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Food Waste Sustainability Final Report



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Project Purpose

To launch a pilot project redistributing food waste from a single Edinburgh University Students' Association location, based on research of the current situation and the resulting viable options.

Scope

Within the scope of the project is the task to research possible options for the establishment of a pilot food waste redistribution scheme at one of Edinburgh University's Students' Association's catering outlets. Food waste solutions will be included as possible options if they comply with UK and EU food waste legislation. Furthermore, to pilot the most suitable scheme and to include an evaluation of said scheme in a final report with recommendations. Included within this recommendations report will be advice on whether the pilot scheme was effective at diverting food waste from food waste disposal and therefore should continue at the chosen location and can be replicated at other Students' Association catering and retail outlets. Also included within the report will be the feasibility of rolling out the scheme at the University of Edinburgh Accommodation, Catering and Events (ACE) outlets. Excluded from the scope will be continued maintenance of the scheme once the 12-week project period has expired.

Motivation and Long-Term Vision

Implementing a food waste redistribution system at a business can have a number benefits:

Ensuring staff morale – When a business shows that it takes its social and environmental responsibilities seriously, pride in their employer is often enhanced in staff. "Throwing away" edible food can often be a demoralising factor for employees.

Economics savings - Waste collection by a contractor costs the business per bin collected. Ideally, a food waste sustainability project also aims to reduce the costs incurred through waste collection.

Customer expectations - Customers are increasingly becoming aware and demanding businesses where they spend their money to invest in their social and environmental responsibilities. Public awareness around plastic packaging and disposable coffee cups are appropriate examples of customer pressure leading to changes in businesses.

The long-term vision of the project is to have in a place an efficient food redistribution system across the University of Edinburgh campus that diverts edible food from disposal to the local community for consumption.

Objectives and Goals

A key aim of this scheme was to divert edible food from food waste recycling to locations for human consumption, creating energy and economic savings.

Objectives

- Discuss project expectations with key stakeholders
- Discuss current situation in relation to food waste and appetite for a distribution system with catering staff
- Identify pilot scheme location
- Identify the greatest source of food waste from the chosen location
- Create a food waste distribution model
- Identify and establish an agreement with the food waste distributor
- Create a waiver of liability, which is to be signed by both parties
- Interview staff within the catering department
- Evaluate the pilot scheme
- Collate evaluator information
- Produce a final recommendations report

Goals

- To have researched viable options for food waste distribution, which comply with UK and EU food waste distribution legislation
- To have established a relationship with a food waste redistribution network
- To have a food waste distribution network established that is collecting food waste from New Amphion, Teviot
- To market and promote the scheme to staff and students
- To evaluate the efficiency and acceptance by staff and customers of the redistribution system
- To have completed the project proposal, interim report and a final recommendations report.
- To have embedded an efficient scheme into New Amphion, Teviot that can be applied in other catering outlets.

Milestones

1. Engage key stakeholders and discuss project expectations

Key stakeholder meetings carried out within weeks one and two. Project expectations and the current situation were discussed and integrated into the project planning.

2. Construct project plan

A project plan was constructed taking into consideration the expectations and advice provided by the key stakeholders. This project plan was distributed to the project team.

3. Design Food Waste Distribution Model with food waste distributor

Potential food waste distributors were researched, and Food Sharing Edinburgh was selected based on student involvement and speed of distribution. The rate of distribution was a prioritised factor as the hotplate food waste has a shortened lifespan than packaged and is not accepted by many charitable organisations.

4. Compose liability waiver

The liability waiver is based upon Sheffield Students' Union liability waiver (Appendix A). In consultation with Food Sharing Edinburgh, it was modified to include details such as ensuring a cold store chain and a specific temperature the food should be kept at.

5. Pilot scheme implementation

The pilot scheme began in week eight. It was postponed due to the adverse weather conditions during week five and the time taken for construction of the liability waiver in line with the expectations of both parties.

6. Interim Report

The interim report was created over weeks five and six. It was then distributed to the team.

7. Pilot scheme evaluation

This began during pilot scheme implementation and was conducted over weeks twelve and thirteen. This was pushed back from weeks nine and ten due to the closure of New Amphion for the academic break and therefore temporary suspension of the pilot scheme.

8. Gather staff and user feedback

Gathering feedback is essential to the longevity of the scheme after the pilot project. In order to understand any drawbacks that can be improved upon and positive aspects of the scheme, New Amphion staff and Food Sharing Edinburgh volunteers were surveyed.

9. Final Recommendations Report

Written over the final two weeks of the project extension period, this report collates experience implementing the scheme, feedback, evaluations, and recommendations for the future.

Potential Barriers and Outcome

Prior to pilot project implementation potential barriers were investigated and noted. The table below (Figure 1) describes each of these potential barriers and the outcome.

Barrier	Description	Outcome
Time	The project required staff involvement whose main duties do not include waste management. Ensuring contact and coordination between these actors within the 240 h (+ 80 h ext.) allotted was time restrained.	Including the 80 h extension, a successful pilot project was set-up and managed for six weeks, with capacity for reporting via regular meetings, reports, and the final presentation.
Resources and Funding	Resources and the related funding needed to be acquired. For example, packaging for food donations had to be costed and ordered. A budget table included in Appendices (Appendix B).	Costs incurred for packaging and ID cards were minimal and therefore the Association sourced the required funds within the organisation.
Volunteer Recruitment	A complete rota was required for the project to run effectively. This encompasses 11 collections per week.	Due to the central location and proximity to the student body, a complete rota was formed within the pilot period.
Access	Access to facilities had to be granted in order for a model to be developed.	Access to Association facilities was granted throughout the project period. Access to ACE facilities was restricted due to the project staying within the discussion phase.

Figure 1: Potential barriers to the food waste redistribution project as predicted during the project planning stage. Also included are the notes on the outcome of that potential barrier.

Partner Organisation

Food Sharing is a community-based, volunteer-led food waste reduction project (Figure 2). They re-distribute excess food from local businesses to charities, people and events that can use it. They also run sustainable cooking workshops, community events and a food waste prevention research project. They are working towards opening a food waste supermarket this year as part of their Zero Waste Edinburgh project.

Food Sharing was set up by a group of students in 2012 and has received support from the Climate Challenge Fund and Zero Waste Scotland. They currently redistribute 2 tonnes of food a month from 25 partner businesses to 18 partner non-profits with their team of 150 volunteers. Last year (2017/2018) they saved 193 tonnes of CO₂ equivalent from landfill through food waste re-distribution and behaviour change, as well as teaching 150 students in their cooking classes. Food Sharing is part of the SHRUB Coop, who recently won the Enterprise Award at the Green Gown Awards (2017) and the Waste Award from the Climate Challenge Fund (2017.)



Figure 2: Food Sharing Edinburgh call for volunteers for an upcoming event. The organisation is a volunteer-led and redistributes waste while also encouraging behaviour change.

Current Food Waste Reduction Strategies

The food waste sustainability project not only encompassed the redistribution of food waste but also an analysis of the food waste reduction strategies that are implemented in the Association's catering outlets. Outlined below are some of the strategies the Association implements to reduce food waste:

Portion spoons and smaller dishes – When staff use spoons of exact portion size the amount of food in a dish can be evenly and fairly divided between customers. This reduces the likelihood of an incomplete portion of food being left at the end of each dish. By replacing their large serving dishes with smaller ones, the kitchen staff can more easily regulate food production in line with expected customer demand. On days when customer demand is expected to be lower, fewer dishes can be prepared. Whereas, originally the larger dishes would have to be prepared because there was no smaller alternative.

Optional extras – By asking customers whether they want extras, such as a side salad, with their main dish, food waste post-sale can be reduced.

Accurate integrated fluctuation planning – Catering staff experience allows customer demand to be predicted depending on factors such as seasons and time of the academic year. Daily food production fluctuates depending on this expected demand.

Product movement – Pre-prepared foodstuffs are moved between outlets dependent on their expiry dates and business hours. This ensures that each product receives the maximum amount of time for sale before it is wasted.

Waste Saved

Previous to the Food Waste Sustainability project, waste statistics were being collected by the Association and were provided by Biffa, the University of Edinburgh's waste contractor. Part of the protocol carried out by Food Sharing Edinburgh pick-up volunteers is to record the weight of the food received at each pick-up. This is recorded on a shared excel spreadsheet and recorded for the calculation of carbon equivalent saved, a requirement of the Scottish Government that funds the organisation.

Over the six weeks that the pilot project operated, 64.97 kg of food was saved from disposal. In the UK, we consume on average 2.67 kg of food per day ¹. Therefore, this figure represents over 24 days of food for a single British person.

Air emission reporting is conducted in the unit of Carbon Dioxide Equivalent (CO₂e). As different greenhouse gases trap varying amounts of heat within the atmosphere they have a differing environmental impact. Their impact is measured by its Global Warming Potential (GWP). The International Panel on Climate Change (IPCC) developed the GWP factors. As each greenhouse gas has a different GWP they cannot be summed together for reporting. Therefore, this factor is used to translate the emission figure into the common unit CO₂e.

The Scottish Government updates the conversion calculation regularly. For the 2017/18 period:

Production Carbon multiplier: 4.06

Landfill Carbon multiplier: 0.723

So, for, x kg of food waste:

$$4.06x + 0.723x = y \text{ kg of CO}_2\text{e}$$

Over the six-week period, 310.75 kg of CO₂e was diverted.

Where did the food go?

Due to the nature of the food, which was released for collection on the day, it must be consumed, the proliferation of the donations is often within the local community. The donations are distributed by volunteers to the local community, including the homeless, and

brought to Food Sharing Edinburgh drop-off points. They are also distributed in evening events of the waste reduction organisation, SHRUB.

Feedback

Feedback was gathered from New Amphion staff and Food Sharing Edinburgh pick-up volunteers. New Amphion staff were supplied with a paper copy of a survey (Appendix C) while pick-up volunteers were asked to fill out an online form. Volunteer feedback rate was 67 %. Stated figures are therefore 100 % of the survey participants.

Catering Staff

From the kitchen staff within New Amphion, 100 % rated the food waste scheme either to greatly decrease their workload to having neither decreased or increased their workload. When asked if they agreed with continuing the scheme in the current format, four of the six participants answered yes, with the further two answering neutral and no. The participant who answered no did not supply reasoning or recommendations but agreed with all other participants that the scheme should continue. One staff member recommended that we investigate edible packaging.

100 % of volunteers thought the project should continue.

Volunteers

Volunteer feedback was positive with all volunteers who provided feedback saying they would continue to volunteer in the future and would recommend volunteering (Figure 2). In the table below are the questions asked in the volunteer survey and results.

Questions	Result
What level of effort is required to participate in the scheme?	100 % moderate or little amount
What level of commitment is required to participate in the scheme?	100 % moderate amount
Would you like the scheme to continue?	100 % yes
What was your experience of the scheme?	100 % positive or very positive
Would you like the scheme to continue?	100 % yes
Would you recommend volunteering in this scheme?	100 % yes
Do you think it would be beneficial to continue this scheme?	100 % yes

Figure 3: Survey questions presented to Food Sharing volunteers and the collated results.

Pick-up Protocol

For each food donation pick-up, there is a protocol that is followed by the volunteer and staff. This ensures accurate reporting, maintenance of the cold store chain and adherence to health and safety regulation.

Protocol

- Food to be donated is placed in appropriate packaging and allergens are labelled by staff.
- The Food Sharing volunteer who is assigned that pick-up time and day arrives at the location and identifies themselves using an ID card. They retrieve the food from the staff and place it in a disinfected, cool bag. This maintains the cold chain.
- The bag is weighed by a portable scale kept at the location (Figure 4).
- The weight minus the weight of the bag is input into a shared Google Drive excel sheet.
- The food is transported by the volunteer to the drop-off point. The drop-off point could be a partner charity, an event, society, or shared amongst the local community.



Figure 4: A Food Sharing volunteer weighing the food donation.

Operations List and Stakeholders Responsible

The table below (Figure 5) lists the operations required to bring a food waste redistribution project to operational stage and evaluation stage. Each of the key stakeholders – Food Waste Consultant, Edinburgh University Students' Association (Donor Organisation) and Food Sharing Edinburgh (Recipient Organisation) – has a category. The numbers represent the importance of that stakeholder in the operation. Shaded boxes show that the operation could be carried out without that stakeholder. The colours represent the stage of the project, defined in the far-left column. The operations are listed in practical chronological order for the project.

Stage	Operation	Food Waste Consultant	Donor Organisation	Recipient Organisation
Preparatory	Contact the outlet	1		
	Determine the waste volume	1	1	
	Determine the waste type	1	1	
	Investigate liability	1		
	Identify and order packaging	2	1	
Ground-Laying	Identify suitable recipient organisation	1		
	Donation transport	1	1	1
	Waiver of liability construction	1		
Participant Logistics	Volunteer rota construction	2		1
	Staff/volunteer inductions	1		1
	Staff/volunteer guidelines	1		
Project Management	Report and monitor waste metadata	2		1
Evaluation	Project public relations	1		
	Evaluate project	1		
	Review scheme chain	1		
	Interview donor organisation staff	1	2	
	Interview recipient organisation staff	1		2
	Collate survey results and analyse	1		
	Form recommendations	1		
	Construct evaluation report	1		
Project Regulation	Implement recommendations	3	1	2
	Report regularly	1		
	Facilitate donor – recipient communications	1		
	Manage stakeholder expectations	1		

Figure 5: Operations list and the key stakeholders responsible. The numbers indicate the importance of the stakeholder to the completion of that operation.

Recommendations

Based on the evaluation of the pilot project, in conjunction with the data of food diverted from disposal, it is recommended that the project continues in New Amphion and network expansion within the catering department is explored.

Volunteer feedback highlighted the appreciation of consistent labelling of the hotplate food and whether it was vegetarian and included allergens. Consistent labelling using allergen labels is therefore recommended to continue. In addition, a label reminding recipients of the food that it cannot be reheated, as required under food safety regulation, is recommended. Food Sharing Edinburgh volunteers are required to receive training and an induction for this pick-up, in which they are told that the hotplate food donated cannot be reheated.

During training, volunteers are made aware that it is not certain that there will always be a food donation to pick-up. In order to increase the efficiency of the system and maintain volunteer morale, it is recommended that a notification system is installed. This system would consist of the volunteer coordinator receiving a message confirming whether there would be a food donation pick-up that day. This message could be sent by group email via a text messaging service.

Currently, the scheme uses Vegware clamshell packaging, ordered from the Association's provider. Volunteer feedback commented that it was suitable, however, if overfilled it could leak. An alternative with a secure lid was investigated. However, this option was triple the cost from the current supplier. Feedback from both volunteers and staff recommended reusable packaging. Transitioning from single-use to reusable packaging was investigated. However, due to time restraints on the side of the Association and Food Sharing Edinburgh as well as lack of facilities for cleaning, it was ruled out for this pilot.

This report recommends that the choice of packaging the food donations are provided in is regularly revised to ensure that it is suitable for the purpose and is an environmentally sustainable option.

Part of the remit of this project was to include the Accommodation, Catering and Events (ACE) department. ACE is supportive of a food waste project, however, were not able to partake in this pilot project. It is, therefore, a recommendation of this report that further work involves establishing a similar project in ACE outlets. After further discussion, two key conditions were outlined to involve ACE: (1) Form a direct link with at least one charity that would use the food and (2) ensure that the logistics are in place to handle large-scale donations.

Acknowledgements

This project would not be possible without the combined effort of Edinburgh University Students' Association and the University of Edinburgh's Social Responsibility and Sustainability department, in conjunction with Bright Green Business. The hard work and dedication to the Food Waste Sustainability project by Ollie Glick, Vice President of Community and Kai O' Doherty, Vice President of Activities and Services brought the project from an idea to a position. The constant mentoring by Al Powell was essential to drive the project from the planning stage to this report. Thanks also to Davy Gray and Derek McLelland, both of whom were also involved in the recruitment process and project. This was a collaborative effort with Food Sharing Edinburgh, the work by the staff and volunteers there made this project possible. Many other staff of the Association and the University of Edinburgh contributed to the successful implementation of the project. Thank you to all those involved.

Appendices

Appendix A: Food Waste Liability Waiver

Food Redistribution Memorandum of Understanding between Edinburgh University Students' Association and Food Sharing Scotland

General

1. This agreement is intended to provide a mechanism for the donation of surplus food from Edinburgh University Students' Association to local organisations with the intention of this food being provided to individuals in need of it.
2. Edinburgh University Students' Association is the donator of food; Food Sharing Scotland is the recipient of these donations.
3. Edinburgh University Students' Association will be responsible for the safety of food under any requirements of the Food Safety Act 1990 and the General Food Regulations 2004 up until the point of transfer. The recipient will be responsible for the safety of food under any requirements of the Food Safety Act 1990 and the General Food Regulations 2004 after the point of transfer.
4. The recipient may only use the donated foodstuff for redistribution in line with its stated aims, which shall include the redistribution of food to individuals in need of it.
5. The donated food may not be sold commercially for profit.
6. The donated food may be charged for as part of a nominal charge to the ultimate individuals in need of services provided.
7. All foodstuffs donated become the responsibility of the recipient after collection.
8. All donated pre-prepared foodstuffs will be stored in single-use clamshell packaging for transport.

Edinburgh University Students' Association Declarations

9. Edinburgh University Students' Association will only donate food that is apparently wholesome food even though it may not be readily marketable due to appearance, age, freshness, grade size or other conditions. Edinburgh University Students' Association will not donate food that has past its use by date.
10. Edinburgh University Students' Association will ensure that all foodstuffs are handled and stored in accordance with best practice and requirements under legislation up until the point of hand over to the recipient, including between the time the food was removed from sale and the time it is handed over to the recipient.

Recipient Declarations

11. No food donated shall be frozen and used later with the exception of bread and cake products. Where bread and cake products are frozen they will be used within three months.
12. All food donations received will be used or discarded within the use by date.
13. All prepared food must be consumed the day of collection.
14. Chilled products and frozen products will be transported and stored appropriately (refrigerated and / or frozen).
15. Prepared foods (dairy products; meat and fish products; cooked products; prepared ready to eat foods, including prepared vegetables or salads; and uncooked or partly cooked pastry and dough products, such as uncooked pizza or fresh pasta) must be stored at a temperature of less than 5 degrees c.
16. Foods should be separated by types, for example: meat products should be stored separately from bread or dry goods; and sweet and savoury foods should be kept separate.
17. All products will be transported in food-safe Food Sharing bags, which are disinfected before each collection.
18. The recipient accepts responsibility and liability for donated food after the point of transfer.
19. Any food not used will be disposed of in a responsible and proper manner.

Signed On behalf of Edinburgh

Signed on behalf of Food

University Students' Association

Sharing Scotland

Date _____

Date _____

Appendix B: Budget Table

A short budget table detailing the costs occurred during the pilot project.

Item	Cost
Packaging – Vegware Bagasse Clamshell box (500)	£41.26
ID Cards (15)	< £5

Figure 6: Budget list for project. Packaging was ordered through the Students' Association supplier and ID cards were printed in-house.

Appendix C: Staff Survey

The survey questions provided to New Amphion catering staff to evaluate the project.

Food Waste Scheme - Staff Survey

Name and/or position:

The survey can be anonymous. If so, leave the above field blank.

The Food Waste Scheme was introduced at the start of April 2018 in New Amphion, Teviot, in an effort to reduce the volume of food that is sent for waste disposal and instead divert it to Food Sharing Edinburgh. The organisation redistributes the safe, adequate quality food otherwise destined for disposal for human consumption.

Out of 10, please rate whether Food Sharing system has increased or decreased your workload (1 = greatly increased workload; 5 = has neither increased or decreased workload; 10 = greatly decreased workload).

Please rate whether you understand the why the Food Sharing system has been introduced.

Do you agree with implementing the Food sharing system in its current format? If No, why not? (Yes/Neutral/No)

Would you recommend any changes to the system? Yes/No – if Yes, please state what

Do you think it would be beneficial to continue the system?

References

1. National Geographic Magazine. 2014. What the World Eats. [ONLINE] available at: <https://www.nationalgeographic.com/what-the-world-eats/> . [Accessed 21 May 2018].