Design of business models to encourage Public Sector Bodies to engage in the reuse/exchange of unwanted bulky items

Final Report Template for Project Based Awards[1] and Green Enterprise Projects

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- 1 Summary

The purpose of this project was to design business models to encourage public sector bodies to engage in the reuse/exchange of unwanted bulky items.

A review of the policy landscape both at an EU and national level showed that although there are a range of policies focused on the circular economy and waste, most of the activities still focus on recycling which is further down the waste hierarchy diagram than prevention (reuse & repair).

The initial stakeholder engagement proposed building a business model based on existing State services such as SMILE Resource Exchange and the Public Resources Exchange Platform (PREP). To test this business model a series of workshops were hosted, and an online survey was distributed among those in public sector bodies who are interested in reuse to identify the main barriers to reuse in public sector bodies and to propose solutions.

Regional workshops were conducted in Dublin, Cork and Sligo in December 2018 and identified many of the existing barriers to reuse. The survey provided more quantitative information, such as the amount participants were willing to pay for such a reuse platform and how many bulky items they were disposing of on an annual basis.

During the project the initial business model had to be adapted due to several developments in the Irish reuse market. At the end of 2018 the SMILE Resource Exchange platform was discontinued and in mid-2019 the UK commercial platform Warp It began focusing on the Irish market. They already have two Irish clients – University College Dublin and University College Cork.

Due to these developments, five further value-propositions were created and then refined into two more detailed business models –

- A national reuse platform for public sector bodies, funded by the public sector bodies who sign up to the platform and want to donate bulky items internally and to the Third sector;
- An individual approach, where public sector bodies would implement reuse schemes to suit their needs using either a manual or commercial-based reuse platform.

The first model (a national reuse platform) was included based on the feedback from the workshops and survey. This model would involve building on the currently dormant services of PREP and SMILE. It would also require at least 60% of local authorities, hospitals and universities to pay their annual fees in advance so the platform could be relaunched and provide an ongoing commitment to the platform, so it stays in service. It should be noted that most public sector bodies don't currently have the budget to pay the fees for a reuse platform or the internal resources assigned to manage a reuse scheme and given the current lack of policy support for reuse activities in this area, this option may not be realistic.

The second model is based on public sector bodies designing and implementing a reuse scheme to suit their needs. The scheme may or may not involve using a commercial software platform for reuse. This scheme also allows them the flexibility to define their own processes – who they donate to, turnaround times, storage & transport services etc. Initially this may look like a more expensive option however it has the benefits that it initially requires more upper management buy-in, so it has the potential to be more successful.

Next steps for this research include dissemination of the main observations and recommendations of the research and a supporting guidance document and supporting the introduction of policy

instruments to provide appropriate incentives to invest in reuse/exchange activities. Further funding would have to be sought to support the implementation of either model.

1 Background

Reuse and repair are not new concepts; in fact, they have been happening in society for generations. Taking many different shapes and they were mainly done for economic or cost-saving reasons. Businesses are now recognising the environmental impact that reuse and repair can have, whether its existing processes such as industrial symbiosis, where waste or by-products of one industry become the raw materials for another, or it's reuse/repair services (charity shops, salvage yards, tailors/alteration shops, cobblers, scrap yards etc.).

Unfortunately, our current economic model means it is generally much cheaper and more convenient to throw the item aware rather than to repair, reuse or purchase second-hand. This has led to a rapid decline in the availability of repair/reuse services within our society and while it still makes sense for certain valuable items to be repaired or reused, it no longer makes economic sense to repair and reuse low value, bulky items such as furniture & office equipment etc.

With the reuse and recycling sector clearly having significant potential to grow, particularly in the area of bulky items such as furniture, IT equipment, electronic and electrical goods and mattresses, the CRNI recognised that it was in a strong position to initiate research in this area. As the all-Island representative body for community-based reuse, recycling and waste prevention organisations, it works closely with its members who are actively involved in gathering, preparing, exchanging or selling reusable items such as textiles, furniture, WEEE, paint, art materials, mattresses and bicycles. It recognised that the prevention of waste must become more central to Ireland's climate action policies and moves to make this a reality.

CRNI observed that existing reuse platforms, such as SMILE Resource Exchange, were mainly being used by commercial enterprises and engagement with public sector bodies remained relatively low[2]. The following barriers were identified as potentially preventing State agencies from using such platforms:

- a lack of awareness of the service, i.e. public/civil servants unaware of PREP
- internal rules or systems preventing goods from being sent for reuse
- the "hassle" factor involved in identifying suitable recipients for unwanted goods
- the lack of collection services and/or the lack of any physical storage, meaning that goods may be discarded should it not be possible to have donations collected/matched from recipients within turnaround times specified
- the lack of a coordination service to facilitate the removal of bulky items on offer from a donor

At the time of starting this research it was felt that by combining a number of existing services, including SMILE Resource Exchange and its call-based matching service, and the Prep system, a

[2] For example, there is no reference to reuse of furnishings (and only limited reference to reuse overall) in the Action Plan on Green Public Procurement. The EPA Green Public Procurement Guide does go further to encourage setting prevention and reuse targets in relation to WEEE, packaging of food and cleaning products and endorses consideration of remanufacture potential in the pre-procurement phase but does not refer to reuse in the context of furnishings.

solution could be found that would overcome the barriers identified and get more State agencies using such a platform.

The development of business model(s) and the identification of case studies could facilitate the wider engagement of State bodies and private enterprises with the reuse sector in a range of reuse opportunities including, eventually, in the area of procurement.

The results could also be a useful template for other European networks in a similar position (e.g. with a similarly diverse sector) to help develop the capacity of the sector to participate in tenders and/or reuse opportunities, in terms of the process for handling bulky items.

2 Project Overview

o 3.1 Purpose

The purpose of this project was to design value-propositions and viable business model(s) for efficiently engaging Irish public sector bodies in diverting unwanted bulky items away from landfill and towards reuse activities and community recycling.

o 3.2 Aim

The original aim of this project was to use the Business Model Canvas approach to design value-propositions and business model(s) for a national bulky item reuse scheme for public sector bodies. It would build on the emerging matching services offered by SMILE Exchange and integrate elements of other existing exchange platforms such as the Public Resource Exchange Platform (PREP).

These models would then be tested using common barriers to reuse, such as the lack of a suitable reuse platform for the public sector, short turnaround times, the requirement for interim storage, the need to have improved networks available to respond to donations, insurance liability issues, and how such a service could become financially self-sustaining.

o 3.3 Scope

This project was limited to creating a value proposition and viable business model(s) for the reuse of bulky items within the public sector only, where bulky items refer to medium size items such as office furniture, fixtures and fittings, office consumables (stationary, ink jet cartridges), lab equipment and medical/hospital equipment.

The following were deemed to be beyond the scope of this research: bulky item reuse within the private sector and how to procure bulky second-hand or upcycled items.

Key representative stakeholders from State agencies were selected for developing the business models, including Local Authorities, Universities and the HSE.

o 3.4 Objectives

The main objectives of this project, which were outlined in the original research proposal include:

1. Assess all existing resource exchange systems – including SMILE Resource Exchange and its call-based matching service, the State agencies reuse platform PREP, and other services currently in use by organisations / charities – to see if they could be combined to provide a suitable service for State agencies;

2. Examine how turnaround times could be successfully met;

3. Address the requirement for interim storage (Storage Hubs);

4. Explore how a donation should be best responded to;

5. Create a comprehensive customer profile through interviews and meetings with stakeholders;

6. Meet the various needs of donors e.g. liability concerns, removal of goods by one provider;

7. Explore how such a service could be financially self-sustaining.

o 3.5 Proposed Methodology

The original research proposal proposed following the 6-phase approach outlined below, supported by tools such as Business Model Canvasing and PESTLE/SWOT analysis:

1. **Background research**
   In this phase a literature review and market mapping were conducted, as well as interviews and meetings with key stakeholders. The output proposed was a briefing note outlining the findings that will feed into the development of the value offers and business model(s).
2. **Development of value offers and business models**
   This phase involved proposing several potential value-offers and business models for further assessment. The output is five models prepared using the Business Model Canvas approach.
3. **Testing**
   This phase involved testing the business models through a series of workshops with people interested in reuse from the public sector. After testing the models, 3 potentially viable solutions would be analysed in more detail.
4. **Resourcing**
   This phase involved investigating what would be required to look at various costing models for each of the potentially viable business models. The output would be a high-level financial feasibility proposal.
5. **Reporting**
   Complete a final report which would summarise key observations and conclusions, compile the outputs of the previous sections, and present at least two viable business model(s), accompanied by
   a. A service level template document providing practical guidance including terms of engagement between reuse organisations and State agencies; and
   b. A summary report describing the project, outcomes, potential barriers and making recommendations for the reuse sector
6. **Post implementation**
   Work with identified stakeholders to look at how the most suitable business models could be progressed.

o 3.6 Project Management

This report is part of the National Waste Prevention Programme (NWPP) & EPA Research Programme 2014-2020.

Role	Responsibility
Project Manager	To conduct the research and project management work. Completed Business Model Canvas online training and attended an in-house workshop.
CRNI Network Coordinator	To deliver of all the work packages
CRNI Board	To provide strategic direction for the project
EPA Research Programme 2014 -2020	As the main project sponsor, they received and approved the project update reports.

High-level Timeline	Activity
June 2017	Initial application submitted to the National Waste Prevention Programme (NWPP) & EPA Research Programme 2014-2020
July 2018	Project start – an initial delay due to the recruitment of the project manager
December 2018	Submitted the first progress report which covered the first 6 months of the project (July – Dec 2018). During this time the initial stakeholder meetings were conducted, in addition to a literature review and market mapping. This information fed into the development of five value-offers and business models. Three 3 regional workshops were then hosted to test the business models against identified barriers. During this timeframe it was agreed to take a slightly different approach and create business models based on customer segments (target market) – such as social enterprises, start-ups etc. and test them using the identified barriers. From this work it was agreed to recommend establishing a country-wide reuse platform using existing platforms and networks (SMILE, PREP, FreeTrade Ireland).
June 2019	Submitted the second progress report which covered the second six months of the project (Jan – July 2019). During this time the project was delayed because: 1. The original project manager left, and it took several months to get another resource in place. The CRNI Funding and Communications Manager took on the project. 2. The SMILE Resource Exchange was discontinued by the EPA in December 2018, resulting in the loss of the SMILE database which had approximately 7,000 recipients. 3. The commercial UK-based platform, Waste Action Reuse Platform (Warp It), entered the Irish market

	An online survey was completed in this phase to get quantitative information on the main barriers to a reuse/exchange platform within the Public Sector. This was to support the testing phase of the project.
September 2019	A new project manager was hired to complete the Resourcing, Reporting and Post-Implementation phases of the project. Based on the market changes and meetings held with sector representatives, it was decided that the best approach was to be less prescriptive about the software platform used and instead focus on providing a set of models to help the public sector overcome some of the barriers and start a small reuse project.
January 2020	Submission of the final report and supporting documentation on 5 January 2020.

4 Background Research

This section provides a literature review of the current reuse/exchange landscape both globally and nationally, and a review of the reuse sector and activities in both the UK and Ireland.

4.1 Setting the Scene

State of Play

Greenhouse gas emissions from the waste sector typically account for only 3-4% of total emissions from the average OECD country, as only direct emissions are considered (OECD, 2012). However, this same study found that emissions arising from material management accounted for between 55% and 65% of national emissions. This study is also supported by research conducted by the Ellen MacArthur foundation (Ellen MacArthur Foundation, 2019) who stresses that our current response to the global climate crisis represents an incomplete picture. Thus far the focus has been on the transition to renewable energy however, these measures can only address 55% of emissions. The remaining 45% comes from producing the cars, clothes, food, and other products we use every day. These cannot be overlooked and one of our future challenges is to transform the way we make and use products.

Our current consumption model means our emissions are strongly coupled with economic growth; Ireland's material consumption is well above the EU average and continues to rise as the economy grows. Over 1.2 million potentially reusable bulky items are going to landfill or incineration on the island of Ireland every year. Office desks, a typical non-domestic bulky item, are not usually thrown out because they have stopped functioning for their original purpose but instead because they are slightly damaged, showing signs of wear and tear, or simply out of fashion. According to (CRR, 2009) office furniture has a typical service life of 9 to 12 years and is often replaced due to aesthetic and corporate reasons, not through loss of functionality. Items are often replaced on an entire-office basis, with the replaced items being sent to landfill.

While we are still a long way from mainstreaming reuse and repair, there are more emerging technologies and practices that support the transition to reuse. There are now many technology platforms (Warp It, Adverts, DoneDeal, Facebook Marketplace etc.) to make reuse/exchange easier, new businesses that are creating second-hand markets, and multi-nationals such as IKEA who are beginning to look at trialling Furniture-As-A-Service and rental models (Thomasson, 2019).

Challenge

There is no commonly accepted definition of bulky waste at European level, and no legal definition (URBANREC, 2019). Currently it is not directly addressed in the Waste Framework Directive, it is only indirectly mentioned as part of municipal waste, which has a target of 50% to be recycled in each EU Member State by 2020.

As Ireland continues to move to a service-based industry, the demand for office furniture continues to grow. It is estimated that by 2024 the size of the industry will be about USD100 billion dollars (Ahrend , 2019) and the materials and energy required for this greatly contribute to our emissions. To prevent the loss of 80-90% of these valuable resources after a short use period it is necessary to drastically improve our waste prevention activities such as re-use and repair. The H2020 URBANREC project defined bulky waste as furniture, mattresses, upholstery, garden and outdoor or other large fixtures and fittings and found that it represented a European generation of 19 Mt/year, of which more than 60% is currently landfilled (URBANREC, 2019).

The challenge will be transitioning people from our current linear approach and educating them on the benefits of re-use and repair and how it is an important solution to becoming more resource efficient and minimising our environmental impact.

Our Policy Framework

The Circular Economy is an important priority at global, EU and national policy level however to date reuse is not currently supported to anywhere near the extent that it should be considering its place on the waste hierarchy. The following summarises the activities that support waste prevention activities.

1. **EU policy developments that support Reuse/Repair Activities**

    1. The second version of the **EU Green Deal** was launched in December 2019 (European Commission, 2019). It is promising to see support for designing durable, repairable and re-useable goods, however it falls short in terms of product re-use with no explicit backing for second-hand.
    2. **EU Circular Economy Action Plan** 1.0 (2015) is an output of the Green Deal and has now come to the end of its cycle, with some of its achievements covering the Single Use Plastics Directive, targets to tackle Food Waste and an update to the Waste Framework Directive. This will now be replaced by the Circular Economy Action Plan 2.0 in Q1 2020.
    3. The **EU Urban Agenda** is made up of 14 priority themes which each theme having a dedicated partnership, one of which is the Partnership on Circular Economy.

2. **EU Case Studies for Bulky Item Reuse**

    1. The **H2020 URBANREC** project started in 2016 and finished in November 2019. It aimed to provide a comprehensive guide on urban bulky waste management with an online interactive tool and e-learning modules to support. While this project focuses on the reuse of bulky items with the consumer, it provides a good status update of where other EU member states are in the development of new waste streams for bulky items.
    2. **Ahrend**, a Dutch office furniture company, has been creating modular-based furniture products with life extension in mind. It is currently piloting a Furniture As A Service (FAAS) model in the Netherlands. By confining this offering to one geographical area for now it allows the technology and financing solutions to be managed and scaled properly. (Ahrend , 2019)
    3. In early 2019, **IKEA** announced plans to start offering “scalable subscription services” for everything from couches to kitchens. So instead of opting for the current model of purchasing a piece of furniture outright and the item eventually ending up in landfill, customers will instead opt for rent, lease, pay-per-use or pay-per-service models for their furniture or appliances. This new shift by IKEA to start looking at the potential of offering products-as-a-service (PaaS) through rental, supports its goal to become a fully circular and climate positive business by 2030. (Thomasson, 2019)

3. **Irish policy developments that support Reuse/Repair Activities**

    A review of the Irish policy landscape as it applies to waste prevention activities (redesign, reuse, repair) reveal that while the Government are now putting an unprecedented focus on

addressing climate action, there is still a predominate focus on energy and waste activities such as recycling which are further down the Waste Hierarchy. Recycling for example, receives funding supports such as the REPAK PRI scheme which is in the region of €17,276,000. (CRNI, 2016)

The launch of the all Government Climate Action Plan and the DCCAE Green Government initiative in 2019 represent the most suitable policy frameworks to potentially increase the priority of waste prevention activities, however, to date there are no specific targets or actions that focus on such reuse activities. In March 2019, the Government published **Circular 20/2019: Promoting the Use of Environmental and Social Considerations in Procurement** (DPER, 2019) which mandates the OGP & DCCAE to ensure green public procurement becomes part of the mainstream public procurement process and requires them to bring forward implementation proposals on how this will be done. This has the potential to have significant potential for waste prevention activities but is still in its infancy. It should also be noted that the existing green public procurement policy launched in 2012 did not work.

In 2020-21 the Government has also committed to launching **A Circular Economy Policy and Action Plan for Ireland in 2020-21**. This will build on the new requirement for all Government departments to publish Resource Efficiency Action Plans (REAPs) which detail each Departments resource use in three key areas – energy, water and waste. These plans cover a three-year period, from 2019-2021. At the time of research 7 out of 17 Government departments had published their first plan on their departmental website.

Irish Case Studies for Bulky Item Reuse

1. National Waste Collection Permitting Office (CRNI, 2020)
2. University College Dublin (UCD, 2019)

Irish Public Sector Opportunity

The annual public sector procurement budget accounts for some 12% of Ireland's gross domestic product - and impacts greatly on production and consumption trends, with the State spending approximately €8.5bn every year on goods and services (OGP, 2019). The Irish government procures millions of euro worth of bulky items every year, with the Government procurement for ICT and office equipment per annum in excess of 400 million euro (OGP, 2016). The UK office furniture industry was valued at £680 million per year in 2009 with Government procurement accounting for 9.6% of this market (CRR, 2009).

Given that priority should be given to reuse over other forms of waste management, there is an opportunity for the public sector to lead by example on this transition. It is particularly well positioned, given the number of organisations and buildings in its use and ownership. SEAI annually request 351 public bodies and 3,696 schools (SEAI, 2018) to respond to their online national energy monitoring and reporting (M&R) system, suggesting the potential to affect change if a similar system was in place for reuse.

o 4.2 Mapping the Irish Waste/Resource Exchange Sector

A mapping exercise was undertaken to better understand the sector as it currently stands and what opportunities exist to support the public sector as it starts to consider improving its reuse levels. Figure 1 shows an updated version of a study previously undertaken (RPS, 2014) of the various methods of reuse available currently in Ireland. Like the previous study it only provides an indication of the types of organisations involved in each reuse sector.

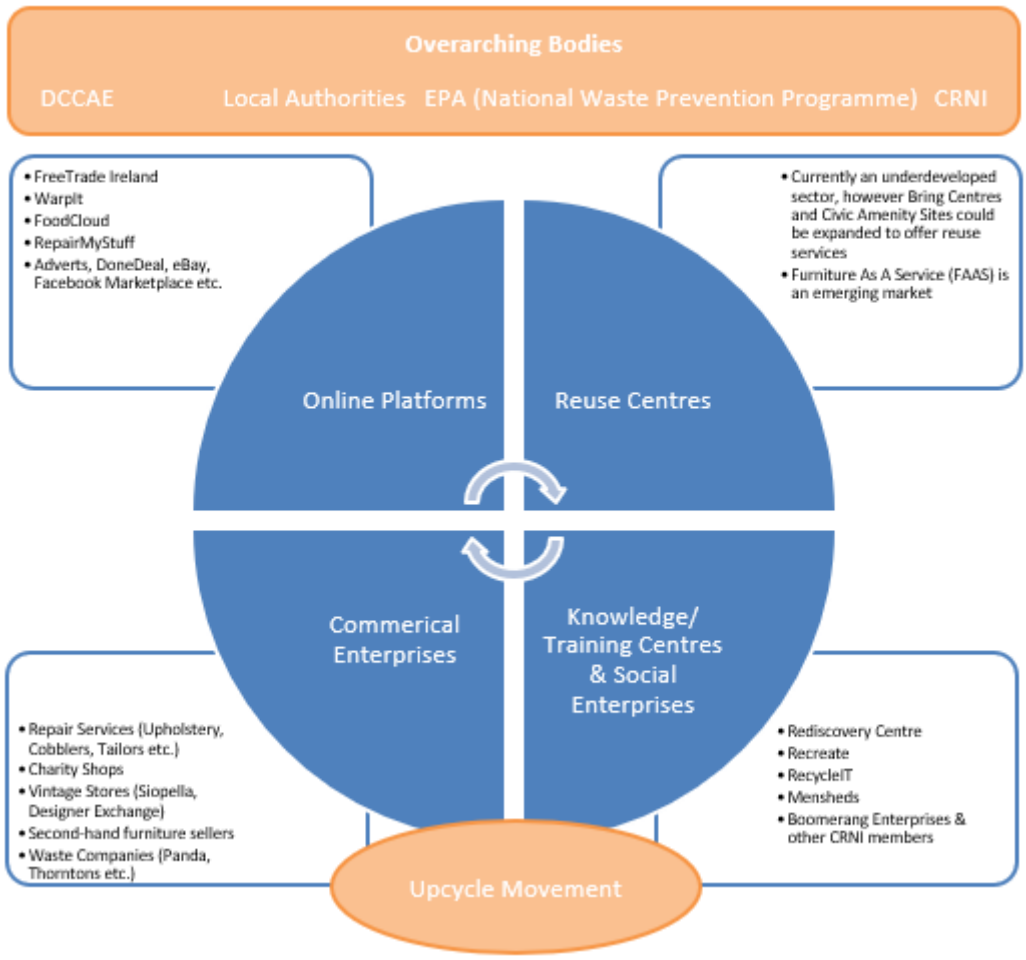


Figure 1: The Waste/Resource Exchange Sector in Ireland

Figure 2 and Figure 3 give an overview of the organisations and the departments within these organisations who have the potential to be involved in a reuse scheme, either internally within their organisation or within a regional cluster.

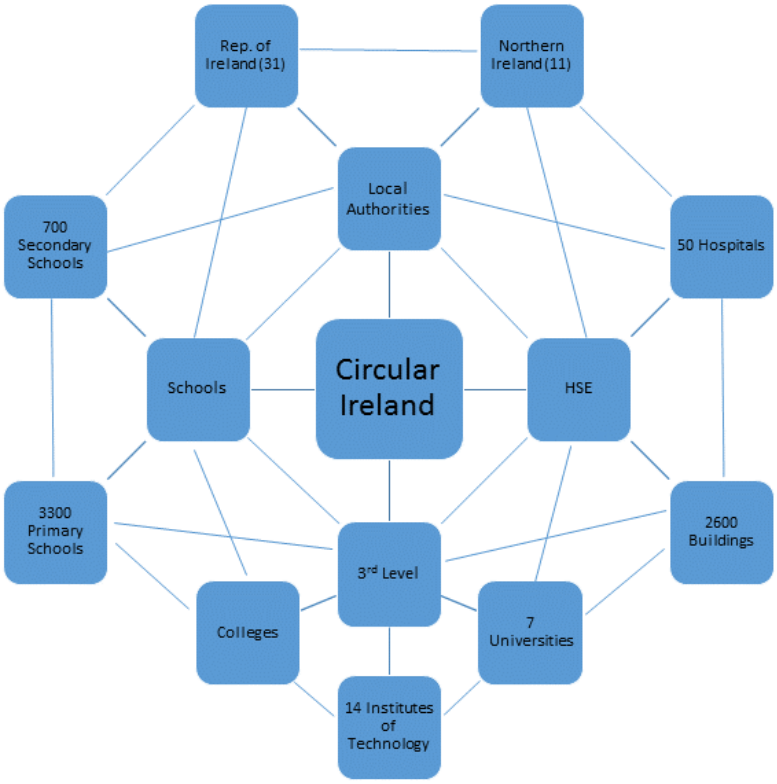


Figure 2 – Mapping of Public Sector Bodies potential available for reuse activities in Ireland

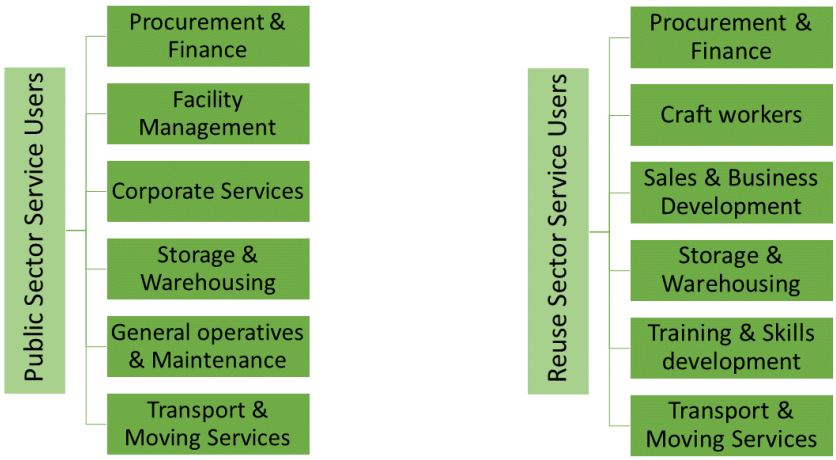


Figure 3 – Overview of the various departments who would potentially need to be involved in a successful reuse platform

o 4.3 Public Sector Case Studies from UK

This project conducted a review of State agencies in the UK who were using the Warp It reuse platform to understand the main benefits for implementing a reuse platform and some of the main criteria to ensure its success.

NHS Tayside Scotland: As 60% of carbon emissions come from the NHS supply chain, they were keen to look at ways in which they can reduce the procurement demand. It took one year to embed in the organisation, required strong support from the CEO and c-suite and required the procurement and facilities departments to work closely.

The National Institute for Biological Standards and Control, England: It employs 300 people and within 6 months of implementing this reuse platform they had saved over £25K and avoided 14 tonnes of supply chain carbon emissions.

University College London: In 2 years of using the reuse platform they had saved £100K and avoided 26 tonnes of supply chain emissions.

Northumberland County Council: As part of a huge restructuring project they managed to save £68K on internal purchasing in the first 4 months

St Andrews University, Scotland: It avoided 2.8 tonnes of supply chain emissions, diverted 970 kg of waste from landfill and saved £4,129 in waste disposal and procurement costs.

In summary it is worth noting the positive attitude of the participants to the use of a reuse platform and how “proud” they are of their cost savings, supply chain emissions savings, and the amount of waste diverted from landfill.

For more information on these case studies see Appendix6.

5 Creation of Initial Value-Proposition and Business Model

This section summarises the initial engagement with stakeholders in the Irish reuse/waste sector regarding their reuse activities and thoughts on how best to improve the levels of bulky item reuse within public sector organisations. This feedback then supports the creation of the initial business model for the testing phase.

5.1 Initial Stakeholder Engagement

Using the seven objectives below that were outlined in the initial research proposal, this section summarises the barriers facing stakeholders and attempts to provide potential solutions. An overview of these meetings can be found in Appendix1.

1. Assess all existing resource exchange platforms;
2. Examine how turnaround times could be successfully met;
3. Address the requirement for interim storage (Storage Hubs);
4. Explore how a donation should be best responded to;
5. Create a comprehensive customer profile through interviews and meetings with stakeholders;
6. Meet the various needs of donors e.g. liability concerns, removal of goods by one provider;
7. Explore how such a service could be financially self-sustaining.

5.1.1 Existing Resource Exchange Platforms

The following types of reuse models were investigated to determine their suitability as reuse/exchange processes for the public sector; industrial symbiosis, retail shops/service providers, reuse centres, social enterprises and online platforms.

Industrial Symbiosis

Defined as the engagement of traditionally separate industries in a collective approach to competitive advantage involving physical exchange of materials, energy, water and by-products (Chertow, 2000). The SMILE Resource Exchange platform offered industrial symbiosis services to businesses that were interested in developing new business opportunities and exchanging resources in order to save money and reduce waste going to landfill.

This type of service was deemed to be beyond the scope of this project however as it is more relevant to private sector businesses who were producing waste or by-products which had the potential to become the raw materials for another industry.

Retail Shops and Service Providers

Reuse shops are those generally run by charities, in addition to those owned by private traders selling vintage or second-hand goods. Reuse services apply to traditional type services that have “gone out of fashion” in the past few decades such as tailors, upholsterers, cobblers, furniture upcycling services and those who offer general repair services for IT or household items.

The reuse business offering for retail and services businesses is still underdeveloped and where they do exist, they are typically under-resourced. In many cases, entirely new business models are needed to be able to offer services that can meet the demand as reuse becomes more popular. While in the future such businesses may have a role to play in either receiving goods from or providing reuse

services to the public sector, none were identified as part of this project that were suitable to hosting such a reuse/exchange platform.

Reuse Centres

Reuse centres are like existing civic amenity recycling centres and bring centres; however instead of recycling they serve as a location for temporarily storing reusable bulky items for collection later by charities, social enterprises or others in the reuse sector. The feasibility of setting such reuse centres up at existing civic amenity recycling centres has been explored (Rx3, 2013) however a formal process is yet to be established. It was suggested that shipping containers could be purchased and located at civic amenity sites and recycling centres for the purpose of reuse, however when this was trialled in the past the bulky items were stored in open containers, leaving them exposed to the elements and wildlife so within a very short time frame they were no longer suitable for reuse.

This option has the potential to be explored further, however its merit is beyond the scope of this project as it would be most suitable to providing new reuse streams items that come to existing civic amenity sites from the general consumer, rather than public sector bodies.

Social Enterprises and Training Centres

There are a growing number of social enterprises focused on reuse and circular economy opportunities in Ireland. These include Rediscovery Centre, Recreate, Back2New and RecycleIT, along with other CRNI members. While such enterprises are key to providing reuse services to both businesses and the general consumer, their main mission is to create training and employment opportunities in their local communities, so were not deemed suitable to run a national reuse/exchange platform for the public sector.

Online Platforms

Similar to other sectors, online platforms will play a key role in increasing the rates of reuse/exchange within the public sector, with Table 1 showing the options that are currently available in Ireland. Given that there is no longer an obvious owner for such a platform (since the discontinuation of the SMILE platform), it now remains to be decided if strategic approach will be taken across the public sector with regard to an online reuse/exchange platform, or whether it will be allowed to happen more organically with each public sector body choosing its own platform and way of working.

Name	Function	Suitability (Pros/Cons)
SMILE Resource Exchange (or similar given this platform has been discontinued)	- Free matching services for businesses who want to reuse/exchange; - Benefits were diverting waste from landfill and creating new business opportunities in the reuse space; - Established in 2010 by Macroom E Enterprise Centre, with the support of the Environmental Protection Agency, Cork County	A similar platform could provide an obvious solution to providing a nationwide platform for reuse/exchange for the public sector. It would mean that all public sector bodies would have free access to the platform, which would potentially increase their engagement. However, initial research has shown it would have to have the flexibility to

	and City Councils, the Local Enterprise Offices and Ireland's Waste Management Regions. - Managed by Macroom E Enterprise Centre (subsidiary of Cork County Council); - Database of approximately 7,000 contacts; - In 2018 it launched a national hotline for businesses interested in finding efficiencies or new opportunities within their current wastes and by-product streams - The platform was discontinued as of 31 December 2018.	accommodate various ways of working as each organisation will have different requirements (i.e. liability, storage solutions, transport, turn-around times etc.). The main barrier with a custom reuse platform funded by the public sector is that there is always the risk that funding will be discontinued.
Public Resource Exchange Platform (PREP)	- Free matching service for public sector bodies only who want to reuse/exchange; - Established in 2014 by RPS Consultancy on behalf of the Environmental Protection Agency; - The platform was based on the same platform as the FreeTrade Ireland platform that they were already running; - There was little uptake in use of the platform, and it is currently not being maintained or used.	A reuse/exchange platform just for public sector bodies has the benefit of minimising liability concerns. While the Prep system could be relaunched, it would need further modifications to bring it in line with existing commercial platforms (reporting functionalities etc.) and other requirements such as GDPR. There is more to a reuse platform than just the software program and the launch would need to be supported by a proper role out campaign, training and ongoing maintenance of the platform. Green procurement and reuse targets will also be required to mainstream reuse and ensure its uptake.
FreeTrade Ireland	- Free online reuse service for the general user who wants to pass on items for free; - Funded under the EPA National Waste Prevention	This platform predominately serves the general consumer and initial research showed that public sector organisations have reservations about using such platforms.

	Programme and is championed by Mayo County Council; - Maintained by RPS Consultancy; - Launched nationally in 2010;	
Warp It	- UK-based commercial platform for businesses who want to reuse/exchange; - Started in 2005 as a "freecycle" style email network; - In 2012 the software platform was launched and today many UK public sector bodies are using the platform (universities, government agencies, councils, NHS etc.); - WarpIt entered the Irish market in mid-2019 with UCD as a client.	Our research has shown that current Warp It users from the public sector are generally happy with this system and it has improved their internal levels of reuse. As with all systems, users have stated they get out of it what they put into it. It was also noted by the researcher that most organisations use the platform differently i.e. some just exchange internally, while some donate to the Third sector.
Adverts and similar ads websites	- A community-based marketplace where individuals can buy or sell items online; - Launched in 2005; - Now part of Digital Media Ventures, the same group as DoneDeal and Daft;	Deemed not suitable as this is a platform for the general public and more focused on the act of buying and selling rather than having a mission of promoting reuse, reducing carbon emissions and diverting from landfill.

Table 1: Assessment of existing reuse/exchange platforms

5.1.2 Turnaround Times

Turnaround times refer to the number of days needed for the donor to find a new home for the item i.e. validate that the item is suitable for reuse, find a suitable claimant and organise the relocation of the item once the vacancy date arrives. The vacancy date is the final date before the item is sent to a waste stream.

This process requires an element of "upfront work" which is not required if the item is going directly into a waste stream. To reduce turnaround times as a barrier, and ensure that a suitable claimant has been identified, a certain level of education is required for potential donors around engaging in the reuse process.

From initial meetings with stakeholders it was agreed that this barrier could be successfully addressed if internal processes and staff training were put in place. Initial meetings suggested that organisations may need up to a month to shift an item depending on its popularity and whether donation to the Third sector was a viable option. Having access to a wide network of potential

claimants was also key to reducing the turnaround times, however most stakeholders said that they had no problem finding claimants for sought after items.

It was noted that for most significant public sector refurbishment projects, public procurement rules apply, requiring a tender process in addition to the typical internal procurement and purchase order process. There may even be two tender processes, one tender for the design team and another to tender for the main contractor. As these processes take time the process of seeking claimants for these items should be started in parallel with the tender process.

It should also be noted that during the implementation phase of such processes there will be a "scaling phase" where it may not be possible to meet all the turnaround times and some items may still go into the waste stream. This does not mean that turnaround times should be used as a barrier to starting reuse activities.

5.1.3 Interim Storage and Hubs

From meetings with initial stakeholders there was a general consensus that reuse could not work without having adequate storage solutions in place, however most organisations do not have anywhere to store unwanted items while they wait for them to be claimed by someone else, and the cost of storage can be prohibitive.

Small scale interim storage options were investigated, and it was found that containers can be purchased for 2000EUR approx. (plus VAT and delivery). However, if organisations decide to provide storage solutions, they will negate any cost savings they make in reducing the amount of skips they require or the amount they pay their waste management company.

Providing storage solutions also creates new issues such as the potential for items to get damaged and for organisations to forget what items they have in storage, unless an up to date asset management system is maintained.

There may be certain circumstances where storage hubs might work but these should only be considered after a trial period where the organisation has proven there is a real demand for them. This research would recommend implementing reuse practices without storage first and then only investigating how a storage solution might work if there is a proven demand for them and it is accompanied by the necessary processes to eliminate the barriers mentioned above.

Storage Hubs

Storage hubs are central locations that may be established by a regional reuse cluster of organisations if they identify a real need for interim storage. Again, it should be looked at on a case by case basis and how it could work will be dependent on the organisations involved in the cluster and the resources available to them.

Transport

Transport was also cited as a barrier during initial meetings with stakeholders. When providing solutions to this barrier it is important to first determine how the process will work in an organisation or cluster of organisations. Again, it will be dependent on the type of reuse system that the organisation decides to implement.

From discussions with those who have already implemented internal reuse practices, it was found that building this requirement into their maintenance or portering service contract where possible was the preferred solution.

For those providing reuse services to external organisations (Third sector etc.), it was recommended that the claimant should be responsible for arranging transport of the item(s) and their associated costs.

It should be noted that those donating to the Third Sector may already have vans and transport as part of their business and existing collection processes and could be used for this purpose. There is also an opportunity to discuss transport services with existing waste companies or those who manage Civic Amenity Sites; such companies are keen to improve their waste management process and maybe interested in looking at improving their levels of reuse (even if initially it isn't financially viable).

5.1.4 Responding to a Donation

Responding to a donation will be dependent on the process of the donor organisation.

Manual Process

Such a process is only suitable if the reuse practices are happening internally within the organisation. It is still important to put a reuse process in place and communicate it to all staff members. Factors that should be considered include

- Gathering all measurements, functionality and photos of the item(s)
- How to inform your reuse network (word of mouth to key staff members, email distribution list, intranet etc.)
- Providing (where required), viewing dates, a vacancy date, transport arrangements (the donor can provide, or the claimant must pay)
- Completing any admin associated with the exchange – removing it from the asset management system or reassigning ownership, signing liability waivers etc.

External Process

Most organisations who have implemented reuse practices with external claimants have an online platform for managing reuse. When the donor is establishing its reuse/exchange process it should consider the following:

- Decide which department/member of staff is responsible for managing the reuse process – validating that the item(s) are suitable for reuse and cataloguing them on the online platform;
- Agreeing how long the item is offered internally before being offered to external claimants;
- Agree the list of external claimants;
- Decide if the claimant must take all items or if you are happy to deal with several claimants;
- Set a vacancy date and ensure the collection date is before this date;
- Set a transport policy (can you deliver or does the claimant cover the costs) and ensure the claimant agrees;
- Ensure all admin work is completed - removing it from the asset management system or reassigning ownership, signing liability waivers etc.

5.1.5 Creating a comprehensive customer profile

From the initial stakeholder interviews and meetings, it has been established that there is not a one size fits all approach for the introduction of a reuse/exchange platform within the public sector or an obvious department or individual that this responsibility should sit with. From initial research, particularly from the UK, it would seem as though each public sector organisation will have to

determine its approach to reuse/exchange. The following are some observations about the types of individuals interested establishing reuse practices in their organisations:

- **Where the ownership/management of a reuse platform sits within the organisation.** This will depend on the organisation structure, but initial meetings with those who have implemented reuse practices showed it is currently being managed by sustainability teams, the procurement department or the facilities/estates management department. To get such a process started it should best sit in a department with a "champion" who has a real interest in implementing reuse practices. Often the most successful processes have staff from a range of departments involved.
- **Addressing low levels of awareness among stakeholders about the benefits of reuse.** Initial meetings revealed that general staff awareness on the topic of reuse and the associated benefits of it remain low, despite its position on the waste hierarchy diagram. Given this, the implementation of a reuse system must be supported by a strong staff training programme – for both the reuse of bulky items and the procurement of second-hand items.
- **Under-resourced and lack of upper management support.** Initial meetings suggested that those interested in establishing a reuse scheme within their organisation can often not get the upper management support to establish such a scheme. It was noted by one interviewee that while they could get the budget to implement a platform their main barrier was not having the internal resources to run it. Those that have been successful in establishing such a platform, such as UCD, had to initially take on the responsibilities in addition to their day job.

5.1.6 Meeting Various Needs of Donors

Previous sections have already dealt with some of the needs of donors, such as how they should define their reuse process, selecting a reuse platform suitable for their organisation, how best to meet turnaround times, addressing the need for interim storage and transport.

Liability

Initial research has shown that there is uncertainty around the chain of custody when it comes to the exchange of bulky items from public sector organisations. As the issue of ownership is somewhat unclear it can create a concern around the potential for legal liability and as a result some organisations choose to avoid such risk by engaging a waste contractor (RPS, 2014).

This contrasts with public sector bodies in the UK who are actively engaging in reuse practices. The examples studied as part of this research were using the Warp It platform and used a "transfer of ownership" contract to negate any liability concerns.

Initial conversations have been had with Irish legal firm Arthur Cox who believe liability concerns involved with the donation and reuse of bulky items such as office furniture are low risk. Further work should be done in this area if a pilot project can be established.

Legislation & Compliance

As reuse is still an area that is developing some initial concerns were raised around the legal requirements when it comes to reuse/exchange and maintaining compliance. In the case of donation of bulky items such as furniture, as long as the item is transferred to be used for the same original purpose, even if there is some checking, cleaning or repair required, this falls under reuse (waste prevention) and so the item is not categorised as a waste; therefore, waste legislation does not apply.

It should also be noted that it the item has been discarded as a waste, for example in a waste skip at a recycling centre/civic amenity site, with the intention of recovery (including recycling) or disposal, the item will remain a waste until it has been subject to a recovery operation at a waste permitted/licensed facility that allows reuse. (RPS, 2014)

Reputable Claimants

When establishing a reuse process, donors should ensure that all claimants are reputable and are intending to reuse the items for their intended purpose. Each donor should undergo a vetting process to minimise the chance of passing items to bogus collectors, who are operating under the guise of a resource exchange or charity without suitable authorisation.

Removal of Goods by One Supplier

An organisation may choose to specify this as a requirement when engaging in reuse practices with external organisations. This should be looked at on a case by case basis – it could be included as an option for each donor and it is up to them whether they want to specify it as a requirement. The donor should consider the following

- The timeframe between the date of advertising and the vacancy date of the items;
- The amount of time the donor has available to meet multiple claimants;
- The transport options available to both the donor and claimant;
- How sought after the item(s) will be by the market.

If a donor believes they may have a continuous stream of items, it may be worth exploring partnerships with interested donors which could potentially reduce the administration involved with the reuse/exchange process.

5.1.7 A Financially Self-Sustaining Service

Previous studies (RPS, 2014) have shown that the cost to set up and operate reuse organisations can be prohibitive and similar to all start-ups and social enterprises can be risky. From initial meetings and the changes that have taken place in the reuse environment during the course of this project, (i.e. the decision taken to stop funding the SMILE Resource Exchange) it is clear that there isn't an appetite for further public sector funding for a national reuse platform.

It should also be noted that reuse activities in the UK are not publicly funded and most public sector bodies use a commercially based platform to manage their activities (Warp It). Even if public sector funding was available, this should be used to establish the platform and not be relied upon to meet ongoing running and maintenance costs to ensure long-term viability of the platform.

There are several different aspects of costs that need to be considered

1. The cost to a service provider to establish and maintain a reuse platform;
2. The cost to donors to implement and run a reuse programme within their organisation;
3. There are other costs that are currently not being tracked, such as how much it costs to send bulky items to landfill and how much it costs to procure new items when the previous items were fully functioning.

Initial discussions with UCD, who have already implemented financially self-sustaining reuse services, suggest that they are self-sustaining. While they have new costs such as reuse software platform fees and the cost of up to 1 FTE (based on a large organisation), they have also made significant savings on their waste and procurement costs. They have also recently noted an increase in the seniority of the staff members joining the platform in the past year.

o 5.2 Regional Clusters

It is known that reuse generally works better in urban areas where there is a greater population of potential donors/claimants and the travel distances are shorter between the donor and the claimant. Work was completed to map some potential regional reuse clusters in Cork, Waterford, Limerick and Galway – see Appendix5.

The main benefits of clusters include raising awareness of reuse activities among other public sector bodies, creating and widening informal reuse networks among both small and large organisations, and potentially making reuse activities more efficient and successful.

Given this potential to increase reuse activities, the concept was discussed during initial meetings with stakeholders and the following types of regional clusters were proposed. The type selected by a potential cluster would be dependent on several factors including its location and the organisations participating in it:

- **Public Sector Body Cluster only** – this would be for internal reuse/exchange between public sector bodies who were in proximity to each other (i.e. local authorities, hospitals, universities, schools etc.);
- **Public-Private Cluster only** – this would be for internal reuse/exchange between a group of agreed organisations who were in proximity to each other (i.e. local authority, local businesses, schools, business parks etc.);
- **Public Sector Donation Cluster** – one public sector organisation who creates a "cluster" of Third Sector organisation who it donates its bulky items to (i.e. charities, schools, reuse/exchange organisations etc.). A mapping exercise of all of the reuse/exchange outlets in Ireland was conducted (RPS, 2014) which could help to identify potential cluster participants if this type of sector was of interest.

o 5.3 Initial Business Model Creation

This section takes the initial stakeholder feedback detailed in the previous sections to develop the initial business model, which was designed using the business model canvas approach. This approach assesses the model using the following headings – 1) key partnerships 2) key activities 3) key resources, 4) value proposition, 5) customer relationships, 6) channels, 7) customer segments/target market, 8) cost structure, and 9) revenue streams.

During the first phase of the project, the project manager completed Business Model Canvas online training and an in-house workshop to better understand and utilise these tools.

It was then decided to take a slightly different approach to the one outlined in the original research proposal. Instead of developing three different business model canvases, one business model would be created which attempted to provide solutions to all the barriers that were identified as part of the initial stakeholder meetings. The following options-based business model canvas was created which was used during the testing phase (workshops):

Initial Business Model

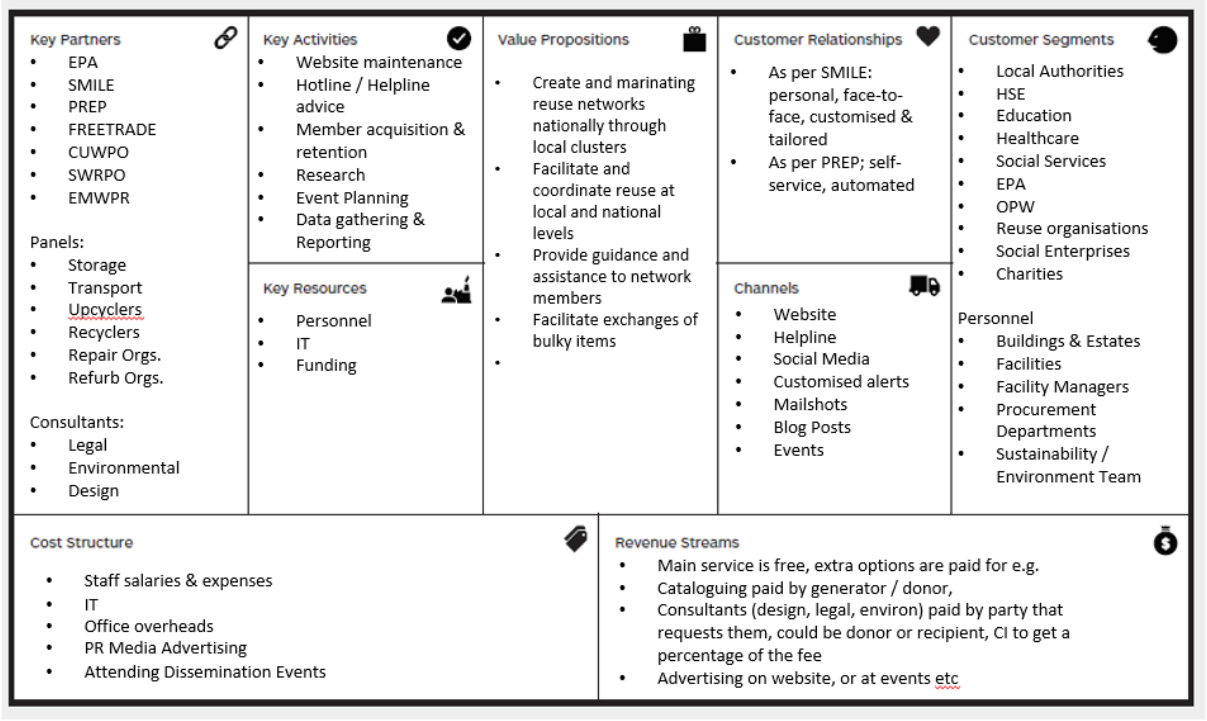


Figure 4: Initial Business Model used in Testing Phase for Workshops

This business model was created when the SMILE Resource Exchange was still active and when it was thought that the best option would be to build a national reuse platform for the public sector on the emerging matching services offered by SMILE and integrate elements of other existing exchange platforms such as the Public Resource Exchange Platform (PREP) and community recycling.

1. The **key external partners** that were identified included national agencies such as the EPA and the regional waste management bodies (CUWPO, SWRPO, EMWPR) and other supporting organisations such as CRNI to provide guidance and best practice examples of reuse/exchange. Existing online reuse platforms such as SMILE, the Public Resource Exchange Platform (PREP) and FreeTrade Ireland to establish and manage a national online platform for reuse. Service providers (transport, storage, upcycling & repair services) would be required if the platform has the capacity to arrange such services. Other consultants were identified as being able to support the platform in terms of legal, environmental and design concerns.

2. The **key activities** of running a national reuse platform for the public sector included website maintenance, engaging with public sector bodies and claimants through a help-line service, training of staff, further research on reuse in Ireland, promotion of the initiative through social media and blogs/case studies etc., event planning and data gathering/reporting.

3. The **key resources** identified were a resource to carry out the key activities listed above, public funding from the EPA, and IT services to help establish and maintain the online platform.

4. The **value proposition** includes expanding the resource matching facility currently offered by SMILE, provide a one-stop-shop platform for donating and requesting bulky items, help to reduce the number of bulky items going to landfill, savings on waste and procurement costs, help meet the national emissions reduction targets and CSR and sustainability goals, provide a platform to get rid of unwanted items.

5. The **customers relationships** that need to be maintained include the "point of contact" in all public sector bodies donating to the national reuse platform and those in the Third sector who will claim the bulky items. Maintaining relationships with the relevant bodies in the Irish reuse network – EPA, CRNI etc. to ensure the platform remains relevant.

6. There are various **channels** that can be used to ensure the necessary promotion of the national platform including a website and blogs/case studies, social media, a helpline, newsletter and alerts, events.

7. The **customer segments/target market** for this model are public sector bodies who want to develop a National reuse/exchange platform; mainly larger public sector bodies (Universities/IT's, Local Authorities, hospitals) as they have more resources and other Government agencies such as the EPA, HSE and OPW who are interested in donation. On the claims side, reuse organisations, social enterprises and charities are necessary to develop the demand for bulky items. Key personnel in these organisations are generally from facilities/estates, procurement, and sustainability teams.

8. The **costs** involved to successfully establish and maintain a National reuse platform include a minimum of a full-time resource and the IT and marketing costs involved with establishing a website and the software platform/app and professionally promoting it.

9. The **revenue streams** available could include public funding based on the potential environmental/social impacts such a platform could have and revenue generated from services offered. This is based on the main service being offered for free to both the donor and claimant.

- 6 Business Model Testing and Further Development Phase

This section develops and tests the initial value-proposition and business model proposed in the previous section. This was done qualitatively through 3 workshops in each of the waste management regions and quantitatively through an online survey of those active in the Irish reuse/waste sector. See Appendix3 for a list of organisations who participated in this research.

o 6.1 Regional Workshops

Three workshops were held in each of the three waste management regions, one workshop in Cork on the 28th of November, one in Dublin on the 6th of December and one in Sligo on the 7th of December 2018.

Overview

The purpose of these workshops was to learn about what actual public sector personnel viewed as barriers, instead of making assumptions or only considering barriers discussed in the literature. It also provided an opportunity for organisations to talk to one another and hear that what they may believe to be an insurmountable barrier, might now merely appear to be a challenge to be overcome.

A total of 44 people took part in the workshops from procurement, facility management, environment and sustainability teams, green campus, buildings and estates, and corporate services from over 30 different public sector organisations. It was evident that there is certainly interest in the area of reuse, and that several organisations within the public sector are very keen to be involved in any proposed initiative.

Workshop Format

The format for the workshops included a 20-minute presentation from CRNI introducing the project, and a brief look at the Circular Economy in general, followed by a more specific focus on bulky waste; see Appendix7 for workshop slides. After the presentation the attendees were broken into smaller groups of 5 or 6 people. Each group was assigned three tasks:

1. to discuss and identify current reuse practices;
2. to identify barriers to reuse; and
3. to participate in a brainstorming task to identify next steps on how to increase reuse activity of bulky items within public sector bodies.

▪ 6.1.1 Current Reuse/Exchange Practices Identified

The following public sector bodies have existing reuse processes. It was noted during the workshops that while online resource exchange platforms are not being used, there are some active manual internal systems. These rely on the tacit knowledge of several dedicated personnel in the

estates/furniture departments of these organisations who are vital to the smooth operation of the system.

- **University College Dublin (UCD)**, has introduced the UK-based commercial platform, Warp It. It is being used by their estates department to divert furniture and bulky items from going to landfill. There is approximately 1 FTE working on this system, and all items are vetted before being added to the platform. The items are offered to other departments within the college first and if they are not required, they are offered to the Third sector. Engagement and interest from the Third sector (charities, schools etc.) has generally been managed by Warp It.

- **Cork University Hospital, (CUH),** have an existing internal reuse system run by their sustainability team and facilitated by the hospital porter staff. All requested are channelled through one of the sustainability team members who then arranged with the porters to move the items between the donor department and the recipient department. All transactions are internal to the organisation, although they take place within a very large hospital campus. The only external transactions that take place are donations to a local charity that sends medical supplies to Haiti. They are currently working on implementing the Warp It platform.

- The **Health Service Executive (HSE)** runs an internal reuse system on an informal basis, from a central location in Naas. It is dependent on one person and their knowledge of the organisation, various personnel, internal logistics and facilities. It should be noted that this activity is not part of the persons primary job description. The risk with such a set-up is that if this person were to leave the HSE, the system may not continue to function in his absence.

- The **Office of Public Works (OPW)** has an excellent internal reuse system in place with two large warehouses in Dublin, one which also includes a workshop where OPW personnel repair and refurbish items for reuse for Governmental departments and agencies. The OPW has strict guidelines with regards to the specification of new items, items must be durable, high quality, made from materials that can be recycled. They must have manufacturers' guarantees and appropriate certification where required e.g. certain glues such as VOCs are prohibited. This ensures that items will stay in service for much longer and can be reused for longer. They also have an electric van for moving items and have a framework agreement with several companies to transport items when necessary. This network of drivers was procured via the e-tenders facility, and all tenderers had to have appropriate permits e.g. if they are doing clearances where there are waste items also, they had to have waste transport permits.

Other ongoing reuse and exchange practices were also identified, and while most were on a small ad-hoc basis, they included

- the **leasing** of IT equipment, such as printers and photocopiers, which limits the number of personal printers at staff desks. Such printers usually have a short lifespan and are usually discarded rather than repaired. It also reduced the need for their associated cartridges.

- the **storage** of items for possible future reuse, however this was dependent on having storage space.
- **donation** to the Third sector. While some of the stakeholders interviewed had concerns around liability issues with this type of donation, it was also noted that some organisations had held auctions for unwanted items to the general public, while others had sold items to second-hand furniture traders. Several bodies also offer their staff members the option to buy their old IT equipment and some engage with not-for-profit organisations such as Camara or Recycle IT to repurpose their old IT equipment.
- reuse via **internal mailing lists** are used in some organisations and while the items seem to be popular it comes with the downside of leading to clutter in people's inbox. Trinity college also have a Yammer group for reuse/exchange which has proved to be popular.

6.1.2 Barriers to Reuse Identified during Workshops

1. There is a general lack of knowledge of what currently happens to bulky items at end of life and little evidence to show that organisations are tracking this information. There were several anecdotes from workshop participants who had seen perfectly good items being discarded in skips;

2. Donors aren't advertising the items in enough time to allow for claimants to collect items;

3. There is a lack of storage space for bulky items to be stored by organisations between uses, leading to items ending up in the waste stream;

4. There are currently no processes in place to facilitate the moving of bulky items from donor to claimant (transport services and associated costs etc.);

5. There is a concern by some of potential liability risk and insurance issues if public sector bodies were to make items available externally for reuse;

6. A lack of awareness within public sector bodies about the need for reuse, and the benefits associated with it. There is also concern about the quality of using second-hand goods and a fear that they won't meet current fashion trends;

7. Due to the current system setup there is a lack of incentive to engage in reuse activities – there are no waste prevention or CO2 targets set for reuse etc. There is also a perception that engaging in reuse activities will just create additional hassle during office refurbishment or office relocation projects;

8. In most organisations reuse is not an official part of any designated staff members job role;

9. There is concern that there will be no internal support from their organisations to formally get the staff resources needed to manage a reuse platform or get a budget to cover the platform fee costs;

10. Having to ensure reuse practices remain compliant and comply with new legislation, such as GDPR (especially regarding IT equipment) is an additional hassle.

6.1.3 Potential Solutions Discussed to Barriers

Barriers identified		**Potential solutions**
1	Lack of knowledge about what currently happens to bulky items at the end of life	This will start to be addressed as organisations start to adopt reuse platforms, particularly if they use a software platform to monitor bulky items. Introduce a method to track ROI by assigning a monetary value to second-hand items.
2	Turnaround times are too short	Set minimum periods for bulky items to be advertised both internally and with external partners (Third sector) to ensure items have been claimed before the vacancy date. Acknowledge that initially items will still end up in the waste stream as the reuse system gets established.
3	There is a lack of interim storage solutions	Initially we'd recommend not providing interim storage as it poses too much of a barrier to getting a reuse system started within an organisation. To overcome this barrier initially, we'd recommend emphasising the need to advertise the item for exchange well in advance of the vacancy date. If after the platform is established there is still a demand for storage, organisations can then look at storage options (purchasing containers, availing of private warehousing). Organisations who have reuse platforms noted that some departments in their organisations were particularly good at claiming items and keeping them in their own internal storage areas for when someone from their department required a common piece of office furniture.
4	Transport services and costs are not currently defined	This will be dependent on the type of reuse system that is implemented by an organisation or a cluster, and on the resources available to them. It is recommended that a transport policy is defined which outlines who pays the associated costs.
5	Potential liability risks and insurance concerns with bulky item reuse	The workshop showed that this was a bigger concern for some organisations than others. It is recommended that if it is a barrier to reuse within your organisation, then limit your reuse platform to only reusing/exchanging

		internally or with other public sector bodies. See (University of Ulster, 2019) example. A transfer of ownership statement should be signed by each claimant and it should be filed by the donor. Software platforms can manage this process and generally provide a template which can be modified to suit your organisation. See an example of a Transfer of Ownership template in Appendix4. It should also be noted that many public sector bodies in the UK are engaging in reuse practices and use the "Transfer of Ownership" statement to minimise liability risks.
6	Lack of awareness in organisations about the need for reuse, the associated benefits, and the quality concerns of second-hand goods.	To help raise awareness, the implementation of a reuse platform should be supported by management and integrated into organisational level policies. A reuse platform should only be implemented with a training and communications plan. This could be done using a "renew" campaign, create a "how to reuse guide". It is worth identifying "champions" in various departments to help raise awareness of reuse and its benefits. For purchasing second-hand goods, organisations can specify in their furniture tenders that the furniture suppliers must offer repairs services as part of their contract. See (UCL, 2019). They can also look to procure from sources that have been through a quality assurance or certification scheme (e.g. ReMark). (CRNI, 2019)
7	Lack of incentive to engage in reuse practices (i.e. no waste prevention targets or reuse specifications in tenders) and a perception that it will create additional hassle during office refurbishment or move projects	There are no existing policy targets and while these may come, it is recommended that for now public sector bodies should consider setting targets to feed into their REAPs, Climate Action Mandates or Sustainability Policies. Direction / commitment to reuse demonstrated via a mandate from the Office of Government Procurement to make Green Public Procurement and Reuse mandatory would be the ideal solution. At a minimum reuse should be specified where possible in tenders, internal waste prevention targets should be

		set, make reuse a priority limiting procurement of new items if second-hand items are available. Removing the perception that reuse activities create additional hassle will come with being able to point to case studies. If an organisation is facing this barrier, they should contact the CRNI to get a list of up to date case studies.
8	Generally, no staff member is officially responsible for reuse activities	At a minimum we would recommend assigning a project sponsor who is part of the c-suite team, a project champion who is responsible for the reuse platform and all activities and ensure you get buy-in from necessary department heads.
9	A lack of financial resources to establish and run a reuse platform	Get buy-in from management to establish a reuse platform by presenting the benefits– reduced waste costs and procurement savings. If the resources can't be obtained initially to procure a software platform, start with a manual system and identify champions within the business to help establish the platform.
10	Ensuring that a reuse platform is and remains compliant with regulation (i.e. GDPR)	Ensure reuse is considered when implementing new regulations. It was noted by workshop participants that the GDPR regulation has created a demand for lockable cabinets to keep printed documentation.

Table 2: Barriers identified and proposed solutions

o 6.2 Online Survey

After the workshops, it was identified that while a lot of valuable knowledge was gained by conducting these workshops, it was hard to extract quantifiable information from them. The outcome of this was to distribute a survey to workshop participants and other interested parties, which was distributed and completed in August 2019.

38 responses were received from local authorities, hospitals, Departments/Agencies, universities. The main findings include:

1. 30% of respondents conducted **more than 5 bulky clear-outs** in the past 12 months;

2. 20% of respondents **disposed more than 200 items**;

3. The most popular **disposal method** was a skip;

4. Nearly three-quarters of **respondents were interested in a reuse platform** and would strongly consider using such a platform, however it should be noted that this survey contained a high-level of bias as generally people who filled out the survey were interested in reuse activities;

5. There was **more interest in the platform being used to dispose of items** than there was in it being used to source items;

6. Only 10% of respondents thought it extremely important that items be donated to other public sector bodies, while 30% didn't think it was important at all;

7. The main **barriers** to donation identified were lack of storage space and the lack of resources to manage the donation process. The main barrier to sourcing was quality concerns;

8. Respondents were asked to indicate how much they'd pay for a designated reuse platform with nearly half of respondents indicating they'd be **willing to pay €250 approx**.;

9. Over half of respondents indicated that a **turnaround time** of between 7-21 days was needed for bulky item redistribution;

10. The **services** respondents were most interested in having included cataloguing, transportation, and repair/refurbishment services.

The full analysis of the survey results can be found in Appendix8.

o 6.3 Further Business Model Development

Following on from testing the initial business model through the workshops and online survey, another five business models were developed to better reflect the changes in the Irish reuse sector.

The scope of each model is defined using the main barriers to reuse – selecting a resource/exchange platform, turnaround times, interim storage, clusters, donation process (liability, compliance, number of claimants), the resources available and associated costs.

Each of the models are then assessed using the Business Model Canvas headings – 1) key partnerships 2) key activities 3) key resources, 4) value proposition, 5) customer relationships, 6) channels, 7) customer segments/target market, 8) cost structure, and 9) revenue streams.

▪ 6.3.1 National Reuse Platform for Public Sector Bodies

Scope of Model

1. A national reuse platform for public sector bodies is established and managed by a suitable organisation who is active in the Irish reuse networks;
2. An online platform and supporting website and mobile app are developed to support the reuse/exchange activities of public sector bodies;
3. This national platform has a minimum of one full-time resource to liaise with the point of contact in public sector bodies, the Third sector and other reuse bodies. Other activities include monitoring the items uploaded to the platform, compiling reports for national bodies (i.e. EPA etc.), getting new members on board;
4. Provide guidance to the "points of contact" within public sector bodies and to potential new members about how they can set up a reuse scheme in their organisation – how long in advance donors should advertise the items, whether items can be claimed by multiple claimants, how best to advertise the item(s) to ensure they are claimed, the process of conducting the exchange;
5. Design a system that had the flexibility to accommodate the various needs of different public sector bodies – some will only want to reuse/exchange internally while others may choose to donate to the Third sector, staff members, general public.
6. Public sector bodies should have the flexibility to set their own transport, storage, repair policy dependent on their resources;
7. Provide a "Transfer of Ownership" template for all public sector bodies to modify to suit their system;

National Reuse Platform for Public Sector Bodies

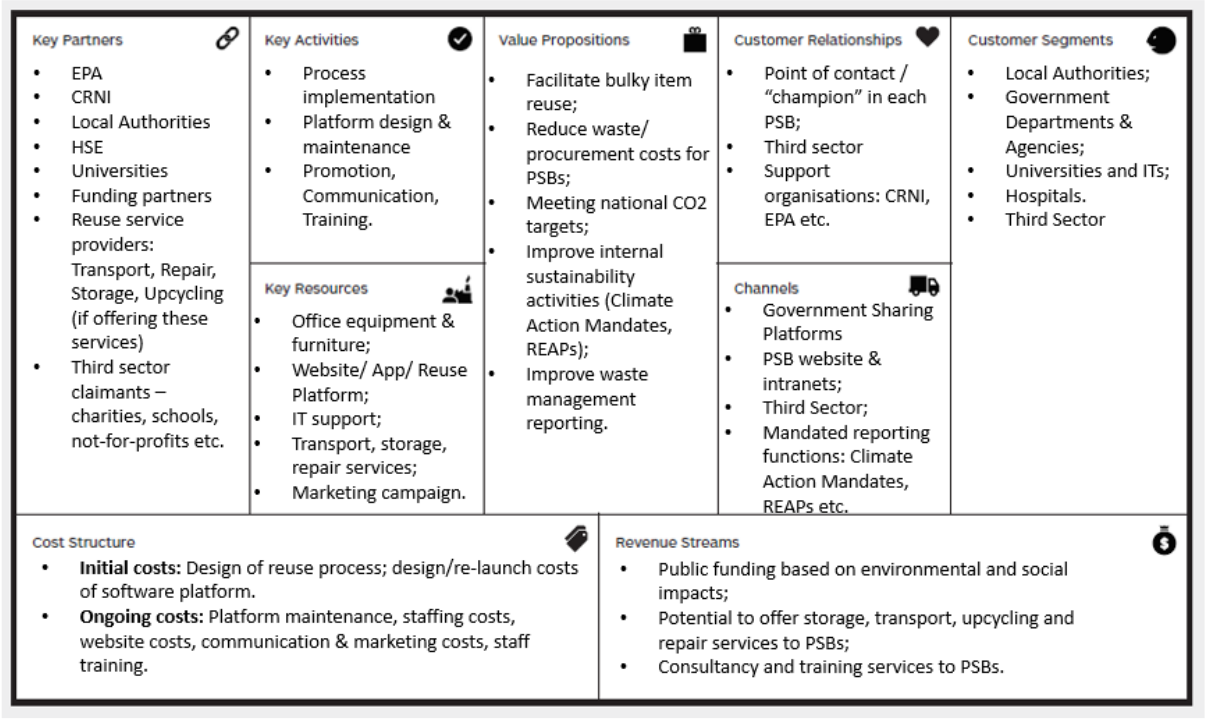


Figure 5: National Reuse Platform for Public Sector Bodies

1. The **key external partners** that would need to be involved to establish a national platform include, but are not limited to, enough public sector bodies (buy-in from upper management) that can cover the costs involved with the establishment of a national platform. Supporting organisations such as CRNI, EPA and other social enterprises to provide guidance and best practice examples of reuse/exchange. The internal departments within public sector bodies – at a minimum procurement, facilities, training, IT/systems departments. Service providers (transport, storage, upcycling & repair services) would be required if the platform has the capacity to arrange such services. The Third sector would also be key as they provide a wide network of potential claimants.

2. The **key activities** of running such an initiative include internal training of staff, promotion of the initiative both internally and externally, reporting on financial/environmental/social targets, maintenance of platform, coordinating office/lab moves, taking staff enquiries, coordinating external services (transport, repair etc.), liaising with claimants from the Third sector.

3. The **key resources** that are required are a website to promote the national reuse platform, marketing campaign to raise awareness among the public sector bodies, IT support to establish and maintain the platform, development of an app, transport/repair/storage services if possible.

4. The **value proposition** for establishing a National reuse/exchange platform for the public sector is that it is an additional method to help the public sector improve their

environmental and social impact, help to reduce national carbon emissions, improve the content of their Resource Efficiency Action Plans (REAPs), Climate Action Charters and other sustainability reporting, encourage better asset management and reduce the amount of resources kept in storage or sent to landfill, reduces procurement costs as new items don't always have to be purchased, reduce their waste removal costs. By having a National platform there is the benefit that all public sector bodies, regardless of size, can access a platform to support their reuse activities. By having the Third Sector involved the number of potential claimants increases, which addresses barriers such as reducing the turnaround times and the need for storage.

5. The **customers relationships** that need to be maintained include the "point of contact" in all public sector bodies involved in the National Platform. Maintaining relationships with the Third sector who will claim the bulky items. Maintaining relationships with the relevant bodies in the Irish reuse network – EPA, CRNI etc. to ensure the platform remains relevant. Supporting staff members within public sector bodies where required for raising awareness and training purposes.

6. There are various **channels** that can be used to ensure the necessary promotion of the National platform including existing Government sharing platforms such as the SEAI Energy Link, the existing public sector bodies website and intranets can include links and material about the platform, existing reporting functions such as the Climate Action Mandates and the REAPs, engage with the Third sector to help raise awareness of the platform.

7. The **customer segments/target market** for this model are public sector bodies who want to develop a National reuse/exchange platform. This would probably be larger public sector bodies (Universities/IT's, Local Authorities, hospitals) as they have more resources.

8. The **costs** involved to successfully establish and maintain a National reuse platform include a minimum of a full-time resource and the IT and marketing costs involved with establishing a website and the software platform/app and professionally promoting it. Each public sector body will then have costs associated with managing their reuse activities within their organisation and the fees involved with supporting the establishment and running of the National platform.

9. The **revenue streams** available could include public funding based on the potential environmental/social impacts such an initiative could have, however the main revenue stream comes from both the savings in not having to procure new items and a reduction in waste disposal costs. If the national reuse platform has the capacity to provide transport, storage or repair services, these could provide a revenue income. See Section for more detailed overview on resourcing of such a platform.

There were no examples of a National Reuse platform funded by the public sector identified as part of this research.

- #### 6.3.2 Internal Reuse/Exchange within a Public Sector Body

Scope of Model

1. An internal Reuse/Exchange process is established by a single public sector organisation;
2. A suitable Reuse/Exchange platform is selected by the organisation to advertise/manage/report items – this maybe an online platform or a manual system depending on the resources available;
3. The resources required to manage the platform are scoped, depending on the process this maybe a single person's or become part of an existing persons job role;
4. The internal resource is responsible for the management of the system, assessing all items that are listed on the platform, staff training, compiling metric reports (savings made, tons of CO2 saved, tons diverted from landfill);
5. No option for the interim storage of items, the donor agrees to advertise the item(s) for a minimum period of 4 weeks;
6. The donor provides the item(s) description and measurements via the agreed process and specifies whether items can be claimed by multiple claimants;
7. If the item isn't claimed within 4 weeks, the item(s) follows the normal process (waste stream);
8. Once an item is claimed, the owner and claimant meet face to face to exchange the item;
9. The organisation implements a transport policy – this either puts the onus on the claimant to organise and cover the collection costs or it builds the requirement into the internal facilities department contract;
10. If the organisation has the resources, it could provide a small-scale repair service;
11. Transfer of ownership statement must be signed by claimant;

Internal Reuse/Exchange with a Public Sector Body

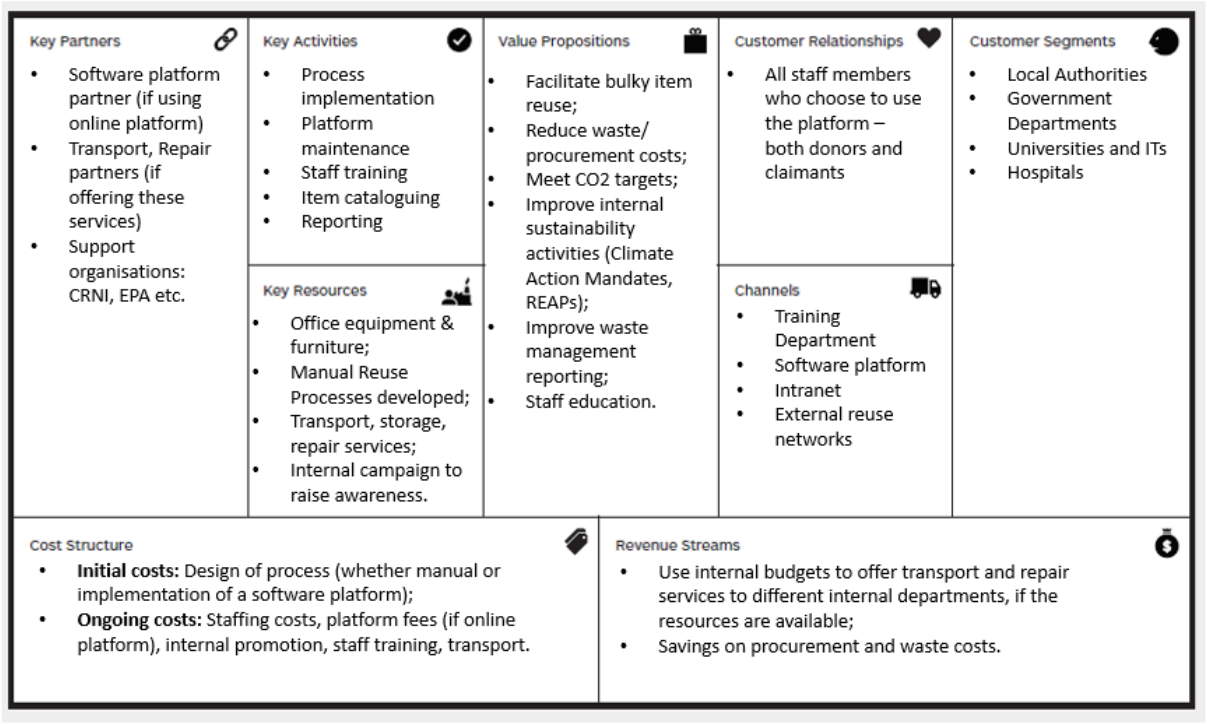


Figure 6: Internal Reuse/Exchange within a Public Sector Body

1. The **key external partners** may include, but are not limited to, the software platform partner, transport and moving partners, storage partners, repair partners, funding partners. They may also engage with external support organisations for guidance or advice such as EPA or CRNI.

2. The **key activities** include designing the reuse process for the organisation. Once the platform is established the key activities include internal training of staff, promotion of the initiative both internally and externally, reporting on financial/environmental/social targets, maintenance of platform, coordinating office/lab moves, taking staff enquiries, coordinating external services (transport, repair etc.).

3. The **key resources** required include office equipment/furniture available for reuse/exchange, the supporting reuse processes, a campaign to raise awareness of the reuse platform and why staff members should sign up. The organisation may decide to offer transport, storage or repair services if they have the necessary resources.

4. The **value proposition** for the public sector is that by engaging in exchange/reuse of bulky items within their organisation they have the potential to help the public sector meet their carbon emission targets, improve the content of their Resource Efficiency Action Plans (REAPs), Climate Action Charters and other sustainability reporting, encourage better asset management and reduce the amount of resources kept in storage or sent to landfill, reduces procurement costs as new items don't always have to be purchased, reduce their waste removal costs.

5. The **customers relationships** that need to be maintained include all staff members who sign up to the reuse scheme. They need to be convinced of the benefit of trying this new process, once engaged they will need to experience a seamless process for them to be repeat customers. As this model is internal only, there will be a combination of an online relationship via agreed channels and face-to-face contact so the item can be exchanged.

6. There are various **channels** that can be used to ensure that the necessary promotion of the initiative is conducted. For this model internal promotion is key; working with the training department to ensure all staff understand the benefits of transitioning to an exchange/reuse model and to understand what processes they must follow to ensure its success. As reuse/exchange is internal only, external promotion is not so important for this model.

7. The **customer segments/target market** for this model are public sector bodies that are looking to develop an internal reuse/exchange platform such as large public sector bodies (Universities/IT's, Local Authorities, hospitals).

8. The **costs** involved with such an initiative include a resource to manage the software platform and answer enquiries from staff, resource to assess the items for reuse as they become available, software platform monthly/annual fees, education and training costs with the concept and also with using the platform, fees to raise awareness both internally and

externally (attending and speaking at events, social media & communications), transport of item costs.

9. With an internal reuse system, the **revenue streams** available are limited. The main revenue stream comes from both the savings in not having to procure new items and a reduction in waste disposal costs. Depending on the organisation there is the option to provide transport, storage or repair services which could provide a small revenue income. See Section for more detailed overview on resourcing of such a platform.

Examples of this type of model in use:

University of Ulster (University of Ulster, 2019) – only does internal exchanges, however they do offer the items to staff for home use if they aren't required by the university.

6.3.3 External Reuse/Exchange with Third Sector

An online commercial system is recommended for this model as item(s) are offered to the Third Sector (primary & secondary schools, charities, not-for-profits) if they aren't claimed internally within a set amount of time.

Scope of Model

1. A Reuse/Exchange scheme is established internally within the organisation, however if they aren't claimed after 4 weeks, they are donated to the Third Sector (primary & secondary schools, charities, not-for-profits);
2. A suitable commercial online Reuse/Exchange platform is selected by the organisation to advertise/manage/report items;
3. The resources required to manage the platform are scoped, depending on the process this maybe a single person or become part of an existing person's job role;
4. A dedicated staff member is assigned ownership of the process and management of the scheme & platform. Their responsibilities should include management of the online platform, validation of all items that are listed on the platform, arranging staff training, compiling metric reports, liaising with internal item owners (staff) and with claimants (staff and representatives from the Third Sector);
5. The item owner agrees to advertise the item(s) for a minimum period of 4 weeks;
6. No option for interim storage of item(s) is provided;
7. The staff member (item donor) uploads the item to the software platform including photos and item description and measurements;
8. If the item isn't claimed internally within the 4 weeks, the item is offered to the Third sector. If it isn't claimed in a further 2 weeks' it follows the normal process (waste);
9. If an item is claimed internally, the owner and claimant meet face to face to exchange the item and agree the logistics and costs of moving the item;
10. If an item is claimed by the Third Sector, the organisation agrees the main point of contact to liaise with the external party to arrange collection;
11. The organisation decides whether it will offer transport & repair services and who these services will be offered to. Generally external claimants arrange and pay for their own transport;
12. Transfer of ownership statement must be signed by all claimants;

External Reuse/Exchange with the Third Sector

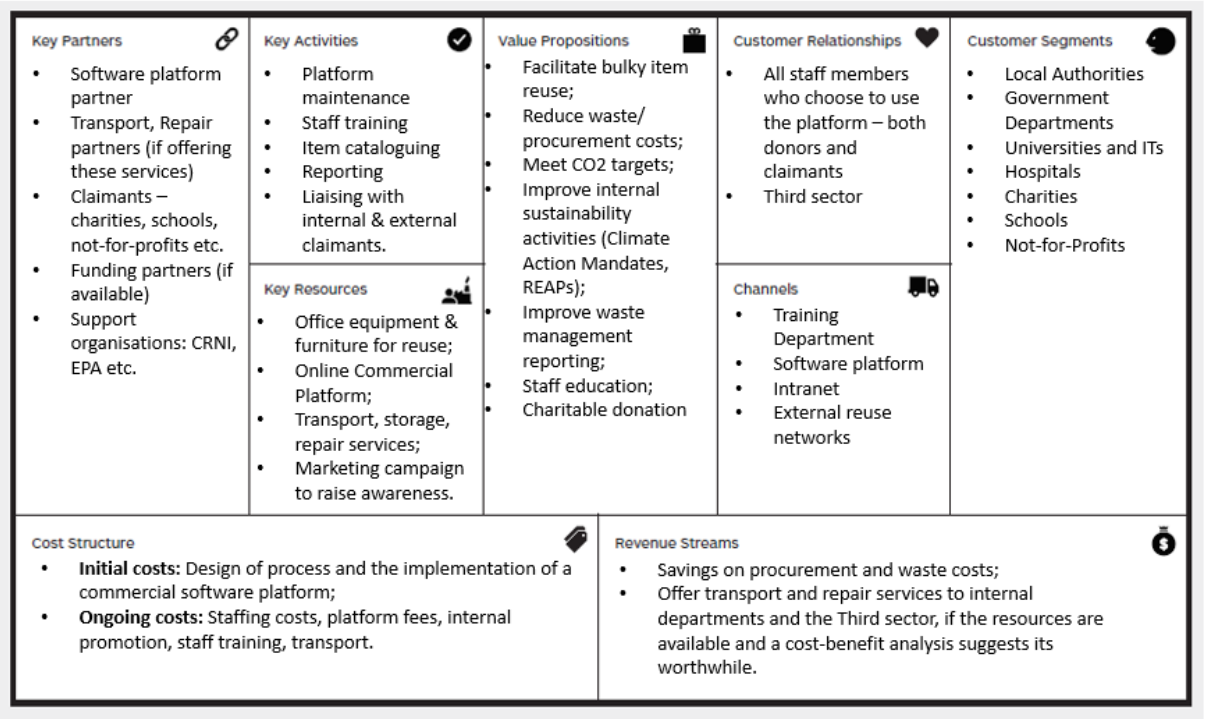


Figure 7: External Reuse/Exchange with the Third Sector

1. The **key external partners** include partners/claimants from the Third sector, the commercial software platform partner, transport and moving partners, storage partners, repair partners, funding partners (upper management or an external source), support organisations such as CRNI or EPA to provide guidance on reuse.

2. The **key activities** in implementing and running this model include setup of commercial software platform, internal training of staff, promotion of the initiative both internally to staff and externally to the Third sector, reporting on financial/environmental/social targets, maintenance of exchange platform, coordinating office/lab moves, taking staff enquiries, coordinating external services (transport, repair etc.), liaising with claimants from the Third sector.

3. The **key resources** include office equipment and furniture that is available for reuse/exchange, the online commercial platform, a comprehensive marketing campaign to raise awareness of the new reuse scheme both with internal staff and the Third sector. Transport, storage, repair services if the organisation has the resources to support.

4. The **value proposition** for the public sector is that by engaging in exchange/reuse of bulky items within their organisation they help the public sector improve their environmental and social impact, help to reduce national carbon emissions, improve the content of their Resource Efficiency Action Plans (REAPs), Climate Action Charters and other sustainability reporting, encourage better asset management and reduce the amount of resources kept in storage or sent to landfill, reduces procurement costs as new items don't always have to be

purchased, reduce their waste removal costs. By having a National platform there is the benefit that all public sector bodies, regardless of size, can access a platform to support their reuse activities. By having the Third Sector involved the number of potential claimants increases, which addresses barriers such as reducing the turnaround times and the need for storage.

5. The **customers relationships** that need to be maintained include all staff members who choose to use the platform. Initially they will need to be convinced of the benefit of trying this new scheme and platform, however once engaged they will need to experience a seamless process to ensure they are repeat customers. It is also important to have a close relationship with the Third sector to ensure you can reuse the item(s) quickly if they are not claimed internally. There will be a combination of an online relationship via the online platform and a face-to-face relationship so the item can be viewed and exchanged.

6. There are various **channels** that can be used to ensure that the necessary promotion of the initiative is conducted both internally and externally. Internally working with the training department is key, staff must understand the benefits of transitioning to an exchange/reuse model and then they must understand what processes they must follow to ensure its success. External promotion is important for this model to ensure all Third sector bodies in your region are aware of the platform and informed when new item(s) are available.

7. The **customer segments/target market** for this model are public sector bodies who are looking to develop an internal reuse/exchange platform such as large public sector bodies (Universities/IT's, Local Authorities, hospitals) and who would like to offer items that aren't required internally to the Third Sector. The Third sector should be defined and can include charities, local primary & secondary schools and also not-for-profits.

8. The **costs** involved with this model are the fees to implement a commercial platform solution and the internal costs involved with running a reuse scheme.

9. With this type of reuse system, the **revenue streams** available are limited. The main revenue stream comes from both the savings in not having to procure new items and a reduction in waste disposal costs. Depending on the organisation there maybe the option to provide transport, storage or repair services which could provide a small revenue income. See Section for more detailed overview on resourcing of such a platform.

Examples of this type of model in use:

The following universities offer the items internally and if the item isn't claimed they offer it to the Third sector.

1. **University College Dublin** Estate Services (UCD, 2019)
2. **University of Glasgow** (University of Glasgow, 2019) - provides a user guide and a process flow diagram of how they conduct their bulky item reuse process.

3. **NHS Scotland** (NHS Scotland, 2016) (Resource Efficient Scotland, 2014) – provide user guides to reuse and also to setting up a reuse scheme.

6.3.4 Reuse/Exchange within Regional Clusters

This model is suitable for two types of clusters:

1. Public sector bodies in cities that are in proximity (cities, towns, etc.) to other public sector bodies and keen to widen their network. They may choose to have a certain focus i.e. medical services or research;
2. Public sector bodies that are operating in a certain region or county and are too small to operate a reuse system individually. The types of organisations involved may extend beyond the public sector to join a cluster of
    a. Other public sector bodies in the county or region;
    b. Public and Private sector organisations (in a local business park etc.);
    c. Have more formal links with the Third sector.

It is up to each cluster to decide whether to engage in external donation of items to the Third Sector (primary & secondary schools, charities, not-for-profits).

Scope of Model

1. A Reuse/Exchange scheme is established between the various organisations who agree to be part of the cluster for the exchange of bulky items;
2. Led by the public body who proposes the cluster – it would be their role to get other organisations from their region involved. A reuse champion/point of contact would be nominated in each of the participating organisations – depending on the process and time required this maybe an FTE or become part of an existing person's job role;
3. A suitable commercial Reuse/Exchange platform shall be selected and implemented by all organisations in the cluster;
4. A letter of commitment should be obtained from the management of each of the organisations that they will assign ownership of this project to a suitable member of staff and actively participate in the cluster;
5. The cluster shall decide if they are just operating an exchange model among themselves or if they're not claimed after a certain period (i.e. 4 weeks), they are donated to the Third Sector;
6. The responsibilities of the reuse champion/"point of contact" in each organisation should include validation of all items that are listed on the platform, arranging staff training, compiling metric reports, liaising with internal item owners (staff) and with external claimants (staff and representatives from the Third Sector) if required;
7. It is recommended that an interim storage service should not be provided, at least at the start and should only be relooked at if a real demand is identified for this service;
8. The donor uploads the item(s) to the software platform six weeks before vacancy date and includes photos and accurate item description and measurements; the donor agrees to advertise item for a minimum period of 4 weeks; if the item isn't claimed it is offered to the Third sector for 2 weeks; if it is still not claimed it follows the normal waste process;
9. A transport service agreement is agreed by the cluster (either external service or internal facilities department depending on the available resources in the cluster). For external exchanges the transport costs are usually covered by Third sector claimants;

10. If the organisations in the cluster have the appropriate resources, they may choose to offer a small-scale repair service to claimants;
11. A terms and conditions contract shall be agreed between all participating organisations;
12. Transfer of ownership statement must be signed by all claimants for each exchange.

Reuse/Exchange within Regional Clusters

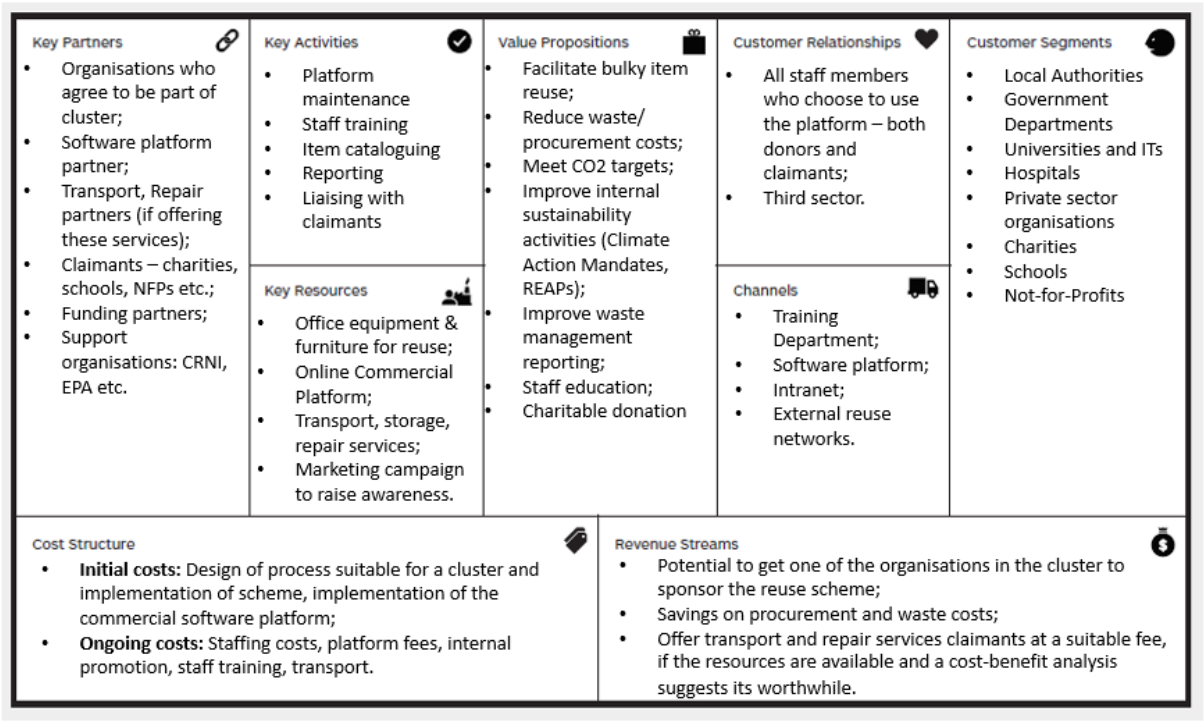


Figure 8: Reuse/Exchange within Regional Clusters

1. The **key external partners** include organisations who agree to be part of the reuse cluster, the commercial software platform partner, transport and moving partners, storage partners, repair partners, funding partners (this maybe upper management or an external funding source), support organisations to provide guidance on reuse i.e. EPA and CRNI.

2. The **key activities** include engaging with other organisations to get them involved in the cluster, determining the processes of the reuse scheme, implementing a commercial software platform, internal training of staff, promotion of the initiative both internally to staff and externally to organisations within the cluster, and promotion to other public sector bodies as an example of best practice. Other activities include reporting on financial/environmental/social targets, maintenance of exchange platform, coordinating office/lab moves, taking staff enquiries, coordinating external services (transport, repair etc.), liaising with claimants. It should be agreed in the T&Cs who's responsible for each activity.

3. The **key resources** include office equipment and furniture that is available for reuse/exchange, the online commercial platform, a comprehensive marketing campaign to

raise awareness of the new reuse scheme with internal staff, other organisations that may join the cluster and with the Third sector. Transport, storage, repair services if organisations in the cluster have the resources to support.

4. The **value proposition** for engaging in a reuse cluster include widening the reuse network which should facilitate more exchanges. It also provides the internal reuse champions with another level of peer to peer support and the opportunity to increase their reuse activities. Other general benefits include the potential to help the public sector meet their carbon emission targets, improve the content of their Resource Efficiency Action Plans (REAPs), Climate Action Charters and other sustainability reporting, encourage better asset management and reduce the amount of resources kept in storage or sent to landfill, reduces procurement costs as new items don't always have to be purchased, reduce their waste removal costs.

5. The **customers relationships** that need to be maintained include engagement with all the organisations within the cluster, including all "points of contact" and staff members who choose to use the platform. The face to face contact that will be involved with establishing the cluster could provide the benefit of maintaining the momentum of reuse activities. Initially users of the platform may need to be convinced of the benefit of trying this new scheme and platform, however once engaged they will need to experience a seamless process to ensure they are repeat customers. It is also important to have a close relationship with the Third sector to ensure you can reuse the item(s) quickly if they are not claimed internally. There will be a combination of an online relationship via the online platform and a face-to-face relationship so the item can be viewed and exchanged.

6. There are various **channels** that can be used to ensure that the necessary promotion of the initiative is conducted both internally and externally. Internally working with the training department is key, staff must understand the benefits of transitioning to an exchange/reuse model and then they must understand what processes they must follow to ensure its success. External promotion is important for this model as you may want to increase the number of donating organisations within the cluster and engage with more Third sector organisations.

7. The **customer segments/target market** for this model are organisations who are potentially interested in developing reuse practices or want to widen their reuse network and are interested in joining a cluster. They may include public sector bodies only or extend the cluster to private sector organisations and the Third Sector.

8. The **costs** involved with such an initiative include assigning an internal resource to manage the reuse process, the software platform monthly/annual fees, education and training costs to raise awareness among staff and also process training on how to use the platform, dissemination costs, transport & repair services (if offering them).

9. The **revenue streams** available are somewhat limited. There could be an opportunity to get one of the organisations involved in the cluster to sponsor the reuse scheme. Otherwise the

main revenue stream comes from both the savings in not having to procure new items and a reduction in waste disposal costs. Depending on the organisation there may be the option to provide transport, storage or repair services which could provide a small revenue income. See Section for more detailed overview on resourcing of such a platform.

University College London (UCL) operate this type of model:

1. University College London (UCL) engage with other public sector bodies in the Bloomsbury area of London to reuse/exchange bulky items;
2. They identified these other organisations through word of mouth, however now they exchange with them via the Warp It software platform. These other organisations signed up to the Warp It platform separately;
3. Some of the UCL research facilities are based outside of London, however they are engaging in reuse/exchange activities with other Warp It users in their area;
4. UCL offers the service to anyone who has a UCL email address – mainly staff and researchers;
5. A transport service agreement is built into the UCL Portering Service contract and it offers the option to claimants to have their items delivered free of charge within the Bloomsbury area of London;
6. They are currently only using Warp It for peer to peer exchange, so this minimises the resources required by UCL staff. Their logistics team are currently investigating how they can use Warp It more strategically in the future;
7. Their procurement team have implemented a furniture framework contract which requires all furniture suppliers offer a repair service (UCL, 2019).

6.3.5 Reuse/Exchange for an Office Refurbishment or Relocation Project

This model is suitable for public sector bodies who want to trial an element of reuse/exchange as part of an office refurbishment or relocation project. This approach allows the public sector organisation to define how reuse could work for their organisation and if successful they could go on to establish a permanent reuse scheme.

In this model the organisation will have to define some factors

- If a manual or online software platform will be used to manage the reuse element of this project;
- If the project includes donation of bulky items only, or will the project also include the procurement of upcycled or reused items;
- The scope of the project – will the reuse element apply to the full project, or will they decide to start with just one room or floor in the building;
- Agree who the potential claimants will be – internal only, other public sector bodies or the Third sector (primary & secondary schools, charities, not-for-profits).

Scope of Model

1. This model is suitable for public sector bodies who want to include reuse/exchange activities as part of their office relocation or refurbishment project. For the purposes of an individual project it wouldn't be recommended to implement a reuse online software platform;
2. The project champion reviews the list of upcoming refurbishment or office move projects within their organisation and gets buy-in to apply this model. The project champion/point of contact in the organisation would possibly be from the green team, facilities or procurement department;
3. Defines the scope of the reuse/exchange activities (see factors above);
4. 4-6 weeks before the upgrade project is about to commence, the project manager advertises the items via existing channel – internal email, existing public sector sharing platform (e.g. OPW Accommodation officers' network, SEAI Energy Link, CRNI network).
5. The reuse activities should be written into the tender document for the refurbishment project to ensure the project management team buy into the process. This will specify if multiple claimants are allowed and if transport/repair/storage services are provided. Generally interim storage, repair or transport services wouldn't be recommended for such a project;
6. If the item(s) aren't claimed before the project commences, the item follows the normal process (waste);
7. Define who liaises with the claimant to arrange collection of items and who covers transport costs;
8. Transfer of ownership statement must be signed by all claimants.

Office Refurbishment or Relocation Project

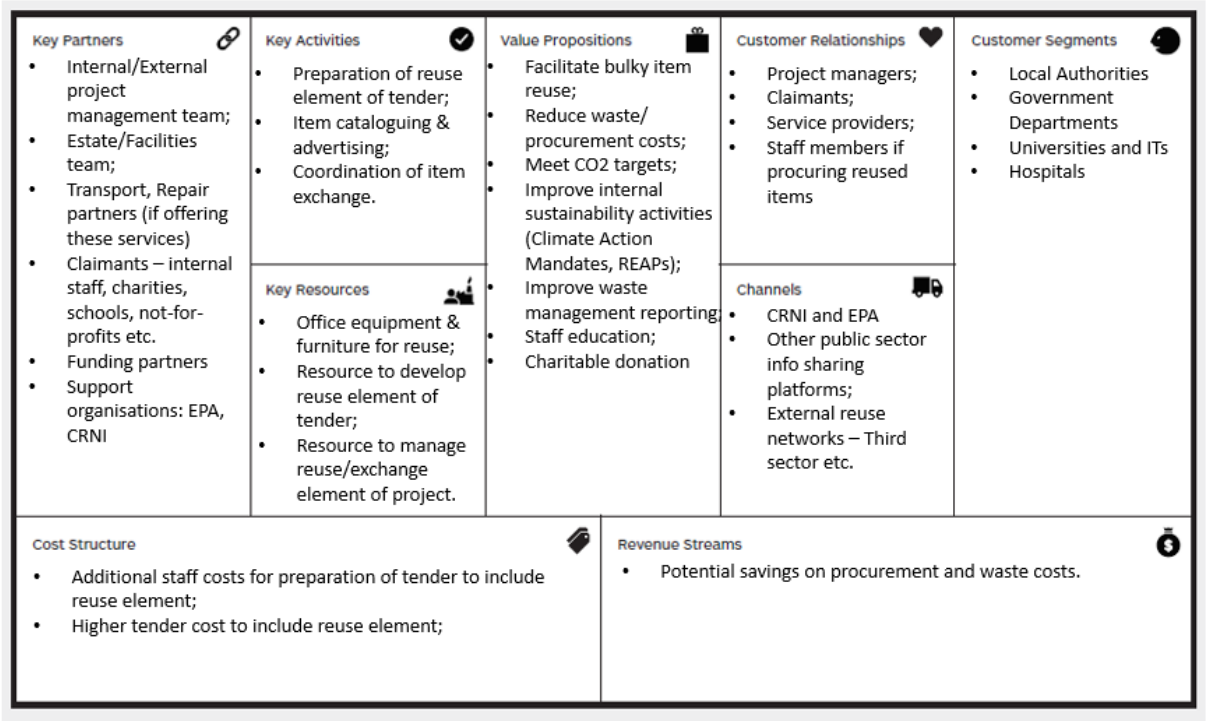


Figure 9: Reuse/Exchange for an Office Refurbishment or Relocation Project

1. The **key external partners** include the internal/external project management team, estates or facilities team, transport and moving partners, funding partners (this maybe upper management or an external source), the claimants, supporting organisations such as the EPA or CRNI to provide guidance on reuse and potentially broker relationships with service providers who provide reuse services.

2. The **key activities** include getting buy-in from upper management and the project team, preparing the reuse element of the tender document, agreeing how the items will be advertised for reuse/exchange, cataloguing the items, coordinating the exchange. All activities should be assigned an owner as part of the tender.

3. The **key resources** required include suitable office equipment and furniture for reuse, a resource to develop the reuse element of the tender, a resource to project manage the reuse element of the project.

4. The **value proposition** for the public sector is by trialling reuse activities with an individual project there is the opportunity to see how a full reuse scheme could work in your organisation. Other benefits include helping the public sector to meet their carbon emission targets, improve the content of their Resource Efficiency Action Plans (REAPs), Climate Action Charters and other sustainability reporting, reduce the amount of resources sent to landfill and reduce their procurement and waste removal costs.

5. There **customers relationships** that need to be maintained include the project team and c-suite. Without their support incorporating reuse/exchange activities into an existing project will be problematic. Other relationships are with the claimants and any other service providers – transport etc. If procuring upcycled or reused items for the office move, then the concept and benefits must be explained to the staff members.

6. There are various **channels** that can be used to ensure the reuse element of this project gets the necessary promotion, including in-house workshops and training for all staff involved with the project. Engaging with external reuse networks and organisations such as EPA and CRNI to get support and advice. They could also broker relationships with service providers in the reuse sector where required.

7. The **customer segments/target market** for this model is public sector bodies who commencing refurbishment/upgrade projects within the next 6-12months and are interested in having a reuse/exchange element as part of the project.

8. The **costs** involved include widening the scope of the tender document and potentially paying more for the project management team to manage this initiative during the refurbishment project.

9. There is no obvious **revenue stream** associated with this project, rather a reduction in the waste removal costs.

Reuse Examples during an office refurbishment or relocation project:

1. There are several Irish examples of small reuse/exchange activities that have taken place, particularly with private sector organisations, through the SMILE Resource Exchange and supported by the CRNI. See Appendix2 for examples of reuse projects supported by the CRNI.
2. In 2016, **Public Health Wales** (PHW) relocated from several smaller satellite offices across Wales to one new large open plan office in Cardiff Bay (Wrap Cymru, 2017). This relocation and refurbishment project specified that it wanted to combine existing, re-used and remanufactured items as a core requirement of the project. 45% of the items were re-used, 49% were re-made and 6% were sourced from new stock, with a total of 41 tonnes of waste being diverted from landfill.

7 Resourcing

This section further develops two of the five models listed in the previous section:

1. A national reuse platform for public sector bodies, funded by the public sector bodies who sign up to the platform and want to donate bulky items internally and to the Third sector;
2. An individual approach, where public sector bodies would implement reuse schemes to suit their needs using either a manual or commercial-based reuse platform.

General Assumptions for both models

1. Both models are based on feedback gathered through engagement with stakeholders throughout the course of the project, so it should be noted that there was a high-level of bias as information generally came from those interested in initiating reuse activities;
2. The financial feasibility for both models is presented as a starting point for conversations with public sector bodies that are interested in establishing a reuse platform. It was hard to quantify the costs of re-establishing a national platform, however the fees for both models are more than the survey participants were willing to pay;
3. In both models the donor organisations would pay subscription fees and the claimants would receive the service for free.

7.1 National Reuse Platform

This model is based on Business Model 1, outlined in Section 6.3.1. The proposed financial figures for relaunching an existing reuse platform were provided by the consulting firm involved with establishing and maintaining reuse platforms in Ireland. The following assumptions have been made to give an indicative figure on how much would be required to launch and maintain a version of the PREP system, see Figure 10. This model would require the public sector bodies who agree to implement a reuse scheme to pay annual subscription fees to maintain the platform. The fee amount would be based on their organisation size (small, medium, large), see Table 3. Additional public sector funding could be sought to cover the costs of relaunching the platform, however this isn't guaranteed.

Proposed Model & Assumptions:

1. In this model a total annual cost is assigned to each of the following sectors: local authorities, universities, and hospitals. Each sector would have to ensure they contributed a minimum of 60% of this amount. For example, a total of 30,000EUR was assigned to the local authorities;
2. Ensure the sector collectively pays 60% of their subscription fees in advance so platform could be built/upgraded. For example, 18,000EUR would be required from Local Authorities in the first year.
3. The subscription fees within each organisation type would be allocated based on the size of each participating organisation (small, medium, large), see Table 3.
4. Public or private sector funding of 20,000EUR is required to be sourced to upgrade the existing PREP platform;
5. Figure 10 shows there is a proposed annual running and maintenance cost of 53,000EUR approximately.
6. Enough public sector bodies would have to commit enough funding support to help their sector meet the total cost assigned to their sector. They would also have to obtain a

budget internally from their upper management team to support this platform i.e. assigning an internal resource(s) to managing the reuse platform and raise awareness of it within their organisation.

7. Each public sector body would need to implement a reuse process to support use of the platform i.e. who they would donate to (internally, other public sector bodies, the Third sector) and their position on storage/transport/repair services.
8. As recommended in the business model section, it wouldn't be recommended to offer storage/transport/repair services initially. Instead once the platform is established a review should be conducted to quantify the demand for these services.

Sectors	**Annual Cost per Sector**	**Number of Organisations** Note: staff brackets are approximate			**How Organisation Size was calculated**
		Small <250 Staff	**Medium** 250<999 staff	**Large** >2000 Staff	
31 Local Authorities	€30,000	11	14	6	Calculated based on a combination of staff numbers given in Annual Local Authority Reports (where available) and by determining their size based on a % size of their county population (CSO, 2016).
21 Third Level	€25,000	9	6	6	Higher Education Institutes Staff Statistics submitted to the Higher Education Authority for 2016 (HEA, 2016)
50 Hospitals	€40,000	17	21	11	Based on a percentage of available in-patient and day-patient beds (HSE, 2012)
Fee Structure		**€500**	**€1,000**	**€1,600**	**Note: fees are exclusive of VAT**

Table 3: Allocation of subscription fees required to build a reuse/exchange platform for Public Sector Bodies

Funding Model with 60% take-up by Public Sector Bodies

Income			€	**Comments**
	Local Authorities	60%	18,000	Based on 60% of all Rep Ireland LAs availing of the platform
	Universities	60%	15,000	Based 60% of all Rep of Ireland Universities availing of the platform
	Hospitals	60%	24,000	Based on 60% of all Rep Ireland Hospitals availing of the platform
			57,000	
Expenditure				
	Set-up Costs			
	Design/Re-launch Costs		(17,000)	These would only be applicable costs in first year. Costs are based on quote to
	Website re-design		(7,000)	relaunch existing platfrom PREP and ensure it is GDPR compliant
			(24,000)	
	Annual Costs			
	Ongoing platform maintenance costs		(5,000)	As per RPS quote
	Ongoing website costs		(1,000)	Hosting, Maintenance etc.
	Resource to maintain		(35,000)	Employee
	Marketing		(2,000)	Minor updates to website / dissemination materials
	Communications		(10,000)	To raise awareness, promote the platform, and develop the network within PSBs
			(53,000)	
			(77,000)	
	Total Profit/(Loss)		(20,000)	Apply for funding for initial set-up costs of the platform

Figure 10: Income and Expenditure for set-up and running costs of a Reuse/Exchange Platform

Benefits of this Model

Some of the main benefits of creating a custom national reuse platform for public sector bodies include

- The PREP and SMILE systems already exists and with some additional resources could be upgraded to the standard of available commercial models i.e. compliant with GDPR regulation, improved cataloguing functionality and reporting functions;
- Commitment from public sector bodies and additional funding support (either from public sources such as the EPA, or private sources such as corporates looking to support sustainability initiatives) would have to be obtained to establish and launch a National reuse platform. This commitment would have to be sought up front from a significant percentage of public sector bodies which would be a good way to get them engaged and using the platform;
- The fee structure for a national platform could potentially be less than all individual public sector bodies separately paying fees for an online commercial platform to manage their reuse activities, particularly if State agency funding could be obtained to cover the initial establishment costs. This is guaranteed however;
- Launching a national reuse platform would better raise awareness of reuse activities at a policy level, which could lead to reuse and procurement targets being set by State agencies such as the Office of Government Procurement;
- Launching a National reuse platform would facilitate reuse clusters and better support the creation of a national reuse network.

Disadvantages of this Model

Some of the disadvantages of this model include

- A model operating on needing a certain percentage of public sector bodies to engage in reuse activities and to pay fees on an on-going basis is risky. Also, there may not be appetite to get a State Agency to cover the initial costs of relaunching a reuse platform;
- There may be competition issues with Government support for a platform when a commercial solution is available;
- Currently there is not an obvious public sector body who would manage such a reuse platform due to reuse service offerings being underdeveloped, see Section 7.1.1 for more details;
- Providing a National reuse platform may stall public sector bodies from starting their reuse activities until the platform is established;
- A national platform may not have the flexibility to accommodate the reuse scheme that best suits an organisation. Reuse activities will be different for every organisation depending on size and resources available.

7.1.1 Finding a Home for a National Reuse Platform

A substantial barrier to establishing a national reuse platform is identifying a suitable body to establish and manage such a platform. Table 4 analyses the suitability of the different types of organisations in Ireland who are currently active in the reuse sector.

Currently there was no obvious organisation type identified as a home for such a platform. It should be noted however that this could be potential area of interest for commercial waste companies. They already have many of the potential services required in place such as transport and logistic networks. They manage some of the nationwide Civic Amenity Sites that could be set up for storage of bulky item(s) for reuse and they could potentially sub-contract other services such as up-cycling to social enterprises or other SMEs/start-ups.

Organisation Types	Existing Irish Examples	Overview of organisation and meeting outcome
Social Enterprises	Rediscovery Centre; Recreate	Meetings were held with social enterprises within the CRNI network. While they have a strong focus on reuse their priorities must remain core to their mission of teaching upcycling skills and promoting creativity through reuse. The sale of items is generally secondary to such organisations and a second-hand reuse platform doesn't really fit within their business model.
Government funded Resource Exchange Platforms	SMILE Resource Exchange; PREP; FreeTrade Ireland.	It was suggested that reuse/exchange services have only been successful due to them being free and that a personalised approach is fundamental to such a platform being successful. It was also noted that reuse platforms were more popular with commercial enterprises than State agencies. There needs to be an incentive to use it – potentially needs to be linked to waste targets such as reducing carbon emissions and diverting waste from landfill. Consultancies have often been engaged in the past to deliver such platforms for Government agencies however as this isn't their core business, they don't have an incentive to continue to run it if public funding stops – as shown with SMILE Resource Exchange.
Start-ups	Thriftify	While such a system could be a nice venture for an entrepreneur, such start-ups can often be quite risky and most reuse business models remain relatively un-tested in the market. It is interesting that while Warp It was a start-up and launched in 2013, they had been working on the idea since 2005. Start-ups do have an important role to play in developing suitable reuse services to support organisations in their reuse activities.
Waste Regions	Southern, Eastern-Midlands, Connaught-Ulster	The waste regions are already managing a wide range of projects and may not have the capacity to take on the running of such a reuse system. However, they do have an action in their management plans to encourage reuse and repair activities, particularly at Civic Amenity Sites.

Civic Amenity Sites and Recycling Centres	Country-wide facilities	Sites are often quite small and currently storage areas are often open to the elements so any bulky items brought here will quickly suffer from weather and vermin damage. During stakeholder engagement as part of this project, it was identified that Beauparc Group (the parent company for Greenstar, Panda and others) would be interested in trialling a reuse scheme at their Civic Amenity Sites – a "Second-Chance Saloon". This could be a potential cluster with organisations and could also deal with bulky items that are brought to the site by the general public. Initially it would form part of their sustainability initiative in terms of educating people and preventing a small percentage of resources from going to landfill, however there may be a business opportunity in the future as demand increases.
Commercial Waste Companies	Beauparc Group; Thorntons etc.	As mentioned in Section 5.1.1 the business offerings for reuse services are still relatively underdeveloped. There could be a potential opportunity for commercial waste companies to win business by offering reuse services and they already have many of the necessary services such as transport, logistic networks, storage sites in place. There is also the opportunity for them to win the contract to process the remaining waste if the reuse activity is part of a wider project.
OPW Furniture Section	Bulky Item Reuse section for all central government buildings	They have an existing manual system and generally have a high specification for their items which they feel would make them less suitable to being in a reuse cluster with certain State bodies. At the time of interview, they were not interested in developing their system into a national platform to include a wide range of public service bodies.
Universities	UCD; UCC	As universities are a large consumer of office furniture and other bulky items, many of them are starting to realise the benefit of reuse. Two Irish universities have already adopted a reuse platform and most of the big universities in the UK are actively engaging in reuse/exchange activities to varying degrees. UCD have successfully established the Warp It platform in their Estate Services Department and have reported it as being very successful. If other bodies were using the Warp It platform they would have the option to widen their reuse network.

Table 4: Analysis to identify an organisation suitable to establishing and maintaining a National reuse platform

o 7.2 Individual Implementation a Reuse Scheme

This model proposes that public sector bodies individually implement a reuse/exchange scheme to suits their needs – a commercial online platform does not have to be a requirement for this model. It is a combination of Business Model 2, 3 and 4, outlined in Section 6.3. To resource such a model, financial figures from Warp It have been provided, see Table 5.

Proposed Model & Assumptions:

1. Each public sector body would select a business model (2, 3 or 4) appropriate to their needs (outlined in Section 6.3) for the implementation of a reuse system. This should allow each organisation to address most of the barriers raised in the testing phase, see Section 6;
2. If organisations want to donate bulky item(s) to the Third sector or be part of a regional cluster, then procuring and implementing an online software platform would be advised;
3. Each organisation would need to get buy-in from upper management to decide on an appropriate reuse scheme for their organisation and ensure the appropriate resources are assigned to manage the scheme.

This model allows organisations to define how best to implement reuse activities in their organisation based on the resources they have available. They can opt for a full reuse scheme that uses an online software platform to conduct reuse activities with the Third sector or within a regional cluster. Alternatively, if they have limited resources, they can start by establishing a manual reuse scheme internally, which means they don't have to pay for an online reuse platform.

As indicated by the results from the online survey conducted as part of this research, see Section 6.2, there is a low appetite in public sector bodies to cover the costs of establishing and maintaining a reuse scheme for their organisation. This can be seen in Figure 11, which shows the average subscription fee that respondents were willing to pay for such a platform was of €250 (ex VAT) per annum.

The amount that users are currently willing to pay for a reuse platform is in stark contrast with the current Warp It fees. However, it should be noted that respondents were asked to indicate how much they'd pay for such a service without being fully aware of the savings that such a platform could offer. Feedback from an Irish case-study who have established a reuse platform, indicated that on waste disposal costs alone they had been spending €3-4k on skips and had managed to reduce this by 25%, which would cover the costs of such a commercial platform. This also doesn't take any of the procurement savings into account, and the same customer had saved €30,000 by being able to reuse furniture.

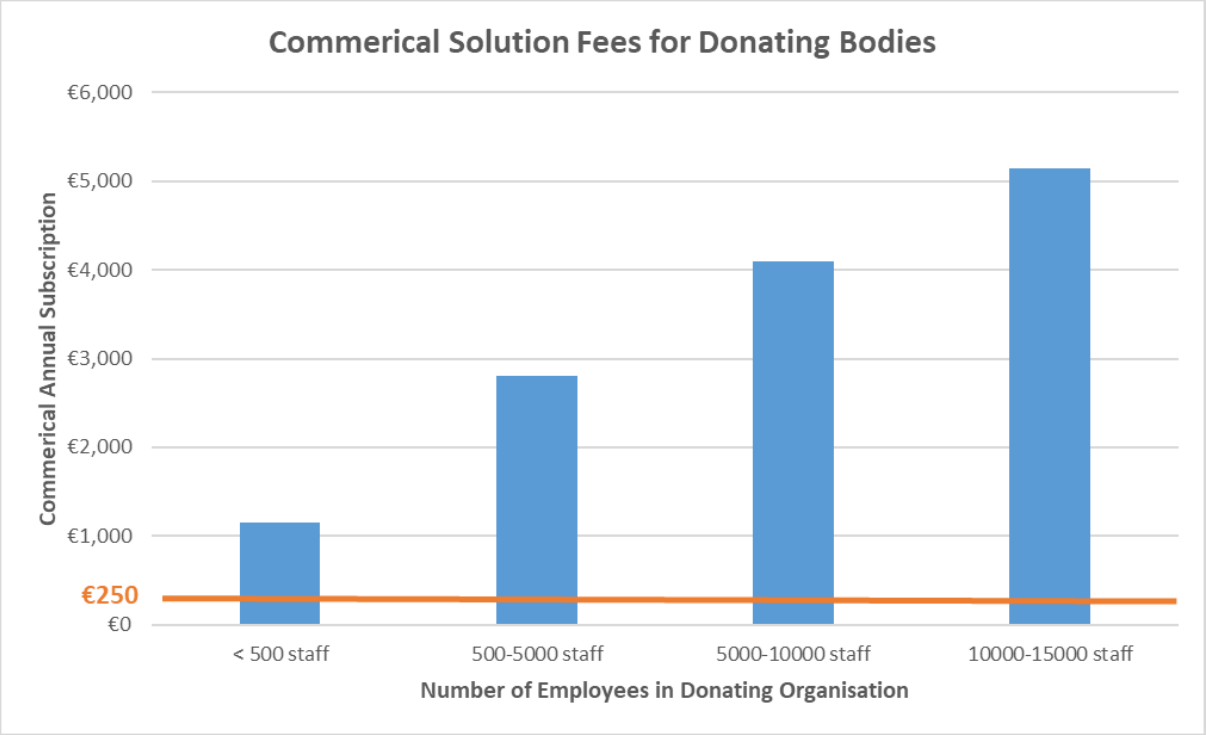


Figure 11: Comparison of commercial platform fees for a reuse platform v what survey responders were willing to pay

Indicative Costs if Choosing to implement an Online Reuse Platform

	< 500 employees	500-5000 employees	5000-10,000 employees
Monthly Fee (ex VAT)	£80 / €100	£195 / €240	£286 / €350
Annual Fee (ex VAT)	£960 / €1,150	£2,340 / €2,800	£3,432 / €4,110
Conversion Rate: 16 Dec 2019			

Table 5: An indication of Commercial Platform Fees from Warp It

Benefits of this Model

- It allows public sector bodies to get started with implementing reuse activities as soon as possible, if they have upper management buy-in;
- It means public sector bodies can tailor their reuse scheme to the resources they have available to them and potentially address many of the barriers raised as the system is designed to meet their needs;
- Developing individual reuse schemes in public sector bodies means that there is no dependency on needing a certain number of organisations to commit to funding a national platform before reuse activities can commence;
- There is less risk of funding being pulled that could nationally impact reuse activities;

Disadvantages of this Model

- It requires an internal resource to take the initiative to establish a reuse platform within their organisation;
- There may be a delay in getting the attention from Government to set policy and targets in this area – particularly policy that prioritises waste prevention activities and requires public sector bodies to consider reuse before procuring new items.

7.3 Comparison of Fee Costings for Both Models

Figure 12 shows a comparison of the fee structures for both models, those that have been estimated if an existing reuse platform is relaunched for the national platform or the current fees for organisation to purchase a commercial software platform.

It should be noted that while the commercial solution fees look substantially higher than the fees for a national platform, the costs obtained for re-launching a national platform are based on existing models and are dependent on at least 60% of public sector bodies signing up to the national platform and paying annual fees.

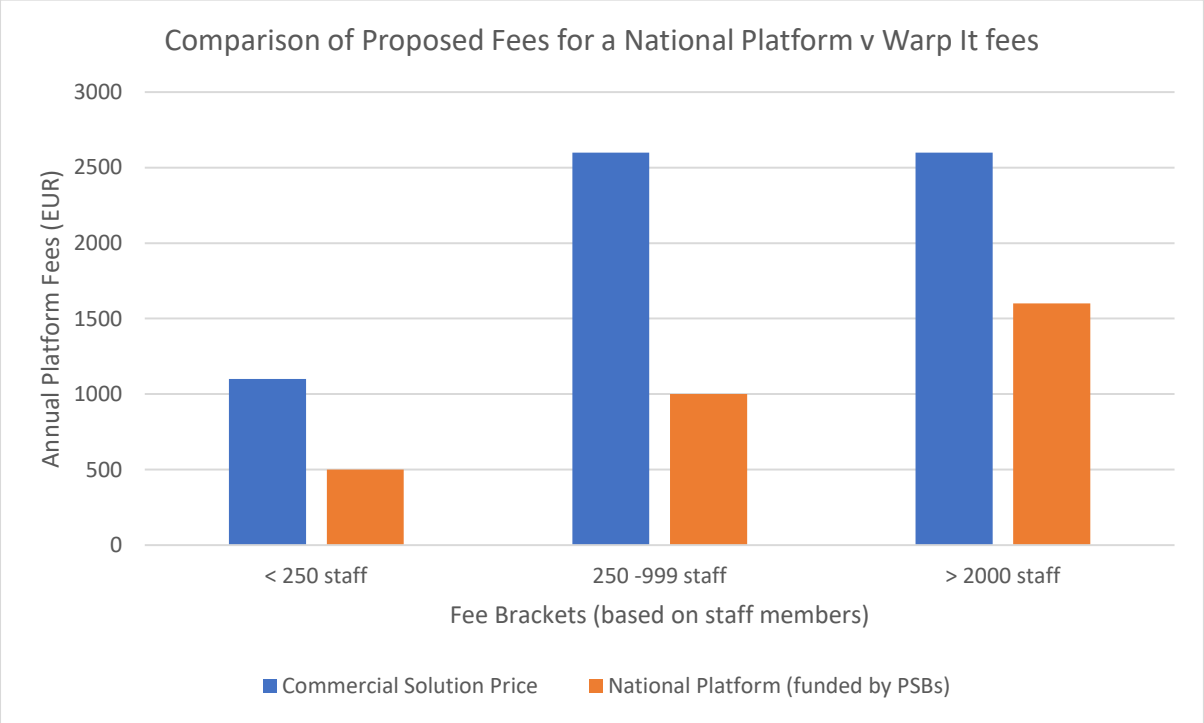


Figure 12: Comparison of Proposed Fees for a National Platform v Warp It Fees

7.4 Selection of a Model

Given that this sector is still emerging and there is lack of supporting policy for reuse activities, this research recommends that public sector bodies who want to engage in reuse activities adopt the second business model (individually implementing a reuse scheme, see Section 7.2).

This was based on the following barriers to the national platform model:

1. not identifying a natural home for a national reuse platform;
2. requiring upfront funding from a minimum of 60% of public sector bodies;
3. there is already a commercial solution now active in the Irish market, so it doesn't make sense to look for public sector funding to duplicate this effort. Also, there may be competition issues with using State funding to support such a platform;
4. the research showed that organisations wanted the flexibility to design their own reuse schemes, which the commercial model may be better at addressing.

8 Reporting

This final section of the report includes a summary of the final outputs of the research and an overview of the main observations and recommendations.

8.1 Final Outputs of Research

This section summarises the final outputs of this research:

1. The final report, submitted to the EPA Research Programme on 05 January 2020;
2. A summary document detailing the project observations, conclusions and next steps to be used for dissemination purposes;
3. A "How to Guide for Establishing a Reuse Scheme".

8.2 Main Observations

- There are significant potential environmental and economic savings associated with increased reuse of bulky items. Over 1.2 million potentially reusable bulky items are going to landfill or incineration on the island of Ireland every year. Office furniture in particular is often replaced due to aesthetic and corporate reasons, on an entire office basis, rather than any loss of functionality, leading to large volumes being consigned to landfill or incineration.

- Through reuse, the greenhouse gas emissions associated with both from upstream material management (55% and 65% of typical national emissions) and end of life management (3-4% of total emissions from the average OECD country) are avoided. In economic terms, the Irish government procures millions of euro worth of bulky items every year, giving an opportunity for the public sector to lead by example on this transition.

- From a review of both EU and national policy documents there are limited policy actions and supports in place to promote reuse/exchange activities, even the most recent EU Green Deal doesn't explicitly promote second-hand reuse. Most existing supports and policy focus on activities further down the waste hierarchy, such as recycling. This lack of policy support for reuse activities means most public sector bodies currently don't have a budget for either an internal resource to run a reuse scheme or to pay the fees associated with either a national reuse platform or a commercial reuse platform.

- There is a lack of education and awareness on the benefits of reuse/exchange within public sector bodies which has resulted in the value in reuse not being recognised. As State agencies previously provided these reuse platforms for free, there now seems to be unwillingness from participants to pay for a reuse platform. The survey results (see Section 6.2) indicated they'd only pay €250 approx. This was substantially less than the fees proposed in either model, see Section 7.3.

- The withdrawal of funding from the SMILE Resource Exchange platform at the end of 2018 demonstrates that a model that operates on Government funding is risky and there may not be appetite to get funding to support the relaunch of a national platform.

- Despite initial enthusiasm about the concept, this research observed that individuals often adopted a position based on a certain barrier (storage, indemnity, resource, previous lack of interest in reuse/exchange etc.) and then felt it is insurmountable to starting a reuse scheme. Compared with the positive feedback from the UK reuse case studies (Section 4.3), it was noted the feedback from our workshops and interviews was somewhat negative with participants focusing on the barriers of reuse in their organisations rather than what they could achieve.

- The workshops revealed that while liability issues are a concern for some, they aren't a barrier for all organisations. This is backed up by the fact that reuse/exchange of bulky items is working well in the UK among risk-adverse public sector bodies such as universities, healthcare providers, councils etc. showing that in can be done with the right processes and resources in place. Initial discussions with an Irish law firm also confirmed that bulky item reuse between organisations and the Third sector is low risk.

- Scaling is problematic as often a wide network (of both donors and claimants) interested in reuse is necessary before the system works well. Not having a perfect system seems to be dissuading organisations from getting started. Setting a lower ambition or taking on smaller scale projects (e.g. where not all items have to be saved from the waste stream) should be encouraged particularly with early adopters.

- Storage seems to be a big barrier for some, and it is felt that such a system can't work without it. Unfortunately, storage only works if there is constant demand for such items otherwise items get forgotten about in storage.

- The business offerings that could support reuse schemes (transport, storage and repair services) are often underdeveloped and where they do exist, they are under resourced (as is the case in several social enterprises that support reuse activities).

- Despite the above barriers, several large public sector bodies in Ireland have already adopted reuse/exchange models. While online resource exchange platforms are not widely used, there are some active manual internal systems. Another interesting example is in UCL where they have a furniture contract framework, which lists the furniture suppliers they can use. This contract specifies the furniture suppliers must repair the furniture if requested. They also have it written into their porter service contract that they must provide transport services free of charge within the local area for exchange of bulky items.

o 8.3 Main Recommendations

- Given that this sector is still emerging and there is lack of supporting policy, this research recommends that public sector bodies who want to engage in reuse activities adopt the second business model (individually implementing a reuse scheme). See Section 7.4 for justification.

- This also enables public sector bodies to address their individual requirements – e.g. some may choose to only conduct reuse activities internally or with other public sector bodies to minimise liability concerns. The business models (see models 2-5 in Section 6.3) have been elaborated in a separate guidance document that can be disseminated as a tool for public sector bodies that are contemplating or are required to adopt reuse/exchange activities.

- It is recommended to use the separate guidance document on how to establish a reuse scheme if you are a public sector body who is contemplating or is required to adopt reuse/exchange activities.

- A reuse scheme doesn't have to involve using an online reuse platform. The model outlined in Section 6.3.2 focuses on internal reuse online and suggests other options such as internal email or groups to facilitate the exchange. This could be a good way to start a reuse scheme if the budget isn't available for procuring a software platform.

- A strong policy driver is required to provide public sector bodies with the incentive to adopt these models and other reuse/exchange activities. This could be implemented in the form of, for example, requirements set out in Resource Efficiency Action Plans (REAPs), Climate Action Charters or other sustainability reporting initiatives.

- Given the limited policy in this area in Ireland and the low levels of awareness and the benefits of reuse/exchange, good practice examples are required to stimulate interest in and a market for this activity. We would recommend starting with some small public sector pilot reuse schemes – potentially a cluster model and a refurbishment project or office move that has a reuse element. This would result in the generation of case studies which would help to develop a market for reuse within the public sector.

- While this sector is still emerging, it is recommended that public sector bodies conducting a refurbishment project or office move should consider starting with just one room or one floor and if the project is successful the scope can be widened for the next project. It may be the case that for the first project only 20% is diverted from entering the waste stream, however this can be built upon in future projects. This approach would both facilitate the public sector body in testing the market and also accommodate the current scale of the sector.

- In the absence of stronger policy support, individuals in public sector bodies who want to commence reuse activities are recommended to get buy-in from upper management and the procurement team to ensure staff consider second-hand items before being allowed to purchase new items. Get reuse/exchange written into organisational policy documents and procurement documents (supplier contracts and tenders).

- It is recommended that public sector bodies struggling to justify budget for procuring a software platform or to get the internal staff resources assigned to manage the scheme, in the absence of stronger policy support, should focus on the value proposition. This proposition includes how such a scheme can improve the organisation's environmental and

social impact, help to reduce national carbon emissions, improve the content of their Resource Efficiency Action Plans (REAPs), Climate Action Charters and other sustainability reporting, reduce the amount of resources sent to landfill, reduces procurement costs as new items don't always have to be purchased, reduce waste removal costs.

- It is recommended to launch reuse schemes in advance of or without the option of interim storage. Instead, there should be focus on raising awareness of allowing enough turnaround times for the item(s) to be claimed. The need for storage can then be reassessed once the system is up and a real demand for storage has been identified. It should be kept in mind that without storage perhaps all items won't be saved from landfill, however it may be preferable to paying expensive storage costs and possibly forgetting about the items. This is in line with other reuse schemes who don't recommend providing interim storage solutions, see (NHS Scotland, 2016).

9 Post-Implementation

This section provides an overview of the actions that CRNI will take to share the research outcomes and progress this research and reuse activities within public sector bodies:

1. To encourage public sector bodies to engage in reuse/exchange activities, CRNI will circulate the summary document & "How to Guide" within the following reuse circles:

    - Those who were interviewed as part of this research, workshop participants and those who responded to the survey;

    - Government knowledge sharing platforms (SEAI Energy Link etc.);

    - Other reuse networks.

2. CRNI will also promote research at upcoming CRNI events that will focus on reuse activities and implementing reuse schemes; Update the CRNI website page that is dedicated to this research, https://www.crni.ie/bulky-items-reuse/ and promote outcomes on social media;

3. To address the policy gap, CRNI will make recommendations in response to the *Public Consultation Waste Action Plan for a Circular Economy* for stronger drivers to engage public sector bodies in reuse/exchange activities. Specifically, these should require (e.g. through Resource Efficiency Action Plans (REAPs)/ Climate Action Charters) that public sector bodies embed reuse/exchange activities into organisational policy documents and procurement documents (supplier contracts and tenders).

4. To help generate good practice examples that will stimulate interest in and a market for this activity, CRNI will complete and share suitable reuse case studies that demonstrate bulky item reuse, particularly in the public sector;

5. In the absence of stronger policy drivers, CRNI will continue to review the funding landscape to identify opportunities to help fund the pilot or initiation of relevant reuse/exchange models with public sector bodies. In particular, funding to support the creation of a reuse

cluster that includes public sector bodies would help drive engagement and test the cluster model proposed here. Individuals from organisations in Sligo who are potentially interested in piloting a cluster model have been identified.

- 10 References

Ahrend . (2019). *Bringing office furniture full circle.* Amsterdam: Ellen MacArthur Foundation .

Chertow, M. (2000). Industrial symbiosis: Literature and Taxonomy. *Annual Review of Energy and Environment*, 313-337.

CRNI. (2016). *Making Reuse and Recycling Happen.* Dublin: Community Reuse Network Ireland. Retrieved December 18, 2019, from https://www.crni.ie/wp-content/uploads/2017/02/crni_white_paper_on_environment_and_social_policy_070916.pdf

CRNI. (2019, December 9). *Re-mark*. Retrieved from Community Reuse Network Ireland: https://www.crni.ie/re-mark/

CRNI. (2020, January 05). *Case Study on Green and Social Procurement*. Retrieved from Community Reuse Network Ireland : https://www.crni.ie/green-and-social-procurement/

CRR. (2009). *A Study of the Market Potential for Reused and Remanufactured Office Furniture in the UK.* Buckinghamshire: Centre for Remanufacturing and Reuse.

CSO. (2016). *StatBank*. Retrieved from Central Statistics Office: https://statbank.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=EP001&PLanguage=0

DPER. (2019, October 20). *Circular 20/2019: Promoting the use of Environmental and Social Considerations in Public Procurement.* Retrieved from gov.ie: https://www.gov.ie/en/circular/Circular-20-2019/

Ellen MacArthur Foundation. (2019). *Completing the Picture: How the Circular Economy Tackles Climate Chanage.* Ellen MacArthur Foundation.

European Commission. (2019). *The European Green Deal.* Brussels: European Commission. Retrieved from https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf

HEA. (2016). *Higher Education Institutes, Governance Section*. Retrieved from Higher Education Authority: https://hea.ie/higher-education-institutions/?v=l

NHS Scotland. (2016). *Setting up a re-use scheme.* Stirling: Zero Waste Scotland.

OECD. (2012). *GREENHOUSE GAS EMISSIONS AND THE POTENTIAL FOR MITIGATION FROM MATERIALS MANAGEMENT WITHIN OECD COUNTRIES.* Brussels: Working Group on Waste Prevention and Recycling.

OGP. (2016). *PUBLIC SERVICE SPEND AND TENDERING ANALYSIS.* Dublin: Office of Government Procurement. Retrieved 2019, from https://ogp.gov.ie/public-service-spend-and-tendering-analysis-report-for-2016/

OGP. (2019). *Public Procurement Guidelines for Goods and Services.* Dublin: Department of Public Expenditure and Reform.

Resource Efficient Scotland. (2014). *Waste Prevention and Reuse Guide.* Stirling: Zero Waste Scotland.

RPS. (2014). *Review of Waste/Resource Exchange Systems and Good Practice Guide .* Dublin: Environmental Protection Agency .

Rx3. (2013). *All Island Bulky Waste Reuse Best Practice Management Feasibility Study.* Dublin: Department of the Environment, Community & Local Government.

SEAI. (2018). *Annual Report 2018 on Public Sector Energy Efficiency Performance.* Dublin: Sustainable Energy Authority of Ireland . Retrieved 2019, from https://www.seai.ie/publications/Public-Sector-Annual-Report-2018.pdf

Thomasson, E. (2019, April 3). *IKEA to test furniture rental in 30 countries*. Retrieved from Reuters: https://www.reuters.com/article/us-ikea-sustainability/ikea-to-test-furniture-rental-in-30-countries-idUSKCN1RF0WY

UCD. (2019, August 19). *UCD Warp It*. Retrieved from Work Smarter Together: http://worksmartertogether.ucd.ie/ucd-warp-it-waste-action-reuse-portal/

UCL. (2019, December 18). *UCL Furniture Framework Buyers Guide.* London: University College London. Retrieved 2019, from University College London: https://www.ucl.ac.uk/procurement/sites/procurement/files/furniture_framework_buyers_march_2019.pdf

University of Glasgow. (2019). *Sustainability*. Retrieved from University of Glasgow: https://www.gla.ac.uk/myglasgow/sustainability/wasterecyclingreuse/warpit-furniturerecycling/

University of Ulster. (2019, December 19). *Waste page*. Retrieved from University of Ulster: https://www.ulster.ac.uk/__data/assets/pdf_file/0009/239364/Warpit-Process-flow.pdf

URBANREC. (2019). Circular Economy in Cities. *URBANREC final conference.* Brussels: ACR+.

URBANREC. (2019, November 21). *Interactive Tool*. Retrieved from URBAN REC Bulky Waste Management : https://urbanrec-project.eu/pre_tool.php

Wrap Cymru. (2017). *Public Sector Procurement Support.* Retrieved from Wrap Cymru: http://www.wrapcymru.org.uk/sites/files/wrap/Public%20Health%20Wales%20Sustainable%20Workplace%20(4).pdf

- Appendices

o Appendix 1: Initial Meetings and Interviews

Meeting format	**Number Completed**	**Examples of Stakeholders**
Interviews & meetings	12	SMILE, Rediscovery Centre, Recreate, Thriftify, OPW, RPS (PREP), UCC, Limerick County Council, EPA, Southern & Eastern Midlands Waste Regions.
Email & Phone Correspondence	20+	UCD, UCL, Trinity College, DCU, Zero Waste Scotland, WarpIt, WRAP, FRN, OGP, RREUSE, Welsh Government, HSE, Removals & 2nd hand Furniture Companies, All Local Authorities in Ireland and Northern Ireland, GMIT, Blanchardstown IT, Orangebox, Skip and Container Companies, the Centre for Remanufacturing and Reuse, Beauparc Group (Waste Management Company).
Site Visits	5	OPW Workshop and Warehouse North Strand Recycling Centre UCC Co-ops Masters Class CJM Furniture Charity shops
Conferences & events attended	9	Environment Ireland EPA New Plastic Economy Circular Ocean GPP4 Growth She Is Sustainable Ireland The Lean Patient Experience CRNI Conference CRNI & EMWR Social Enterprise Event National Waste Conference
Workshops hosted	3	Cork Dublin Sligo
Workshop Participants	45	With 38 different organisations participating

o Appendix 2: Examples of Reuse Projects

Organisation (private / public body)	**Description of items**	**Timeframe & terms of collection / delivery**	**Successful transfer**
Fidelity (private) - via BITC 29/1/19	10 chairs, large grey pod, 4 storage cabinets, 4 filing cabinets, 2 large + 4 small round wood tables, 2 x long office cabinets, 2 x commercial dishwashers, 10 x canteen chairs	Fortnight - 3 weeks approx. Collection from storage unit in Naas	Connected with Furniture Opinions Manager at NCBI. Interested in storage cabinets, filing cabinets & long office cabinets. Did not confirm if all items taken
PM Group (private) - via Katherine Corkery 26/2/19	106 old desks; 36 new desks; 93 pedestals; 12 tables; 92 bookcases; 14 cabinets; 108 office chairs; 19 other chairs	Weeks (not specified yet) - collection	WH Five Loaves, Cork Mental Health foundation, DEIS school Finglas = office chairs. Two other organisations looked @ furniture but didn't take (FOE, DP). Cabinets & bookcases taken (internal?). Desks not claimed.
HSE (public body) 27/2/19	15 office chairs	28 days - collection First offer 27 Feb Collected 1 April	Age Action took 10 chairs. The rest in poor condition / stained.
UCD 15/4/19	Large clearance, including office furniture, meeting room furniture, couches, duvets and bicycles	Ongoing since April	Bicycles were successfully transferred both through a UCD staff member and also through WARP-IT. The number of donations through WARP-IT has increased in the last while, with Jack and Jill being the biggest customer. UCD works with other charities on other projects, such as Duvets for Dogs and the Husky Rescue Centre for linen and blanket, and

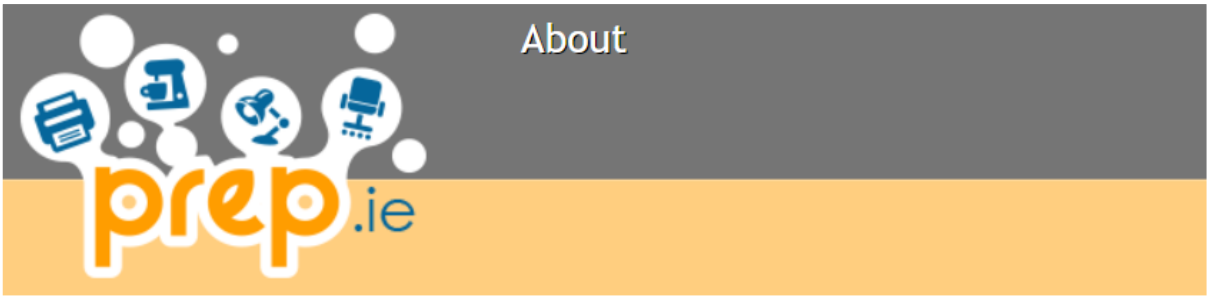
			also have a connection with LauraLynn.
Clark Hill Solicitors 11/6/19	Clearance of office and meeting room furniture	1 week	No furniture was exchanged to our knowledge
The Civic, Tallaght 25/6/19	Café Furniture clearance before refurbishment 56 x chairs, 7 x tables measuring 27.5" x 19.5", 5 x tables measuring 39" x 39" 10 x tables measuring 39" x 27.5", 10 x stools	2 days; first come, first served; must be collected from The Civic; small voluntary donation to their Inspire Scheme requested if "taker" could afford it.	The Civic posted list of items on Facebook, which generated 30 comments and 59 shares; CRNI was recommended to The Civic by someone on Facebook and we shared the clearance with our members; The Civic posted four hours after the original post that all items were gone.

o Appendix 3: List of Organisations who Supported the Research

- An Bord Pleanála
- Beauparc Group
- Belfast City Council
- Citizen Information Board
- Clean Technology Centre
- Cork County Council
- Cork University Hospital
- Defence Forces
- Department of Agriculture, Food, Marine
- Department of Foreign Affairs
- Donegal County Council
- Dublin City Council
- Dublin City University
- Dublin Port Company
- Dun Laoghaire Rathdown County Council
- Easte & Midlands Waste Region
- Eirgrid Group
- Enterprise Ireland
- EPA
- Failte Ireland
- Fingal County Council
- Gas Networks Ireland
- RPS & FreeTrade Ireland
- Health Services Authority
- Higher Education Authority
- HSE Estates
- HSE Sustainability
- Limerick County Council
- Longford County Council
- Meath County Council
- Met Éireann
- Monaghan County Council
- National Waste Collection Permits Office
- Offaly County Council
- Office of Public Works
- Panda
- Recreate
- Rediscovery Centre
- St. James' Hospital
- SMILE & Macroom E
- South Dublin County Council
- Southern Region Waste Prevention Office
- Sligo County Council
- St John of God's, Kerry Services
- Teagasc
- Thriftify
- Trinity College Dublin
- University College Cork, Building and Estates
- University College Cork, Green Campus
- University College Dublin
- University College London
- Warp It
- Waterford County Council
- WEEE Ireland

o Appendix 4: Transfer of Ownership Template

This "Transfer of Ownership" template was obtained by registering on the PREP website http://www.prep.ie/



Transfer of Ownership

You assume total responsibility and risk for your use of the Website and the items you have agreed to take from another organisation.

The public sector organisation who donates any Item using the Portal, (the "Donor") assumes no legal liability for and do not warrant the accuracy or completeness of the content of the advertisements for items included on the Website, including but not limited to the ownership, quality, authenticity of any photographs, compliance with description or fitness for purpose of any such item.

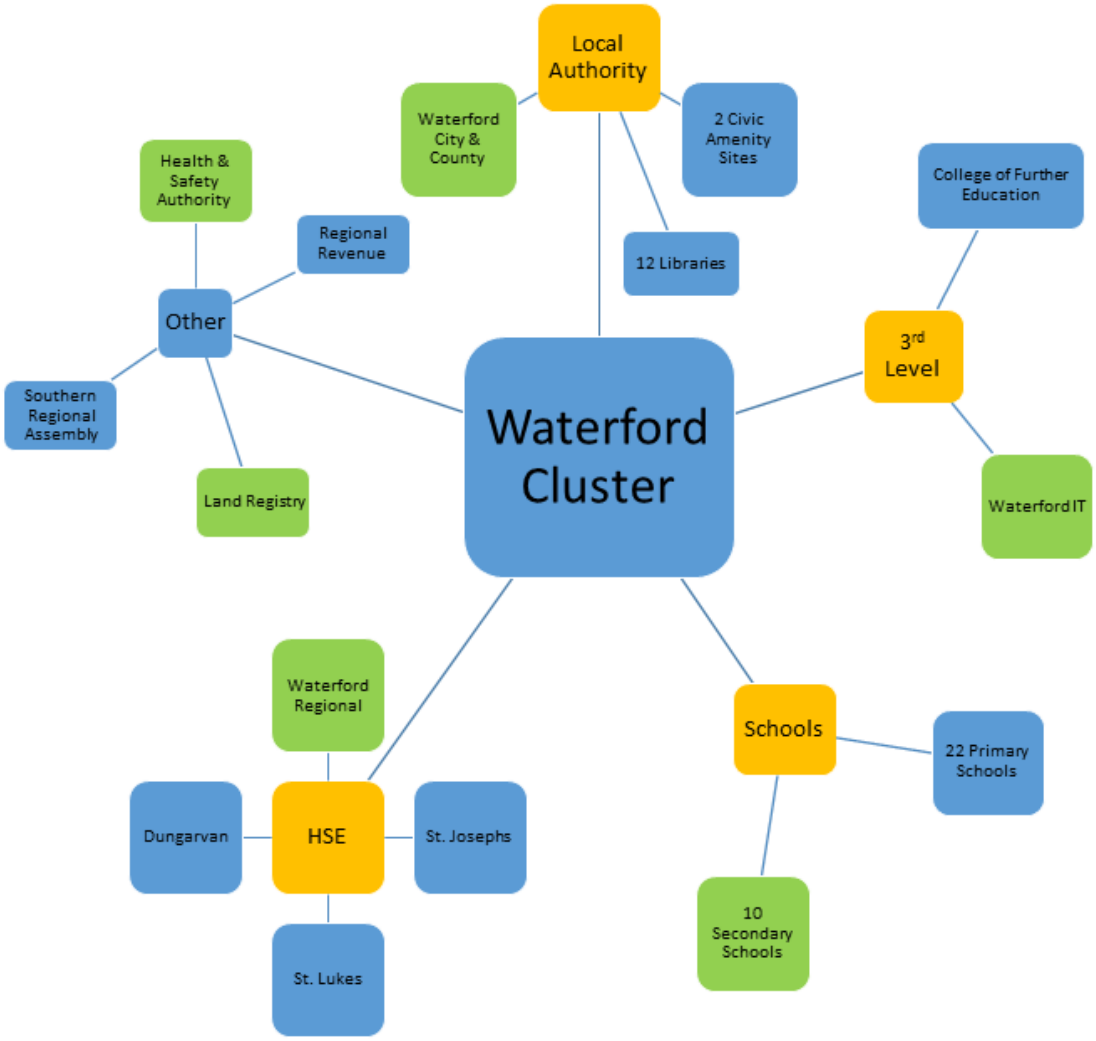
To the extent permitted by law, you, as the public sector organisation accepting items from the Donor (the "Recipient") acknowledge that any reliance by you on any information contained on the Website shall be at your own risk. To the greatest extent permitted at law we exclude all liability to any person for any loss or damage caused whether directly or indirectly, or howsoever arising, as a result of use of or inability to use the Website, use of or reliance on any content displayed on the Website, any errors or omissions on the Website, whether such errors or omissions result from negligence, accident or any other cause, but this disclaimer is without prejudice to any claims for our fraudulent misrepresentation or personal injuries or death caused by our negligence.

Note: A similar request was made to Warp It for their "Transfer of Ownership" template however it was declined as it was company intellectual property and was commercial sensitive.

o Appendix 5: Potential Regional Reuse Clusters

Cork Cluster
UCC
CIT
Colaiste Stiofan Naofa
3rd Level
St. Johns
College of Commerce
Griffith College
Cork City LEO
Southern Lean Forum
Business
Cork County LEO
Chambers of Commerce
345 Primary Schools
Schools
67 Secondary Schools
EPA
NRA
Other
SEAI
CSO
Fisheries (BIM, SFPA & Inland)
CUH
Bantry
SIVUH
HSE
Mallow
St. Finbarrs
MUH
Cork City Council
11 + 1 Civic-Amenity Sites
Cork County Council
Local Authorities
Sub-Offices
29 + 7 Libraries
3 + 3 Swimming Pools

SRWMO
4 Civic Amenity Sites
Local Authority
Limerick City & County
16 Libraries
Dept. Of Agriculture& Food
University of Limerick
Other
3rd Level
Limerick Cluster
Dept. Foreign Affairs & Trade
South-West Region Revenue Office
Mary I
Limerick IT
University Hospital Limerick
Schools
119 Primary Schools
HSE West & Stores
St. Johns Hospital
HSE
22 Secondary Schools
Mid-Western Croom
Mid-Western Dooradoyle



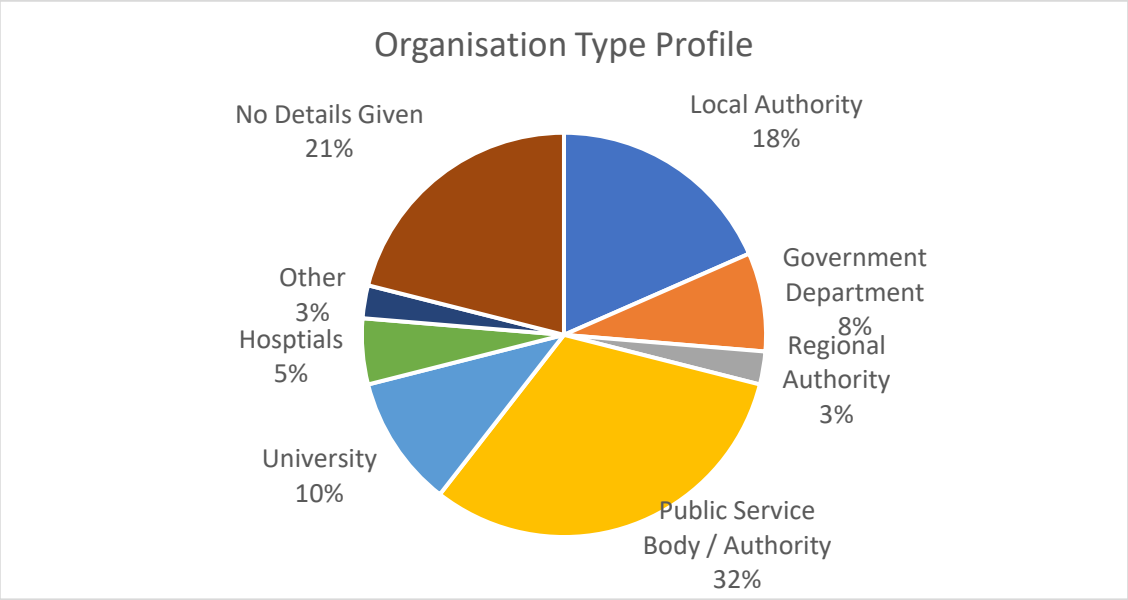
o Appendix 6: Public Sector Reuse Case Studies from UK

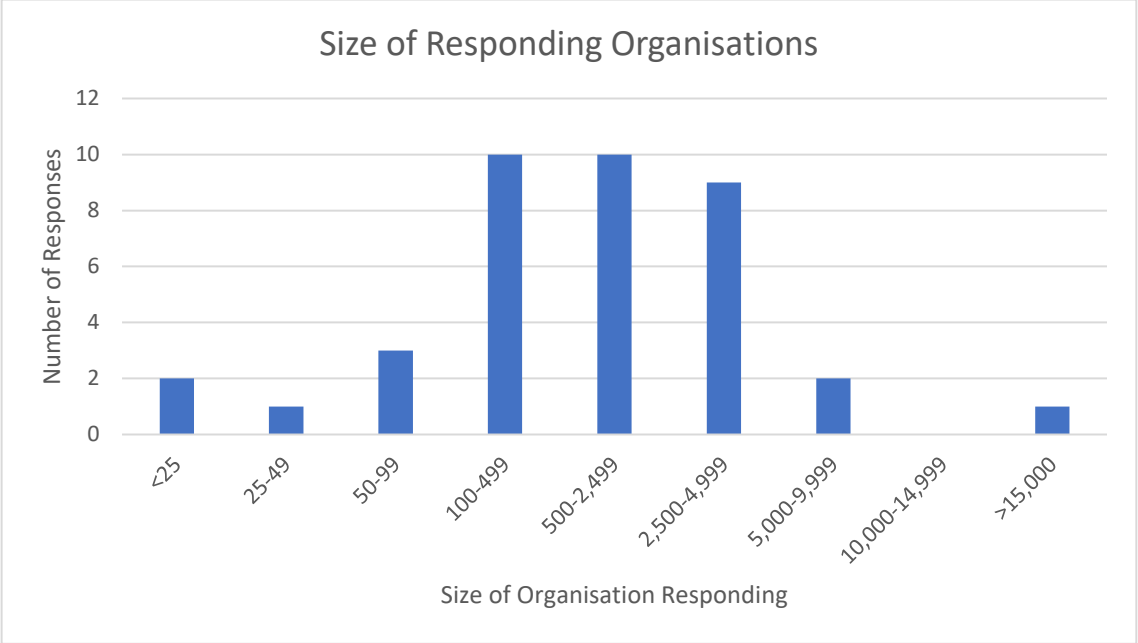
See external report.

o Appendix 7: Workshop Slides

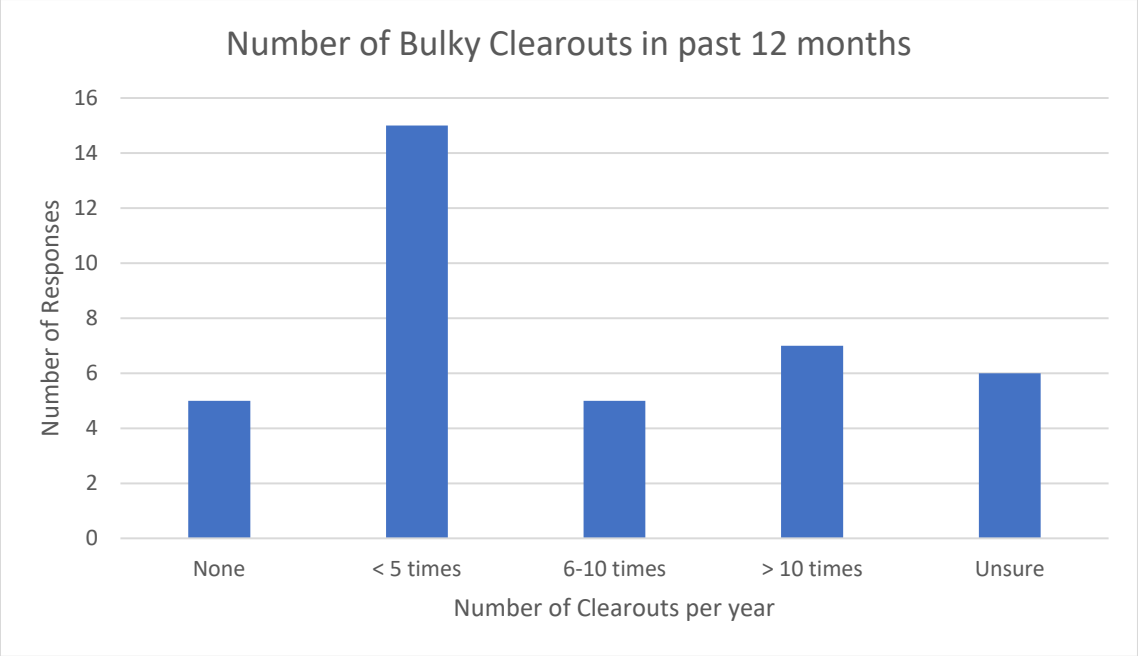
See external report.

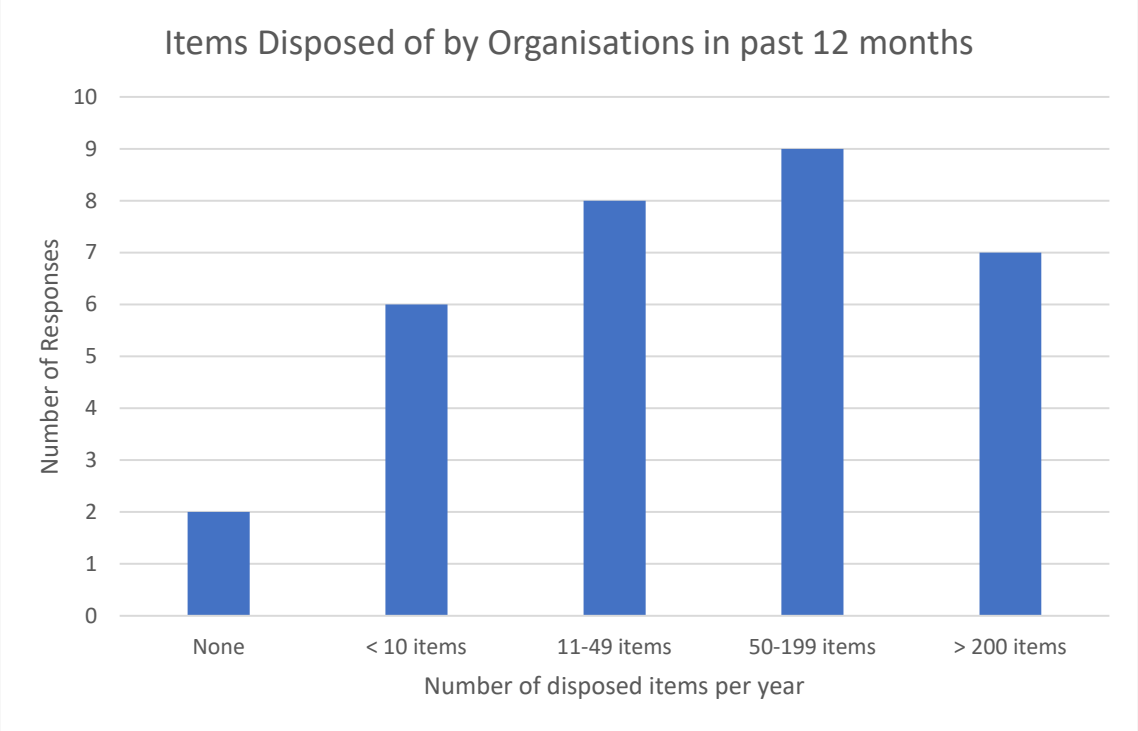
o Appendix 8: Survey Results

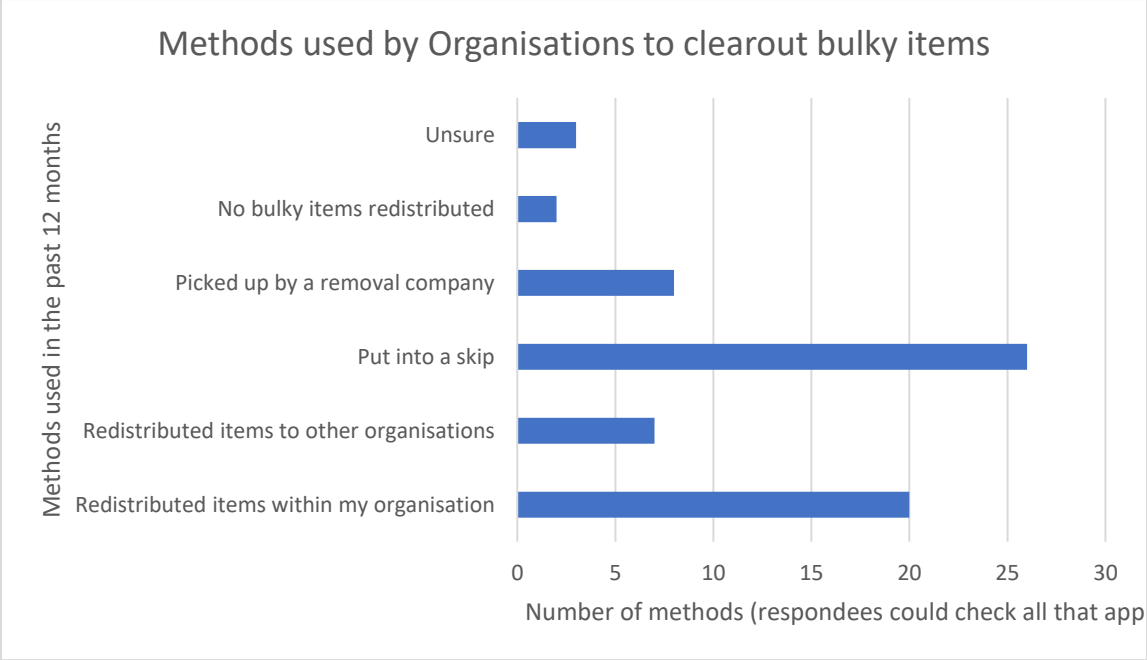


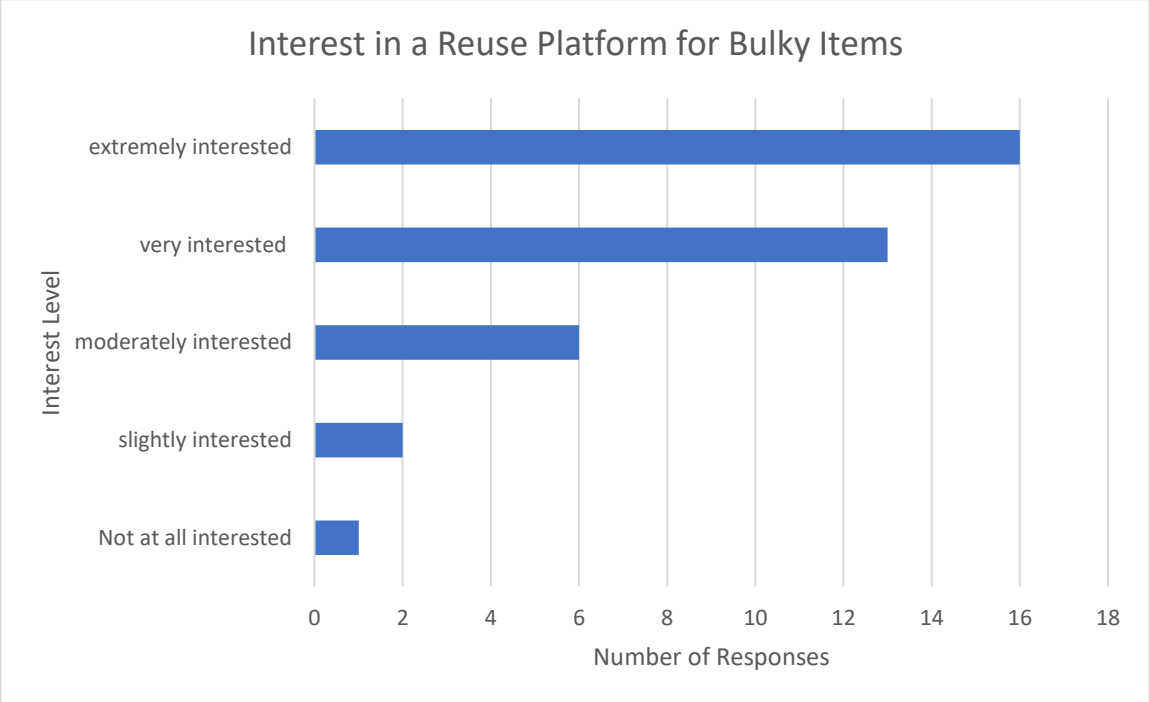


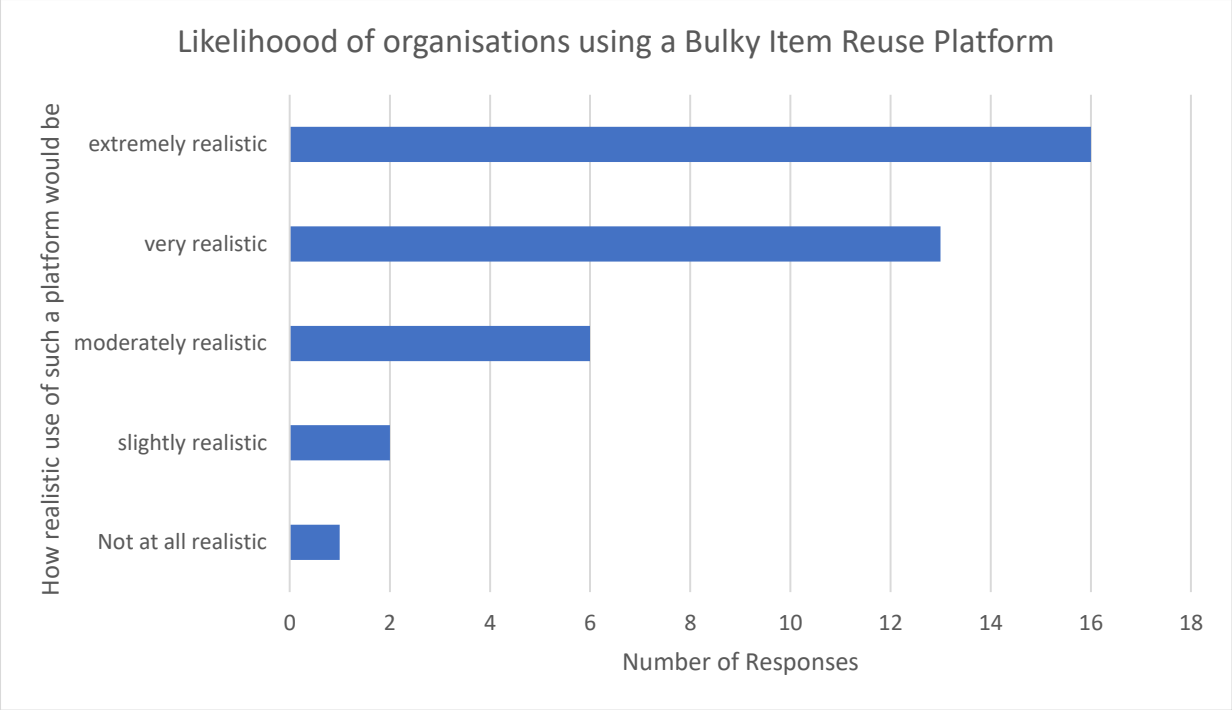
Additional services public sector bodies would find helpful	
Service	**% of organisations that would be interested in the service**
Cataloguing bulky items	73.7%
Transportation of bulky items	71.1%
Storage of bulky items	47.4%
Repair/Refurbishment of bulky items	60.5%
Design advice for bulky items	28.9%
None	10.5%

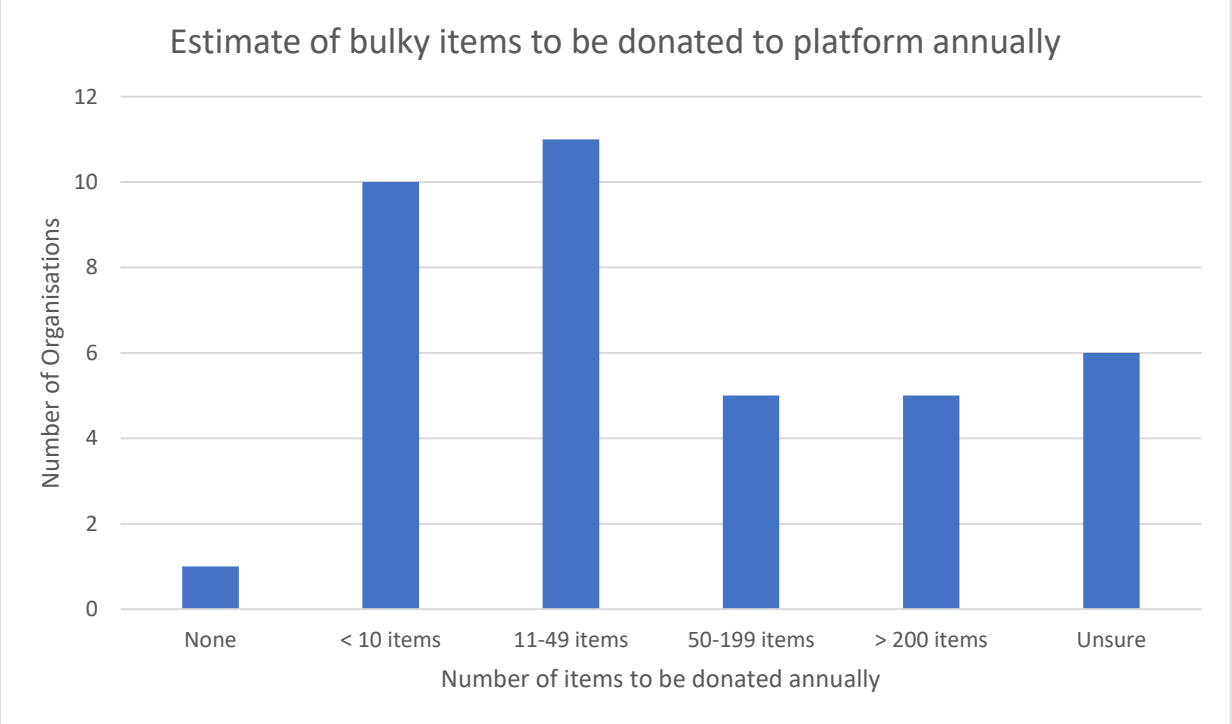

Number of Bulky Clearouts in past 12 months
Number of Responses
16
14
12
10
8
6
4
2
0
None
< 5 times
6-10 times
> 10 times
Unsure
Number of Clearouts per year

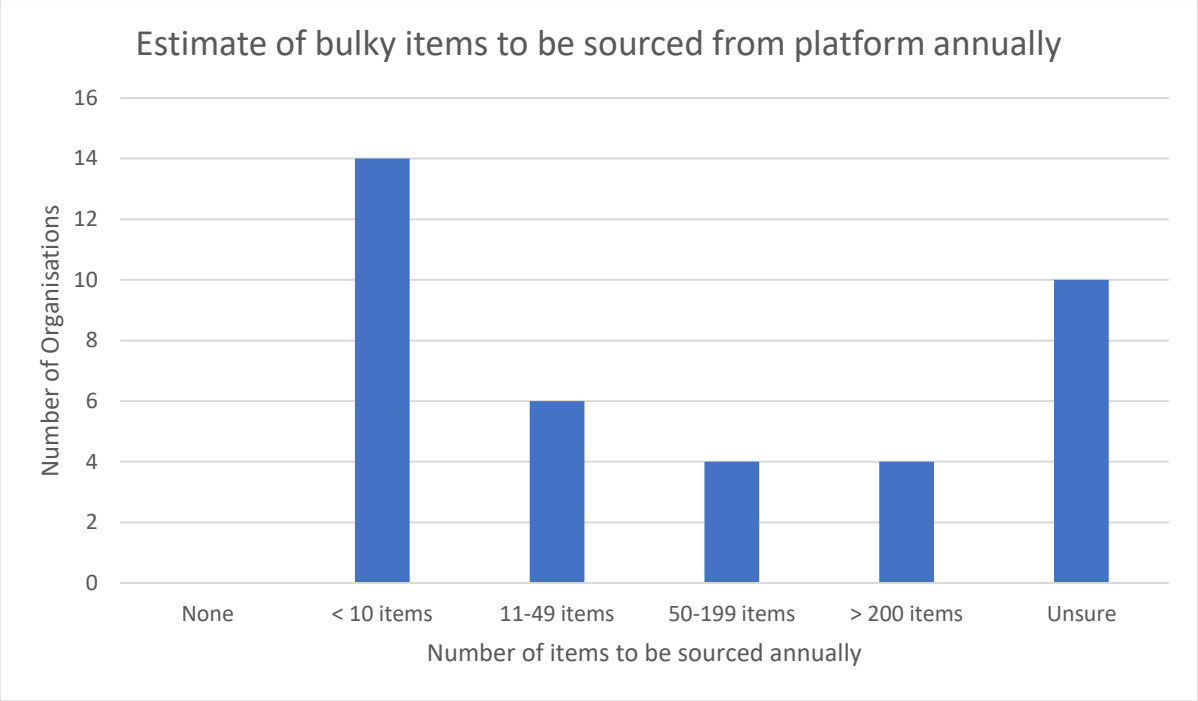

Items Disposed of by Organisations in past 12 months
Number of Responses
10
9
8
7
6
5
4
3
2
1
0
None
< 10 items
11-49 items
50-199 items
> 200 items
Number of disposed items per year

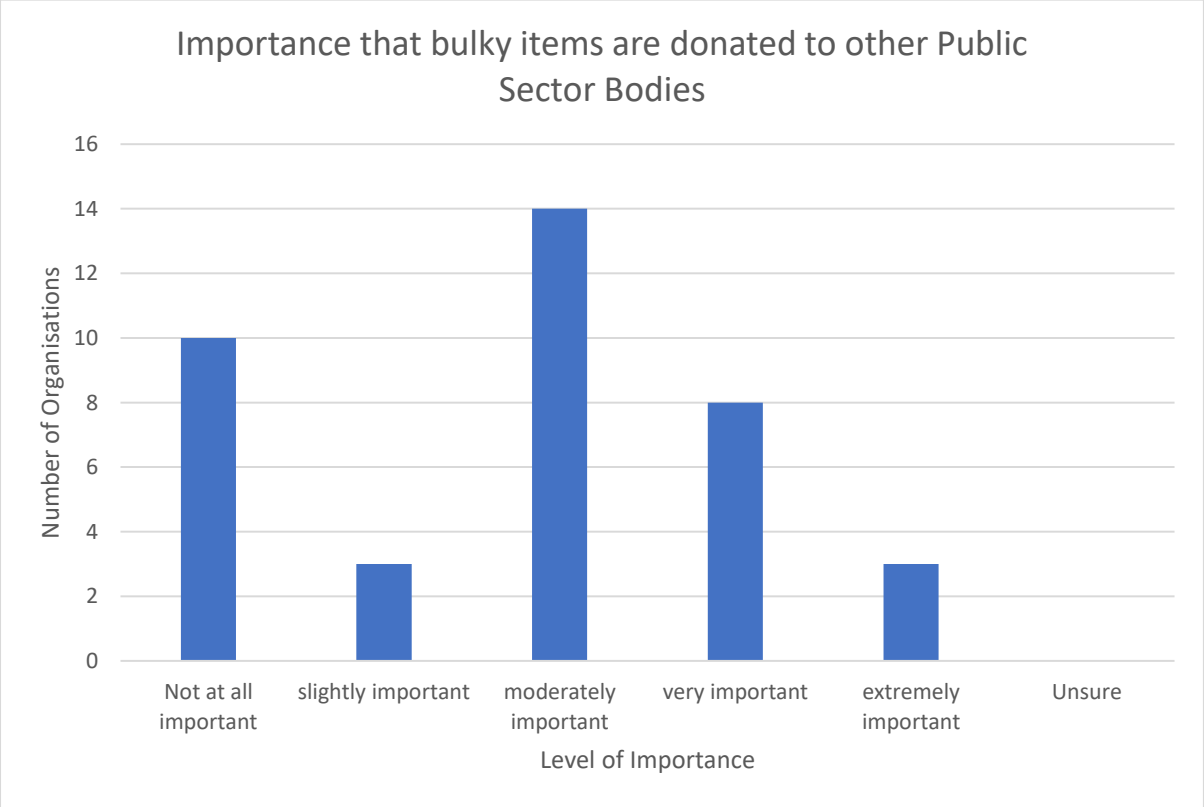

Methods used by Organisations to clearout bulky items
Methods used in the past 12 months
Unsure
No bulky items redistributed
Picked up by a removal company
Put into a skip
Redistributed items to other organisations
Redistributed items within my organisation
0
5
10
15
20
25
30
Number of methods (respondees could check all that app

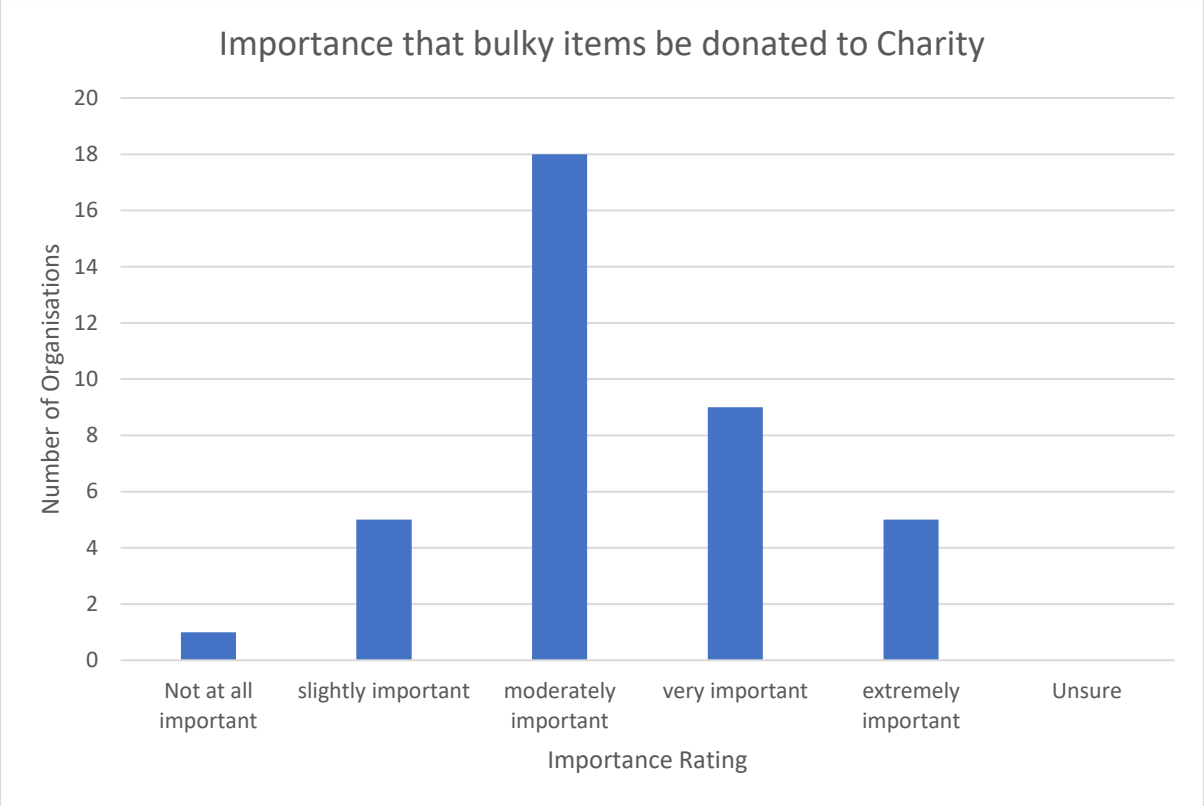

Interest in a Reuse Platform for Bulky Items
Interest Level
extremely interested
very interested
moderately interested
slightly interested
Not at all interested
0
2
4
6
8
10
12
14
16
18
Number of Responses

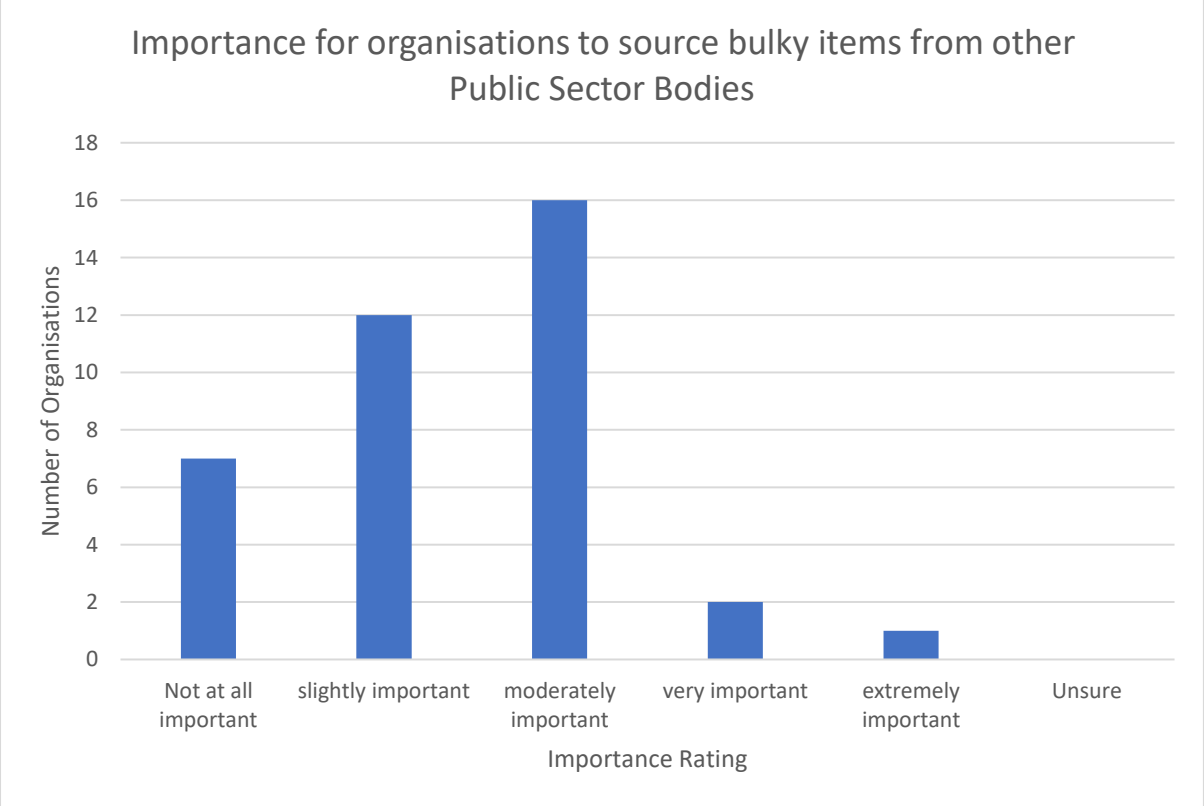

Likelihoood of organisations using a Bulky Item Reuse Platform
How realistic use of such a platform would be
extremely realistic
very realistic
moderately realistic
slightly realistic
Not at all realistic
0
2
4
6
8
10
12
14
16
18
Number of Responses


Estimate of bulky items to be donated to platform annually
Number of Organisations
12
10
8
6
4
2
0
None
< 10 items
11-49 items
50-199 items
> 200 items
Unsure
Number of items to be donated annually


Estimate of bulky items to be sourced from platform annually
Number of Organisations
16
14
12
10
8
6
4
2
0
None
< 10 items
11-49 items
50-199 items
> 200 items
Unsure
Number of items to be sourced annually

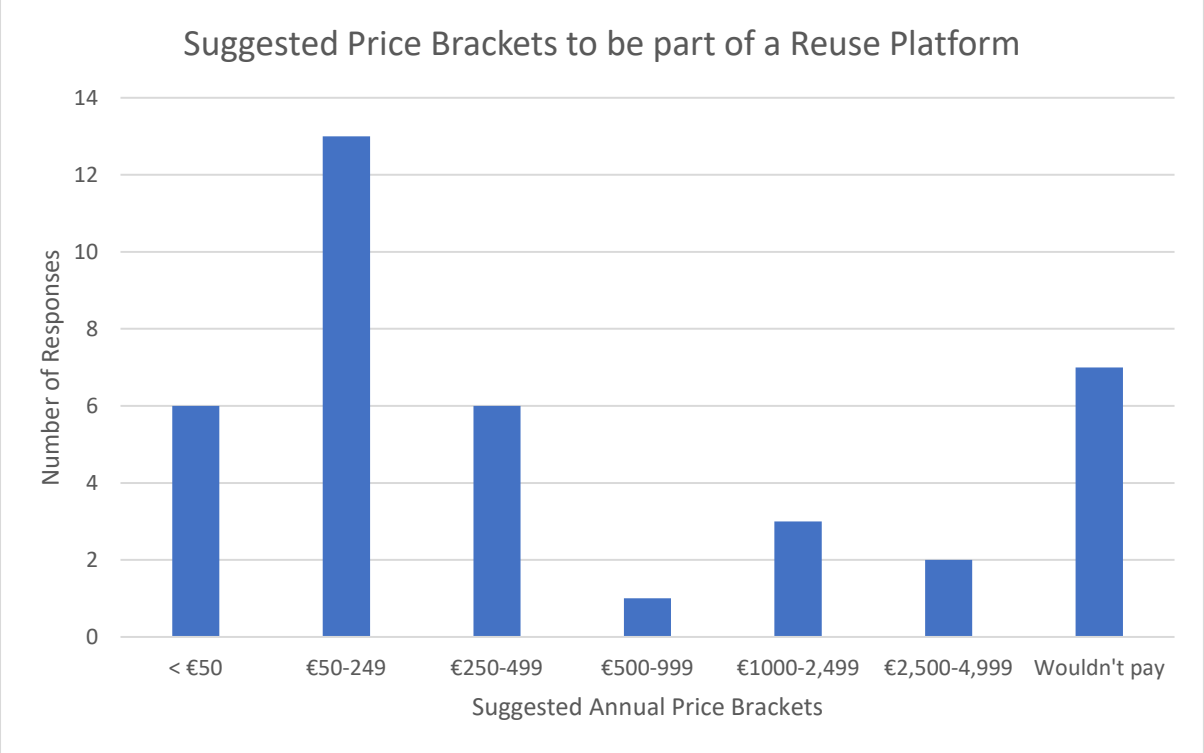

Importance that bulky items are donated to other Public Sector Bodies
Number of Organisations
16
14
12
10
8
6
4
2
0
Not at all important
slightly important
moderately important
very important
extremely important
Unsure
Level of Importance

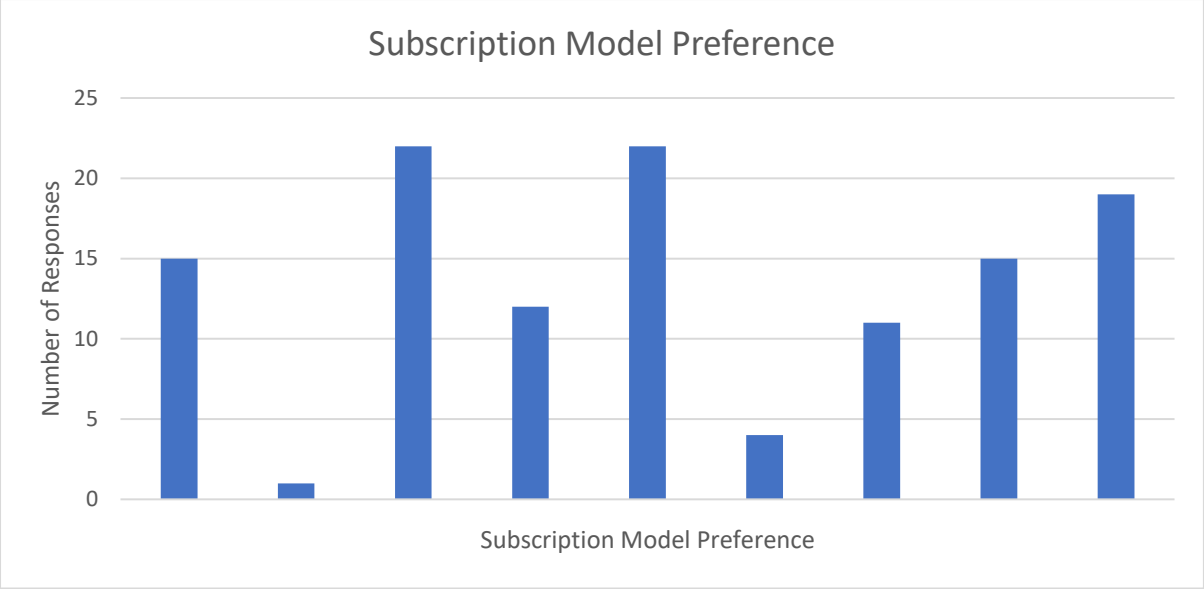

Importance that bulky items be donated to Charity
Number of Organisations
20
18
16
14
12
10
8
6
4
2
0
Not at all important
slightly important
moderately important
very important
extremely important
Unsure
Importance Rating

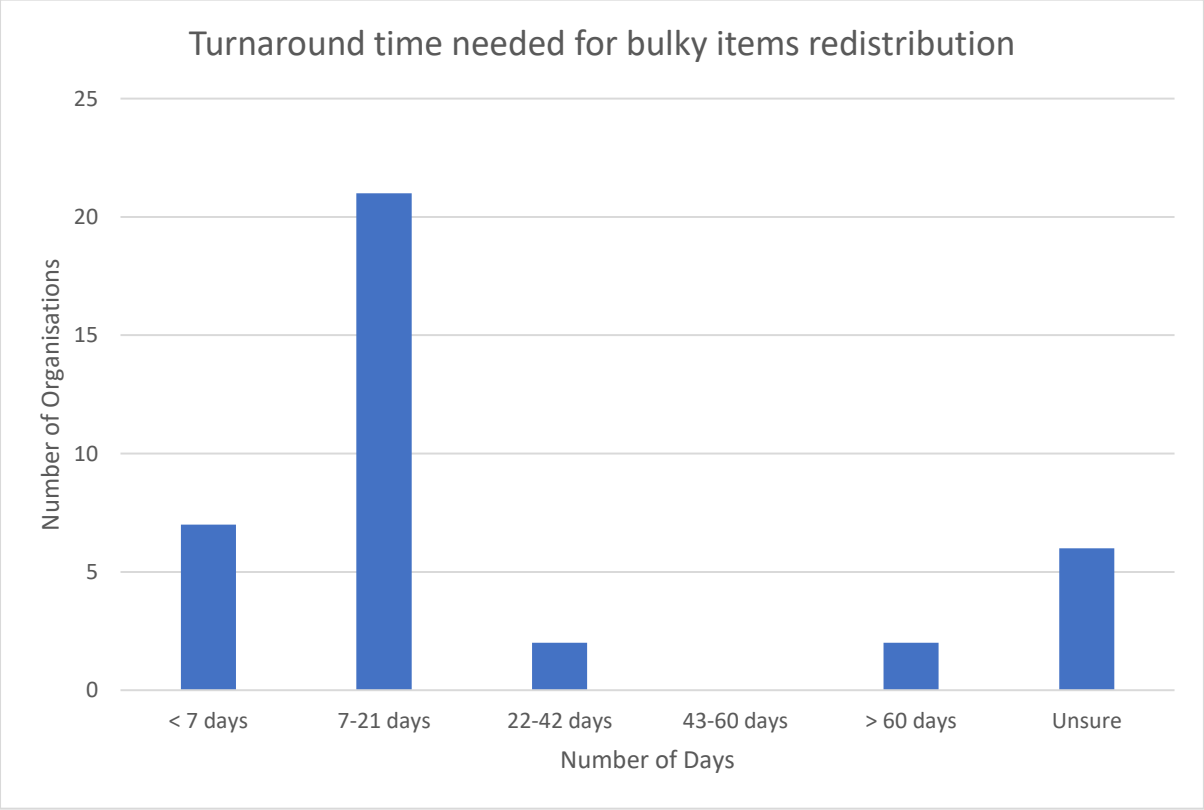

Importance for organisations to source bulky items from other Public Sector Bodies
Number of Organisations
18
16
14
12
10
8
6
4
2
0
Not at all important
slightly important
moderately important
very important
extremely important
Unsure
Importance Rating

Reasons Provided for not Donating Second-Hand Items	Selected as first option
Short turnaround time to clear out bulky items	14.8%
Lack of storage space	30%
Lack of access to transportation	6.5%
Liability concerns when redistributing to other organisations	26.5%
Lack of a designated staff person to donate second-hand items	21.6%

Reasons Provided for not Sourcing Second-Hand Items	Selected as first option
Quality Concerns	36%
Staff perceptions with using second-hand items	0
Lack of awareness that second-hand items can be sourced	10.3%
Lack of incentive to source second-hand items	13.3%
Lack of authority to source second-hand items	12.9%
Lack of a designated staff person to source second-hand items	14.3%
Second-hand items do not meet current fashion/trends	11.4%




Subscription Model Preference
25
20
15
10
5
0
Number of Responses
Subscription Model Preference


Turnaround time needed for bulky items redistribution
25
20
15
10
5
0
Number of Organisations
< 7 days
7-21 days
22-42 days
43-60 days
> 60 days
Unsure
Number of Days

o Appendix 9: Description of "Bulky Items"

As highlighted in Section 3.3, bulky items refer to medium size items that are too large to fit in a typical municipal waste bin and may otherwise end up in a skip or require alternative management.

Specific examples are provided in the table below:

Simple building materials	Difficult materials	Building Elements	Fixed furniture	Loose furniture	Specialist items	Misc
Blocks, Bricks, Pavers, Tiles	Composites, Laminates, Hybrids	Doors	Kitchens, Labs	Beds	Hospital equipment	Signage
Glass	Carpet, upholstery	Windows	Wardrobes	Tables	Lab equipment	Hoarding, fencing, gates
Stone	Light fittings	Cubicles	Shelving	Desks	Gym and playground equipment	Street furniture, bollards etc
Untreated timber	Chipboard /OSB /Ply / MDF	Partitions	Storage units	Chairs	Containers	Books, paper
Untreated metals	Steel reinforced concrete		Sanitary ware	Lockers	Textiles, canvas, tarpaulin	Mechanical & Electrical Equipment
Insulation	Pipes, cables, ducts, junctions		Ironmongery	Whiteboard / Blackboard / Pinboards		Art work, installations, decoration
Radiators, tanks, containers	Insulation		Seating (auditorium, waiting areas)			

Materials excluded from the scope of this project are WEEE and IT equipment, compostable items, hazardous materials or items that are beyond repair.