THE GREAT PLASTIC DIVESTMENT

An Investigation into Plastic Waste at LSE

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1. TEAM PROFILE

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2. EXECUTIVE SUMMARY

The Great Plastic Divestment is a student-led project aiming to contribute towards the reduction of plastic waste on the London School of Economics and Political Science (LSE) campus.

In view of the Sustainability Strategic Plan, associated with the 2030 Strategy, this report assesses the plastic waste problem at LSE and proposes solutions. In 2018, 74% of the General waste was contaminated with recyclables - most of which were plastics (see appendix B(i)). From a waste sample of 5 months in 2018, 63% (306,928 items) were either plastic cups, lids or pots- with pots making up 13% of this (see appendix D(i)). This is a testament to the fact that LSE uses a considerable number of single-use plastics. We identified three main sources of the problem – consumption, education and a lack of data. Several proposed solutions correspond to each problem. Here we have chosen to focus on the ones we believe will have the greatest impact.

To tackle single-use plastics consumption, we recommend the introduction of a reusable lunchbox scheme and the conversion of the LSE General Store into a sustainably focused shop. 84% of students in our survey claim that the introduction of sustainable products in the General Store would encourage them to use it more (see appendix E(iV)). This would not only reduce plastic consumption but would also make sustainable practices more accessible for students.

Our research suggests that students lack sufficient awareness and knowledge on the topic of sustainability. We recommend the introduction of mandatory sustainability training for all new students. If done well, this would make their behaviour on campus less wasteful. The effectiveness of this programme could then be tracked with the relevant data if regular waste audits are conducted.

This leads us onto the final set of solutions tackling the lack of data. The current plastic usage at the School can only be roughly estimated via outdated audit data. We believe annual waste audits must be conducted in order to better track, and therefore tackle the abundance of different waste streams at LSE.

3. INTRODUCTION

3.1 Mission

In October 2020, LSE revealed its Sustainability Strategic Plan, a key part of the institution's 2030 strategy. In an effort to build upon the Plan and to more actively engage students in the overall process, the LSE Students' Union (LSESU) Sustainable Futures Society initiated two student-led projects to investigate the broad themes of sustainability and waste at LSE. These projects centre around food waste and plastic waste. By investigating the present state of plastic waste at LSE, this report seeks to build upon existing initiatives and proposes new solutions to reduce the amount of plastic that is thrown away on campus.

3.2 Context and scope

Plastic waste is the accumulation of plastic objects in the Earth's environment that adversely affects wildlife, wildlife habitat and humans. In the UK, 5 million tons of plastic are consumed each year and only a quarter of that is recycled. The vast majority ends up in landfill and unregulated disposal sites, mostly in developing countries. This has an adverse effect on the planet's ecosystems and natural resources. While it is imperative that we deal with the plastic which has already been produced through reusing and recycling, the most effective way to combat this problem is through reducing plastic consumption. The solutions outlined in this report deal with all three aspects of this effort to combat plastic waste. The aim is to increase, promote and formalise recycling and reusing processes at LSE, while simultaneously reducing the overall amount of plastic consumed on campus. To that end, the solutions proposed revolve around providing the right circumstances for effective behaviour change. The areas of focus are moving consumption by students and by the School itself in a more sustainable direction, instilling zero waste habits through education and streamlining the process of data collection. It must also be noted that the report, and therefore solutions, focus on the LSE campus. We believe that the campus is more representative of the whole student body and that the waste of halls is residential waste that LSE has less impact over.

3. INTRODUCTION

3.3 Approach

By analysing the available data, we were able to pick out the sources and problem areas of plastic waste on the LSE campus. The Great Plastic Divestment team identified three main areas of focus. First, consumption by LSE represents plastic waste produced by catering and other LSE teams. Second, consumption by students constitutes plastic waste brought onto campus by students. Third, the education section tackles the overall lack of knowledge of both recycling processes on campus and sustainable alternatives to everyday products. Fourth, there is a lack of data, especially with regards to specific waste streams within the broader category of mixed recycling. This last category has been kept separate as the solutions posed will only show tangible results in the longer term. Once we had identified the key waste areas, we used the waste management hierarchy, see appendix (Ki), to structure our solutions. This allowed us to prioritise them based on their position within the hierarchy and ensure we focused most of our efforts on the ones tackling waste at its source first. If this was not possible, we resorted to finding feasible ways of reusing or recycling. The Great Plastic Divestment team identified this as a particularly useful approach in the context of plastic waste. Note we did not include any solutions lower down on the waste hierarchy than recycling as we believed these were ineffective when handling plastic waste.

3.4 Methodology

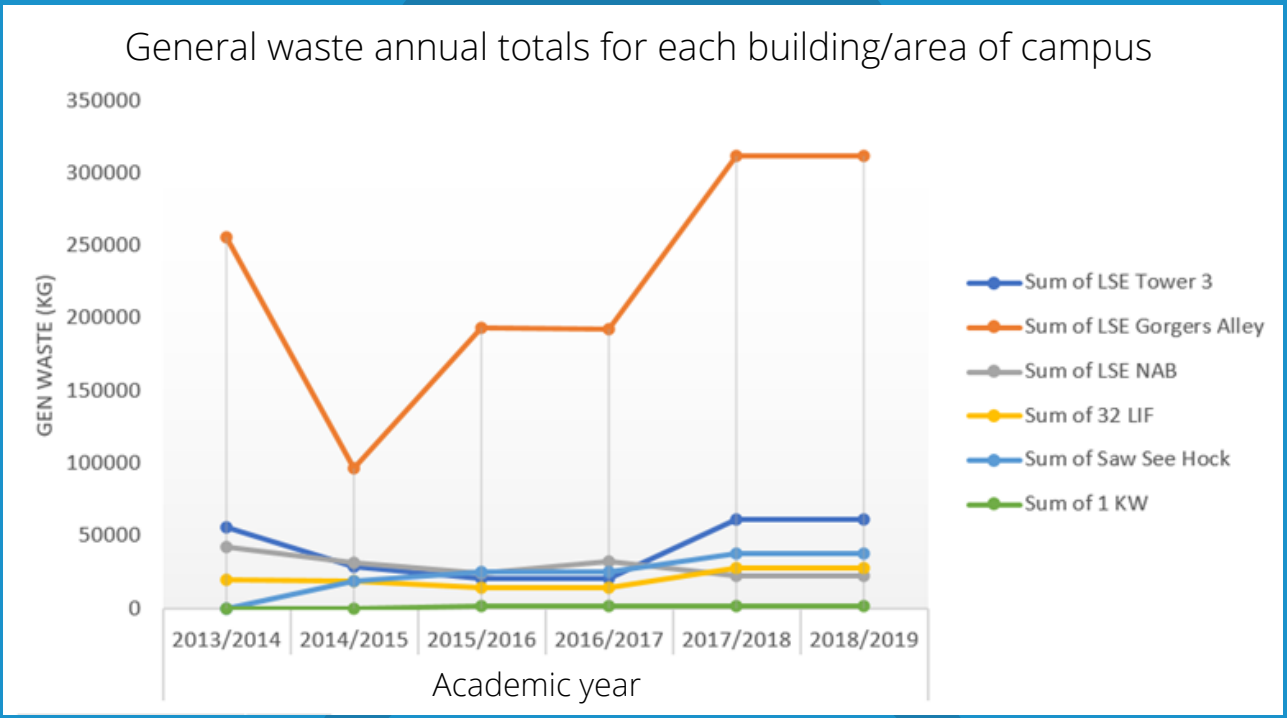
The project was completed using various forms of research and data collection. Primary data and research consisted of several surveys (appendix E) and case studies. We conducted conversations and interviews with representatives from the respective organisations. Secondary data consisted of previously collected waste data for LSE (appendix A), as well as two separate waste audits (appendices B and G) and data provided by catering staff and suppliers on current product purchasing and sales rate (appendices A,C,D). The data was then collated and represented in the appendices.

4. OVERVIEW: STATE OF WASTE AND PLASTICS AT LSE NOW

LSE has undertaken annual sustainability reporting since 2012, which allows for accountability for developed initiatives and to track the progress made. LSE has reduced its waste from **1,795 tonnes in 2012/13** to approximately **1,700 tonnes in 2018/19.** Since 2012, LSE has upheld a zero waste to landfill policy, with any waste which is unable to be recycled being used to produce energy in an enclosed incinerator.

Unfortunately, due to the nature of waste collections in London, there are inherent problems with the detail in which this data can be provided. Currently, London operates on a simple two-bin system: general waste and mixed recycling; it is then sorted into more refined streams at appropriate facilities. The benefits this provides in terms of logistics are matched by a hindrance in the ability to track specific waste streams - plastic is no exception to this. Despite this inability to identify plastics specifically, the data provides a good overall picture for LSE's current waste position. To date, the overall trend is that the amount of waste produced on campus (proportional to the number of students) is decreasing, although not significantly. It is important to note that, in 2018, the New Academic Building opened causing a mass staff decluttering and a consequential rise in waste, the figures for this year have been added for continuity purposes. However, they have been ignored for all further calculations because they are not representative due to the campus closure as a result of the COVID-19 pandemic.

4. OVERVIEW:
STATE OF WASTE AND PLASTICS AT LSE NOW



Shown above is a graph showing the breakdown of the general waste for each building/area of LSE for each academic year between 2013 and 2019.

A breakdown of this data shows that Gorgers Alley is the area contributing the most waste, with all others in total contributing largely similar amounts. It is the biggest waste collection site on campus, used by multiple buildings and the biggest Catering outlet, namely the Fourth Floor Restaurant in the Old Building. This points out the second limitation of the data: just as it is not specific in its contents, it is not specific in its origin. The only specific data we have comes from a waste audit of the library conducted in 2011 and a small general audit in 2018. From there, we can estimate the composition of the waste from campus and generate rough values for recycling rates and the like. It must be emphasised however that the audits are neither thorough, nor recent enough to provide definite values. Nonetheless, they can be used to get a general understanding of the waste composition at LSE.

4. OVERVIEW:
STATE OF WASTE AND PLASTICS AT LSE NOW

Concurrent between both audits was a very high proportion (around 70%) of the general waste being made up of misplaced recyclables - with 45% of these being plastic products (see appendix B and G). The proportions of plastic vary greatly between the two audits but, due to the more thorough nature of the 2011 audit, these proportions have been used. Assuming 20% of mixed recycling is plastic and 12% of general waste, on average there was 64,763Kg of plastic waste each year between 2013 and 2017. This is a significant number, as on average, that is 6kg of plastic waste per student. The top contributors to plastic waste on campus are plastic cutlery, coffee cups, food wrappers (crisps/sweets etc.) and plastic food packaging, each weighing minimal amounts individually. The data suggests a large amount of waste per person - this is backed up by additional data, such as the fact that catering outlets sold 160,731 disposable coffee cups in the 2018-19 academic year.

Although several waste and plastic initiatives have been implemented in recent years and the figures show proportional waste is on the whole decreasing, there is still much more to be done. The true size of the problem cannot be properly assessed until we have sufficiently detailed data. However, in the meantime, through reasonable assumptions, estimates and trends can be identified and tackled.

5. LSE SUSTAINABILITY STRATEGY AND EXISTING INITATIVES

With the launch of LSE's strategic plan this year in October 2020, LSE has committed to various actions to create a sustainable campus. LSE plans to address its environmental footprint as laid out in the **'Our School'** section of the Strategic Plan, with the theme lead as Julian Robinson, the Director of Estates. As part of the initiatives to work towards a 'Zero Impacts' campus while also strengthening collaborations with student societies, the Plastic Waste Project under the LSESU Sustainable Futures Society was founded to assess the plastic waste situation on campus and provide solutions for improvement.

The **Waste Action plan for 2020-2021** has been developed, with the key objectives for waste being: reduce, reuse, recycle and recover. As part of waste minimisation, LSE has introduced a 25p charge for disposable food containers and coffee cups, with signage to communicate these levies at food outlets. Minouche Shafik, the Director of LSE, introduced the **'Plastic Free LSE'** campaign, where the campaign targeted four products found most common from an internal waste audit, while also hoping to create dialogue around plastic consumption. The campaign included initiatives from Green Impact Teams, Green Week, Sustainable Futures Society and INTERVAL as detailed in the **Plastic Free Impact Report.**

5. LSE SUSTAINABILITY STRATEGY AND EXISTING INITATIVES

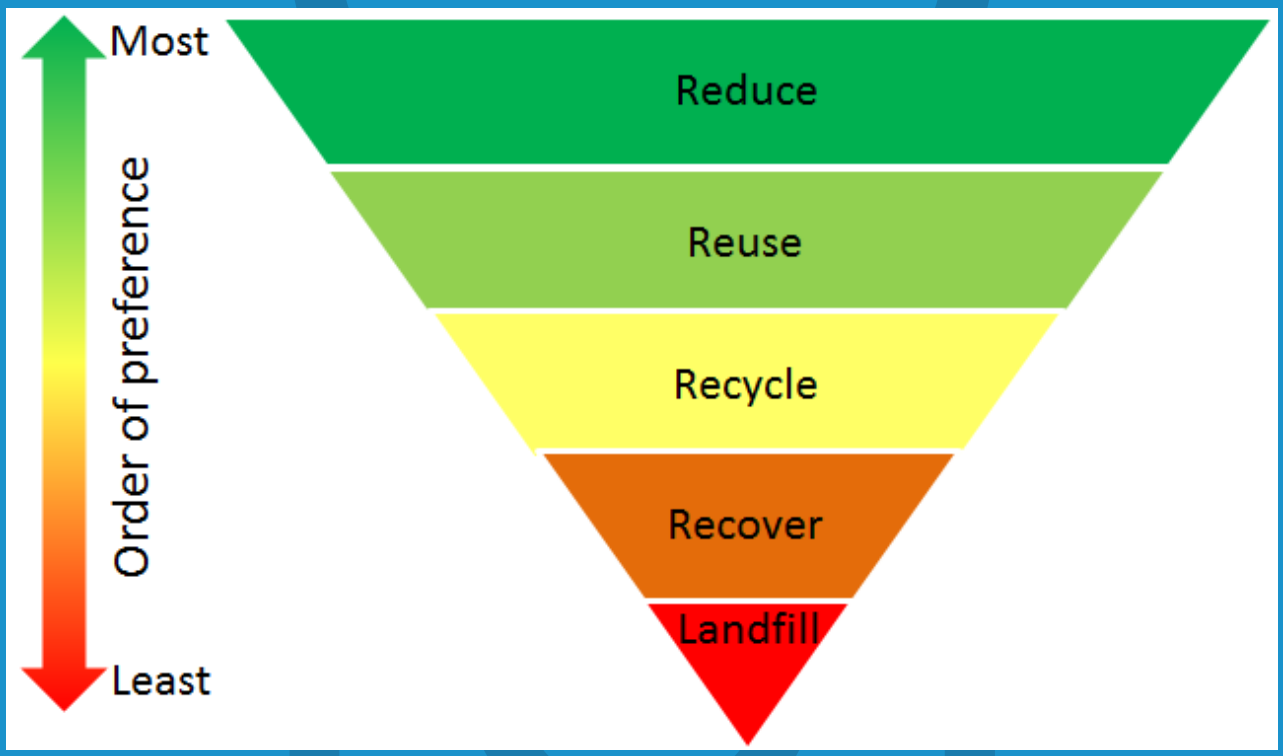
Many student initiatives undertaken were independent of the campaign itself and received support from the Sustainable Futures Society and Sustainable LSE as part of the SFS Sustainable Projects Fund, but not directly from the campaign itself. Further, INTERVAL strategies developed bags out of waste material from construction on campus, but it is unclear whether these products were finalised and produced, as well as whether this was only a one-off project. As part of the campaign, a notable **40%** of hot drink sales were reusable in 2018/19. For reuse, LSE has planned to establish a process to send furniture which needs to leave campus for reuse or back to the supplier. Programmes such as **'ReLove'** in halls donated 9.6 tonnes of unwanted items in 2018/19, raising £16,845 for the British Heart Foundation. Finally, for recycling and recovery, LSE has launched a coffee cup recycling initiative on campus. Waste sorting and collection are to be streamlined, by making sure that halls of residence have all 3 bins for general waste, food and recyclables accessible.

While LSE has committed to numerous initiatives, and has been setting targets for improvement each year, actions are fragmented, and it is unclear whether all initiatives have produced substantial results. The plastic project seeks to streamline ongoing initiatives and provide critical analysis of existing programmes, the areas of weakness and potential improvements to reduce waste. This project will work closely with LSE, including stakeholders such as Sustainable LSE, Catering, the Estates Division and more, to collect data and implement effective and efficient solutions.

6. SPECIFIC PROBLEMS AND SOLUTIONS

Each solution corresponds to one of the top three levels on the waste hierarchy illustrated bellow. This is signified through the number in brackets next to the title of each solution:

- Reduce (1)
- Reuse (2)
- Recycle (3)



6.1 CONSUMPTION

6.1.1 Consumption by LSE

Appendix reference: A(i,ii,iii,iV),B(i,ii,iii), C(i,ii),D(i), G(i,ii)

To the right is a graph (appendix (Bi)) showing the most common plastic products found in both the mixed recycling and general waste bins from the 2018 waste audit.

Data from the 2011 and 2018 waste audits illustrates that the main contributors to plastic waste on the LSE campus are cutlery, coffee cups, food wrappers and plastic food packaging (see above and appendix B(i,ii,iii), G(i,ii)). In addition to this, between September and January 2018, Catering purchased 306,928 plastic lids, cups and pots, projecting a total of 736,627 for the year, with cups pots and lids forming the majority of their plastic purchases-63% (see appendix D(i)).

By focusing on consumption by LSE, we aim to reduce the opportunities for waste to be created from the start. LSE Catering is the main stakeholder and has the main potential to significantly reduce plastic waste at source. We propose various solutions on how this can be addressed:

- **Introduce a reusable lunchbox scheme**
- **Introduce a charge on packaging**
- **Incentivise staff to encourage reusable items**
- **Switch from the plastic student ID cards to a more sustainable alternative**
- **Organise stationery amnesties**

See below for detailed explanation of above solutions.

6.1 CONSUMPTION

Caulibox: A case study (1): Caulibox is a reusable lunch box scheme which we are using as a case study for an implementation of a similar scheme on the LSE campus.

CauliBox is a successful digitally enabled network of reusable lunch boxes which we have used as a case study. The Great Plastic Divestment proposes the implementation of a similar scheme throughout LSE. This would help reduce the plastic waste generated by take-away food.

Caulibox was founded as a response to the increased awareness of the negative impacts of take-away containers on the planet. While the UK produces nearly 11 billion pieces of packaging every year, only one-third of all recyclable take-away waste is being recycled. The scheme allows members to order food from partnering food-to-go outlets in London in a reusable lunch box. Once one has finished eating, customers bring the boxes to a drop-off point, where they will be collected daily to be professionally washed and sterilised by commercial dishwashers which are regularly sanitised. When clean, the boxes are returned to the partnering food-to-go outlets to be used again. Moreover, the boxes are 100% recyclable and can be used up to 400 times, replacing the same number of disposable packaging alternatives.

The scheme currently works with street vendors and businesses in central London, aiming to become an industry-wide solution to the plastic waste problem. A distinguishing feature of Caulibox compared to other reusable box schemes and 'Bring-Your-Own-Box' schemes is that the scheme only has a £5 one-time membership fee for customers to participate and no additional costs. Moreover, the scheme rewards customers who reuse most with locally sourced goodies and has been proven to increase members' reuse and recycling habits while on the scheme.

6.1 CONSUMPTION

Charge on packaging (1): We recommend the introduction of a 50p charge on all single-use food containers on campus.

At LSE, every purchase of a plastic bottle is subject to a 10p tax. Similarly, 25p gets added to the price of every hot drink sold in a single-use coffee cup. These incentives are intended to motivate reuse while simultaneously raising money for sustainability-related projects. The former contributes towards the Sustainable Projects Fund, while the latter enabled Catering to scrap the additional fee for plant-based milk substitutes.

If communicated well, this would motivate staff and students to bring their own reusable food boxes and hand them over to staff to fill up with food. This would be a suitable alternative to Caulibox in cases when the customer does not intend to return to campus for a while and will not be able to return the Caulibox container. Moreover, the incentive can be supplemented by offering suitably sized containers at the LSE General Store (refer to problem 1b). In combination with a lunchbox network scheme such as Caulibox, this charge should enable LSE to eliminate single-use boxes from all catering outlets. This is particularly vital for boxes as single-use boxes use up a multitude of plastic material and rarely get recycled. The generated revenue from this levy can be used to subsidise the zero-waste section of the LSE General Store and ensure affordable prices for sustainable products (refer to problem 1b). Alternatively, the revenue could be used to provide all students with a reusable water bottle as part of their LSE tote bag at the start of the year.

6.1 CONSUMPTION

Incentivise staff to encourage reuse (1): Actively supporting the use of reusable items would encourage students and staff to limit opportunities for waste to be created.

Whilst it is important to have the right schemes in place, it is equally vital to ensure that the entire LSE community is aware of them and actively participates in their effective implementation. Posters and social media posts are necessary, but a limited number of students notice them. To help transform the reuse habits of students, we recommend that Catering staff members interact with their customers on the topic. A simple "Have you brought your food box today?" or "Have you got your KeepCup today?" upon purchase would go a long way to shift norms at the School. It could serve as a wake-up call, instilling the expectation for reuse amongst students and staff.

For the Catering staff to get in the habit of pushing reusables, there needs to be an incentive in place for them too. This can be achieved by introducing a reusability competition between cafes with monthly or termly rewards for the staff members at the winning catering outlet. This suggestion is already outlined in the Waste Action Plan 2020/21. While the one intended there is 1-month long, we recommend that the competition takes place continuously. Our team would be happy to contribute towards its implementation by kick-starting the process in collaboration with LSE Catering.

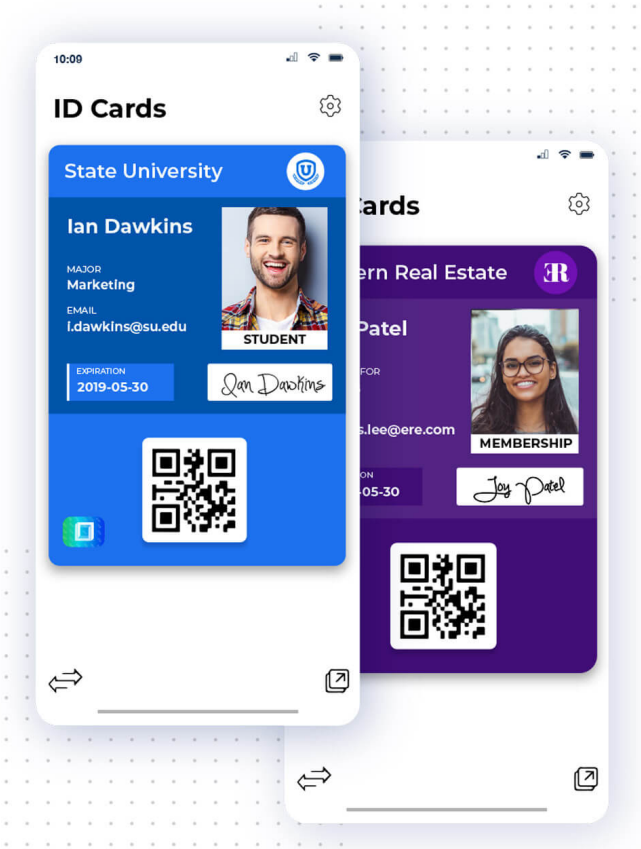
6.1 CONSUMPTION

A sustainable alternative to plastic ID cards (1): Switching from plastic student ID cards to more sustainable materials or digitised ID cards could have a big impact on giving students an eco-friendly first impression of the university. There will be an opt-out option for students with no smartphones.

Standard plastic ID cards are made from PVC, as it gives them a resistance to scratches, oil and chemicals. However, PVC is also the single most environmentally damaging plastic because its lifecycle releases toxic chemicals which can pose serious dangers if it is not recycled properly. If not recycled, the durability of the cards does not allow them to breakdown after disposal.

Digitising student ID cards would be the most sustainable alternative to switch to, which could be available on the LSE Student Hub app. However, as the procedure might not be feasible for a variety of reasons, other alternatives such as eco-cards made from biodegradable or recycled materials should be considered.

Companies such as 'All About Cards' offer a range of alternatives to plastic ID cards, offering cards made from materials such as wood, paper, chalk or also BIO PVC, depending on their intended purpose. BIO PVC is an alternative to the conventional PVC which is made of biodegradable organic matter. The cards are as durable as standard PVC cards, yet their by-products are not toxic and can break down much quicker after being disposed of.



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6.1 CONSUMPTION

Stationery amnesties (2): Organising regular stationery amnesties is an opportunity to redistribute stationeries between students or/and and is efficient way to reduce waste.

Alternatively, a stationery amnesty could be created as a termly event, incentivising students and staff to bring their good condition unwanted stationery items to be sold. This provides an opportunity for individuals to declutter their drawers and cupboards, proposing an occasion for stationery to be redistributed and re-loved. It will also inevitably reduce unnecessary waste.

The University of Manchester executed such an event in 2019, selling stationery to staff or seeing if it can be used internally. They also partnered with Chariot Office Supplies, who repurposed the unsold goods internally, to local charities and primary schools. If the goods cannot be used, the university aimed to sustainably dispose of them first before adding them to general waste as a last resort. Utilising this knowledge, LSE could partner with Chariot Office Supplies too, holding the same event. Student halls and the Student Union would be the best outlets for advertising this while also increasing engagement by reducing waste in a 'second-hand-style' event. Other alternatives to Chariot Office Supplies include: Low and Behold, Watan UK (formerly known as Human Care Syria) or First Mile. However, such an event would be best executed in real life, and the complications of COVID-19 can disrupt an event like this from occurring. This should be taken into consideration. Stationery amnesties provide a great incentive to solve the plastic waste problem by enabling the community to reuse pre-loved items.

6.1.2 Consumption by students

Appendix references: A(i,ii,iii,iV), B(ii,iii), E(i,ii,iii,iV,V), G(i,ii), H(ii)

Seen to the right (see appendix E(iV)) is a chart showing the proportion of responses when 96 students were asked, via a survey conducted by the project team, if they would be encouraged to shop at the General store if it sold more sustainable products.

Through our focus on consumption by the student body, we aim to limit plastic waste brought onto campus by students and ensure that all necessary recycling facilities are in place. Data from the General Store survey (see above and appendix E) shows that 84% of students would be encouraged (or very encouraged) to shop there if they could buy products which would limit their plastic consumption. This represents a big opportunity to reduce plastic waste at LSE. We hence propose two main solutions:

- **Offer sustainable and zero waste products on campus**
- **Introduce a ballot bin on campus**

See below for detailed explanation of above solutions.

6.1 CONSUMPTION

Zero waste store (1): Offering sustainable products on campus would enable students to switch to zero waste alternatives and reduce their use of plastics.

The Great Plastic Divestment team has identified that situating these items in the LSE General Store alongside its already existing range of products would be most suitable given its function and location on campus. This would be beneficial to the Catering team who manage the shop as this would give it a competitive advantage when compared to other supermarkets in the area. A survey was conducted as part of this project to determine whether students use the shop and what would motivate them to do it. 55% of respondents admitted that they never use the shop, while only 2% identified as regular customers. Meanwhile, the biggest number of respondents, 84% claimed that they would be encouraged to use it more often if the shop was to offer sustainable products. This demonstrates that there is a demand for zero waste products on campus. Providing them in the LSE General Store would deliver two benefits at once: 1) enable students to move away from single-use plastics and 2) bring more customers to the shop

The University of Manchester has its own student-led zero waste shop called Want Not Waste. They found two factors to be particularly beneficial to their success. The first is their central location right next to the SU. Similarly, the perfect location is also the advantage of the LSE General Store. The second factor of success for them was the reasonable prices that they offer. If necessary, we would recommend that this gets achieved through a form of subsidies which would result from the 50p charge on single-use food containers (refer to Problem 1a). Active engagement with customers has shown that students are particularly receptive to the idea and passionate about sustainability. The success of previous initiatives suggests that students at LSE are also very involved with the topic (refer to section 4).

6.1 CONSUMPTION

Below is a list of the products that Want Not Waste found were particularly sought after amongst students:

- Shampoo and conditioner bars
- Shampoo and body wash liquid refills
- Recycled toilet roll
- Bamboo toothbrushes
- Reusable menstrual items
- Small gifts - handmade soaps, upcycled earrings
- Refillable dried goods - pasta, rice, oats, pulses

Want Not Waste partner with local producers, thus ensuring a reduction in emissions for the transportation of their products, as well as a transparent and ethical supply chain. Their product inventory would be a useful source of inspiration for the implementation of this solution at LSE. The University of Manchester case study demonstrates that there is significant demand from students for sustainable products and it gives an insight into the specific items that are likely to be most successful. The LSE General Store has the potential to become the bastion of zero waste culture on our campus.

The transition to a sustainable store does not have to be a sudden one. Allocating a few shelves to sustainable products, based on the list above, will allow for a steady transition with less financial risk. Gradually, a better idea of the suitable products for LSE can be formed and the section can be expanded. The end goal would be that eventually all products are sustainable and zero waste items are prioritised.

6.1 CONSUMPTION

Ballot bin (3): Introducing ballot bins throughout campus is an engaging way to ensure cigarette butts are recycled properly.

Cigarettes are some of the most littered plastic items on the planet. They may take up to 10 years to decompose, during which they can leach toxic chemicals such as heavy metals into their surrounding environment.

Introducing ballot bins on the LSE campus could represent an effective and engaging way to reduce the amount of cigarette littering. While proposals to decrease cigarette butt pollution tend to be ineffective, research has shown that a ballot system encourages the use of the ashtray, reducing cigarette butt litter by 46%.

Each Ballot Bin displays a question chosen by the owner and two answers. Users vote by dropping their cigarette butt into the slot underneath their chosen answer. As smokers vote and the litter stacks up, the preferred answer will be seen. Once full, the bins can be emptied and cleaned, and the question can be changed. Ballot Bins can be fixed onto poles or directly onto walls.

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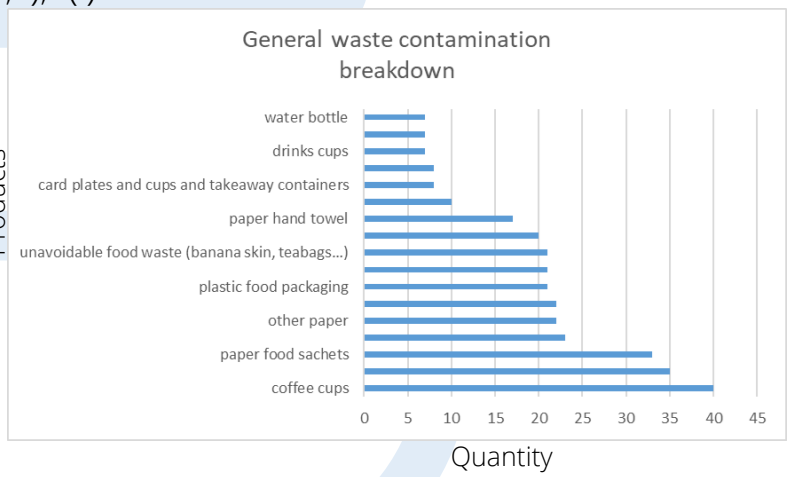
6.2 Education

Appendix reference: B(i,ii,iii), G(i,ii), I(i)

To the right is a graph (appendix (Bii)) showing the most common contaminants (products in the wrong bin) found in the general waste bins during the 2018 waste audit.



A recent poll The Great Divestment: Food and Plastic Waste Instagram page posted (@lsefoodandplasticwaste, see appendix I(i)), showed that 87% of individuals do not understand the recycling systems in the UK. Henceforth, there is a clear information gap the community holds about their waste disposal, which constitutes to plastic waste at LSE. This can be backed up by a waste audit conducted in 2011, see appendix G(i,ii), estimating that 72% of waste in the LSE Library is put into the wrong bin. This has an adverse impact on the effective use of resources. Data from the Waste Audits (see above and appendices B(i,ii,iii) and G(i,ii)) also concludes that general waste contained 75% recyclables, that most recycling bins were contaminated with food and liquid residue. This is extremely concerning considering that LSE provides separated bins in all facilities to ensure recycling can occur. This demonstrates a need for continuously educating students to help improve their habits.

We need to actively increase the incentives to educate one's knowledge about the environmental impact their consumption holds. From this, we provide three possible solutions:

- **Student-led classes**
- **Halls/ Student Union/ Athletics Union training**
- **Influencing consumer shopping habits with subtle hints and facts.**

See below for detailed explanation of above solutions.

6.2 EDUCATION

Mandatory sustainability course (1): A mandatory course for all LSE students would ensure wide engagement with sustainable practices and habits.

Data from the LSE Sustainability Consultation stated that '67% of students and staff would like initiatives to best help to develop sustainability knowledge and skills in LSE's study programmes to be embedded across all learning.' The best way to implement this would be to make the course mandatory, similarly to LSE100. Though the 'Introduction to Sustainability' Moodle course is of a relatively close module that LSE has executed, a mandatory course could promote greater benefits for students to actively engage in sustainable methods in their daily lifestyles in the future.

An example of a course of similarity executed in another university is UCL's 'Introduction to Sustainability e-learning course'. It aims to provide introductory knowledge to 'what sustainability means for you, UCL and the wider world' in 15 minutes. Mandatory for all new UCL staff inductions but optional to students, the course contains a mixture of elements, including audio, which can be echoed if LSE were to curate a sustainability course.

https://moodle.ucl.ac.uk/course/view.php?id=13529

6.2 EDUCATION

Halls/ Student Union/ Athletics Union (1): Training via quizzes with prices can increase intercollegiate friendly competition between these institutions. This can solve the plastic waste problem.

The Facilities Team Training, devised by the former Waste and Resources Officer, includes a presentation with a quiz to provide Estates staff with waste training. This can be echoed in our solution with prizes ranging from, points to the Halls cup, discounts at The Three Tuns or paid-for meals at restaurants post-quiz. Reflecting on the low turnout consequence of the student-led classes, we could perhaps integrate classes as such into the Halls/SU/AU with LSE's Green Flash. While it gets students involved and aware of their plastic waste, they may be more likely to learn about their consumption habits due to the friendly competition that can be sparked through these quiz-like events.

Targeting students in halls could be an option to educate them about plastic waste. This could shift their lifestyle habits and promote awareness of plastic waste in the university. It is more difficult to achieve this with students who reside in private accommodation. Integrating regular sustainability updates in the SU newsletter could be another way to raise awareness. Solving the lack of education in plastic waste through Halls/ Student Union/ Athletics Union may one of the best propositions to reduce plastic waste at LSE in the long term.

6.2 EDUCATION

Influencing Consumer Habits (1): The plastic information gap could in part be closed if we influence shopping habits by sharing of facts, tips and tricks.

After a meeting with Charles Joly, Head of Sustainability at LSE, he suggested this idea. The Great Divestment: Food and Plastic Waste Instagram page (@lsefoodandplasticwaste) already actively posts infographics to increase commercial awareness of consumer habits with regards to food and plastic waste respectively. The page has reached 2,362 impressions and reached 392 accounts from the 21st November until 20th December, but to heighten this impact, something can be implemented within LSE to influence shopping habits. A prime example of how this plan can be executed is during the Freshers Fair.

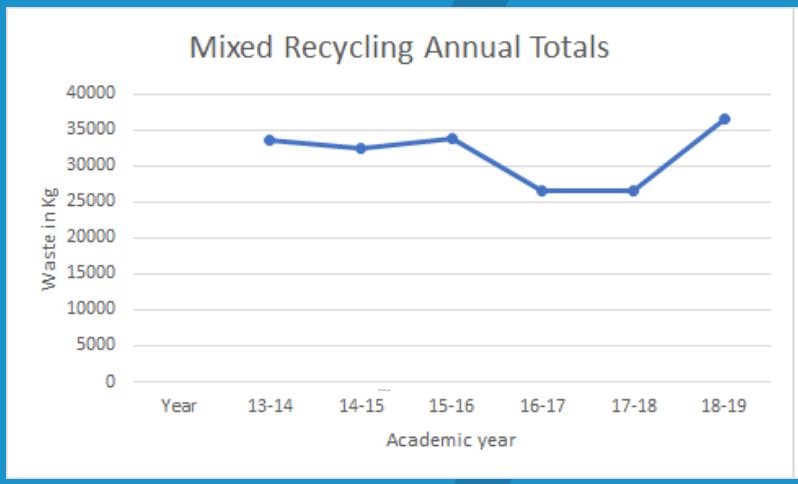
With regards to the fresher packs that are provided to students, reusable items with small descriptions on how to use them, or including information about how to recycle, becoming plastic-free, in the welcome packets could perhaps influence shopping habits. However, complications of COVID-19 forced 2020 freshers' fair to turn virtual, hence, currently, the Instagram page may be the best possible method to shape shopping habits through the influence of social media, combatting the plastic waste crisis, with regards to reducing waste respectively.

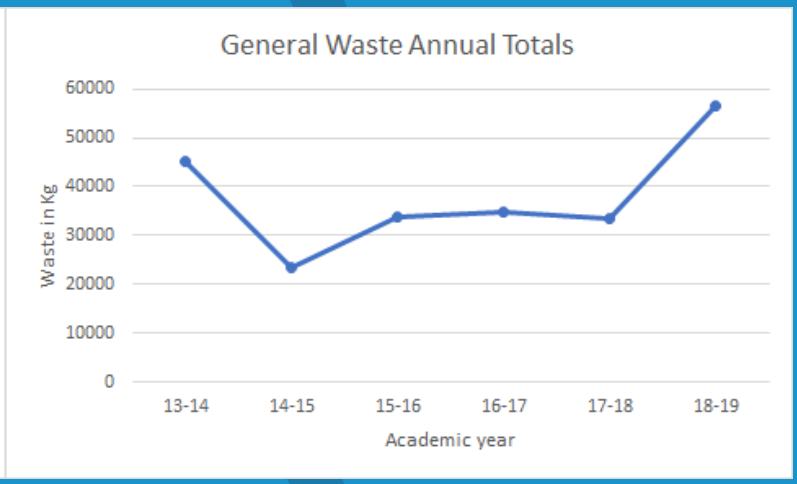
6.2 EDUCATION

In sum, LSE does not provide enough information to educate individuals on their consumption habits, alluding to growth in waste, evident in the Waste Data Summary. We have set up three solutions that could be viable solutions to combat this problem, actively incentivising individuals to reduce their habits. Consequently, the Halls/ Student Union/ Athletics Union are the best way to target methods to educate the community on plastic waste. From competitive quizzes and training, it may be the best solution that can be integrated within LSE, actively encouraging the participation of students with regards to their waste habits, solving the information gaps.

6.3 Lack of data

Appendix reference: A(I,ii,iii,iV), B(i,ii), G(i,ii)
See below for graphs of the annual waste totals of mixed recycling and general waste (appendix A(i)).





As alluded to before, this project was limited by the data available. This was in part a consequence of COVID-19, as the subsequent reduced footfall on campus meant new primary data could not be attained. This complication was amplified by the lack of both frequency and precision from previous years waste data. The waste collection system in London has a mixed recycling bin only, which means that it is impossible to identify the make-up of the waste collected with any certainty (see above and appendix A). A waste audit needs to be conducted regularly in order to make more accurate estimations. The last thorough waste audit at LSE was carried out in 2011 (see appendix G(i,ii)) and focused on the library specifically. A less formal, but more general audit was conducted in 2018 (see appendix B(i,ii)) but was not performed at a large enough scale to generate a clear picture of the current waste situation. We therefore identified the lack of data as a key problem within LSE's battle with plastic as without proper data we can neither properly identify or tackle the plastic and wider waste problem.

6.3 LACK OF DATA

We therefore propose these initiatives to help tackle LSE's data problem (listed in priority order):

- **Annual waste audits** in order to better understand the current waste and plastic situation.
- **Annual sustainability meetings** with suppliers and contractors to ensure LSE is acknowledging the full scope of its waste production and keeping up with new technology. This would be at no extra cost to LSE.
- **Tracking of individual buildings waste** through use of data from the audits, or other means. This would cost a negligible amount if implemented in combination with annual audits. See below for detailed explanation of above solutions.

6.3 LACK OF DATA

Annual waste audit (1): Organising a yearly waste audit would ensure that waste is tracked and understood better for initiatives that aim to decrease it.

We propose that a yearly waste audit is carried out within LSE in order to better track, and therefore tackle, LSE's plastic usage. An audit will allow the success of waste initiatives to be evaluated and help identify key challenges and focus areas in the battle against plastic waste. In order for this to data to be useful and accurate it must cover the entire campus, with bins being chosen at random within each building and the number of bins chosen per building being proportional to its size (the number of bins covered is dependent on how accurate the audit is desired to be but a base of at least 10% should be applied). It is recommended, when carrying out a waste audit at home, to conduct it in two separate seasons in order to account for the seasonality of waste. Due to the nature of university, and this project, we believe this is not necessary and a single audit will suffice in order to improve efficiency and reduce costs. We do recommend, however, that the audit should be conducted in either Michaelmas or Lent term due to examinations affecting footfall on campus during Summer Term.

This could be conducted by LSE staff (by either the estates or sustainability team) although it requires thorough safety precautions and designated waste processing area to conduct, please see appendix (Ji) for an exemplar methodology and the appropriate forms required. It could also be outsourced to various companies, see appendix (Jii) for a rough quote. A waste audit is a cheap and effective way to quantify and assess both the plastic and overall waste situation at LSE. The results can then be used in several other initiatives and published in the annual sustainability report to help track progress and keep LSE accountable for its waste.

6.3 LACK OF DATA

Meetings with suppliers on their waste/sustainability work (1): Organising annual meetings with suppliers will allow to better track waste's lifecycle and ensure an up-to-date understanding of new sustainable alternatives.

In addition to monitoring LSE's waste at the end of its journey on campus, it is just as important to manage it at the beginning. The current procurement strategy incorporates several environmental initiatives and processes to ensure that contractors are meeting base environmental standards, however there is a need for follow-ups and constant pressure to maintain these standards. Technology is evolving at a staggering rate and new sustainable alternatives are constantly coming to market. We thus consider annual meetings with suppliers are necessary to ensure that LSE is always keeping up to date. The organisation of annual meetings will also enable LSE to better track and tackle its waste at the source. Data from suppliers, such as purchasing orders or sustainability reports (see appendix Di) enable LSE to quantify how much waste is travelling onto campus and accurately assess the economic viability of sustainable alternatives as and when they arrive. It also helps identify particularly plastic heavy products. This will not only help to streamline LSE's sustainable consumption more quickly but also enable the School to be responsible for the full scope of its plastic usage. As a leading educational institution LSE must take responsibility for its supply chain. While the work of the sustainability team in the procurement strategy puts us at a very strong starting point, annual meetings will ensure that this momentum is maintained by suppliers, helping both sides to work closely together to reduce plastic waste.

6.3 LACK OF DATA

Monthly waste tally from cafes (1) As shown in previous years' waste data, Gorger Alley accounts for the bulk of LSE's waste due to it acting as a confluence for the waste collections of several different buildings.

This means that the waste at individual buildings cannot be accurately tracked. Therefore is difficult to form more specialised and targeted strategies to reduce plastic and general waste. This can easily be solved through a small waste tracking initiative implemented to run alongside the waste audits. If audits are done in sufficient detail, the waste make-up can then be used throughout the year to track waste. Taking the average weight and contents of a bin from either a specific building or, if the audit is more general, from the campus as whole, would enable the tracking of monthly samples of waste. This can be as simple as counting the number of mixed recycling or general waste bags accumulated in one week, estimating their contents from proportions found in the audits and extrapolating for the month, or go to as much detail as mini waste audits per building at the end of each month, the former being much more cost and time effective. By doing this, individual buildings can be held more accountable for their waste and, as such, more strategised and specific waste plans can be formed.

7. CONCLUSION - A VISION FOR A LESS WASTEFUL LSE

The LSE Sustainability Strategic Plan has set a strong framework for a more sustainable LSE. We hope that this report will strengthen the implementation process towards the goals outlined in the strategic plan and build on it constructively with regards to plastic waste. The aim has been to work out new opportunities and strengthen current initiatives while creating solid groundwork for students to get involved in sustainability and explore new opportunities in the future.

As a world leading academic institution, LSE has a responsibility to shape the future and to lead by example. This investigation has highlighted key areas of improvement and proposed practical solutions. Implementing the above would be a big step in the right direction towards “The Great Plastic Divestment”. LSE could be a national, if not international example of how to combat plastic waste. In the long run, we can not only achieve 100% recycling but become the first plastic free campus. It is within our reach if we commit to zero waste products, thorough recycling practices, effective campaigns and cooperation across LSE institutions and the student body. Plastic waste has a detrimental effect on our oceans, groundwater and other key ecosystems and natural resources. LSE can lead the way in the global effort to tackle these issues. We have the resources and the expertise to create meaningful change together. As members of this great community we should not be satisfied with “doing enough”, but expect leadership, constant innovation and excellency. We can show the world that decisive action in all three areas of “reduce, reuse and recycle” is not only achievable but also a source of future success.

8. ACKNOWLEDGEMENTS

We would like to express our gratitude to all the people that have contributed to the completion of The Great Plastic Divestment report. A special thank you to the LSE Sustainability Team, who provided us with suggestions and information for the contents of this report. They also supported the promotion of this project through the Sustainable LSE social media channels. Furthermore, we would like to extend our gratitude to LSE Catering for providing us with the data needed and demonstrating an openness to the solutions that we proposed. We also gratefully acknowledge the assistance of Arthur, Ellie and the Sustainable Futures Society for enabling this project to take place. They have been helpful and supportive throughout the process.

We are also grateful to the Want Not Waste committee from the University of Manchester who provided us with a detailed and very helpful account of their experience with setting up a zero waste shop. 180 Degrees Consulting provided us with valuable guidance for the structure of the report.

We look forward to working with the Estates Division and LSE Management in implementing the solutions to the plastic waste problem at LSE.

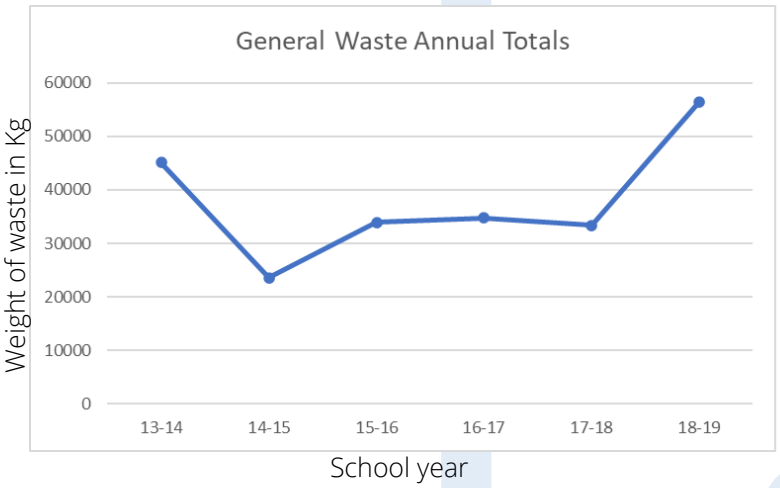
9. **APPENDICES**

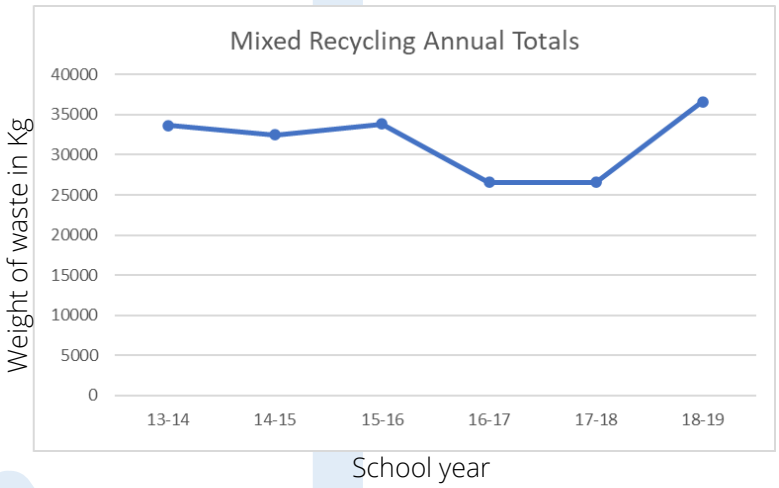
APPENDICES

A- Summary of Waste data between 2013 and 2019

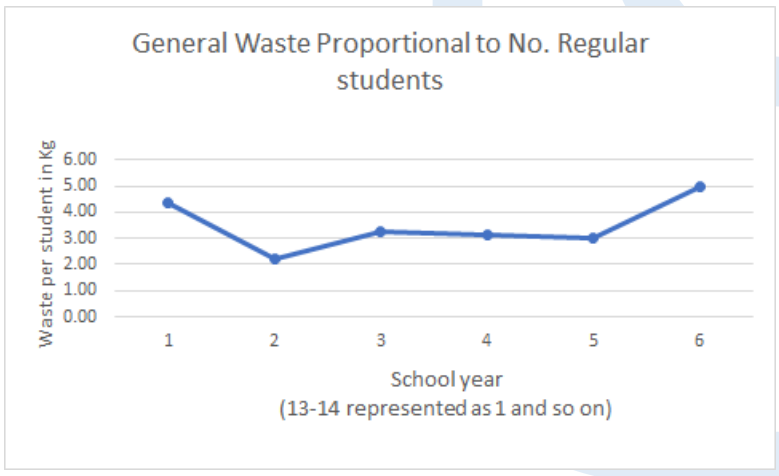
Link to data:
https://docs.google.com/spreadsheets/d/11zAlWy590J6WplirTYCkHRG37tSuXoEs/edit#gid=1357304446

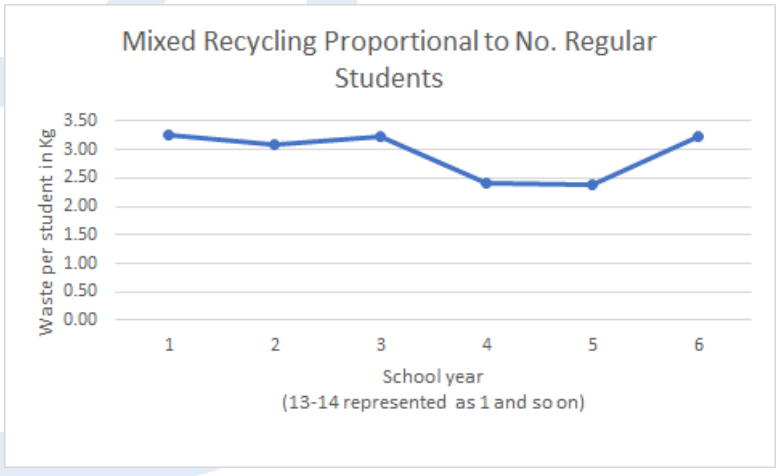
Ai) Mixed recycling and general waste annual totals.





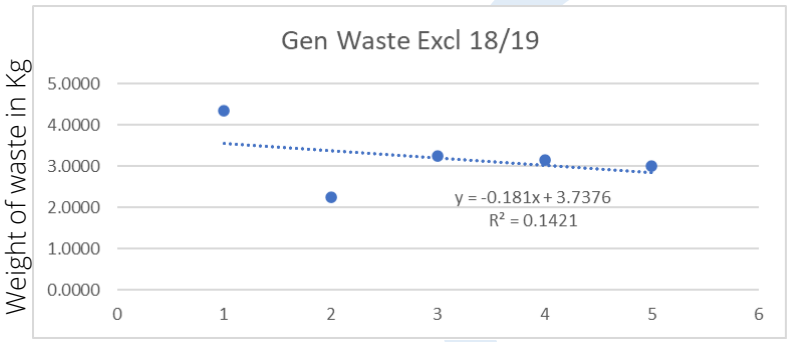
Aii) Mixed recycling and general waste annual totals proportional to the number of regular students, with 1 on the X-axis representing the year 13-14 and so on.



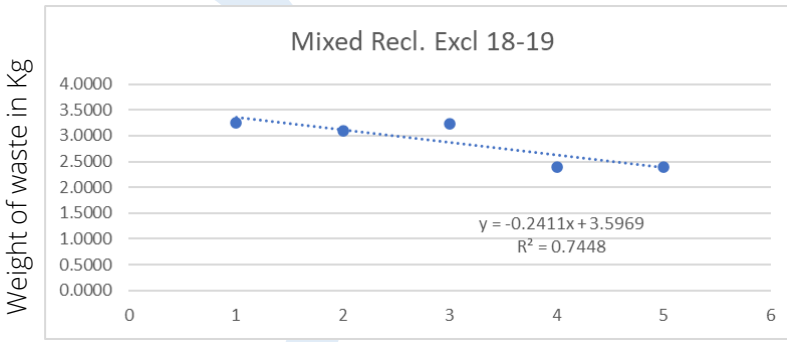


APPENDICES

Aiii) Linear regression models used to find line of best fit and test significance of proportional data. Due to the irregularity of data from the year 18-19, two calculations were made, one with and one without this year included. Significance test results are shown below the graphs.



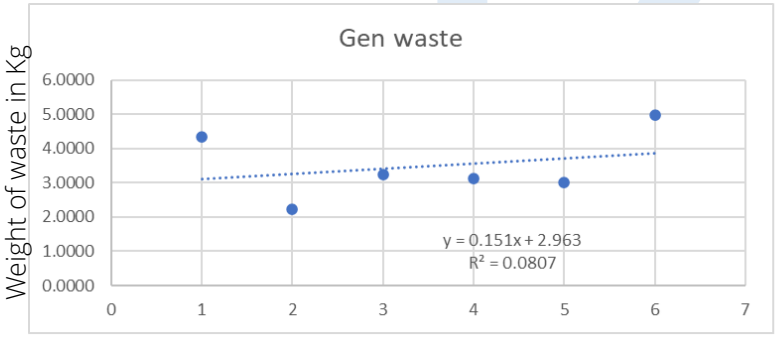
School year
(13-14 represented as 1 and so on)



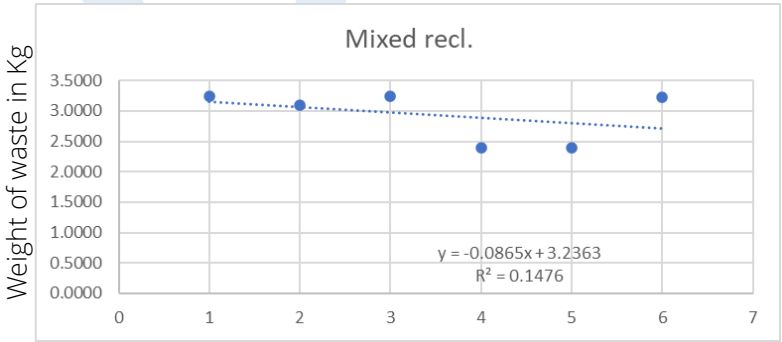
School year
(13-14 represented as 1 and so on)

Sig Value	0.05
P Value exc 18/19	0.5316
Is the trend significant ?	No

Sig Value	0.05
P Value exc 18/19	0.05958
Is the trend significant?	No



School year
(13-14 represented as 1 and so on)



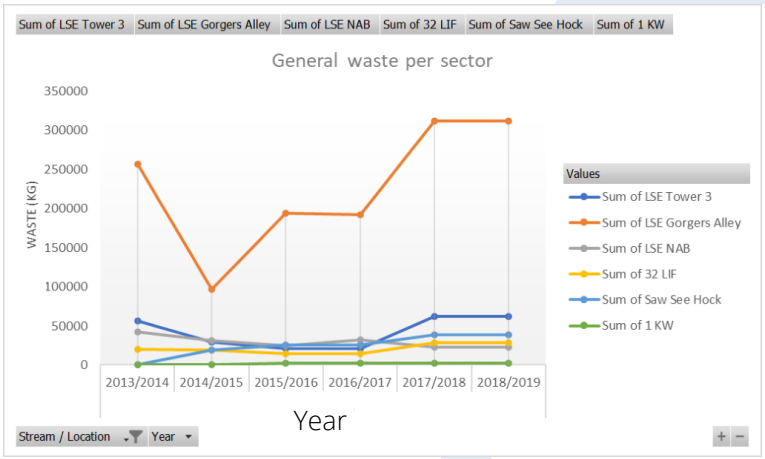
School year
(13-14 represented as 1 and so on)

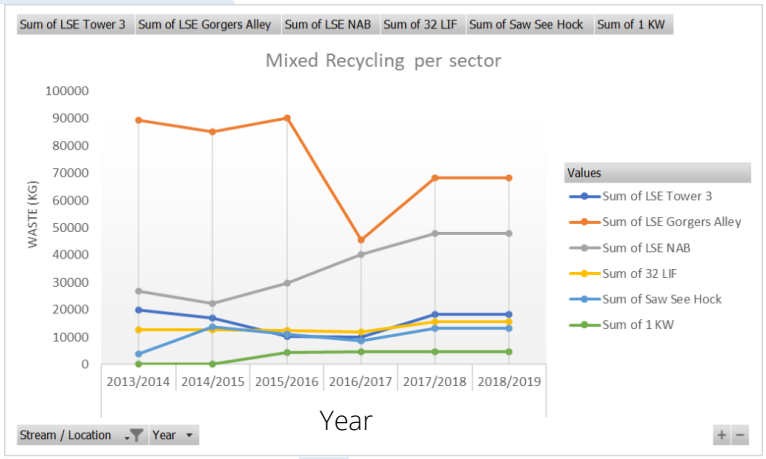
Sig Value	0.05
P Value	0.5854
Is the trend significant ?	No

Sig Value	0.05
P Value	0.4521
Is the trend significant?	No

APPENDICES

A iV) Annual waste summaries split by source of waste.





B-Waste audit from 2018

Link to data:
https://docs.google.com/spreadsheets/d/1iibTVAhs7aarovlnjo4nqd8Xu6wHdGyM/edit#gid=2101053081

Bi) Statistics inferred from the data:

- 57% of the products found in all bins were plastic
- 48% of the products in Mixed recycling were contaminants
- 74% of the products in Gen waste were contaminants
- 45% of the General waste contaminants were plastic

Bii) The make-up of the plastic waste observed, note due to the large variety of products only the top ten most frequent items are shown.

Biii) Products that contaminated the general waste bin (ie should either be in mixed recycling or food waste bins). Note again due to the large variety of products, only products contributing to 80% of the total items within the bin are shown.

APPENDICES

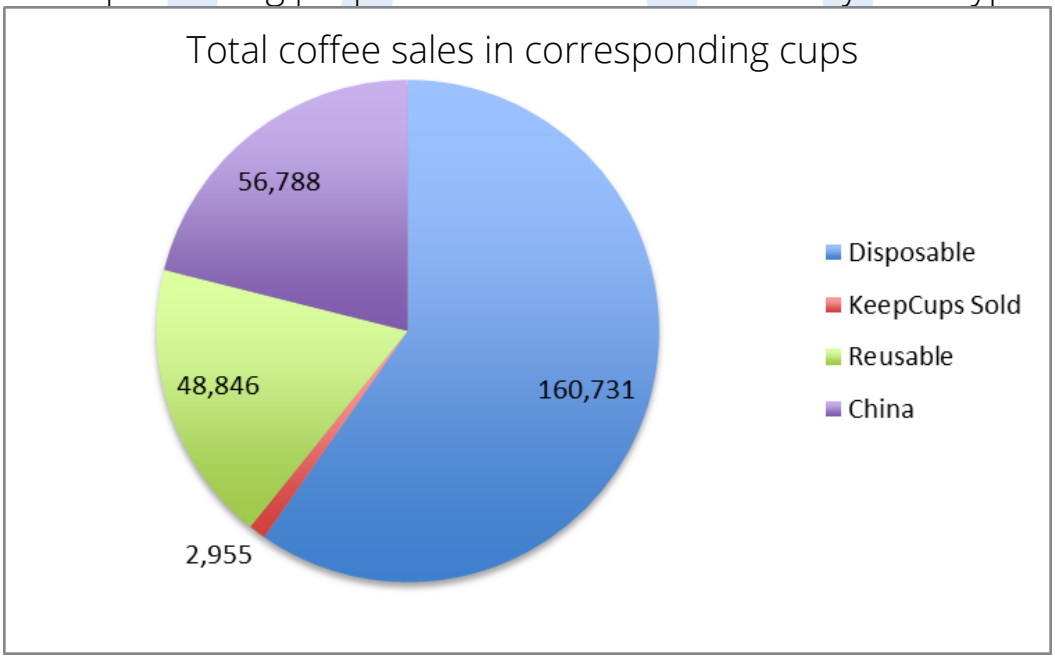
C- Coffee cup use data

Link to data:
https://docs.google.com/spreadsheets/d/1pllTZwZPca0fXu2lmx5VaGbnVyxURvch/edit#gid=578903585

Ci) Table showing the breakdown of cup sales via LSE catering services for

MONTH	Disposable	KeepCups Sold	Reusable	China	Total Drink Sold	% Reuse rate
Sep-18	3367	422	592	1052	5433	38%
Oct-18	26768	653	7854	6597	41804	36%
Nov-18	21502	326	6611	7510	37753	43%
Dec-18	10805	105	3469	4217	17733	39%
Jan-19	16679	308	5262	6211	28152	41%
Feb-19	18431	255	5802	8001	32234	43%
Mar-19	21613	198	6940	7708	36271	40%
Apr-19	7119	84	2464	2781	12637	44%
May-19	12294	110	4446	4749	21489	43%
Jun-19	9576	242	2735	4220	16940	43%
Jul-19	12577	252	2671	3742	18990	34%
TOTAL	**160,731**	**2,955**	**48,846**	**56,788**	**269,436**	**40%**

i) Pie chart representing proportion of total coffee sales by each type of cup.

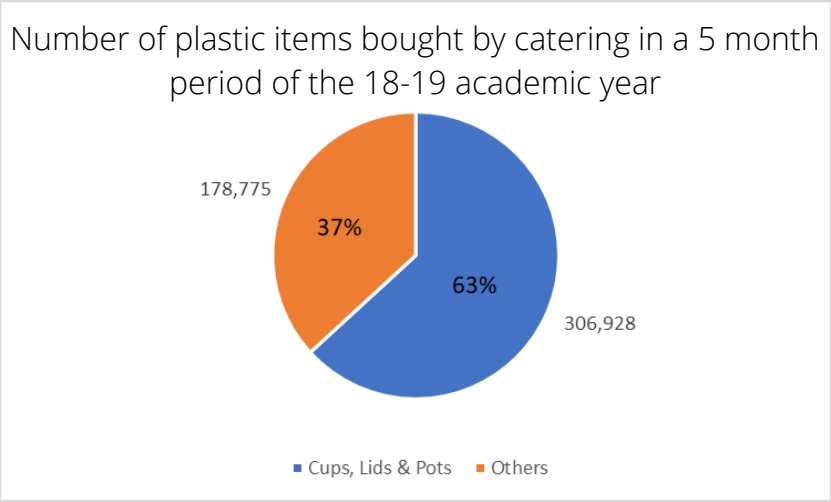


APPENDICES

D- Data from a sustainability report by Tri-Star packaging in 2019, identifying which products are made from recycled material.

Link to data:
https://docs.google.com/spreadsheets/d/1DIi8PXsQvqRbvFdzGRRr3dxMNJ0MGOE8/edit#gid=1894644885

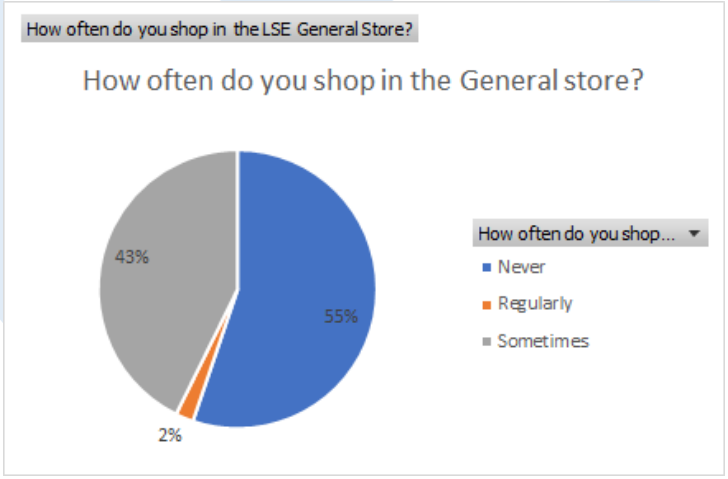
Di) Pie chart showing the proportion of plastic items ordered by catering that are either lids, cups or pots over a 5 month trial period in 2018.



E-The project conducted a survey regarding the LSE General Store, it had 96 participants.

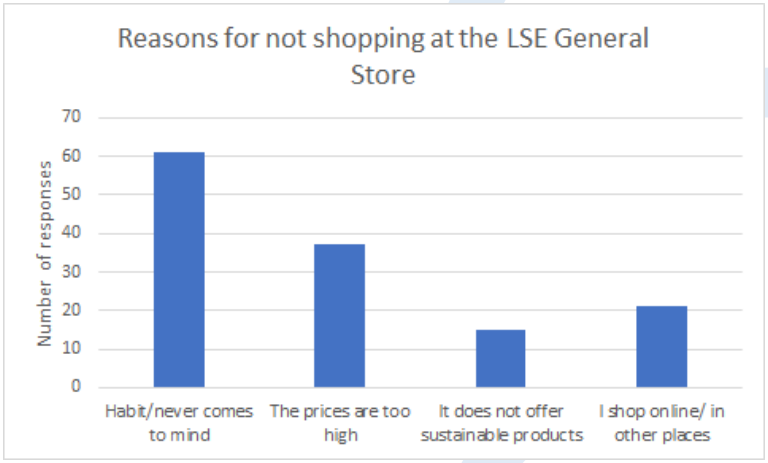
Link to data:
https://docs.google.com/spreadsheets/d/1heYGVpA5lYJLJYEmxmLiBPvi94okQcQl/edit#gid=904456571

Ei) Participants were asked how often they used the store, below are the results.

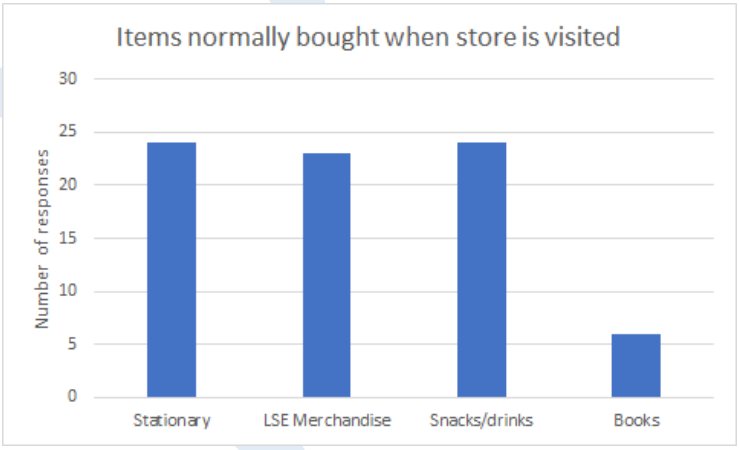


APPENDICES

Eii) Participants were asked their reasons for not shopping at the store. Note that this question allowed multiple answers and so the data does not total to 96.

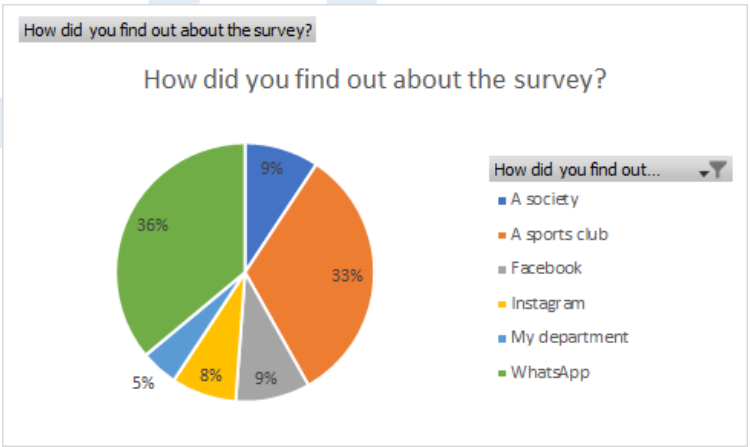


Eiii) Participants were asked their most frequent purchases at the store when visited. Note again that this question allowed multiple answers and so the data does not total to 96.



EiV) Participants were asked if they would be encouraged to shop at the store if more sustainable products were available there.

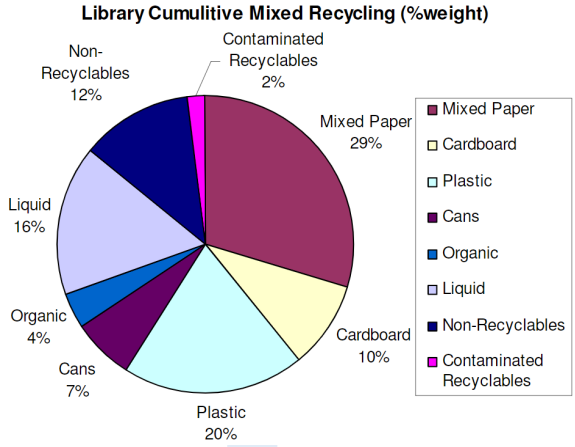
EV) In response to worries of only an environmentally focused demographic response's, participants were asked where they heard of the survey to ensure it was from a wide variety of channels.

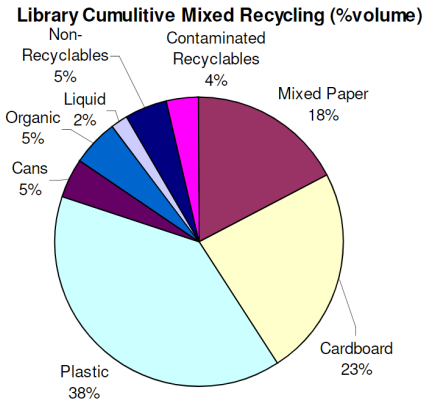


G- Data from a waste audit of the library conducted in 2011. See here for link to full doc

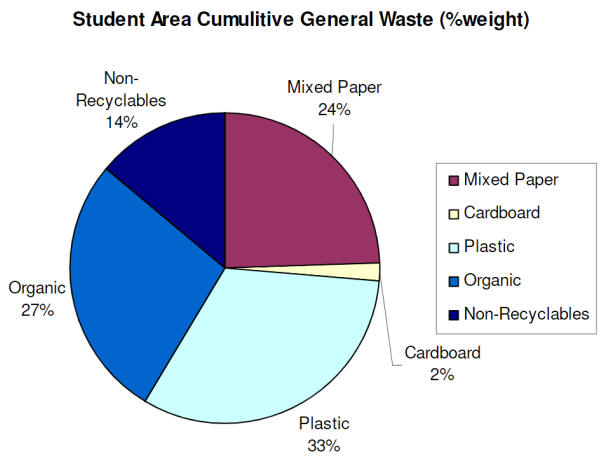
Link to audit document:
https://docs.google.com/document/d/1Qn0X4okcTLKJdmFND3iPVlc4TB_RLOZDbr3dNqotP5k/edit

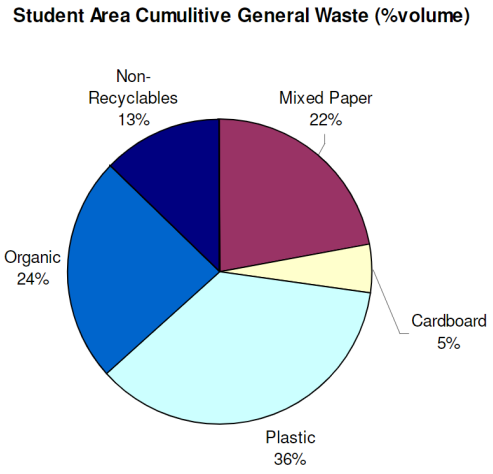
Gi) Breakdowns of the contents of the mixed recycling bins sampled





Gii) Breakdowns of the contents of the general waste bins sampled. It should be noted as well that it was concluded in the report 75% of the general waste was made up of contaminants.



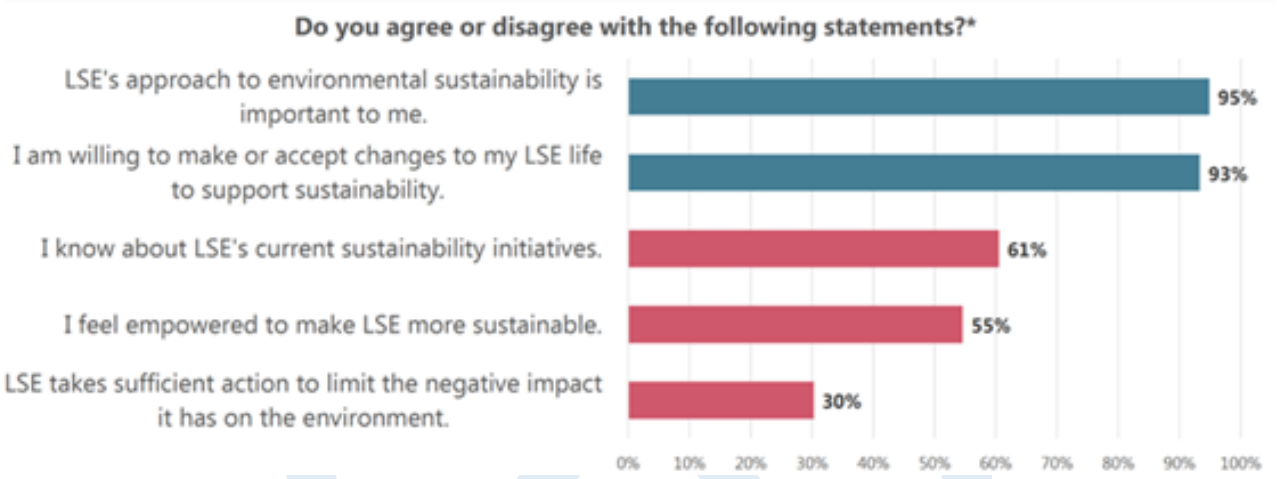


APPENDICES

H- Useful graphs taken from the LSE sustainability consultation in April 2020. The survey involved 668 participants, 75% of which were staff or students.

See here for full report: https://info.lse.ac.uk/staff/divisions/estates-division/sustainable-lse/Assets/Documents/Consultation-SusTAG/LSE-Sustainability-Consultation-Summary-of-key-findings-April-2020.pdf

Hi) Graph showing survey's participants position and knowledge of sustainability at LSE



Hii) Recorded responses when participants asked how LSE could best tackle environmental problems.

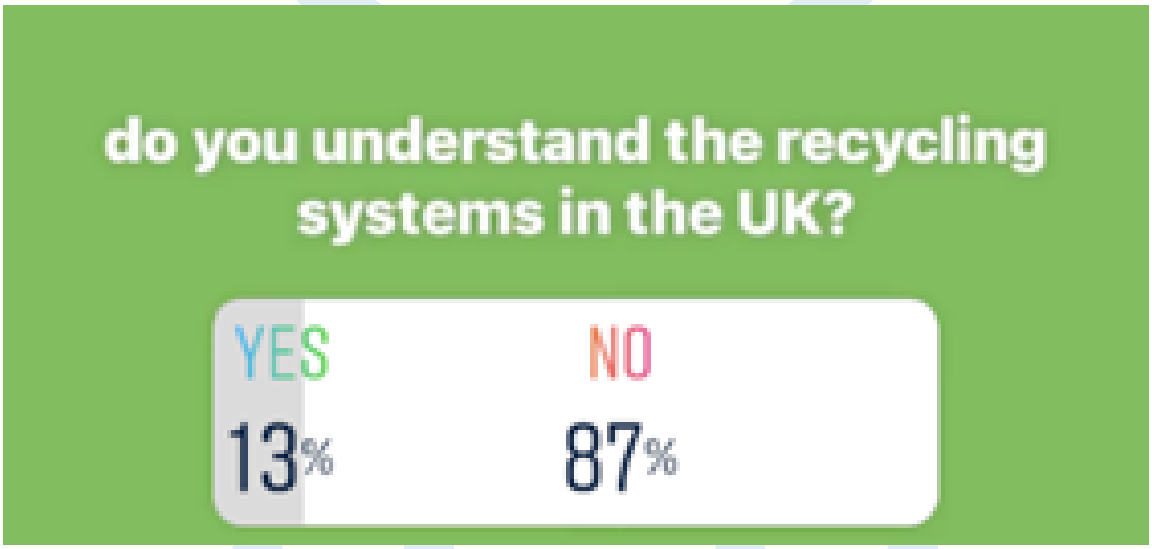
APPENDICES

I- A small Instagram poll was conducted to assess the current knowledge of the recycling/waste system in campus.

Participants were asked 'Do you understand the recycling system in the UK?'.

It must be noted that there were only 16 participants, however conversations with other waste officers and members of the sustainability team reinforce the results shown.

Ii) 87% of participants said they did not understand the current waste recycling system within the UK.



APPENDICES

J- Research for waste auditing solution

Ji) Link to waste audit methodology- https://www.zerowastescotland.org.uk/sites/default/files/WCAMethodology_Jun15.pdf

Jii) Quotes from James Loring from PulseEnvironmental regarding waste audit cost.

Below is the relevant information from an email chain:

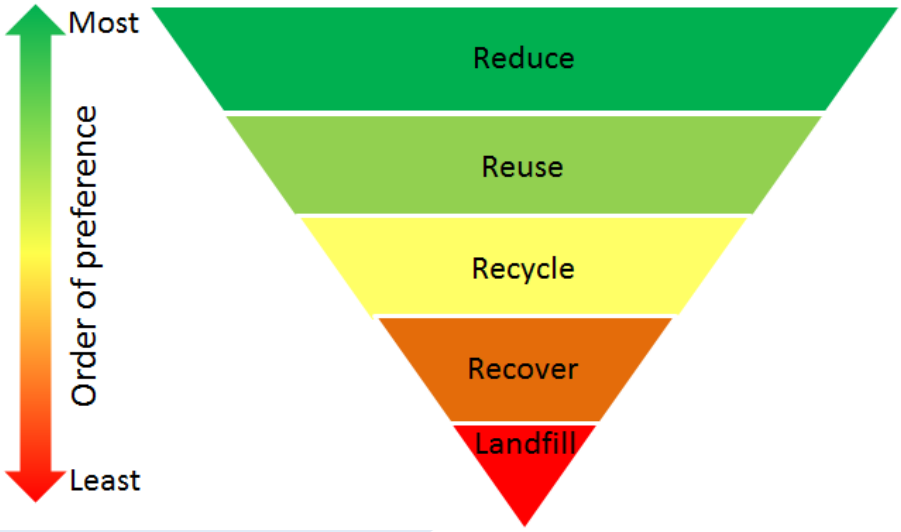
As discussed, the scope of the audit will largely depend on your budgetary constraints. However; to give you a rough idea of what we charge, I have provided two examples below:

- Option 1 84 x Sack Waste Audit: £1,680.00
- Option 2 140 x Sack Waste Audit: £2,800.00

This service includes: provision of waste audit materials, collection of sample sacks, auditing, analysis report and waste disposal.

K-Waste management hierarchy

Ki) See figure on the right



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