



# CITY UNDER MICROSCOPE

GLASGOW

United Kingdom

11-15 | November  
2015



INTERNATIONAL  
YEAR OF LIGHT  
2015

# EDITORIALS



Glasgow is Scotland's largest city with a growing population of 600 000. £8 billion of capital investment since 2011 has resulted in significant changes in the physical environment of the city. New homes, offices, hotels, sports and cultural venues are all part of the transformation of the city, from an industrial powerhouse to a modern, lively destination.

Sustainable urban lighting has been part of the story as Glasgow embraces smart and resilient city development. Glasgow first welcomed LUCI members in 2005 and the network has grown significantly since then, as this city and how we use lighting has changed. We want to reflect on what we have achieved and challenge our thinking to shape the way forward, and even more so as we come towards the end of 2015, the Year of Light. The LUCI City under Microscope event will allow delegates to share their expertise, have hands-on experience of exploring lighting solutions and take Glasgow onto the next stage.

As our city brand says, People Make Glasgow, and you can be assured of a very warm welcome.

## **Bailie Allan Stewart**

Past President of LUCI  
Glasgow City Council



There are very few cities in the world where LUCI has had the chance to be welcomed twice. 10 years after the LUCI AGM in Glasgow, it is with great pleasure that we return to this city, a founding member of LUCI. We will take this opportunity to discover in detail how Glasgow has been using light in the process of becoming a world class, smart city.

This includes how light has contributed to create inviting places to live in and an attractive city to visit, a focus on intelligent street lighting and a smart, resilient, city strategy. This City under Microscope will undoubtedly reflect the image of Glasgow: rich and dynamic – with conferences, site visits, and a demonstration of the latest technologies implemented in the city; as well as many networking opportunities and special events including the Radiance Reflected exhibition.

It will also be the moment for a unique workshop offering hands-on experience to LUCI delegates: with the "Magnifying Glasgow" workshop, participants will design lighting solutions to answer to "real life" issues encountered by the city.

I would like to warmly thank the City of Glasgow for hosting this event, I wish an inspiring City under Microscope to all participants!

## **Johan Nyhus**

President of LUCI  
Deputy Mayor of Gothenburg

### Wednesday 11 November

- 19:00 Welcome cocktail and exhibition opening – Radiance Reflected
- 21:00 Walking lighting trail in the city centre

### Thursday 12 November

- 9:00 Opening of the City under Microscope
- 9:10 Transforming the city: steam to green
- 10:50 Planning the economic growth of the city
- 12:00 Lunch
- 13:00 People make Glasgow... light up!
- 15:00 Inviting place to live: what next?
- 15:50 Resilient City – what does the resilience lens mean for cities?
- 18:20 See the vision for the Canal in action
- 20:00 Dinner / The Piping Centre

### Friday 13 November

- 9:20 Future and smart city
- 10:10 LUCI Announcements
- 11:00 “Magnifying Glasgow” workshop introduction
- 12:30 Lunch
- 13:30 “Magnifying Glasgow” workshop activity
- 16:15 There is lots to learn in this city – parallel sessions
- 19:30 LUCI make Glasgow!
- 20:00 Dinner / The Flying Scotsman, Corinthian

### Saturday 14 November (OPTIONAL PROGRAMME)

- 10:00 Auchentoshan Distillery tour
- 12:00 Tour at the Winter Gardens, Peoples Palace, Glasgow Green
- 14:00 “Helmholtz” by Wintour’s Leap at Glasgow Science Centre Tower Base
- 15:00 The 2015 Turner Prize exhibition at Tramway
- 17:00 “Island Drift” exhibition

### Sunday 15 November (OPTIONAL PROGRAMME)

- 10:00 Cathedral Square, Glasgow Cathedral and Necropolis
- 12:00 Visit to Drygate Brewery Glasgow’s newest microbrewery restaurant
- 13:00 Riverside Museum
- 15:00 Kelvingrove Art Gallery and Museum

Wednesday **11** November

**16:30 Executive Committee meeting (for LUCI EC members only) / City Chambers**

**19:00 Welcome cocktail and exhibition opening – Radiance Reflected / The Lighthouse**

*Bailie Allan Stewart, Past President of LUCI, Glasgow City Council*

*Mary-Ann Schreurs, LUCI Vice-President, Deputy Mayor of Eindhoven*

An exhibition that explains the origins of the approach to lighting in the city, and how this has evolved over time. It reflects the development of LUCI and Glasgow's role as a founding member.

**21:00 Walking lighting trail in the city centre**

This tour will offer participants the opportunity to see some of the permanent and temporary lighting installations in and around the vibrant city centre.

Thursday **12** November

**8:30 Registration and coffee / City Chambers**

*Moderator: Cathy Johnston*

**9:00 Opening of the City under Microscope**

*Bailie Allan Stewart, Past President of LUCI, Glasgow City Council*

*Mary-Ann Schreurs, LUCI Vice-President, Deputy Mayor of Eindhoven*



**9:10 - 10:20 | TRANSFORMING THE CITY: STEAM TO GREEN**

Glasgow has transformed from a city dependent on heavy industry to one which aspires to be one of the most sustainable cities.

■ **Introducing a world class city**

*Tom Turley, Assistant Director, Development and Regeneration Services, Glasgow City Council*

Following years of investment in regeneration, Glasgow is once more a global force boasting truly world class assets. Tom will show that light has often been a signal for regeneration in the city.

■ **Setting the scene – street lighting infrastructure**

*George Gillespie, Assistant Director, Land and Environmental Services, Glasgow City Council*

As well as explaining the hard facts of the outdoor lighting infrastructure in Glasgow, George will touch on the work that has been done to develop new city management approaches taking into account data and carbon management.





Thursday 12 November

## ■ Let there be light

*Professor Martin Hendry, Head of School, Professor of Gravitational Astrophysics and Cosmology, Glasgow University*

International Year of Light 2015 celebrates the impact of light on science, technology and culture and marks 150 years since the ground-breaking discoveries of James Clerk Maxwell. Professor Hendry will explore the impact of Maxwell's remarkable work on the role of light, and how it underpins our modern world.

## ■ Q&A session



10:20 Coffee break

## 10:50 - 12:00 | PLANNING THE ECONOMIC GROWTH OF THE CITY

The continuous and sustainable economic growth of Glasgow requires focus and planning. The city has unique partnerships that include businesses, academics, and the public sector to allow it to flourish.

## ■ Growing a green economy

*Bailie Elizabeth Cameron, Elected Member, Glasgow City Council, Ambassador for Glasgow Year of Green 2015*

Glasgow aspires to be one of the world's best cities, excelling in a select number of growth sectors. 2015 is Glasgow's Year of Green and supporting low carbon industries is one of those sectors. Bailie Cameron will explore the role that this has in the future development of the city.

## ■ Light and technology and its role in the growth of the economy in Glasgow

*Simon Smith, Economic Development Manager: Business Growth, Glasgow City Council*

Innovation matters: Simon will focus on the way in which the city is seeking to specifically support the role of light and technology through innovation and business growth in the framework of the ambitious City Deal programme.

## ■ Getting ahead of change: City Centre Strategy

*Jane Laiolo, Group Manager, Development and Regeneration Services, Glasgow City Council*

The city centre is a key driver in the economy of Glasgow, and of Scotland. Jane will explain the ambitious strategy and action plan that has been developed to ensure that the city centre maintains its vibrancy and importance. Plans for the public realm, including lighting, underpin the approach.

## ■ Q&A session

12:00 Lunch

## 13:00 - 14:30 | PEOPLE MAKE GLASGOW... LIGHT UP!

People make Glasgow the city that it is today. Different people with different perspectives and talents make the city the diverse and interesting place that people enjoy living and working in, and visiting.

### ■ Beaming Glasgow across the world

*Joe Aitken, Head of Major Events, Glasgow City Marketing Bureau*

Glasgow is steadily building its global presence, particularly as a destination. People make Glasgow, and Joe will explain how the lighting of the city has underpinned the image that can be projected across the world.

### ■ Local people make local places

*Heather Claridge, Senior Project Officer, Development and Regeneration Services, Glasgow City Council*

*Cathy Houston, Architect, Collective Architecture*

Lighting for communities has been a core objective of Glasgow's lighting strategy. Heather and Cathy will give examples of the different projects and approaches that have resulted in creative and innovative local projects, which are now part of the fabric of the city.

### ■ Light in Motion 2012-15

*Angus Farquhar, Creative Director, NVA*

A short history of Glasgow arts company NVA's mass choreography of endurance runners and cyclists for the Olympics and Tour de France using 100 specially designed, remotely-activated and programmable light suits.

### ■ LightLinks II – Glasgow and Buffalo City partnership

*Iain Macrae, Head of Global Lighting Applications Management, Thorn*

*Cathy Johnston, Group Manager, Development and Regeneration Services, Glasgow City Council*

LUCI, Thorn, Concepteurs Lumières sans Frontières, Glasgow and Buffalo City in South Africa worked together on LightLinks II. Getting an international perspective on decision making for public lighting for communities in developing countries has been the purpose of the project. This presentation will discuss some of the issues encountered in delivering this ambition.

### ■ Q&A session

14:30 Coffee break

## 15:00 - 15:50 | INVITING PLACE TO LIVE: WHAT NEXT?

The transformation of the city continues with future regeneration projects that create vibrant community spaces for its growing population.

### ■ People make Glasgow home – housing led regeneration

*Patrick Flynn, Head of Housing and Regeneration Services, Glasgow City Council*

In this session, Patrick will present the Council's ambitious commitment to deliver 25 000 homes by 2050. This demand comes from the city's growing population; the need to create vibrant communities through quality place-making; and to attract inward investment to support Glasgow's thriving economy. This ambition is also a real opportunity for the inclusion of intelligent lighting in the city.

### ■ Port Dundas: seeds of change – culture and creativity

*Richard Millar, Director of Heritage Enterprise and Sustainability, Scottish Canals*

The canal was also part of Glasgow's industrial past. It is changing into a place of creativity and new urban living. Richard will give an insight to the way in which a new vision for urban pioneers – creative businesses, urban sports, the arts and cultural education – puts a spotlight onto the canal, lighting being a key component of the approach.

### ■ Q&A session

## 15:50 | RESILIENT CITY CONVERSATION – WHAT DOES THE RESILIENCE LENS MEAN FOR CITIES?

Glasgow was the first, and only Scottish city to be named in the first round of Rockefeller 100 Resilient Cities. What does thinking about light in a Resilient City mean?

*Duncan Booker*, Sustainable Glasgow Programme Manager at Glasgow City Council, will give a short overview of the “Resilient City Conversation” that is taking place in Glasgow to set the scene for a panel discussion featuring speakers from cities of the Rockefeller 100 Resilient Cities Network.

16:40 Free time and opportunity to visit city centre

18:00 Departure from the hotel (by bus)

### 18:20 See the vision for the Canal in action

NVA's internationally touring public artwork “Speed of Light” will arrive in Glasgow for the first time with a powerful re-staging of “Ghost Peloton” at the Whisky Bond, home of Glasgow Sculpture Studios.

20:00 Dinner / The Piping Centre

23:00 Return to the hotel (by bus)



## Friday 13 November

8:30 Registration and coffee / Technology and Innovation Centre, Strathclyde University, Level 2 Foyer

Moderator: *Cathy Johnston*

## 9:10 – 10:10 | FUTURE AND SMART CITY

What does the future hold? How can we be smart about working together through innovation and knowledge and make intelligent choices?

### ■ Future Cities Demonstrator project

*Colin Birchenall*, Architect for Glasgow Future Cities Demonstrator, Glasgow City Council

In 2013 Glasgow won funding worth £24m from Innovate UK to explore the ways in which technology and data could be used to make life in the city safer, smarter and more sustainable. Colin will give an overview of the demonstrator projects.

### ■ Street lighting as the enabler for smarter cities

*Brian McGuigan*, European Commercial Director of Smart Cities and Lighting, Silver Spring Networks

In his presentation, Brian will show how cities like Glasgow, Bristol and Copenhagen are innovating city services and infrastructure through intelligent lighting systems.

### ■ Q&A session

## 10:10 | LUCI ANNOUNCEMENTS

10:30 Coffee break

## 11:00 – 16:15 | "MAGNIFYING GLASGOW" - WORKSHOP

Lighting design workshop involving informed people in innovation – that's you! This is where the fun begins. LUCI events are special in bringing together lighting designers, urban planners, policy makers and technical expertise. We enjoy that exchange. How much more fun to really apply that knowledge and see the art of the possible.

### 11:00 **Why do it this way? Learning from Glasgow's input to the Liveable Cities programme**

*Cathy Johnston*, Group Manager, Development and Regeneration Services, Glasgow City Council

*Mark van Doorn*, Design Manager, Philips Lighting

### 11:20 **Workshop brief and site visits to Strathclyde University campus**

A unique opportunity to have hands-on experience in designing solutions to real issues encountered in the city, as well as an opportunity to test the objectives of Glasgow's approach on real sites. Delegates will be divided into multidisciplinary groups that will put learning into practice by coming up with interesting lighting design approaches for three sites on the Strathclyde University campus. The winning groups will implement their design concepts on site.

### 12:30 Lunch

### 13:30 **Urban lighting concept design**

Get those creative thoughts flowing! Participants will be supported by Glasgow City Council and Philips staff to come up with ideas for realisation.

### 15:00 **Concept presentation by the teams**

There is nothing like a bit of friendly competition to help us learn.

### 15:45 Coffee break

### 15:45 **Jury session**

Our eminent jury will decide which 3 teams will spend time constructing their showpiece.

### 16:00 **Announcement of 3 winning teams**

## 16:15 – 17:45 | THERE IS A LOT TO LEARN IN THIS CITY

Three sessions on lighting that will run as parallel sessions so that you get a chance to see them all.

### PARALLEL SESSIONS

#### **Lighting as the Internet of Things**

*Janet Milne*,  
Intelligent Lighting Centre,  
TIC, University of Strathclyde

#### **Glasgow's public lighting since 1780: the changes in the city's night image**

*Prof. Branka Dimitrijevic*,  
Department of Architecture,  
University of Strathclyde

#### **Visit of the City Observatory and intelligent street lighting demonstration**

*Peter Devine*, Engineering Lead Future Cities, Glasgow City Council  
*Richard Bellingham*, Director, City Observatory – Institute for Future Cities, University of Strathclyde

### 17:45 Free time and opportunity to visit city centre

### 19:00 Departure from the hotel

### 19:30 **LUCI make Glasgow!** The constructed designs will become temporary installations for the evening. Come and see the results, and the mark that LUCI delegates have made on our city.

### 20:00 Dinner / The Flying Scotsman, Corinthian

### 23:00 Return to the hotel (on foot) or free time



## SPEAKERS



### Tom Turley

Assistant Director, Development and Regeneration Services, Glasgow City Council

*Tom Turley graduated from Glasgow School of Art in 1984. He has held a number of senior positions within Glasgow City Council, dealing with all aspects of the regeneration agenda. In his current role, Tom works with strategic partners and key stakeholders to ensure the development and continued regeneration of the city.*



### George Gillespie

Assistant Director, Land and Environmental Services, Glasgow City Council

*George Gillespie is Assistant Director with responsibility for roads, lighting, cleansing, parks, waste management, environmental health, scientific services and trading standards. He is a Chartered Civil Engineer and has held a number of senior positions within Strathclyde Regional Council and Glasgow City Council among which Head of Lighting and Traffic.*



### Prof. Martin Hendry

Head of School, Professor of Gravitational Astrophysics and Cosmology, Glasgow University; Chair of IYL 2015 Scotland

*Martin Hendry is Professor at the University of Glasgow, where he is currently Head of the School of Physics and Astronomy. As Chair of the Institute of Physics in Scotland he is a member of the UK Steering Group for International Year of Light 2015 and is leading the Scottish programme of IYL activities.*



### Bailie Elizabeth Cameron

Elected Member, Glasgow City Council; Ambassador for Glasgow Year of Green 2015

*As the Ambassador of Glasgow's Green Year 2015, Bailie Cameron has headed up the year of activities and events, strengthening partnerships across sectors including science, culture and education. She is currently the Executive Member for children, young people and lifelong learning.*



### Simon Smith

Economic Development Manager: Business Growth, Glasgow City Council

*Simon Smith has worked across the fields of physical, social and economic regeneration. He contributed to the development of Glasgow's influential City Lighting Strategy. He also managed the two Radiance international light festivals. At his current position, he leads a team that is responsible for supporting growing, resilient and innovative businesses in the city.*



### Jane Laiolo

Group Manager, Development and Regeneration Services, Glasgow City Council

*Jane Laiolo graduated in Economic History from the University of Glasgow, followed by an Economic Development postgraduate diploma. After various significant positions at Glasgow City Council, since 2009 Jane contributes to the development of the City Centre Strategy 2014-19 which directly responds to the issues now affecting city centres in relation to changing consumer behaviour and online trends.*



### Joe Aitken

Head of Major Events, Glasgow City Marketing Bureau

*Joe's role is to attract and develop events that will have a significant economic impact for Glasgow and help position it internationally. He has been responsible together with his team for attracting events like BBC Radio 1 Big Weekend, MTV European Music Awards, BBC Sports Personality of the Year, Euro 2020 football championships and World Curling 2020.*



### Heather Claridge

Senior Project Officer, Development and Regeneration Services, Glasgow City Council

*Heather is an urban planner. She works with communities, artists and creative practitioners in the development of environmental regeneration projects. These include the award winning Stalled Space Initiative, the Land Art Generator Initiative and Integrated Green Infrastructure projects. Recently she has worked with the Scottish Government and Architecture and Design Scotland to develop the Stalled Spaces Scotland programme.*



### Cathy Houston

Architect, Collective Architecture

*Cathy Houston recently completed a post-graduate degree at Edinburgh University in Advanced Sustainable Design. She won "Architect of the Year" at the Women in Construction Awards 2012. Her lighting projects include the transformation of 3 tower blocks in Castlemilk and the newly launched Linked Via Light project in Carmyle designed with the young people of 3 local schools.*



### Angus Farquhar

Creative Director, NVA

*In 1992, Angus Farquhar founded NVA, a Glasgow based independent arts company that created many benchmark large-scale works. These include Glasgow and Newcastle's first international lighting festivals, illuminated walked performances in the Scottish highlands and Speed of Light and Ghost Peloton choreographing endurance runners and cyclists in programmed light suits.*



### Iain Macrae

Head of Global Lighting Applications Management, Thorn; Past President of the Society of Light and Lighting

*Iain Macrae graduated in Mechanical Engineering. Since starting with Thorn over 25 years ago, he has gained many years of manufacturing, application and technical experience including a whole range of projects across most market sectors. Iain currently works with an international team directing application strategy, co-ordinating work on lighting standards and supporting new product development and marketing.*



## SPEAKERS



### Cathy Johnston

Group Manager, Development and Regeneration Services, Glasgow City Council

*Cathy is a landscape architect and planner who currently leads the Development Plan group delivering key strategic objectives for the local authority including input to the Strategic Development Plan for Glasgow and Clyde Valley, and Glasgow's Local Development Plan and Open Space Strategy. Previously she managed the group that championed high quality design, and delivered Glasgow's Lighting Strategy.*



### Patrick Flynn

Head of Housing and Regeneration Services, Glasgow City Council

*Patrick Flynn joined Glasgow City Council as a housing officer in 1981. He joined Scottish Homes in 1991 and subsequently held a number of senior positions in that organisation and then in Communities Scotland and the Scottish Government. He re-joined Glasgow City Council in 2011 and is the Head of Housing and Regeneration Services.*



### Richard Millar

Director of Heritage Enterprise and Sustainability, Scottish Canals

*Richard Millar's remit covers caring for the heritage and environment of the nation's inland waterways, as well as project development, fundraising, and the promotion of marine and canal-led tourism. Richard has worked on a number of high-profile projects, including the Millennium Link and the regeneration of the Lowland Canals as a visitor destination.*



### Duncan Booker

Sustainable Glasgow Programme Manager, Glasgow City Council

*Duncan Booker is a graduate of the Universities of Oxford and Glasgow. He is manager for Sustainable Glasgow, which is the city's multi-sectoral partnership for driving its sustainability ambitions. He has worked on policy development in local government for over twenty years and previously served in the Council Leader's office.*



### Dr. Colin Birchenall

Architect for Glasgow Future Cities Demonstrator, Glasgow City Council

*Dr. Colin Birchenall is the lead architect for the Glasgow Future Cities Demonstrator, a £24 million programme funded by Innovate UK, to showcase smart city principles and technologies at scale.*



### Brian McGuigan

European Commercial Director of Smart Cities and Lighting, Silver Spring Networks

*Brian McGuigan has worked in the large scale deployment of innovative services and technologies for the last 15 years, in the Smart City, Energy and Medical sectors, applying a clear focus on leveraging technology to deliver real end user benefits. At Silver Spring Networks Brian has worked with many cities to explore how lighting upgrades can accelerate wider city service innovation.*



### Dr. Mark van Doorn

Design Manager, Philips Lighting

*In his current role, Mark is responsible for driving design and innovation programmes for external clients with a focus on city revitalisation and smart city projects. In addition, Mark works on shaping a city revitalisation service proposition to further strengthen Philips' involvement in the domain of urban regeneration coupled with a smart city approach.*



### Janet Milne

Intelligent Lighting Centre, TIC, University of Strathclyde

*Janet Milne graduated in Physics and has since developed a broad base of commercial business skills during 17 years in high-technology product development, manufacturing and commercialisation. She has Executive Director level management experience in SMEs and currently provides strategic direction to the Intelligent Lighting Centre through connections with industry, government and end-users.*



### Prof. Branka Dimitrijevic

Department of Architecture, University of Strathclyde

*Branka's research interests include history of architecture and settlements, sustainable re-use of architectural and urban heritage, and integration of low carbon infrastructure systems in the built environment. Branka has directed several knowledge exchange projects of Scottish universities in collaboration with Scottish businesses related to the development of innovations for sustainable built environment.*



### Richard Bellingham

Director, City Observatory – Institute for Future Cities, University of Strathclyde

*Richard Bellingham is Director for the Institute for Future Cities at University of Strathclyde and was previously Head of Energy Policy for the Scottish Government. Richard is leading development of the new City Observatory that is drawing together urban data to allow cities to be seen in new ways and creating effective solutions for urban issues.*



### Peter Devine

Engineering Lead Future Cities, Glasgow City Council

*Peter Devine works within Land and Environmental Services in the Lighting Section at the Glasgow City Council. He is the project lead for Intelligent Street Lighting as part of Future Cities.*



## OPTIONAL PROGRAMME

### Saturday 14 November

- 9:30 Departure from the hotel (by bus)
- 10:00 Auchentoshan Distillery tour (£6)
- 12:00 Tour at the Winter Gardens, Peoples Palace, Glasgow Green
- 14:00 "Helmholtz" by Wintour's Leap at Glasgow Science Centre Tower Base
- 15:00 The 2015 Turner Prize exhibition at Tramway
- 17:00 "Island Drift" exhibition
- 18:00 Return to the hotel

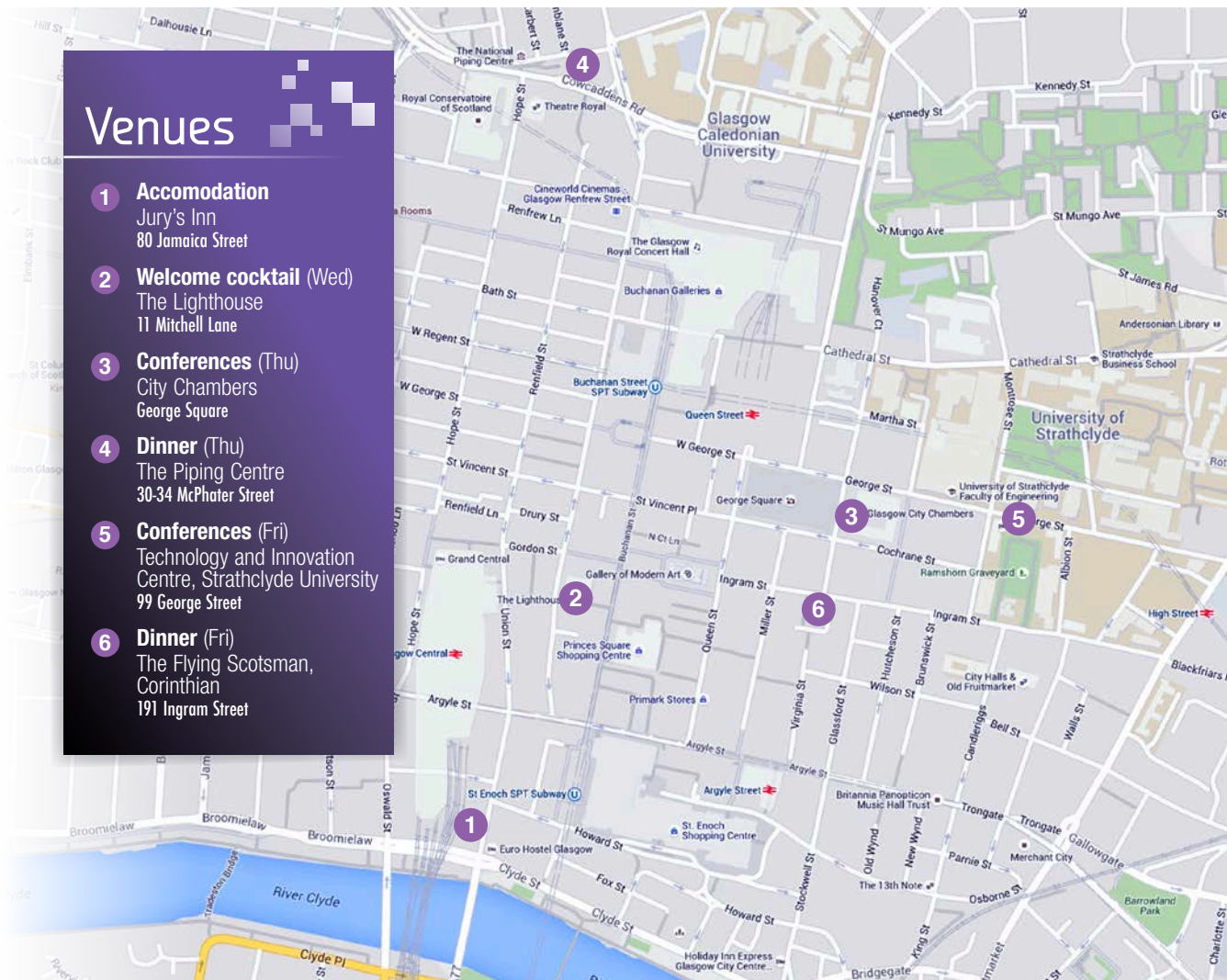
### Sunday 15 November


- 9:30 Departure from the hotel (by bus)
- 10:00 Cathedral Square, Glasgow Cathedral and Necropolis
- 12:00 Visit to Drygate Brewery Glasgow's newest microbrewery restaurant
- 13:00 Riverside Museum
- 15:00 Kelvingrove Art Gallery and Museum
- 17:00 Return to the hotel



## Venues

- 1 **Accommodation**  
Jury's Inn  
80 Jamaica Street
- 2 **Welcome cocktail (Wed)**  
The Lighthouse  
11 Mitchell Lane
- 3 **Conferences (Thu)**  
City Chambers  
George Square
- 4 **Dinner (Thu)**  
The Piping Centre  
30-34 McPhater Street
- 5 **Conferences (Fri)**  
Technology and Innovation  
Centre, Strathclyde University  
99 George Street
- 6 **Dinner (Fri)**  
The Flying Scotsman,  
Corinthian  
191 Ingram Street






LUCI (Lighting Urban Community International) is an international network of cities on urban lighting bringing together over 70 municipalities across the world. It creates spaces for exchange of knowledge and good practices, and helps cities develop an appropriate and sustainable use of urban lighting.

Organised twice a year, the LUCI City under Microscope events enable participants to discover the lighting strategy of a member city over a two day period.

A chance to see a city in its best light!



More information on the LUCI website:  
**[www.luciassociation.org](http://www.luciassociation.org)**

- Free participation for LUCI members
- 300 euros for non-LUCI members (accommodation not included)

## LUCI ASSOCIATION

13 rue du Griffon 69001 Lyon - France

T: 00 33 4 27 11 85 37 - F: 00 33 4 27 11 85 36

[www.luciassociation.org](http://www.luciassociation.org) - [luci@luciassociation.org](mailto:luci@luciassociation.org)

Sponsors:

**PHILIPS**



With the support of:



**INVEST  
GLASGOW**



**NVA**



**Scottish  
Canals**

**TWB**



This document is printed on recycled paper using vegetable oil based ink.