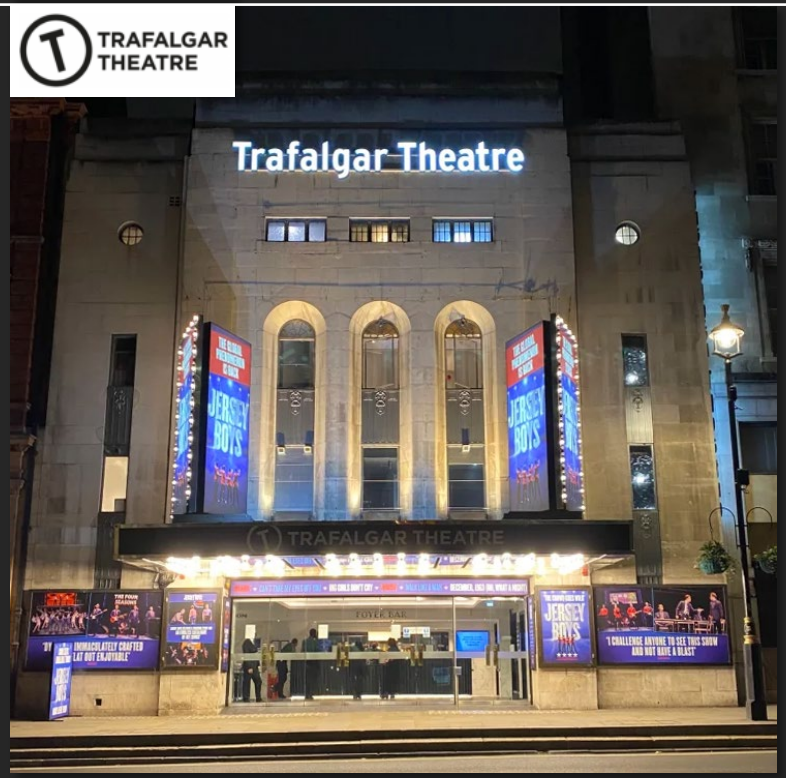
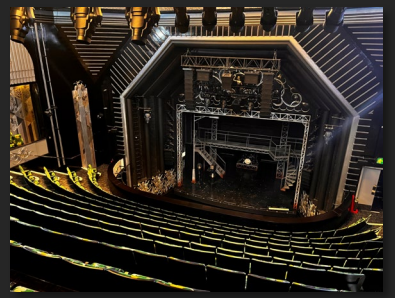
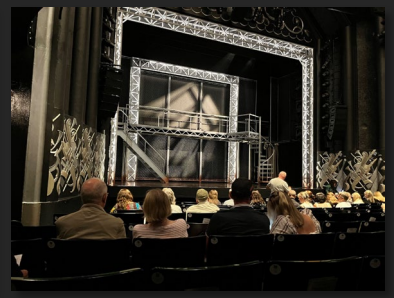
# Project: Trafalgar Theatre







## Venue Details and History

Trafalgar Theatre is a West End theatre in Whitehall near Trafalgar Square, in the City of Westminster, London. The venue was originally built in 1930 with interiors in the Art Deco style as the Whitehall Theatre.

The theatre was Grade II listed by English Heritage in December 1996, noting "The auditorium has a decorative cohesion and prettiness rare in theatres of its day, and has the best surviving original fabric of this type of theatre".

It was converted into a television and radio studio in the 1990s, before returning to theatrical use in 2004 as Trafalgar Studios, the name it bore until 2020, with the auditorium converted to two studio spaces.

It re-opened in 2021 following a major multi-million pound project to reinstate it to its original heritage 1930's single-auditorium design, some of which has not been seen for 90 years. The redecoration has reinstated the striking black with silver, and bronze design of the original auditorium interior along with modernisation and improvements to the foyers. Since the building's listed status meant the 2004 changes had to be reversible, it was possible for the theatre to be restored to its previous form.

The restoration resulted in the restoration of a new single auditorium at an increased capacity and a larger stage, matching other theatre venues such as the Duke of York's and Vaudeville theatres. All seats at Trafalgar Theatre are on just two levels, stalls, and dress circle.

In terms of existing constraints, the Trafalgar Theatre is a striking art deco theatre with a significant number of retained original single glazed windows which represent a further opportunity/challenge to implement improvements in energy consumption and emissions. However, the location and listed status of the venue pose a host of challenges when considering making improvements to the glazing. Conservation and listing requirements mean the aesthetic of the original windows must be maintained and this limits the available improvement options.

## Home Survey Tool Output

Buro Happold's engineering consultancy team deployed the digital Home Survey Tool by inputting information associated with the key features of the venue in order to detect appropriate "lean, clean, and green" improvements. In the case of the Trafalgar Theatre based on the venue's recent refurbishment, location, existing construction, and age amongst a range of potential carbon & energy improvement measures the Home Survey Tool identified the following key upgrade opportunities:

- Upgrade and replace existing windows
- Review and improve insulation to systems distribution
- Consider heat pumps for heating & cooling

Following the initial application of the Home Survey Tool, Buro Happold's team visited the Trafalgar Theatre on Monday 24th January 2021. The team spent the day on site reviewing all aspects of the venue to gain a first-hand understanding of its construction, operation, and condition. As noted previously, it was clear the venue has benefited from its refurbishment with significant improvements being made to the entrance foyer and auditorium ventilation and was fully operational at the time of visiting.

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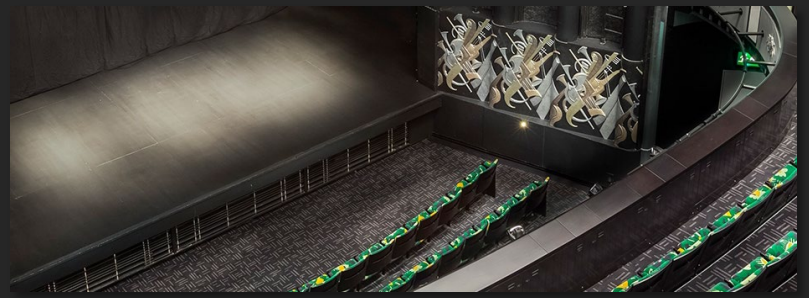

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Theatre Green Book Case Study

## Physical Site Survey

The in-person site visit allowed for a detailed understanding of the existing listed venue and its wider site context. This verified the initial output of the Home Survey Tool, adding site specific detail which reflect the listed status of the venue.

In addition to visually inspecting the building and engineering systems the Buro Happold team again spent time with the facilities and operational teams. This allowed the engineers to understand the subtle nuances of the building's operation from different perspectives which added to the insight given in the resulting report.

In the case of the Trafalgar Theatre this also included reviewing the Operation & Maintenance documentation for the recently completed refurbishment and again considered what was working well, what needed improving.

This first-hand feedback fed into the report and resulted in a series of further recommendations and constraints for the venue including:

- New heating & ventilation plant had been installed within the past 12 months
- Consider replacing existing single glazed windows, or -
- Consider refurbishing existing windows to ensure effective operation / retrofit secondary glazing where not possible.
- Consider refurbishing door and fitting draft strips to reduce air leakage
- Improve insulation of heating pipework, hot water pipework and ventilation ductwork
- Review heating set points to improve energy use

## Conclusions/Recommendations

The common theme across both digital and physical analysis appears to be the **Air Leakage**.

Air leakage from buildings of all types occurs naturally. Theatres can be more susceptible to the impact of this than other building types due to their large internal volumes and concentrated occupancy periods.

The phenomenon of air leakage may include nuisance drafts causing audience members discomfort as well as energy wastage when heated or cooled air is allowed to leak out of the conditioned building.

The Home Survey Tool and in person site visit at the Trafalgar Theatre identified a number of opportunities where air leakage improvements could be achieved.

One such issue was the extent and condition of the original metal framed single glazed windows which commonly for older theatres, form part of the building's listed fabric. Their protected nature poses inherent challenges when it comes to making improvements or to looking at replacement options.

However even if the capital investment and planning permissions needed grants their replacement unviable, refurbishing and weather sealing existing windows can still offer a significant benefit in terms of limiting air leakage.

This, more moderate and cost-effective, approach will still improve occupant comfort levels whilst reducing energy wastage. It might not result in the same scale of improvement a full window replacement would achieve but will still offer a meaningful benefit in terms of visitor experience and building performance improvement.

Building Controls | Building Fabric | **Air Leakage** | Dated Plant | Record Information