



SUSQI PROJECT REPORT

“Greener Choices, Cleaner Future” – Sustainable Food and Water Transformation at HHFT.

Start date of Project: May 2025

Date of Report: September 2025

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Background:

Hampshire Hospitals NHS Foundation Trust (HHFT) serves a population of approximately 600,000 people across Hampshire and parts of west Berkshire. This includes residents in Andover, Basingstoke, Eastleigh, and Winchester, as well as surrounding towns and villages such as Tadley to the north, Alton to the east, Romsey and Chandlers Ford to the south, and Stockbridge, Bishops Waltham, and Alresford. The trust also employs around 8,600 staff and has approximately 15,000 public and staff members.

Each year, Basingstoke and North Hampshire Hospital provides inpatient care to approximately 47,000 patients, treats around 43,000 patients in its Emergency Department, manages over 175,000 outpatient appointments, and delivers more than 2,800 babies. The Catering Department plays a vital role in supporting patient recovery by providing nutritious meals to all inpatients. In addition, it serves staff members and visitors through the on-site restaurant, ensuring access to fresh and varied food options throughout the hospital. Hampshire hospitals catering team pride themselves on being one of only a handful of fresh cook catering site within the NHS, and are committed to providing nutritious home cooked meals that are designed with the patient and the environment in mind.

Nutrition and hydration play a crucial role in patient recovery within hospital settings. However, the production and provision of food can have significant environmental consequences, in fact it is calculated that globally food production is responsible for over a quarter of greenhouse gas emissions, contributing approximately 13.7 billion tonnes of CO₂ equivalent annually (1). Looking at the NHS specifically, It has been calculated that we serve 195million meals a year, accounting for 6% of the total NHS waste emissions. These emissions arise from multiple stages of the food supply chain, including production, processing, transportation, and waste management. In addition, of those 195 million meals around 20% will go in the bin. This not only contributes to negative environmental

impacts through processing and disposal but means that patients are not getting the nutrition they need from consuming the food.

To mitigate these environmental impacts, healthcare institutions can take action by reducing food waste and promoting sustainable dietary practices, such as decreasing meat consumption and increasing the availability of plant-based meal options. Bringing more variety to the menu through sustainable practices will also increase the nutritional value and inclusivity of the patient menu with the hope to reduce waste and increase patient nutrition and health.

While looking into environmental sustainability within the trust, it was brought to our attention that we were providing water to patients and staff via bottle feed water coolers. Bottled water coolers have been shown to have significant environmental impacts, in fact the negative impacts from using bottled water coolers can be up to 3,500 times greater than that of using tap water (7). This significant difference is largely due to the resources required for the manufacture, packaging, and transportation of bottled water. Producing the plastic canisters used in bottle-fed watercoolers, such as those currently used across the trust, demands substantial amounts of oil, water, and energy. These processes contribute to serious environmental issues, including oil spills, water pollution, ozone depletion, and eco-toxicity (7).

The plastic bottles themselves pose their own set of sustainability challenges. Each bottle has a limited reuse lifespan—typically up to 50 cycles—after which it's discarded. Unfortunately, many end up in landfills, where they can leach harmful chemicals into the soil and groundwater, threatening local ecosystems.

Beyond disposal, the logistics of transporting, delivering, and collecting these bottles require frequent van journeys. This contributes to greenhouse gas emissions, air pollution, and road congestion, further amplifying their environmental footprint and accelerating climate change.

Beyond environmental concerns, there are also potential health risks associated with plastic water bottles. Plastics, particularly PET bottles, have been shown to leach harmful chemicals such as BPA and DEHA into the water they contain. Both substances have been linked to adverse health effects in humans (8).

Adopting more sustainable food practices is crucial for mitigating climate change, protecting natural resources, and ensuring a healthy planet for future generations. Providing more sustainable offerings not only reduces the environmental impact but can also help improve patient nutrition, as plant-based meals tend to be higher in fiber and lower in cholesterol than meat, especially red meat. This also provides a more inclusive menu catering to various individual preferences/choices/beliefs.

By phasing out the use of bottled water coolers across the trust and transitioning to more sustainable alternatives such as mains-fed water dispensers we could reduce the associated environmental and health impacts, thereby minimising plastic waste, greenhouse gas emissions, and associated potential health risks.

This initiative was delivered through a multi-disciplinary team comprising:

- Catering Department – senior managers and front-line staff providing operational leadership and practical implementation.
- Estates & Facilities – ensuring infrastructure and logistical support.



- Sustainability Team – guiding environmentally responsible practices and monitoring impact.
- Greener by Default – offering expertise in sustainable procurement and operational change.
- HHFT Communications – supporting staff and public engagement through clear messaging.
- Staff Side Representatives – ensuring staff input and buy-in.
- Procurement and Suppliers – facilitating the sourcing of sustainable products and solutions.

The project was primarily led by the Catering Department, whose daily role in delivering nutrition to patients, staff, and visitors placed them at the center of this challenge. Their leadership, combined with the expertise and support of estates, sustainability specialists, procurement, and communications, ensured a coordinated, practical, and impactful approach.

Specific Aims:

- 1) To improve the nutritional quality and choice within the patient menu at BNHH while reducing the carbon footprint and overall environmental impact of food production.
- 2) To cut carbon emissions, plastic use, and waste from bottled water coolers across HHFT, improve water quality at all sites, and reduce the Trust's annual water supply cost of £250,000.

Methods:

1) Meals project:

The patient menu was reviewed for the Basingstoke site based on the nutritional requirements for patients and against a checklist of other ideal requirements including presentation of the meal, mix of sides and additional items, inclusivity of dietary and personal preferences. This assessment also included the balance of meat and other protein items within each menu option, identifying as part of this assessment the menu options which had the highest contributory factors to environmental impact - e.g. red meat and dairy content.

The concept for the change program was agreed which was to move over to a whole-meal based approach while also reducing or substituting the meat content of the meals for plant-based options. A range of methodologies were used based on ideas and concepts derived from a partnership with Greener By Default (GBD). GBD is an initiative set up to promote plant-based foods as the default option on a dining menu, encouraging healthier and more sustainable eating habits while preserving consumer choice. Some of the initiatives utilized included the placement of plant-based options first on the patient menus and adopting tasty titles - ensuring that the description of the plant-based meals sound appealing, focusing on flavor and ingredients rather than 'plant based'.

We also implemented a meat reduction strategy to minimize the inclusion of red meat and dairy where possible, this included the development of hybrid meals by our chefs where 50% of the protein was from meat and 50% from a plant-based source i.e. eat curious pea protein, these meals enabled us to provide familiar meals to patients while reducing the environmental and cost impacts associated with red meat/red meat products.

A new patient menu was created by the chefs using these strategies which was reviewed by nutrition and dietetics. This was trialed on 5 wards over a period of four weeks and patient and staff feedback were used to identify areas for improvement. Menu items were reviewed periodically and changes made according to feedback results. Once this process had been completed the new menu was rolled

out across the whole of the Basingstoke site. As part of the methodology the menu will be continually reviewed at regular intervals going forward to maintain quality and continue to provide good nutritional content and improve inclusivity and sustainability.

Water project:

An initial scoping exercise was carried out including an audit of existing water cooler units to assess the number and type placed across the sites. There was also a review of the water quality provided within these units.

A project group was set up to review the situation and identified that it would be better for both social, economic and environmental reasons for the bottle fed watercoolers to be removed and a more sustainable and better quality system to be put in place which incorporated mains fed water provided by either a drinking water tap or a mains fed watercooler.

A standard operating procedure was produced for the provision of drinking water across the Trust. Engagement and communication were carried out with staff groups across the Trust via a variety of different mediums including briefings, emails and internal intranet and media communications to advise of the program and the removal of the bottle-fed water coolers. Areas that would require a mains fed cooler were identified so this could be procured and disruption minimised. Engagement was done with the watercooler suppliers and procurement.

The estates team supported the project by carrying out water quality assessments for drinking water tap locations across the Trust to ensure water quality met standards and was access able to staff.

A staged program for watercooler removal was designed and implemented starting with the Basingstoke site and rolling out across Winchester and Andover subsequently. Each site was surveyed to ensure accessible points were selected for each area. Along with the mains fed cooler a mains fed flavor tap was installed in the restaurants at Winchester and Basingstoke. These provide a selection of free still, sparkling and flavored water options to patients, staff and visitors. Hampshire Hospitals are the only Trust to provide these watercooler systems for free to all stakeholders.

Measurement:

Patient outcomes:

Meals project:

The quality of the new menu items was measured via engagement with staff and patients on the trial wards to ensure their appeal and taste were satisfactory. The range of menu options was analysed to ensure an appropriate balance of options suitable for all patients inclusive of their dietary, medical, personal or religious preferences, ensuring personalised and inclusive care. This was carried out through a series of questionnaires and personal interviews carried out by the chefs and management team, with support from the housekeepers and ward staff.

The nutritional value of the new menu items was reviewed by the nutrition & dietetic team to ensure they provided sufficient nutritional content. While impacts on nutrition cannot be measured in the project timeframe, we have highlighted potential impacts within the healthcare setting in the results section.

Water Project:

Bottle-fed watercoolers have been shown to be a source of bacterial contamination and can provide a lower quality of water than tap drinking water and mains fed options (4,5). In addition, water from bottle-fed water containers often contain Bisphenol A (BPA) — a chemical linked to health risks and environmental toxicity. Even BPA free alternatives can release microplastics over time, especially with repeated cleaning and exposure to heat. This was not directly measured during this project but was researched and taken into consideration.

The process for manufacturing each bottle requires petroleum-based raw materials, significant energy and water contributing a significant sustainability challenge when scaled across the thousands of units produced by manufacturers. Disposal of the plastic bottles is also a challenge, many are typically discarded, with many not being recycled due to contamination or lack of proper recycling streams resulting in bottles ending up in landfills where they take hundreds of years to degrade and leech toxins into the soil and ground water contributing to soil degradation, groundwater contamination, habitat loss, ecosystem disruptions/harm and risks to human health (4,5).

The placement and availability of water points was reviewed to ensure units were sufficiently accessible for all patients, staff and visitors across each site. No measures were required for patient clinical impacts.

Environmental sustainability:

Meals Project:

GHG emissions associated with the meat from the meals project were estimated using calculations from Mike Berners-Lee How Bad are Bananas/Small World Consulting.

- UK beef: 25 kgCO₂e/kg
- UK Lamb: 21 kgCO₂e/kg
- UK chicken: 3.8 kgCO₂e/kg
- UK bacon: 10.0 kgCO₂e/kg

Water project:

GHG emissions associated with the water cooler bottles were estimated using a bottom-up, process-based approach. This included emissions from primary material production, end-of-life disposal, and transport—specifically, delivery of filled bottles to the Trust and return transport of empty bottles to the supplier in Wolverhampton. It was assumed that each bottle would be reused 50 times before being recycled. Emission factors for materials and transport were sourced from the 2025 UK Government Conversion Factors Database. For the sweetener/syrup bottles, a bottom-up process-based approach was also used as above. For the syrup itself, an emissions factor for high-fructose corn syrup (1.09 kgCO₂e/kg) taken from CarbonCloud was used.

Economic sustainability:

Meals Project

The financial benefit from the meat reduction and increase in plant-based menu elements were calculated using cost data obtained from suppliers pre and post implementation of change. The price per kg of each meat type was calculated and used to maintain a directly comparable set of data.

Water Project

To calculate and compare the total annual cost of operating a bottle-fed water cooler system versus a mains-fed water cooler system we measured several comparable components, including rental, consumables, and maintenance over a 12 month period.

Social sustainability:

Feedback from patients was gathered via a satisfaction survey completed by patients both pre and post implementation of the new menu. Feedback from staff has been obtained informally through meetings and conversations.

Results:

Patient outcomes:

Meals project:

The results of the project feedback showed that the revised menu options were more palatable for patients who ate more and had positive feedback about the taste and quality of these meals. In fact, we saw a dramatic reduction in the amount of plate waste from patient meals during the trial period of 64.5% (Figure.1.).

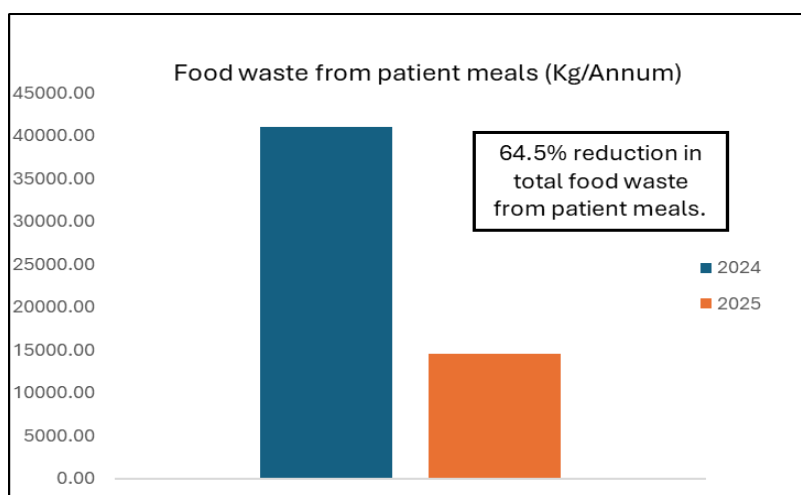


Figure 1. Displays the total amount of food waste in Kg produced from patient meals serve at BNHH pre and post implementation of the trial parameters.

The increased inclusivity of the menu also received positive feedback from patients, e.g. those who were gluten free or had other specific dietary requirements were very happy to have an increased choice. It has long been noted that a well-balanced diet contributes to physical and mental wellbeing. This is even more important in the healthcare setting where patients are vulnerable and need balanced nutrition to aid biological systems promoting recovery and repair. While not possible to measure directly in this project, quality nutrition in the health care setting has been linked to improved patient outcomes, including reduced recovery times and improved wellbeing. (9, 10).

Environmental sustainability:

Food Project

Following the introduction of the new patient menu, there was a significant reduction in the proportion of meat-based options and a corresponding increase in plant-based choices (Figure.2).

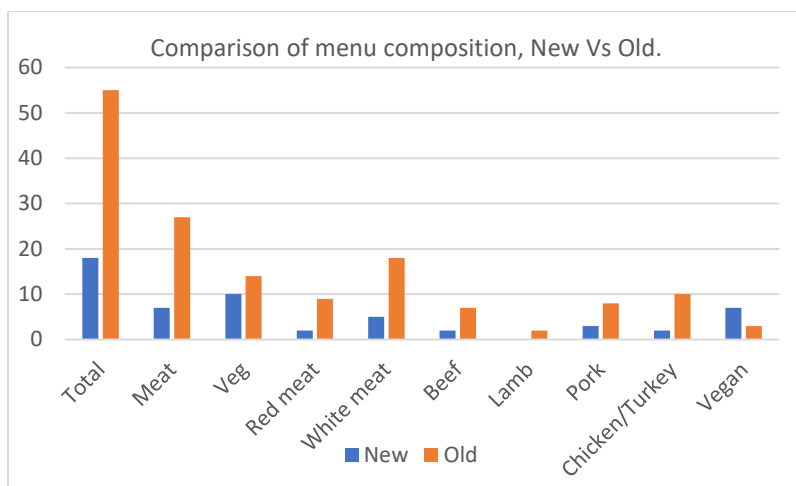


Figure.2. Shows the comparison of meal components from the old Vs the new menus at BNHH over the analysis period.

- Overall meat dishes were reduced from the transition, representing a 44% reduction in total meat dishes (27 down to 6).
- Red meat options decreased from 16% (9 of 55) to 8% (1 of 12), with lamb being completely removed from the menu.
- White meat options decreased from 33% (18 of 55) to 25% (3 of 12).
- Beef options dropped from 13% to 8%, and chicken from 18% to 8%.

At the same time:

- Vegetarian options increased from 25% (14 of 55) to 50% (6 of 12).
- Vegan options rose fivefold, from 5% (3 of 55) to 25% (3 of 12).
- This shift demonstrates a targeted reduction in high-impact red meat and dairy dishes, alongside a significant expansion of plant-based choices.

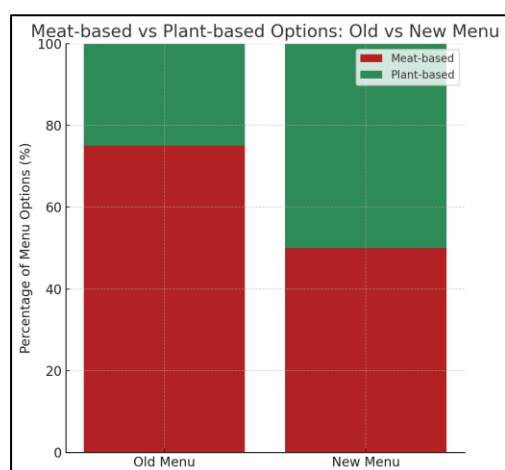


Figure.3. Displays the proportions of the menu consisting of meat and plant-based options over the analysis period.

Figure.3 shows a clear and substantial reduction in meat-based dishes, falling from 75% on the old menu to 50% on the new menu. This reduction is mirrored by an increase in plant-based options, which rose from 25% to 50%, aligning with the project's sustainability and nutrition goals.

The total meat weight was reduced from 583.5 kg to 346 kg over a two-week cycle.

- Beef usage decreased from 133.5 kg to 40 kg, avoiding approximately 2,337.5 kgCO₂e.
- Lamb was completely removed from the menu, eliminating 840 kgCO₂e.
- Pork usage fell from 190 kg to 103 kg, reducing emissions by 870 kgCO₂e.
- Chicken/Turkey usage dropped from 220 kg to 30 kg, saving 722 kgCO₂e.

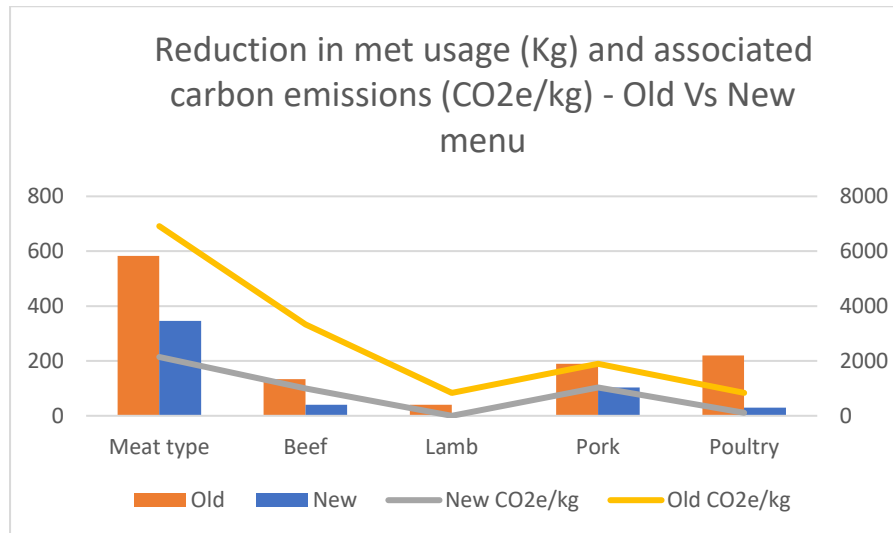


Figure.4. Displays the Kg reduction figures for each meat type used in the menus pre and post implementation of the new menu along with the associated estimated KgCO₂e.

The introduction of e-curious, a plant-based meat alternative derived from pea protein, played a key role in reducing the environmental impact of the menu. Used both as a full substitute and in 50/50 hybrid blend with conventional meat, e-curious accounted for 30 kg of the total menu weight over the two-week rotation, resulting in just 105 kgCO₂e in emissions. This strategic shift toward more sustainable ingredients contributed to a dramatic reduction in total emissions—from 6913.5 kgCO₂e to 2249 kgCO₂e. The overall decrease of **4664.5 kgCO₂e** represents a 67% reduction (graph 4). These results highlight the powerful impact of plant-based innovation and thoughtful menu design in advancing climate-conscious food service operations. Overall, these changes resulted in a reduction of **4664.5 kgCO₂e** every two weeks. Projected across a year, this is a saving of **121,277 kgCO₂e**, equivalent to driving 356,802 miles in an average car.

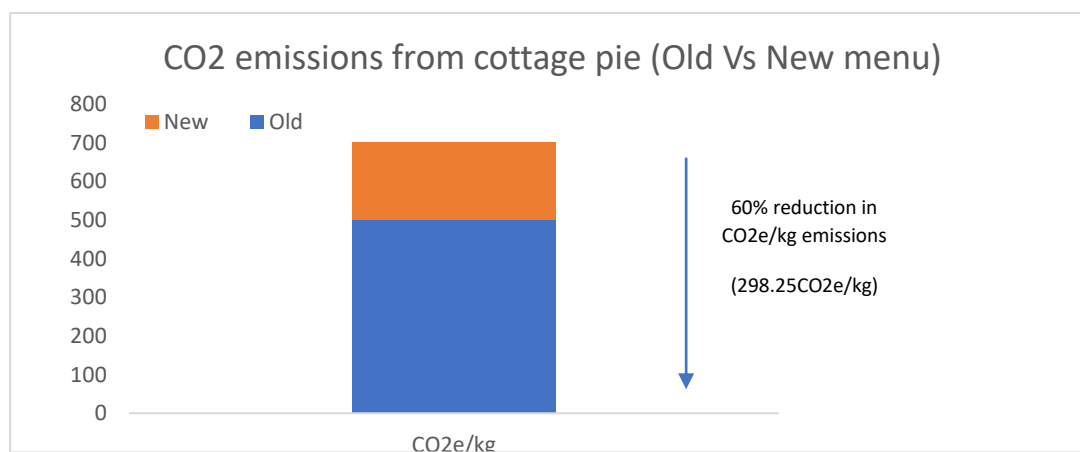


Figure.5. Displays the estimated KgCO₂e produced from cottage made using the recipe pre and post implementation of the changes.

Emission savings were not solely achieved through the complete replacement of animal protein, but also through the strategic use of hybrid dishes that blend conventional meat with plant-based alternatives. A notable example is the cottage pie featured on the new menu, which utilized a 50/50 mix of beef and e-curious. This approach allowed for a meaningful reduction in carbon emissions while maintaining the familiar taste and texture of traditional dishes. By halving the beef content and supplementing it with pea protein-based e-curious, the dish achieved a 60% reduction in emissions compared to its fully beef-based counterpart. Such hybrid innovations demonstrate how incremental changes in recipe composition can contribute to broader sustainability goals, making low-carbon dining more accessible and appealing to a wider audience.

Water Project:

Results from the water project showed a significant reduction of 99.9% in kgCO₂e from moving to mains fed water coolers at the Basingstoke site (Table.1.). This represents a decrease of 7,626 kgCO₂e, equating to 39,420kWh, enough power to run the electricity of 11 average households in the UK (Energy (kWh)=0.19338 kgCO₂e/kWh7626 kgCO₂e≈39,420 kWh – www.GOV.UK).

Table .1.

Water cooler bottles		Syrup sweetener	
GHG emissions per bottle (kgCO ₂ e)	0.68	GHG emission per bottle (kgCO ₂ e)	0.6560
Number of bottles purchased per month	950	Number of bottles per month	16
GHG emissions per year (kgCO ₂ e)	7,750	GHG emissions per year (kgCO ₂ e)	126

Table 1. Displays the KgCO₂e calculations from consumables using both the bottle and mains fed water cooler systems.

Using the flavor tap at Basingstoke has also saved an estimated 273,264 plastic water bottles being bought/needed per annum, and a huge 22.4 tons of plastic packaging needing disposing of.

Economic sustainability:

Food Project:

Based on the data collected we calculated an estimated annual saving of £110,358.82 through the changes made to the menu. This represents a 69% decrease in spend on the patient menu (Figure.6.).

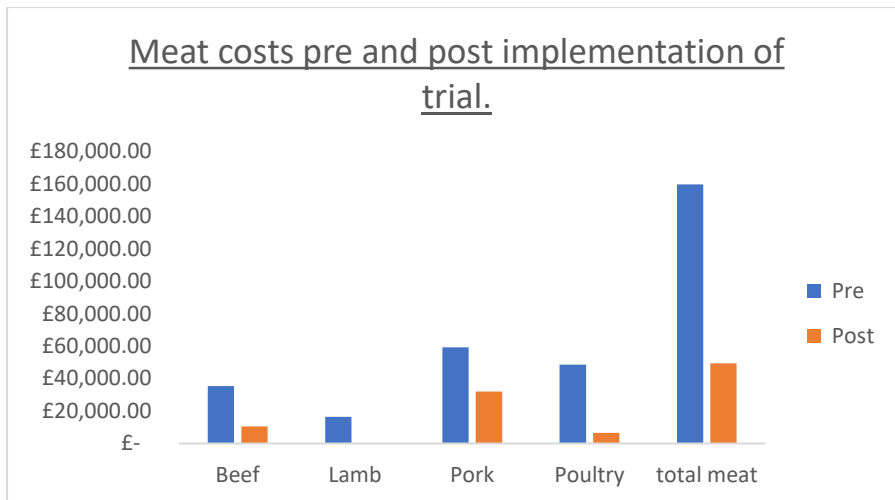


Figure.6. Shows the cost of meat used in the menu recipes pre and post implementation of the changes calculated over a 12 month period.

Water Project:

We calculated the costing of the watercoolers as an annual figure based on the monthly rental and consumables invoices for each supplier (Initial install costs were not included). The overall cost for the bottle-fed water coolers over 1 year was £73,147.37. This was 97% more expensive than the alternative mains feed coolers now installed across Basingstoke site (£2145.12), giving a saving of £72,931.37 over the 12 months.

Figure.7.

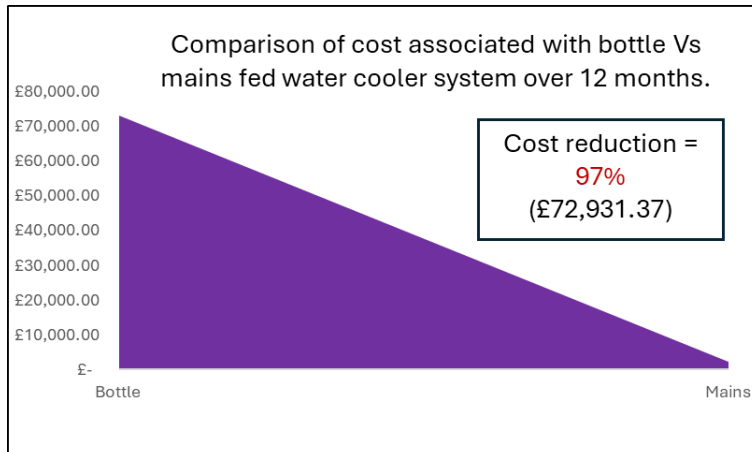


Figure.7. Showing the total cost of running a bottled water cooler system for 12 months Vs a mains fed water system for 12 months at BNHH.

Social sustainability:

Food Project:

Staff: Feedback highlighted a noticeable shift in staff attitudes towards food, with many expressing pride in the meals being served. This positive culture around food provision has a direct impact on patients, contributing to a more welcoming and supportive environment.

Patients: Patient feedback has been overwhelmingly positive, reinforcing the effectiveness of the revised menu. In a recent survey, 53% of patients rated their food offerings as excellent—an

impressive 37% improvement compared to results collected prior to the implementation of the new menu. When asked what the most important factor was regarding meal satisfaction 80% of patients identified taste, and 61.4% rated the taste of their meals as excellent. These results indicate that the recent changes have positively impacted patient experience, particularly in the areas they value most. When reviewing individual comments from patients regarding the recent menu changes, two key themes consistently emerged: choice and quality. Patients highlighted the increased variety of options as a positive development, noting that the expanded selection better accommodated personal preferences and dietary needs. Additionally, many comments praised the quality of the meals, with specific mentions of improved taste, freshness, and overall satisfaction with the food provided.

Image 1. Survey results from question 6 word bubble – What do you like most about the menu.



The few suggestions for improvement received have been carefully considered during subsequent review meetings, resulting in targeted adjustments to better meet patient expectations. This responsive approach ensures that the menu continues to evolve in line with patient preferences while maintaining the principles of sustainability, inclusivity, and nutritional value.

Continual review of the menu ensures that offerings remain current, seasonal, and cost-effective. Since the rollout of the new sustainable menu framework, regular evaluations have been conducted to monitor patient meal uptake and identify opportunities for improvement. As a result, underutilized meals have been removed and replaced with alternatives that better align with patient preferences. These substitutions are guided by the newly implemented systems focused on sustainability and inclusivity, ensuring that every menu change supports both environmental goals and diverse dietary needs. This dynamic approach not only enhances operational efficiency but also reinforces the commitment to delivering nutritious, appealing, and responsible food choices.

Water Project

While there were initial challenges around the distribution of plumbed-in water coolers, these were gradually overcome. General feedback now reflects a more positive outlook on hydration provision across the site.

We installed 10 water units initially, and following feedback identifying 'arid zones', areas with limited access to water, we added an additional 13 units to ensure comprehensive coverage. This has significantly improved hydration quality for patients, staff, and visitors.

The provision of still, sparkling, and flavoured water has helped foster a culture of hydration, encouraging healthier drinking habits. Although staff engagement was initially limited and required targeted efforts, the introduction of flavoured tap water coolers has led to a reduction in single-use plastic bottles, supporting both environmental and wellbeing goals. More drinking options should support both patient, visitor and staff wellbeing and experience.

Discussion:

This project demonstrated how targeted changes to catering and hydration services can deliver meaningful environmental, nutritional, and cultural benefits within a healthcare setting. By redesigning the patient menu to reduce red and white meat options and increase plant-based alternatives, the team achieved a 67% reduction in food-related carbon emissions. Similarly, transitioning from bottled water coolers to mains-fed systems led to an estimated annual saving of 7,624 kgCO₂e, alongside improved water quality and reduced plastic waste.

Several challenges emerged during implementation. Logistical barriers included the need for infrastructure upgrades to support mains-fed water systems and ensuring sufficient coverage across all hospital zones. Unexpected barriers included identifying 'arid zones' with poor water access, which were addressed by installing additional units.

When things didn't go as planned, such as initial resistance to water cooler changes, targeted communication, openness to feedback and the introduction of flavoured water options was supportive. This adaptive mindset was crucial to maintaining momentum and ensuring lasting improvements. Risks such as patient dissatisfaction or reduced nutritional intake were mitigated through iterative menu trials and feedback loops involving dietetics and ward staff.

This initiative is highly transferable to other hospitals and healthcare settings with large-scale catering operations. The approach could be adapted for care homes, rehabilitation centres, or even staff canteens.

Conclusions:

The project has proven significant environmental savings can be achieved at the same time as improving patient experience. Key success factors included strong cross-departmental collaboration, leadership from the Catering Department, and the use of evidence-based strategies from Greener by Default. The trial-and-feedback approach ensured that changes were responsive to patient needs and staff insights.

To embed change, the team has committed to ongoing menu reviews, seasonal updates, and monitoring of patient uptake. The water provision strategy is now supported by a standard operating procedure and infrastructure upgrades. Learning could be shared with other organisations to encourage spread and scale of these improvements.

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