Transport and Environment Committee

10.00am, Thursday, 27 February 2020

Communal Bin Enhancement Update

Executive/routine	Executive
Wards	All
Council Commitments	C23, C25

1. Recommendations

1.1 It is recommended that Committee notes the contents of this report and approves the recommendations:

1.1.1 approval of parameters and criteria – Appendix 1;

1.1.2 approval of proposed phasing and timeline - Appendix 2 and;

1.1.3 approval of wheeled communal bins as the preferred container type.

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Report

Communal Bin Enhancement Update

2. Executive Summary

2.1 This committee report provides a progress update on the Communal Bin Review project and sets out the parameters and the criteria that will be used to improve the waste and recycling service to residents in multi-occupancy and flatted properties.

3. Background

3.1 Across the City there are approximately 18,000 communal bins, ranging from 500L to 3200L in size. The frequency of collection varies but typically the vast majority of communal bins are serviced on a twice per week frequency.

3.2 There are a number of locations across the City where bins for residents to dispose of waste to landfill or energy from waste are prevalent but there is a lack of recycling infrastructure and this has a subsequent, negative impact upon the City's recycling performance.

3.3 There is a lack of public confidence in the communal collection system. Some locations clearly have particular recurrent issues in respect of overflowing bins and this is typically assumed to be due to failures in collection. Whilst on occasion this can be the case, there are numerous other factors that can result in overflowing bins. Issues such as trade waste abuse, double parking, the increasing proliferation of short term lets, holiday lets/party flats, and highly transient populations with a lack of engagement on waste management expectations are all additional factors.

3.4 In order to alleviate these issues, and help increase recycling performance, Waste and Cleansing Services developed the Communal Bin Review project and this committee report provides information and recommendations on the parameters and criteria which will support the delivery of improvements in waste and recycling services to residents in multi-occupancy and tenements properties.

4. Main report

4.1 The proposed approach for service improvement is based on:

Waste Collection Hubs

4.2 Ensuring each bin location is provided with a fully-integrated waste and recycling service: each location will have non-recyclable waste as well as mixed recycling, glass and food waste.

4.3 The provision of a fully integrated waste and recycling facility will ensure residents do not need to walk to different locations to dispose of different waste and recycling streams. Residents will not need to walk further to recycle than they would walk to dispose of their non-recyclable waste. By making recycling easier, more accessible and at the same location as non-recyclable waste facility it is anticipated this will remove barriers preventing residents from recycling.

Increasing recycling capacity

4.4 Increasing recycling capacity will better reflect the range of materials accepted for recycling compared with when the service was originally introduced (e.g. food and glass). This is in line with the legislative requirements in Scotland to maximise recycling and also reflects the feedback from residents in earlier consultation phases. Further detail on proposed capacities can be found in Appendix 1.

Bin types

4.5 The types of bins that could be used have been reviewed. For non-recyclable waste and mixed recycling, a comparison between different systems of collection and types of bins is provided in Appendix 3. It is recommended that for those streams, wheeled communal bins should be used throughout the City, as far as possible at all locations. The recommendation is based on:

4.5.1 the ability to provide a single service city-wide which will improve service flexibility and reliability;

4.5.2 the ability to procure from a wider pool of UK suppliers, to fulfil the Council's procurement requirements, to minimise potential risks associated with Brexit, and to provide greater competition between suppliers; and

4.5.3 the flexibility to future proof the service to accommodate changes in waste streams required by legislation as well as the introduction of the Deposit Return Scheme for drinks containers.

The types of bins used for food waste and glass are different taking into account the characteristics of those materials. For food waste 240L bins will be used with housings for on street locations to make the service more attractive and accessible. For glass a combination of approaches will be used

to ensure that all sites provide sufficient capacity for the number of households served.

Reduction in the number of bin locations

4.6 Providing a more formalised hub will help the residents recycle more, reduce the number of collection points and enhance the streetscape. Each location review will focus on the optimum location(s) within a street for a formalised waste and recycling hub. The assessment includes walking distance for residents (see Appendix 1) and the flow of pedestrians within a street and any impact on parking provision and other services.

4.7 While the number of locations is reduced, the servicing frequency of non-recyclable waste and mixed recycling will be increased primarily at on-street locations to deliver a more reliable service and reduce overflowing bins.

4.8 The project allows the Service to review the siting of bins to take account of updated streetscape and road safety requirements which have been introduced during the lifetime of the current service (Appendix 1).

4.9 The above criteria and parameters are being used to deliver joint working in partnership with the Roads Capital Programme, Controlled Parking Zone extension, Leith Tram, bike storage, electric vehicle charging points, City Centre Transformation, active travel schemes and other partners as appropriate. Collaboration allows an integrated and more efficient approach to be maintained and enhanced across these services. This will also minimise disruption to residents and operations and promote a holistic approach to improve the streetscape.

Phasing and timeline

4.10 The roll out of the project will be carried out in phases. The order of the phases has been determined considering various factors including the need to include the time required to change the road layouts within Controlled Parking Zones (Traffic Regulation Order process) and concentration of on-street locations within specific wards (Appendix 2 - Phasing and Timeline). It is anticipated the roll out of the project will take at least 18 months.

Engagement and communication

4.11 A communication plan is under development to ensure materials and other media are in place and updated. It is anticipated that residents will receive a first letter to advise of the waste and recycling service changes. A second letter and leaflets will be delivered at the time of the service changes with more detailed information on the new service. Other material including posters, lamp-post wraps, bin sticker and on-line materials will be used during and after the new service implementation to promote it.

4.12 Details of the communication plan, with a more specific timeframe, will be shared at the residents engagement drop in sessions which will be held at

local level as each phase is progressed prior to the service changes and prior to any Traffic Regulation Order advertisement when this is required. The engagement drop in sessions will be held by members of the project team and Changeworks and will include:

4.12.1 information on the aims and the reasons that to the Communal Bin Review project;

4.12.2 information on the approach, criteria, and parameters as outlined in the Appendix 1 (including examples and concept testing), which will be used to determine the locations of each collection point;

4.12.3 an outline bin location concept will be presented using maps although final bin location design might vary and will be available for most of the on street locations through the Traffic Regulation Order process which includes elements of consultation focused around the traffic management aspects of the project; and

4.12.4 opportunity for questions on the plans and the project concept.

4.13 An opportunity to provide feedback about the final design for on street bin locations, from a transportation prospective, will be available through the Traffic Regulation Order process.

5. Next Steps

5.1 It is proposed to develop and roll out the project as outlined in Appendices 1 and 3. This will include a programme of engagement activities and information which will be used throughout the project and which will be reported to Committee, and ward councillors in due course.

5.2 The implications of the Government's commitment to introduce a Deposit Return Scheme for specific drinks containers will be tracked throughout the lifecycle of the project.

5.3 It is recognised that each street has unique characteristics so the solution for one location may not be appropriate for another. As each phase is delivered the Service will ensure that changes are monitored to ensure the project objectives are achieved. The ability to revisit and revise solutions, where necessary will be retained within the Service as part of business as usual activities.

6. Financial impact

6.1 The project is likely to be reliant to a degree on external funding from Zero Waste Scotland but at the current time Zero Waste Scotland is not able to confirm whether funding will be available and the scale of any funding. This

will be subject to ongoing engagement with them. A further meeting with ZWS is planned for early March 2020.

6.2 There will inevitably be financial implications from increasing the frequency of collections and the range of recycling streams provided to residents. During the project delivery phases short term additional costs will be funded from the existing project budget. As the project matures the longer term financial impact will be better defined and will be built into the service's revenue budget.

6.3 The detailed financial implications will be outlined following modelling and the bin location review and will subsequently be reported to Committee at a future date.

7. Stakeholder/Community Impact

7.1 Engagement with residents will be carried out through information drop-in sessions at the local level as each phase is progressed. A communication plan is under development to ensure materials i.e. bin stickers, leaflets, letters and other media are in place and updated.

7.2 The use of the Traffic Regulation Order process will also include an element of consultation focused around the traffic management aspect of the project.

7.3 Appendix 1 outlines the parameters and criteria which will be used to determine bin locations. These take into account the guidelines and requirements associated with road safety and planning and as such aim to minimise negative outcome at each location as far as possible.

7.4 Engagement has been carried out with Elected Members on an ongoing basis. This has included engagement on the project approach including criteria and parameters. Further engagement on a local level will be carried out as each phase is developed and delivered as per Appendix 2.

7.5 Discussions with Zero Waste Scotland (ZWS) relating to the Council's position on the Recycling Charter and potential funding from ZWS to support the aims of this project are ongoing.

7.6 There are no perceived governance, policy or risk implications associated with this report or the project itself. Where policy changes may be required as a result of the actions within the communal bin review project, these matters will be taken forward by way of a separate report to the relevant committee for approval.

7.7 Improvement in the quality of Waste and Cleansing Services will contribute towards a reducing the amount of waste to landfill or energy recovery, increasing the amount of recycling and improving the quality of Edinburgh's

local environment. In addition increasing the amount of waste recycled would be expected to support delivery of the Council's carbon reduction target.

8. Background reading/external references

8.1 Enhancing Communal Bin Collections - Item 7.7 Transport and Environment Committee of 7th December 2017

8.2 Enhancing Communal Bin Collections- Update following trial to implement every other day collections - Item 7.11 Transport and Environment Committee of 9th August 2018

8.3 Communal Bin Embranchment Update Transport and Environment Committee of 20th June 2019

9. Appendices

9.1 Appendix 1 – Criteria and parameters

9.2 Appendix 2 – Phasing and Timeline

9.3 Appendix 3 – Type of bins and collection system

Appendix 1 - Criteria and parameters

This appendix sets out the approach which will be used to determine the locations of each waste collection point. **As far as possible** these will be applied to all locations, albeit there may be occasions where the layout of the street prevents these being met in full.

The **key priority** criteria which will be used are:

- Range of materials collected
- Capacity provided
- Walking distance to bins
- Road safety requirements and streetscape

Other parameters which will be used are:

- parking optimisation
- siting of bins versus properties

Capacity

The following table provides an outline of the capacities to be provided for properties serviced by communal bins. These will used as the basis for siting decisions and numbers of bins.

	Proposed capacity per property per week	Kerbside service capacity per property per week	Code of Practice capacity per property per week
Non-recyclable waste	140/170L	70L	70L
Mixed recycling	140/170L	120L	120L
Glass	5-20L	20L	20L
Food waste	5-20L	23L	23L

(The service standard set out in the Code of Practice for Household Recycling and Waste Collection is also included for reference.)

In the case of the bulkier streams (non-recyclable waste and mixed recycling) the aim is to match or exceed the capacity provided to a householder receiving the kerbside collection service. More flexibility is designed into the service for glass and food waste taking into consideration the less bulky nature of these materials as well as the impact of the Deposit Return Scheme for drinks containers. However, the aim would still be to provide glass and food waste containers at each bin location.

The mixed recycling capacity represents an increase compared with the current capacity provided in most areas. The non-recyclable waste capacity is reduced to reflect this but is still significantly more generous than would be provided under the kerbside service, taking into account the particular characteristics of flatted properties (i.e. transient population, less ownership of a particular bin, lack of storage etc.).

Those two factors combined enhance the ability for residents to recycle conveniently while reducing the risk of overflow of non-recyclable waste when there is less engagement in the service.

Walking distance

One of the aims of the project is to reduce the number of bin locations while at the same time ensuring that the full range of waste and recycling services are provided at each location.

Reducing the number of locations in this way will mean that many people will need to walk further to dispose of waste and recycle.

There is a risk that in making people walk further there might be barrier to segregating waste even with the increased recycling capacity and there is a risk for people with reduced mobility being able to use the service.

A balance therefore needs to be struck between these risks and the enhancement which the project will bring to the visual environment.

As far as possible bins will be sited in accordance with the "Mobility Component of the Personal Independence Payment" which is used by the Government to assess Mobility e.g. for Blue Badge access. This applies where a person cannot walk more than 50m.

Examples of circumstances where this might not be possible include main arterial routes, where bins have to be sited on side streets, however this would still be an improvement in most cases compared to the current situation.

For new developments, the present maximum walking distance for householder (from home to bin) must be no greater than 30 metres as per "Waste and Recycling - Instructions for Architects and Developers" and this will be maintained. This complies with:

- British Standard Waste Management in Buildings —Code of practice, BS5906:2005 https://www.rbkc.gov.uk/pdf/BS5906-2005.pdf
- "Making Space for waste – Designing Waste management in New Development – A practical guide for Developer and Local Authorities – Adept http://www.lgcplus.com/Journals/3/Files/2010/7/14/ADEPTMakingspaceforwaste_000.pdf

Road Safety Requirements and streetscape

A range of parameters are used to site bins which ensure that road safety is not compromised. These include but are not restricted to:

- placing bin in locations where driver or pedestrian **visibility** is not affected. Bins should be positioned ideally 10 metres away from any junctions and pedestrian crossing.

- bins should preferably be located on the **roadway** not the footway. At some locations this is a significant change which takes into account the requirement the Edinburgh Street Design Guidance which seeks to prioritise pedestrians over vehicles e.g. by reducing clutter and impediments on the footway. In addition, it seeks to declutter the visual environment and streetscape e.g. through the use of bin clusters at a smaller number of locations.

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.

- bins users should preferably not be required to cross a road to dispose of their waste and recycling. Every effort should be made to provide bins on the same side of the road as the users' properties, unless a safe crossing place is nearby.

- bins should not be sited over manhole covers or other street furniture including gullies and other drains.

- Bins should be located in such a way that the user is not required to stand in the flow of traffic in order to access the bin aperture.

Other parameters

Where a location is identified on the roadway 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.

Appendix 2 - Phasing and Timeline

The selection of areas for inclusion in the plan below has been determined by 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.
In the table below the term "on street" is used to refer to areas where there are large number of on-street locations. However, in those areas there would be also off-street locations which will be addressed at the same time.

Prevalence of on street or off street	Timescale	Phase	Ward		% of total communal bins city-wide
On street	Autumn 2020	1	13	Leith	**11**
On street	Winter 2020	2	12	Leith Walk	**12**
On street	Spring 2021	3	15	Southside	8
			10	Morningside	6
				Total	**14**
On street	Summer 2021	4	9	Fountainbridge/Craiglockhart	5
			7	Sighthill/Gorgie	6
				Total	**11**
On street	Autumn 2021	3	5	Inverleith	5
			11	City Centre	8
				Total	**13**
Off street*	Spring 2021	6	14	Craigientinny/Duddingston	7
			17	Portobello/Craigmillar	6
			16	Liberton/Gilmerton	4
				Total	**18**
Off Street*	Autumn 2021	7	2	Pentland hills	5
			8	Colinton/Fairmilehead	3
			6	Corstorphine/Murrayfield	2
				Total	**10**
Off street*	Winter 2021	8	3	Drum Brae/Gyle	2
			1	Almond	4
			4	Forth	7
				Total	**12**
				Total	**100**

*For wards with a prevalence of off-street locations e.g. private development, TRO process is not required.

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.

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 the return of existing bin locations to 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) which includes: Southside, Marchmont, Bruntsfield, Merchiston, Fountainbridge, Dalry, West End, Comely Bank, Stockbridge, Canonmills, Broughton, Hillside and the City Centre. Those are areas which have a high concentration of on street communal bins.

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, including its design stage, it is anticipated that implementation stage for communal bin locations within existing CPZ areas could not start before Spring/Summer 2021.

Therefore it is proposed to prioritise the on-site delivery of the project in areas which do not fall within the current CPZ areas but which also have a high concentration of on street communal bins (e.g. Leith and Leith Walk). While changes to bins and bin locations will be visible first in these areas, the development of new street layouts in the areas which do fall within the current CPZ will continue to be progressed through the TRO process so that each of these can be delivered as early in the process as possible.

The earliest phases also need to have enough locations to justify route changes and ensure efficiency is maintained as far as possible in terms of vehicles, crews and routes. Leith and Leith Walk have been identified as areas which have sufficient critical mass in terms of locations/number of bins to represent suitable phases.
However, consideration also needs to be given to other projects already live in those areas (e.g. the Tram to Newhaven and the extension of the CPZ parking strategy).

The development of parking proposals for Leith and Leith Walk areas, which is a live project, has included communal bin review design criteria and parameters. However, Leith and Leith Walk are not within the current CPZ area and as such do not require a TRO to implement the waste and recycling changes on the ground. Full application of parking restrictions will therefore only apply some time after the bins are sited.

It is possible, in theory, to site bins in a parking place without following the TRO process, however this is not the approach that the Council would usually follow; this approach would carry considerable risks as out lined below:

- Absence of a structured process
- Perceived lack of accountability due to the absence of legal framework
- Reduced transparency for interested parties
- Without the TRO process previous
  Loss of parking space because when bins are moved to new locations the previous location does not automatically became available for parking. TRO allows to amend and alter parking space to mitigate issues
- Enforcement of parking restrictions is more difficult and easier to challenge.
- Absence of local issues consideration e.g. where a bin might be best placed in one location, but the loss of the parking at that location could have a significant impact. TRO would allow the Council to address such issues and reallocate space.

Appendix 3 – Bin and Collection systems comparison

The following table provide a summary of the key features, including the pro and cons, of different collection system and bin types.
To note that the Underground Refuse System (URS) considered in the comparison is the new and most innovative system with crane lifting system and with capacity up to 5000L. In Edinburgh there are locations where residents are serviced by underground systems for non-recyclable waste and mixed recycling which use hydraulic platform where wheeled communal bins or side loading bins are store underneath the platform/ground and brought to the surface to be collected by rear and side loading service vehicles.

	Wheeled communal bin	Side loading bin	Crane lifting bin	Underground bin
Bin capacity	**1100L/1280L**	**1800L/2400L/3200L**	**Up to 3750L**	**Up to 5000L**
Type of collection	**Rear Collection** 	**Side loading collection** 	**Crane Lift collection** 	**Crane Lift collection** 
Routing efficiency	Able to collect bins from on-street and off-street locations within the same round/route increasing the routing efficiency and avoiding dual service in the same area.	Most of the off-street locations have wheeled communal bins stored in bin stores. For those locations, side loadings bins are not a feasible option. Dual service is required to service on-street and off-street locations.	Most of the off-street locations have wheeled communal bins stored in bin stores. For those locations, crane lift collection bins are not a feasible option. Dual service is required to service on-street and off-street locations.	Most of the off-street locations have wheeled communal bins stored in bin stores. For those locations, underground systems are not a feasible option. Dual service is required to service on-street and off-street locations.
Street side collection	Collection from either side of the road i.e. possible also on one-way system.	Collection is possible only from the left side of the road i.e. not possible when the bin location is on the right side of the vehicle movement.	Depending on the type of crane lift system it is possible to collect from either side of the street. On average the collection takes 4 minutes per each container and this can be problematic due to vehicles blocking traffic flows.	Depending on the type of crane lift system it is possible to collect from either side of the street. Due to the time taken at each location siting can be problematic due to vehicles blocking traffic flows. However, this is more easily achievable at areas of significant new build.

	Wheeled communal bin	Side loading bin	Crane lifting bin	Underground bin
Movability of bin	Wheeled communal bins are not static, and it is easier to move them along the street. Corralling needs to be in place to prevent movement.	Bins are static and less movable along the street. However, HIAB needed when they do move and become full	Bins are static and less movable along the street due to their weight.	Bins are static and not movable along the street as they are underground.
Temporary movement/relocation	In case of temporary movement/relocation (i.e. Road works) easier to manoeuvre.	In case of temporary movement/ relocation (i.e. Road works) specific vehicle (Hi-AB) and specific driver required.	In case of temporary movement/ relocation (i.e. Road works) specific vehicle (Hi-AB) and specific driver required.	Not possible to relocate. Additional surface bins needed on a temporary basis.
Future proofing to split mixed recycling in paper/cardboard and plastic/cans	Easier with 1280L/1100L as most locations will have 2 x 1280L – non-recyclable waste, and 2 x 1280L mixed recycling.	More difficult as most locations would have 1 x side loading non-recyclable waste and 1 x side loading mixed recycling to minimise overcapacity. More space would need to be allocated.	More difficult as most locations would have 1 x crane lifting non-recyclable waste and 1 x crane lifting mixed recycling to minimise overcapacity. More space would need to be allocated.	More difficult as most locations would have 1 x underground non-recyclable waste bin and 1 x underground mixed recycling bin to minimise overcapacity. Additional underground chambers and space would be required.
Number of bins per location	Number of bins: Increasing the collection frequency will decrease the number of locations/bins and will mean having more properties serviced by one location which on average has: 2 x 1280L - non-recyclable waste 2 x 1280L - mixed recycling 1 x food waste 1 x glass 2 x 1280L every 1 x side loading bin. → more bins per location compared with side loading bins.	Number of bins: Increasing the collection frequency will decrease the number of locations/bins and will mean having more properties serviced by one location which on average has: 1 x side loading bin non-recyclable waste 1 x side loading mixed recycling 1 x food waste 1 x glass. 1 x side loading every 2 x 1280L bins → Less bins per location compared to wheeled communal bins.	Number of bins: Increasing the collection frequency will decrease the number of locations/bins will mean having more properties serviced by one location which on average has: 1 x crane lifting bin non-recyclable waste 1 x crane lifting mixed recycling 1 x food waste 1 x glass 1 x crane lifting every 2 1280L bins → Less bins per location compared to wheeled communal bins	Number of bins: Increasing the capacity of the bin and the collection frequency will decrease the number of locations/ bins and will mean having more properties serviced by one location which on average has: 1 x Underground bin non-recyclable waste 1 x Underground bin mixed recycling 1 x food waste 1 x glass 1 underground bin x 5 x 1280L → Less bin per location compare to wheeled communal bins.

	Wheeled communal bin	Side loading bin	Crane lifting bin	Underground bin
Location footprint (locations servicing up to 40/50 properties)	Length of bay: 7.2m	Length of bay: 6.5m	Length of bay: 6.5m	While the above street impact can appear smaller, the overall footprint for each location is increased due to the wider platform required.
Location footprint (locations servicing 25 properties	Length of bay: 4.5m (not future proof). In order to future proof the location, there is a need to split mixed recycling into paper/cardboard and plastic/cans increasing the size of the bay to 5.8m long. (See also above however as most locations will already have sufficient bins)	Length of bay: 6.5m long (not future proof). To future proof the location, there is a need to split mixed recycling into paper/cardboard and plastic/cans increasing the size of the bay to 8.3m long. Possible to consider smaller side loading bins 1.4m (prototype for one company at the moment and not available on the market) instead of 1.8m but option <u>not available with the current fleet</u> which would require investment.	Length of bay: 6.5m long (not future proof). To future proof the location, there is a need to split mixed recycling into paper/cardboard and plastic/cans increasing the size of the bay to 8.3m long.	While the above street impact can appear smaller, the overall footprint for each location is increased due to the wider platform required.
Procurement	Easier and more straightforward as bins are produced in UK. Spare parts procurement is easier and quicker.	More difficult as it requires more intensive procurement, producers (mainly from the continent) not on Scotland Excel. Spare parts procurement for repair is more difficult and will take longer. Brexit might have an impact as well.	More difficult as it requires more intensive procurement, producers (mainly from the continent) not on Scotland Excel. Spare parts procurement for repair is more difficult and will take longer. Brexit might have an impact as well.	More difficult as it requires more intensive procurement, producers (mainly from the continent) not on Scotland Excel. Spare parts procurement for repair is more difficult and will take longer. Brexit might have an impact as well.
Procurement timescale	Quicker for 1100L than 1280L. Both type of bins requires less time to be purchased as produced locally and so shorter and more flexible transport time.	Timescale longer as the bins are coming from abroad, longer transport and less cost effective.	Timescale longer as the bins are coming from abroad, longer transport and less cost effective.	Timescale longer as the bins are coming from abroad, longer transport and less cost effective.

	Wheeled communal bin	Side loading bin	Crane lifting bin	Underground bin
Collection crew	The collection is carried out by 3 men crew (1 driver + 2 loaders) which requires more resource.	The collection is carried out by a 2 men crew (1 driver + 1 loader) which requires less resource compared to wheeled communal bin collection.	The collection is carried out by a 2 men crew (1 driver + 1 loader) which requires less resource compared to wheeled communal bin collection.	The collection is carried out by a 2 men crew (1 driver + 1 loader) which requires less resource compared to wheeled communal bin collection.
Vehicle availability and reliability	A standard vehicle which does not require specialist maintenance and is readily available.	The vehicles available require specialist maintenance.	The vehicle is not available in the current fleet.	The vehicle is not available in the current fleet.
Vehicle driver training	A standard vehicle is available so no more specific training is required.	The vehicles available require specific training.	The vehicle is not available in the current fleet.	The vehicle is not available in the current fleet.
Vehicle Telematics	Vehicle Telematics invested in SupaTrak telematics which is best utilised on Dennis Eagle vehicles for full functionality usage.	Vehicle Telematics invested in SupaTrak telematics which is best utilised on Dennis Eagle vehicles for full functionality usage. Would not get full use on these vehicles	Vehicle telematics integration would need to be investigated as the vehicle is not available in the current fleet.	Vehicle telematics integration would need to be investigated as the vehicle is not available in the current fleet.
Mixed recycling bin design to prevent contamination	Already in place on 1100L.	Needs further development to prevent contamination due to aperture.	Needs further development.	Needs further development.
Accessibility	Easy to access, 1100L/1280L bins are lower and the opening/aperture means residents do not need to use the lid.	Easy to access, the side loading bins might be a bit higher but there is a foot pedal to easy open the lid. The lid can also be opened by using the handle. However, experience has shown that both designs in use are problematic for some people e.g. smaller or frailer people.	Easy to access, the crane lifting bins might be a bit higher but on some designs there is a foot pedal to easy open the lid. The lid can also be opened by using the handle.	Easy to access as most designs use a small litter bin type of structure above ground with various types of aperture to prevent recycling contamination.
Communication (i.e. sticker)	1100L/1280L stickers already developed.	Side loading bins possibly already developed on board/panel. Need further work on creating stickers, printing.	Needs further work on creating stickers, imprinted on those type of bins.	Needs further work on creating stickers, imprinted on those type of bins.