Directorate of Estates & Facilities
Sustainability team

Waste and Resource
Strategy and Action Plan 2021-24

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King's College London recognises that as an educator, we have a responsibility to play a central and transformational role in advancing the Sustainable Development Goals (SDGs) by 2030. The SDGs are a set of 17 goals aimed at transforming the world by 2030. This strategy confirms our commitment and contributions to the SDGs – particularly SDG 11, 12, 14 and 15 Sustainable Cities and Communities, Responsible Consumption and Production, Life Below Water and Life on Land.


11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
14 LIFE BELOW WATER
15 LIFE ON LAND

Summary

This strategy and action plan details King's College London's (King's) renewed approach to waste management with an emphasis on reduction over recycling. From 2017 to 2020, King's evolved its approach to waste management by implementing upgrades to its existing waste infrastructure and to its management of contracts. These initiatives increased the recycling rate by 30 percentage points, going from 39% to 69%, reduced waste costs and reduced the overall environmental impact of our waste.

The impact of the COVID-19 pandemic significantly reduced the amount of waste generated on campus. The current challenge therefore is to minimise any increase in waste generated and seize the opportunity to change the way we do things as students and staff return to campus. This strategy and action plan sets out six principles of waste management in line with the key commitments of the King's Waste and Resource Management Policy.

Those principles include;

- Going beyond legislation and regulation targets
- Waste being considered part of the procurement decision
- Helping the King's community make a more sustainable choice
- Resource recovery and waste management
- Data informing our decisions
- Harnessing the power of research and education

There are seven key areas of opportunity at King's that we will focus on as part of this next phase of waste management. The phase will include a reduction in waste generation via an increase in responsible procurement and the consideration of waste as a resource.

The seven key areas are;

- Procurement
- Laboratory and research
- IT equipment and IT packaging
- Food and food packaging
- Building and maintaining our estate
- Cleaning our estate
- Students living on campus

It is important to note that we have a recycling rate target of 75% by 2024. However, we will prioritise waste reduction at source over the target to improve recycling rates, recognising that often a reduction in waste at source will directly impact levels of recyclable waste streams when compared to total non-hazardous waste generated across the estate.

We welcome your thoughts and please contact sustainability@kcl.ac.uk with any queries or comments relating to this document.

“Our waste is our resource”

King’s College London is reaffirming its commitment to the active management of waste and promoting the reduction, re-use, and recycling of the waste it produces. King’s recognises the COVID-19 pandemic has had a drastic impact on the amount of waste produced and managed across the estate. King’s also recognises that a more circular approach to creating and managing waste requires improvements to campus operations and to business services.

1. King’s evolution in its approach to waste management

In 2017 King’s set itself the target to achieve a 70% recycling rate by 2019-20 from its 2015-16 baseline of 37%. By December 2020, King’s was recycling 67% of its non-hazardous waste with an overall annual average rate of 64%.

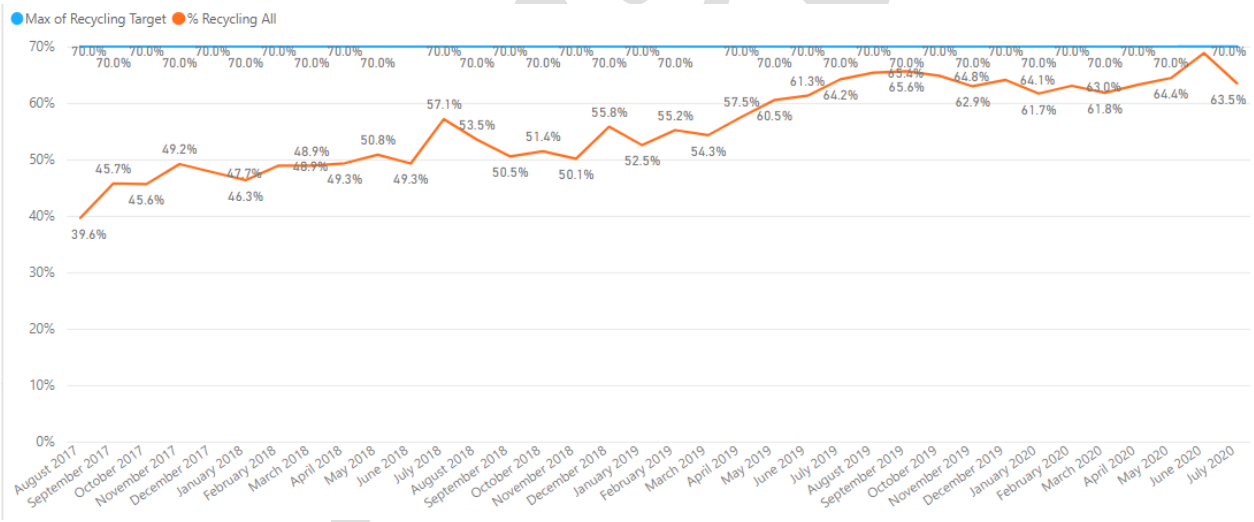

Figure 1 - King’s recycling rate from 2017-18 to 2019-20

The 30-percentile point increase in recycling over three years was achieved through effective contract management of King’s waste suppliers, improved waste data quality, and a tailored action plan for each campus. The university standardised its bin stock and introduced new waste streams to maximise recycling and reduce the amount of waste going to energy from waste; new streams of waste included food waste, glass waste and cardboard. King’s managed residences saw the most significant improvement from the introduction of food waste caddies, and a glass bin in every kitchen. Nudge techniques were used to reward good behaviour

resulting in the 23% recycling rate in 2017-18 increasing to 64% in 2019-20 in residences alone.

King's is committed to the Waste Hierarchy and recognises that recycling is not the end goal. While an increased recycling rate is a positive step, the reduction and prevention of overall waste generated is necessary, even at the expense of a decrease in recycling rates.

King's evolution in waste management mirrors that of the government, which set out a 25-year plan to reduce waste in the economy by tackling it in its production. The diagram below illustrates the evolution in England's waste hierarchy as waste is increasingly minimised at source before being reused and recycled.

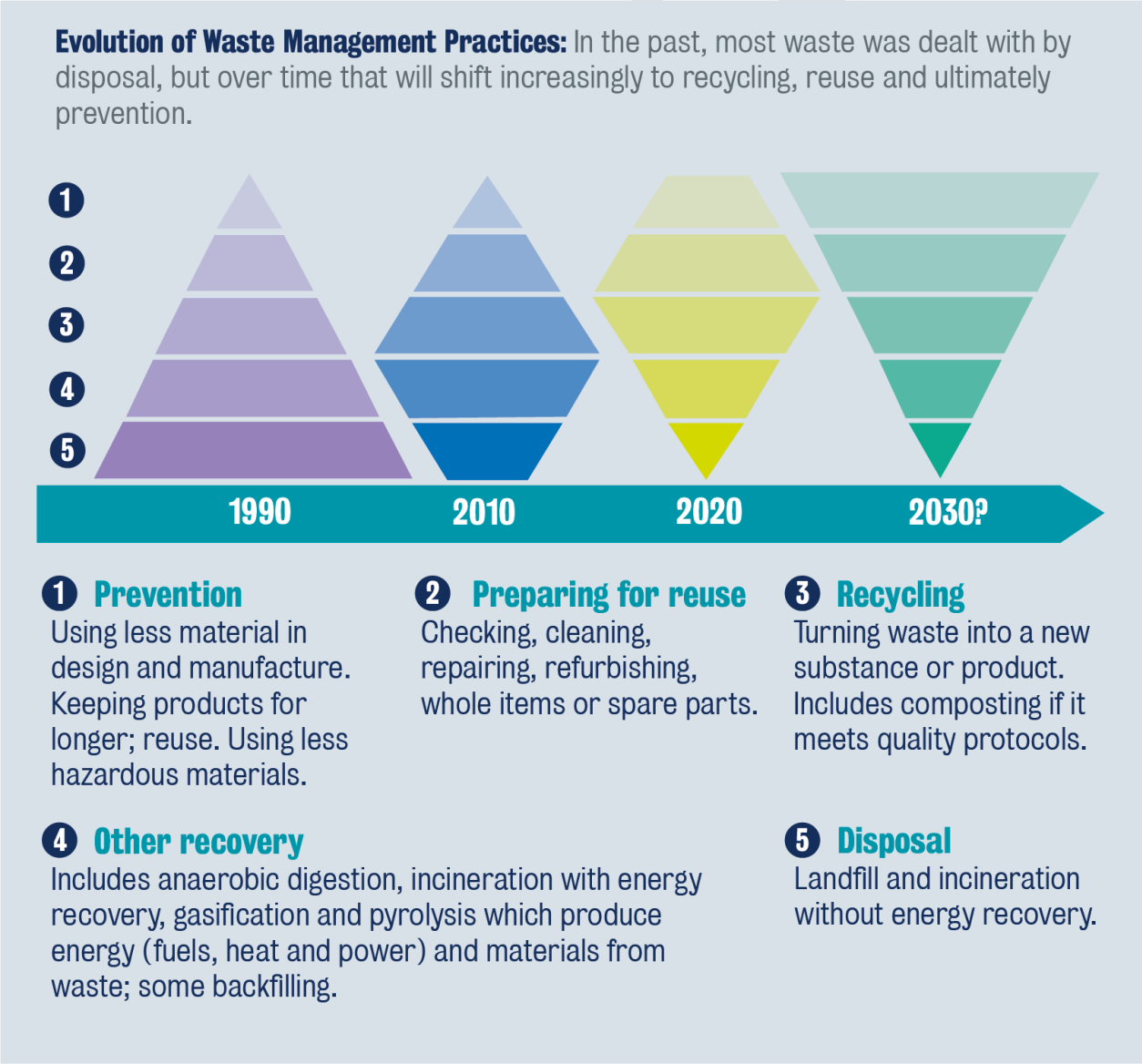

Figure 2 - Evolution of Waste Management – England Waste and Resource Strategy

2. The impact of COVID-19

Since March of 2020, when the first lockdown occurred, waste generated at King's decreased by 75%. Students studied and staff worked from home creating the 'new ways of working' that continued into 2021 and is expected to remain the case into 2022. This makes it the ideal time for King's to review how it produces and manages waste in order to limit its environmental impact before students and staff return to campus in greater numbers.

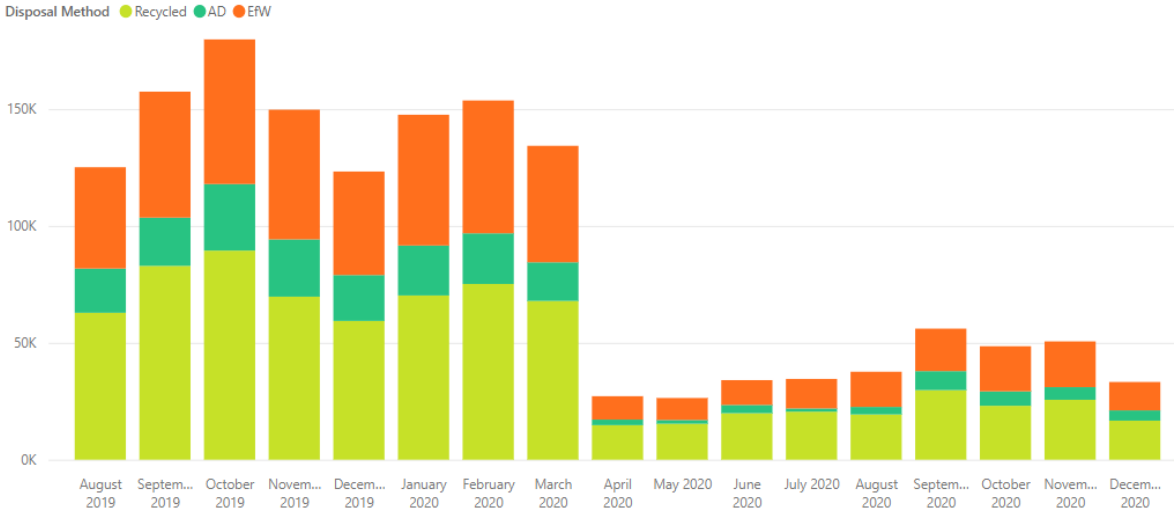

Figure 3 - The effects of COVID-19 on King's waste output

Key:
Recycled – Waste sent to Materials Recovery Facility
AD – Food waste sent to Anaerobic Digestion Facility
EfW – Waste sent to Energy from Waste

3. Our way forward is the circular economy

King's has identified that in order to reduce its waste, it must first reduce the number of goods procured and engage with its suppliers to work on solutions to create a circular economy. Making informed decisions on what to procure for and better understand how that service or product is delivered, will enable King's to effectively engage in the circular economy.

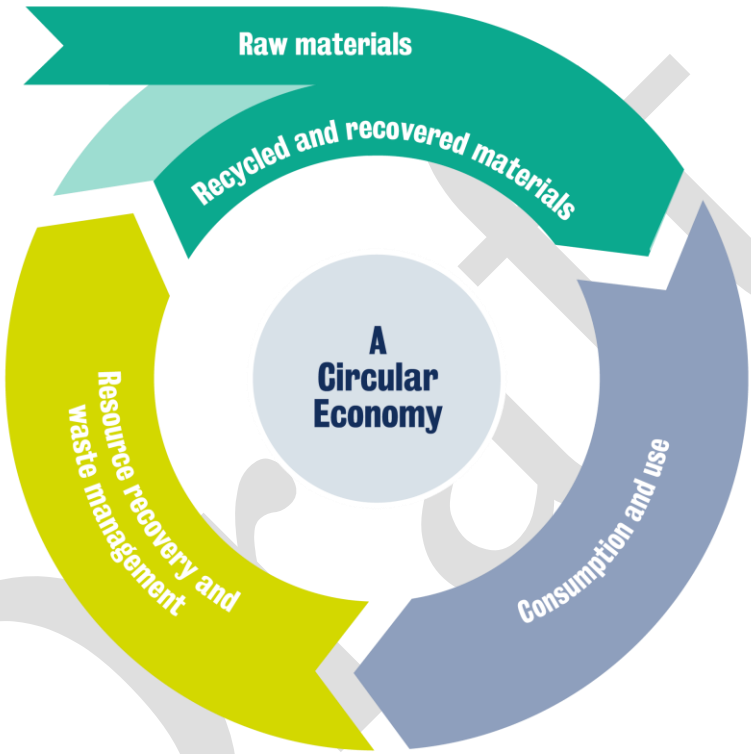

Figure 4 - Circular Economy Diagram – England Waste and Resource Strategy

3.1 The Circular Economy

The circular economy is a pre-requisite for any organisation wanting to operate more sustainably. It is based on the idea that rather than continuing to use new raw materials and disposing of them after use, we need to rethink how and why we use certain products, in order to eliminate waste and recirculate those materials to be reused. Engaging with the circular economy is an integral part of King's net zero carbon journey, as is harnessing the opportunities to develop regenerative solutions that drive innovation while at the same time reduce waste. The first step in embedding the principles of the circular economy is implementing best practice and engaging with suppliers and business partners to re-examine how we can reduce waste collectively.

3.2 Waste minimisation

Waste minimisation, via dematerialisation, is the reduction or removal of materials flow from the economy and therefore the reduction of their impact on the environmental system[1]. It allows for the production and use of material goods but requires a lower input of materials. This means that over time, fewer materials enter the economy, and fewer materials are disposed of rather than reused. Similar to the Lean Method of working, any part of King's operations that creates waste needs to be reconsidered/redesigned.

There are two types of waste minimisation, relative and absolute, and they are inseparable as one is not achievable without the other.

- Relative waste minimisation occurs when a reduction of environmental impacts can be directly correlated to a decrease in waste created and is measurable.
- Absolute waste minimisation occurs after the economy has dynamically adapted to the stimulus created by the original increases in environmental efficiency and reduced overall waste output. King's are looking to achieve the former and in doing so, contribute to the latter.

To start with, the focus must be on what King's can control (i.e., its suppliers and delivery of services) and we must be mindful when considering recycling schemes where costs can sometimes outweigh the benefits. For example, rubber gloves are a necessary part of PPE (Personal Protective Equipment), but their recycling schemes are not cost-effective*(at the time of writing this strategy).
However, a reduction in packaging and single-use plastics where there is a clear case and a viable alternative exists, would be the preferred option.

(* guidance from HSE (Health & Safety Executive))

[1] https://www.sciencedirect.com/science/article/pii/S0959652614012384

4. Turning our waste policy commitments into principles

Supporting the key commitments of the Waste and Resources Management Policy, this strategy sets out the university's six waste principles, created after careful reflection on waste operations across the King's estate. These principles promote responsible procurement and compliance with the waste hierarchy.

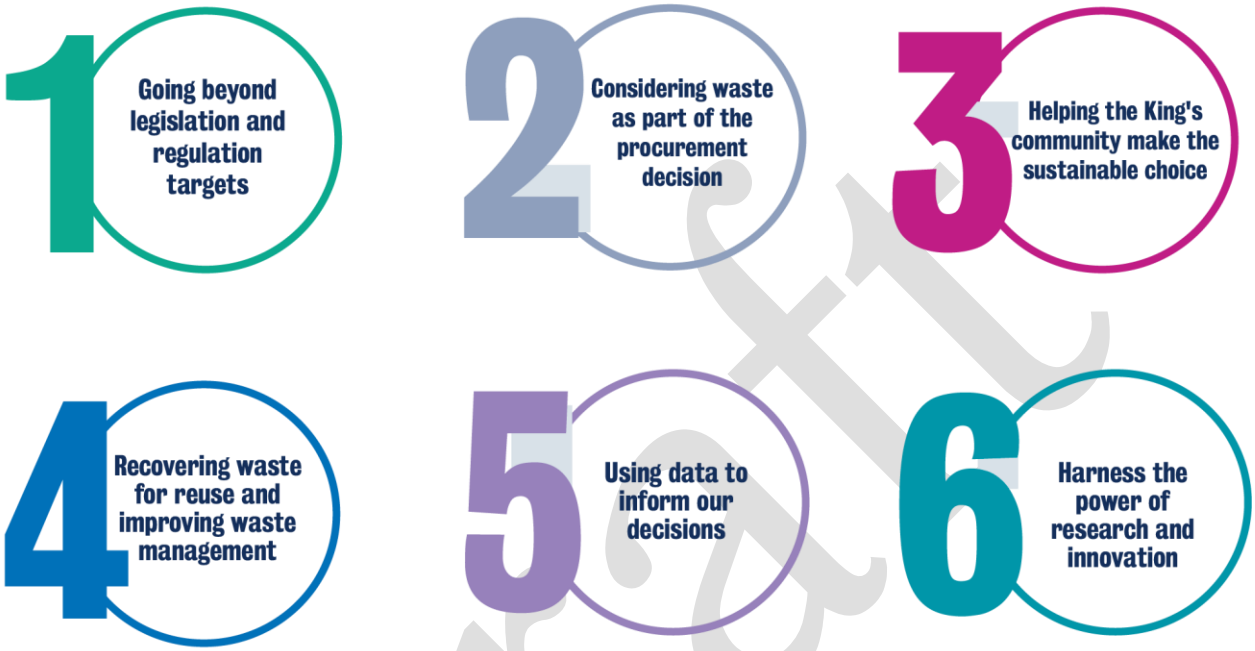

Figure 5 - Our commitments into principles

4.1 Principle 1 – Going beyond legislation and regulation targets

King's aspires to go beyond the UK's target to recycle 65% of its waste by 2035, and already has various recycling schemes in place. The adoption of a zero to landfill policy, a food waste stream, and a drive to increase rates of recycling has put King's in a good position to go beyond legislation and regulation targets.

Under this principle, King's will aim to:

- Set reduction and recycling targets that go beyond the UK's targets where appropriate.
- Adopt schemes early that are outlined within England's Resource and Waste Strategy 2019, for example reverse vending and deposit return schemes.

4.2 Principle 2 – Considering waste as part of the procurement decision

Waste is created at the point of purchase, whether we purchase a specific product or a service. King's can minimise waste through procurement decisions and by working with suppliers.

Under this principle, King's will aim to:

- Integrate the principles of the circular economy into procurement decisions
- Engage with other institutions and procurement frameworks for waste minimisation solutions
- Reduce the product catalogue and promote sustainable choices
- Reduce/eliminate unnecessary packaging from key suppliers
- Make eco-friendly products the preferred choice
- Hold suppliers accountable for their sustainable policy and practices
- Identify training requirements for King's staff involved in procurement decisions that will inform on sustainable and ethical practices with a focus on waste reduction

4.3 Principle 3 – Helping the King's community make the sustainable choice

Students and staff lifestyle and choices affect King's waste output. King's therefore has a responsibility to facilitate/support its community in making sustainable choices by providing them with the tools and resources to do so.

King's also has a responsibility to raise awareness on the various waste generating issues across the estate by inviting them to participate in waste reduction initiatives. King's already has initiatives in place to encourage our community towards the more sustainable option, including the 20p coffee cup levy and 50% off end-of-day food items, but more can be done.

Under this principle, King's will aim to:

- Identify and address barriers to re-use
- Provide information and training to students and staff to help them make more sustainable choices
- Foster sustainable thinking through events and campaigns
- Ban disposable items and single-use plastics where there is a clear case and a viable alternative exists
- Make re-usable utensils the preferred option in King's Food outlets

4.4 Principle 4 – Recovering waste for reuse and improving waste management

King's has increased its recycling rate from the 2015-16 baseline of 37% to 64% by 2020. While the recycling rate peaked at 67% in 2019-2020, the university has not yet reached its target to recycle 70% of its waste. However, continued improvement to infrastructure and management of waste is likely to result in us reaching our target.

Under this principle, King's will aim to:

- Promote the correct disposal of each waste stream
- Continue improving King's recycling rate
- Further reduce levels of waste going to energy
- Work with our suppliers to review our waste streams and tailor services to the university's needs to ensure waste minimisation at source
- Provide training to operational staff on waste management

4.5 Principle 5 – Our data to inform our decisions

Data is essential in measuring our progress, and the key to identifying our solutions is maintaining our waste dashboard and reporting on a monthly basis.

Over the last three years, King's has developed a robust data set from its waste suppliers. Linking this waste dataset with our procurement data will give us insight into how waste is entering the campus and allow us to take advantage of opportunities for further waste reduction.

Under this principle, King's will aim to:

- Link the university's procurement and purchasing data with waste data
- Develop tools to analyse and inform on the effects of procurement on waste output and make operational decisions accordingly
- Continue to improve the accuracy of the university's waste data by working with waste contractors.

4.6 Principle 6 – Harness the power of research and education

King's is already taking meaningful sustainability action, and has been recognised for this by ranking 11th in 2021 THE Impact Rankings, and 2nd in the 2021 People & Planet University League Table, up from 21st place in 2019. As a university, we have the opportunity to use our world-leading research and education to improve our overall management of waste by advocating waste reduction.

Under this principle, King's will aim to:

- Develop opportunities for research and learning with students using real-world problems as case studies.
- Involve suppliers in research opportunities as part of their social impact plans.
- Proactively seek opportunities to participate in local initiatives aimed at reducing waste and supporting a circular economy

5. Key areas of opportunity

King's has identified seven key areas where it can reduce its waste:

- Procurement
- Laboratories and research
- IT equipment and IT packaging
- Food and food packaging
- Building and maintaining our estate
- Cleaning our estate
- Students living on campus

Each of these activities influences the waste output of King's, whether it's through deliveries, consumables, or retail products and all apart from 'students living on campus' have a clear supply chain with active contract management.
A collaborative approach will ensure that King's can reduce its waste and contribute to the circular economy. These areas are focus points for our action plan, with key commitments and principles within this strategy being implemented across King's operations.

5.1 Procurement

To reduce waste, King's must target the source of waste generation; this means preventing waste before it reaches the campus. To achieve this, King's must engage its suppliers through its procurement team and the local and national frameworks it sources suppliers from. From the tender process through to appointment, waste reduction needs to be to a key performance indicator for suppliers and efficiency needs to be a core value of the service they supply. Setting these expectations for suppliers before appointment will enable King's to reduce the amount of waste generated across the estate.

5.2 Laboratories and Research

King's is world-leading in its laboratories and research practice and understands that these activities are energy and resource intensive. Our laboratories have good examples of takeback schemes in operation, ablebit sporadically, but by replicating their example, we can understand how to apply this to other areas across the estate. Some clinical and laboratory waste generated at King's is over classified, and could be reclassified as offensive waste, thereby saving in disposal costs and storage space. The COVID-19 pandemic has shown that reducing clinical waste through the

introduction of offensive waste for treatment, where acceptable, can help mitigate supply chain issues, by alleviating an already overburdened waste stream.
There are also opportunities to adopt reusables and glass instead of single-use plastics, along with re-usable sharps bins. By fostering relationships between the LEAF (Lab Efficiency Assessment Framework) programme and suppliers, King's can develop solutions to reduce waste.

5.3 IT equipment and IT packaging

King's is dependent on the use of IT equipment in various ways, namely laptops for staff, PCs for student computer labs and specialised IT as part of research equipment in labs. Our WEEE (Waste Electrical and Electronic Equipment) is currently removed off site by our waste contractors for repair, so it can be re-used elsewhere and recycled where it cannot. Our data bearing WEEE contractors operates at a 70% re-use rate, with our non data-bearing WEEE contractor operating at a 100% recycling rate. Working with our IT suppliers, we aim to reduce packaging, replace with a more sustainable material and procure for longer-lasting, more energy efficient IT equipment.

5.4 Food and food packaging

Food also has a large ecological footprint due to the use of land, water and resources in its production, and the creation of food waste and food packaging. Catering disposables is an important and emotive subject for students and staff. King's Food has already made significant progress in reducing food waste and food packaging through 'end of day' discounts, the coffee cup levy, examination of food sales data and portion control. King's Food is already considering the replacement of single-use items and the reduction of food packaging from deliveries and food products as students and staff return to campus.

5.5 Building and maintaining our estate

Maintenance of our estate is integral to the university's upkeep. The maintenance team operate planned preventive maintenance (PPM) throughout the year and carry out ad-hoc maintenance work. Ensuring sustainable choices are made around equipment, fittings and parts can reduce the amount of waste created throughout the lifetime of the product, from installation to decommission. The way the university designs and constructs its estate is also a key part of waste reduction and using frameworks to improve building efficiencies will further reduce waste as building materials and fabrics last longer and promote energy efficiency.

5.6 Cleaning our estate

Toilet and cleaning consumables are used throughout the university and single use paper handtowels are still being used in some of our buildings. Alternatives within the cleaning industry include the use of ionised water, and hand-dryers in bathrooms instead of paper towels. Choices around the consumables for toilet roll and hand towels can also affect the university's carbon footprint.

5.7 Students living on campus

King's students understand the importance waste has on the environment and have changing attitudes towards consumption. The university has already seen a large increase in the amount of waste recycled at its residences. Events such as zero waste workshops are well attended and are often organised by students themselves indicating their growing concern on how to reduce waste.

While King's does not have direct control over what students choose to buy, it's a key area where providing students with support and information may influence lifestyle choices and result in a reduction of waste and increase in recycling rates.

6. Targets

6.1 Waste recycling target

King's set a target in 2017-18 to recycle 70% of its non-hazardous waste by 2019-20. As of December 2020, King's recycled 67% of its non-hazardous waste and had an annual average recycling rate of 64%. Although the 2020 target was not met, significant progress was made, with some buildings achieving a recycling rate of over 70%. King's recognises that a further increase in the recycling target is achievable.

	2017-18	2018-19	2019-20
Target recycling rate %	60%	65%	70%
Annual recycling rate %	48%	55%	64%

Table 1 - Recycling rates and targets 2017-20

King's has a solid foundation to work from to continue to increase its recycling target. Suppliers are responding to a change in attitudes to waste packaging, leading to an increased focus on the waste hierarchy and the promotion of recyclable goods. This strategy sets out King's commitment to engaging with the circular economy, which will reduce the total amount of waste generated onsite.

King's sets the target to recycle 75% of its non-hazardous waste by 2023-24.

	2021-22	2022-23	2023-24
Annual Recycling Rate Target %	70%	73%	75%

Table 2 - New annual recycling targets 2021-24

The university recognises that it could aim for an 80% recycling target, but also recognises that this strategy is focused on reducing waste at source which will, in turn, reduce the total amount of recyclable waste particularly from packaging and in doing so, is likely to make reaching the recycling rate targets more difficult.

6.2 Waste reduction target

King's achieved a 6.4% reduction in total waste generated between the academic years of 2017-18 and 2018-19. The following year, the COVID-19 pandemic caused a 35% drop in total waste generated across the estate and in 2020-21 waste dropped again by 77% when compared to the 2017-2018 baseline. The significant reduction in waste has demonstrated that setting an overall reduction target is not practicable and until we have post pandemic data that reflects the 'new ways of working' we can only set a maximum waste generation target.

Academic year	Total waste (Tonnes)	Reduction % from 2017-18 baseline	Comments
2017-18	2,398	N/A	
2018-19	2,244	-6.4	King's had achieved waste reduction pre COVID-19 despite increase in student and staff numbers
2019-20	1,562	-34.8	UK COVID-19 lockdown starts March 2020
2020-21	792	-67	Full year of hybrid working with teaching online and staff working from home.

Table 3 - Total waste 2017-21

To mitigate the impact of students and staff returning to campus, King's sets a maximum waste generation target against the baseline of 2017-18 and based those targets on the assumptions listed below

6.2.1 Reduction target assumption

- King's will continue to accommodate staff wishing to work from home
- Blended learning for students will continue
- King's continues to take a cautious approach when re-opening the campuses, only allowing a reduced capacity in certain buildings with a gradual increase over the next three years.

	2021-22	2022-23	2023-24
Maximum waste generation target (tonnes)	1439	1559	1678
Percentage against 2017/18 baseline	-40%	-35%	-30%

Table 4 - Maximum waste generation targets 2021-24

These targets will be reviewed over the next three years as we come to better understand the impacts of the COVID-19 pandemic.

Glossary

Circular Economy – A reduction in raw materials into the economy with re-use and recycling as the main materials in circulation.

Laboratory Efficiency Assessment Framework (LEAF) – Framework that allows labs to quantify the energy and waste generated in a lab and sets out an action plan to reduce inefficiency.

Energy from Waste (EfW) – Where general waste is sent to be burnt and energy is captured.

Lean Method – A methodology to eliminate waste and optimize projects.

Material Recovery Facility (MRF) – Where recycling is sent to be sorted into different streams and sold as a commodity.

Waste Electrical and Electronic Equipment (WEEE) – Name given to waste electrical goods e.g. computers, light fittings, printers, light bulbs etc.

Waste Minimisation – Waste minimisation is the reduction or removal of materials flow from the economy and the environmental system/waste management system.

Resources and references

Kings Waste and Resources Management Policy 2021

King's Waste Dashboard- available to King's staff in PowerBi

OurWaste, Our Resources: A Strategy for England

Resources and waste strategy: at a glance

The Waste Electrical and Electronic Equipment (WEEE) at King's.

Appendix 1 – King's Waste and Resource Action Plan

The King's Waste and Resource Action Plan is a live document that will be updated as actions are revised and progressed, and new ones are identified. These actions form part of the King's Environmental Management System and will be added to the EMS Action Log in due course and managed by the Waste to Resource Officer once appointed. In the interim the sustainability manager for operations and the wider sustainability team will endeavour to deliver on each of the actions by their target dates.

Key area of Oppertunity	Strategic Aim	Action	Target Date
Procurement	i) Maximise waste reduction as a requirement in the specification process for King's ii) Where applicable implement waste minimisation / removal as part of the scope to reduce the amount of waste at source iii) Prioritize waste minimization as a criteria (sub-criteia) when evaluating the suitability of suppliers and service providers favoring those who have demonstrated innovation on waste reduction. iv) Continue to drive efficiencies to the King's catalogue(s) which promote waste minimization while at the same time deliver on our service strategy.	- Approach procurement frameworks to identify strategy for waste reduction e.g. LUPC - Work with consortia and other institutions to set up a working group with other HE institutions with the same suppliers to drive greater efficiencies in waste reduction schemes. - Continue to reduce the King's online catalogue to promote sustainable items - Review opportunities to introduce a King's delivery hub and/or consolidated deliveries to streamline deliveries and facilitate takeback schemes.	August 2022 August 2022 August 2022 August 2022
Laboratory and Research	i) Reduce the number of single-use consumables which otherwise may be reused, and	- Re-engage with Lab Waste Efficiency Groups for Technical Lab Managers and Lab users	December 2022 December 2022

		complimented by the expansion of existing wash/reuse capacity and facilities ii) Reduce the amount of packaging used by suppliers iii) Introduce waste streams appropriate for lab spaces iv) Utilise takeback schemes and expand where practicable v) Review of classification of waste streams and increase awareness of correct disposal method for all streams of waste vi) Review existing laboratory waste streams, with the goal of identifying where offensive waste may be introduced (potentially in place of clinical waste), as well as any remaining gaps in recycling, or reuse scheme facilities. vii) Standardisation of waste operational procedures, policies, signage, and training viii) Review existing training, signage, and policies which are relevant to waste practices in labs ix) that would be completed with expansion of wash facilities and capacity to service laboratories implementing reuse of consumables and materials	- Identify single-use items that can be replaced with re-usable ones - Setup online-learning course for the correct disposal of all streams of waste - Introduce new standardised signage for lab areas – making clear the changes to lab practices waste minimization - Connect with a working group with other labs at HE institutions to pressure suppliers to innovate and reduce packaging - Trial re-useable sharps bins in New Hunts House - Expand on the takeback schemes already offered by lab suppliers - Maximise the use of exchange platforms such as Warp-it to redistribute various resources such as lab equipment books	December 2022 December 2022 December 2022 December 2022 August 2022 August 2022 August 2022
IT equipment and IT packaging	i)	Identify areas for re-use for packaging and IT assets.	- Set up a Green ICT working group at King's identify barriers to re-using IT packaging, and other forms of forms of IT waste	May 2022

			- Carry out annual duty of care visits to I.T. supplier sites with a focus on examining packaging reuse - Join with other HE institutions with the same supplier to increase the scale of the solution and drive change within the sector.	August 2022
Food and Food packaging	i) ii) iii) iv)	Reduce the amount of food waste from catering outlets Reduce the amount of packaging from food deliveries Introduce a take-scheme for bottles and cans sold at catering outlets Eliminate single-use items from catering outlets and conferencing services where reasonably appropriate	- Work with King's Food to identify areas for food waste reduction - Set a food waste reduction target against the 2018-19 baseline - Engage with food suppliers on solutions to reduce food related packaging - Introduce reverse vending machines at King's - Introduce a re-useable container incentive for takeaway food - Identify and address barriers to re-usable cutlery and utensils.	March 2022 March 2022 June 2022 October 2022 September 2022 June 2022
Building and Maintenance of the Estate	) i)	Prioritise furniture re-use and repair as part of campus projects and office refits Reduce the amount of waste generated from campus maintenance	- Include waste reduction in the Strategy and Action Plan for Embedding Sustainability in Capital Projects - Identify opportunities for waste reduction with maintenance suppliers - Introduce waste reduction into the tendering and procurement process for construction - Remind Project Managers of the benefits of incorporating Warp-it into the project plans and of o increase the re-use of furniture across projects	June 2022 October 2022 December 2022 July 2022

Cleaning the Estate	i) Reduce the amount of cleaning related consumables used on campus ii) Review cleaning operations to increase efficiency iii) Conduct trials for greater efficiency and sustainability	- Where appropriate, replace hand towels with hand dryers in toilets - Implement smart cleaning efficiency to reduce cleaning consumables - Set up an internal King's study into the use of ionised water as an alternative to cleaning chemicals - Trial the use of long-lasting foam soap dispensers over refillable liquid soaps	August 2022 July 2022 July 2022 December 2022
Students living on campus	i) Reduce total volumes of waste created in residences and increase rates of recycling via engaging with students ii) Reduce the amount of waste disposed of at the end of term iii) Increase the amount of packaging reused / recycled at residences	- Participate in HE waste minimization campaigns - Remind students of the benefits of using sharing and swapping platforms (Warpit, eBay, Freecycle, Gumtree etc.) - Organize end of term giveaways and invite public to take items offsite for free - Introduce cardboard bailers at residences	September 2022 December 2022 August 2022 December 2022