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Recycling and Waste Strategy 2021-2030



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Why we need a waste strategy

This strategy will set out the steps we are going to take and how we will monitor and measure our progress over the next 10 years.

The council continues to be under financial pressure and the disposal cost of the general waste black bin has increased to £110 per tonne, due to an increase in landfill tax and treatment costs. The strategy will play a key role in diverting recyclable material from landfill or energy from waste to ease financial pressure and preserve natural resources.

Despite achieving one of the highest recycling rates in England in 2019/20 a waste audit carried out in 2019, found that 45% of the average household bin contained recyclable material. Diverting only 25% of the recyclable waste found in the general waste bin could save over £200,000 a year and diverting 100% could save £1.1 million. (See table 3, in appendix seven, for more information on the financial savings as a result of diverting recyclable waste from landfill or energy from waste).

The last recycling and waste strategy set out plans to improve the management of recycling and waste between 2013 and 2017. Since then our progress has been very impressive in such a short period. We now want to set more ambitious targets. It is time to reevaluate our current waste service and seek to improve further where possible and required to do so.



Our Vision

We will be a leading authority in minimising waste and tackling the climate emergency.

We want to change the way we all think about waste. It is a resource to be utilised and value recovered.

We will lead our communities to inspire sustainable actions and provide an open, fair and green service.



North Somerset Council recycling and waste containers presented for collection

Targets

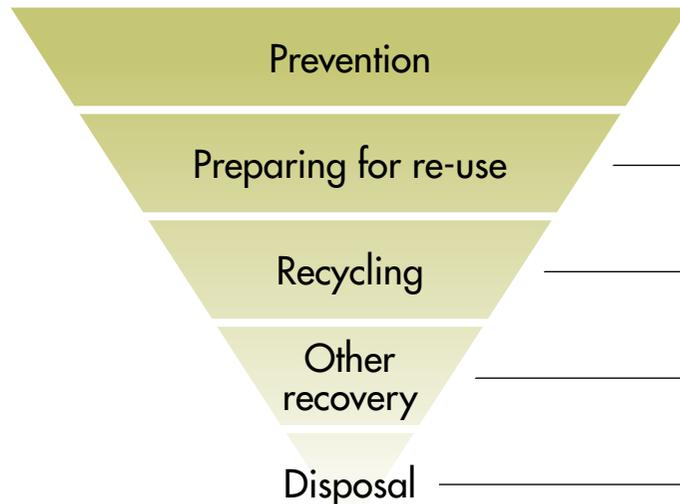
This strategy is focused on working with residents, local community groups, businesses and town and parish councils to contribute towards North Somerset's aim to be carbon neutral by 2030; as well as changing the way we operate our waste services to achieve:

1. a reduction in residual waste (waste that is not recycled or reused) of 15% the level of 2019/20 by 2030
2. a recycling rate of 70% by 2030
3. divert all non-recyclable, kerbside collected household waste away from landfill by end of 2022
4. review and update recycling facilities at all flat blocks and continue to introduce food waste collections in phases in line with the Environment Act 2021 by 2023
5. expand the commercial waste service to serve more businesses, schools and events in North Somerset each year
6. tackle incidents of litter and fly-tipping in North Somerset through improved reporting, increasing education and enforcement activities
7. improved appearance of our streets and open spaces
8. progress towards a circular economy where waste is treated as a valuable resource rather than disposed of.

Key Principle

Our key principle is to reduce waste with minimal environmental impact. We want to follow the waste hierarchy (see diagram) by firstly encouraging waste minimisation and reuse, before recycling and other resource recovery from waste. By following the waste hierarchy, we aim to have a minimal amount of residual waste being disposed of in landfill and will work towards zero waste being sent to landfill.

Stages



Include

- Using less material in design and manufacture. Keeping products for longer; re use. Using less hazardous material
- Checking, cleaning, repairing, refurbishing, whole items or spare parts
- Turning waste into a new substance or product. Includes composting if it meets quality protocols
- Includes anaerobic digestion, incineration with energy recovery, gasification and pyrolysis which produce energy (fuels, heat and power) and materias from waste
- Landfill and incineration without energy recovery

Waste hierarchy. Source: DEFRA, Guidance on applying waste Hierarchy (2011)

Baseline

North Somerset Environment Company, which is wholly owned by North Somerset Council, has been providing the recycling and waste services since March 2021. Prior to this the service was provided by Biffa from March 2017 and by Kier between 2010 and 2017.

In 2005/6 we recycled only 14% of our waste, with 86% going to landfill. By 2019/20 we achieved a recycling rate of 60.6%, with 22.79% going to landfill and 13.73% going to Energy from Waste (EFW).

Figure 1 shows the amount of general waste collected has halved in the past 15 years, from approximately 60,000 tonnes in 2005/6 to approximately 30,000 tonnes in 2019/20. This has been due to the successful introduction of a kerbside recycling service including food waste, garden waste and dry recycling.

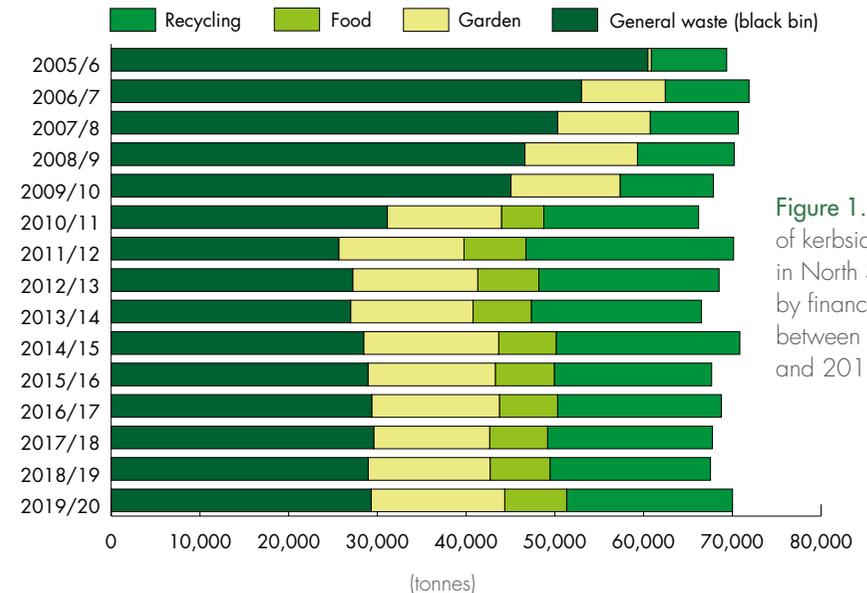


Figure 1. Composition of kerbside collections in North Somerset by financial year between 2005/6 and 2019/20.

This recycling rate placed North Somerset Council 9th, out of 341 local authorities, in the overall recycling performance league table for 2019-20. Highest placed in the South West and second highest unitary authority.

We use the 'kerbside sort' method for collecting recycling. Crews sort the recycling into separate compartments of the vehicle as they collect. This means we are able to filter out contamination at the point of collection. This provides more reliable, quality material to sell for recycling. When total costs are considered, this is cheaper for council tax payers.



West of England Partnership

North Somerset along with Bath and North East Somerset (BaNES), Bristol and South Gloucestershire Councils is committed to sustainable, efficient and cost-effective ways of dealing with the residual waste which cannot be recycled or composted. Within the West of England Partnership, we co-operate to develop a rolling programme of joint waste minimisation education and promotional campaigns to reduce waste, encourage re-use and increase recycling and composting. Figure 2 shows that since 2010 North Somerset Council has had one of the highest household recycling rates within the partnership. However, recycling rates in BaNES and

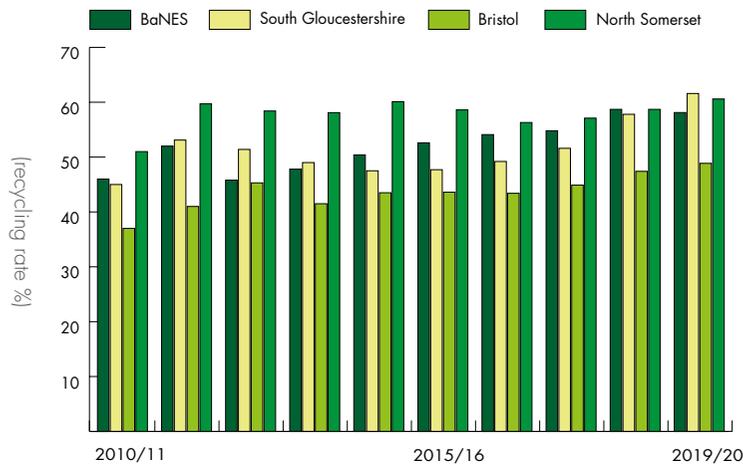


Figure 2. Household recycling rate for the West of England partnership data derived from WasteDataFlow and Defra's statistical department for the period covering the financial year from 2010/11 to 2019/20. The data shows the total household waste recycling, composting and reuse rate for West of England partnership local authorities. NB: * The introduction of smaller 140L bins collected fortnightly, BaNES in 2017/18 and South Gloucestershire 2018/19

South Gloucestershire increased from 2017/18 and 2018/19 respectively, to competitive levels when they reduced the size of the residual bin to 140 litre, compared to the 180 litre residual bin in North Somerset. Figure 3 shows the general waste collected by each local authority has fallen in the past 10 years, there was a slight decrease in the amount of general waste collected from households in BaNES and South Gloucestershire, when they introduced smaller bins, however North Somerset has also matched the reduction, and each local authority produces approximately 400 kg/ household in 2019/20 compared to approximately 525 kg/household in 2010/11

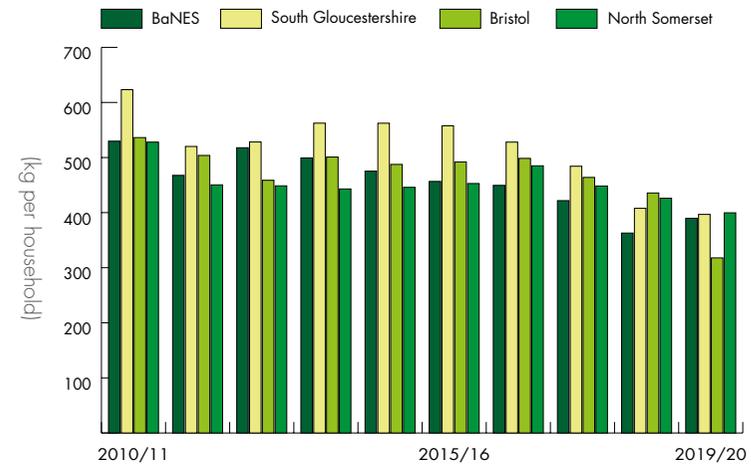


Figure 3. Residual household waste per household for the West of England partnership data derived from WasteDataFlow and Defra's statistical department for the period covering the financial year from 2010/11 to 2019/20. NB: * The introduction of smaller 140L bins collected fortnightly, BaNES in 2017/18 and South Gloucestershire 2018/19. Bristol is yet to submit full details for 2019/20

Our achievements

- In 2019/20 we achieved a recycling rate of 60.6% which has increased from 56% in 2016/17.
- Between 2016/17 and 2019/20 residual waste per household reduced from 485kg per household to 400kg per household.
- Between 2016/17 and 2019/20 there was a 44% reduction in residual waste at recycling centres.
- Implemented an energy from waste contract to divert non-recyclable household waste from landfill and generate electricity.
- Implemented a commercial waste service.

- Introduced the collection of small electrical items (WEEE) at kerbside in 2017/18. North Somerset collect on average between 34-38 tonnes of WEEE from kerbside a year.
- North Somerset is ranked as a High-flyer in Eunomia's Carbon Index. In 2018/19 our carbon index score was 102kg of carbon saved per person. Ranking North Somerset as the 15th best performing local authority in England. (See appendix three for more information).



2016/17

56%
recycling rate

2019/20

60.6%
recycling rate



2016/17

485 kg
per household

2019/20

400 kg
per household

Action plan

Reducing waste

Our consultation on this waste strategy showed that reducing waste was a top three priority for 45% of respondents with 25% ranking it their top priority.

Since 2005/06 we have cut the amount of residual waste collected at kerbside by 48% despite population growth, through improving and building upon the recycling service we offer to residents of North Somerset. However, as a result of the Covid-19 pandemic there was a 7.57% increase in the total volume of residual waste collected in 2020 compared to 2019. See appendix four for more information on the impact of Covid-19 on recycling and waste in North Somerset. Through community engagement and encouraging individuals to opt for low waste and reusable options we hope to continue to reduce the amount of residual waste collected at kerbside.

The volume of waste per household can also be reduced through ~~potential~~ changes to waste collection capacity either by reduced frequency of collections or by reduced capacity within bins provided. See appendices 6 and 7 for more detail.



Aim: Support residents to reduce waste

- Action:**
- Promote and provide advice on how residents reduce their waste.
 - Support plastic free community groups and promote the campaign.

Why? To encourage residents to reduce what they are buying.

Action: Promote reusable nappies through the North Somerset Nappy Scheme.

Why? Each baby will get though 5,000 disposable nappies contributing to the eight million a year disposed of across the UK. Switching to reusable nappies even part time will help reduce waste and save families money.

- Action:**
- Promoting alternatives to single-use items (i.e. plastic bags, wet wipes, drink bottles, coffee cups, straws, reusable period products).
 - Promote refill options: Promote local refill/zero waste shops, work with 'City to Sea' to encourage local businesses and cafes to create refill water points.

Why? Reduce single-use items and promote alternatives.

Supports target: (1) A reduction in residual waste of 15% the level of 2019/20 by 2030.
(8) Progress towards a circular economy.

Aim: To reduce waste in black bins

Action: Set up trials of three weekly collection frequencies in two or three different small areas and monitor by end of 2024.

Why:

- Reducing capacity for non-recyclable has been shown to increase recycling rate of both dry materials and food waste in other local authorities.
- Cost saving efficiencies
- Reduction in emissions contributing to action on the climate emergency.

Supports target: (1) A reduction in residual waste of 15% the level of 2019/20 by 2030.
(8) Progress towards a circular economy.



Reuse

Re-using something, either for its original function or a different one, preserves resources, reduces waste and supports a circular economy. Reuse also creates social value and brings communities together. North Somerset Council have worked with Changing Lives to divert some reusable items taken to recycling centres. Information about Changing Lives can be found in appendix five.

Reuse has been impacted by the pandemic and capacity to collect reusable items was already limited. To increase reuse we will develop a reuse strategy which supports the aims and actions within this strategy.

Aim: Encourage and promote re-use of unwanted items

- Action:**
- Work with existing groups to establish a reuse network within North Somerset, supported by the council.
 - Promote workshops and council run reuse events to provide education for reuse and skill learning, upcycling, care & repair such as bike repair schemes or wood recycling projects.
 - Collaborations with repair groups, charity organisations and housing associations through supplying furniture or items for re-use.

- Why?**
- To promote re-use and reduce waste.
 - Support community reuse.

Action: Open re-use or repair shop.

Why? Further demonstrate, support and promote the value of re-use.

Action: Launch or promote a re-paint scheme with community re-paint and Resource Futures.

Why? Divert waste from landfill to reuse.

Supports target: (1) A reduction in residual waste of 15% the level of 2019/20 by 2030.
(8) Progress towards a circular economy



Recycling

North Somerset achieved a recycling rate of 60.6% in 2019/20 (percentage of household waste sent for reuse, recycling or composting), and 58.7% in 2018/19 which ranked us 9th out of 345 local authorities in England. Our recycling target is to reach 70% by 2030, which exceeds targets set by the UK Government for England to achieve a recycling rate of 65% by 2035. The 2021 strategy consultation showed that 62% of respondents said increasing recycling was one of their top three priorities. 23% of all respondents to the question said it's their top priority.

Due to the Covid-19 pandemic the volume of dry recycling and food waste collected at kerbside increased by 20% between 2019 and 2020. We will continue to promote the waste hierarchy over disposable and encourage reduce and reuse over recycling where possible. See appendix four for more information about the impact of the pandemic on recycling and waste in North Somerset.

Divert recycling from household black bins

Despite an increase in housing numbers in North Somerset the total amount of household residual waste declined from approximately 42,770 tonnes in 2017/18 to 41,000 tonnes in 2018/19 and to 38,700 tonnes in 2019/20. This means that the average household produces 400kg of residual waste, which is 30kg less than the year before, and 48kg less than the year before that.

While there has been a decline in the average amount of residual waste presented by each household the 2019 waste audit in Figure 4 shows us that we have more to do to divert recyclable waste from the black bin into recycling. Just under half (45%) of the average household bin in the 2019 waste audit contained materials/items that could easily be recycled through the kerbside collection service. The most recyclable waste in the average household residual bin was food waste at 27%.



Figure 4. Results of 2019 waste audit across 250 households in North Somerset.

Diverting food waste

In North Somerset food waste is collected and processed through anaerobic digestion (AD) to generate electricity and make compost. Anaerobic digestion is the breakdown of organic material by micro-organisms in the absence of oxygen which produces a methane-rich biogas that is used as a fuel. The left over 'digestate' is a valuable source of nutrients, used as a non-chemical fertiliser.

As shown in Figure 5, food waste recycling tonnage in North Somerset has increased from 6,747 tonnes in 2018/19 to 6,980 tonnes in 2019/20. This increase of 3.5% can be attributed to a high rate of participation due to increased publicity both locally and nationally together with fortnightly refuse collections and weekly food waste collections.

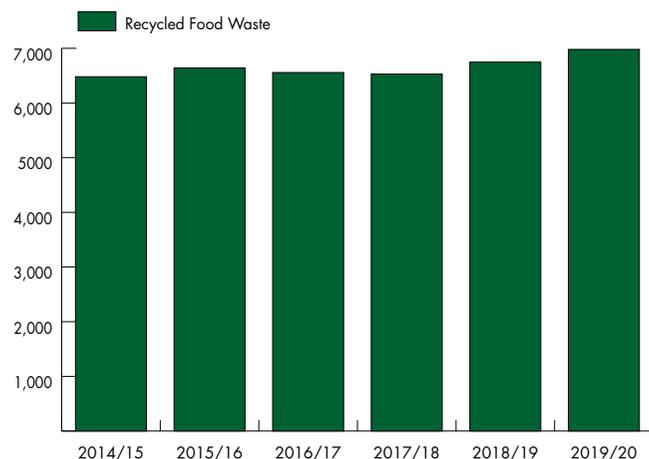


Figure 5. Tonnes of food waste recycled through the kerbside collection service by financial year since 2014/15.



Anaerobic Digestion plant in Weston-super-Mare

Aim: Reduce food waste in residual bin

Action: Continue to promote and provide containers for weekly food waste collections.

Why? To increase awareness and engagement of the service.

Action: Communicate information and advice to residents to help reduce food waste in line with national campaigns such as Love Food Hate Waste.

Why? To increase awareness of food waste and reduce avoidable food waste

Supports target: (1) A reduction in residual waste of 15% the level of 2019/20 by 2030.

(2) A recycling rate of 70% by 2030.



Aim: Improve recycling in flats

Action: Work in partnership with resident groups and managing agents.

Why? To help encourage recycling and ensure the facilities are suitable for the building.

Action: Roll out of food waste collections.

Why? To divert from residual waste.

Action: Improve recycling facilities with better signage.

Why? To promote recycling and make it easier to recycle.

Supports target: (1) A reduction in residual waste of 15% the level of 2019/20 by 2030.
 (2) A recycling rate of 70% by 2030
 (4) Review and update recycling facilities at all flat blocks and continue to introduce food waste collections in phases in line with the Environment Act 2021 by 2023.

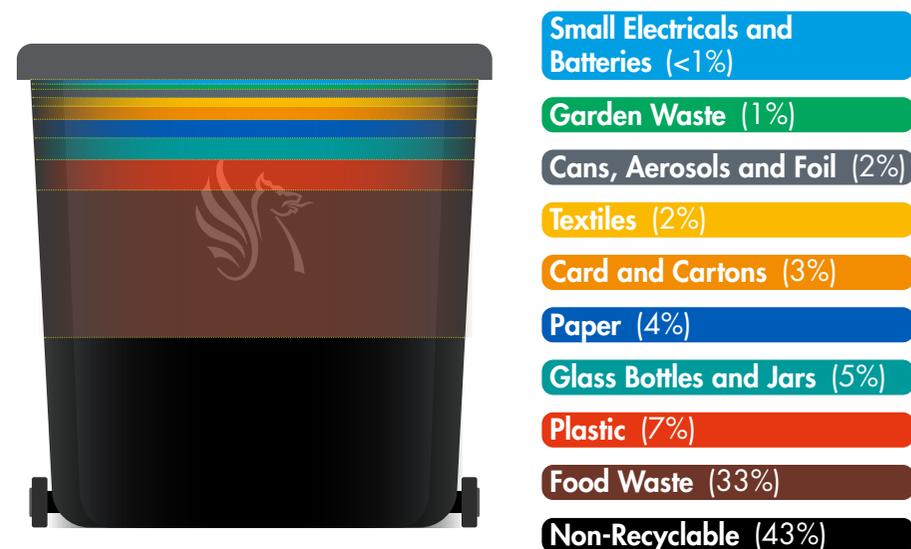
Improving the recycling service in flats

The results of the 2019 waste audit, as shown in Figure 6, show that 54% of the average residual bin in a block of flats is recyclable. The largest proportion comes from food waste, at 33%, which is currently not collected for recycling from the majority of flats.

A successful roll out food waste recycling in flats would lead to offering a food waste recycling service to all 21,114 flats in North Somerset. Offering food waste recycling to flats was supported by 95% of respondents to the 2021 consultation.

To reduce the amount of food waste disposed of in the residual bin and increase recycling we will aim to improve recycling facilities and education to encourage recycling. We will also work in partnership with managing agents and resident groups to ensure the facilities are suitable for the building and used effectively.

Figure 6. Results of 2019 flat waste audit across 11 blocks of flats (163 households) in North Somerset.



Composting

Improving the way that waste is collected and handled is vital to achieving a carbon neutral society. Changing the way that we deal with garden waste has a key role to play.

To promote the waste hierarchy, we will aim to encourage residents to compost their garden waste either individually or as a community, and use their own compost on their garden, creating a circular economy within a household. Composting at home for just one year can save greenhouse gases equivalent to all the carbon dioxide your kettle produces annually. It therefore has the potential to reduce our carbon footprint in the recycling and waste sector significantly and contribute towards a net zero carbon local authority.

By encouraging residents to compost instead of signing up for the council's chargeable collection service, this should reduce the number of properties to collect from and allow the number of collection routes to be reduced. This will reduce the number of vehicles on the road and reduce carbon emissions associated with transport.

Composting received good levels of support in the 2021 consultation. 88% of respondents either agreed or strongly agreed with supporting community composting. 80% supporting discounting compost bins, 75% supporting webinars and providing information and 66% supporting attending events.

Cold composter in garden



Aim: Promote composting

- Action:**
- Provide discounted compost bins.
 - Provide free online webinars and workshops to support efficient home composting.
 - Encourage home composting through attending local events.
 - Provide information on home composting through social media and leaflets.
 - Support local community composting sites.

Why? Encourage local composting of garden waste at home and in communities.

Supports target: (8) Progress towards a circular economy

Communications

Finding the correct range of communications is key to engaging all stakeholders in North Somerset. To achieve the targets in this strategy we will utilise a wide range of communications including targeted education.

Aim: Improve engagement and participation

Action: Target communication material to address: contamination, unsorted recycling, low participation.

Why? Gives residents the information and confidence to recycle more.

Action: Door knocking to support individual households.

Why? Provides face to face supports and gives residents opportunities to ask questions.

Action: Continue to grow North Somerset's recycling and waste social media pages

Why? To reach a large proportion of residents daily and engage in reducing waste and provide recycling information.

Action: Increase use of email as a method of communication to residents.

Why? Email is a cheap method of communication and is a waste-free compared to leaflets. This was suggested by respondents to the consultation.

Supports target: (1) A reduction in residual waste of 15% the level of 2019/20 by 2030.
(2) A recycling rate of 70% by 2030.
(8) Progress towards a circular economy.



The range of ways we currently offer service information to residents and other stakeholders.

- Leaflets
- Website
- North Somerset social media pages (facebook: nsrecyclingandwaste; twitter: ns_recycling)
- North Somerset Life (the council's magazine)
- North Somerset Digital Digest (monthly emailed updates)
- Information stickers/hangers on wheelie bins

The collage features several key documents:

- Changes to the Garden Waste Service:** Announces a new annual charge of £50 per bin from April 2021 and provides sign-up details.
- Composting:** Promotes home composting as a cost-effective and eco-friendly option, offering e-learning courses and community sessions.
- Recycling and waste services:** Details collection schedules, charges, and rules for recycling bins.
- Changes coming to garden waste collections:** Explains the transition to a new service and provides information on what to do next.
- Could you compost?:** Offers guidance on home composting, including bin types and collection methods.
- Recycling and waste in the pandemic:** Provides safety advice for recycling and waste collection during COVID-19.
- LIFE digital digest:** A monthly emailed update featuring local news and council services.

Commercial Waste Service

North Somerset Council offers a commercial waste service to local businesses and schools. As of March 2021 the service had 282 customers, this has grown substantially from approximately 50 customers in 2016/17. We aim to continue to increase the number of local businesses, schools and events registered for the service.

By offering commercial food waste collections we will increase the amount of food waste collected for recycling. This will help reduce food waste ending up in commercial non-recyclable waste bins therefore decreasing methane emissions and increasing green energy created from the anaerobic digestion process in North Somerset.

By targeting customers on existing food waste collection routes we can expand the commercial food waste collection efficiently and avoid unnecessary increases in emissions from transport and costs of collections.

Aim: Expand commercial waste service

Action: Promote recycling and waste collections from local businesses and one-off events.

Why? Encourages correct disposal of commercial waste efficiently.

Action: Increase food waste recycling collections.

Why? Encourage local schools to businesses to recycle food waste.

Supports target: Expand the commercial waste service to serve more businesses, schools and events in North Somerset each year.



Enforcement and Tackling Environmental Crime

Tackling environmental crime was seen as a top three priority by 57% of respondents to the 2021 consultation.

In particular littering and fly-tipping is an area of the service which stakeholders feel very strongly about.



Tackling littering

We have identified areas where large amounts of litter are dropped. These include main roads, the town centres and the beaches. To address the litter problem the council is undertaking education and enforcement action.

Between April 2021- May 2022 Enforcement activities have been outsourced to Local Authority Support, including issuing fixed penalty notices (FPNs) for a range of environmental crimes such as littering. Once this initial 1-year contract period ends we will look at options.

Aim: Reduce litter

- Action:**
- Install signs to warn people of the potential fine they could receive for dropping litter to discourage people from doing it.
 - Employ enforcement officers to patrol.
- Why?**
- To deter people from dropping litter and not pick up after their dog.
 - Engage with communities and raise awareness.

Supports target: Tackle incidents of litter and fly-tipping in north somerset through improved reporting, increasing education and enforcement activities.

Tackling fly-tipping

Everyone has a duty of care for the responsible disposal of their waste and those who allow it to be fly tipped in North Somerset should expect to be caught and fined or prosecuted.

All incidents of fly tipping in North Somerset are fully investigated. An investigation must take place to give a suspected offender the opportunity to be formally interviewed, explain their actions and raise any defences.

A consistent and clear message must be delivered at a local level to influence the behaviour change that we need to achieve our vision.

Aim: Reduce fly-tipping

Action: Campaign on householder duty of care and business duty of care.

Why? To ensure residents carry out duty of care.

Action: Increase the number of Duty of Care checks on businesses.

Why? To ensure waste is being managed legally.

Action: Create a council approved waste collector scheme that the public can use to ensure they are fulfilling their Duty of Care.

Why? To ensure residents can check their waste is responsibly disposed of.

Action: Use social media to raise awareness of issues of waste crime.

Why? To show the environmental damage caused by waste crime.

Action: Work towards getting better outcomes from investigations.

Why? To successfully prosecute offenders.

Action: Install cameras around fly-tipping hotspots.

Why? To capture evidence of waste crime.

Action: Improve reporting of fly-tipping across the whole district.

Why? To make reporting a fly-tip easier.

Supports target: Tackle incidents of litter and fly-tipping in north somerset through improved reporting, increasing education and enforcement activities.

More detailed information on how North Somerset Council will aim to tackle littering and fly tipping will be available in the enforcement strategy.

Street Cleansing

North Somerset street cleansing contract has been run by Glendale since 2013, they provide services from emptying litter bins, the removal of sand and leaves from roads and general street cleansing. Over 3,700 tonnes of mechanical street cleansing arisings, 500 tonnes of leaves during leaf fall season and 150 tonnes of beach tide waste was recycled. This has contributed to a recycling rate of 77.38% in 2019/20.

Aim: Clean and safe streets and open spaces within North Somerset

- | | |
|----------------|--|
| Action: | Review litter bin locations and types. |
| Why? | To make litter bin collections efficient and make sure bins are placed for best use by the public. |
| Action: | Work with town and parish councils to improve street scene. |
| Why? | To improve efficiencies, use resources more effectively and empower town and parish councils. |
| Action: | Plan education events. |
| Why? | Engage with communities and raise awareness. |
| Action: | Monitor trends to identify problem areas. |
| Why? | To focus time and attention. |

Action: Increase uptake in our Adopt-a-Street voluntary litter picking scheme.

Why? To support local voluntary community groups.

Action: Continue to ensure that all areas used for events are back to Grade A standard as set out under the code of practice for litter (Environmental Protection Act 1990).

Why? To remove litter from the environment after events to a high standard.



Supports target: (7) Improve the appearance of our streets and open spaces.

'On the go' Recycling

'On the go' recycling is a method of collecting waste material for recycling when people are out and about. North Somerset Council does not currently offer an on-street recycling service but has the potential to target North Somerset's 'on the go' society which includes tourists, visitors and commuters into town centres. See appendix eight for more information.

Household Waste Recycling Centre (HWRC)

There are three recycling centres across North Somerset in Weston-super-Mare, Portishead and Backwell. The recycling centres offer residents of North Somerset the ability to dispose of items that cannot be collected at kerbside due to the size or volume.

Our centres accept all materials collected from kerbside collection except food waste. They also accept: books, bric-a-brac, bicycles, car batteries, cooking oil, electrical and electronic equipment, engine oil, fluorescent tubes, fridges and freezers, furniture, garden waste, household and garden chemicals, ink cartridges, lightbulbs, mobile phones, paint, scrap metal, tapes and discs, textiles (must be bagged), TVs and monitors, washing machines and tumble dryers, wood and timber, hard plastics. They also accept construction waste for a charge.

As shown in Figure 7, since 2011/12 the amount of residual waste disposed of at a recycling centre has declined from over 12,000 tonnes to 8,600 tonnes in 2019/20. To continue to reduce residual waste we will look to further improve our three recycling centres and encourage re-use and recycling over disposal.



Weston-super-Mare
Household Waste Recycling Centre

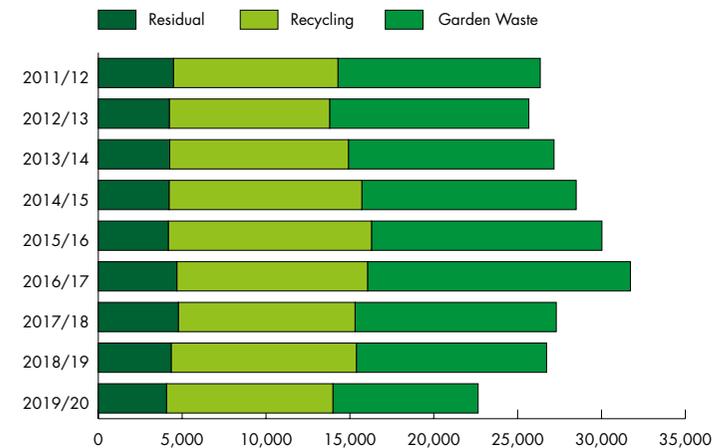


Figure 7. The composition of waste collected at HWRC's in North Somerset by financial year.

Aim: Improve recycling centre facilities

- Action:**
- Divert waste for re-use via a re-use shop.
 - Investigate options to expand upon the material accepted for recycling including; plastic film and bags, carpets and mattresses (see appendix ten for more information).
 - Trial bag splitting. Where staff at the recycling centres can ask residents to open black bags of waste to check everything that can be recycled is recycled, and not going in the non-recyclable skip.
 - Accept commercial waste from small to medium sized local businesses.

Why? To increase recycling and reduce residual waste disposal.

Supports target: (1) A reduction in residual waste of 15% the level of 2019/20 by 2030.
(2) A recycling rate of 70% by 2030.
(8) Progress towards a circular economy.

The 2021 consultation showed a 99% level of support for investigating expanding materials for recycling. 91% overall support for setting up a reuse shop. 83% support for accepting commercial waste from small- medium sized local businesses and 59% support of trialling bag splitting. 60 comments in the consultation were requesting changes to the recycling centres.



Zero Waste to Landfill and Energy from Waste (EfW)

Greenhouse gas emissions from the waste sector mainly comprise of methane released from landfill sites. Methane is emitted when biodegradable waste such as food, paper and cardboard, decompose anaerobically. Since 1990 emissions from landfill sites have fallen by 64% largely due to the landfill tax and better landfill site management. The landfill tax, which was introduced in 1996 and has since increased in price more than tenfold, has driven a reduction of over 75% in biodegradable waste being sent to landfill and a diversion to other disposal routes such as recycling. It has been supported by policies to reduce waste arisings, such as the Love Food Hate Waste campaign.

To further reduce emissions from landfill, North Somerset's kerbside collections aim to be zero to landfill by the end of 2022. Instead the waste will be diverted to incineration with energy recovery, which will avoid the release of methane that would have been released from landfill sites.

Ideally, before waste reaches an Energy from Waste (EfW) plant, all recyclables should have been removed. Not only for the efficiency, but because less carbon-rich recyclable material in the waste mix (i.e. cardboard, plastic, metals and wood) means less carbon dioxide output when the waste is burned. Some argue that the presence of EfW plants may discourage recycling, particularly among domestic households. To ensure

only end of life materials are incinerated with energy recovery the contract doesn't have a minimum guaranteed tonnage. Therefore, it remains important for North Somerset to continue to encourage residents to follow the waste hierarchy and to think about whether the item can be reused or recycled before disposing of it.





Recycling bales in
Weston-super-Mare depot and
Waste Transfer Station

Waste Transfer Station, depot and infrastructure

The existing waste infrastructure: three HWRC's, a waste Transfer Station and an AD plant. In recent years, new housing and population growth has stretched these waste facilities, with some sites reaching capacity and others already operating at, or over capacity.

Future plans will be set out in the upcoming depot strategy and will:

- Consider need for additional recycling centres to accommodate the population growth in the area.
- Consider a new depot and waste Transfer Station in Weston-super-Mare.
- Consider a new depot in the North of the district to reduce travel time for crews.



Zero Emission Collections

To achieve a carbon neutral recycling and waste service, a key part would be ensuring our collections are zero emission. Either electric or hydrogen powered vehicles could replace smaller collection vehicles such as the ones used for narrow roads and the vehicles used for bin deliveries when possible to do so.

If not financially viable another option would be carbon offsetting. This will be considered when there is no mitigation option to remove all sources of short-lived gases such as methane over the foreseeable timeframe. Reaching zero carbon will require net removals of long-lived gases in the atmosphere to compensate for residual short-lived emissions.

See appendix nine for more information on electric and hydrogen collection vehicles.

Measuring success

We will undertake and publish an annual review of our progress in delivering this strategy for our residents and other various stakeholders. This will ensure the strategy continues to be relevant to North Somerset and we are honouring our values to be open, fair and green.

We will use the following as measures of success in each area of the strategy

Reducing Waste

- Decrease in household residual waste (kg/household)
- Progress with trial of three-weekly refuse collections
- Tonnage of non-recyclable waste sent to Landfill

Reuse

- Tonnage of material diverted for reuse
- No. of groups and organisations engaged with us on reuse in NS

Recycling

- Percentage recycling rate
- Position in recycling league table of local authorities in England
- Results of waste composition analysis showing fewer recyclables in general waste bins

- No. of flats with a food waste collection service offered
- Tonnage of food waste collected for recycling

Composting

- No. of compost bins sold
- No. of people completing composting education training
- Progress towards setting up a community composting site

Communications

- No. of social media followers
- No. of residents door knocked
- No. of people engaged at events
- Email opening rates
- No. of case trackers

Commercial waste service

- No. of customers
- No. of commercial food waste collections
- No. of events using the commercial waste service

Enforcement and Environmental Crime

- No. of duty of care checks done on businesses
- No. of successful prosecutions
- No. of Fixed penalty notices issues



Street Cleansing

- No. of adopt a street litter pickers
- No. of recycling bins installed on streets as trial for 'on the go recycling'
- Levels of cleanliness of streets
- No. of complaints about street cleanliness

Recycling Centres

- Progress towards increasing materials accepted for recycling
- Progress towards accepting local small and medium business waste
- Progress with setting up a reuse shop

Table 1. Recycling and waste targets.

	2019/20 actuals	2024/25 target	2029/30 target
Household residual waste (kg/household)	400	370	340
Recycling rate	60.6%	65%	70%

Glossary

Anaerobic Digestion (AD)

Anaerobic Digestion is the process in which food waste in North Somerset is recycled. The process breakdowns organic material by micro-organisms in the absence of oxygen which produces a methane-rich biogas that is used as a fuel. The left over 'digestate' is a valuable source of nutrients, used as a non-chemical fertiliser.

Circular economy

A circular economy is an alternative to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life.

Dry recyclables

Non-food and garden waste such as plastic, paper, cardboard, glass, textiles, metals, batteries and electronic items.

Energy from Waste

Where waste is burnt at a high temperature as a fuel to generate electricity and heat.

Household Waste Recycling Centre (HWRC)

Sites provided under the Environmental Protection Act 1990 where residents can take their household waste. There are three HWRC's in North Somerset. Also known as 'recycling centres'

Kerbside recycling

Collection of recyclable materials from householders' 'doorsteps'.

Love Food Hate Waste (LFHW)

The Love Food Hate Waste campaign aims to reduce food waste by encouraging better shopping, storage and food preparation habits. www.lovefoodhatewaste.com

Residual waste

The waste which goes in the black general waste bin. It includes non-hazardous waste material that cannot be re-used or recycled and needs to be sent to energy recovery or disposal.

Transfer Station

Is a building or processing site for the temporary storage waste. Vehicles discharge their waste which will then be loaded into larger vehicles. These larger vehicles will transport the waste to the end point of disposal e.g. landfill, recycling reprocessor or Energy from Waste facility.

Waste Electrical and Electronic Equipment (WEEE)

Any unwanted electrical item with a plug or battery. Small WEEE includes toasters, kettles and mobile phones. Large WEEE includes Fridges and washing machines. Disposal of WEEE is controlled by WEEE regulations.

Waste hierarchy

A key element of the revised Waste Framework Directive which illustrates the priority for waste. Waste prevention (reduce) is prioritised, followed by re-use, then recycling, then energy recover and disposal in landfill as a last resort.

WRAP

The Waste and Resources Action Programme (www.wrap.org.uk) is funded by government to research sustainable waste management offering advice to people at home and at work, working with a wide range of partners including businesses and local authorities.

Zero waste

The conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials without burning and with no discharges to land, water, or air that threaten the environment or human health. As defined by Zero Waste International Alliance December 2018.



Appendices

Appendix one

Legislation driving change

The Revised Waste Framework Directive (2008): A key part of the directive is the waste hierarchy which prioritises waste prevention, followed by re-use, then recycling, then energy recovery and disposal as a last resort. Our waste strategy follows this with a focus on prevention, re-use and encouraging recycling.

Environment Act (2021): Through the Environment Act, the UK government is taking the powers necessary to deliver on many of the commitments in the Resources and Waste Strategy (2018), such as to reform the UK packaging producer responsibility system and to introduce greater consistency in recycling collections in England, as well as to continue the work to improve enforcement against littering.

1. The Environment Act allows for consistent and frequent recycling collections across England, ending the current postcode lottery.
2. It requires councils to operate weekly separate food waste collections, preventing food waste from going to landfill or being incinerated.
3. It allows the government to introduce clearer labelling on certain products so consumers can easily identify whether products are recyclable or not.
4. It also allows the government to expand the use of charges on single use plastics, following the successful introduction of

the carrier bag charge and will introduce a Deposit Return Scheme (DRS) on drinks containers, subject to consultation. (See appendix 1a for the possible impact of a DRS).

5. There are powers to introduce new extended producer responsibility schemes will make producers responsible for the full net costs of managing their products when they are ready to be thrown away.

Our Waste, Our Resources: A Strategy for England (2018):

Resource efficiency and waste reduction is based on four principals:

1. Consistency of waste and recycling collections. The government wants to introduce legislation to standardise recycling and waste collections to make recycling easier and less confusing for households and improve recycling information on packaging to help customers make more informed choices when they buy packaged products.
2. Extending producer responsibility. Producer responsibility is where manufactures of products that end up as waste i.e., packaging, pay towards their collection and disposal. The government is proposing to increase the items that need to be paid for and make sure that manufactures pay



the full cost. This legislation is due to be implemented in 2023 and could create more opportunity for the UK to make better use of recyclable material and encourage better design of packaging that prioritises waste prevention, re-use and recycling rather than disposal.

3. Deposit Return Scheme (DRS). To help reduce litter and improve on-the-go recycling. Customers buying a drink could reclaim the deposit added to the cost of the drink by returning the bottle or can. (See appendix 1a for the possible impact of a DRS).
4. Plastic packaging tax. The government is proposing a new tax on the production and import of plastic packaging with less than 30 percent recycled content. The government strategy also proposes to move away from measuring waste targets and recycling performance by weight to measuring in carbon and environmental footprints.

Climate Emergency Declared by North Somerset Council (2019):

On the 25th February 2019, North Somerset Council declared a climate emergency and set a target of becoming carbon neutral by 2030, which is 20 years ahead of government targets for the UK to be carbon neutral by 2050.

The Circular Economy Package (2018): Sets legally binding EU targets for waste recycling and reduction of waste to landfill

- Recycling 65% of waste by 2035
- Reduce landfill to maximum of ten percent of waste by 2035

25-Year Environment Plan (2018): Minimise waste, reuse materials as much as we can and manage materials at the end of their life to minimise the impact on the environment.

The Waste (England and Wales) Regulation (2012): Requires that metal glass, paper and plastic are collected separately where it is 'technically and environmentally and economically practicable to do so'.



Appendix 1a.

Impact of a Deposit Return Scheme (DRS)

What is a DRS?

A DRS for single-use beverage packaging (e.g. beer cans, soft-drink bottles) is a system that incentivises the return of used packaging through the use of a refundable deposit. Consumers pay the deposit when they purchase the beverage and receive it back when they return the container to designated collection points, typically located in retail outlets or other centralised locations. If a consumer chooses not to return the empty container, then they lose the deposit. The containers that are collected are recycled.

What impacts would a DRS have on North Somerset's recycling and waste services?

The main concern expressed to date on behalf of local authorities is the potential loss of material revenue. A report by Eunomia found that for the high performing recycling authorities assessed in the study, despite the reduced amount of higher value materials in kerbside recycling collections, a DRS still results in net cost savings. This is due in large part due to a reduction in general waste requiring treatment, along with the possibility of reduced material recovery facility (MRF) costs and potential efficiencies in collection. There also appears to be potential for a reduction in street cleansing costs.

More information on the financial implications of a DRS is available in Eunomia's report 'Impacts of a Deposit Refund System for One-way Beverage Packaging on Local Authority Waste Services, 2017'.

Appendix two

Current service

The recycling waste service provided in North Somerset is sorted at kerbside with a single-pass collection vehicle which results in a high-quality recycling with a lower overall carbon footprint compared to other collection services.

The household kerbside collection service:

- Weekly recycling collection of two 55 litre boxes: Plastic bottles, tubs, trays and pots; tins, cans, foil and empty aerosols; paper; cardboard and cartons; glass bottles and jars; food waste; spectacles, sunglasses, textiles, shoes and clothes; batteries, small electrical appliances and mobile phones.
- Fortnightly collection of non-recyclable waste in 180 litre black bins.
- Fortnightly garden waste collection in spring, summer and autumn and monthly collection in winter. Annual chargeable service from April 2021.
- Kerbside collection of large household items for a charge with local charity Changing Lives.

Recycling

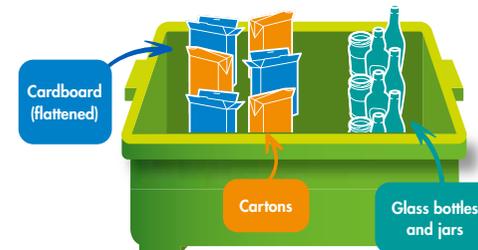
Weekly collections

Wash plastics and tins to avoid contaminating paper boxes and plastics to fit more in
Squash cardboard boxes and plastics to fit more in
Sort your recycling as shown to speed up collections and improve the quality of recycling

BOX 1: Plastic and cans together – paper separate



BOX 2: Card and cartons together – glass separate



It takes just **20 seconds** to collect a well sorted box but up to **two minutes** for a box that is all mixed together

Box nets are available to purchase to help reduce litter
www.n-somerset.gov.uk/recycling

EITHER BOX:

Bag separately and tie loosely to keep dry

Separate spectacles and sunglasses from the reusable textiles, shoes and clothes

Batteries, small electrical appliances and mobile phones

NO THANKS:

- ✗ Black plastic
- ✗ Plastic film
- ✗ Crisp packets
- ✗ Polystyrene
- ✗ Hard plastic
- ✗ Tissues/paper towels
- ✗ Disposable PPE
- ✗ Paper towels
- ✗ Nappies
- ✗ Saucepans
- ✗ Pyrex dishes
- ✗ Drinking glasses
- ✗ Broken glass
- ✗ Pringles tubes
- ✗ Disposable cups

Figure 8. Imagery of materials collected and how they should be sorted within kerbside recycling boxes. Box one: plastic and cans together – paper separate. Box two: card and cartons together – glass separate.

The flats collection service:

Flats where space allows and where it is practical to do so (typically less than 12 properties in a block) receive a 'house service' with recycling boxes.

- Weekly recycling collection: Some of these are communal boxes with individual boxes for different materials. Some have numbered their boxes for each property. This collection also allows for them to have food caddies.
- Weekly or fortnightly refuse collection: Depending on space available for general waste (black bin), the block of flats will receive either a weekly or fortnightly refuse collection.

The alternative flats service is communal general waste bins and a Mini Recycling Centre (MRC) for recycling.

The MRC bins are collected by a separate 'toploader' vehicle which has three compartments. Apart from 10 flats in Weston-super-Mare on a food waste collection trial, this means they do not have access to food waste recycling. We also do not currently collect textiles or small Waste Electrical and Electronic Equipment (WEEE) from flats.

- Collection frequency of both general waste (black bin) and recycling vary between properties and are either weekly or fortnightly. Often depending on the space available in the bin store for bins. Capacity is regularly limited as bin stores or space for bins available is too small for the number of properties.

The capacity provided should be equivalent to that of houses:

- Refuse: 180 litres per flat per fortnight or 60 litres per week
- Recycling: 55 litres of recycling per flat per week however the minimum required for an MRC to work is 3 x 240 litres bins fortnightly which would suit six flats.



Figure 9. Imagery of materials collected and how they should be sorted within an MRC

In addition:

- Three Household Waste Recycling Centres (HWRC's), which separate an array of household waste to maximise recycling including, garden waste, scrap metal, wood and timber, hard plastic, electrical and electronic equipment etc.

Appendix three

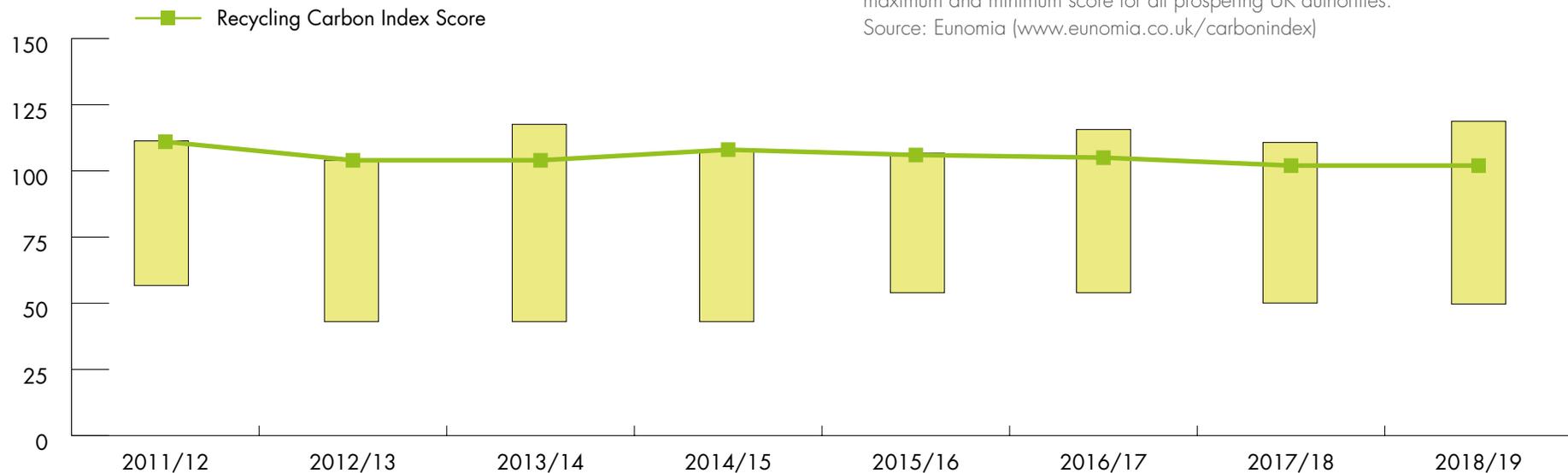
Eunomia Recycling Carbon Index

The Eunomia Recycling Carbon Index measures the environmental performance of councils' recycling services. When products are recycled it avoids the need to extract and process new raw material, reducing carbon emissions. The size of the reduction depends on the material recycled. The Carbon Index uses the amount of each material that a council collects to calculate how much carbon is saved. Eunomia calculated the total carbon savings generated from all the recycling reported by each authority, encompassing their kerbside collections, HWRCs and bring sites. Dividing this figure by the population served yields a carbon saving figure per person, thereby

allowing an effective comparison between authorities. The higher the value, the higher carbon savings. Figure 11 shows North Somerset's 2018/19 recycling carbon index score was 102 kg carbon saved per person, which ranks North Somerset as the 15th best performing authority in England.

The current kerbside sort collection that North Somerset Council has adopted plays an important role in carbon savings as it filters contamination out at the point of collection, providing a more reliable stream of quality materials.

Figure 10. The graph shows the range between the top and bottom performing authorities. The rectangular range boxes surrounding each point on the graph indicate the maximum and minimum score for all prospering UK authorities. Source: Eunomia (www.eunomia.co.uk/carbonindex)



Appendix four

Impact of Covid-19 on recycling and waste

In March 2020 Covid-19 spread across the globe along with waves of lockdowns and social distancing measures. As a result of the pandemic collection crews experienced staff shortages, a closure of all recycling centres, which have now reopened, and an increase in recycling and waste.

Social distancing measures did not put a stop to kerbside recycling collections, and recycling centres have now reopened. Initially with measures in place such as essential use only and restricted capacity. These measures have allowed vital collections of many recyclable materials to continue. As a result

of the Covid-19 pandemic more people are working from home and online shopping which has led to an increase in the amount of recycling and waste collected from households.

Figure 12 shows that in 2020 the total volume general waste increased by 7.57% compared to 2019, while the total amount of general waste collected at kerbside increased by 18.14%. Overall, the average amount of general waste in kilograms per household has increased from 323 kg/household in 2019 to 343 kg/household in 2020.

Figure 11. Comparison of general waste collected at kerbside and total (including HWRC's) over the festive period 2019-20 prior to the pandemic and 2020-21 during the pandemic.

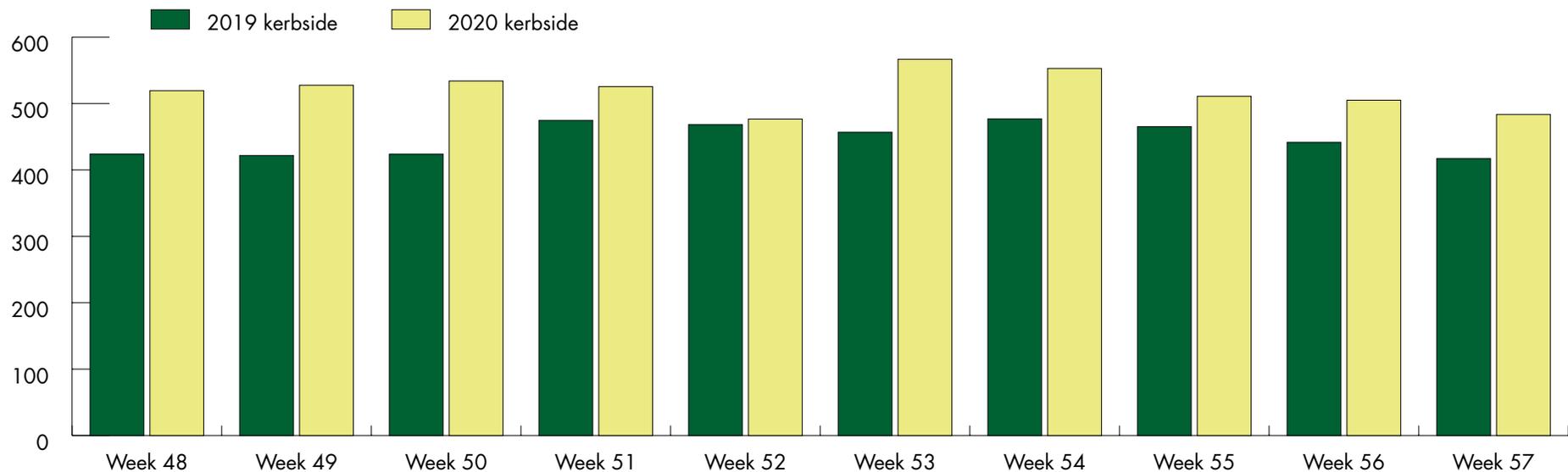


Figure 13 shows the volume of dry recycling and food waste collected at kerbside increased by 20% between 2019 and 2020. A total of 19,328 tonnes was collected in 2019 and 23,198 tonnes in 2020. Overall, the average amount of

recycling and food waste in kilograms per household has increased from 201 kg/household in 2019 to 238 kg/household in 2020.

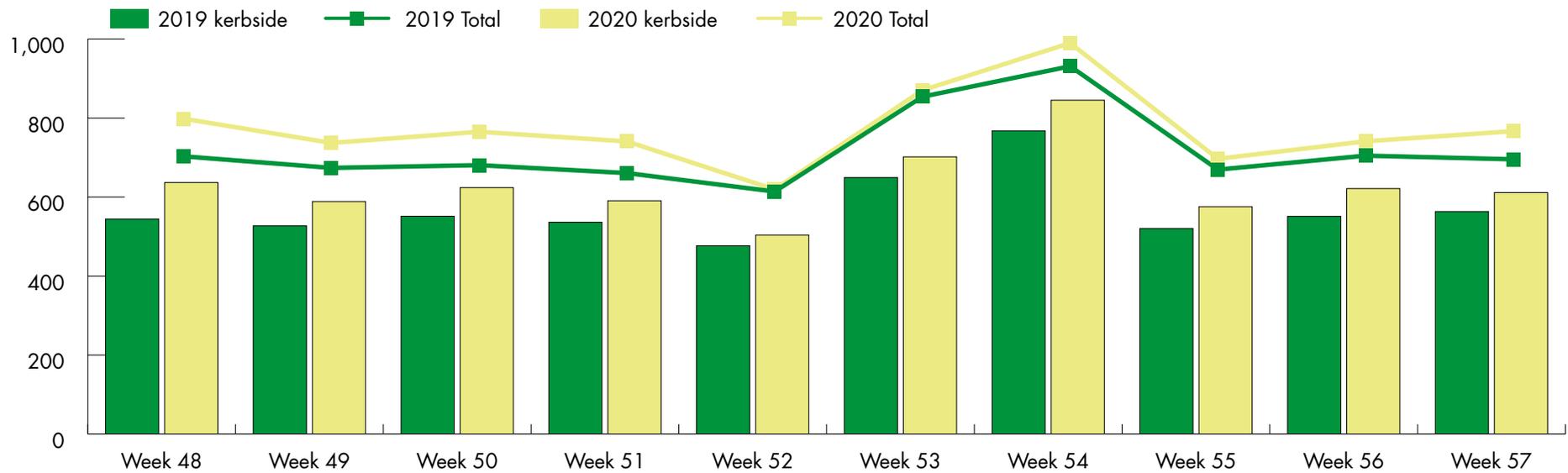


Figure 12. Comparison of dry recycling collected at kerbside between week 48 and 57 in 2019 and 2020

Table 2. Corresponding week commencing for week 48 to 57 in 2019 and 2020

	Week 48	Week 49	Week 50	Week 51	Week 52	Week 53	Week 54	Week 55	Week 56	Week 57
2019	25/11/2019	2/12/2019	09/12/2019	16/12/2019	23/12/2019	30/12/2019	06/01/2020	13/01/2020	20/01/2020	27/01/2020
2020	23/11/2020	30/11/2020	07/12/2020	14/12/2020	21/12/2020	28/12/2020	04/01/2021	11/01/2021	18/01/2021	25/01/2021

If the pandemic continues under current regulations this may impact reaching our recycling and waste targets.

Appendix six

Smaller general waste black bins

The space in households' black general waste bins plays a role in the level of recycling, if there is less space for general waste, then people will sort more waste and put it in the recycling.

Evidence from South Gloucestershire Council and Bath and North East Somerset Council demonstrates that while introducing a smaller bin could increase recycling rate, it has a significant potential to reduce the amount of household waste each property can produce. Currently North Somerset produced 400 kg/household in 2019/20. Replacing refuse bins across the district, can however be costly.

Feedback from the 2021 waste consultation showed a smaller 140L bin collected fortnightly was the most acceptable option to 54% of respondents when comparing the options for reducing black bin capacity to the same bin on three weekly collections or a larger bin on four weekly collections. It was also the least acceptable option for 21% of respondents. Respondents raised concerns about the cost and waste and carbon impact of replacing all the bins.

Case Study: West of England Partnership

South Gloucestershire

Fortnightly collection of non-recyclable waste in 140 litre black bins since January 2018, which replaced the 240-litre black wheeled bins used for non-recyclable waste. Their recycling rate increased from 51.6% in 2017/18 to 57.8 in 2018/19 and 61.59% in 2019/20 and the amount of household general waste reduced from 484.2 kg/household in 2017/18 to 407.8 kg/household in 2018/19 and 396.8 kg/household in 2019/20.

South Gloucestershire provide a free nappy bag collection service for disposable nappy waste. Residents receive a roll of purple bags that can be put out next to their black bin on collection day, leaving more space in their bin for normal household waste.

Bath and North East Somerset Council (BaNES)

BaNES introduced a smaller 140 litre bin in November 2017. Before the change the amount of general waste produced per household was 449.4 kg/household in 2016/17 which by 2019/20 reduced to 389.67 kg/household. Although recycling rate did not increase as drastically, between 2016/17 at 54% to 56.2% in 2019/20.



Appendix seven

Collection frequency

A change in refuse collections to once every three or four weeks could significantly reduce carbon emission, reduce the amount of general waste sent to landfill and Energy from Waste and increase recycling rates. A 180 litre bin is sufficient for a three weekly collection, limiting space in general bin to an achievable level is a key driver to improving recycling. Recycling collections would stay at a weekly collection to encourage residents to recycle as much as they can, especially food waste. This would make North Somerset Council a flagship Authority in this area.

Three or four weekly collections would drive cost savings and support the climate emergency strategy, by saving fuel and vehicle journeys, alongside a reroute to improve efficiency of collections.

A delay each year could result in 13,500 tonnes of recycling being disposed of through general waste. By diverting recyclable material from residual disposal, we could prevent 2,700 tonnes of CO₂e entering the environment a year. (Please see table 4 for full details).

Neighbouring authorities within the Somerset Waste Partnership (SWP) are switching to three-weekly general waste (black bin) collection through phased roll out.

- The SWP has estimated the three-weekly scheme could deliver savings of £1.7 million per year before rollout costs.
- The three-weekly refuse collections in Somerset were first trialled in 2014. The trial found that where the model was in place, food waste and dry recycling collections rose 45% and 28% respectively, while general waste fell by 27%.

East Devon District Council switched to three weekly collections in 2017.

- Collected 298.7kg of household waste per person and have a recycling rate of 59.1% (2019/20)
- Recycling rates in East Devon immediately increased by as much as 15% following the introduction of a three-weekly bin collection.
- Rolled out to 140,000 residents.

Table 3. Opportunities and threats of three and four weekly general waste (black bin) collections.

	Opportunities	Threats
Three weekly collection	<ul style="list-style-type: none"> • Greater reduction in general tonnages collected than fortnightly • Greater savings achieved through disposal costs than fortnightly • Increase in recycling and food waste rates; and any associated income from material • Encourages people to think about their waste 	<ul style="list-style-type: none"> • Could cause confusion with residents as it's difficult to fit in collection cycles • Associated adverse effects: on other services (HWRCs), environmental crime*, contamination* etc. • Perceived as cut/ reduction in service with no benefit passed back • Might not work for flats – most are currently still on weekly refuse collections due to limited space/ capacity and not having a food waste recycling service.
Four weekly collection	<ul style="list-style-type: none"> • Four weekly collection cycles easier for residents to remember • Encourages people to recycle and make decisions on what they buy to reduce waste • Lead to greater diversion of recyclables from residual disposal • Greater savings achieved through disposal costs then fortnightly and three weekly collections. 	<ul style="list-style-type: none"> • Higher risk of associated adverse effects than three weekly collections: on other services, HWRCs, environmental crime*, contamination* etc. • Perceived as cut/ reduction in service with no benefit passed back • Would not work for flats – most are currently still on weekly refuse collections due to limited space/ capacity and not having a food waste recycling service.

(*not reported on a significant level by local authorities that moved to three weekly collections)

The introduction of three or four weekly collections is frequently accompanied by stories of over-spilling bins, exploding populations of rats, and people buying “top-up” collections from opportunist private bin companies. Most stories are unfounded, and they are in fact, all the same issues raised about fortnightly collections prior to their introduction.

Eighteen councils have moved to three-weekly collections already with some looking at four-weekly. Roll out of extended collection periods in North Somerset would not cover all properties. Some areas may need to remain on weekly or fortnightly collections due to practicalities; for example in town centre areas. There are currently 9,143 properties, mainly in Weston and Portishead, that receive weekly general waste collections where it may not be practical to implement a three or four weekly general waste collection service, although work will still be required to improve recycling service and waste storage.

There would be a number of important factors to consider such as the household disposal of nappies and adult personal hygiene waste to prevent any build up in waste and hygiene problems. Options to consider:

1. A separate weekly or fortnightly nappy and adult hygiene collection service.
2. Continue to provide larger, 240 litre, black bins for households with nappies or adult hygiene waste collected either fortnightly or three-weekly.
3. Promote re-usable nappies and offer trials and advice through North Somerset Nappies.

Local Authorities within SWP are keeping 180 litre black bins when moving to three weekly collections and providing a larger bin (240 litre) on a three weekly collection cycle for residents that use nappies or adult incontinence products, where there is a large number of people living in the household or where the resident finds it difficult to understand and manage the recycling services, such as mental ill health or physical disability.

East Devon District Council opted for a three-stage process to help anyone struggling to dispose of nappies or incontinence products. Stage one, these items should be double wrapped and placed in the wheeled bin to avoid smells. Stage two support residents to minimise their waste and provide bigger bins if required. Stage three if there is still a problem provide a fortnightly collection for nappies or incontinence pads.

Financial savings

There will be a reduced demand for general waste (black bin) collection vehicles if North Somerset switched to three or four weekly black bin collection cycles. However, collecting the additional recycling diverted from the black bin would require extra recycling collection vehicles. Therefore, the assumption is that cost savings from reducing black bin collections would support increasing recycling rounds to ensure the additional recycling generated is collected. There will however be some savings on fuel.

Three weekly collections

The majority of savings will come from diverting recyclable material from costly residual waste disposable into the recycling stream. We expect moving to three weekly collections could divert 25% of current recyclable material in the black bin and would save ~£230,000 in disposal costs (table 3).

Neighbouring local authorities Bath and North East Somerset and South Gloucestershire opted for smaller 140 litre black bin bins collected fortnightly to reduce waste across their district. Providing smaller bins and retaining two weekly collections is expensive and would require new bins for 83,445 households at £13 each. The capital outlay of this option would be over £1 million and take over 4 years to achieve payback if 25% of recyclable material was diverted from the black bin. It would also create a lot of waste taking useable bins out of service before their end of life.

Opting for three weekly collections means North Somerset can keep the same size bins, therefore mitigating the cost of suppling and delivering new containers.

In the 2021 waste consultation three weekly collections were most preferred by 39% of respondents with only 14% saying it was their least preferred option when comparing to a smaller bin fortnightly or a larger bin four weekly.



Four weekly collections

Moving to a four weekly black bin collection would require the provision and delivery of new larger 240 litre black bins. This would therefore require a capital outlay of over £1.2 million due to the higher cost of larger bins. However, it could drive a high recycling performance especially in food waste. For

initiative purposes we could assume opting for four weekly collections could divert 50% of current recyclable material in the black bin and save ~£469,000 in disposal costs (Table 3). This would take approximately 2.5 years to achieve payback.

material	% in residual waste bin	tonnage in residual waste bin	disposal cost per tonne	disposal cost for material	non-disposal cost per tonne	total non-disposal cost	100% diversion of recyclables	50% diversion of recyclables	25% diversion of recyclables
food	27.0%	8100	£110	£891,000	£65	£526,500	£364,500	£182,250	£91,125
paper	4.0%	1200	£110	£132,000	-£60	-£72,000	£204,000	£102,000	£51,000
textiles	4.0%	1200	£110	£132,000	£0	£0	£132,000	£66,000	£33,000
garden	3.0%	900	£110	£99,000	£23	£20,700	£78,300	£39,150	£19,575
plastic	2.0%	600	£110	£66,000	-£45	-£27,000	£93,000	£46,500	£23,250
cards & cartons	2.0%	600	£110	£66,000	-£20	-£12,000	£78,000	£39,000	£19,500
cans, aerosols, foil (ferrous) 70%	0.7%	210	£110	£23,100	-£80	-£16,800	£39,900	£19,950	£9,975
cans, aerosols, foil (non-ferrous) 30%	0.3%	90	£110	£9,900	-£680	-£61,200	£71,100	£35,550	£17,775
glass bottles & jars	1.0%	300	£110	£33,000	-£12	-£3,600	£36,600	£18,300	£9,150
small WEEE	1.0%	300	£110	£33,000	£0	£0	£33,000	£16,500	£8,250
Saving							£1,130,400	£565,200	£282,600

Table 4. Financial savings from diverting recyclables

Greenhouse gas emission of recyclable material in the black bin

Diverting recyclable material from the black general waste bin where it is sent to landfill or Energy from Waste could prevent 2,700 tonnes CO₂e entering the environment a year.

Calculated using Greenhouse gas reporting: conversion factors 2018 published by Department for Business, Energy & Industrial Strategy (www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2018)

Table 5. Greenhouse gas emissions of current recyclable material disposed of as non-recyclable waste in the black bin compared to being recycled instead.

Material	Percent of recyclable material in black waste bin	Yearly tonnage in black waste bin	Kg CO ₂ e produced from residual disposal (landfill, EfW)	Kg CO ₂ e produced if recycled instead
Food	27%	8100	1,890,055.98	173,212.02
Paper	4%	1200	454,278.39	25,661.04
Textiles	4%	1200	203,597.06	25,661.04
Garden	3%	900	194,912.74	19,245.78
Plastic	2%	600	10,229.84	12,830.52
Cards and cartons	2%	600	227,139.20	12,830.52
Cans, aerosols and foil	1%	300	5,114.92	6,415.26
Glass bottles & jars	1%	300	5,114.92	6,415.26
Small WEEE	1%	300	5,910.82	6,415.26
Total			2,996,353.87	288,686.70



Appendix eight

'On the go' recycling

Why introduce 'On the go' recycling:

- To ensure the same level of service is provided on the streets as at home. Residents of North Somerset would be able to recycle the same materials whilst they are out and about as they do at home. This will not only reinforce the recycling message, but also reduce material sent to landfill.
- To add to the economic and environmental savings. The savings in both greenhouse gas emissions and landfill charges from increasing recycling could be sizeable.
- To manage our waste. North Somerset is adopting an aspiration of achieving a circular economy. Ensuring that a consistent and easy to use 'on the go' scheme operates throughout North Somerset, would help to achieve these goals.

Contamination is the major barrier to a successful 'on the go' recycling scheme. Contamination especially from food and drink containers is common and it can limit the amount of material suitable for recycling. Information campaigns, raising awareness of the issue and giving people a better idea of what should be placed in each bin, can reduce contamination to some extent, but it will always be an issue, as people cannot clean waste before disposing of it when they are 'on the go'.

One solution from Earls Court Olympia is to use an anaerobic digester, whereby both packaging and left-over food is collected and taken to a plant offsite. The packaging is removed and recycled where possible and the food waste is composted.



Appendix nine

Electric and hydrogen collection vehicles

Electric vehicles

Electric motors have a longer history than the internal combustion engine as a means of propelling vehicles. The motors produce no atmospheric emissions through their operation. Recent advances in battery technology and regenerative braking are increasing vehicle range, while the rise of renewables means that the carbon emissions associated with generating electricity are falling. There are already several examples of municipalities, including UK local authorities, adopting electric RCVs. The City of London Corporation has commissioned a fleet of electric refuse collection vehicle, under its current collection contract whilst operators in other locations including Edinburgh, Sheffield, Greenwich and Westminster are trialling them.

A cost-benefit analysis carried out by Eunomia has assumed a mileage of 60 miles, or just under 100km, per vehicle per day (January 2020). Therefore, electric vehicles might not yet be suitable for all the routes we cover. Due to the rurality of North Somerset properties can be spread out and those at the North end of North Somerset, such as Portishead, are further away from the depot in Weston-super-Mare creating longer routes that cover more miles than those in the town centres, where electric vehicles would work best.

Case study:

Cambridge and South Cambridgeshire Council

Cambridge and South Cambridgeshire Council aim to have zero emission waste collections and will be one of the first nationally to have one of the green vehicles which have zero emissions and contribute to better air quality when out on the road.

- In March 2020 they brought a fully electric Dennis Eagle 'eCollect'. The new vehicle costs around £400,000.
- While this is more than a traditional diesel bin collection lorry, Councillors expect the whole-life cost to be at the very least the same – if not less – than a diesel vehicle, when reduced servicing, fuel and general running costs are taken into account.
- It typically takes around 7 to 8 hours to recharge and can easily complete a full day of collection rounds and return with charge remaining in the battery. As well as electric, hydrogen vehicles are also an option.
- They are looking at the possibility of installing a solar/wind farm near their waste depot to be completely self-sufficient when it comes to charging vehicles.

Hydrogen vehicles

For the time being, hydrogen vehicles still have a longer range than purely electric vehicles. Hydrogen fuel cells have already been used to power RCVs in Eindhoven. In this system, the combustion of hydrogen is used to generate electricity on the go, offering an extended range and avoiding reliance on batteries, while producing only water vapour as an emission.

However, much hydrogen is currently generated by steam reforming of natural gas, and so relies indirectly on fossil fuel production – although renewable means of producing hydrogen are gaining ground as it improves in efficiency, cost-effectiveness and availability.

Through the Hydrogen for Transport Programme Glasgow received funding for a green hydrogen refuelling station and 19 refuse trucks, these will be amongst the first zero emission hydrogen refuse collection lorries developed in the UK (announced 30 September 2020).

The UK government has also announced wider plans to drive forward progress on net zero ambitions by creating a new Hydrogen Transport Hub in Tees Valley to accelerate the UK's take up of hydrogen technology, and paving way for exploring how green hydrogen could power buses, HGV, rail, maritime and aviation transport across the UK.

Case Study: Cheshire East Council

Cheshire East Council has partnered with renewable energy company Storengy to secure funding towards a £1-million hydrogen refuse vehicle scheme.

With funds from both public and private sector money, including a £345,000 contribution from the local enterprise partnership's Local Growth Fund, the scheme will allow for the installation of a green hydrogen fuelling facility at the Ansa environmental services depot in Middlewich – the first of its kind in the north west of England.

The new facility will use an electrolyser connected to solar panels and grey-water recycling to provide hydrogen fuel which will be pumped into dual-fuel refuse collection vehicles (RCVs).

Initially, two council-owned vehicles and one owned by Storengy will be converted to use the hydrogen fuel, reducing diesel use by more than 10,000 litres per year. The refuse vehicles started operating in autumn 2020.



Appendix ten

Expand the materials for recycling

We will continue to look into options available to increase recycling and reduce general waste disposal. These could include:

Plastic film/bags collection trial

Waste analysis shows 3.2% of the average household bin and 0.4% of recycling contained carrier bags and 'recyclable plastic film' which Resource Future class as bubble wrap and bread bags. Together this is equivalent to 0.19 kg/household/week. Offering the opportunity for residents to recycle these materials could reduce the waste each household produces by 9.88 kg/household/year and approximately 956 tonnes across North Somerset in a year. A trial to collect and recycle these items can be first carried out at drop-off points and HWRC's, if successful this could be considered for kerbside collection.

To collect these items, there would need to be a stable market for plastic film/carrier bags to ensure security and avoid sending them abroad, where they may not be dealt with responsibly.

Many of the major supermarkets have introduced collection points for soft plastic packaging during 2021 these include Tesco, Sainsburys, Co-op and Morrisons with stores in North Somerset now having collection points available.

Carpet and mattress recycling at HWRC sites

It is estimated in the UK that 400,000 tonnes of waste carpets arise per year and 167,000 tonnes of mattress are sent to landfill every year.

Around 28% of the local authorities in the UK are now separating carpets received at HWRC's to avoid landfill. There's a network of facilities for the re-use and recycling of carpets. CRUK provides up to date information regarding operational reprocessors: <https://carpetrecyclinguk.com/find-a-recycler/>. In 2018/19 Bristol waste started separately collecting mattress for recycling at its recycling centres and in 2019/20 it diverted nearly 70 tonnes from landfill. There is also a network of mattress reprocessing facilities across the UK (www.tfrgroup.co.uk), where components are dismantled and separately recycled.



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