

# Transport and Environment Committee

10.00am, Thursday, 16 November 2023

## Communal Bin Review Update

Executive/routine  
Wards

Executive  
All

### 1. Recommendations

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- 1.1 Transport and Environment Committee is asked to:
  - 1.1.1 Note the outcome of the performance monitoring update for Phase 1 (Appendix 1);
  - 1.1.2 Note the progress of the Communal Bin Review project and delivery of Phase 3;
  - 1.1.3 Approve the revised timeline for the delivery of the communal bin hubs roll-out (Appendix 2);
  - 1.1.4 Note the bin hub locations of Phase 3 and Phase 4 have been reviewed in line with the Review Framework agreed in May 2023 and the outcomes are outlined in Appendices 3 and 4;
  - 1.1.5 Approve the next stage of the phase 5 within World Heritage Site (WHS) as per Appendix 5; and
  - 1.1.6 Note that side-loading bins will be removed from the WHS area and replaced with Euro bins due to operational reasons.

**Paul Lawrence**

**Executive Director of Place**

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## Communal Bin Review Update

### 2. Executive Summary

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- 2.1 This report provides an update on the delivery and monitoring of the Communal Bin Review project and the implementation of increased collection schedules (Appendix 1).
- 1.1 It also provides an update on the timelines for implementation and seeks approval to revise the timescale of the project to allow the roll-out to continue in the areas of Phases 4 and 5 (as outlines in Appendix 2).
- 2.2 The report provides an update on the outcome of the review of bin hub locations for Phases 3 and 4 (Appendices 3 and 4) in line with the new review framework approved by Committee in May 2023.
- 2.3 The report also addresses the request by Committee to improve recycling services for residents on communal bin services within the World Heritage Site (WHS) (Phase 5 of the project) as outlined in Appendix 5.
- 1.2 Finally, the report also responds to the motions/amendments agreed by Committee in May 2023.

### 3. Background

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- 3.1 On 27 February 2020, Transport and Environment Committee approved the [report](#) outlining the approach to implementation of the communal bin review project. This included setting out the parameters and criteria to be used to determine the locations of each bin hub and they type of bins that would be used for non-recyclable waste, mixed recycling, food waste and glass.
- 3.2 Phases 1 and 2 have been implemented. Phase 3 started in September 2023 and Phase 4 is due to commence in early 2024. Phase 5 (WHS) was paused following concerns raised by heritage bodies and community groups. This report provides an update on the work being undertaken to achieve the project objectives whilst acknowledging the heritage status of this unique area.
- 3.3 On 18 May 2023 Committee approved a [report](#) outlining a Review Framework to allow officers to check bin hub locations and allow some flexibility in their

positioning. This report provides the outcome of the reviews undertaken for bin hub locations in Phases 3 and 4.

## 4. Main report

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### **Implementation update: phase 1**

- 4.1 The implementation of Phase 1 was completed in March 2022, while the effectiveness of the changes was monitored for the period January to March 2023 and reported to Transport and Environment in May 2023. An update on the performance monitoring for the period January to September 2023 is outlined in Appendix 1.
- 4.2 Requests for service for overflowing communal bins (non-recyclable waste and mixed recycling) for the period January to September 2023 have decreased, with a significant drop in communal mixed recycling complaints (85%) compared to pre-pandemic levels. This demonstrates how the changes have successfully addressed the lack of capacity for residents to recycle.
- 4.3 Dumping and fly-tipping continues to be observed at some bin hubs and communal bins. To help tackle these issues, additional resources have been introduced to overlap with communal bin routes to ensure dumped items are removed as quickly as possible. Communication materials continue to be distributed to residents and attached to bins, highlighting the appropriate means of disposing of unwanted household goods.

### **Implementation update: Phase 2**

- 4.4 Approximately 190 on-street bin hub locations were introduced in Gorgie, Shandon, Roseburn and Corstorphine, Trinity, Newhaven and Portobello between late 2022 and early 2023.
- 4.5 The roll-out to off-street locations in Gorgie, Shandon, Roseburn and Corstorphine (e.g. developments where bins are stored in private car parks, and/or internal/external bin stores) has progressed with the delivery of 56 food waste bins, circa 40 glass bins, and over 85 more mixed recycling bins ((with either changes to non-recyclable waste and paper bins or additional mixed recycling bins have been delivered) available to residents for recycling.

### **Implementation update: Phase 3**

- 4.6 Approximately 355 on-street bin hub locations are currently being introduced in Polwarth, Darly, Hillside, Broughton, Comely Bank, Marchmont, Morningside and Churchill to service around 15,000 properties.
- 4.7 As part of the implementation of the new bin hubs within Phase 3, nearly 450 side loading bins, which used to collect non-recyclable waste have been removed. All on-street non-recyclable waste, mixed recycling, packaging and paper wheeled communal bins (mainly 1280 litre bins) are being removed and sent for refurbishment.

- 4.8 Over 1,400 new or refurbished non-recyclable waste and mixed recycling bins are being installed, together with the deployment of 355 new or refurbished glass bins and 355 new food waste housing containers.
- 4.9 For all on-street non-recyclable waste and mixed recycling bins, the new increased collection frequency (every other day) started in Summer 2023 in Polwarth, Dalry and Hillside areas. Broughton, Comely Bank, Marchmont, Morningside and Churchill will be receiving the enhanced service by end of December 2023.
- 4.10 The majority of the off-street locations for Phase 3 have been completed with the delivery of over 72 food waste bins, nearly 40 glass bins, and approx. 90 more recycling bins available to residents for recycling.

**Implementation update: Phase 4**

- 4.11 Bin hub locations as part of Phase 4 (including Stockbridge, Canonmills, Fountainbridge, Tollcross, Sciennes, Southside, St Leonard's, Newington and Prestonfield) require a Traffic Regulation Order (TRO) process for the peripheral and central Controlled Parking Zone (CPZ) areas 3, 4, 5A, 6, 7 and 8. The TRO process for Phase 4 began in April 2023 and is due to be completed in by early 2024.
- 4.12 Subject to the outcome of the TRO process, it is anticipated that the implementation of the new bin hubs will begin in February 2024.

**Implementation update: Phase 5**

- 4.13 Implementation of Phase 5 within the WHS was paused to allow a feasibility study of possible alternative waste collection solutions to be carried out by the Association for Public Service (APSE). The outcome report is attached in Appendix 6. This leans heavily towards an underground solution which is not an affordable or pragmatic solution in the short term.
- 4.14 Furthermore, Council officers have been working closely with the New Town and Broughton Community Council (NTBCC) and street Residents Associations to undertake a pilot using green gull proof sacks to replace the red box service and improve recycling capacity available to residents. In May 2023, Committee agreed to extend the pilot, and this commenced in November 2023. Further details of the trial are available in Appendix 5.
- 4.15 Appendix 5 also provides details on proposals for the waste and recycling collections service within the Phase 5 area. In summary, it is proposed that properties in Area A will be serviced with communal bin hubs for the reasons outlined.
- 4.16 In Area B, pending the outcome of the trial, it is proposed that the gull proof sack service will be extended to all these properties, with communal bins removed.
- 4.17 In Area C assessments will be undertaken to identify the feasibility to move properties on gull proof sacks service to communal bin service or vice versa to maintain consistency within the areas.

- 4.18 The Council will progress with the removal of the side loading bins and replace these with wheeled communal bins within Phase 5 as the vehicles used to service these specialist bins are being replaced. This change will be carried out in Spring/Summer 2024.
- 4.19 For properties within Phase 5 that are currently provided with a kerbside wheeled bin service, there will be no changes to their waste and recycling service provision.

## 5. Next Steps

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- 5.1 Implementation will continue as outlined in the main report and in Appendix 2.
- 5.2 Committee will be aware that the introduction of the Scottish Government's Deposit Return Scheme (DRS) has been delayed until October 2025 at the earliest. The implications of this commitment will be tracked throughout the lifecycle of the project. Elected Members should be aware that the DRS will remove both recyclable and (currently) non-recyclable material from the control of the Council and this may have a negative impact upon the Council's overall recycling performance. The extent of the impact will not be fully known until the DRS is fully operational and monitoring has taken place.
- 5.3 Bin hub locations as part of Phases 1, 2 and A are already installed. Progress with the locations review, applying the review framework, is expected to be completed by the end December 2023.

## 6. Financial impact

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- 6.1 The Council has committed over £3.2m of capital investment to upgrade communal bins.
- 6.2 In addition, the Council successfully obtained £7.7m from Zero Waste Scotland's [Recycling Improvement Fund](#) (RIF). Funding was granted for refurbishment of bins, corralling and associated roadworks, electric refuse vehicles, in-cab devices and bin sensors. Further information regarding the funding was provided in the [Business Bulletin](#) to Transport and Environment Committee on 27 January 2022.
- 6.3 Costs have, however, increased as a result of the global economic challenges which are feeding through to the costs associated with equipment and fuel in particular. The cost of bins and containers have increased by approximately 25-30%.
- 6.4 To off-set these costs, an application for additional funding from Zero Waste Scotland, under the RIF was submitted and additional funding of £792,000 has been secured for the roll out of the project.

## 7. Equality and Poverty Impact

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- 7.1 The Integrated Impact Assessment has been reviewed due to the changes for the framework review which was approved at transport and environment committee in May 2023 and also in consideration of the lessons learnt from the implementation of Phases 1 and 2.
- 7.2 Updated [IIA](#) is available on the Council website.

## 8. Climate and Nature Emergency Implications

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- 8.1 As a public body, the Council has statutory duties relating to climate emissions and biodiversity. The Council

*“must, in exercising its functions, act in the way best calculated to contribute to the delivery of emissions reduction targets”*

(Climate Change (Emissions Reductions Targets) (Scotland) Act 2019), and

*“in exercising any functions, to further the conservation of biodiversity so far as it is consistent with the proper exercise of those functions”*

(Nature Conservation (Scotland) Act 2004)

- 8.2 The City of Edinburgh Council declared a Climate Emergency in 2019 and committed to work towards a target of net zero emissions by 2030 for both city and corporate emissions and embedded this as a core priority of the Council Business Plan 2023-27. The Council also declared a Nature Emergency in 2023.

### **Environmental Impacts**

- 8.3 One of the key objectives of the project is to support improvements in recycling performance. By reducing resource consumption, this serves to reduce future climate change as well as provide other environmental benefits such as a reduction of resource extraction, and therefore protect biodiversity.
- 8.4 The increase in frequency for non-recyclable waste and mixed recycling to every other day will reduce incidents of overflowing bins which will reduce side waste and litter which could have a positive impact on the marine and urban environment.
- 8.5 In the longer term, residents' positive behaviour changes will potentially help in reducing overall waste volumes and to reduce net waste quantities, reducing the number of vehicle trips required and reducing associated vehicle emissions.
- 8.6 Changes to fleet will be taking place via scrappage of fossil-fuelled vehicles and modal shift to electric waste vehicles (EVs), in line with local, national and international targets, including the city's Low Emissions Zone (LEZ), and as such will contribute to an improvement in local air quality.
- 8.7 The delivery of the project also supports delivery of the Council's Net-Zero 2030 strategy.

- 1.3 The project does not in itself contribute to the mitigation of climate change impacts which are already taking place.

## **9. Risk, policy, compliance, governance and community impact**

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- 9.1 The parameters and criteria approved by Committee in February 2020 are based on accessibility, health and safety, legislative requirements to ensure the bin hubs provide the appropriate services and can be accessed and serviced safely by residents and operational collection crews.
- 9.2 All efforts are made to accommodate requests both from residents or Elected Members to move locations including meeting on site with residents and ward councillors. The review framework approved by Committee in May 2023 includes greater flexibility on walking distance and crossing the road to dispose waste and recycling under certain circumstances.
- 9.3 If an alternative location can be found which meets the framework review, bin hubs have been moved or other amendments to the bin hubs have been made e.g. reduction of number of bins, reduction in size of bin.
- 9.4 For locations as part of Phases 1, 2 and A, the installation of bins and bull bars has been already carried out and the review of these bin hub locations is anticipated to take place by the end December 2023.
- 9.5 The TRO for bin hub locations as part of Phase 3 were already approved in September 2021 and the road works and installation of bull bars started late September 2023. In Summer 2023, the bin hub locations were reviewed, and its outcome is outlined in Appendix 3. Thanks to the review framework flexibility, over 40 locations were moved which would need to go through a new TRO anticipated to be advertised by early 2024.
- 9.6 For locations as part of Phase 4, engagement with residents took place before the statutory consultation as part of the TRO process to allow members of the public to provide feedback on the new bin hub locations proposal. The engagement process was carried out in June/July 2023 and it included the postage of letters to all properties that use the communal bin service or are in the proximity of the proposed bin hub. In addition, seven engagement events in the areas were organised to provide information on how to provide feedback and general information about the aim of the project. The feedback received supported the determination of the final bin hub locations in accordance with the review framework which has led to changes to 24 locations. The TRO process is underway to secure the changes in parking restriction and the installation of bull bars and implementation of the new bins hubs is anticipated in early 2024.
- 9.7 For locations as part of Phase 5, if recommendation the report recommendations are approved, engagement will continue with Edinburgh World Heritage and Historic Environment Scotland to agree the bin hub locations for Area A and agree the measures to mitigate the impact on the WHS.

- 9.8 Engage with the public prior to the statutory TRO process will also be progressed. The feedback provided by members of the public on specific locations will be considered and accommodated where possible and in accordance with the review process. This will support the determination of final bin hub locations that will undergo the statutory consultation for the TRO process.
- 9.9 If recommendation 1.1.6 is approved, engagement will be undertaken with residents in Areas A, B and C of Phase 5. This will follow the process followed for Phase 4.
- 9.10 The delivery of the project supports the Council's [waste and cleansing strategy](#).

## **10. 10. Background reading/external references**

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- 10.1 Enhancing Communal Bin Collections - Transport and Environment Committee, [7 December 2017](#).
- 10.2 Enhancing Communal Bin Collections- Update following trial to implement every other day collections - Transport and Environment Committee, [9 August 2018](#).
- 10.3 Communal Bin Enhancement Update - Transport and Environment Committee, [20 June 2019](#).
- 10.4 Communal Bin Enhancement Update - Transport and Environment Committee, [5 December 2019](#).
- 10.5 Communal Bin Enhancement Update - Transport and Environment Committee, [27 February 2020](#).
- 10.6 Communal Bin Enhancement Update –Transport and Environment Committee, [20 November 2020](#).
- 10.7 Contract Award – Purchase and refurbishment of Communal Bins - Finance and Resource Committee, [4 March 2021](#).
- 10.8 Communal Bin Enhancement Update – Transport and Environment Committee, [22 April 2021](#).
- 10.9 Contract Award – Supply and Installation of Corralling for Bin Hubs and Associated Road Works – Finance and Resources Committee, [7 October 2021](#).
- 10.10 Waste and Cleansing Services Update - Transport and Environment Committee, [31 March 2022](#).
- 10.11 Response to Motion by Councillor Whyte – Cleaning Up Edinburgh (Communal Bin Review Update) – Transport and Environment Committee, [6 October 2022](#).
- 10.12 Communal Bin Review Update – Transport and Environment Committee, [18 May 2023](#).

## **11. Appendices**

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Appendix 1 – Performance Monitoring update – Phase 1



Appendix 2 – Phasing and Timeline

Appendix 3 – Outcome of review of bin hub locations – Phase 3

Appendix 4 – Outcome of review of bin hub locations – Phase 4

Appendix 5 – Phase 5 plans – gull proof bags and communal bin hubs

Appendix 6 – World Heritage Area Waste Refuse Collection Options (APSE)

## Appendix 1 – Performance Monitoring Update – Phase 1

In [May 2023](#) the effectiveness of the changes was monitored for the period January to March 2023 and compared to the same period in previous years as per Appendix 1 of the Communal Bin Review update report presented to Transport and Environment Committee.

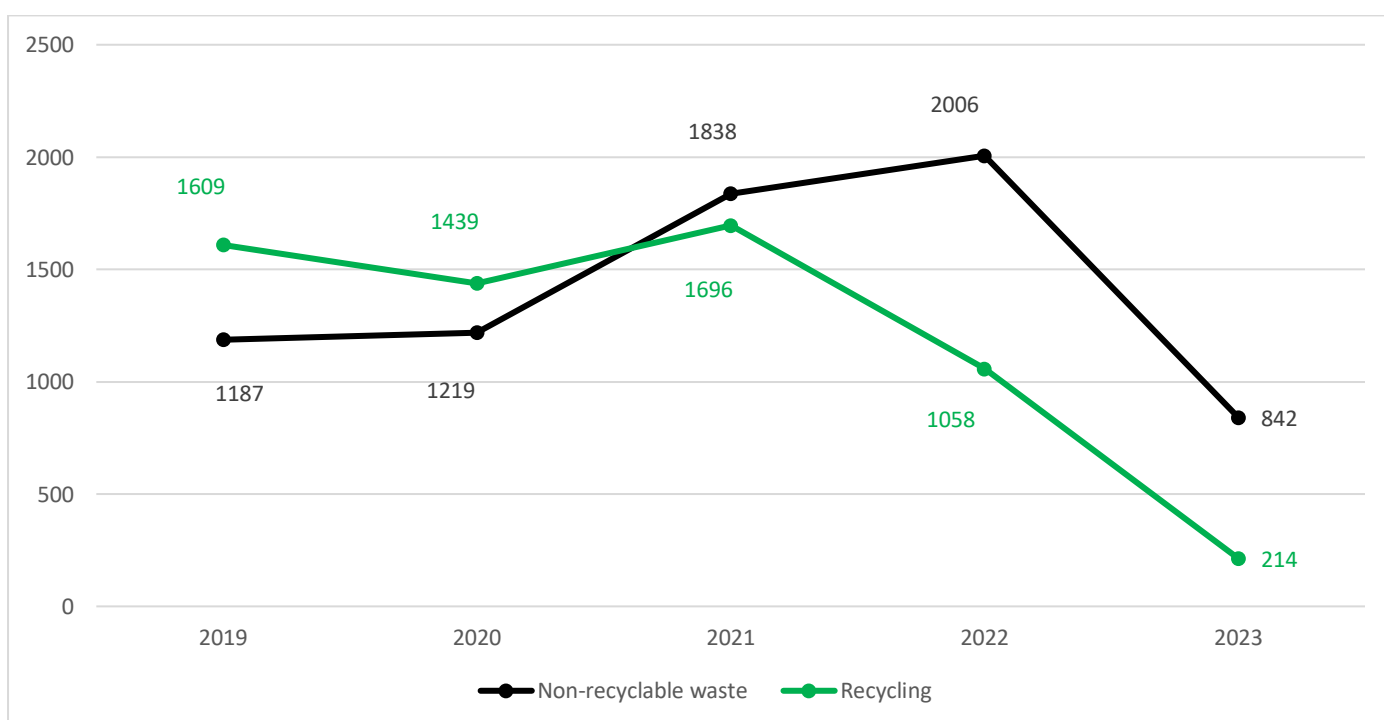
To continue monitoring the outcome of the new increased frequency of collection of non-recyclable waste and mixed recycling for on street bin hubs, the period of monitoring for phase 1 has been extended from January to March to January to September for the last 5 years (2019 to 2023). This to establish if the outcome of the monitoring carried out in the early 2023 was still valid and to ensure the benefits of the communal bin review project are still being realised.

### Requests for service for overflowing communal bins

Information has been collated in relation to requests for service for full/overflowing communal bins for locations as part of Phase 1 of the Communal Bin Review (CBR) project for the period January to September for the years 2019, 2020, 2021, 2022 and 2023.

Request of service for overflowing communal bins – Phase 1 CBR					
Stream	Jan – Sep 2019	Jan – Sep 2020	Jan – Sep 2021	Jan – Sep 2022	Jan – Sep 2023
Non-recyclable	1187	1219	1838	2006	842
Recycling	1609	1439	1696	1058	214

Non-Recyclable includes requests for service for overflowing euro bins (i.e. 1100/1280/660L bins) and side loading bins (1800/2400/3200L bins). Recycling includes request of service for overflowing packaging, mixed recycling and paper bins (i.e. 1100/1280/660L bins).



It can be seen in the table and graph above that the request for service of overflowing bins has seen a decrease in 2023 compared to the previous 4 years.

The non-recyclable waste request for service in 2023 has decreased by more than 55% (from circa 1,900 to 842 for the same period of the year) compared to 2021 and 2022 and has decreased by 30% compared to 2019 and 2020 (from circa 1200 requests for service to 842 for the same period of the year).

The recycling request for service in 2023 has decreased by 85% from an average of 1,500 requests in 2019, 2020, 2021 and 2022 to 214 in the same period in 2023.

This shows how the project has addressed one of its main aims, to improve the waste and recycling service reliability. It was acknowledged there was a lack of public confidence in the communal collection system and the Council used to receive a relatively high number of service request from the public regarding full or overflowing bins. This was also a key finding in the Changeworks Consultation undertaken in early 2018 with householders living in flats in Edinburgh who identified the overflowing bins as a barrier to recycling.

## Appendix 2 – Communal Bin Review Project Implementation: Phasing and Timeline

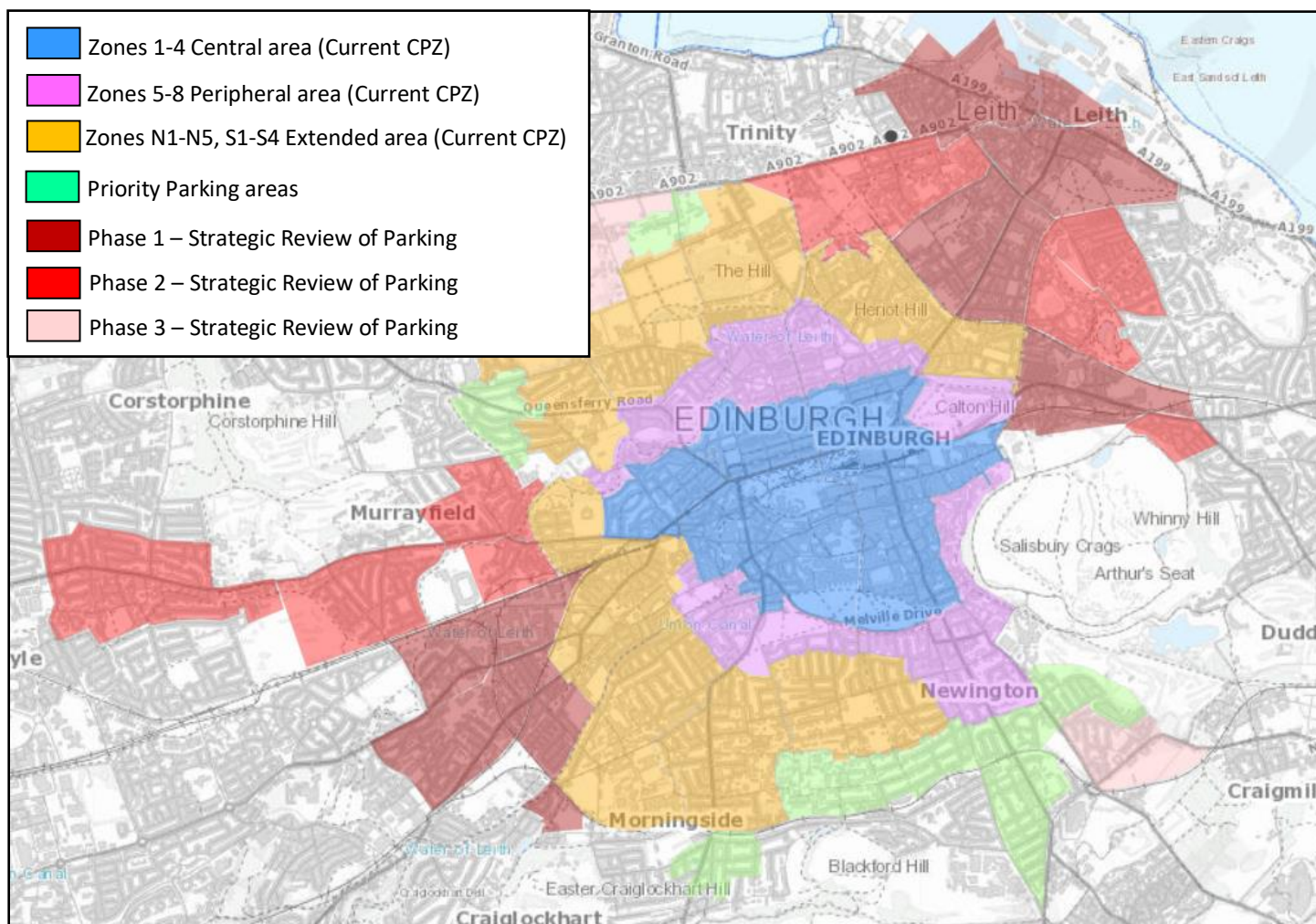
The phasing and the timeline for the project is under continuous assessment to ensure dependencies from other projects (e.g. Strategic Review of Parking) are included. The identification of the order for each phase to be rolled out depended on the need to secure Traffic Regulation Orders (TROs) in many of the areas where on-street waste and recycling bins are sited and are prevalent i.e. current Controlled Parking Zones (CPZs).

The Council’s standard approach to siting communal bins at on-street locations in controlled parking areas has been to use Traffic Regulation Orders (TRO). This process is used to amend parking places to accommodate and correctly reflect bin locations. This approach ensures that each bin location can be subject to yellow line restrictions, allowing them to be correctly enforced. It also improves transparency, as the legal process for a TRO includes a formal consultation process where the Council is legally required to consider any relevant objections received in relation to traffic management and road safety issues.

The project will change and rationalise bin locations, resulting in fewer bin locations. Following the TRO process will allow any potential loss of parking to be minimised through allowing the return of some existing bin locations to be used as parking places and to make sure that parking places in the new locations are adjusted accordingly. The TRO process also ensures that the allocation of space, or the split in parking, is appropriate and usable.

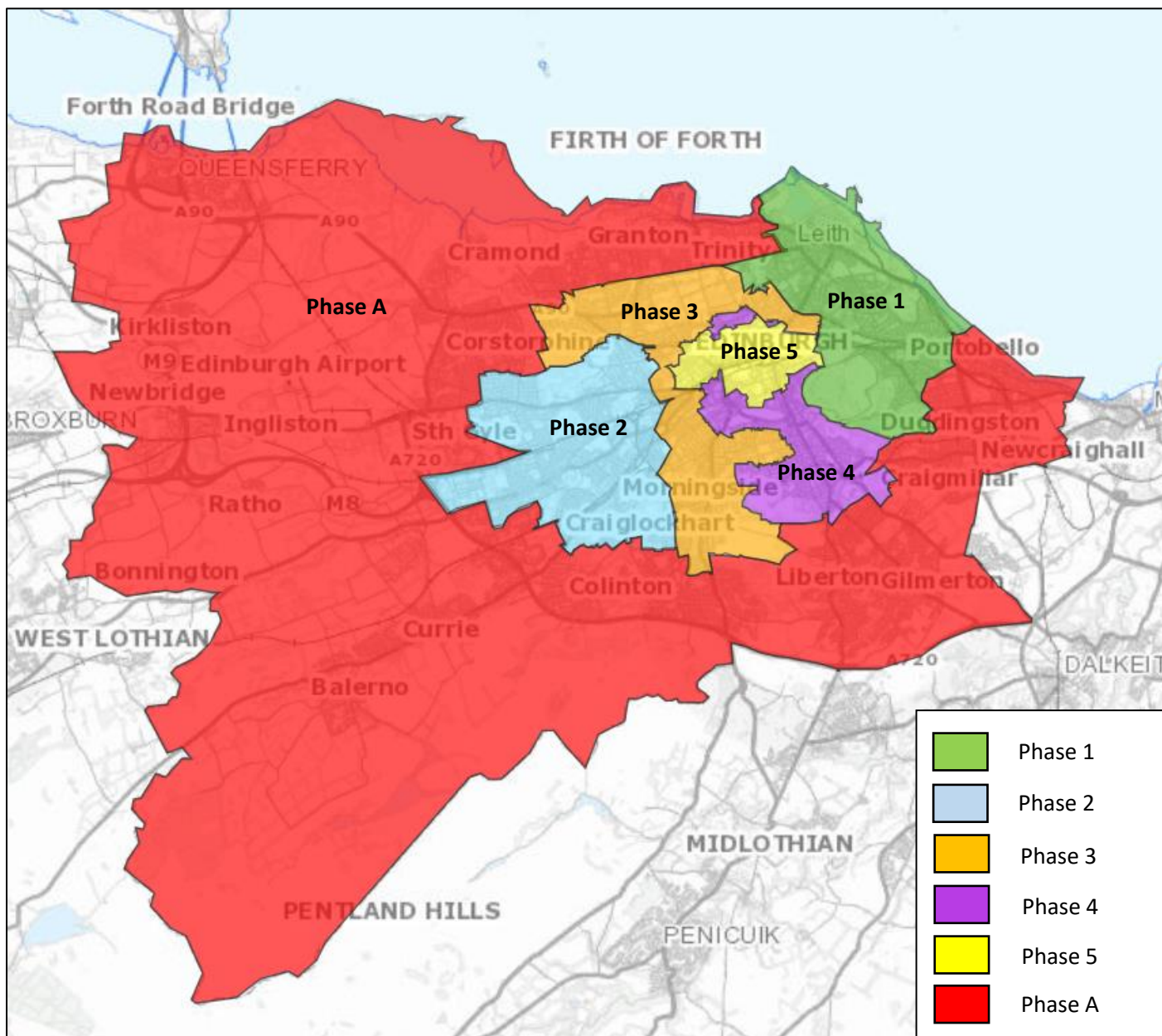
TROs are a process designed to encourage transparency, accountability and to ensure that affected stakeholders can become actively engaged in a process that legally requires Councils to consider their comments.

TROs are needed in the controlled parking zones (CPZ), 1-8, N1-N5, S1-S4 which include Southside, Marchmont, Bruntsfield, Merchiston, Fountainbridge, Dalry, West End, Comely Bank, Stockbridge, Canonmills, Broughton, Hillside and the City Centre.



Map 1 – Controlled Parking Zones

The TRO process, which is required to change the road layout within existing controlled parking zones, takes a minimum of 6-12 months and up to 18 months to determine and implement changes. Considering the length of the TRO process, which we anticipate being on average 9 months long the following maps and tables show the phases.



Map 2. CBR project phasing

**Phase 1 – Leith, Leith Walk and Craigmillar area**

The implementation of on street locations for phase 1 of the project was completed by August 2022. The outstanding off-street locations (i.e. developments where bins are stored in private car parks, and internal or external bin stores) have been implemented.

**Phase 2 – Gorgie, Roseburn and Corstorphine**

The implementation of phase 2 on street locations was completed by April 2023. The off-street locations (i.e. developments where bins are stored in private car parks, and internal or external bin stores) are due to be implemented during Autumn/Winter 2023.

### Phase 3 – Broughton, Hillside, Inverleith and Marchmont

Areas within Phase 3 of the project are within current CPZs S1-S4 and N1-N5. These required a TRO process to amend the parking restrictions. TROs for these areas were advertised in Autumn 2021 and the objections have been discussed. The TROs were approved by the [Transport and Environment Committee on 1 September 2022](#).

In the summer 2023 the project team reviewed the bin hub locations and its outcome is outlined in Appendix 3. Thanks to the review framework flexibility over 40 locations were moved which would need to go through a new TRO anticipated to be advertised by early 2024 and their implementation is expected to be carried out mid-2024.

The implementation of the new bin hub locations within CPZs S1-S4 and N1-N5 started in September 2023 and are due to be completed by December 2023. The majority of the off-street locations have been completed.

CBR Phase	Timescale	CPZ area (colour coded as per map 1)	Section	No. properties (approx.)	Ward affected
3	July 2023 – January 2024	Current CPZ – Extended area	S1 (Marchmont) S2 (Churchill) S3 (Merchiston) S4 (Dalry)	13,300	7- Sighthill/Gorgie 6 – Corstorphine/Fairmilehead 10 – Morningside 11- City Centre 15 – Southside
			N1 (Hillside and Broughton) N2 (Inverleith) N3 (Inverleith)	12,000	5 - Inverleith 11 – City Centre 12 – Leith Walk 14 – Craightinny/Duddington
		Outwith Current and future CPZ	Remaining Morningside (except CPZ 8) Inverleith (except CPZ 5-5a)	2,600	5 - Inverleith 10 – Morningside
			<b>Total</b>	<b>27,900</b>	

Table 3. Phase 3 number of properties

### Phase 4 – Southside, Newington, Prestonfield and some parts of Stockbridge and Canonmills

Areas within Phase 4 of the project which are within current CPZs 3, 4, 5A, 6, 7 and 8 require a TRO process to amend the parking restriction. The TROs process for these areas started in April 2023 and is expected to be finalised by early 2024. The implementation stage for communal bin locations for phase 5 are anticipated to start February 2024.

Off street locations are due to be implemented before and the same time of the on-street bin hub locations.

CBR Phase	Timescale	CPZ area (colour coded as per map 1)	Section	No. properties (approx.)	Ward affected
4	January – June 2024	Current CPZ – Central Area	3 (Old Town and Southside) 4 (Fountainbridge)	5,100	9 – Fountainbridge/Craiglockhart 11- City Centre 15 – Southside
		Current CPZ – Peripheral Area	5 (Dean) 6 (Stockbridge and Canonmills) 7 (Dumbiedykes-Sciennes) 8 (Bruntsfield)	10,300	5- Inverleith 11 – City Centre 15 - Southside
		Outwith Current and future CPZ	Southside	2,000	15 - Southside
			<b>Total</b>	<b>17,400</b>	

Table 4. Phase 4 number of properties

## Phase 5 – World Heritage Site (WHS) – City Centre

Phase 5 includes on-street locations within the WHS and CPZs 1-6. The TRO process for this phase is currently paused while the Council undertakes a feasibility study of alternative solutions. More information on the recommended approach to be taken in Phase 5 is available in the Appendix 5 - Phase 5 plans – gull proof bags and communal bin hubs.

Off street locations are due to be implemented between from early 2024 to Summer 2024.

CBR Phase	Timescale	CPZ area (colour coded as per map 1)	Section	No. properties (approx.)	Ward affected
5	On hold	Current CPZ – Central Area	1 (Westend) 1a (New Town) 2 (New Town) 3 (Old Town and Southside) 4 (Fountainbridge)	10,600	9 – Fountainbridge/Craiglockhart 11- City Centre 15 – Southside
		Current CPZ – Peripheral Area	5 (Dean) 6 (Stockbridge and Canonmills)	5,300	5- Inverleith 11 – City Centre 15 - Southside
			<b>Total</b>	<b>15,900</b>	

Table 5. Phase 5 number of properties

## Phase A

The majority of the areas included in phase A have a prevalence of off-street locations (i.e. private developments). Those locations can be assessed at any time and waste and recycling changes will be implemented on an on-going basis through the project implementation period.

Due to operational efficiencies, on street locations within Portobello, Newhaven and Trinity areas as part of Phase A were implemented by December 2022.

CBR Phase	Timescale	CPZ area (colour coded as per map 1)	Section	No. properties (approx.)	Ward affected
A	On-going during the project	Outwith Current and future CPZ	Forth Portobello/Craigmillar Liberton/Gilmerton Colinton/Fairmilehead Pentland Hills Drumbrae/Gyle Almond	25,500	1 – Almond 2 – Pentland Hills 3 – Drumbrae/Gyle 4 - Forth 8 – Colinton-Fairmilehead 16- Liberton/Gilmerton 17 – Portobello/Craigmillar
			<b>Total</b>	<b>25,500</b>	

Table 6. Phase A number of properties

### **Appendix 3 – Outcome of review of bin hub locations – Phase 3**

All the bin hub locations for Phase 3 have been reviewed with reference to the review framework approved by Transport and Environment Committee in May 2023. It is concluded that alternative bin locations could be found for the locations below:

<b>Reference</b>	<b>Location</b>	<b>Reference</b>	<b>Location</b>
N1-26	42 Broughton Road	S2-52	41 Colinton Road
N1-30	89 Broughton Road	S2-59	203 Bruntsfield Place
N1-45	7 Bellevue Terrace	S3-15	28 Mardale Crescent
N1-56	60 Brunswick Street	S3-18	1 Merchiston Crescent
N1-61	66 Montgomery Street	S3-20	59 Merchiston Crescent
N1-65	7 West Montgomery Place	S3-21	31 Polwarth Gardens (Mertoun Place)
N1-67	119A Montgomery Street	S3-22	30 Mertoun Place
N1-82	20 Elgin Terrace	S4-03	17 Murieston Crescent
N1-94	15 Brunton Place	S4-04	3 Murieston Place
N1-104	2 West Norton Place	S4-05	8 Murieston Crescent
N2-01	1 Inverleith Avenue	S4-06	8 Murieston Terrace
N2-09	19 Eildon Street	S4-23	8 Cathcart Place
N2-10	11 Eildon Street	S4-33	3 Caledonian Crescent
N2-11	73 Inverleith Row	S4-52	35 Gibson Terrace
N2-15	36 Howard Place	S4-53	15 Gibson Terrace
N3-33	14 Learmonth Gardens	S4-54	3 Gibson Terrace
N3-41	11 Dean Park Street	S4-71	36 Watson Crescent
N3-48	17 Cheyne Street	S4-98	27 Ardmillan Place
S1-10	54 Marchmont Road	S4-102	105 Harrison Road
S1-29	84 Strathern Road	S4-105	47 Bryson Road
S2-01	2 Bruntsfield Terrace	S4-106	35 Caledonian Crescent
S2-09	32 Cuddy Lane		

Letters with a map illustrating the new bin sites were posted to residents in August 2023 and information has been sent to local Councillors, Community Councils and Transport and Environment Committee members.

These new bin hub locations, as per list above, will need to go through a new Traffic Regulation Order (TRO) process which is anticipated to be advertised in early 2024. It is anticipated that the new bin hubs for the locations listed above will be delivered in mid-2024.



The maps for bin hub locations as part of phase 3, both the ones on the list above and the ones that will be delivered from late September 2023 are available online depending on which controlled parking zone they fall in: [N1](#), [N2](#), [N3](#), [N5](#), [S1](#), [S2](#), [S3](#) and [S4](#). These maps are also available through a link in the city map on the communal bin review project [page](#).

The rest of the locations within Phase 3 have started to be installed from late September 2023 and are due to be completed by December 2023. However, for the locations mentioned above, the historic bin locations will be retained until the new TRO is secured.

To ensure continuity with operational services, some of the historic bins, as per the locations in the list above, might change in type or size (i.e., a large side loading bin may be swapped for smaller wheeled 1100/1280L bins), however the frequency of collection will be adjusted to ensure enough capacity is provided and to prevent overflowing issues. Existing bins will not be moved from the historic locations listed above until new hubs are installed.

## **Appendix 4 – Outcome of review of bin hub locations – Phase 4**

All the bin hub locations for Phase 4 have been reviewed with reference to the review framework approved by Transport and Environment Committee in May 2023 and with consideration to the comments received from residents through the engagement undertaken in June-July 2023. It is concluded that alternative bin locations could be found for the locations below:

<b>Reference</b>	<b>Location</b>	<b>Reference</b>	<b>Location</b>
Z3-02	11 Bernard Terrace	Z7-11	4 Gladstone Terrace
Z4-05	2 Leven Terrace	Z7-21	1 Sciennes Hill Place
Z4-24	12 Lonsdale Terrace	Z7-40	4 Oxford Street
Z4-26	14 Lauriston Gardens	Z7-50	51 Salisbury Road
5A-20	2 Perth Street	Z7-52	57 St Leonard's Hill
5A-50	3 Perth Street	Z7-79	15 West Newington Place
Z5-04	34 Dean Street	Z8-19	29 Viewforth
Z6-29	27 East London Street	Z8-22	22 Viewforth
Z6-88	8 Eyre Crescent	Z8-29	4 Barclay Terrace
Z6-89	27 Eyre Crescent	Z8-45	5 Warrender Park Terrace
Z7-01	4 Fingal Place	Z8-47	45 Warrender Park Road
Z7-06	11 Livingstone Place	Z8-50	4 Roseneath Street

With reference to Glengyle Terrace and Warrender Park Road, the team is currently working with colleagues in Parks and Greenspaces to understand the implications of moving bin hubs Z4-02, Z4-03 and Z4-04 to the south side of Glengyle Terrace and Z8-40 and Z8-44 to the north side of Warrender Park Road, as residents would be required to stand on the grassed area to deposit their waste and recycling.

A letter and map showing the new bin locations were posted to residents in September 2023 and information has been sent to local Councillors, Community Councils and Transport and Environment Committee members.

It is anticipated that the new bin hubs for the locations listed above will be delivered in mid-2024.

The maps for bin hub locations as part of phase 4, available online depending on which controlled parking zone they fall in: [5A](#), [6](#), [4](#), [8](#), [3](#) and [7](#). These maps are also available through a link in the city map on the communal bin review project [page](#).

## **Appendix 5 - Phase 5 plans – Gull proof sacks and communal bin hubs**

Phase 5 of the project was paused to allow a feasibility study of possible alternative waste collection solutions within the World Heritage Site (WHS).

The Association of Public Service Excellence (APSE) was commissioned to undertake an independent feasibility study into waste solutions for the WHS. Officers provided background information in respect of existing waste services and household numbers etc. The study drew on best practice examples employed elsewhere and feedback from stakeholders and resident representatives.

The study, which is available in Appendix 6, concluded that a pneumatic waste system, such as that employed in Bergen, would be the most beneficial solution. Officers do not consider this to be deliverable in the short or medium term from a finance and infrastructure perspective and it is therefore discounted.

The second option was suggested as URS (underground recycling system). Again, officers do not believe this to be deliverable in the short or medium term due to financial or infrastructure considerations. More investigation would require to be done from an archaeological and an infrastructure perspective. The feasibility study also recognises that this would not be suitable in all locations.

The study also highlights above ground communal bins as being preferred to Gull Proof Sacks and boxes, in part due to the requirement for a property to have railings for the sacks to hang on and both the manual handling and litter implications arising from boxes. It is however important to note that the on-site element of the feasibility study was largely conducted prior to the current trial of dry mixed recycling sacks replacing boxes. It would also be intended that new sacks would be issued with a closure flap and weighted bottom which avoids the need for them to be hung on railings.

So far, feedback on the trial from crews has been highly positive. The sacks are easier and quicker to empty than a box. Anecdotal evidence from residents in the area also suggests a positive improvement through a reduction in windblown litter on collection days.

### **Recycling gull proof sack trial**

While the feasibility study was being undertaken, Council officers have been working closely with the New Town and Broughton Community Council (NTBCC) and street Residents Associations to undertake a pilot to improve the recycling rate in streets with gull proof sacks.

Residents in 1,000 properties were issued with green gull proof sacks to replace their red boxes for the collection of dry mixed recycling, increasing the capacity available for recycling. All other waste collections remained the same. The pilot has been running since October 2022 and the local groups have been proactive in promoting and monitoring the impact of the trial.

This was assessed via measurement of tonnages for both mixed recycling and non-recyclable waste, presentation rates and feedback from residents and operational teams. Residents have embraced the trial, and the feedback has been very positive. Operations have also seen an improvement in littering as there is less likelihood of the waste being blown out of the gull proof sacks. However, the tonnage hasn't demonstrated a significant increase in the amount of recycling collected, despite increasing capacity from 44 to 85 litre (L) and the trial has not shown a reduction in the non-recyclable waste collected.

In May 2023, Transport and Environment Committee approved the retention of the weekly collection frequency for non-recyclable waste while decreasing the size of the gull proof sacks from 180 to 70L and increasing the collection frequency for mixed recycling from fortnightly to weekly. This was to align the overall capacity with the existing policy for kerbside households (currently servicing circa 140,000 households).

This second stage of the trial is due to start in mid-November 2023.

Capacity per household per week (Litres per household per week)	Gull proof sacks capacity Stage 1	Current kerbside wheeled bin service	Gull proof sacks capacity Stage 2
<b>Non-recyclable waste</b>	180	70	70
<b>Dry mixed recycling</b>	GPS trial 85	120	170
<b>Glass</b>	20	20	20
<b>Food waste</b>	23	23	23

Table 1, comparison of capacity (Litres per household per week) between kerbside properties and residents with gull proof sacks.

Stage 2 of the trial will start in November 2023 and will be undertaken for six months. The outcome of this will be available in summer 2024.

F Committee also requested a final recommendation in respect of Phase 5 relating to mixed provision streets where both gull proof sacks and communal bin services were provided.

The mixed recycling gull proof sacks trial has addressed the issue relating to the lack of capacity for mixed recycling. Through the initial stage of the trial, started in October 2022, the capacity for mixed recycling increased from 22L to 85L per week per household (45L red box collected fortnightly and 85L mixed recycling gull proof sacks collected fortnightly) and with the second stage of the trial, planned to start mid-November 2023 the capacity will increase from 85L to 170L (170L mixed recycling gull proof sacks to be collected on a weekly basis).

The capacity for mixed recycling provided to kerbside properties is 120L per week per household (with 240L green wheeled bin collected fortnightly) and for communal bin service through the communal bin review a minimum of 140L per week per households. The capacity for recycling through the mixed recycling gull proof sacks fully align with the kerbside and communal services and it is a significant improvement with an increase from 22L to 180L per week per household.

For residents within the WHS boundaries currently provided with communal bin services, the lack of capacity for mixed recycling, food waste and glass still need to be addressed.

Moreover, issues in relation to overflowing communal bins due to overuse of these by residents who should be using the gull proof sacks are still outstanding. This is most noticeable where a mixture of services (gull proof sacks and communal bins services) is provided within a small area (i.e. Nelson Street and Northumberland Street or St Bernard Crescent and Leslie Place). It is proposed to address this by simplifying the range of services provided within each part/area of the WHS and in increasing the consistency of the approach.

It has to be noted that all properties within Phase 5 that are provided with off-street communal waste and recycling services (e.g. developments where bins are stored in private car parks, and/or

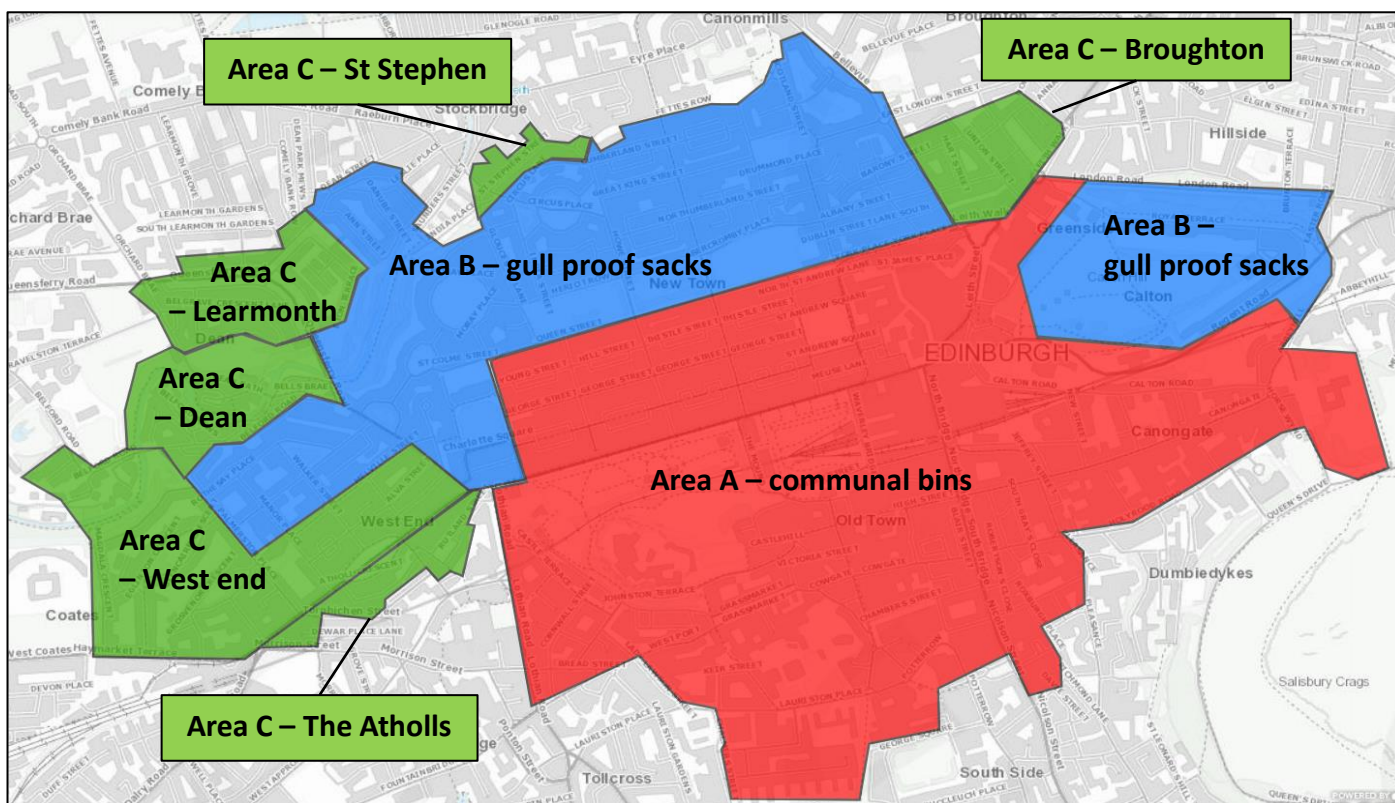
internal/external bin stores) will fall under the communal bin review project improvements. This means that for an off-street development which is currently provided with communal services every effort will be made to ensure the waste and recycling facilities are provided in line with Communal Bin Review (CBR) with the improvement of services for mixed recycling, glass and food waste bins.

For properties within Phase 5 that are currently provided with a kerbside wheeled bin service there will be no changes to their waste and recycling service provision.

To ensure a sustainable waste and recycling solution for Phase 5, three areas have been identified (A, B and C) considering a number of factors which includes:

- Current service provided i.e. kerbside, communal or gull proof sack service.
- Current service provided to nearby streets/areas to minimise the misuse of the communal bin service by residents that will be provided with gull proof sacks.

Area	No. households on street communal	No. households off-street communal	No. households on gull proof sacks	No. households on kerbside	Total no. households per area
A	3,330	3,580	0	0	6,910
B	2,050	220	1,980	210	4,460
C	3,000	240	270	250	3,760
<b>Total</b>	<b>8,380</b>	<b>4,040</b>	<b>2,250</b>	<b>460</b>	<b>15,130</b>



**Area A – Old Town and George Street corridor**

Area A covers most of the Old Town and the George Street corridor and it is bounded by the following streets: Lothian Road, Hope Street, Charlotte Square, Queen Street, Leith Street and Calton Hill (with the exclusion of Royal Terrace, Carlton Terrace, Regent Terrace and its Mews).

This area is currently provided with a prevalence of communal bins service with more than 3,300 properties on-street service and around 3,600 properties provided with off-street facilities.

There are no households provided with gull proof sack service.

It is recommended that within Area A the communal bin review should progress.

It is anticipated that up to 70 bin hubs would be installed in this area to improve recycling services and replace the existing bin locations. Engagement and agreement with Edinburgh World Heritage and Historic Environment Scotland is currently in progress on the specific bin hub locations. Moreover, mitigation factors will be applied to new bin hub locations within these areas to minimise the impact on the WHS.

These mitigation factors include:

- Provision of a different corralling design and finish which is more in keeping with the streetscape of the WHS (Black powder coated bespoke corralling);
- Different colour of the bin lids: deeper green for mixed recycling and glass lid to have only the flap purple to minimise visual intrusion;
- Locating bins on the opposite side of properties serviced (i.e. garden side) where this can be accommodated as per CBR framework review approved by Transport and Environment Committee in May 2023;
- Relaxation of the recommended walking distance (50m) as per CBR framework review approved by Transport and Environment Committee in May 2023.

It has to be noted that some streets within Area A are not suitable for full bin hub facilities i.e. streets adjacent to Rose Street, High Street and Canongate are not suitable for the installation of bollards consequently facilities of recycling facilities at locations such as these will be agreed with Edinburgh World Heritage and Historic Environment Scotland.

### **Area B – New Town and part of Westend**

Area B covers the majority of New Town and part of West End within the WHS and is bounded by the following streets: Queen Street, Charlotte Square, Queensferry Street, Melville Street, Palmerston Place, the back of Rothesay Place, Belford Road, the Dene path, the back of Danube Street, the back of Bernard Street and Leslie Place, Deanhaugh Street, Gloucester Street, the back of North West Circus Place to cover the Royal Circus and North East Circus Place, Fettes Row, Royal Crescent, Summer Bank, Cornwallis Place, Bellevue Crescent, Mansfield Place, Broughton Street and York Place.

This area is currently provided with a prevalence of gull proof sacks and on-street communal bin services with limited number of properties with off-street communal bins and kerbside services.

Nearly 2,000 properties within Area B are currently provided with gull proof sacks service which represent up to 90% of total number of households provided with this service.

It is recommended that gull proof sacks are retained for all properties who currently receive this service for non-recyclable waste and mixed recycling as per stage 2. Pending the outcome of the stage 2 trial monitoring anticipated to be available in Summer 2024, it is anticipated that the gull proof sacks service will be provided with a 70L gull proof sack for non-recyclable collected on a weekly basis and a 170L gull proof sacks for mixed recycling collected as well on a weekly basis.

In addition, the gull proof sacks service as described above would be extended to cover the properties currently on communal bin service for an additional 2,000 properties. This change however will be subject to the success of the next stage of the trial and also subject to engagement with residents.

This would address problems with abuse of the communal bins leading to bins overflowing. Streets that would be change their service from communal bins to gull proof sacks are:

- Fettes Row
- Royal Crescent
- Summerbank
- Cornwallis Place
- Bellvue Crescent
- Mansfield Place
- London Street
- Broughton Street (west)
- Barony Street
- Barony Lane
- Albany Street
- York Lane
- Dublin Street
- Scotland Street
- West Scotland Street Lane
- Nelson Street
- Drummond Place
- Dundonald Street
- Cumberland Street
- Dundas Street
- St Vincent Street
- North East Circus Place
- North West Circus Place
- Royal Circus
- Howe Street
- Gloucester Lane
- Wemyss Place
- Randolph Place
- Rothesay Place
- Rothesay Terrace

For properties that are currently provided with a kerbside wheeled bin service there will be no changes to their waste and recycling service provision.

### **Area C – Broughton, St Stephen, Learmonth, Dean, part of West End and The Atholls**

Area C covers the Atholls, part of Westend, the Dean, Learmonth, St Stephen and Broughton area within the WHSs and it is bounded by the following streets: Broughton Street, Broughton Place, Gayfield Square, Union Street, Antigua Street, Leith Street and Picardy Place, Rutland Street and Square, Canning Street Lane, Torphichen Street, Torphichen Place, part of Morrison Street, Haymarket Terrace, Donaldson Crescent up to Queenferry Road, South Learmonth Avenue, Learmonth Terrace Lane, Comely bank Avenue, Dean Park Crescent, the back of Ann Street, down the The Dene path, Belford Road, the back of Rothesay Mews, Palmerston Place, Melville Street, Queensferry Street and Shandwick Place.

Properties in area C are mainly served by on street communal bin services with 3,000 properties on this service, with some properties provided with off-street facilities, some kerbside wheeled bin services and a limited number of household provided with gull proof sacks (circa 270 properties which represent just over 10% of the total number of properties currently on gull proof sacks service). The current streets provided with gull proof sacks in area C are:

- Lennox Street
- Eglinton Crescent
- Melville Street
- Palmerston Place (east)
- Manor Place
- Walker Street

Due to the proximity of those areas to on-street communal bin locations outwith the WHS and also the proximity to gull-proof sacks area further assessment is required to identify the feasibility to

move properties from gull proof sack to on street communal bin service and vice versa to improve service consistency.

For properties that are currently provided with a kerbside wheeled bin service there will be no changes to their waste and recycling service provision.

### Phase 5 – Side loading bins service

As part of the communal bin review project and as approved by Transport and Environment Committee in [February 2020](#), side loading bins (see image below) are being removed across the city in favour of wheeled communal bins, 1100/1280L bins (see image below). The specialised side loading bins vehicle are at their end life and to provide a single service city-wide so to improve service flexibility and reliability it is necessary to remove the side loading bins within Phase 5 and replaced with wheeled communal bins.



Image 1. Side loading bins  
Image

The change in the large side smaller not affect the the frequency of adjusted to



2. Wheeled communal bin

type/size of bins from loading bins to communal bins will capacity provided as collection will be ensure enough

capacity is provided and to prevent overflowing issues. While the type/size of bins would change the bin locations will not.

It is anticipated the removal of the side loading bins from Phase 5 in favour of wheeled communal bins will be carried out in Spring/Summer 2024.

The code of practice on household waste and recycling services in Scotland is intended to become a statutory measure. The timescale for this is unclear however this might require further changes to align the gull proof sack service to the code of practice in terms of capacity of recycling to be provided and streaming of the materials.





# Edinburgh World Heritage Area Refuse Collection Options

City of Edinburgh Council

This report has been  
prepared by Andy  
Mudd

Draft Version 1.0

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APSE (Association for Public Service Excellence) is a not-for-profit local government body working with over 300 councils throughout the UK. Promoting excellence in public services, APSE is the foremost specialist in local authority front line services, hosting a network for front line service providers in areas such as waste and refuse collection, parks and environmental services, leisure, school meals, cleaning, housing and building maintenance.

APSE provides services specifically designed for local authorities, such as benchmarking, consultancy, seminars, research, briefings and training. Through its consultancy arm APSE delivers expert assistance to councils with the overt aim of driving service improvement and value for money through service review and redesign. APSE delivers in excess of 100 projects a year and clients benefit from the consultancy's not for profit ethical approach to consultancy services.

# Edinburgh WHA Refuse Collection Options

City of Edinburgh Council

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# 1. Executive Summary

## 2. Introduction

- 2.1 The collection of waste in a World Heritage Area (WHA) poses significant challenges. In Edinburgh that challenge is compounded by the fact that many domestic properties do not have anywhere to store containers, such as wheeled bins and it is seen as undesirable for them to be permanently on the streets in such a sensitive area.
- 2.2 Following a previous meeting of the Transport and Environment Committee, the Council engaged APSE Solutions to undertake a feasibility study to consider a range of potential waste and recycling collection options for the area and to report back on which ones would be feasible for the Edinburgh World Heritage Area (WHA).
- 2.3 APSE Solutions has reviewed a range of background documentation, held meetings with relevant council officers and wider stakeholders and carried out research into the waste management systems in place in other World Heritage Cities. On-site visits have also been carried out to gain a better understanding of the waste management issues Edinburgh and its residents face.
- 2.4 The methodologies set out below are all theoretically available. However, some may not meet essential criteria e.g., from a health and safety perspective, and others may not be feasible for operational or other reasons. They are however all included to facilitate a frank discussion. They include options for the collection of individual household waste and recycling as well as options for communal containers.
- 2.5 This options appraisal takes particular account of a recent report by Simpson and Brown, commissioned by the New Town and Broughton Community Council, assessing the Heritage Impact of the proposal to create communal bin hubs in the area. This report has been extremely useful in considering the implications for the WHA of the available collection methodologies.
- 2.6 The options can be split into three broad categories; those involving individual household provision, those of an above ground communal nature and those located below ground. There are multiple sub options for each of these broad options as set out below.
- 2.7 This version of the options report is an initial draft for discussion. It should not be circulated beyond those to whom it has been provided for comment.

### 3. Option One: Individual Property Options

#### **Option 1A: Time Zoned Hybrid Collection using gull proof sacks, caddies and other containers for food waste and recycling**

- 3.1 High Frequency (daily / twice daily collection) with very specific limited timed collection windows, with residents restricted to only presenting waste an hour before in either dark grey tinted or clear transparent sacks (paper & card, collected in resident supplied cardboard boxes). Vehicle would need to be a rear loaded split body suitable for a lot of hand loading, unless the use of crew 'assistance-bins' is acceptable. This would then be rigorously enforced to ensure waste was not left in the street.

#### **Option 1B: Hybrid collection on standard frequencies of gull proof sacks, caddies and other containers for food waste and recycling**

- 3.2 This methodology is currently being trialled in some areas of the WHA. Collection frequencies do not currently match those in use for wheeled bins elsewhere in Edinburgh. Residual waste is being removed on a weekly, as opposed to fortnightly basis in recognition of the type of containment provided. Containers/bags can only be presented for the day of collection, as with wheeled bins in other areas.

#### **Option 1C: Traditional Container Collection**

- 3.3 Traditional container-based collection methodology (considered to include either newer design higher capacity kerbside caddies with hinged lids, or hinged lidded bins / wheeled bins collected from the kerbside at the same frequency as other areas of Edinburgh. (The current design open boxes are not considered viable due to the lack of lid, the cleansing impact from wind-blown litter and the significant amount of bending required by operatives.)
- 3.4 Food waste and glass could either be collected from small communal containers or on an alternate basis from caddies using a further compartment at the front of the vehicle.

### 4. Option Two: Communal Container Options

#### **Option 2A: Moveable Communal Containers**

- 4.1 Wheeled or Eurobins are placed at regular locations in the area wherever most appropriate for waste arisings or storage location and are easily moved as desired. The exact location of these bins is impossible to control as they are capable of being moved by anybody not just collection staff.

### **Option 2B: Moveable Large Communal Containers**

- 4.2 Large freestanding containers without wheels which are either side or crane loaded, are placed at regular locations in the area wherever most appropriate for waste arisings or storage location and easily moved as desired. These units are less easy to move than wheeled bins but do not have a fixed location.
- 4.3 This may be enhanced with Semi-underground or Underground containers where they are deemed to be appropriate.

### **Option 2C: Communal Container Hubs**

- 4.4 These are a way of fixing the location of communal wheeled bins to ensure that they remain in the intended location. There are several different ways in which this could be achieved. Examples are:
- Using low minimal railings to keep containers in place.
  - Enclosing containers in individual housing, in rows with limited apertures to a single container
  - A gated bin store which may or may not have a roof. These are the 'norm' for many modern blocks of flats without waste chutes.
  - Purpose-built buildings with appropriately sized restrictive apertures in which the waste is deposited, with the bins themselves being out of site
  - Above ground versions of the underground systems described below which have easy access apertures and can have access control technology.

## **5. Option Three: Underground Refuse Systems (URS)**

### **Option 3A: Semi-Underground URS**

- 5.1 These containers tend to have about a metre visible above ground which can have appropriate decorative surround / cladding attached, generally a grey plastic lid which houses an appropriately sized restrictive apertures. These can be circular or square / rectangular and of various diameters of approximately 1-2m. The lid and inner bag / container is lifted out with a crane and emptied into the collection truck. They are very high capacity and so need emptying far less frequently than wheeled bins. Edinburgh already has some of these units in place of standard litter bins in Princes Street Gardens but there are many alternative designs on the market.
- 5.2 Access to semi-underground bins is capable of being restricted through the use of an RFD fob or smart card. Sensors fitted to the bins can be used to ensure that the bins are only emptied when they are full.

### **Option 3B: Fully-Underground URS**

- 5.3 This system just has one or a series of above ground pillars. They are generally either in stainless steel or painted steel. These in turn house appropriately sized restrictive apertures into which waste & recycling is deposited. This pillar sits on top of a sealed flat metal plate or other decorative appropriate surface, which completely hides the container that sits beneath. This whole pillar / lid unit is then lifted up and the container beneath emptied into the collection truck using the inbuilt crane mechanism. These units have very high capacity – up to 20 times that of a standard 240ltr wheeled bin and so need emptying far less frequently. Compatible above ground units are also available for locations where it is not feasible to place an underground unit.
- 5.4 Access to fully underground bins and compatible above ground units is capable of being restricted through the use of an RFD fob or smart card. Sensors fitted to the bins can be used to ensure that the bins are only emptied when they are full.

### **Option 3C: Hydraulic Platform Fully Underground Containers**

- 5.5 This system uses standard wheeled bins but hides them underground on a hydraulically operated platform which allows the bins to be emptied by a regular refuse collection vehicle fitted with a bin lift. There are examples of such units in use in the Grassmarket.
- 5.6 Access to hydraulic platform bins is capable of being restricted through the use of an RFD fob or smart card. Sensors fitted to the bins can be used to ensure that the bins are only emptied when they are full.

### **Option 4D: Vacuum / Pneumatic Waste System**

- 5.7 These systems are effectively like the high-powered waste chutes found in high-rise buildings, enabling waste to travel in horizontal pipes beneath the ground. They have waste deposit chutes like fully underground containers, similar to post boxes placed at regular intervals along the pavement or road, development court yards etc. The waste is sucked to a central depot and compacted into a demountable vehicle body. There are a few examples worldwide of such systems in a municipal setting, the most significant retrofitted example being in the World Heritage City of Bergen in Norway. This system involves the phased installation of 7,500 metres of pneumatic pipes, capable of transporting 50 tons of waste a day. Installation began in 2010 with the first phase becoming operational in 2015 and was extended in 2022. Once complete, the system will cover 30,000 apartments with waste and recycling streams being transported multiple times a day.

## 6. Options appraisal

6.1 To help with understanding the potential for different options to work for Edinburgh the table below sets out some of the key factors to take into consideration in determining the preferred approach. It includes service parameters applicable to communal bins as well as essential requirements for all systems, to ensure the health and safety of both collectors and residents and to meet the requirements of WHA status. The table also includes some secondary factors that are likely to influence preferences such as user convenience and operational practicality.

Service parameters	Comment
<p>Source: Transport and Environment Committee; 10am, Thursday, 27 Feb 2020, Communal Bin Enhancement Update.</p> <ul style="list-style-type: none"> <li>• Residents should not need to walk more than 50m, alignment to Blue Badge criteria; target being 30m as for new build locations.</li> <li>• Placing bin in locations where driver or pedestrian <b>visibility</b> is not affected. Bins should be positioned at least 10 metres away from any junctions and pedestrian crossing.</li> <li>• Bins should preferably be located on the <b>roadway</b> not the footway.</li> <li>• However, if this is not possible bins can still be sited on the pavement subject to factors such as width of pavement and distance left for wheelchair and pushchair users which should be a minimum of 2 metres.</li> <li>• Users should preferably not be required to cross a road to dispose of their waste and recycling. Bins should be on the same side of the road as the users' properties, <b>unless a safe crossing place is nearby</b>.</li> <li>• Bins not to be over covers and gully grates.</li> <li>• User is <b>not required to stand in the flow of traffic</b> in order to access the bin aperture.</li> <li>• Where there is parking, as far as possible multiple of 5 metres stretches of parking will be used to guide the bin location to minimise any loss of parking spaces where that cannot be avoided.</li> </ul>	<p>These parameters apply to all systems but were developed specifically for Communal bin options</p>
<p>Operations have a vehicle reverse distance of maximum 15m and an operative pull distance of 10m.</p>	
<p>Other key projects are being delivered across the area. i.e. EV points, bike storage, road safety. These might have an impact on locations and service to be provided etc. Including community heating.</p>	



	<b>Proposed capacity per property per week (communal)</b>	<b>Kerbside service capacity per property per week</b>	<b>Code of Practice capacity per property per week</b>
Non-recyclable waste	140/170L	70L	70L
Mixed recycling	140/170L	120L	120L
Glass	5-20L	20L	20L
Food waste	5-20L	23L	23L
<b>Essential Appraisal Criteria</b>			
<b>Health &amp; Safety; User;</b> Minimal manual handling (carrying, lifting, distance) adjustable by the user, i.e. they can carry amounts that are appropriate to them, with a journey frequency that is appropriate, Access with minimal steps and debris, which is well lit with good visibility, with good hygiene promoted by minimal contact points that are not soiled in an area that does not require regular cleaning. Ease of accessibility.			The preferred solution must not create undue risks for users
<b>Health &amp; Safety; Collection personnel;</b> Minimal manual handling (carrying, lifting, distance) by collection personnel, with minimal exposed activity in the highway, easy access to collection containers (minimal steps, debris, lighting), with minimal risk from the waste itself and minimal weather exposure.			The preferred solution must not create undue risks for operatives
<b>WHAS-Atmosphere / General Aesthetic;</b> Is of the utmost importance, especially the visual of the building fronts and the 'main' front street view (both frontal and street length). The basis of the protection is individuals 'experience' of the area in terms of originality, (legally that is what an individual would have 'experienced' during a visit in 1995, as that was the time of the application for protection), is impacted as little as possible, so significant numbers of brightly coloured containers, left out, at a high frequency, would be less desirable, than a minor permanent infrastructure amendment. Time window is important (duration and timing), preference to avoid Friday collections, to avoid containers being left out over the weekend. Preference for regular placement of moderate sized free-standing units, over less-frequent container stores, preference for waste 'post-boxes' over regular placement of moderate sized containers.			Permanent presence of bins on the streets not compatible with this
<b>WHAS-Built Environment;</b> Minimal Building, Highway structures altered or impacted as little as possible with little permanent irreversible amendments. Of the utmost importance, is the visual of the building fronts and the			Permanent bin housings would need very careful

<p>'main' front street view, so infrastructure amends to avoid, to enable 'bins' on garden side or 'side-street' would include a preference for speed tables to facilitate that. Requires confidence upon methodology as being the right solution to avoid the need to be changed. This includes damage to the road surface and sub-structure by collection vehicles, including axle loadings.</p>	<p>consideration</p>
<p><b>WHAS-Archaeological;</b>          OLD TOWN area; Excavation best avoided, or absolutely minimised in frequency and scale, considered only at specific sites and likely to overrun and be costly.          NEW TOWN area; Excavation would potentially be OK in general, there are some complete no-go areas, confirmation of no issues is impossible, area by river unstable.</p>	<p>URS may not be feasible for some areas</p>
<p><b>Levels of recycling; quantity / quality;</b>          The quantities of actual real reuse of packaging ought to be maximised, through achieving maximum output without contamination, with moisture ingress minimisation for paper / card. Need to be able to move away from co-mingled collections. The collection methodology ought to easily support the addition of other materials like Soft Plastics, Textiles &amp; WEEE.</p>	<p>Requires multiple containers to achieve</p>
<p><b>The Household Recycling Charter Code of Practice (CoP Scotland 2016), Compliance;</b>          The collection methodology ought to maximise compliance with the current code and consider change impact from the Deposit Return Scheme and Packaging and packaging waste: Extended Producer Responsibility (EPR). Therefore, to easily support the addition of other materials like Soft plastics, Textiles &amp; WEEE and / or support a change in the number waste streams.</p>	<p>DRS may remove some recycling streams for domestic waste</p>
<p><b>Cost (Revenue);</b>          Collection, Cleansing, Maintenance costs overall required to be affordable and to achieve an optimised outcome against methodology efficacy.</p>	<p>Needs to be fair on all Edinburgh charge payers</p>
<p><b>Cost (Capital);</b>          Must be achievable with an acceptable payback period for capital expended</p>	<p>Needs to be overall affordable</p>
<p><b>Secondary Options Appraisal Criteria</b></p>	
<p><b>Resident Convenience; Capacity, Access, Noise / disturbance, Scheduling;</b>          Containers should be accessible to all members of the community, have adequate capacity and minimise noise and disruption to residents.</p>	
<p><b>Practicality and Overall Suitability, ease of Methodology to be Combined, Integrated, be Flexible;</b></p>	

<p>The system will either need to be practical for most locations of the area, or be consistent with other systems e.g. in terms of lifting methodology. It should avoid, very specific vehicle format that requires dedicated spare vehicles that cannot be used elsewhere. It needs to offer flexibility with other collection methodologies and keep total number of vehicle movements to a minimum (to reduce carbon emissions but also damage to the fabric and atmosphere of the world heritage site).</p>	
<p><b>Preferential Options Appraisal Criteria</b></p>	
<p><b>Cleanliness / Hygiene; Container access, Container area, Collection process, Ease of mechanical sweeping, fly-tipping risk;</b></p> <p>The area needs to minimise places for dirt / rubbish to collect and fly-tipping to be abandoned, communal containers ought to permit hands free access, with openings not contaminated during emptying. The collection process ought to minimise the risk of litter and lost containers. Cleansing by mechanical sweeper ought to be easy.</p>	
<p><b>Service Delivery impact; Inclement weather, scheduled collections, collection frequency;</b></p> <p>Minimal collection process disruption (total highway disruption, time versus frequency), collection methodology able to respond adequately to public holidays and weather disruption especially wind &amp; snow.</p>	
<p><b>Ingress Of Trade Waste;</b> System ought to minimise free access by businesses.</p>	

6.2 Given that there are no options that totally avoid compromising one or other of the criteria set out above, a 'least bad' approach seems unavoidable. Moreover, identifying a single preferred option for all locations may not be feasible. It may therefore be better to draw up a hierarchy of preferences to be followed, depending on a location-by-location assessment.

**Service parameters**

6.3 In terms of the broad options, they all have sub-options that are capable of operating within the service parameters. The clear exception to this is communal bin options that involve the informal placement of wheeled bins. The potential for these to be moved mean that they are likely to fall foul of every one of the service parameters as they all hinge on containers remaining in a fixed location. For this reason, Options 2A and 2B can be discounted from any further appraisal.

**Safety and well-being of users.**

6.4 The first of the essential criteria concerns the safety and well-being of users. Manual handling is minimised in systems that allow for waste to be disposed of on a frequent

basis to avoid large amounts having to be carried in one go. All systems that require residents to present their waste on a frequency basis move away from this principle to one extent or another.

- 6.5 Wheeled containers avoid the need for carrying but can be heavy and difficult to manoeuvre, particularly if they have to be brought down stairs or steps. Other containers, including sacks and boxes also create manual handling issues, although these would be less significant for options with the most frequent collection regimes. Sacks and boxes that are removed or emptied on a frequent basis minimise the need for residents to carry significant quantities of material at a time and to that extent, share the advantage of the communal bin options in this regard. However, frequent emptying also increases the need for collection vehicles to enter into residential areas which creates physical risks and, until vehicles are decarbonised, contributes to poor air quality and will increase the carbon footprint of refuse collection at a time when the council is committed to tackling climate change through reducing emissions from its activities. It should however be borne in mind that five electric RCVs will be available to the Council from July 2023 onwards.

Best: URS and Pneumatic systems

Better: GPS, boxes and caddies with frequent collection

Worst: Individual property containers emptied on a standard kerbside frequency of fortnightly

### **Health and safety of collectors**

- 6.6 The second essential criterion is the health and safety of collectors. Risk to them comes primarily from manual handling requirements but can also be related to the location of the material they are lifting. It follows that the safest systems are those that avoid the need for manual handling altogether and where the location of the container is permanent. This includes all the fixed location communal bin options as well as the underground systems. The pneumatic system avoids the need for on street collection altogether so eliminates all risk to refuse collectors. This includes those associated with working outside and with the operation of vehicles and machinery.

Best: URS and Pneumatic systems

Better: Fixed location communal bins

Worst: Bags, boxes and caddies with higher manual handling requirements

### **General aesthetic of the area**

- 6.7 The general aesthetic of the area is best protected by minimising the extent to which waste and recycling containers are left on the streets. On the one hand this could suggest using less visible containers that are left out for a minimum period. The hybrid

collection, using gull proof sacks, boxes and caddies is the option that most closely fits this description, although if the collection frequency was daily or even more frequent there would be at least some containers on the street most of the time. Moreover, this option maximises the impact of collection vehicle movements in sensitive areas, albeit that collections could potentially be scheduled to minimise this. The less obtrusive communal or URS options on the other hand, could be carefully designed and sited to actively minimise their impact on the environment subject to the parameters for siting. Fully underground URS systems in particular would remove the actual waste container from view altogether and minimise the visual impact. The pneumatic system would eliminate issues associated with collection altogether:

Best: Pneumatic system

Better: URS

Worst: Individual household containers

### **WHAS Archaeological**

6.8 The archaeological impact of some options could rule them out altogether for some areas, if not the whole of the Old Town, as they would require significant excavation. Fully underground systems require a deeper excavation than semi underground units but neither could be used without extensive survey work. The installation of a pneumatic system would involve major and extensive earthworks. The example of medieval Bergen suggests that it may not be entirely unfeasible, particularly where there are other utilities such as sewers or utility supplies in place.

Best: Above ground containers

Better: Pneumatic or semi underground

Worst: Fully underground

### **Levels and quality of recycling**

6.9 The need to avoid co-mingled collection inevitably means that multiple containers are required. Materials such as paper and cardboard are easily devalued by contamination and by exposure to adverse weather conditions. It follows that the best options in relation to this criterion are those that make it easy for users to sort material and which preserve the quality of it. Box systems do neither of these things as they are too small for some materials and generally open to the weather. Bins of all types are better options in relation to this criterion but are greatly improved through the use of access control technology and where designed to be easy and clean to use. Large wheeled bins can be difficult to open, dirty and if not lockable by users, likely to be left open to the elements. The systems with easy access apertures escape these problems. These include some above ground options where access is via a restricted

aperture, along with all versions of URS which are easy to use and fully protect recyclable material.

Best: URS

Better: Other sealed containers with aperture access

Worst: Open sacks and boxes

### **The Household Recycling Charter Code of Practice (CoP Scotland 2016) Compliance**

6.10 The main requirement of this criterion is flexibility and the ability to adapt the system to accommodate additional recycling streams or the removal of any materials from the domestic waste stream as a result of DRS. Individual household wheeled bins can be expensive to repurpose where there are thousands of them in use – even if this means just changing the colour of lids rather than the whole bin. Providing residents with different coloured gull proof sacks would be relatively easy and far less costly.

6.11 Traditional, high capacity, communal wheeled bins can be repurposed to accept a different waste stream by changing a colour coded lid. Where they are contained within enclosures however it may be difficult to add additional bins if a requirement for additional source segregation arises. Similarly underground units can be easily adapted to changes in material but the installation of additional bins to accept new streams would be prohibitively expensive.

Best: Gull proof sacks

Better: Communal wheeled bins

Worst: URS

#### **Affordability**

#### **Cost (Revenue);**

6.12 The revenue cost of different options is closely linked to the frequency with which they are collected and to the number of people and vehicles needed to achieve this. The most expensive is therefore the sack-based system with daily or more frequent collection and significant levels of manual handling, involving a crew of four. Whilst the calculation of an accurate cost is beyond the scope of this options appraisal, it is reasonable to assume that the revenue cost of this approach would be many times greater than the cost of a high capacity URS system, where bins are only emptied when they are full and each lift clears the equivalent of the waste from 20 households. URS can be and in many cases is, emptied by a single person crew. Policy may require an additional crew member for reasons of safety but costs are significantly lower than any collection methodology based on individual household containers. The lowest

revenue cost of all the options is the pneumatic system which avoids collection costs altogether.

Best: Pneumatic

Better: URS and other communal systems

Worst: Gull proof sacks, boxes and caddies

### **Cost (capital)**

6.13 The capital cost of the options tend to be highest for the ones with the lowest revenue costs. A pneumatic system would amount to a major capital project. The value of the contract to install the first phase of the Bergen system was reported to be £20m (2010 prices) which is £2,564 per household across 7,800 homes. Recent reports indicate that the eventual cost of the full scheme, covering 30,000 households, is likely to be in excess of £100,000,000.

6.14 Stand-alone, fully underground refuse units cost around £9,000 per unit or around £1350 per property for a three stream system. Semi underground systems can be purchased for around £6,000 per unit or £900 per property for a three stream system.

6.15 Whilst these costs are high, the revenue savings over the lower capital cost options can make them good investments in the longer term. The recent example of Liverpool where underground bins are being installed in areas of high density terraced housing is expected to pay back the capital outlay from savings in collection and clean-up costs in less than 10 years. In that case the per household cost of service has reduced from over £60 per household per annum to under £20.

Best: Sacks, boxes and caddies

Better: Above ground communal systems

Worst: Pneumatic system

### **Secondary appraisal criteria**

#### **Resident Convenience; Capacity, Access, Noise / disturbance, Scheduling;**

6.16 All systems that are compliant with the service parameters offer a level of convenience to users. Gull proof sacks are popular with residents because they are regarded as more convenient than communal options but experience from other locations in the UK indicates that it is likely that the less obtrusive URS and pneumatic options would also be popular. These systems avoid some of the less convenient aspects of the gull proof sack system associated with the requirements around presenting and taking in the sacks on collection day. Moreover, it is very unlikely that residual waste collection frequencies can be maintained at the current frequency Two weekly collection would increase the quantity of material to be presented and the need for residents to store

it between collections. All communal options reduce levels of disruption as they reduce the frequency with which collections take place. This is particularly the case with URS options and of course the pneumatic system would remove collection altogether. The vacuum option is also the quietest as waste and recycling is removed soundlessly.

**Practicality and Overall Suitability, ease of Methodology to be Combined, Integrated, be Flexible;**

6.17 The least practical methodologies from an operational perspective are the ones using the smallest containers as these require the most frequent collection frequencies. It is however feasible for these methodologies to be combined with other, more practical methods where the latter are not feasible, for example because it is not possible to site above ground units without impacting on the streetscape or where it is not possible to excavate for underground systems.

**Cleanliness / Hygiene; Container access, Container area, Collection process, Ease of mechanical sweeping, fly-tipping risk;**

6.18 Sealed units offer significant benefits in terms of street cleanliness. Whilst gull proof sacks may prevent animals from spilling waste onto the streets, the presentation and collection process itself is likely to lead to some spillage. On the other hand, standard communal bin storage areas are widely seen as magnets for fly tipping and when not fitted with fill sensors, bins are frequently allowed to overflow although the proposed collection frequency is designed to reduce the potential for overflows. Unenclosed communal bins can also attract fly tipping and unless fitted with sensors and access control mechanisms, can become overfull before they are scheduled to be emptied. Whilst effective enforcement and service planning can go some way to resolving these issues, the underground options are a better alternative. These units retain all the waste that goes into them and there is very little escape at emptying time. They eliminate foul odours and discourage fly tipping. The Bergen experience of the pneumatic version is that it leads to cleaner streets with no disruption from refuse collection.

Best: Pneumatic systems

Better: Other URS

Worst: Communal wheeled bins

**Service Delivery impact; Inclement weather, scheduled collections, collection frequency;**

6.19 Other than pneumatic systems, which do not require to be emptied, large capacity URS, equipped with fill sensors, are the least susceptible of the systems to disruptions



in collection frequency. Gull proof sacks are the most susceptible, particularly where there is a narrow collection and take back window. Where collections are scheduled daily, adverse winter weather could be highly disruptive, leading to resident dissatisfaction and unacceptable numbers of containers left on the streets although a weekly schedule would reduce this risk. Above ground communal containers typically have much lower capacity than URS and do not have locking systems linked to fill sensors. They are therefore more likely to become overfilled and lead to waste spillage if the collection regime is disrupted.

Best: Pneumatic systems and other URS

Better: Above ground communal bins

Worst: Gull proof sacks

### **Ingress Of Trade Waste;**

6.20 There is a widespread view that trade waste is routinely finding its way into the domestic waste stream in the WHA. Freely accessible communal bins of all types will be attractive to residents of the area whose premises are used for commercial purposes. This includes the many properties made available through Air BnB and other routes. The council does not currently provide a charged for service to commercial customers and there seems to be a low level of enforcement. Therefore, even the solutions based on individual properties, may not be effectively restricted to domestic customers.

6.21 In so far as communal bins are concerned, the use of access control that is capable of differentiating between domestic and trade users can facilitate a cost effective, co-collection regime with automatically generated charging for trade waste users. Authorised users would have a fob or card to allow access to specific bins. This sort of technology is routinely used on URS units and compatible above ground bins but is not readily available for communal wheeled bins where low tech but difficult to police methods, such as different coloured bags, are sometimes used.

6.22 Whilst co-collection is also a feasible option with the gull proof sack system, it does not necessarily lend itself to the needs of many trade waste users who would likely continue to take advantage of nearby accessible communal bins. For this reason, the method is less capable of controlling the level of trade waste entering the domestic stream and has less potential for creating an income stream for the service than a suitably equipped underground system.

Best: All underground systems

Better: Gull proof sack

Worst: Open access communal wheeled bins

## 7. Conclusions

- 7.1 In terms of visual impact, resident convenience and operational practicability, the assessment indicates a pneumatic system may well be the best option. However, the feasibility of installation and capital affordability are significant barriers to the implementation of such a system. The excavation required may be entirely unacceptable, at least in some of the areas concerned and the capital cost prohibitive at a time when UK local government funding is under huge pressure. Moreover, installation would likely take years to get underway and at least a decade to complete. The fact that the system has been retrofitted in one World Heritage Area – Bergen, does not mean it could therefore be installed in Edinburgh. Conditions for excavation are unlikely to be the same and the public sector funding regimes and local government powers framework of Norway and Scotland are not comparable. One major difference is that Bergen is able to charge residents for using the system and whilst ‘pay as you throw’ schemes have been discussed in Scotland, they are not currently lawful for domestic waste disposal services.
- 7.2 Other underground solutions also come out well in the assessment. URS is convenient, operationally practicable and would have a minimum impact on the WHA streetscape. Such systems are expensive to install but do generate significant revenue savings over individual household collection methodologies. If the revenue comparison were to be with a system that involves daily collections it is likely that a robust financial case could be made. As with the pneumatic system however, the excavation required may not be feasible in all areas, either because of what is underground or because suitable sites cannot be found to satisfy the service parameters, e.g. to avoid residents having to cross the road to access the bin. It should be noted that underground systems have been installed in a number of other cities with WHA status, including Lyon and Bruges.
- 7.3 Other communal bin solutions all struggle in terms of the impact they would have on the environment of the WHA. Whilst they can be convenient, operationally practicable and very affordable, all versions of permanently sited bin hubs, whether enclosed or not, would have a high visual impact, making them unsuitable for most, if not all locations in both the Old and New Towns.
- 7.4 Standard large wheeled bins are very unpopular with users, not only because they are ugly but also because they can be difficult to open and close and are considered unhygienic. To meet the service parameters there would need to be a hub of at least three containers every hundred meters. These could be hidden in bin stores or other housing which, if carefully designed, could make them more user friendly, but it is difficult not to conclude that the permanent addition of them to the streetscape

would not be compatible with the WHA requirement to preserve the general aesthetic of the area and the appearance of the built environment.

- 7.5 Despite strict requirements around the presentation and taking back of containers, the gull proof sack system is relatively popular with residents, albeit that some have been observed to make use of nearby communal wheeled bins, perhaps indicating that the system is not always practicable for all residents. Its major drawback is the level of manual handling required of collection operatives and the frequency with which emptying would have to take place to make the service convenient and accessible to all residents. The use of boxes and caddies also creates manual handling issues and is the least effective way to preserve the quality or increase the quantity of recyclable material.
- 7.6 Daily collection is costly and also damaging to the environment but weekly or less frequent collection could prove difficult for at least some residents because of the quantity of material that they would need to present for collection on emptying day. Regardless of frequency, a narrow time window for collection and taking back would be necessary to minimise the visual impact. This would make the system difficult to use for some residents, e.g. those who are at work when collection takes place, indicating a requirement for controlled access to alternative disposal arrangements if issues around fly tipping are to be avoided.

### **Hierarchy of preferences**

- 7.7 None of the options are an exact fit with the appraisal criteria. Those that best satisfy the key requirements and constraints of WHA status, whilst remaining convenient to all users and operationally practicable, are also the ones that pose the greatest challenge in terms of implementation. It is therefore likely that a range of solutions will be needed, depending on location.
- 7.8 It is important to stress that the options presented in this report are alternatives to the default system used across Edinburgh and are only applicable to sites where this is not feasible because of WHA sensitivities. There may however be some areas where it is feasible e.g. where residents are able to keep wheeled bins within the curtilage of their property. Where this is not the case, unobtrusive communal systems are the best overall choice and the best way to achieve this is to put them underground. Where this is not possible for the reasons discussed above, compatible above ground units should be considered but only for siting in areas where their visual impact does not unduly impact on the preservation of the WHA characteristics. For those locations where neither URS nor compatible above ground units are feasible or acceptable, the only remaining option is the gull proof sack system.

**First preference: Option 3D:** Pneumatic system but only if a financial and feasibility case can be made

**Second preference:** Options 3A, 3B and 3C: Other underground Refuse Systems with fully underground as a first preference, subject to location-by-location feasibility and affordability study. Semi underground to be used for locations where fully underground not feasible. Units to be equipped with differential access control technology and fill sensors

**Third preference: Option 2C:** Fixed location, above ground communal systems with restricted, accessible apertures subject to site survey to establish location by location impact on WHA requirements. These could be above ground units compatible with the lifting gear required for URS and equipped with access control and fill sensors

**Fourth preference: Option 1A and 1B:** Gull proof sack system with boxes and caddies for recycling – perhaps supplemented by access to nearby communal bins. If the latter is feasible, collection frequencies can be weekly or greater, if not then collection would have to be more frequent, even daily

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