



# A Framework for Heritage Lighting

ARUP





Royal Liver Building, Liverpool  
Cover: New Rijksmuseum Amsterdam © Pedro Pegenaute

# A Framework for Heritage Lighting

Light has forever formed the basis of our work, home and social lives. Our relationship to light and how it has developed throughout history is strongly reflected in heritage sites.

An increasing number of our cultural and heritage organisations are investing in ‘once-in-a-lifetime’ restoration projects, however the role of lighting has not always been recognised from the outset. A holistic approach to lighting for heritage projects can create vibrant, prosperous, safe and inclusive places for those who live, work and play near them.

Successful lighting to our heritage buildings creates an opportunity to provide benefits in terms of social and economic value for a variety of stakeholders, from site owners to the local community. For example, it can enliven the urban environment for tourists and the local population, re-kindle the national interest in a forgotten landmark and even unlock new commercial opportunities for the site and its neighbours.

When working on two of the UK’s iconic Grade I listed heritage buildings; Alfred Waterhouse’s Manchester Town Hall and Walter Aubrey Thomas’s Royal Liver Building, it became apparent that there was limited guidance on how to sympathetically illuminate and restore the lighting of landmark sites. Our work on these two projects, supported by other heritage experience, inspired us to create our own guidance.

The purpose of this brochure is to demonstrate that lighting goes beyond functional, task-based illumination.

Lighting is a tool for placemaking, an opportunity to reinstate landmarks and an educational palette for observers. Lighting designers should re-think their title and responsibilities when working with heritage projects, instead becoming hybrid lighting designers, historians, product designers, advertisers, and wayfinding specialists to name a few.



Lauren Blow  
Senior Designer  
Lighting

# Lighting Heritage Sites

Our lighting design supports four key opportunities for heritage sites:

## **EDUCATION**

Showcasing the technical lighting evolution, demonstrating historic workmanship and showing how light once formed a space.

## **ECONOMIC**

Showcasing landmarks and place-making to increase footfall and creating tenantable spaces.

## **REPURPOSE**

Incorporating modern lighting requirements, preserving heritage luminaires and revealing architectural forms with light.

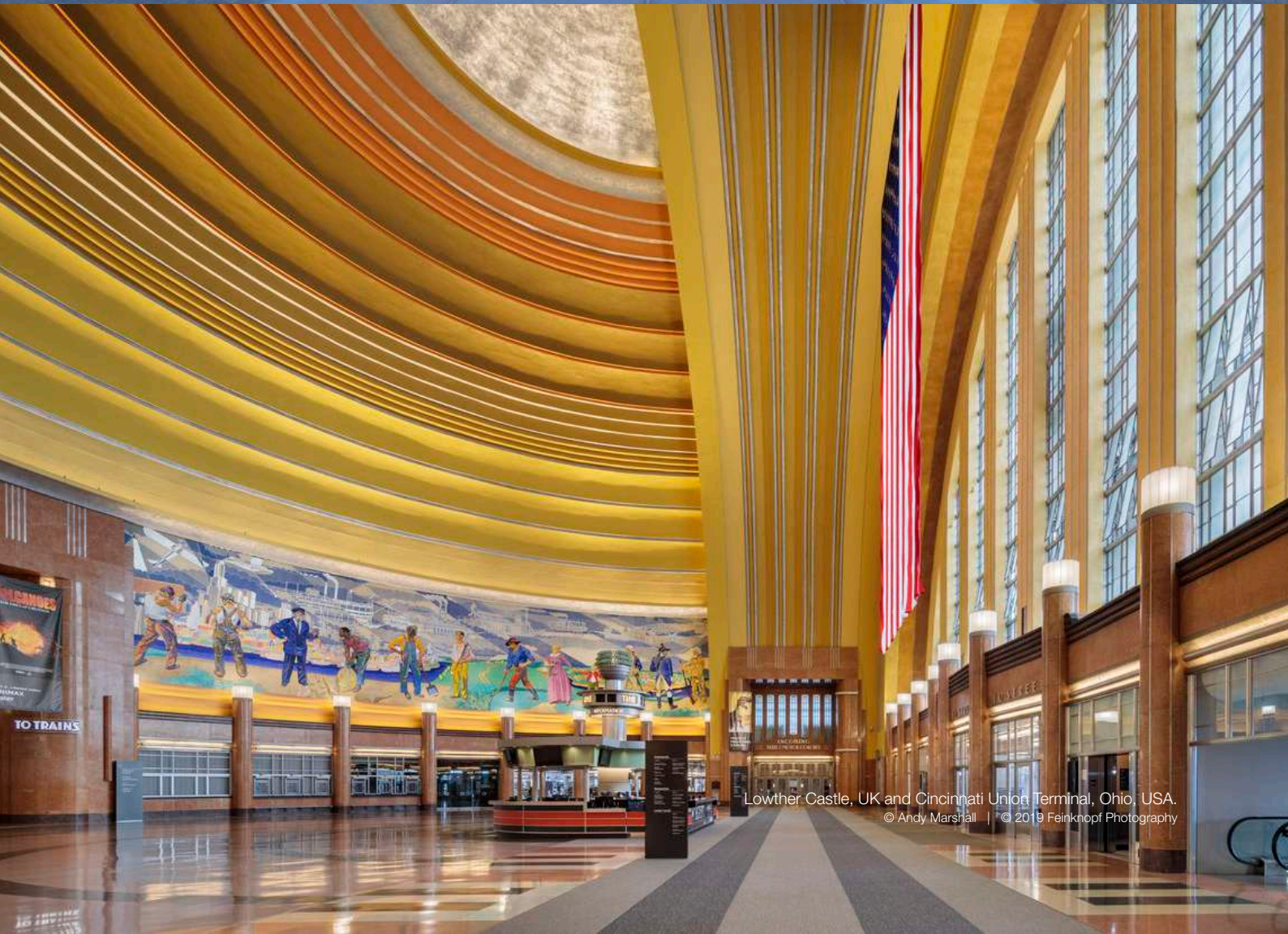
## **SUSTAINABILITY**

Adapting existing buildings, reducing energy consumption and improving safety and well-being of occupiers.

There are three forms of statutory protection for heritage sites within the United Kingdom:

- Conservation Areas, which can be in towns, city centres, suburbs or rural landscapes that have an architectural or historical importance.
- Scheduled Monuments, such as archaeological sites and landscapes with national significance.
- Listed Buildings, which are buildings or structures with special architectural or historic interest.





Lowther Castle, UK and Cincinnati Union Terminal, Ohio, USA.  
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York Art Gallery, York, UK and  
Public Square, Science Gallery London, UK  
© Giles Rocholl | © Paul Carstairs Group



# Our Strategy Framework

Our experience has lead us to develop a process which will inform a heritage lighting strategy, tailored to each individual project:

## **1. SURVEY**

Benchmark the existing lighting scene to quantify visual characteristics such as shade, brightness and contrast. Determine the key viewpoints, approaches and journeys to the building or space.

## **2. RESEARCH**

Invest time in researching the site history to form the basis of the lighting strategy and luminaire treatment, including any requirement for replica luminaires. Establish a time-line of events and modifications to the project including architectural intentions, social opinion, local and national events, luminaire modifications and light source developments.

## **3. CLASSIFICATION**

Designate a classification to each of the existing luminaires for early validation that coordinates with the project-specific Heritage Management Plan<sup>1</sup>. Define the principles of the lighting treatment for each luminaire classification.

## **4. LUMINAIRE RESTORATION**

If no luminaires are classified as 'heritage', move to Step Five. Create a lighting specification for each luminaire that connects to findings in Step Two. Remove a sample of luminaires for closer inspection to determine their construction, condition and materiality and confirm their age.

## **5. TECHNICAL**

Determine the most suitable light source and qualities for each space by looking at the survey results in Step One and complete mock-ups. Consider appropriate use of lighting technology, energy use and sustainability. If suitable, incorporate other services within the restored or replica luminaires such as location-based services, WiFi and CCTV equipment.

## **6. LIGHTING STRATEGY**

Balance the lighting strategy between the conservation requirements and the modern lighting design guidance requirements. Specify a lighting strategy for each type of space in accordance with the conservation principles of the project.

<sup>1</sup> A Heritage Management Plan details how the site will be maintained and preserved and its significance.

# Heritage Lighting Design at Arup

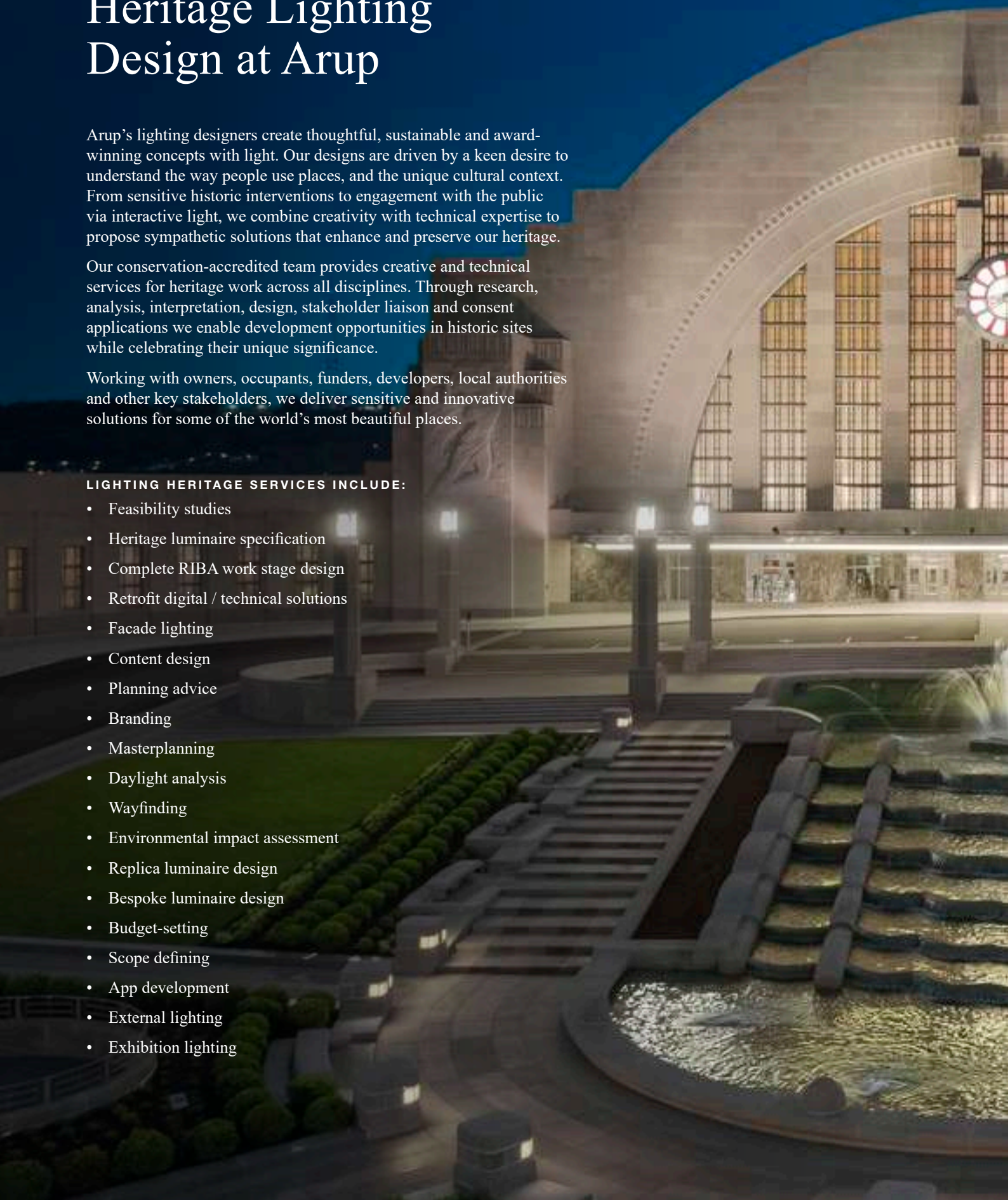
Arup's lighting designers create thoughtful, sustainable and award-winning concepts with light. Our designs are driven by a keen desire to understand the way people use places, and the unique cultural context. From sensitive historic interventions to engagement with the public via interactive light, we combine creativity with technical expertise to propose sympathetic solutions that enhance and preserve our heritage.

Our conservation-accredited team provides creative and technical services for heritage work across all disciplines. Through research, analysis, interpretation, design, stakeholder liaison and consent applications we enable development opportunities in historic sites while celebrating their unique significance.

Working with owners, occupants, funders, developers, local authorities and other key stakeholders, we deliver sensitive and innovative solutions for some of the world's most beautiful places.

## LIGHTING HERITAGE SERVICES INCLUDE:

- Feasibility studies
- Heritage luminaire specification
- Complete RIBA work stage design
- Retrofit digital / technical solutions
- Facade lighting
- Content design
- Planning advice
- Branding
- Masterplanning
- Daylight analysis
- Wayfinding
- Environmental impact assessment
- Replica luminaire design
- Bespoke luminaire design
- Budget-setting
- Scope defining
- App development
- External lighting
- Exhibition lighting







Cincinnati Union Terminal, Ohio, USA.  
© 2019 Feinknopf Photography







## CASE STUDY

# Royal Liver Building, Liverpool

Owners of the Grade I Listed Royal Liver Building, situated on Liverpool's UNESCO world heritage site, sought to breathe life into the area by investing in a new façade lighting scheme. By understanding the wider benefits to the community and city, the scheme aims to rediscover the majesty and form of this iconic building during the hours of darkness.

To create a hierarchy that defines how lighting should be applied and focused on the façade, we mapped the key journeys and viewpoints across Liverpool and aligned this with the visual prominence of the architectural elements.

Illumination of the clock towers and the famous Liver Birds were key to the lighting concept. Research revealed how fundamental these elements were to Liverpool's maritime heritage and the city's story. Highlighting these dominant elements became paramount; one of the main concept statements was the reinstatement of the original purpose of the clock towers into a 21st century digital format. By embedding digital control technology into the design solution, we have enabled a dynamic visitor experience to the Pier Head which honours the intentions of the iconic clock faces.

Through a sympathetic façade lighting scheme, we are able to reconnect the Royal Liver Building back to Liverpoolians and visitors and bring a revival to the waterfront by further promoting the area as a desirable nocturnal destination.



**Left:**

Façade lighting installation and lighting visualisation of the Royal Liver Building.







## CASE STUDY

# Manchester Town Hall, Manchester

Our recent collaboration with Manchester City Council on the seven-year restoration of one of Britain's finest examples of neo-gothic architecture revealed a series of challenges, forgotten terminology and treasures.

During the research phase of the framework, one of the discovered terms was 'gloomth.' Coined by Horace Walpole, the great pioneer of Gothic culture, gloomth was captured by Alfred Waterhouse in the Grade I Listed Manchester Town Hall. It represents the use of warm colours and gloom with dark shadows.

Our lighting concept intended to retain the dark shadows, crevices and sunlit patches to enable the preservation of gloomth and Waterhouse's original intention. The heritage luminaires required elements of replication and restoration. Research and archive evidence informed our decision making process whether to replicate or restore luminaries.

By replicating and restoring the luminaire portfolio, we created the following opportunities; educating the public about past technologies by retaining the gas burners and documenting our research; reducing the energy consumption by incorporating a wireless control system and facilitating an accessible environment with improved lighting quality and placement.

The lighting team was appointed to provide lighting design services from concept to site delivery on the internal spaces, facade and adjacent Albert Square public realm lighting in collaboration with an Arup multidiscipline design team.



**Left:**

Replica luminaire detail for Manchester Town Hall, designed and modelled by our designers.



## Further experience includes:



### Old Library at Trinity College, Dublin, Ireland

The project includes the complete restoration of the existing Old Library at Trinity College Dublin, which dates from 1730 and includes the world renowned Long Room below and the priceless Book of Kells. The project is currently in the design phase, having recently achieved planning permission. Key goals and drivers for the lighting include the retention of the existing building fabric and charm, whilst enhancing the visitor experience. These goals have led to a solution that closely controls the levels of daylight entering vertical openings and a series of discrete details that hide artificial light sources and minimum their impact on building materials.



### Liverpool Mountain and Tate Gallery, Liverpool, UK

Liverpool Mountain is Swiss-artist Ugo Rondinone's first public artwork in the UK and the first of its kind in Europe. This 10-metre high sculpture stands within Mermaid Courtyard alongside the Grade I listed Tate Liverpool. The sites are within the Royal Albert Dock, an UNESCO designated World Heritage Maritime Mercantile City. It consists of coloured rocks, stacked vertically appear to defy gravity. To highlight the sculpture at night, Arup's design incorporated in-grounds to highlight the sculpture as well as facade illumination of the Tate to provide an illuminated backdrop.



### Cincinnati Union Terminal, Ohio, USA

Cincinnati Union Terminal was constructed in 1933 and designed by Fellheimer & Wagner as an intercity train station and museum. The building is a National Historic Landmark and is an exemplary demonstration of art deco architecture. Arup worked alongside GBBN Architects on the restoration and renovation of the site. The design focused on using new technology to embrace the building's history such as custom-developed grand "candlestick" area lights provisioned with LED sources. Inside the terminal, the colorful mosaic mural reappears grazed in light as a key focal point in the space.



### Royal Academy, London, UK

Arup worked alongside David Chipperfield Architects to provide a cohesive lighting design between Burlington House and Gardens for the Royal Academy of Arts. The Italianate Grade II\* listed buildings were part of a masterplanning project to connect the sites both physically and with successful design. The lighting design elements include illumination of a number of exhibits, lecture theatre and to guide visitors around the circulation spaces.



### York Art Gallery, York, UK

Working with York Art Gallery, Arup provided lighting and exhibition lighting design for a major £8m refurbishment and redevelopment that provided 60 per cent more exhibition space. The Grade II listed museum has three exhibition spaces on the ground floor, and four on the first floor, two of which contain an internationally significant collection of British Studio Ceramics. The Arup team worked with the curators and exhibition designers to illuminate a diverse range of exhibitions, from Italian Old Masters to modern and contemporary pieces.



### Public Square, Science Gallery, London, UK

Part of the renovations to the Science Gallery, London, included transforming an undeveloped Georgian courtyard from a car park to a newly-landscaped public square. This area soon created a place where communities can connect and rest, while the lighting sympathetically integrated the newer aspects of the building renovations with the older surrounding urban landscape.





## **ABOUT ARUP**

Arup is a global firm of planners, designers, engineers and business consultants. We provide a diverse range of professional services to clients around the world, exerting a significant influence on the built environment. The firm is the creative force behind many of the world's most innovative and sustainable building, transport and civil engineering projects and design technologies.

Established in 1946, Arup has over 15,000 employees based in more than 90 offices across 39 countries, working on up to 10,000 projects at any one time. Our unique structure, with the firm held in trust on behalf of its employees, gives us complete independence.

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