PLYMOUTH CITY COUNCIL

Subject:	Plan for Modernising Waste and Street Services
Committee:	**Place and Corporate Overview and Scrutiny Committee**
Date:	5th October 2016
Cabinet Member:	Councillor Leaves
CMT Member:	Anthony Payne, Strategic Director for Place
Author:	Alison Ward, Senior Policy, Performance and Partnership Advisor
Contact:	Alison.ward@plymouth.gov.uk
Ref:	
Key Decision:	No
Part:	I

Purpose of the report:

As part of the on-going transformation and improvement of Council services, the Plan for the Modernisation of Waste and Street Services describes, at a high level, the current provision of services and the Council's performance. It also highlights the challenges, opportunities and levers for change and identifies basic next steps.

The Plan sets the scene and builds on previous work and will help the Council identify the further improvements that could be made to services to improve performance and deliver savings.

Corporate Plan 2013/14 – 2016/17:

The Council's Corporate Plan includes a commitment for an improved street scene environment. To deliver this the priority actions build on the new administration's manifesto pledge to improve litter on streets, and to address fly-tipping in the city, as well as adopting and implementing this Plan and the delivery programme that accompanies it.

Implications for Medium Term Financial Plan and Resource Implications: Including finance, human, IT and land

The Plan identifies the savings associated with the implementation of Alternate Weekly Collections; however the information is based on the options appraisal carried out for the Council in 2014 and only considers the introduction of AWC in isolation.

Further detailed analysis of the costs is required in order to validate the benefits associated with the proposals and will be included in a detailed business case.

Other Implications: e.g. Child Poverty, Community Safety, Health and Safety, Risk Management and Equality, Diversity and Community Cohesion:

A detailed business case will identify implications in these areas, depending on the options explored.

Recommendations & Reasons for recommended action:

That the Place and Corporate Overview and Scrutiny Committee make recommendations to the Cabinet on the further development of the Plan for Modernising Waste and Street Services.

Alternative options considered and reasons for recommended action:
The options considered were:

1. Maintain the status quo - do nothing
2. Introducing Alternate Weekly Collections
3. Changing all bin sizes to 120 litre instead of 240 litre

Background papers:

Plymouth Waste Strategy Review: Maximising Recycling Options Discussion Paper

AMEC Environment & Infrastructure UK Limited: November 2014

Sign off:

Fin	**AK H16 17.28**	Leg	**DVS 26494**	HR		Corp Prop		IT		Strat Proc	
Originating SMT Member: Lou Hayward											
Have you consulted the Cabinet Member(s) named on the report? Yes / ~~No~~											

PLAN FOR MODERNISING WASTE AND STREET SERVICES

1 Executive Summary

1.1 Creating a cleaner, greener, forward-looking city is part of achieving the overall Plymouth Plan vision that by 2034 Plymouth will be one of Europe's most vibrant waterfront cities where an outstanding quality of life is enjoyed by everyone. As part of this vision, Plymouth's population is set to increase to over 300,000 over the next 20 years, with the number of households projected to exceed 132,000.

1.2 It's imperative that the Council transforms services to keep pace with this population growth, ensuring that the city adopts the highest standards, and the most efficient practices in waste management and street services, to make it an attractive place for people to live, work and visit. We also need to maximize the investments we have already made in our state-of-the-art recycling and energy from waste facilities, and to build on our achievements to date.

1.3 The Council has already started to reshape waste services with the optimization of collection routes early in 2015. This Plan builds on those changes and moves the Council into the next phase of the transformation of waste management and street scene services to create a seamless, sustainable, modern system, in partnership with our residents. The transformation of services is expected to generate savings of around £750k. It will require changes in attitudes and other adjustments, and it's crucial that we recognise the importance of bringing residents and staff with us through this transition.

1.4 Early indications from the recent resident budget engagement survey showed that whilst some people understandably have concerns about the Council making changes to services, for example altering the frequency of waste collections, others are keen to see recycling opportunities expanded and to see more to see more education and awareness-raising.

1.5 Many areas of the country have shown that it is possible to achieve high levels of recycling from the municipal waste stream, and many have used reduced household collection frequencies as a driver for change. However, there is no national one-size solution to optimize waste management solutions. Every area has to adopt the best combination of practices to suit local circumstances.

1.6 In order to implement changes, it's crucial to gain the trust and cooperation of individuals, households and communities. It's also essential to make sure that the Council is flexible and responsive, working with people to help them make the right choices. Strong communications and clear campaigns are important factors, together with consistent awareness and education for all sections of the community and front line staff.

1.7 This Plan sets the scene to enable a fresh look at the next phase of Plymouth's transformation of waste management and street scene services. The next phase will identify a balanced package of measures that will boost recycling rates and deliver efficiencies, starting with the proposed introduction of Alternate Weekly Collections (AWC). AWC was the most effective intervention overall from the range of options appraised in 2014[1], taking into account the potential increase in recycling rates, the cost of introducing it, and the savings it would

[1] AMEC Environment & Infrastructure UK Limited, November 2014

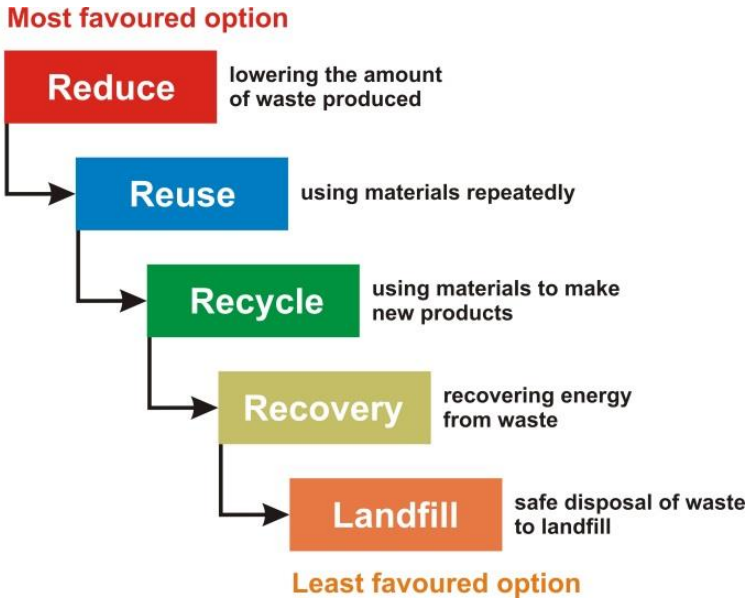
generate. Over 75% of councils across England have now implemented Alternate Weekly Collections and there is a large body of evidence to support its effectiveness.

2 National context

2.1 The EU Waste Framework Directive provides the legislative framework for the collection, transport, recovery and disposal of waste, and includes a common definition of waste. From that Directive the UK Government adopted the Waste (England and Wales) (Amendment) Regulations 2012 which came into force on 1 October 2012.

2.2 From 1 January 2015, waste collection authorities were required to collect waste paper, metal, plastic and glass separately. However, councils are allowed to continue to collect materials in a single 'commingled' stream, if it is possible to demonstrate that separate collections are not 'Technically, Environmentally or Economically Practicable' (TEEP). (Plymouth meets this test and is therefore is covered under this exemption).

The UK's simplified waste hierarchy can be represented by the steps below.



2.3 As part of the Government's drive towards greater harmonisation and consistency in local authority recycling and waste collections, WRAP recently published 'A framework for greater consistency in household recycling for England'.[2] This guidance sets out 3 typical models of waste recycling and collection. The framework is not mandatory but councils are expected to work towards alignment with one of the 3 models. (Appendix 1)

2.4 UK trends show that recycling rates have generally been increasing, but have plateaued over the last few years. Most of this increase has been achieved by encouraging more separation of waste by households, and by varying collection frequencies to incentivise recycling.

2.5 South Oxfordshire District Council currently has the highest national recycling rate at over 67%, however many inner city areas have also achieved impressive rates, including several of the Greater Manchester councils like Stockport and Trafford, both achieving over 60%. There is a great deal of learning that can be extracted from other areas.

[2] http://www.wrap.org.uk/content/consistency

2.6 A further driver for improving how we deal with waste is reducing greenhouse gases and addressing climate change throughout the lifecycle of products, by cutting back on our use of raw materials and manufacturing processes, and by significantly reducing transport movements.

3 Plymouth Plan

3.1 The Plymouth Plan sets the overarching long term vision for the city to 2034 and beyond. The city's ambition is for the population to grow from the current level of 262,172 to over 300,000 by 2034, and for the number of households to rise from 117,432 to circa 132,926 over the same period. Adopting best practice in waste prevention and sustainable waste management practices will contribute to the overall health, wealth and well-being of the City.

3.2 In particular, Policy 27 of the Plymouth Plan, **Minimising Plymouth's Waste**, outlines the city's plans to adopt the most sustainable, whilst feasible and financially viable, solutions to waste management. The Policy sets a target of 50% recycling rate by 2034, and includes a range of initiatives such as the active encouragement of home composting to reduce waste; working with community and voluntary groups and businesses to encourage more recycling; and ensuring that all new developments have adequate facilities for efficient waste storage. Whilst many of these initiatives have already been introduced there is always more that can be done to build on them, responding to changes in Government policy and taking advantage of shifts in societal attitudes and behaviours.

4 Corporate Plan

4.1 The Council's Corporate Plan includes a commitment for an improved street scene environment. To deliver this the priority actions build on the new administration's manifesto pledge to improve litter on streets, and to address fly-tipping in the city, as well as adopting and implementing this Plan and the delivery programme that accompanies it.

Plymouth's Current Waste Services

Waste and Recycling Service Provisions

- Most of the city's 117,423 households are provided with two 240 litre wheeled bins. This includes a **brown bin** for general refuse which is collected weekly, and a **green bin** collected fortnightly for mixed recyclables. Five material types – glass, paper, cardboard, plastics and metals can be deposited in the green bin.
- There is a free city wide seasonal fortnightly kerbside collection of garden waste (except for flats and other properties without gardens). Approximately 5,000 tonnes per year is collected and composted.
- The city has two Household Waste Recycling Centres (HWRCs), Weston Mill and Chelson Meadow. In 2012, Chelson Meadow the larger of the sites was fully reconfigured and redeveloped through a £2.2m investment. This led to an increase in the material received on site being diverted for reuse, recycling and composting from 63% to 80%.
- The Materials Recycling Facility at Chelson Meadow was upgraded in 2015 enabling the kerbside collection of glass, as part of the fortnightly recyclables collection, and increasing the quality and quantity of recycled materials from households and trade sources to over 19,000 tonnes in 2015/16.
- The trade waste collection service provides waste and recycling collections to around 1500 Plymouth businesses, including schools and corporate properties.
- A commercial waste disposal service is available at Chelson Meadow Household Waste and Recycling Centre.
- Bulky waste services for large items over 25kg collect circa 3,600 items per year which amounts to around 510 tonnes. Material is sorted and items recycled where possible.

- Plymouth's Energy from Waste (EfW) Combined Heat and Power Facility came on line in April 2015 to treat residual waste and produce heat and power for the Devonport Naval Base. It is a 'State of the art' high-efficiency residual waste treatment facility. Since being fully commissioned, 99.99% of the waste it processes is diverted from landfill.
- Metals from the incinerator bottom ash (IBA) are recycled, and the remaining IBA is treated and used as an aggregate in the construction industry.

Performance

- In 2015/16 the Council collected 125,295 tonnes of municipal waste - Local Authority Collected Municipal Waste. (LACMW is all the waste collected under the authority's control i.e. waste from households, shops, businesses, schools, charities, churches etc.)
- Of the 125,295tonnes of LACMW, 43.2% was reused, recycled or composted
- 105,000 tonnes of the 125,295 tonnes collected was household waste, of which 32.6% was reused, recycled or composted (national average in England for 2014 was 44.8%, DEFRA)
- Plymouth residents generated 414Kg of waste per head of population (national average for 2014 was 413Kg, DEFRA)
- Plymouth's recycling rate of household waste has remained fairly static since 2007/8, at around 32% - 33%. The introduction of glass into the dry recyclate household kerbside collection scheme in 2014/15 produced an increase of 3%. However, this increase was effectively negated by changes in the national definitions as to what could be included in the data (see next bullet). The latest figures (2015/16) show that Plymouth's household recycling rate is 32.6%.
- A decline in recycling rates was experienced by many authorities in England largely due to the change in classification of Street Sweepings (sent for composting) by DEFRA, moving their classification from household to municipal waste and imposing tighter standards for secondary markets and re-processors.
- Plymouth also experienced a significant decline in the volumes of garden waste sent for composting following the implementation of restrictions at the HWRCs to prevent cross border misuse (use of the HWRCs by non-Plymouth residents). This policy saved the service £16k in 2015/16.

Challenges and Opportunities

Challenges

- Plymouth has a high student and transient population, and areas of the city with high levels of deprivation which are known to reduce the rates of participation in recycling.
- There are significant areas of high density housing, flats and narrow streets which create issues with storage of bins and collection.
- Frequent vehicle movements contribute to traffic congestion, particularly given the layout of much of the city with narrow alleys and lots of shared living accommodation.
- Without intervention, the projected increase in the population and housing numbers could exacerbate these problems.
- There could be resistance and concerns over reduced frequency collections.

Opportunities

- Many households that already recycle believe they do as much as possible under the current regime; however some have indicated that they would be keen to do more.
- Studies elsewhere have shown that at least 60% of household waste can be recycled. ('Resource futures' have been commissioned to undertake a compositional analysis of a sample of Plymouth's household residual waste stream and a recycling participation survey. This is taking place at the end of September 2016.)

- The city has a strong sense of identity and civic pride, as well as a thriving voluntary and community sector that would be likely to actively support local initiatives.
- Plymouth's recycling plant facilities are 'state-of-the-art' and could be further exploited.
- Plymouth's energy from waste facility is one of the most advanced in Europe and delivers exceptional performance in terms of meeting the criteria set out in WRATE. (The Waste and Resources Assessment Tool for the Environment which is an industry standard used to assess the overall impact, looking at factors like contribution to global warming and toxicity to humans and wildlife).

Modernising the service – the approach

Service Review

7.1 A preliminary review of waste management and street services has indicated that modernisation in line with national best practice would:

- enable services to keep pace with the predicted growth in the population
- meet public expectations
- be far more efficient, environmentally sustainable and cost effective.

7.2 A holistic approach to service delivery with increased cross departmental and collaborative working is essential to create the type of impact that will be required to be successful, however the biggest key to success is gaining the trust and cooperation of residents, and making it easy for them to make good choices.

Options appraisal

7.3 Three high level options have been selected for evaluation at this point to demonstrate the impact of do-nothing versus the introduction of AWC or reducing bin sizes. A comprehensive options appraisal will form part of the detailed business case that needs to be developed.

Option Number	Option Description	Impact on Recycling	Cost of introduction/Savings	Other comments
Option 1	Maintain the Status Quo	No impact	No change	Budgets continue to be squeezed as household increase and budget stays the same.
Option 2	Introduced AWC	5% increase in recycling rates diverted from EFW can be as much as 9%	Net benefit £250k 1st year implementation costs of £500k for (£750k) of benefit	This is a full year effect and will need implementation at 1st April for full year savings to be recognised
Option 3	Replace 240L bins with 120L	Up to 3%	NET cost £1.834m Implementation & staffing and storage costs of £2.0m and disposal savings of £0.166.	Substantial set up costs with a small return in increasing recycling

7.4 The options appraisal conducted for the Council by Amec in 2014 showed that from a mixed range of 19 interventions and activities evaluated, Alternate Weekly Collections (AWC - green bin collected one week, and brown bin the next) had the potential to boost recycling rates by up to 9% per annum, and to generate savings in the region of £450K.

7.5 These figures were based purely on implementing the change to AWC in isolation; however the basis of this Plan to set the scene for the wider modernisation of services by looking at a combination of interventions which is expected generate a further £300K of savings. These will need to be identified through the detailed business case to follow; however the move to AWC is proposed as a first step.

7.6 There is strong evidence nationally which clearly demonstrates the correlation between the introduction of Alternate Weekly Collections and increased recycling rates. Over the last 10 years around 75% of councils in England have moved to Alternate Weekly Collections, and there is now a growing trend of councils moving from 2, to 3 weekly collections for general waste and recyclable materials. Oldham Council is one of the latest areas to move to 3 weekly collections, following behind Salford, Rochdale and Bury Councils.[3] Other councils that are in the process of adopting AWC during the autumn of 2016 include Blackburn and Darwin, and Poole Councils.[4]

7.7 Concern is sometimes expressed about switching to less frequent collections of residual waste which includes food waste, citing potential problems with odour, flies and the increased risk of vermin. However, research and evidence from those areas that have been operating reduced frequency waste collections for many years has shown that there is no risk to health or amenity provided that simple precautions are adopted like the double wrapping of large items of food waste, and ensuring that bin lids are kept closed.[5] Councils must also accommodate the needs of individual households where there are special circumstances, for example where there are several children still using nappies, or occupants with health conditions that generate unavoidable waste.

7.8 Based on all the evidence available, implementing AWC will increase Plymouth's recycling rates; reduce collection and disposal costs; and will reduce the council's Carbon footprint by saving an estimated 28 tonnes of CO^2 emissions per annum.

7.9 AWC will need to be part of a balanced package of measures aimed at modernising services over the next few years. These will be evaluated as part of the business case. However there are some actions that we must continue, increase, introduce or explore further, to ensure that this first stage is a success.

7.10 The complementary steps to transforming the service include:

Education, awareness-raising and training

- Being clear about the ambition for the city. Plymouth's aspiration is to become a modern, clean, green city.

[3] http://www.letsrecycle.com/news/latest-news/oldham-approves-three-weekly-waste-collection-scheme/

[4] http://www.poole.gov.uk/environment/recycling-rubbish-waste/refuse-and-recycling-collection-and-disposal/alternate-weekly-collections/

http://www.blackburn.gov.uk/Pages/Alternate-weekly-bin-collections.aspx

[5] http://researchbriefings.files.parliament.uk/documents/SN05988/SN05988.pdf

- Being open and transparent about what happens to separate waste streams to encourage people to recycle more. (Follow the link for an example from Fife[6])
- Supporting and delivering education for schools, including through visits to the EfW where possible.
- Using all available channels to promote messages, including the voluntary sector, community groups and partners such as housing organisations.
- Developing an effective all-encompassing education campaign and high profile media campaign to support changes to services, including using corporate communications and Council staff.
- Developing clear branding and consistent messages.
- Building good relations and a regular dialogue with residents.
- Making sure our customer services staff receive training so that they feel well supported and equipped with the right information.
- Increasing training for front line staff, including possible PACE training for the Waste Liaison team to empower then to tackle more waste and street scene issues. This will augment the numbers of front line staff who can take enforcement action.

Making good choices easier

- Ensuring that bins are clearly marked with what can and can't be put in them.
- Ensuring that households have bins with sufficient capacity for recycling and residual waste.
- Being responsive to customer concerns and requests, to support and incentivise more recycling.
- Providing recycling facilities in busy places across the city so that people don't have to compromise when out and about.
- Making it fun for children to recycle and instilling habits that will last a lifetime.

Monitoring and enforcement

- Adopting clear waste and recycling collection policies to support the effective implementation of AWC and other changes to services, to underpin and strengthen enforcement action where absolutely necessary.
- Increasing enforcement for fly tipping and the mis-presentation of waste and recycling containers and side waste. This will send clear messages regarding what is acceptable.
- Implementing changes to working practices, including increased collaborative working between waste and street scene services with parking and public protection to tackle fly tipping, littering and other waste related issues.
- Using front line workers (i.e. collection crews, street sweeper, parking attendants) as the eyes and ears on the ground, providing information on issues such as fly tipping and gathering evidence to support the issuing of Fixed Penalty Notices and prosecutions.

Innovation

- Learning from the experience of other areas.
- Being receptive to customer feedback and exploring alternative solutions.
- Exploring closer working with our communities, e.g. greater promotion of home composting and looking at the potential for community composting schemes

Next steps

8.1 A detailed business case for the transition to AWC needs to be fully developed, building on the work already undertaken. This should include revised projections on the likely impact on

[6] Fife Council

recycling rates, together with the anticipated costs of implementing the scheme and the cashable benefits expected. The business case should be agreed as soon as practicable and should also include an assessment of other actions that could be explored.

Conclusion

9.1 Plymouth needs to transform waste and street scene services to address the challenges faced now and in the future. The Council needs to modernise services to reduce the overall cost of waste collection and disposal; to aspire to upgrade current practices to match the best nationally; and to prepare for the projected growth in the population.

9.2 Many residents already engage in recycling but there is plenty of scope to increase this with a concerted, well planned programme of engagement and awareness raising, using the shift to AWC as a catalyst.

9.3 The city has invested in state-of-the-art recycling facilities that are currently under-utilised, and an extremely efficient energy from waste plant that means that only around 0.01% of residual waste ends up in landfill.

9.4 We can learn from other areas of the UK, including high density city areas that have achieved impressive levels of recycling and have reduced costs, by listening to and working with residents to make big changes, including moving to less frequent waste collections.

Plymouth Waste Strategy Review: Maximising Recycling Options Discussion Paper

1. Introduction

The review of the Plymouth Waste Strategy, as drafted, puts forward a 'continuation of existing trends' scenario, which reflects the **optimising waste as a resource** solution and forecasts the municipal reuse, recycling, and composting rate baseline as 40% based on existing waste management service provision with no changes or interventions.

The purpose of this discussion paper is to set out what it would mean for Plymouth City Council if it were to adopt a **maximising waste as a resource** solution in order to achieve the highest possible recycling levels and considers options to increase the reuse, recycling, and composting rate to at least 60% by 2031.

2. Discussion Parameters

The parameters for the discussion include:

- Weekly collection of recyclable material;
- Separate collections of other waste streams, i.e. food waste, textiles, etc; and
- Re-enforcing the message to existing Plymouth households of the need to recycle to try and squeeze a bit more recycling out of them.

3. Recycling Options

3.1 Consideration of Recycling Options

Table 3.1 sets out the various recycling options that could be considered in order to achieve higher recycling levels and assesses them in terms of:

- What each option would add, in percentage (%) terms, to the overall recycling rate; and
- What each option could cost or potential cost savings which could be made.

The options listed have been developed in conjunction with Plymouth City Council officers whilst having taken due consideration of the issues raised through both the Scrutiny process and subsequent meetings with Councillors and the Council Leader.

3.2 Influencing Factors

In addition to the options outlined in the Table 3.1 and regardless of which option(s) or combinations thereof chosen, the ability to achieve higher recycling will also be influenced by a number of factors outside of the Council's control. Most notably this includes any existing contractual waste management commitments as well as revisions or future changes to European and/or UK legislation.

Plymouth City Council, as part of the South Devon Waste Partnership, has recently procured the Energy from Waste (EfW) facility at North Yard, Devonport which will become operation in 2015 and manage all residual municipal waste arisings from Plymouth and the other Partnership areas. Furthermore, the Council has recently procured a new strategic Materials Recycling Facility (MRF) to replace the existing MRF at Chelson Meadow, which will become operational in April 2015. It is anticipated that the majority of the strategic MRF capacity would be for the management of Plymouth's municipal waste recyclates.

Recent revisions to national waste policy has raised the importance of the waste hierarchy, i.e. waste minimisation and reuse now have priority over recycling, followed by recovery. Furthermore, changes in the definitions of recycling and the implementation of standards means that what is currently accredited as recycling may not in the near future achieve the necessary standards and become recovery or remain a waste. Although it is difficult to ascertain what the potential impact may be on the recycling rate, it is assumed that any legislative changes are likely to have a positive impact, i.e. likely to increase the availability of recyclate and higher end use of material. If better recyclate recovery is achieved, this would have a positive effect in terms of carbon and environmental impacts.

A further influencing factor is the emergence of waste minimisation initiatives, in particular initiatives relating to producer responsibility (i.e. take back schemes) or 'light weighting' in terms of packaging (i.e. lighter and less packaging and goods). Although such initiatives would seek to reduce carbon and environmental impacts, this would need to be offset against the reduction in material available for capture, which could potentially have a negative impact on the recycling rate.

Table 3.1 Potential Options that will Improve Reuse/Recycling/Composting Rates

Ref	Option	Description/ Outline	Potential Impact on Recycling Rate (%)	Order of Cost/ Income/ Saving (£)	Complexity of Delivery	Impact on Customer	Impact on Carbon Footprint/ Environment
1	Food Waste Collections	Introduce (weekly) doorstep food waste collection service and treat collected food waste in Anaerobic Digestion plant to produce electricity and heat energy as well as fertiliser (i.e. digestate)	10% (~10 000 tpa if citywide) Based on 2007 residual waste analysis. NB: WRAP 2012 research shows food waste has fallen by 18% and evidence suggests it continues to fall. Over the same period PCC has seen a fall of 18% in residual waste. To obtain an up to date assessment would require undertaking a residual waste compositional analysis.	Cost: ~£1m+/annum ~£3.5m in Year 1	New service to set up (1 year +) New contract procurement	New containers inside and outside. Not suitable for all properties. Not universally popular. Potential for fly, odour, rodent and other nuisances.	Marginal compared with high-efficiency EfW. Actual impact would be dependent on collection method chosen, i.e. separate RCVs or modifications to existing RCVs.
2	Weekly Dry Recyclate Kerbside Collections	Increase frequency of kerbside recycling from fortnightly to weekly. Increased opportunity to recycle and raised awareness likely to lead to increased recyclate. Will need support and back-up of clear collection policies and procedures and contamination control measures.	Up to ~3% Based on 2012 Local Authority bench marking and 2007 residual waste analysis.	Cost: ~£517k/annum for additional RCVs + crews. As well as costs to change communication campaign – range £25k - £65k (depending on the range of communications delivered)	Additional RCVs and crews. Need to integrate additional collections with existing infrastructure. Change to Communication campaign. Raised support for collection procedures and contamination monitoring to reduce risks of misuse of green recycling containers. Would need to be agreed with MRF contract provider.	Improved recycling service - likely to be popular with many residents that are keen recyclers and those that find the present fortnightly collection provides insufficient collection capacity to recycle all of their waste dry recyclate. Raised public awareness of recycling and leading to changes in behaviour and attitude to waste.	Increased carbon footprint for the additional collection rounds. Circa 28 tonnes CO2 e/annum. Increased dry recyclate yield reduced residual waste.

Table 3.1 continued Potential Options that will Improve Reuse/Recycling/Composting Rates

Ref	Option	Description/ Outline	Potential Impact on Recycling Rate (%)	Order of Cost/ Income/ Saving (£)	Complexity of Delivery	Impact on Customer	Impact on Carbon Footprint/ Environment
3	Smaller Residual Waste Bins	Reduce residual bin size to 140l and retain 240l for recycling. Continue to provide 240l residual bin for large families and others with the requirement for larger capacity. The reduction in residual bin capacity will stimulate householders to recycle or recycle more (need to ensure this is backed up by clear policies, i.e. not to accept side waste, closed lid and recyclate acceptance enforcement to avoid contamination of the recycling bin. Also to avoid contamination need to ensure that there is sufficient residual bin capacity appropriate to resident's circumstances, i.e. large families, families with small child/children in nappies, adults requiring incontinence pads, etc.	Circa 1.5 - 2 % (once all household bins are changed) Based on residual waste analysis 2007.	Cost: Circa £1.2m to implement Citywide (includes cost of replacement bin, delivery and project management, as well as education campaign) Cost 240l bin £18 140l bin £14	High Cost and onerous to implement citywide, i.e. checking current bin size and allowing for large families etc. Easier to phase in - change residual bin default size to 140l or 180l and reduce cost of future bin purchases. Would need to be communicated to MRF contract provider and could result in contract issues regarding rejects/ contamination.	Limited capacity may create issues for some households, i.e. growing, Christmas, special occasions. Gradual change through the reduction of residual bin default size will potentially have little impact on householders if special requirements are met, i.e. large family larger bin. Potential of 240l bins being stolen by householders unhappy with smaller 140l bins - could cause delivery charge issues.	Not environmentally sound to implement Citywide in one programme but old bins can be recycled to reduce environmental impact. Gradual replacement through natural wastage will reduce environmental impact.

Table 3.1 continued Potential Options that will Improve Reuse/Recycling/Composting Rates

Ref	Option	Description/ Outline	Potential Impact on Recycling Rate (%)	Order of Cost/ Income/ Saving (£)	Complexity of Delivery	Impact on Customer	Impact on Carbon Footprint/ Environment
4	Increased Education/ Awareness Raising Campaigns	Increased education/awareness raising campaigns and/or door stepping, targeting 'hard- to-reach' groups, i.e. students, transient populations, literacy, and language barriers. Reassign a core of street services staff duties to target increased participation, minimise contamination of recycling bins/bags, and the misuse of bins/bags. Important to ensure that every resident has a recycling receptacle and is using them.	~0.2% (Circa 1.8% increase in participation equates to ~268 tpa) Based on actual 2013/14 waste arisings/households and the outcome of the campaign in 2007/8.	Initially staff released from other duties. Potential cost of training.	Will require additional waste and recycling policies and procedures.	Better understanding of waste and recycling scheme enabling improved access and participation.	Reduced environmental impact from increase in recyclate recovery and reduced waste.
5	Enforcement of Collection Policies	Enforcement of collection policies, i.e. no side waste, closed lid to improve street cleanliness via reduced fly tipping, littering, improved service use and efficiency. Back-up education with increased enforcement action through the issuing of fixed penalty notices/prosecutions.	Unknown Difficult to quantify	Difficult to ascertain but costs of additional staff likely to be balanced by reduced costs associated with fly tipping, littering, recycling contamination.	Require additional staff, including PACE trained, to enable enforcement procedures. Inadequate legislation to fully back up enforcement.	Potential PR issues and other problems from lack of co-operation as some residents may object.	Potential benefits from reduced fly tipping, littering and increased recyclate.

Table 3.1 continued Potential Options that will Improve Reuse/Recycling/Composting Rates

Ref	Option	Description/ Outline	Potential Impact on Recycling Rate (%)	Order of Cost/ Income/ Saving (£)	Complexity of Delivery	Impact on Customer	Impact on Carbon Footprint/ Environment
6	Target Additional Recycling Commodities and Working with Third Party Sector	Target additional recycling commodities via the kerbside dry recyclate collection. Work with third party sector - possibility to collect textiles, small Waste Electronic and Electrical Equipment, batteries.	Up to ~2.5% (i.e. from Tetra Paks (~0.5%) and plastic film (~2.0%) combined). Textiles (potentially ~4%) although presently not viable to collect at the kerbside in that it is difficult to keep items clean and suitable for resale/reuse but options to increase collection via bring banks (see Option 6 below). Percentages indicate the total likely available based on 2007 compositional analysis.	Feasible to extract Tetra Paks and some types of plastic film via new MRF but at a Cost – e.g. likely to require re-negotiation of the MRF contract.	Change to communication campaign. Change to MRF contract terms and conditions. Working with 3rd sector requires further work	Tetra Pak and plastic bag recycling collection is likely to be popular with residents. Many households already receive good doorstep textile collection opportunity via charities.	Reduced environmental impact from increase in recyclate recovery and reduced residual waste – textiles high carbon impact
7	Bring/ Recycling Banks	Review and refurbish current bring bank provision. Explore options to extend the range of materials collected at individual sites – i.e. potential to increase textile collection via bring banks has been identified.	0% - 0.25% Possible small gains from hollow vessels; i.e. cans, plastic bottles, glass bottles, and jars. Also improved glass bottle colour segregation making glass suitable for re-melt rather than recovery. ~0.5 - 1% increased textile collection.	Costs circa £70K to refurbish/ improve bring bank facilities. Potential option being explored via working with the third party sector to obtain a small income from textiles. Good quality textiles have high market value at present.	Rotation of skips to ensure service provision to all sites is covered during the refurbishment programme. Officers are currently working with a third party sector organisation(s) to examine ways of working co-operatively to provide further textile collection facilities.	New and refreshed signage will encourage participation and effective usage – better quality recyclate (i.e. easier to sort glass into separate colours). Reduce negative aesthetic impact on the local environment.	Difficult to ascertain impact – likely minimal gain from changes to current bring bank system due to impact of changes in packaging, consumerism, and glass collection at the kerbside (has produced 20% diversion of glass from bottle banks). Likely gains from improved textile collection.

Table 3.1 continued Potential Options that will Improve Reuse/Recycling/Composting Rates

Ref	Option	Description/ Outline	Potential Impact on Recycling Rate (%)	Order of Cost/ Income/ Saving (£)	Complexity of Delivery	Impact on Customer	Impact on Carbon Footprint/ Environment
8	Recycling on the Go	Providing on-street recycling facilities in City Centre, Barbican, and other popular attractions and high footfall areas. Fits with aspirations to be a leading City in Europe – all major cities in the UK and Europe have on-street recycling facilities, albeit for a limited range of materials but at least for cans and plastic bottles. When Waste Services hold road shows, especially in the City Centre and at the University, they are always asked why the Council does not provide such facilities.	At most 1% (i.e. circa 223 tpa from City Centre, Barbican, Hoe based on 60% diversion (Westminster Trial))	Cost £k needs quantifying (purchase of bins)	Provision of additional recycling facilities (i.e. bins) in the City Centre, Barbican, and other popular attractions and high footfall areas. Integrate management of these additional recycling facilities with existing collection infrastructure, i.e. may require separate collection. Need to ensure scheme is sustainable – a trial is recommended. Likely contamination issues may need agreement if recyclate going to new MRF contract.	Although the percentage increase is only 1% at most, the key potential benefits of 'recycling on the go' are much wider: Raised public awareness of recycling leading to changes in behaviour and attitude to waste; Stimulate and enable changes to way of life – so there is a knock-on effect – research shows more opportunities to recycle stimulates people to recycle more; Demonstrates the City's, and moreover the Council's, commitment to recycling and the environment; It is good waste management practice and pushes more material up the waste hierarchy, thus assisting the Council in meeting its legal obligations; **Reinforcement of Civic Pride** provided correct and attractive bins with City logo are installed.	Increased recyclate reduced residual waste.
9	Recycling across all Council premises and buildings	Offer recycling in all municipal buildings including libraries.	Difficulties establishing data	-	Project needs further work	Good PR with public and can be used to influence businesses.	Increased recyclate and reduced residual waste.

Table 3.1 continued Potential Options that will Improve Reuse/Recycling/Composting Rates

Ref	Option	Description/ Outline	Potential Impact on Recycling Rate (%)	Order of Cost/ Income/ Saving (£)	Complexity of Delivery	Impact on Customer	Impact on Carbon Footprint/ Environment
10	Overhaul/ improve recycling facilities to high-rise properties and HMSOs.	Overhaul/ improve recycling facilities to high-rise properties and HMSOs to address poor quality and low level recyclate yields due to absence and/or misuse of recycling facilities. Redesign/improve bin storage facilities, raise promotions and service improvements to recycling in high-rise flats. Includes changes in collection procedures, i.e. lockable lids which crews must access using keys to reduce misuse of bins.	~0.5 - 1% increase	Cost ~£1k per block for bin modifications such as locks and slotted lids. Changes to bin storage facilities high cost but potential to work with housing associations/ landlords to meet/share costs.	Further exploration required. Ensuring crews service the locked bins correctly. Maybe onerous to gain support, particularly funding from housing associations/ landlords.	Gives many occupants the opportunity to recycle as many flats do not currently have recycling facilities. Facilitates effective participation in that many communal recycling bins are poorly marked and misused.	Reduced environmental impact from increase in recyclate recovery and reduced contamination and reduced waste.
11	Embed Recycling Provision for all new Buildings and Developments	Ensure recycling provision is incorporated in all new buildings and developments using planning policies as appropriate.	+ Although difficult to quantify in that it would depend on the number of new developments.	None to PCC Costs will be borne by the developer.	Changes to planning policy.	Will provide access to recycling facilities to all new properties which is not the case at present.	Reduced environmental impact from increase in recyclate recovery and reduced residual waste.

Table 3.1 continued Potential Options that will Improve Reuse/Recycling/Composting Rates

Ref	Option	Description/ Outline	Potential Impact on Recycling Rate (%)	Order of Cost/ Income/ Saving (£)	Complexity of Delivery	Impact on Customer	Impact on Carbon Footprint/ Environment
12	Capture re-use tonnages from charity shops, furniture reuse schemes, etc. Paint reuse/ recycling Resale outlets from HWRC	Work with charity shops and reuse schemes to capture their re-use tonnages (have to engage with the charities and resource to incentivise charities to partake). Officers currently exploring paint reuse project with third party sector organisation.	Potential to capture estimated ~2% but difficult to obtain data from many charities as no incentive/obligation for them to provide this data.	Cost approx. £15k/annum - working with third part sector to minimise staff costs. Reusing HWRC paint would save PCC disposal costs	Efforts to work with charities have found data difficult to obtain and maintaining links with charities needs resourcing. Resale outlet at Weston Mill HWRC not feasible (due to site size) but is possible at Chelson Meadow.	Potential to obtain paint at very low price Community repaint schemes could enhance local environment while encouraging people to become involved in a local community activity thus improving relationships. Resale on site could be popular with residents.	Paint reuse will have significant environmental benefit as it is hazardous waste and has to be disposed of accordingly.
13	Incentive schemes	Reward/ incentivise residents to recycle, e.g. offer vouchers for shopping points or financial donation to charity.	0.25% - ~3% Difficult to ascertain – national research inconclusive and suggests could be zero impact as many residents will already be recycling and incentives need to be the right motivator to stimulate change in recycling behaviour of non-recyclers. Evidence suggests more likely to stimulate those already participating to recycle more than stimulate complete change in behaviour.	Cost varies according to scheme. For example: 'Local Green Points' quote circa £280k to set up individual award recycling scheme. Annual running costs £335k.	Citywide scheme could be costly and difficult to implement and sustain long term. Scheme needs to be set up carefully to ensure effective participation and that the potential of residents recycling non target items or contaminating recyclate to gain more rewards is limited.	Financial benefit from recycling likely to be popular with many residents provided the reward system is easy to use and the benefit deemed of worth. Recommend trial to identify likely impacts.	Difficult to determine may not be any additional recyclate or improved quality yield.

Table 3.1 continued Potential Options that will Improve Reuse/Recycling/Composting Rates

Ref	Option	Description/ Outline	Potential Impact on Recycling Rate (%)	Order of Cost/ Income/ Saving (£)	Complexity of Delivery	Impact on Customer	Impact on Carbon Footprint/ Environment
14	Additional HWRC materials to be recycled	Mattresses (233 tonnes collected in 2009/10 trial) Carpet	~ 0.2% mattresses Carpets – unable to quantify	Cost Circa £250/tonne for mattresses Carpet market not verified.	High cost and lack of sustainable market. Carpet recycling market is in its infancy therefore it is difficult to establish the types of material suitable to recycle.	None Sorted by HWRC operatives	Difficult to ascertain but likely to reduce environmental footprint from recyclate recovery and reduced residual waste.
15	Alternate Weekly Collection	Kerbside recycling collection (green bin) is collected one week, residual waste (brown bin) the next.	Circa 5 - 9% Based on PCC residual waste analysis 2007 as we; as national research (WRAP) which has found up to 9% increase.	Saving ~450k (Saving in reduced RCV numbers + crews. Reduced disposal costs but costs to change communication campaign. Potential increased fly tipping)	Significant change to service which will need effective communication. Additional measures will need to be in place to cover material that will be diverted to the HWRCs/ potential fly tipping. PCC currently tied in to providing weekly residual waste collection until end of 2017 due to MRF DCLG funding - or required to pay back £4million.	Significant change in service provision - may not be popular with residents who dislike having biodegradable wastes hanging around for a fortnight - concerns over flies, unpleasant odours, and vermin.	Reduced carbon footprint for the additional collection rounds. Circa 28 tonnes CO_2 e/annum saving
16	MRF Shift Patterns	Increase the shift patterns at the Chelson Meadow MRF thereby enabling greater throughput at the facility	+ Although difficult to quantify in that it would depend on the shift patterns to be implemented	Cost of additional staff time	Changes to extant planning permission for the MRF may be required.	Creation of additional recycling capacity within the City.	Increased recyclate and reduced residual waste.

Table 3.1 continued Potential Options that will Improve Reuse/Recycling/Composting Rates

Ref	Option	Description/ Outline	Potential Impact on Recycling Rate (%)	Order of Cost/ Income/ Saving (£)	Complexity of Delivery	Impact on Customer	Impact on Carbon Footprint/ Environment
17	Disposal Nappy Recycling	Easily targeted waste stream, i.e. most households using disposal nappies are likely to already dispose of nappies separately before putting in with general waste bin.	+ Difficult to quantify	Cost of additional collection/service and promotion thereof.	New service to set up and promote.	Enhanced collection service.	Difficult to ascertain but likely to reduce environmental footprint from recyclate recovery and reduced residual waste.
18	Charging for Garden Waste Kerbside Collection Service	Replacing the 'free' garden waste seasonal service with a charged service and the provision of wheeled bins instead of reusable bags, possibly as an all year round service.	Fall of circa 3% Based on typical participation rate of similar authorities providing a charged service and 10-15% participation rate	Cost of changes to service provision need to be offset against potential income.	The service would not be equitable as many residents do not use the service, i.e. have no garden, home compost, an estimated 55% of residents participate.	Change in service would have no impact on residents that currently do not participate in kerbside collection service.	Could increase carbon footprint if high number of residents choose to transport garden waste to HWRCs individually, i.e. collective carbon footprint would e higher than provision of free kerbside collection service.
19	Increased Commercial Waste Activities	Increased trade waste activities but need to ensure recycling services is conversely competitive to prevent residual commercial waste rising significantly in comparison to recycling which will reduce Council's municipal recycling rate.	Potential negative impact e.g. In 2013/14 increased residual waste arisings led to a decrease of 0.9% in municipal recycling rate.	Cost of changes to service provision need to be offset against potential income.	Careful balance needs to be made between drive to increase trade waste customers and proportional endeavours to obtain recycling custom to ensure recycling rate is not undermined.		Difficult to ascertain but likely to reduce environmental footprint from recyclate recovery and reduced residual waste.

3.3 Achieving Higher Recycling Levels

To be able to achieve higher recycling levels (including reuse and composting) than the forecast of 40%, a combination of the outlined reuse and recycling options outlined in Table 3.1 would need to be implemented. Furthermore, a distinction needs to be made between, on the one hand what needs to be done to create waste management capacity to handle the amount (i.e. tonnage) of (additional) recycling, and on the other hand, what would need to be done to generate the amount of recycling, such as food waste collections, smaller bins etc.

As set out in the table, many of the options outlined would seemingly only make small increases towards higher recycling rates and their associated costs vary or could potentially be shared with other sectors and/or organisations for example through partnership working. As such, many more of these options would be required in combination to achieve higher recycling rates. Nevertheless, the wider benefits of implementing some of these options may outweigh the smaller increase in recycling rate (e.g. recycling on the go).

Those options which would achieve the more substantial increases in the recycling rate are potentially also the more costly particularly in terms of their logistical requirements, notably the consideration of food waste collections and alternate weekly waste collections which could potentially achieve increases in the recycling rate of 10% and 5-9% respectively.

4. Conclusions

Should Plymouth City Council seek to adopt a **maximising waste as a resource** solution, clear choices will need to be made as to which combination of the options outlined in this paper will need to be implemented to achieve a reuse, recycling, and composting rate of at least 60% by 2031. Each option and the combination of those options will have clear political and financial implications.

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