulky items.</p> <p>The above will happen at the same frequency as traditional household collections, unless other arrangements have been made</p> <p>We will collect and return your containers from an agreed collection point, which should be agreed in the planning and development stage</p>	<p><u>Landlords/developers/property management companies:</u></p> <p>Proactively maintain contact with the waste strategy team when planning any new development/making changes to existing development. This is to ensure:</p> <ul style="list-style-type: none"> • A collection point and collection method is agreed • Your bin store is accessible and safe for our crews to collect from • You have an adequate number of recycling and waste bins for the development • Payment is made for bins and delivery in advance • Recycling/waste bins and 	<p>We will return within 2 working days if you report that we have not collected your communal bins on the scheduled collection day.</p> <p>If additional waste has generated as a result of a non-collection, we will collect any bags outside of your bin.</p> <p>We will check the vehicle CCTV cameras and trackers when all reports of non-collections are</p>

	<p>Provide flat specific information including leaflets, and bin store signage</p> <p>Have a dedicated officer to assist in improving recycling participation, and correct waste presentation, in blocks of flats</p> <p>Replace any communal bins damaged by our refuse collectors free of charge.</p> <p>Provide advice and support during the planning development stage, and any planned remedial works, in relation to the type/number of bins required, access requirement for our crews and collection method statements</p> <p>Offer a sale of recycling and waste containers through our commercial waste team</p> <p>Offer a hygiene collection in blocks of flats</p> <p>Provide supplementary planning guidance, in addition to the accessible information on the Cardiff Council website</p>	<p>information is available for your residents before they move in</p> <ul style="list-style-type: none"> • We have a contact for the development, should any issues arise in the future e.g. contamination issues, lack of bins, health and safety issue identified • Co-operate fully with waste management officers, where Health and safety risks are identified. Meet an officer on site, and ensure remedial works take place to ensure the safe collection for occupiers of the properties <p>Regularly monitor the presentation of waste from your building, to ensure it is compliant with our waste collection requirements e.g. no additional bags outside of the bins. Make arrangements to remedy any incorrect presentation</p> <p>If you choose to buy bins from an alternative supplier, they must meet the Council's specification. If they don't, we do not have to collect your waste until the situation is resolved</p> <p>Allow access to the development between 6am-10pm on the day of collection</p> <p>Further information can be found at</p>	<p>received. We will only return to make a re-collection if the report is found to be genuine</p> <p>We will complete a daily End of Shift report which will identify any reason why we have been unable to collect your recycling or waste. This information will be available to our contact centre</p> <p>We will make every attempt to contact you if we are unable to collect waste due to a Health and Safety issue. We will request a site meeting and offer advice to attempt to reduce the risk of this occurring in the future</p>
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www.cardiff.gov.uk/recycling- follow waste management planning guidance

Residents

- Make full use of the recycling and waste collection schemes available at your block of flats
- Let us know if you think recycling arrangements can be improved at your block of flats
- Follow all recycling and waste presentation guidelines provided
- Responsibly dispose of any bulky waste you have- do not simply leave within your bin store without making collection arrangements

Inform us of the specific collection point for your hygiene bags

Do not place hygiene bags in any container for collection

Ensure full access between 6am-9pm for hygiene bag collection

Inform your concierge/caretaker (if on site) not to place hygiene bags into communal bins

Let us know where we should replace

		your hygiene bags- we are unable to deliver to your front door	
Provision of wheeled bins, food waste liners, green recycling bags, red striped waste bags and food caddies	<p>Provide green recycling bags, free of charge, and in a variety of ways to meet customer needs.</p> <p>Provide food waste liners, free of charge, and in a variety of ways to meet customer needs</p> <p>Provide kitchen and kerbside caddies free of charge, to order online or by calling the C2C contact centre</p> <p>Provide re-useable, garden waste bags for £2 per bag by calling the C2C contact centre (not City wide)</p> <p>Deliver a limited supply of red striped waste bag twice a year, enough to place out up to 3 bags per fortnightly general waste collection (bag areas only). This will be 3 rolls as standard</p> <p>Replace wheeled bins, lost or stolen from a property, for a charge of £25 per bin</p> <p>Identify an appropriate local stockist within each electoral area of Cardiff,</p>	<p>If you are unable to attend a local stockist, to order your recycling and food waste equipment in advance of running out. This will ensure you can still participate in all services available</p> <p>To use all equipment as specified by the Council. Incorrect use may result in a Fixed Penalty Notice of up to £100 being issued</p> <p>Green recycling bags should not be used for any alternative purpose e.g. transporting non-recyclable waste to HWRC/charity shops, used for business waste, used outside of Cardiff</p> <p>Be polite and courteous to staff within our local stockists, who have been asked to implement a control process to allow you a maximum of 2 rolls of bags per visit</p> <p>Let us know if you require an alternative delivery address, where initial delivery has been unsuccessful, or you know you will not be home to receive delivery.</p>	<p>Deliver food waste liners and green recycling bags to all local stockists twice a week.</p> <p>Where demand is consistently high, consider increased deliveries to stockists</p> <p>To deliver the maximum stock of bags that can be held at each stockist, with consideration to available space</p> <p>Deliver all ordered items within 15 working days of the order being received</p> <p>Post rolls of bags through your letterbox, where design allows</p> <p>Leave a delivery note in the following circumstances:</p>

	<p>to allow the collection of a maximum of 2 rolls (1 additional for a neighbour) of green recycling bags and food waste liners per person</p>	<p>Collect your item/s from Lamby Way Depot if we have been unable to deliver after 2 attempts</p>	<ul style="list-style-type: none"> -where we have been unable to deliver item/s - where item/s have been left at an alternative location - where you have paid for the item/s <p>We will deliver wheeled bins to the frontage of your property.</p> <p>We will not leave garden waste sacks on your doorstep. If your letter box allows, they will be posted. Alternatively, you must be home for delivery or provide an alternative delivery address</p> <p>We will not leave red striped waste bags on your doorstep. They will be posted through your letter box. Where no letter box is available, or no access to communal areas can be made, a note of unsuccessful delivery will be made. We will send you a letter to allow you to collect your</p>
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			<p>bags</p> <p>Visit your property twice to attempt delivery of chargeable items</p>
<p>Bulky Waste Collections</p>	<p>Offer a chargeable, bulky waste collection service for items that cannot be recycled.</p> <p>Offer a free bulky waste collection service for items that can be recycled.</p> <p>Work to procure a partnership with a local charity, to further enhance the re-use of bulky items that can be used again</p> <p>We may be able to offer assistance with the removal of your bulky waste, if arrangements are made in advance.</p> <p>Inform our fly-tipping removal teams of all bulky waste collection bookings, to ensure they are not incorrectly assumed as fly-tipped items.</p>	<p>Present your items at an agreed collection point by 6am on the day of collection. This may be within a property boundary, or kerbside</p> <p>Present your items in a clear and accessible location; if they are being collected from within your property boundary, they must be at the nearest point to the highway.</p> <p>Keep all absorbent items dry to facilitate a safe collection e.g. rugs, sofas, mattresses</p> <p>If you no longer require a collection for any reason, you must inform us no later than 3 working days before collection is due to take place. A refund will then be offered</p> <p>Only place out items for collection that have been booked in advance</p> <p>Present your item/s in a safe manner, as instructed by the contact centre and</p>	<p>Collect your items between 6am-9pm on the day of collection</p> <p>If a collection is missed due to service disruption, our contact centre staff will be informed. We will arrange to make a re-collection as soon as possible.</p> <p>We will complete a daily End of Shift report which will identify any reason why we have been unable to collect your bulky waste item.</p> <p>Leave a calling card to advise of any issues with collecting your item/s or confirm item has been collected</p> <p>Aim to offer a collection of</p>

		detailed within our website	your bulky items within 10 working days of the request. This may be extended during periods of high demand, and you will be told of your proposed collection date before you make payment.
Recycling and waste education	<p>Implement and promote campaigns to increase recycling participation across the City.</p> <p>Let you know if your collections will be delayed due to Bank Holidays or inclement weather via our waste apps, website and C2C contact centre</p> <p>Ensure information regarding recycling and waste services is available to the public via a range of communication methods including:</p> <ul style="list-style-type: none"> - outreach sessions - social media e.g. twitter and Facebook - website updates - Leaflets and letters - Advertising <p>Form partnerships with key</p>	<p>Provide us with correct information to enable us to complete our household visits</p> <p>Allow us access to the frontage of your property if requesting a registered collection. Our officers will need to complete a risk assessment</p> <p>Be open and honest when explaining why you need assistance with waste collections, or additional non-recyclable waste capacity.</p> <p>Be polite and courteous to our staff, who are aiming to help and are asked to relay key messages</p> <p>Use your chosen communication reminder method to keep informed of recycling and waste messages/collection</p>	<p>Organise at least 1 outreach session a month, and inform you where we will be via social media and the website www.keepcardifftidy.co.uk</p> <p>Visit you within 10 working days to arrange a registered collection.</p> <p>Process any agreed registered collections by the end of the working day; your assistance will begin between 7-10 days.</p> <p>Visit you within 10 working days to arrange an additional capacity bin assessment.</p>

	<p>stakeholders including student union, local volunteer groups, and charities. This will enable activities such as the student campaign</p> <p>Arrange assessments for residents who may struggle to present waste for collection on the highway- these are known as registered collections</p> <p>Arrange assessments for residents who feel they require additional non-recyclable waste allowance</p> <p>Regularly review all properties signed up for a registered waste collection, to ensure they are still required</p> <p>Complete regular monitoring of the City's participation in recycling schemes using a range of methods to include:</p> <ul style="list-style-type: none"> - desk based data analysis - on street monitoring <p>Produce improvement plans & changes of schemes when considering results of public satisfaction surveys</p> <p>Continue the promotion of recycling and waste minimisation messages for school children, through our Really Rubbish Campaign</p>	<p>days etc.</p> <p>Take personal responsibility to ensure you are participating in all recycling schemes available. Contact us if you require assistance</p> <p>Let us know if you no longer require a registered collection at your address.</p> <p>Respond to registered collection review letters, to let us know if you still require the service.</p>	<p>If any additional/larger bins are required, order these within 24 hours of the visit.</p> <p>Provide basic recycling and waste collection information in the 15 most spoken languages across the City</p>
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Compliments and complaints (use corporate info)	<p>Your feedback helps us to improve our services.</p> <p>If something goes wrong, we need to be able to put it right quickly.</p> <p>If possible, we will take action to ensure it doesn't happen again.</p> <p>We will ensure all compliments receive reach our operational teams, via staff screens in communal areas.</p>	<p>Provide us with feedback via the various contact methods available to you.</p>	<p>Acknowledge your complaint within 5 working days of it being received</p> <p>Aim to resolve your complaint within 20 working days</p> <p>Let you know within the 20 working day period if we think it may take longer to investigate, and keep you informed</p>

5.2 Future considerations- High level options

Garden waste collections

The collection of garden waste from households helps the Council to meet its statutory re-use/recycling and composting targets. However, it is not a statutory function to collect garden waste from households free of charge.

Garden waste collections can prove challenging; there are many variables including:

- seasonal impacts
- differing demands across the City

It has been identified that there are current inefficiencies in our garden waste collections, due to the challenges listed above. It is very difficult to determine demand levels; our refuse collection vehicles service every street, although only one or two properties may present garden waste; although collection frequency is reduced to four weekly between November-March, feedback from customers identifies that there is a large proportion that still require a regular collection until a later date.

The move to a new technology based collection system, with live access from back office function to the vehicle, gives opportunity for alternative service delivery.

This document indicates the options that can be considered, and a high-level analysis of the strengths, weaknesses, opportunities and threats of each.

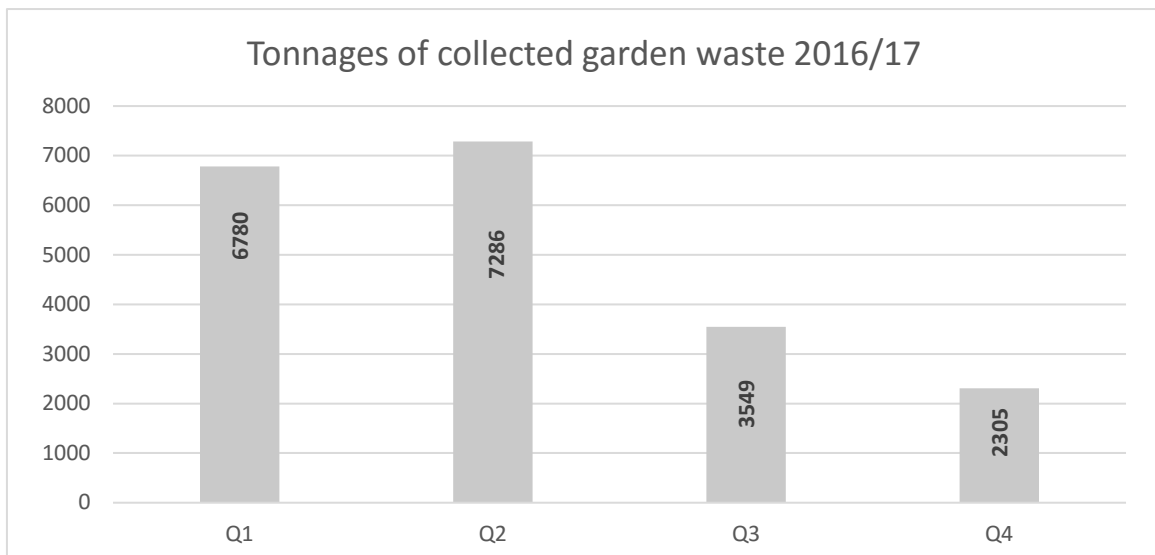
Current position

Garden waste is collected fortnightly between April and October, and monthly between November and March.

Households present garden waste for collection in a 240L green wheeled bin, or a white re-useable sack. The Council specifies which container a household uses. Households may place 2 wheeled bins, or 5 re-useable sacks out for collection as standard.

Wheeled bins are charged at £25, and re-useable sacks at £2 per sack.

In 2016/17, the Council collected 19,919T of garden waste, in the main from households and Household Waste Recycling Centres. Of the amount of garden waste collected, 14,066T were collected between April-September as identified in the graph below:



The tonnages identify a clear demand for the service between April-September. However, despite the amount of waste collected there are still huge variables across the City.

A participation monitoring exercise was completed during April-May 2016. The below table shows the participation rate (the % of properties presenting garden waste once over 3 collection cycles) and the set out rate (the amount of properties presenting garden waste at each opportunity).

	April – May 2016	
Area (sacks or bins)	Participation rate %	Set out rate %
Cathays (s)	3.4	1.7
Heath (b)	77	49
Splott (s)	8.9	4.3
Ely (b)	59.4	31
Grangetown (s&b)	14	7

The same exercise was completed in different areas of the city during the winter of 2017/18 and the results show that participation in the service was low and infrequent.

	October 2017 – January 2018	
Area (sacks or bins)	Participation rate %	Set out rate %
Ely (b)	10.8	4.9
Riverside (s)	41.8	19
Penylan (s)	42.2	19
Rumney (b)	21	7.8
Heath (b)	44.3	21.4

Our Ask Cardiff 2016 survey results have indicated that 81% would consider an opt-in collection service, whereas only 25% would consider a chargeable collection.

Research

An initial research exercise has been completed, to determine the provision of garden waste collections across Wales, and core cities.

Further detailed research will be undertaken with the local authorities, to help steer the preferred method of garden waste collection.

The following Council's charge for garden waste collections:

Authority	Charge	Cost	Method of opt in
Bristol	Y	£32 annually	Ring & collect
Newcastle	Y	£20 annually	Subscription
Sheffield	Y	£55.87 full 15, £47.99 x 9 collections and £37.99 x 5 collections.(2017 price) To be reviewed for 2018	Subscription
Birmingham	Y	£40 annually	Subscription
Denbighshire	Y	£34 / £22 online, annually	Subscription
Pembrokeshire	Y	£48/£43 annually	Subscription
Monmouthshire	Y	£18 annually	Subscription
Ceredigion	Y	£1.20 per bag	Ring & collect
Carmarthenshire	Y	£40.80 / £48 in instalments	Subscription
Conwy	Y	£1.50 per bag, maximum of 6 collected	
Bridgend	Y	£27 / £23 for OAP, annually	Subscription
Swansea	Y	£1.50 per weighted bag, 75p non-weighted	N/A
Flintshire	Y	Only a charge for any additional bins of £24 per bin per annum	N/A
Gwynedd	Y	£33 a year, extra £28 a year per additional bin	Subscription
Powys	Y	£13.56 per roll of sacks	Subscription
Vale of Glamorgan	Y	Bags £2 each	Ring & collect during winter months

Potential options appraisal

1) Charged winter opt-in

Strengths

- As production of garden waste is seasonal and has huge variation in demand across the city (due to housing stock types) – routes can be better rationalised to reflect need in service.
- Potential to scale back low season collections (e.g. Dec – Feb) to zero.
- Gives scope to only visit streets that present garden waste on collection day.

- Customers will have greater autonomy of when to opt in, meeting the need of their own gardening habits.
- Comparatively short sign up windows allows for flexibility of change of customer circumstances.

Weaknesses

- Short opt-in period results in monthly admin to maintain registrations – this is admin for both staff and customers who have to sign up over again.

Opportunities

- Opportunity to build a profile of statistical participation of garden waste collections without the need for resource intensive participation monitoring

Threats

- If opt-in properties cover are small in number but cover a large geographical area, rationalisation will not be achieved.

2) Opt-in on demand winter collections

Strengths

- Existing booking and scheduling model available (bulky waste)
- As collections are reactive to customer requests, route optimisation would have the greatest effect with this model – unless properties are vastly spread out.
- No charge

Weaknesses

- Increased call traffic to the contact centre to register for collections as online infrastructure is not currently available.
- This system would require a huge amount of admin resource.
- Online opt-in infrastructure would be required to ease customer use of the service (the contact centre is available at limited times). This is not yet available – especially if the service incurs a charge

Opportunities

- Opportunity to use in-cab technology to the best of its potential.

Threats

- Threats that customers will stockpile garden waste at home before ordering a collection – this has a detrimental effect on the quality of garden waste material for composting.
- The effort required by resident to request a collection may dissuade them from using the service entirely, resulting in reduced garden waste tonnages.

3) Annual Permits

Strengths

- Minimal admin required to maintain the system of the opt-in options.
- This model will likely to be preferable to residents who consistently use garden waste collections over the winter months. Requesting a collection every two weeks would be irritating to residents who use something regularly.

Weaknesses

- If properties register on an annual basis, route optimisation may not occur, as RCV's will visit addresses whether garden waste is presented or not.
- Ongoing admin required for each property - annual permits
- Process required if customers want to unsubscribe from the service.
- If residents move house but have paid for a permit – it could be transferable to a new property
- Residents will perceive no positive change in service, just a charge for a service they previously received without having to make the effort to sign up.

Opportunities

- Opportunity to rationalise rounds under this model with a high season and low season permit.

Threats

- If permits are to be displayed on a bin, this adds additional complicity to the scheme for the public.

1. Bank Holiday Collections

Cardiff Council currently does not collect waste on bank holidays. This can mean the residents have to place out their waste either one day or two days late, depending on when the bank holiday falls. Each bank holiday the arrangements can change and lead to confusion for residents.

Across local authorities, the growing trend is to collect recycling and waste on bank holiday Mondays. This means less confusion for the resident as there are no changes to their collection services except at Christmas and New Year. This can mean less incorrectly presented waste so in turn provide cleaner streets.

This would also mean a contract change for the work force as well as re-educating the public on their collection days

2. Collection day changes (rebalancing)

Each waste stream has a specific number of properties that can be collected by each vehicle in a shift per day. These rounds build up like a jigsaw to determine what day each ward has their waste collected on, how many vehicles the service requires and the overall cost of the service. By constantly monitoring how these rounds are performing, efficiencies can be improved.

As the city grows, the number of properties on some collection rounds can become imbalanced, meaning increase costs and reduced efficiencies. It is recommended that Authorities' rebalance the collection rounds every 5 to 10 years depending on the level of growth within the authority. The last large scale rebalance in 2012 meant significant changes to the day residents had their recycling and wastes collected. Change is not required currently, but it is anticipated that a further large scale rebalance will be required within the length of this strategy (but this will be subject to the cities growth, as per the LDP).

3. Alternative working patterns for Collection services

Finding an appropriate shift-pattern, which matches the specific needs of the organisation and our customers, is critical. At present, waste management operates a "Double Shift" pattern. Introduced in October of 2009, the double shift pattern offset the cost of introducing weekly food waste collections. Moving to a double shift pattern enabled the new food waste collection service to be delivered to our customers, whilst reducing our overall fleet vehicle requirements and subsequent costs. Effectively this provided a cost neutral increase in services.

At the time other options were explored including "6 day working", 4 on and 4 off" and 7 day working. However, the "Double shift" pattern provided the best financial and operational benefit.

As the city progresses, all options are worth keeping under consideration. The Council will also consider the impacts of alternative working patterns. Some initial research identified that:

- **London Borough of Sutton:** moved to a double shift arrangement, incorporating Saturday into the working week. This contributed £500K to the £1 million saving imposed on service area
- **London Borough of Barnet:** £1.3 million savings delivered through the revision of its mixed organics collection over 6 days rather than 5, Monday-Saturday thus reducing fleet and operatives
- **London Borough of Merton:** Service review resulted in 6 day collections (Monday-Saturday) with operatives working 36 hours over 4 day shift pattern. The reduction in vehicles contributed to the £540K p/annum savings rather than the reduction in staff.

So bearing these case studies in mind and the demands of a capital city environment which include busy streets and congestion; high volumes of on street parking; high seagull population and pest attacks on bags; a 24/7 city economy a high level analysis will be completed.

A re-evaluation of potential options include ;

1. Current - (Double shift over 5 days) 6am to 10pm, Monday to Friday
2. Night Shift - (Single Shift over 5 or 6 days), 7am to 3pm, Monday to Saturday
3. 4 in 6 shift pattern - (Single Shift over 6 days), 7am to 3pm, Monday to Saturday

Further detailed modelling and consultation is required to test whether the current collection arrangements are the best value for the customer and the Council.

Appendix A6- Recycling performance

1. How Cardiff compares with other Welsh local authorities (2016/17) & core Cities

Area	%
Ceredigion	70.1
Wrexham	68.7
Monmouthshire	68.7
Flintshire	68.2
Carmarthenshire	66.2
Isle of Anglesey	65.8
Caerphilly	65.5
Vale of Glamorgan	65.3
Pembrokeshire	65.3
Merthyr Tydfil	65.2
Powys	65.2
Denbighshire	64.7
Rhondda Cynon Taf	64.4
Wales	63.8
Swansea	63.7
Torfaen	63.6
Neath Port Talbot	62.8
Conwy	62.6
Newport	61.4
Gwynedd	61.1
Cardiff	58.1
Bridgend	57.9
Blaenau Gwent	56.8

It should be noted that Cardiff have a high proportion of commercial waste within the waste stream. The majority of the Welsh Authorities do not have the same commercial opportunities as Cardiff or choose to price themselves out of the Commercial market. If Cardiff were to remove the profitable commercial element, the City's overall recycling performance could potentially increase by 4%.

However, as a capital city, Cardiff faces many challenges that other Welsh Authorities do not encounter. To gauge the performance as a capital city a core cities comparison provides an insight on just how well Cardiff performs as a Capital City. The table below outlines performance of the Core cities in Cardiff's comparison group.

Area	Recycling	Residual	Garden	Food	No. of HWRCs	Population* census 2011	No. of houses* census 2011	Surface area	Population Density	Recycling performance 2016/17 (%)
Cardiff	Weekly co-mingled	Fortnightly 140L bins or 3 bags	Green bin fortnightly Monthly in winter	Weekly	3 moving to 2	346,100	142,802	140.3km ²	2,500/km ²	58.1
Edinburgh	Fortnightly kerbside sort Green Bin: textiles, tins cans paper cardboard envelopes plastic bottles, pots, tubs and trays Blue box: glass, batteries, small electrical goods.	Residual 140L Fortnightly	Garden Waste Every 3 weeks	Food waste weekly	3	476,626	230,058	264km ²	1,828/km ²	42.3
Bristol	Kerbside sort Green box; cartons, cardboard, plastic bottles/packaging, cans, foils, aerosols, lids + small WEEE next to box Black box; directories, paper, glass, batteries	Residual 180ltr or up to 3 bags Fortnightly	Chargeable Garden 240ltr bin – fortnightly, buy bags/phone for	Food Weekly	2	428,234	182,747	110km ²	3,892/km ²	43.4

	(put in a small bag), textiles (in an untied bag), shoes, spectacles, engine oil, car batteries (to side of box)		collection (same day as recycling)							
Manchester	<p>Kerbside sort</p> <p>Brown bin glass jars/bottles, plastic bottles, tins & cans, foil and takeaway trays</p> <p>Blue bin/bag; paper, card, food & drink cartons</p> <p>alternate weeks</p>	Residual 120ltr fortnightly	Garden bin	Food if they have room to have a garden bin then food is combined	3	503,127	224,540	115.6km	4,680/km ²	36
Glasgow	<p>Twin stream 140L purple bin; glass. Every 4 weeks</p> <p>Blue bin; paper, tins, cans, plastic bottles, cardboard. Every 2 weeks</p>	Fortnightly-green bin 7 day collection schedule	Brown bin- every 2 weeks (March-November)	Food in garden bin	4	593,245	285,693	149.9km ²	4,023/km ²	26
Newcastle	Fortnightly (alternate to residual) Twin Stream	Residual every 2	Brown bin £20	Food every	3	280,177	128,030	360km ²	2,613/km ²	42

	All Cardiff items, textiles (in separate bag). Black caddy within blue bin for glass bottles & batteries (in separate plastic bag)	weeks	year for collection	2 weeks						
Sheffield	Kerbside sort Fortnightly Blue bin; plastic bottles, glass bottles & jars, cans Blue box; paper & card	Fortnightly alternate week to recycling provided by veolia Student scheme-red sacks provided to students for additional waste, collected between 10 June and 5 July.	Garden £55.87 – full 15 collections £47.99 x 9 and final 5 £37.99	Food into residual	5	539,064	229,928	267.8k m2	1,563/km2	29.6
Liverpool	Fortnightly: Co-mingled blue bin Same contents as Cardiff	Residual some areas weekly, most every 2 weeks	Garden every 2 weeks	Food no collections	2	466,415	206,515	111.8k m2	4,332/km2	28.1

Leeds	Depending on the area some fortnightly, 3 weekly and 4 weekly	Weekly	Only collection s March – November	Same	8	751,485	320,596	551.7k m2	1,416/km ²	37.9
Nottingham	Fortnightly (alternate to residual) Brown bin with grey lid-same materials as Cardiff Orange “survival bags” for properties not suitable for bins	Fortnightly Weekly for residents on orange bags	April - October	Fortnightly	1	305,680	126,131	74.61k m2	4,359/km ²	29.8
Birmingham	Twin stream being rolled out. Blue box; paper, cardboard. Green box; glass, cans, plastic bottles, pots, tubs, food trays and aluminum foil. OR; 240L recycling wheeled bin, inner caddy for paper/cardboard	Weekly-180L bin	£40, £38 on-line or early bird £35 March - Dec	Into residual waste	5	1,073,045	410,736	267.8k m2	4,199/km ²	24.4

2. Recycling Data comparison

The overall recycling rate is based on all MSW tonnages, but it is important to see how each of the elements of MSW build up to form the overall recycling performance.

Kerbside Collections ~ 65% recycling rate

The effects of the move to smaller residual waste containers has seen an increase in the performance of the kerbside collections services. Cardiff out performs many recycling collection services.

HWRC ~70% recycling rate

Investment in new recycling markets e.g. carpets/mattresses, the new Lamby Way recycling centre and additional time and training for site attendants to have a more focussed 'meet and greet' role. Increasing recycling through the education stations at the HWRCs will be one of the main focuses of the new waste strategy 2018 onwards with an aim to reach 80% as set out in Welsh Government's collections blueprint.

Commercial Services ~ 29% recycling rate

The overall recycling performance of the commercial waste department has only slightly increased in recent years. The additional recycling collected can be attributed to more focused recycling efforts, as part of successful tender bids for companies such as Wales Millennium Centre, Principality Stadium and Cardiff and Vale NHS. However, this has also increased the overall amount of waste collected. Significant change is needed here supported by the Environment Act (Wales) Regulations, that are not yet available from Welsh Government.

Street Cleansing ~70% recycling rate

Although the smallest fraction of the MSW stream, the sweepings recycling contributes significantly to the performance of this area. It should be noted that very little recycling is yielded from on-street litter bins (where they are currently located), and flytipping, at a level of 5% recycling. where they are currently located. Although, arrangements are in place to increasingly more-sorting more of flytipping waste, is in place

All of the above tonnages combine to calculate the council overall expected recycling performance in 2017/18 to be 58.1% .

3. Quality of Green Bags Recycling

The analysis of green bags identified that the vast majority of the composition was material that we accept within the kerbside recycling collections.

Although, it is clear that there is confusion from the public and the attempts to recycling; 6.1% of the material could be recycled at a HWRC, and a further 4% in other kerbside collections e.g. food waste, hygiene collection, garden waste.

Target Material in green bags

Summer	Autumn	Average
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Recyclable paper	27.5%	28.2%	27.9%
Glass bottles and jars	21.9%	22.3%	22.1%
Thin card	8.3%	8.5%	8.4%
Plastic bottles	6.9%	6.4%	6.7%
Corrugated card	6.8%	6.3%	6.6%
PTTs (All types excl. black plastic trays)	4.1%	3.4%	3.8%
Ferrous cans and tins	3.7%	3.6%	3.7%
Non Ferrous cans	1.3%	1.1%	1.2%
Ferrous aerosols	0.4%	0.3%	0.4%
Non Ferrous aerosols	0.3%	0.2%	0.3%
Total	81.2%	80.3%	80.8%

Target (HWRC) material in green bags

	Summer	Autumn	Average
Other dense plastic	2.4%	2.4%	2.4%
Drink cartons (Tetra packs)	0.8%	0.7%	0.8%
Glass non-packaging	0.5%	0.7%	0.6%
Other ferrous items	0.4%	0.4%	0.4%
Other electrical items	0.0%	0.7%	0.4%
Clothing	0.2%	0.4%	0.3%
Shoes, bags, belts	0.2%	0.4%	0.3%
Other small electronic items	0.1%	0.4%	0.3%
Other non-combustible	0.2%	0.3%	0.3%
Non clothing textiles	0.1%	0.2%	0.2%
Wood and cork	0.3%	0.0%	0.2%
Other Hazardous Waste	0.0%	0.1%	0.1%
White goods	0.1%	0.0%	0.0%
Batteries	0.1%	0.0%	0.0%
Other large electronic items	0.0%	0.0%	0.0%
Other non-ferrous	0.0%	0.0%	0.0%
Computers and televisions	0.0%	0.0%	0.0%
Mobile phones	0.0%	0.0%	0.0%
Water based paint cans	0.0%	0.0%	0.0%

Other paint cans	0.0%	0.0%	0.0%
Total	5.5%	6.7%	6.1%

Target (other household collections) material

	Summer	Autumn	Average
Absorbent Hygiene Products (for example nappies)	1.2	0.6	1.8
Avoidable food waste (unpackaged)	1.2	0.3	1.5
Unavoidable food waste	0.4	0.1	0.5
Garden waste	0.1	0	0.1
Possibly avoidable food waste	0.1	0	0.1
Total	3	1	4

4. Recycling Found in the General Waste

Only 38.2% of the material contained within the general waste was material that cannot be recycled. 61.8% of the material could be recycled either in the kerbside recycling collection, hygiene/food collection or at the HWRC.

It is clear that there still needs to be increased emphasis on behavioural change, to divert this material from the general waste collection. A sustained approach to increased education, awareness raising campaigns and enforcement for non-compliance will be key.

Target Recyclable (kerbside collections) Material in Residual Waste Sample

	Summer	Autumn	Average
AHPs (hygiene separate collection)	8.7%	16.1%	12.4%
Avoidable food waste (unpackaged)	5.3%	5.6%	5.5%
Recyclable paper	4.6%	3.4%	4.0%
Garden waste	4.1%	1.1%	2.6%
Unavoidable food waste	2.7%	1.9%	2.3%
PTTs (All types excl. black plastic trays)	2.5%	1.8%	2.2%
Thin card	2.5%	1.8%	2.1%
Possibly avoidable food waste	1.2%	2.7%	2.0%
Glass bottles and jars	2.1%	1.2%	1.6%
Plastic bottles	1.4%	0.9%	1.2%
Ferrous cans and tins	0.8%	0.5%	0.7%

Corrugated card	0.6%	0.5%	0.5%
Non Ferrous cans	0.2%	0.1%	0.1%
Ferrous aerosols	0.1%	0.1%	0.1%
Non Ferrous aerosols	0.1%	0.1%	0.1%
Total	36.9%	37.8%	37.3%

Target Recyclable (HWRC) Material in Residual Waste Sample

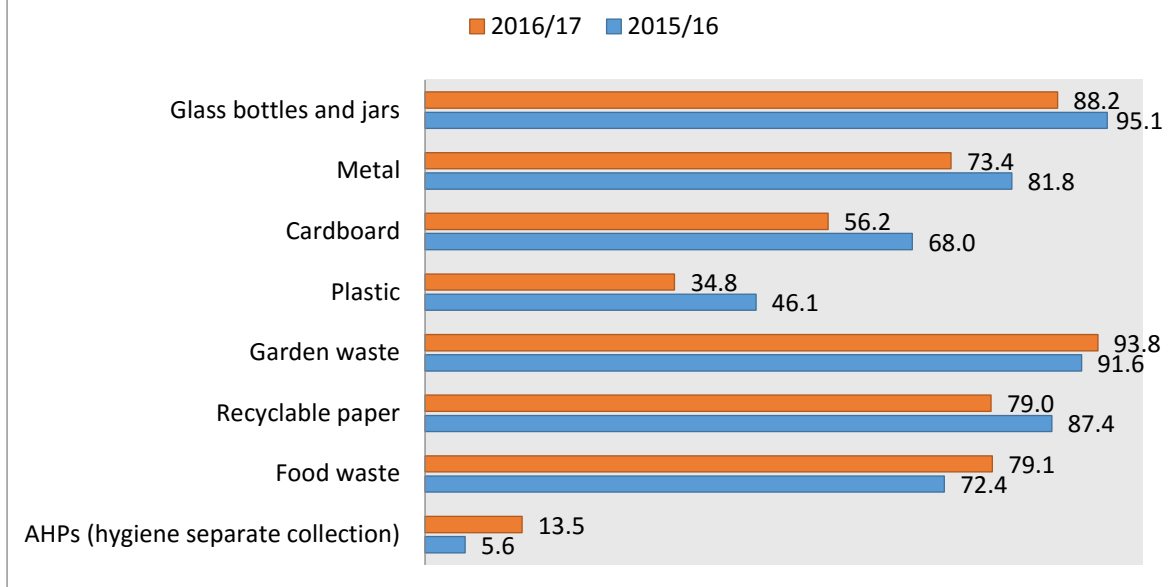
	Summer	Autumn	Average
Other non-combustible (incl.rubble)	6.3%	8.4%	7.4%
Other dense plastic	4.7%	4.5%	4.6%
Clothing	2.4%	2.0%	2.2%
Wood and cork	3.4%	0.6%	2.0%
Shoes, bags, belts	0.9%	2.0%	1.5%
Non clothing textiles	1.9%	0.9%	1.4%
Other electrical items	1.0%	1.2%	1.1%
Other ferrous items	1.0%	0.9%	1.0%
Other Hazardous Waste	0.2%	0.8%	0.5%
Glass non-packaging	0.5%	0.4%	0.5%
Computers and televisions	0.3%	0.4%	0.4%
Other large electronic items	0.5%	0.2%	0.4%
Other small electronic items	0.2%	0.3%	0.3%
Other non-ferrous	0.30%	0.1%	0.2%
Other paint cans	0.4%	0.0%	0.2%
Drink cartons (Tetra packs)	0.1%	0.1%	0.1%
Batteries	0.1%	0.1%	0.1%
White goods	0.0%	0.0%	0.0%
Mobile phones	0.0%	0.0%	0.0%
Water based paint cans	0.0%	0.0%	0.0%
Total	24.2%	22.9%	23.6%

5. Capture rates

The data provided by the compositional analysis research, enabled the Council to identify which material is not being captured to its full potential.

A comparison of the material capture rates (2015/16-2016/17) is below:

Material capture rate comparisons- kerbside collections



The above identifies that members of the public are still placing large amounts of nappies, plastic and cardboard into their general waste collection despite the fact that there are alternative services for these.

However as anticipated, the restriction campaign in 2015 has more than doubled the capture rate of nappies/incontinence waste into the hygiene collection rather than the general waste.

It is also positive to note an increase in the capture of food waste in 2016/17.

It is recognised nationally that plastic is a material that residents are most confused about recycling, due to the differing grades of plastic and conflicting advice on packaging.

It has been estimated that to achieve the 70% recycling target, 90% of residents need to be recycling to their full potential 90% of the time. The compositional analysis, and capture rates data identifies there is lots still to do. There still needs to be increased emphasis on behavioural change, to divert this material from the general waste collection. A sustained approach to increased education, awareness raising campaigns and enforcement for non-compliance will be key.

6. Potential new material to collect from the kerbside

To examine the potential of improving recycling rates in Cardiff, we have examined the recyclable materials that are most prevalent in the kerbside residual waste stream and also potential MRF rejects via composition analysis data – in order to ascertain which materials have the greatest potential effect on recycling rates, if they were to be diverted into the recycling stream.

When combining the observed waste arising of residual composition analysis and recycling composition analysis in 2015, the materials that were most prevalent were textiles (clothing, shoes, bags and non-clothing textiles), WEEE (electrical items and small electronics) and Cartons (tetra-pak style). The table below shows an estimated potential tonnage of how much of each material could have existed in 2016/17 residual tonnage, based on composition analysis proportions.

Potential Kerbside Tonnage yields for textiles, WEEE and Cartons in recycling 2016-17

	Total
Textiles	1602.34
WEEE	482.72
Cartons (tetra packs)	66.08
Grand total all material	2151.13

This concludes that the greatest potential for tonnages is in collection of textiles.

The tonnage shown could also significantly increase as a result of a promoting campaign for the collection of a new material. However it is also important to consider that the other outlets for this type of material in Cardiff are well established, such as charity shop donations or “Cash for Clothes” businesses. Therefore WEEE should not be discounted as electronics could have high potential for capture as the electronic economy becomes increasingly disposable.

7. Overall Recycling Potential

Based on the current tonnages achieved and the composition analysis of what is available the following short summary outlines how 70% can be achieved;

Domestic if an uplift on performance from 64% to 70% is achieved a further ~~6600~~ 6400 tonnes could be recovered. Almost 1000 tonnes could yield from hygiene waste recycling and as identified areas like additional kerbside collections of textiles could yield positive results. The rest of the changes will come from education and influencing habits of residents to recycle correctly and as much as possible.

Commercial has the challenge of increasing recycling whilst improving income. Based on the compositional analysis there is a large proportion of recycling available in the commercial waste streams. If the current level of recycling is increase to ~~58~~ 80% a further ~~60925800~~ tonnes could be recycled.

The next large area of recycling potential is the household waste recycling centres, in achieving the desired target of 80% almost ~~42227700~~ tonnes could be added to the recycling performance. We could also increase by another 1000 tonnes, should other recycling markets become available

Areas like bulky waste, cleansing and fly tipping contribute a smaller proportion of the whole waste stream, but even small changes could yield ~~an additional half a percent~~ an increase in overall performance.

With all step changes in recycling there needs to be consideration of the waste flow changes that will occur if waste is removed from the disposal stream. The energy recovery process used by the Council also contributes to recycling, so less waste through the facility does affect the tonnage balance.

Whilst it is difficult to profile the cities growth and peoples habits on recycling, the review has determined that there is sufficient recyclate still available in the residual streams to achieve 70% or above recycling within the city.