CARBON STRATEGY REPORT 2023-2028

Royal Albert Hall

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OUR CARBON MANAGEMENT STRATEGY

We, the Royal Albert Hall, are aware of the causes and consequences of climate change. As a significant player in the UK's live entertainment industry, we understand our role in reducing our environmental impact and our ability to influence behaviour change in the wider population. Through innovative technological solutions, staff engagement and institutional partnerships and collaborations, we are committed to reducing our carbon footprint in line with a net zero target.

~ Royal Albert Hall

ABOUT OUR EMISSIONS

We, at the Royal Albert Hall, acknowledge that there are environmental impacts associated with the operation of our venue. From the electricity used for our sound and lighting to the water used to flush our toilets during the interval, these activities contribute to our carbon footprint. As a world-renowned live entertainment venue, we are investing in the future of the Arts with sustainability at its heart. We promote the life-changing power of music, showcase the talent of our artists, and provide our audiences with unforgettable experiences. This is achieved through employing a large team of music enthusiasts, engineers and creatives who are determined to make every performance special.

As a live performance venue, we face carbon challenges specific to this sector and its heritage. In order to deliver our breathtaking shows, we require a large amount of electricity to operate our lighting and sound equipment. In addition to this, the age of our building makes it difficult to maintain comfortable temperatures for our audiences. This can create a significant demand for heating and cooling throughout the Hall, subsequently increasing our use of gas. Our status as a Grade I listed building also limits our options in terms of upgrading the existing building fabric to be more energy efficient.

Outside our direct operations we also have a diffuse and complicated supply chain, from the food and drinks available in our restaurants and bars, to the materials used during refurbishments. Furthermore, as an international music venue, our artists, crew, and audiences can travel considerable distances to attend our events. While the sources of these emissions are outside of our direct control, we recognise our responsibility as a key stakeholder to measure and reduce our emissions wherever possible. We are determined to use our influence to motivate and support our suppliers and customers to reduce their environmental impact.

At the Royal Albert Hall, we strive to understand our environmental impact and reduce our carbon emissions, while continuing to provide the best experience for our artists and audiences. Our journey to net zero will not be easy, but we are working hard to achieve this goal. In order to meet our targets, we have used our historical data from 2016 to 2022 to understand the scale and impact of our operations. This report will discuss a range of projects that we will consider implementing to help us to reduce our emissions, identifying prospective timescales, costs, and carbon savings to inform our future carbon reduction strategy.

~ Royal Albert Hall (2023)

INTRODUCTION

We acknowledge that being a truly sustainable organisation requires a triple bottom line approach to development, measuring success not only in terms of economic performance, but also the impacts of our operations on the environment and society. As a world-famous cultural institution, we recognise our responsibility, and the opportunity, to be a leader in promoting positive social and environmental change within the creative arts industry.

This report discusses a number of these carbon reduction strategies, as well as their associated timescales to align with our 2040 net zero goal. As an institution, we embrace a holistic approach to sustainability and are committed to integrating positive social change into our projects where possible, without compromising the quality of our performances. The following initiatives and their potential carbon savings are highlighted below. Please note that 'non-quantifiable' opportunities such as collating spend data and logging staff, production team and audience travel emissions are not included within this table. The estimated implementation cost per tonne of carbon saving is also shown below:

Table 1: Breakdown of Carbon Saving Opportunities.

CARBON SAVING OPPORTUNITY	CARBON SAVING (tCO_2e)	£/tCO_2e
Electric Immersion Heaters	196.42	305.47
LED Lighting Replacement	87.57	29,690.53
Solar PV Installation	19.84	70,060.48
Lift Regeneration	0.33	1,633,333.33
BMS Optimisation	124.14	241.66
Energy Policy	19.33	103.47
Rooftop Garden	0.02	85,000,000

We expect these projects to contribute to a carbon reduction of 447.65 tCO_2e from 2023-2028. The estimated cost for their implementation is approximately £4.95 million, with enabling and groundwork a cost of around £4.8 million.

OUR EMISSION SCOPES

When we discuss greenhouse gases and their impacts on climate change, it is common to use the phrase 'carbon emissions'. However, carbon dioxide is just one of the seven major 'Greenhouse Gases' (GHGs) identified in the Kyoto Protocol's international treaty for controlling the release of harmful gases. The other six greenhouse gases include:

- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (SF_6)
- Nitrogen trifluoride (NF_3)

To account for the warming potential of all GHGs produced in our operations, we have measured our emissions in carbon dioxide equivalent (CO_2e). This measure allows us to express the warming potential of all our GHG emissions as the amount of CO_2 with the equivalent warming impact.

Once our equivalent CO_2e footprint has been calculated, we can divide our emissions into three distinct Scopes. The Greenhouse Gas Protocol defines these categories as follows:

Scope 1 – direct emissions from owned or controlled sources such as gas for heating and hot water or company owned vehicles and machinery.

Scope 2 – indirect emissions from the generation of purchased electricity, heat, steam, or cooling systems.

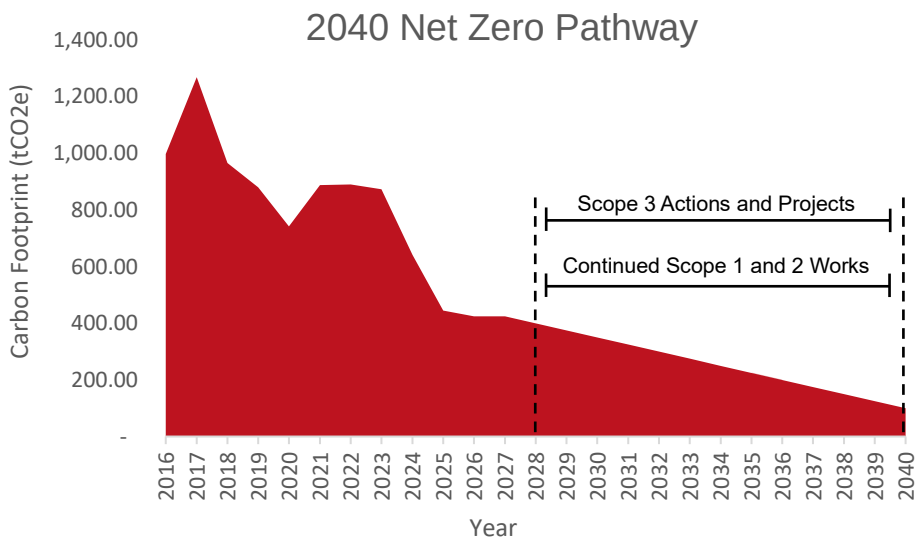
Scope 3 – all other indirect emissions that exist within an organisation's supply chain, including waste disposal, business travel and water consumption.

As Scope 1 and 2 often relate directly to resource consumption on site, they can be easier to influence and reduce. Scope 3, on the other hand, may be more difficult to manage as they are an indirect result of business operations and outside of a company's direct control.

TIMESCALES

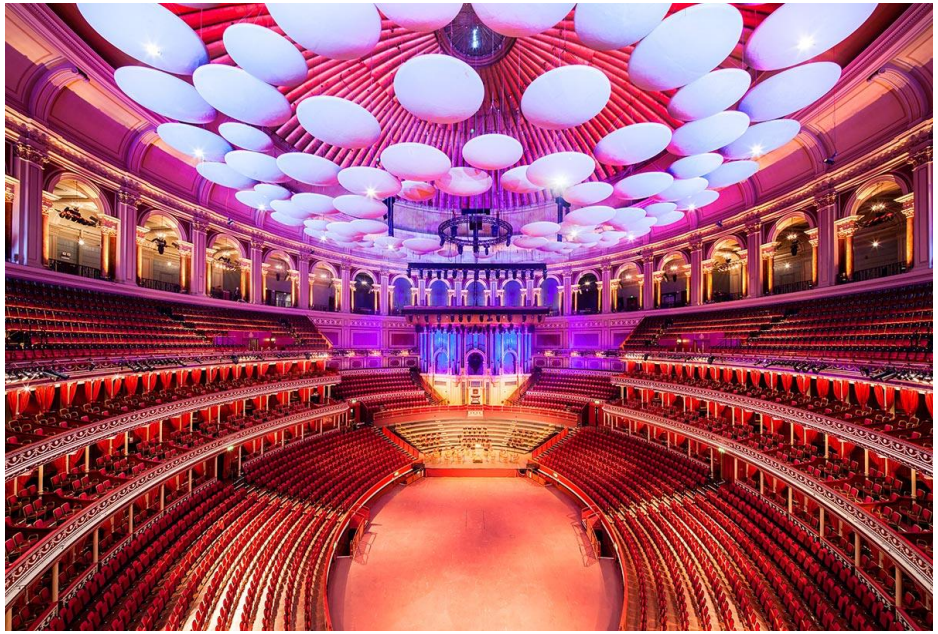
We have set the ambitious target of achieving net zero GHG emissions by 2040. To reach this goal, we have investigated a range of carbon reduction projects that can be implemented in the next five years. Whilst this report focuses on seven of our most important emission reduction strategies, we have also considered several 'unquantifiable' projects, such as collating and monitoring our spend data and logging staff, production team and audience travel emissions. Please note that these initiatives do not appear in the net zero pathway chart below.

Our net zero goal is based on reducing our emissions to a minimum of 99.68 tCO_2e by 2040. Achieving this figure represents a 90% reduction in our carbon footprint compared to our 2016 baseline figure of 996.79 tCO_2e. This aligns with the Science Based Targets' Corporate Net Zero Standard and would require an investment in permanent carbon removal and storage projects to offset the remaining 10% of emissions. We acknowledge that this is an ambitious objective that we are fully committed to achieving. However, as reducing our emissions to absolute net zero may not be feasible, we will be using a combination of techniques to meet our goal, including consumption reduction, greening of our supply chain, and promoting sustainability throughout the venue.

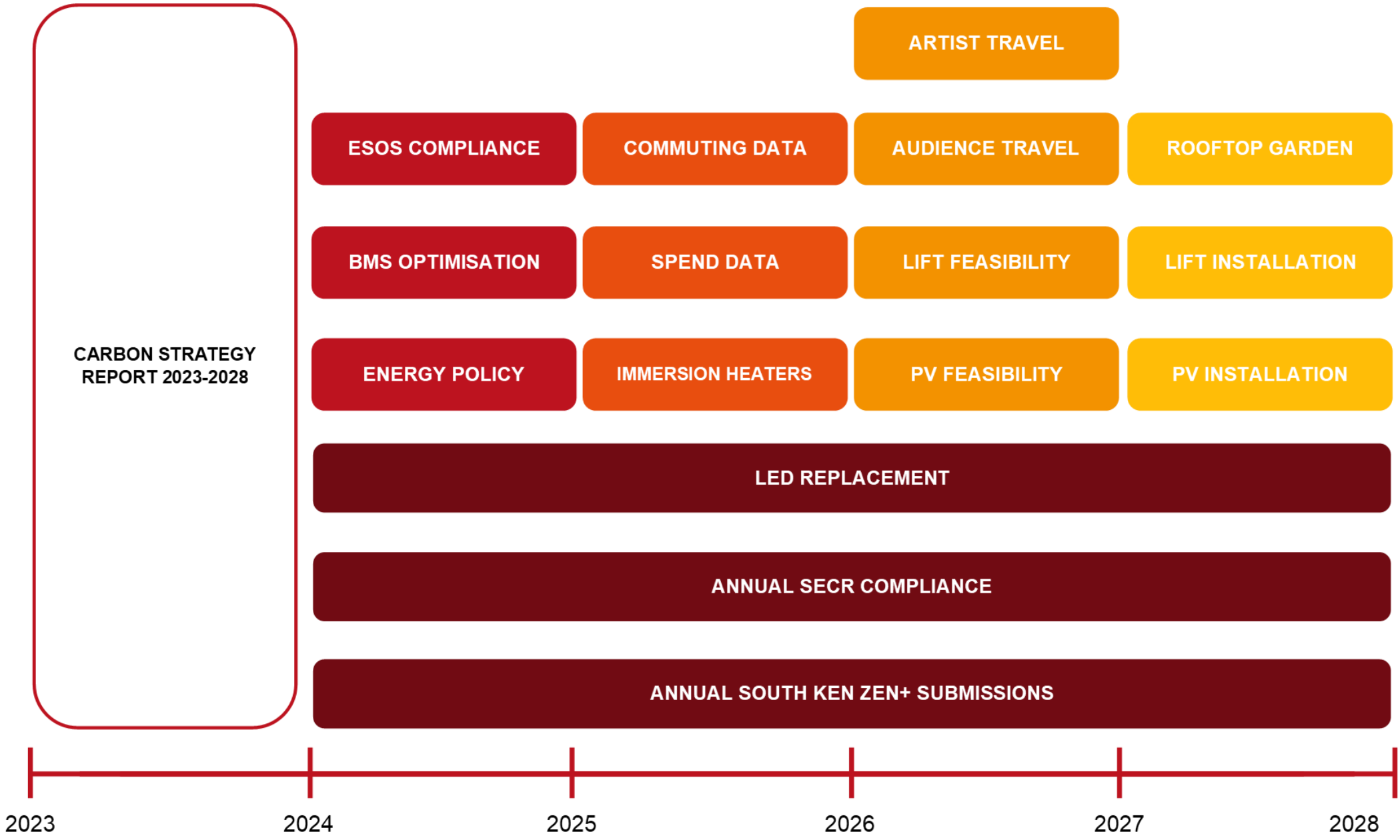


Our net zero pathway is currently a 'linear' representation of our emission reductions and was calculated using our existing data for 2022. The projects that we have selected to implement between 2023 and 2028 have a combined carbon reduction of approximately 447.65 tCO_2e.

In reality, our journey to net zero is more likely to follow a bell shaped curve, where we focus initially on achieving our quick wins and tackling larger projects as we approach our target year. While we expect that our residual emissions (10%) will be approximately 99.68 tCO_2e, it is important to note that this figure may vary depending on our ability to reduce our emissions as much as possible before 2040. Our actual reductions also depend on whether any further energy efficiency strategies are implemented following our latest ESOS report. In addition, we acknowledge that identifying and calculating our net zero target is an iterative process that will require regular reviews throughout our journey. Incorporating a broader range of our emission sources will encourage us to reassess our net zero target in the future.



PROJECT TIMELINE 2023-2028



UNDERSTANDING OUR TIMELINE

At the Royal Albert Hall, we are keen to continue the good work that we have already completed, including replacing our auditorium's incandescent lights with LEDs, investing in an upgraded ventilation system, and maintaining our membership in the South Ken ZEN+ group. These initiatives are discussed in more detail in our Carbon Management Report, available on our website. The timeline above covers a number of major milestones in our net zero journey, starting with our quick and easy wins before moving onto larger and, potentially, more difficult projects. Our Scope 3 carbon reduction initiatives, such as collating and monitoring our spend and travel data, are very much ongoing and will require updating each year. We acknowledge that data collection is an iterative process and that, in order to influence our associated emissions, we will need to make changes to align with our net zero goal. This may include providing discounts for sustainable travel methods for our staff, the introduction of green riders for our cast and crew and the addition of a carbon charge for all of our tickets. These Scope 3 projects, in addition to other unquantifiable initiatives, are discussed in greater detail throughout this report.

Our Carbon Strategy Report currently highlights a number of projects that we aim to complete by 2028. However, we have identified additional initiatives in our Estate Plan that have the potential to lower our carbon emission even further. Examples include insulating the building to with double glazed window units, installing new external doors, and insulating the roof velarium. Following the data collected from these strategies, we will then plan further projects to reduce our Scope 3 emissions.

OUR MISSION STATEMENT

As a world-famous cultural institution we recognise our responsibility, and the opportunity, to contribute to promoting positive social and environmental change within the creative arts industry. To action this, our mission in 2024 is to firstly recruit a Carbon and Environment Manager, whose key responsibility will be to drive forward the Hall's ambitious aims regarding sustainability and carbon reduction. We will also focus on producing a five year and beyond Carbon Strategy on our pathway to net zero which will also inform costs and projects in line with the Hall's Estate Plan. We plan to conduct carbon awareness training with the Hall's Sustainability Committee Members, with a view to roll out to further members of staff in the future.

We would like to start certain major projects that include the building's metering and BMS optimisation across the Hall, this will be an ongoing and iterative process to ensure that we are operating as efficiently as possible. Due to the seasonal nature of gas consumption, we have allocated 12 months from 2024 to 2025 for this project. This will enable us to analyse a full year's worth of data and identify areas for further improvement in the future. Based on calculations, we would expect our BMS Optimisation initiative to reduce our combined Scope 1 (gas) and Scope 2 (electricity) consumption by approximately 632,120 kWh/year.

Improving energy efficiency is a simple and effective way to reduce electricity consumption, as well as the associated costs. Considering this, the Hall will continue with the replacement of incandescent lamps with LED alternatives. This is an ongoing project at the Hall, and we aim to have completed the next stage of the installation by 2024 focusing on back of house areas and the Elgar Room.

We are proud members of the South Ken ZEN+ Programme, an innovative response to the climate crisis in the world-renowned South Kensington neighbourhood, and this will continue in 2024. We are one of 22 members of the Exhibition Road Cultural Group which brings together the leading cultural and educational organisations in the area. Using our collective experience, we help to accelerate the South Kensington Borough's progress towards net zero, creating a more sustainable and future-proofed neighbourhood.

SCOPE 1
GAS CONSUMPTION

This section discusses the energy saving opportunities associated with our electricity consumption, focusing on the installation of electric immersion heater components.

ELECTRIC IMMERSION HEATERS

Here at the Royal Albert Hall, we use four gas calorifiers to deliver our heating and hot water needs around the building. As our water tanks are heated by an external heat source, in our case, a gas boiler, there is a large carbon implication associated with their use. These water storage tanks are responsible for our Scope 1 carbon emissions and represented 861.51 tCO_2e in 2022. In order to reduce our reliance on gas to heat water, we are considering the installation of four electric immersion heater components onto our existing system. However, in recent years, the UK's Department for Energy Security and Net Zero conversion factor for gas has remained lower than electricity. This means that switching to electric immersion heaters on a non-renewable tariff would increase the carbon footprint associated with our heating and hot water requirements.

We are committed to operating as sustainably as possible, something that we can demonstrate through our renewable electricity contract. This effectively enables us to reduce the emissions associated with our hot water consumption to 0 tCO_2e. There are also significant benefits associated with installing electric immersion heater elements, including:

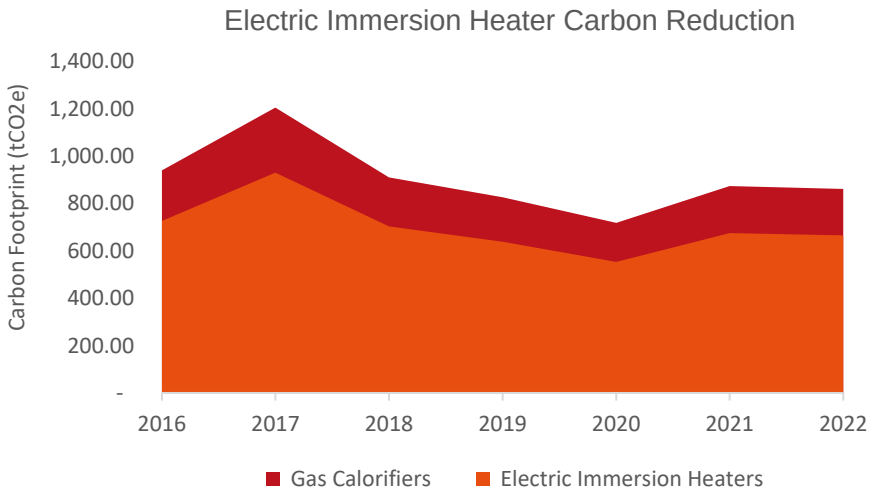
- More precise temperature control
- Faster heating time
- More efficient way to heat water

However, it is important to be aware we will still require a gas based solution to heat the Hall, something that the existing system will be able to provide in conjunction with our immersion heater elements. We will need to ensure that the upgraded can meet our calculated Domestic Hot Water (DHW) demand for the Hall. This way, we will be able to accurately assign a carbon reduction to our switch to electric immersion heater components.

In addition to calculating our carbon savings, we will need to obtain quotes for the installation of the electric immersion heater components. This may include additional engineering works to ensure that the new system is compatible throughout the Hall. We may also need to temporarily switch off heating and hot water capabilities for a period of time which may impact the day to day operations of the business.

CARBON COSTS AND SAVINGS

We plan to upgrade our existing gas calorifiers to include electric immersion heater components in 2025 with the project being completed in 2026. Our green electricity contract is the primary reason for the carbon reduction associated with this project and is expected to equate to approximately 196.42 tCO_2e. This value has been calculated based on the 23% of gas consumption being used to heat water, as provided by the British Electrotechnical and Allied Manufacturers Association (BEAMA). The chart below demonstrates the potential carbon reduction associated with the installation of electric immersion heater elements from 2016 to 2022.



Based on the costings below and accounting for the inflation figures calculated in our July 2023 Royal Albert Hall Estate Plan, we expect this project to cost £60,000. There are a number of requirements to consider when upgrading our gas calorifiers, including the make and model, the practicality of upgrading the existing systems and the period that heating and hot water will be switched off for.

Please note that these costs may vary depending on the type of immersion heater elements chosen, labour requirements and difficultly of the project.

SCOPE 2 ELECTRICITY CONSUMPTION

This section discusses the energy saving opportunities associated with our electricity consumption, including LED lighting replacements, solar PV installations and lift regeneration upgrades.

LED LIGHTING REPLACEMENTS

Improving energy efficiency is a simple and effective way to reduce electricity consumption, as well as the associated costs. The replacement of incandescent bulbs with LED alternatives is an ongoing project at the Hall and we aim to have completed the installation by 2028. We expect that 425 non-LED lights will need replacing to achieve this goal.

Research conducted by the University of Reading indicates there are significant cost and carbon benefits of installing LED bulbs, especially where lighting requirements are varied across a building. Similar research in the Netherlands highlights the reduction in cooling requirement and demand, following the switch from incandescent fixtures. Below we demonstrate the benefits of converting the remaining 425 energy inefficient (grey) bulbs to LEDs (orange):

Annual Running Cost: £3.60	**Energy Usage: 12W**	**Bulb Lifespan: 50,000 hours**
Annual Running Cost: £23.88	**Energy Usage: 60W**	**Bulb Lifespan: 2000 hours**

Replacing the remaining 425 incandescent bulbs across the Hall will require careful planning. We aim to install the LEDs in sections to maximise efficiency and minimise disruption to our visitors and events. We will also need to ensure that the bulbs we source are compatible with our existing lighting system and provide the required level of brightness for the areas they are installed in.

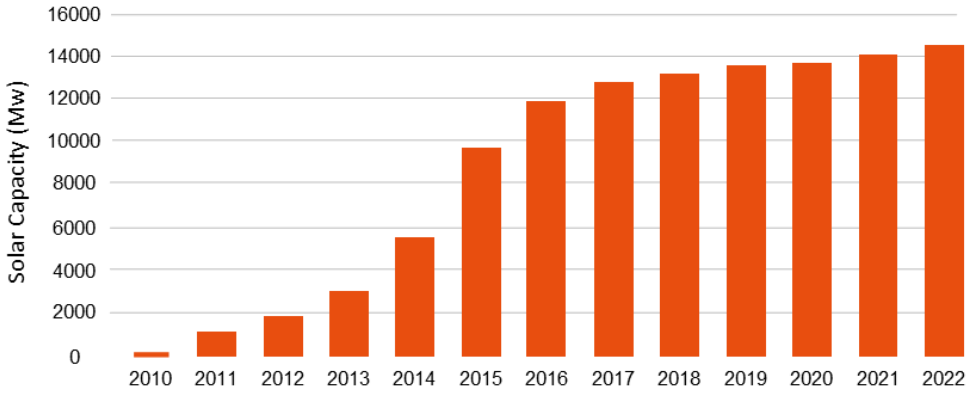
CARBON AND COST SAVINGS

Installing 153 LED has already reduced our carbon footprint by 22.01 tCO_2e representing an 83% reduction in our emissions. Converting the remaining 425 incandescent fixtures, therefore, will have a significant impact on our electricity consumption.

In order to calculate the cost and carbon savings associated with LED lighting, we have used data from our Royal Albert Hall 2023 Estate Plan. The information provided suggests that, whilst LED bulbs often have higher initial costs, such as the price to purchase and install, there are significant savings in the future. Based on replacing the remaining 425 incandescent lightbulbs in our auditorium, purchasing costs are expected to be approximately £2.26 million. There is also a substantial reduction in our emissions as LEDs produce six times less carbon than incandescent bulbs. We expect to reduce our carbon footprint by 87.57 tCO_2e, provided all 425 existing light fixtures are converted.

SOLAR PV INSTALLATION

According to the Department for Energy Security and Net Zero, solar PV capacity across the UK has increased steadily year on year (shown below). In addition to this, installation costs have fallen significantly since 2008, representing a great opportunity for the Hall. Electricity currently forms the largest part of our carbon footprint (53%), making it a key area of focus over the next three years. Generating our own electricity will have a marked impact on emissions, as well as our procurement costs. Solar PV panels will also demonstrate our commitment to sustainability and drive to reduce our environmental impact.



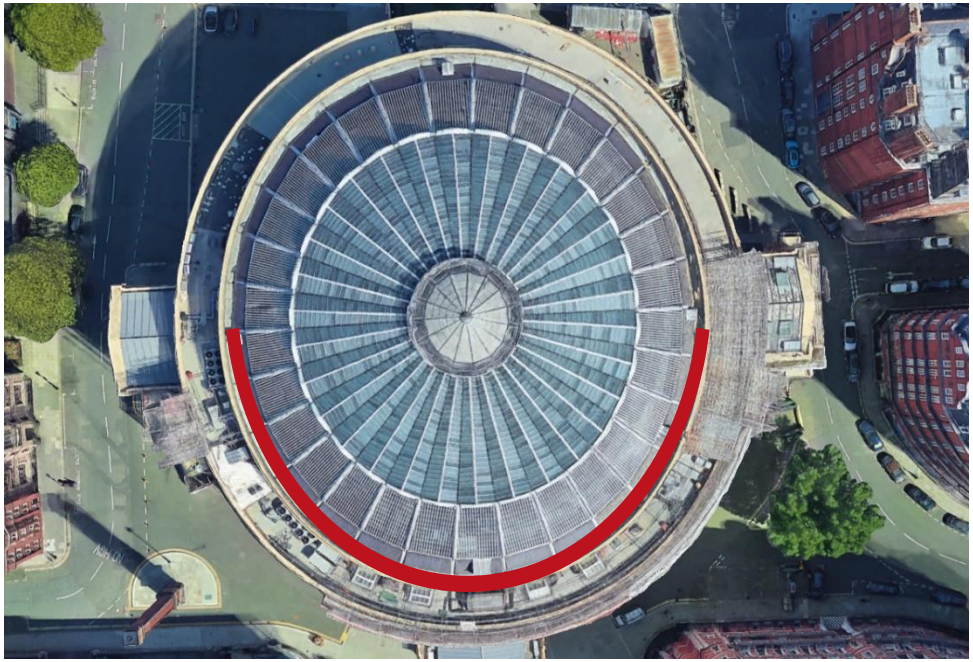
The initial feasibility study, conducted by Enica in our ESOS Phase 2 report, states that the Hall is South facing and would benefit from aligning the panels with the Queen Elizabeth II Diamond Jubilee Steps. There is also the potential to install the PV array in an East-West orientation, to further maximise the generation of the system. It is recommended that we consider installing a 100kW system to meet our electricity demand which would require 600m^2 of available roof space. This is based on estimates taken from Google Earth combined with the Enica report data. There is also a business case for including battery storage facilities on site. Surplus energy could potentially be used for electric vehicle charging points within the residents' car park.

SOLAR PV FEASIBILITY STUDY

To truly appreciate and understand the viability and costs associated with installing solar PV, it is recommended that a detailed feasibility study be conducted on site. This way, a structural survey can be completed to assess the suitability of the roof for mounting the system. We will need to ensure that our roof can:

- Mount panels at the optimum angle and aspect to the sun.
- Take the weight of the panels.
- Withstand the wind loading (pressure or force exerted by wind on a structure).

As a Grade I listed building, we will need to seek planning permission for a solar PV installation on the upper roof. Even though we will be consuming 100% of the energy generated on site, the system will also need to be endorsed by the local distribution network organisation and to comply with the G99 Connection Procedure.



CARBON AND COST SAVINGS

Calculating the costs and carbon savings associated with installing a 100kW system is highly dependent on market fluctuations in the total amount of electricity that can be generated from the panels (often influenced by the amount of shading in the chosen area). It is estimated that this suggested layout would generate 95,800 kWh per year, approximately 2% of our current electricity consumption. This represents a reduction in our Scope 2 carbon footprint of 19.84 tCO_2e.

The costs associated with installing a solar PV system of this size are based on the estimates included in our Royal Albert Hall Estate Plan plus an additional 30% for access equipment, such as scaffolding and cranes. This represents an initial investment of £1.39 million, including the required research, feasibility studies, granting of planning permission and actual implementation process. As such, it is important to note that this is not a precise economic breakdown of the costs and savings and will require further investigation by an approved PV contractor.

We expect to start our solar PV feasibility study to be conducted in 2026 and the installation project to be started in 2027 with a completion date of 2028.

LIFT REGENERATION

We currently operate six lifts at the Royal Albert Hall, providing access from the Basement Floors to the Gallery. These traditional lifts often waste energy through heat dissipation when braking, significantly reducing their efficiency. Instead, we plan to implement a regenerative mechanism (a motor at the top of the elevator shaft) to capture energy as the lift slows down. We can then feed this back into the Hall's internal electrical grid to power our lighting equipment or Heating, Ventilation, and Air Conditioning (HVAC) system.

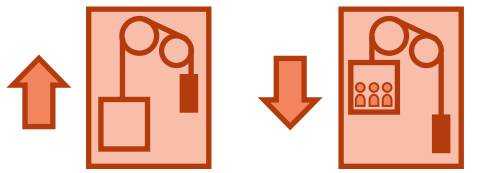
Due to the scale of this project, we may initially trial the installation of one regenerative lift before investing in the refurbishment of all six elevators. This will enable us to calculate the potential carbon and cost savings more accurately as well as to create a cost benefit analysis matrix for future use.

CARBON AND COST SAVINGS

Lifts installed with regenerative capacity are, on average, 60% more energy efficient than their standard counterparts. Based on this figure, and the average annual operating consumption per lift per year (481 kWh), we have calculated our carbon reduction to be approximately 0.33 tCO_2e. This figure appears to be relatively low due to the estimated electricity usage of our lifts. Installing individual meters for each of our elevators would help us to monitor and accurately record the consumption data for each lift.

The capital costs associated with the installation of six regenerative lift mechanisms is based on the values in our Royal Albert Hall 2023 Estate Plan. We expect the project to cost £539,000 and to take place from 2026 to 2028. This timescale will be required as a number of the public and service lifts will need to remain operational at all times, meaning that effective planning this work will be of the upmost importance.

Electricity is generated when lightly loaded cars move upwards and when heavily loaded cars move downwards.



SCOPE 1 AND 2
GAS AND ELECTRICITY CONSUMPTION

This section discusses the energy saving opportunities associated with our gas and electricity consumption, including BMS optimisation and the implementation of an energy policy.

BMS OPTIMISATION

At present, the greatest proportion of our carbon footprint is associated with our consumption of resources. Of this, our plant equipment is the largest source of our gas emissions, whilst show and accommodation consumption represents our greatest area of electricity usage. Ensuring that our Building Management System (BMS) is functioning at the optimum level for the Hall's capacity and requirements is, therefore, paramount.

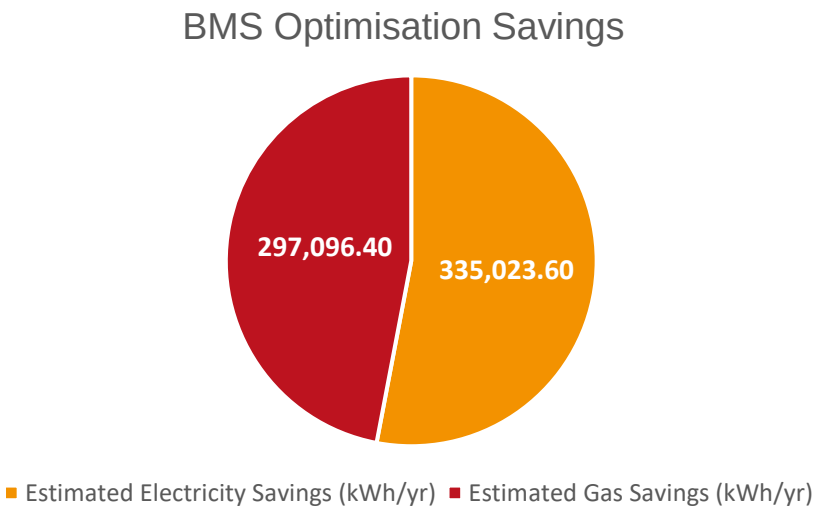
In 2017, we carried out a BMS replacement with demand optimisation control from the plant. However, following our 2019 ESOS Phase 2 report, provided by Enica, it was suggested that our existing system highlighted several anomalies, primarily associated with simultaneous heating and cooling. In order to resolve this issue, we will consider installing a 'dead band' within our Building Management System to prevent unintentional activation and deactivation cycles. This means that our heating and cooling systems will only be switched on outside of acceptable comfort levels. Typically, for buildings like the Royal Albert Hall, this would be between 19°C and 24°C, provided that these are considered to be appropriate temperatures for the Hall.

Combining the above initiative with a reduction in our demand or requirement for heating could represent a significant cost and carbon saving. For example, we could alter our temperature set points for times outside of normal business operations. Instead of maintaining an average temperature of between 19°C and 24°C, our BMS could be set to frost protection mode, only turning on when the water in our boilers drop below a specific temperature (usually 5°C). According to the Energy Saving Trust, each 1°C reduction could represent a cost saving of approximately 4%.

Another benefit of BMS optimisation is the ability to monitor and control which areas of a building are heated or cooled and at what time. Reducing our heating demand in areas such as the auditorium and bar spaces will play an important role in our carbon management strategy. In order to achieve this, we will consider switching heating on closer to performance times in our public spaces. This will ensure that the Hall's temperature closely mimics the requirements for heating and cooling within the acceptable comfort levels of between 19°C and 24°C during normal business hours.

CARBON AND COST SAVINGS

BMS Optimisation across the Hall will be an ongoing and iterative process to ensure that we are operating as efficiently as possible. Due to the seasonal nature of gas consumption, as shown below, we have allocated 12 months from 2024 to 2025 for this project. This will enable us to analyse a full year's worth of data and identify areas for further improvement in the future. Based on Enica's calculations, we would expect our BMS Optimisation initiative to reduce our combined Scope 1 (gas) and Scope 2 (electricity) consumption by approximately 632,120 kWh/year. The chart below shows the potential savings by resource.



The above reduction in consumption represents a total annual carbon saving of 124.14 tCO_2e, approximately 6% of our 2022 carbon footprint. This project is one of the least costly to implement estimated at £30,000, due to the potential requirement for additional equipment. This could include the need for remote access for our IT team, as well as communication equipment, such as cabling, switches, and accessories.

ENERGY POLICY

As highlighted in our ESOS Report, completed by Enica, we have identified a need for a more robust and well documented energy policy across the business. In order to achieve this, we need to establish our commitment to performance improvements and to highlight our key energy priorities. Focusing on removing gas appliances from the Hall in conjunction with producing or procuring our own renewably sourced electricity has been highlighted as the foundation to reduction of our utility carbon footprint. We are committed to implementing a 'best practice' energy policy based on the Carbon Trust's Energy Management Assessment toolkit. We aim to improve our current ranking from proficiency level 1 to level 4 (Table 2) by 2024, with well documented annual reviews.

Table 2: Energy Policy Proficiency Levels.

PROFICIENCY LEVEL	ENERGY POLICY SUMMARY
0	No explicit energy policy
1	An unwritten set of guidelines
2	Un-adopted policy
3	Formal policy but no active commitment from top management
4	Regular energy policy reviews and active commitment

In order for our energy management policy to achieve a proficiency level 4, we aim to complete the following steps within the next year:

- A written energy policy with agreement from senior management and communicated to all employees.
- A commitment to the development or deployment of quantitative improvement targets.
- A commitment to annual reporting internally to all employees or externally to the general public.
- An annual review or revision date.

‘BEST PRACTICE’ POLICY

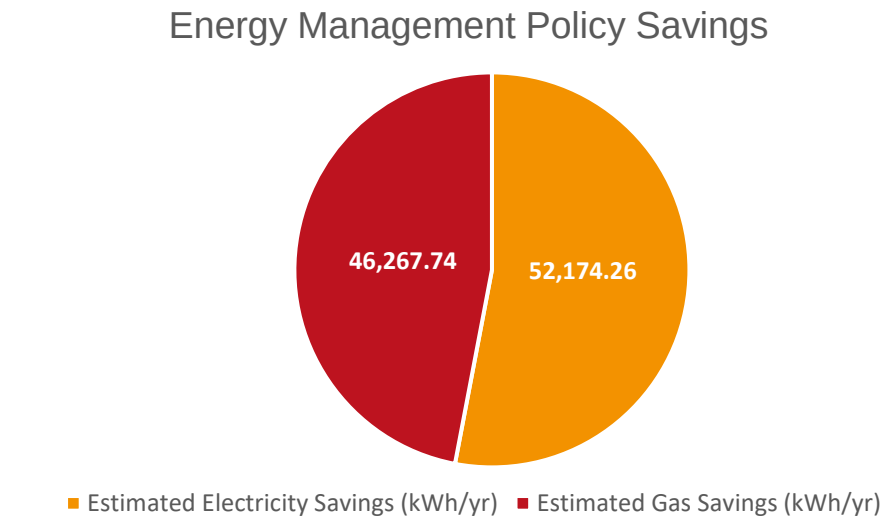
A key component of an effective energy management policy is staff awareness and engagement. We want to encourage our employees, across all areas of the business, to consider the environmental impact of their role. Primarily focusing on the excessive use of or wasted energy at the Hall, we want to empower our staff to be more sustainable at work. The Carbon Trust recommends a fully integrated approach when developing a ‘best practice’ energy management policy, allowing employees to contribute directly to the framework and to suggest areas for improvement with regards to gas and electricity usage.

As a live entertainment venue, hosting shows as often as twice a day highlights a significant source of our energy consumption. Effective communication with departments that are directly involved in the running of these operations will form an important part of our policy and will enable us to identify our largest ‘energy drainers’. These may include inconsistent thermostat settings across the Hall, keeping monitors in standby mode or leaving an excessive number of lights on in the auditorium after an event has finished. In order to encourage more sustainable practices at the Royal Albert Hall, we will consider using a traffic light system for electronics, lighting, and other energy intensive equipment. This will involve adding stickers to devices, coded green, amber, and red, based on whether they should be switched off each day.

Following the approval of our energy management policy, we will review it annually, ensuring that it remains relevant and up to date. Updating our framework regularly will enable us to reflect any changes to our energy needs and goals. This will require our energy performance to be measured and monitored, feedback from our employees to be collected and our achievements and challenges to be reported on. Once this process has been completed, we will communicate our new energy management policy across the business.

CARBON AND COST SAVINGS

We plan to implement our energy management policy to ensure best practice across the business. We aim to begin discussions with each department, ready for the framework to be published internally by the end of 2024. It is expected that introducing an effective management policy could reduce our energy consumption by approximately 98,422 kWh per year. Just over 50% of our energy emissions are associated with electricity consumption (53%) with the remainder (47%) relating to gas usage. The chart below demonstrates the potential savings divided by utility in kilowatt-hours. These savings equate to a carbon reduction of 10.80 tCO_2e for electricity and 8.53 tCO_2e for gas, totalling 19.33 tCO_2e per year.



As part of our ESOS Opportunity Summary, Enica provided a breakdown of costs associated with introducing an energy policy and staff awareness programme. It is expected that it would cost approximately £2,000 to implement, review and maintain in following years. Developing an effective energy management framework could be a ‘quick win’ for the Hall, representing significant carbon and cost reductions in the first year.

SCOPE 3 UNQUANTIFIABLE COSTS AND SAVINGS

This section discusses the unquantifiable cost and carbon savings associated with maintaining our South Ken ZEN+ membership, monitoring our spend data and logging our travel emissions.

SOUTH KEN ZEN+ MEMBERSHIP

We are proud members of the South Ken ZEN+ Programme, an innovative response to the climate crisis in the world-renowned South Kensington neighbourhood. We are one of 22 members of the Exhibition Road Cultural Group which brings together the leading cultural and educational organisations in the area. Using our collective experience, we help to accelerate the South Kensington Borough's progress towards net zero, creating a more sustainable and future-proofed neighbourhood.

The South Ken ZEN+ Programme members are currently working towards:

- Creating a joint toolkit for collectively reporting on progress against net zero and sustainability targets.
- Developing a Shared Procurement Charter, with a focus on sustainable supply chains and waste management.
- Developing projects to foster nature restoration and biodiversity in the neighbourhood.
- Acting as an incubator for new ideas, projects, fundraising, and innovation.

We want to inspire those who live, work, visit and study in the South Kensington area to tackle climate change by reducing their emissions. At the Royal Albert Hall, we want to help our audiences to utilise greener methods of transport, such as bicycles, the bus and tube, in and around the South Ken ZEN+ neighbourhood. This could be achieved by partnering with Transport for London (TfL) to offer discounts when travelling to and from events hosted at the Hall. Extending this partnership to the other Exhibition Road Cultural Group members could also have a significant benefit on South Kensington's carbon footprint.

Our South Ken ZEN+ membership is something that we are keen to remain a part of over the next three years, especially with a focus on reducing our environmental impact. Whilst this project is considered to be 'ongoing', we estimate that it may take approximately six months to engage with and develop a partnership with TfL. However, we recognise that it may take longer than this, depending on the number of other South Ken ZEN+ members involved and the feasibility of a TfL partnership.

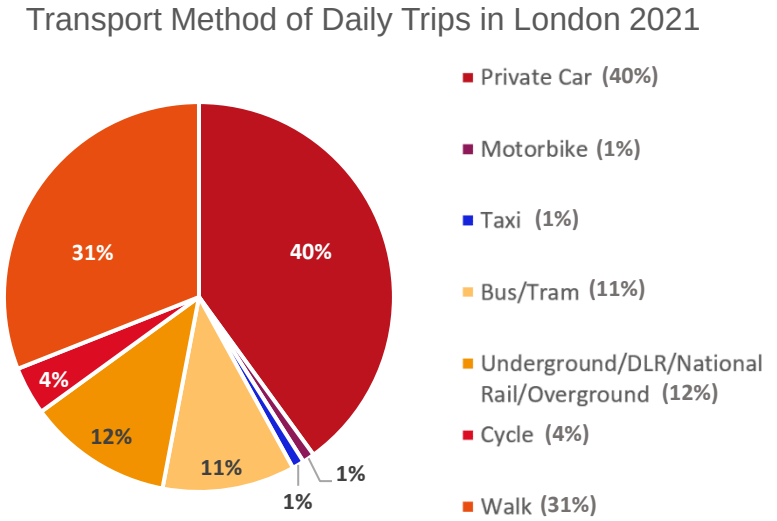
MONITORING SPEND DATA

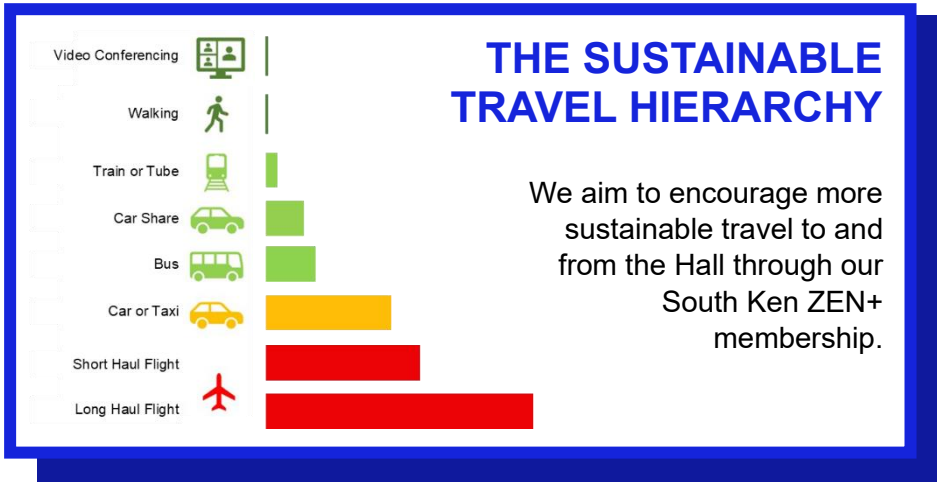
Adopting a spend-based approach to calculating our Scope 3 emissions uses the financial value of our purchased goods or services and multiplies it by a specific conversion factor. The resulting carbon footprint is produced per financial unit, allowing us to calculate an estimate of our upstream supply chain emission. In order to achieve this, we will need to itemise a breakdown of each transaction and assign a category to each spend. The conversion factors would be based on the UK Government's Standard Industrial Classification (SIC) codes; five digit numbers used to categorise spend data by economic activity. The emission factors have been derived from the Department for Business, Energy, and Industrial Strategy's (BEIS) supply chain greenhouse gas emission factors. It is important to note that these documents were produced in 2019 and may not present an accurate representation of our 2023 spend data carbon footprint. However, as one of the most recent conversion factor spreadsheets available, it provides a useful estimate of our Scope 3 emissions.

The ability to calculate the carbon footprint of our spend data is highly dependent on our ability to collate and itemise our yearly transactions. Provided that our individual transactions are stored in a single, easy access location, calculating our Scope 3 emissions will be relatively easy. We estimate that this would take approximately three months to achieve and would enable us to quantify a significant proportion of our remaining carbon footprint. We acknowledge that simply collating and monitoring our spend data will not necessarily help to reduce our Scope 3 emissions. Instead, we will need to identify areas for cost savings and, as a result, carbon savings.

LOGGING TRAVEL EMISSIONS

According to the Department for Environment, Food and Rural Affairs' 2019 Air Quality: Explaining Air Pollution report, transport is now responsible for the largest proportion of emissions across the UK. The chart below highlights the primary methods of travel across London in 2021. It is clear that private cars are the primary mode of transport, closely followed by walking and rail usage, demonstrating a great opportunity for greener travel incentives across South Kensington.





STAFF COMMUTING

We will focus on promoting low emission travel options for our staff, production teams and audiences through a range of projects and initiatives. According to the Centre for London, those living in inner London boroughs, such as Camden, Kensington and Chelsea, and Westminster, are more likely to travel by walking than by car.

However, privately owned vehicles represent the second largest method of transport in 2022, suggesting potential areas for improvement, especially for our staff commuting emissions. For example, incentivising employees to adopt a low to zero carbon alternative could be achieved through offering discounts on TfL's Santander Bike Subscription Scheme. Memberships currently offer unlimited 60 minute rides on a monthly (£20) or annual (£120) basis, a proportion of which could be reimbursed for those who wish to or currently cycle to the Hall. We anticipate that logging the current methods of employee commuting through an online survey could take approximately 4 months, starting in 2025. An example transport survey can be found here:

https://forms.office.com/e/v0FT5nmk7A

ARTIST AND CREW TRAVEL

Another key area of focus within our Scope 3 emissions is the measuring and management of production team travel. This would include the distance and method of transporting the equipment and talent to the Hall for the shows that we host. Implementing a 'green rider' for incoming productions has the potential to reduce our upstream carbon footprint. Green riders incorporate a set of sustainability clauses into TV, film or show contracts. Typically produced by the artists or production teams themselves, we will consider creating a best practice guide for those exhibiting at the Hall. We want to empower the shows that we host to make sustainable and environmentally conscious travel decisions while at our venue and creating a green rider contract forms the foundation of this goal.

Currently, we invite external promoters to use the Hall's PA and lighting systems in order to reduce the number of lorries travelling to and from the site. In addition to this, we also encourage artists and their teams to bring reusable bottles that can be refilled from our coolers, and to dispose of any show related waste via the recycling companies provided. Further formulation and development of such a document, as well as the logging of production travel data, is expected to take approximately 12 months, starting in 2026. An example green rider template can be found here: Theatre Green Book or Equity Green Rider.

AUDIENCE TRAVEL

Arguably the hardest aspect of logging our transport emissions focuses on audience travel. This emission source is significantly outside of our direct control and, as a result, will require a creative solution. A 2009 study conducted by Acorn Consulting Partnerships highlights that of the respondents visiting London museums and attractions, 8% were visiting the Royal Albert Hall from the UK and 7% were from overseas. Whilst we acknowledge that this data is over ten years old, these are the most recently available statistics. As part of our audience travel logging initiative, identifying where our visitors are travelling from will be an important piece of information to collect.

Influencing the way in which our audience members travel could be achieved in a number of ways. For example, we could incorporate a fixed carbon charge for each ticket sale, allocating these funds to our sustainability initiatives. This will require full transparency on our website, as per our Restoration Levy charge, and clear communication with our audiences when purchasing a ticket for our events. We will also need to collect data on where our visitors will be travelling from for a performance which could be done through our ticket sales. However, it is important to note that those ordering multiple tickets may not accurately reflect the distance travelled if attendees are from different locations.

Alternatively, we could employ a similar scheme to logging our staff emissions, offering discounts for local travel within the South Ken ZEN+ area. This idea is discussed in more detail in the 2022 Centre for Climate Change and Social Transformations report and highlights the benefits of partnering with local transport and authorities to empower audiences to make more sustainable travel choices. We expect that logging and influencing emissions associated with our visitor travel to take approximately two years from 2026, being completed in 2028. This will enable us to create a thorough methodology for capturing the relevant information and to ensure that key partnerships are in place.

ADDITIONAL CARBON COSTS AND SAVINGS

This section discusses the carbon costs and savings associated with implementing a rooftop garden and sustainable procurement policy at the Hall.

ROOFTOP GARDEN

Research conducted by the Journal of Scientific Reports found that the spending as little as 17 minutes per day in nature can have a positive impact on health and wellbeing. We want to encourage our members of staff to engage with green spaces as much as possible, something that we aim to achieve through the introduction of a rooftop garden. Whilst we acknowledge that this will require rigorous planning and structural assessments of the Hall, we believe that a green roof will have a positive impact on both our staff and biodiversity around South Kensington.

In addition to employee wellbeing, there are a number of environmental benefits associated with rooftop gardens. As a popular attraction within the South Kensington borough, we are surrounded by a number of other cultural properties and museums. This can create an urban heat island, whereby a high concentration of vehicles and buildings can increase the ambient air temperature by up to 10°C in relation to the surrounding rural areas. Installing a green roof at the Royal Albert Hall could reduce our building temperature by approximately 1°C compared to conventionally finished roofs. Rooftop gardens can also act as a layer of insulation, making it easier to regulate the heating and cooling of the building. This will result in a lower HVAC demand, ultimately reducing our gas and electricity consumption as well as the associated costs.

In addition to these carbon savings, we can also help to enhance biodiversity in the areas surrounding the building. Due to the conservation status of the Royal Albert Hall, it will not be possible to seed a garden directly into the roof. Instead, we will need to use a number of planters to create the desired effect. It will also be important to consider the location of the garden to minimise the potential impact on a solar PV array. We will consider using flower, such as roses, begonias and petunias, and perennials like grasses, ferns, and daisies or asters. This will provide a diverse mix of plants and encourage a range of birds and insects to pollinate and inhabit. Bird species found close to the Hall in Kensington Gardens include:

- Common Nightingales
- Turtledoves
- Woodlarks

CARBON COSTS AND SAVINGS

Similar to our solar PV project, a rigorous feasibility study will need to be undertaken prior to the implementation of a rooftop garden. Structural surveys may also need to be completed to confirm that the building can support the additional weight of the planters. We also plan to involve our members of staff in the selection of the plants for the garden and will encourage those who enjoy gardening to engage in its upkeep and care.

Based on our Royal Albert Hall 2023 Estate Plan, we expect this project to cost around £1.7 million to implement. We aim to start planning in 2027 with a completion data in 2028. Depending on the size of the garden, there is a relatively small carbon benefit. It is expected that the potential drawdown will be approximately 0.02 tCO_2e.

SUSTAINABLE PROCUREMENT

As a live entertainment venue, procurement forms a large part of our carbon footprint. We aim to quantify this figure through the collation and monitoring of our spend data, as discussed in the previous section of this report. This will require the creation of a robust sustainable procurement policy, similar to our energy management strategy.

The UK Government describes a sustainable procurement policy as:

> A process whereby organisations meet their needs for goods, services, works and utilities in a way that achieves value for money on a whole life basis in terms of generating benefits not only to the organisation, but also to **society** and the **economy**, whilst minimising damage to the **environment**.

Incorporating sustainability into our future partnerships, contracts and engagements with other business will form a key part of our procurement strategy. This can be achieved through the inclusion of positive social and environmental criteria within our current policy.

PROCUREMENT POLICY OUTLINE

University College London and Bain and Company provide useful examples of sustainable procurement policies which include a number of key objectives and guidelines. Using these documents as a template, we will consider the following targets:

- To adhere to and comply with all relevant laws and regulatory requirements
- Communicate policy with both internal and external stakeholders and awareness among our suppliers
- Use sustainability criteria when selecting a supplier

Procurement Services:

- Follow the Royal Albert Hall's sustainability guidance
- Promote the use of sustainable products and suppliers
- Include sustainability criteria within tender documents
- Include sustainability in supplier and tender evaluations
- Consider sustainable certification when purchasing products

We plan to review our sustainable procurement policy annually and update the criteria should the need arise. We estimate that the cost of implementing a strategy such as this would be similar to that of our energy management policy. We have, therefore, allocated around £2,000 to write and maintain our procurement policy starting in 2024 and ending in 2025.

COMPLIANCE AND LEGISLATION: SECR AND ESOS

This section discusses the regulation requirements for the Hall, including Streamlined Energy and Carbon Reporting (SECR) and the Energy Saving Opportunity Scheme (ESOS).

SECR COMPLIANCE

SECR is a mandatory emissions reporting scheme which businesses are required to comply with. Companies that meet two out of three of the following criteria need to submit an annual SECR report.

- A turnover of £36 million or more.
- A balance sheet of £18 million or more.
- Employ 250 staff members or more.

We comply with our annual SECR reporting requirements and our emission reduction progress is shown below. Our intensity ratio is based on tonnes of carbon dioxide equivalent per meters squared.

Table 3: SECR Figures 2020-2022.

YEAR	CARBON FOOTPRINT	INTENSITY RATIO
2021	1,755 tCO_2e	0.058
2022	1,925 tCO_2e	0.064
2023	1,862.16	0.062

ESOS COMPLIANCE

Similar to our SECR submissions, we are also required to comply with ESOS regulations. This legislation operates on a four yearly cycle with the next deadline towards the end of 2023. Businesses are required to report on transport emissions as well as operation energy usage. From this, a number of recommendations can be made to help to reduce the associated carbon footprint. Our most recent submission included energy saving opportunities such as:

- Enabling power saving settings on electronic equipment.
- Improving insulation throughout the Hall.
- Minimising simultaneous heating and cooling.
- Fitting secondary glazing where appropriate.
- Installing new, automatic external door closers.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