Carbon footprint report for calendar year 2024

Introduction

The Hall's Sustainability Policy requires yearly reports on aspects relating to the three pillars of sustainability – economic, social and environmental - as a means of understanding impact and measuring improvements. The policy acknowledges that environmental attention should be focussed on the major environmental impact of the organisation, being its carbon footprint, which is addressed in this report.

Emissions

In considering the Hall's carbon emissions, this report uses the common framework assigning emission to scopes 1,2, or 3:

- **Scope 1**: carbon emissions arising directly from the activities of an organisation. For The Queen's Hall this comprises the gas burnt for heating.
- **Scope 2**: carbon emissions arising indirectly from activities carried out by others on our behalf. For The Queen's Hall this comprises the carbon emissions attached to our electricity usage. Water usage is arguably within scope 2, but the UK Government deems it to be scope 3.
- **Scope 3**: all other carbon emissions created in relation to the activities of the organisation such as by others in supplying products, and those generated by the use of the products of the organisation. For The Queen's Hall, water usage is placed in scope 3. Clearly, there are many other sources of emissions in this category which are outwith the control of The Queen's Hall, but which may be influenceable.

Offsets

The only offset claimed at present by The Queen's Hall is for electricity. The two current suppliers both state specific, but different, carbon factors for their actual generation in the year. This is a reasonable off-set to apply, but a truly renewable electricity supply will only happen when all sources of generation on the system are renewable, for which the present target date is mid 2040s.

Offsets generally are a fraught subject. Other offsets are available, particularly for gas supplies. These are of two types:

- Carbon removal – removing carbon from the atmosphere by projects such as atmospheric carbon capture, which is not yet commercially available, or tree planting, which takes a long time to sequester carbon, and is quite likely to re-release the carbon stored before the carbon it is offset against has decayed in the atmosphere.
- Carbon avoidance – largely involves investing in projects to reduce carbon emissions, often by paying for things to be done that should be done anyhow.

Commercial companies are interested in such offsets as it can be useful for signalling green intentions, but for The Queen's Hall the best project to invest in is reducing our own carbon footprint.

Control over emissions

The Queen's Hall has different levels of control over its various emissions:

- Scope 1 – high level of control where we can make decisions to directly affect the level of emissions.
- Scope 2 – considerable level of control over usage and source of supplies which generate emissions.
- Scope 3 – minimal level of control over emissions, but some capacity of choice and influence.

Quantified emissions

The methodology for producing the quantified emissions in the attached report sheet is as follows:

- For gas and electricity, the energy usage for the year in kWh comes from meter readings. For water, which is not metered, a usage per person attendance of 10 litres is assumed as an order of magnitude.
- Each usage figure is then multiplied by a factor issued yearly by the UK Government Department of Energy Security and Net Zero to yield a carbon dioxide equivalent (CO_2e) emission figure in kg.

The quantified emissions are given on the attached report sheet which shows:

- Absolute total emissions for 2024 of 79828 $kgCO_2e$
- Net total emissions after offsets of 59247 $kgCO_2e$

The specific emissions per audience person attendance are also given on the basis that reducing our emissions by reducing audience numbers is not compatible with economic sustainability. These are:

- Specific absolute emissions of 0.73 $kgCO_2e$ per person attendance
- Specific net emissions of 0.54 $kgCO_2e$ per person attendance.

Points of comparison

As two points of comparison:

- The total Queen's Hall emissions given above for the year 2024 are equivalent to those of 8 or 9 average domestic homes.
- In 2024, the average per person carbon footprint in the UK for the year was around 4.5 tonnes CO_2e, so the Hall's contribution to a visit to The Queen's Hall would be equivalent to around 4% of the average daily carbon footprint.

Changes from datum

An arbitrary datum year of 2022 has been set as the first nearly full year of normal operations after the Covid pandemic. In relation to that datum the net emissions have decreased to 92% of datum, and the increased audience numbers means that the specific carbon emissions per audience visit have declined to 75% of datum. This reduction is due both to increased attendance and an 8% reduction in net total carbon emissions.

Other scope 3 emissions

Scope 3 emissions for The Queen's Hall, other than water, can be usefully grouped and considered as follows:

- **Emissions by artists and promoters in their activities in QH**. Our significant promoter partners are being asked about the state of their environmental policies and carbon footprint measurement, but it is acknowledged that QH has little influence over major promoters. For QH promotions, consideration is being given to how QH can persuade other parties to think about their environmental impact. An order of magnitude assessment (attached) has provided an estimated emissions per attendance for artist travel of 0.2$kgCO_2e$, which is about 40% of the direct emissions by the Hall.

- **Supplies to the bar business.** The major bar supplier is being asked about their environmental policies; in this area we do have more choice and hence somewhat greater influence.

- **Waste management.** The waste management contractor is being asked about their environmental policies; in this area also there is more choice and potentially greater influence.

- **Staff travel.** This is a very small component of the total emissions. Staff are encouraged to use public transport to get to work. The quantity of staff travel while at work is minimal.

- **Audience travel.** This is potentially a much larger component of total emissions, but one over which The Queen's Hall has little influence. Details of how to reach the Hall by public transport are posted on the website, but our capacity to persuade people into electric vehicles or active means of transport is strictly limited. An order of magnitude assessment for audience travel (attached) has provided an estimate of emissions per attendance of 2kgCO_2e, which is about 4 times the direct emission by the Hall.

Generally, it is submitted that The Queen's Hall's influence on scope 3 emissions is limited, but by continuing to ask the questions we would hope to persuade others to take action and to add to the general conversation and awareness of climate issues.

Future plans

The main activities in this area are guided by the 'Towards Net Zero' plan approved by the Board in December 2023 which was informed by extensive study work in conjunction with Harley Haddow Consultants.

Activities completed in 2024 relating to the carbon footprint are:

- Completion of the refurbishing of the backstage area improving the insulation of the building in that area and reducing the carbon footprint of the hot water supply.
- A project to improve draft proofing generally and to double glaze where feasible.
- A project to improve the detailed control of the space heating system.
- Definition of the full insulation requirements of the Hall and securing Listed Building Consent for such works.

Activities in the coming year which will impinge on our carbon footprint comprise:

- Progressing the building insulation works.
- Progressing the frontage, access and offices project which, when complete at some subsequent time, will reduce the heat demand by improvement of the insulation of the main Hall and the offices leading to a reduction in gas consumption.
- Progressing the project to replace the air conditioning system for the auditorium which will both reduce the energy demand for heating by incorporating heat recycling, and also provide some of the heat input from air source heat pumps. Both of these features will reduce the demand on the gas supply.
- Investigating the possibility of zoning the heating requirement of the estate to allow the installation of individual air source heat pumps of a size which are currently commercially available, though this would not be the case for the main hall. This could help us to progress to net zero sooner and gives a clear message that we are pursuing a complete plan which could make fund raising easier.

Targets

It is desirable to set targets for emissions reduction but while the Hall has capacity for conceiving and planning initiatives, and for seeking finance, the key requirement is external funding for implementation of what are largely capital projects of significant cost, which makes the timescales deeply uncertain.

The Hall therefore is pursuing a policy of progressing as far as possible in the definition of its various emissions reduction schemes, breaking them down into discrete projects where possible. This allows meaningful and targeted applications for funding to be made, with implementation as and when suitable funds are available.

Conclusion

In terms of actual carbon emissions, the situation has sensibly not changed from 2022 but is considerably less than 2023. However, the net emissions per attendance have decreased by 25% compared with the datum. The definition of the various initiatives for emissions reductions has moved forward significantly which will be critical in reducing emissions in the future. Funding is the key issue.

Emma Mortimore – CEO
Peter Cannell – Chair of Buildings Working Group

Presented to the Board on 21 March 2025

Attachment

1. The Queen's Hall carbon footprint report worksheet to 2024
2. Estimate of the yearly carbon footprint of audience and artist travel - 2024

THE QUEEN'S HALL	**Carbon footprint report**			
Year	**calendar year**	**2022**	**2023**	**2024**
		datum		
Scope 1	**mains natural gas burn**			
	metered supply - kWh	318828	344817	289587
	CO2e factor - kg/kWh	0.200	0.200	0.1829
	CO2e - kg	63765.6	68963	52965
	% of datum	100%	108%	83%
Scope 2	**mains electricity generation & supply**			
	metered supplies - kWh	79521	101035	127971
	CO2e factor - kg/kWh	0.211	0.207	0.207
	CO2e - kg	16754	20922	26490
	% of datum	100%	125%	158%
Scope 3	**mains water supply and treatment**			
	estimated supply - m3 (10l/per attendee)	886	972	1088.99
	CO2e factor - kg/m3	0.421	0.378	0.342
	CO2e - kg	373	367	372
	% of datum	100%	98%	100%
Absolute total	**CO2e - kg**	80893	90252	79828
	% of datum	100%	112%	99%
Offsets	**mains electricity CO2e - kg**	16754	20922	20581
Net total	**CO2e - kg**	64139	69331	59247
	% of datum	100%	108%	92%
Audience attendance	**tickets sold**	88609	97171	108,899
absolute specific CO2e	**kg/person attendance**	0.91	0.93	0.73
	% of datum	100%	102%	80%
net specific CO2e	**kg/person attendance**	0.72	0.71	0.54
	% of datum	100%	99%	75%
Carbon conversion factors from UK Government GHG Conversion Factors for Company Reporting - 2024 v 1.1				

THE QUEEN'S HALL					
Estimate of the yearly carbon footprint of audience travel - 2024					
Inputs					
no. of attendances in the year			108899		
average distance travelled			20	km	
average CO2e per km			0.1	kgCO2e	
Total emissions			**217798**	**kgCO2e**	
Emissions per attendance			2	kgCO2e	
Estimate of the yearly carbon footprint of artist travel					
Inputs					
No. of shows			250		
average no. of artists and support per show			10		
average distance travelled			80	km	
average CO2e per km			0.1	kgCO2e	
Total emissions			**20000**	**kgCO2e**	
Emissions per attendance			0.2	CO2e	
C/f					
Hall total emissions (scope 1 & 2)			**57094**	**kgCO2e**	
Hall emissions per attendance			0.52	kgCO2e	