

# Total Design



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***To strive for quality in  
only a part is almost  
useless if the whole is  
undistinguished.***

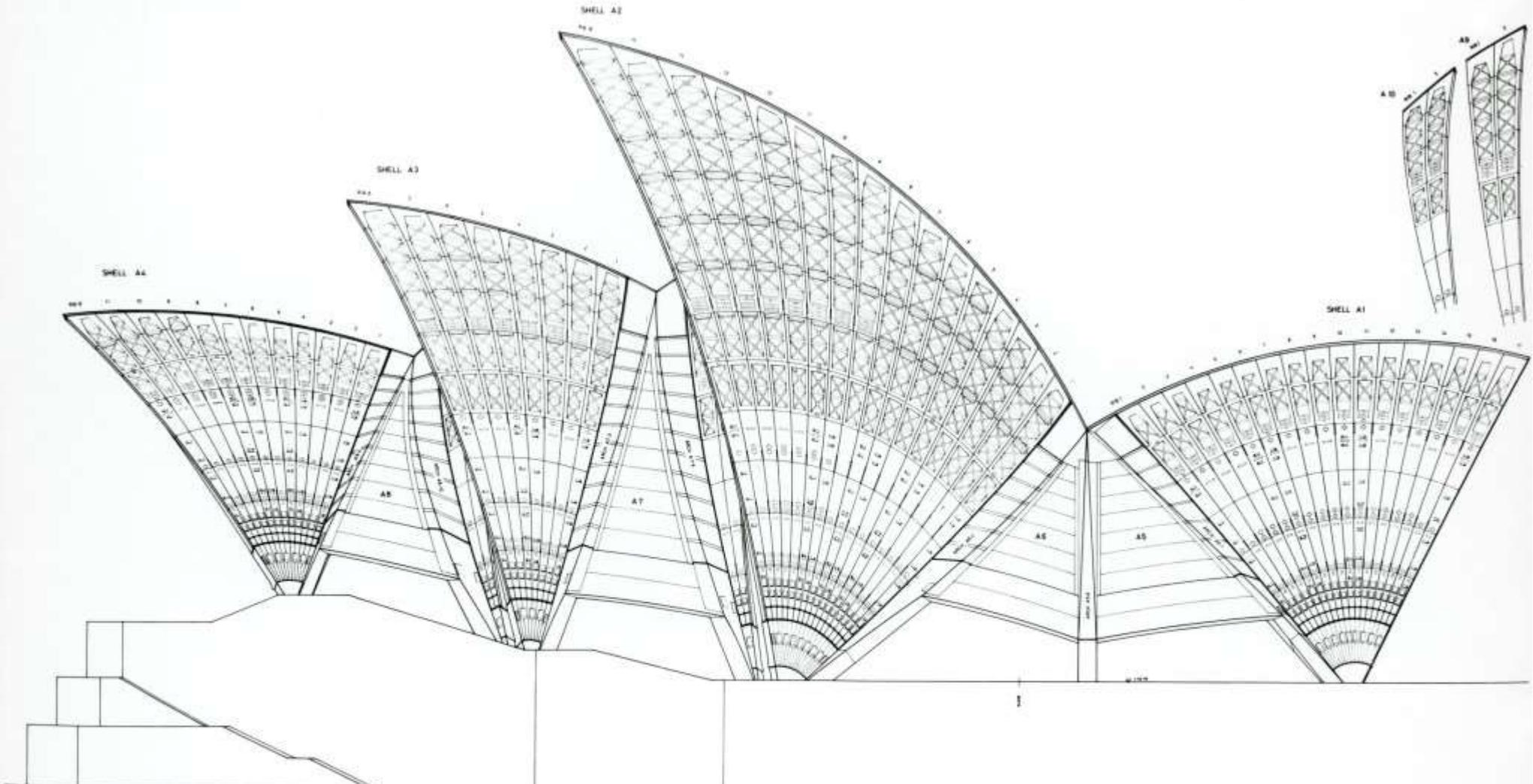


***To strive for quality in only a part is almost useless if the whole is undistinguished.***

***We are led to seek overall quality and fitness for purpose and to the ideal of 'Total Architecture'***







SYDNEY OPERA HOUSE  
 ROOF HALL  
 ELEVATION OF SUPERSTRUCTURE  
 ... .. NO. 1112-56-1013



Source: The Guardian



Ove and His Firm  
1938-1988

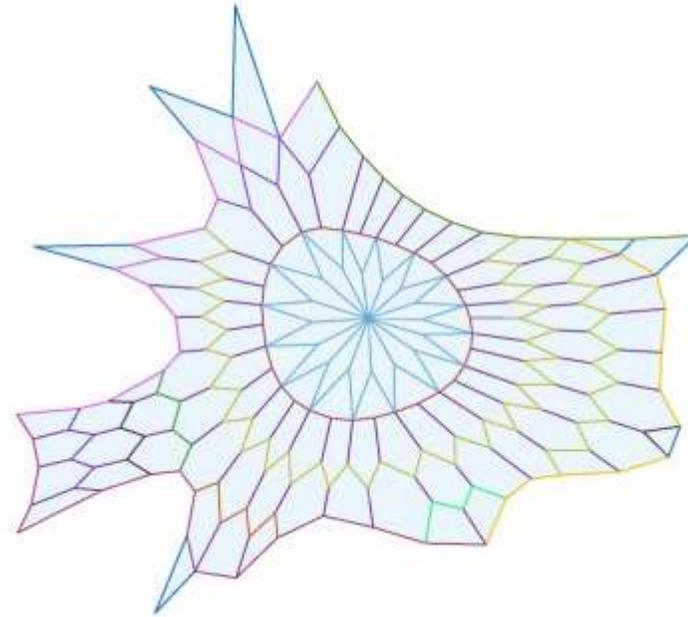
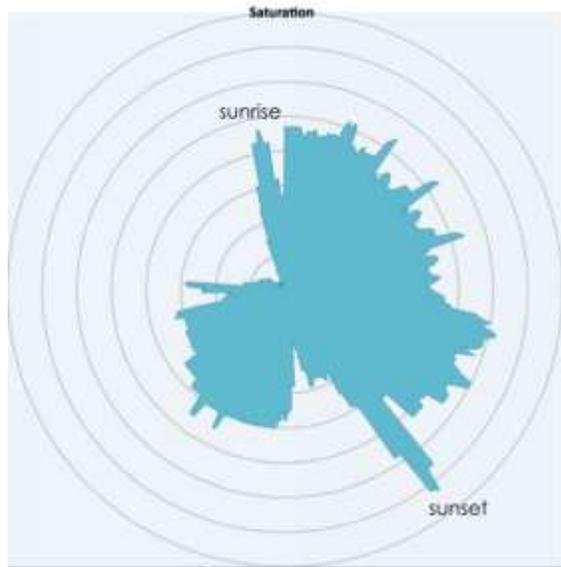
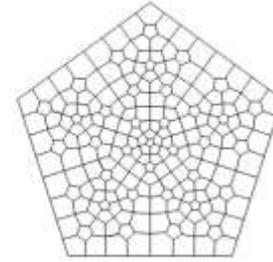
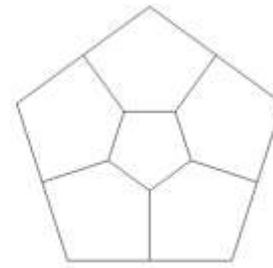
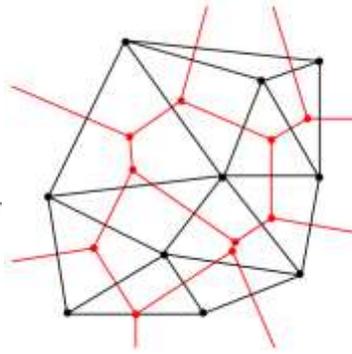
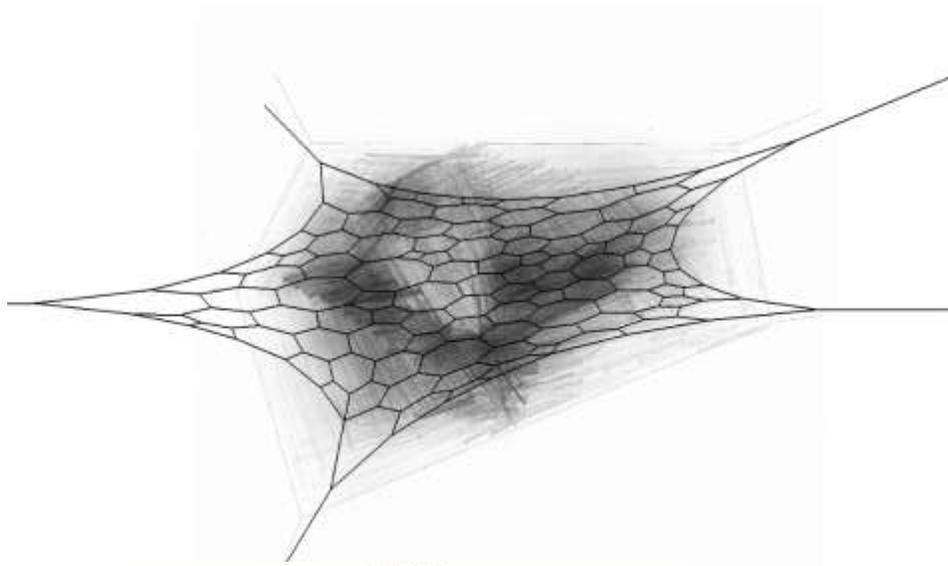
And His Firm  
1988-2018

Today: Total Design

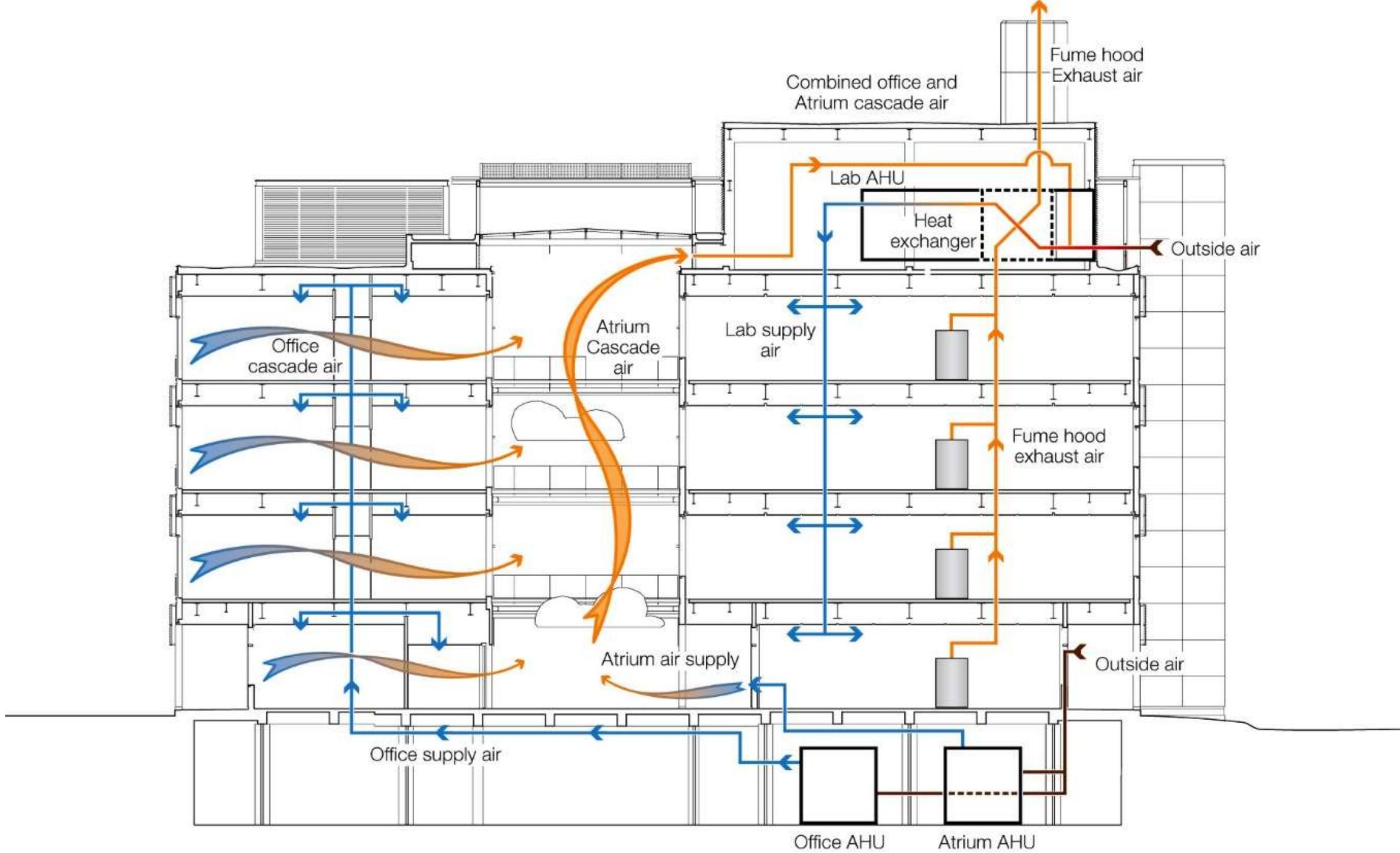


THE BATTLE OF BALLANTYNE PIER  
By 1840, the area around the pier was a busy wharf. In 1841, a battle took place between the British and the Irish. The British won, but the Irish were not completely defeated. The battle is remembered as a significant event in the history of the area.

















R  
RENAISSANCE  
HOTELS

TRAVELERS TRAVELERS





**drivers  
of change  
energy**

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**drivers  
of change  
climate change**

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**drivers  
of change  
oceans**

WISDOM VALUE

ARUP

**drivers  
of change  
waste**

ARUP

**drivers  
of change  
urbanisation**

ARUP

**drivers  
of change  
food**

ARUP

**drivers  
of change  
water**

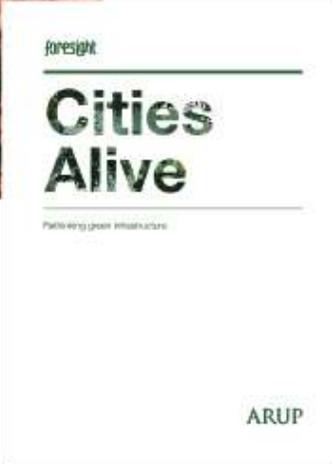
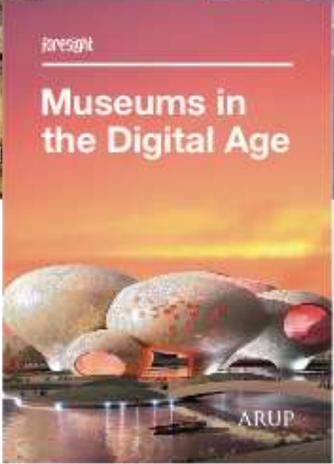
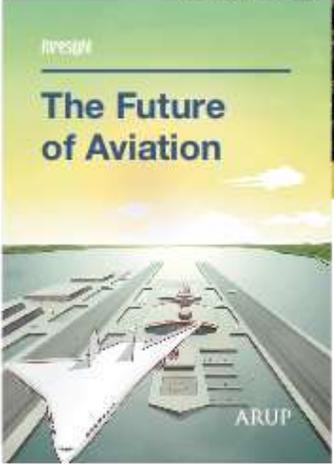
ARUP

**drivers  
of change  
demographics**

ARUP

**drivers  
of change  
poverty**

ARUP



An aerial view of a city skyline at dusk. The sky is a mix of deep blue and orange, with scattered clouds. The city is filled with numerous skyscrapers, many of which are illuminated with warm lights. The buildings vary in height and design, creating a dense urban landscape. The overall atmosphere is one of a bustling city transitioning from day to night.

Cities:

Sustainability and resilience challenges of  
unprecedented urbanization

With nearly 70% of the world's population set to live in cities by 2030, the quality of life experienced by this population will determine our global future.

- Increasingly cities, more than national governments, have the power to tackle climate change, fuel the global economy, deliver prosperity and alleviate poverty. With social media and the growth of the global middle class, urban citizens have greater power than ever to stop or start projects, choose where they live, work and invest and demand a better quality of life.





### City Resilience

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Urban management, techniques and systems to ensure cities can respond to shocks and stresses (foreseen or otherwise)



### Climate-Ready Cities

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Turning adaptive measures in addressing the long term effects of climate change and carbon reduction into opportunities for enhancing city life



### City Life

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Shaping the design of our places and spaces, the buildings people occupy, and the education, health and mobility services they rely on



### City Growth

---

Seizing opportunities for economic growth from airports, interchanges, infrastructure and services investment



### City Regeneration

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Transforming the rundown, abandoned and damaged pieces of our cities back to places where people want to live, work and play



### Host Cities

---

Capitalising on major events to deliver transformational change to cities and their populations



### City Operations

---

The governance, funding, delivery and management programmes that help our cities function and grow



### Digital Cities

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Applying digital technology to improve citizen engagement, governance and a city's operational and resource efficiency.



## Climate Ready Cities

- Turning adaptive measures in addressing the long term effects of climate change and carbon reduction into opportunities for enhancing city life



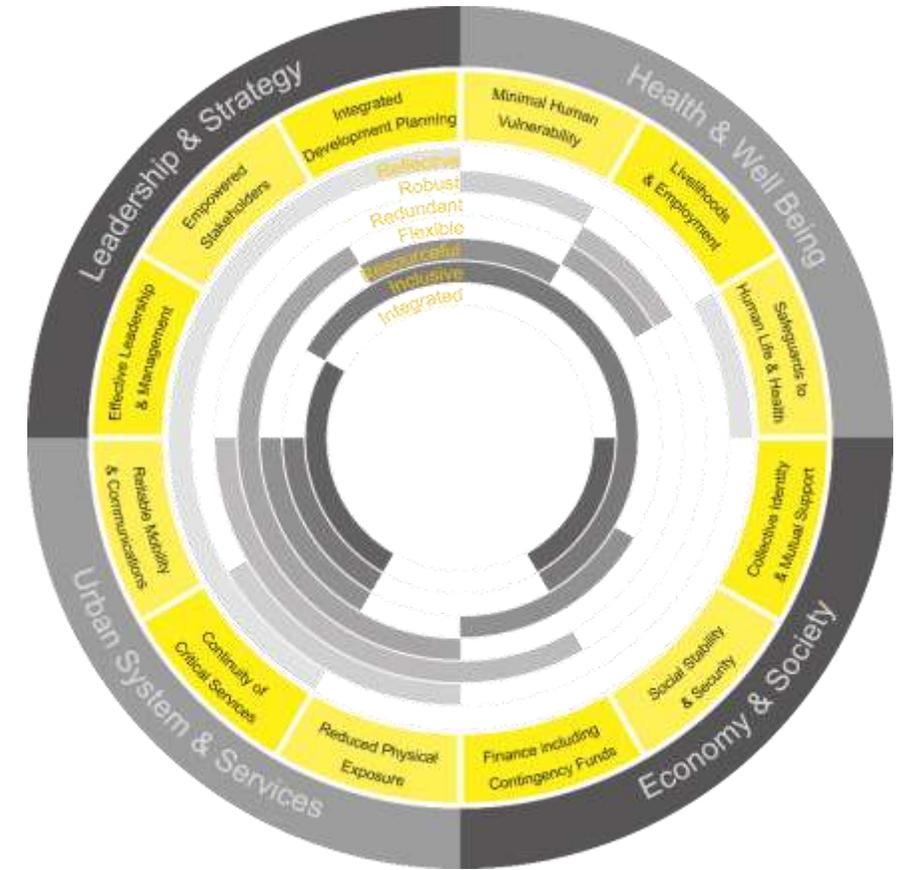
# Global Aggregation of city climate commitments





# City Resilience

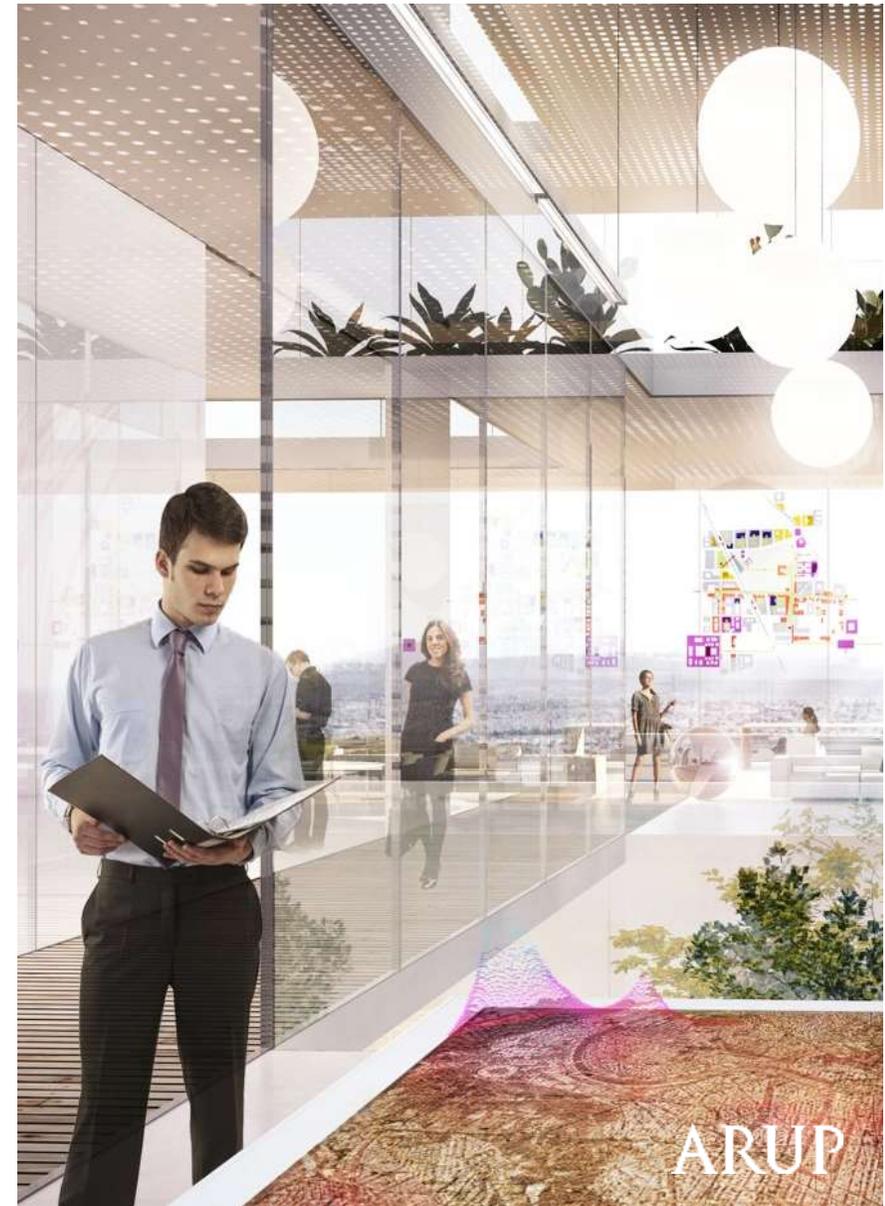
- Urban management, techniques and systems to ensure cities can respond to shocks and stresses (foreseen or otherwise)





## Digital Cities

- Applying digital technology to improve citizen and engagement, governance and a city's operational resource efficiency



# Digital engagement in Cities

A young girl with dark hair, wearing a pink sweater, is shown in profile from the chest up. She is looking at and touching a large, illuminated digital display wall. The wall features a grid of glowing blue circles, each containing a different image or data point. The background is dark, suggesting an outdoor or semi-outdoor setting at night, with some blurred lights visible.

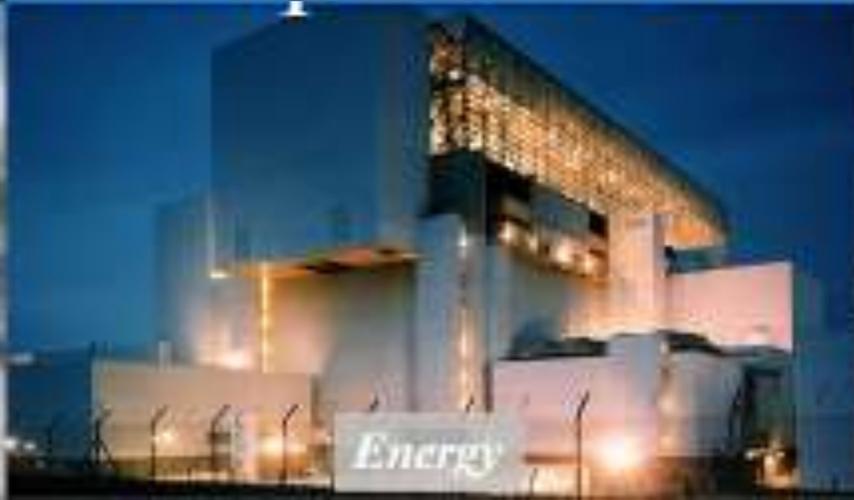
- Improving services to citizens
- Unlocking citizen action
- Responding to external pressure

C4O  
CITIES

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Total Design  
to deliver city services



Cities Alive

# Rethinking the Shades of Night



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# Why nighttime design?

Economic  
vitality

Public Health

Welcome  
(safety)



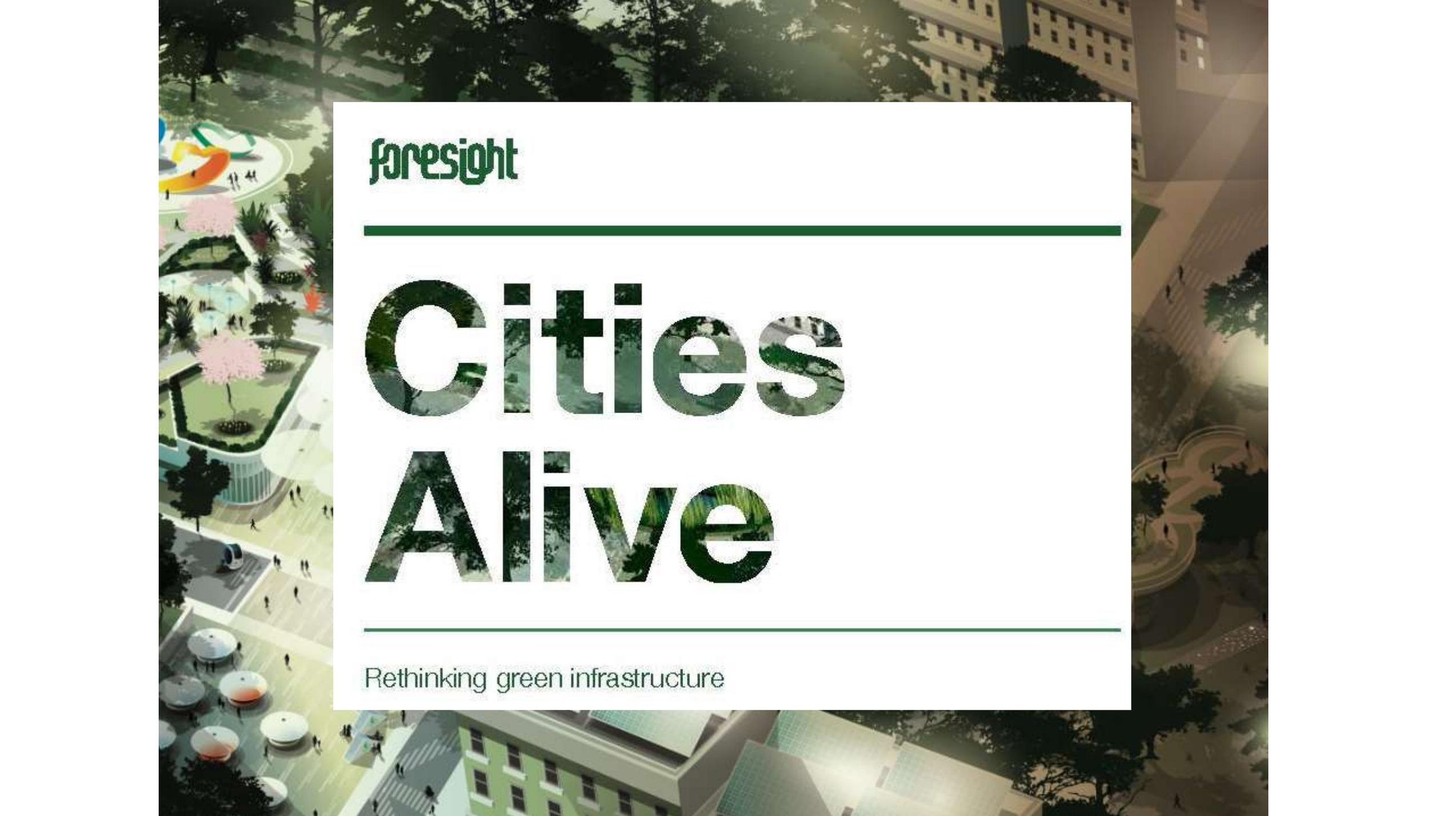
# lighting hierarchy

## Routes

- Primary Vehicular (20 lux, Class CE2\*)
- Secondary Vehicular (10 lux, Class CE4, S2)
- Primary Pedestrian (5-10 lux, Class S3)
- Secondary Pedestrian (5 lux, Class S4)
- Tertiary Pedestrian (2-5 lux, class S5)

\* Lighting Classes as defined by European Lighting Standard, EN 13201-2



An aerial architectural rendering of a city, showing a mix of modern buildings, green spaces, and pedestrian-friendly infrastructure. The scene is viewed from a high angle, looking down on a city street with a crosswalk, a park area with trees and a fountain, and a building with a green facade. The overall atmosphere is bright and optimistic, suggesting a sustainable urban future.

foresight

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# Cities Alive

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Rethinking green infrastructure



***“Cities need green sizes  
S, M, L and XL otherwise  
the human ecosystem is  
incomplete.”***

*Gil Peñalosa quoted in "Happy  
City" by Charles Montgomery  
2013*



**1**

## **Social Benefits: Rethinking Urban Communities**

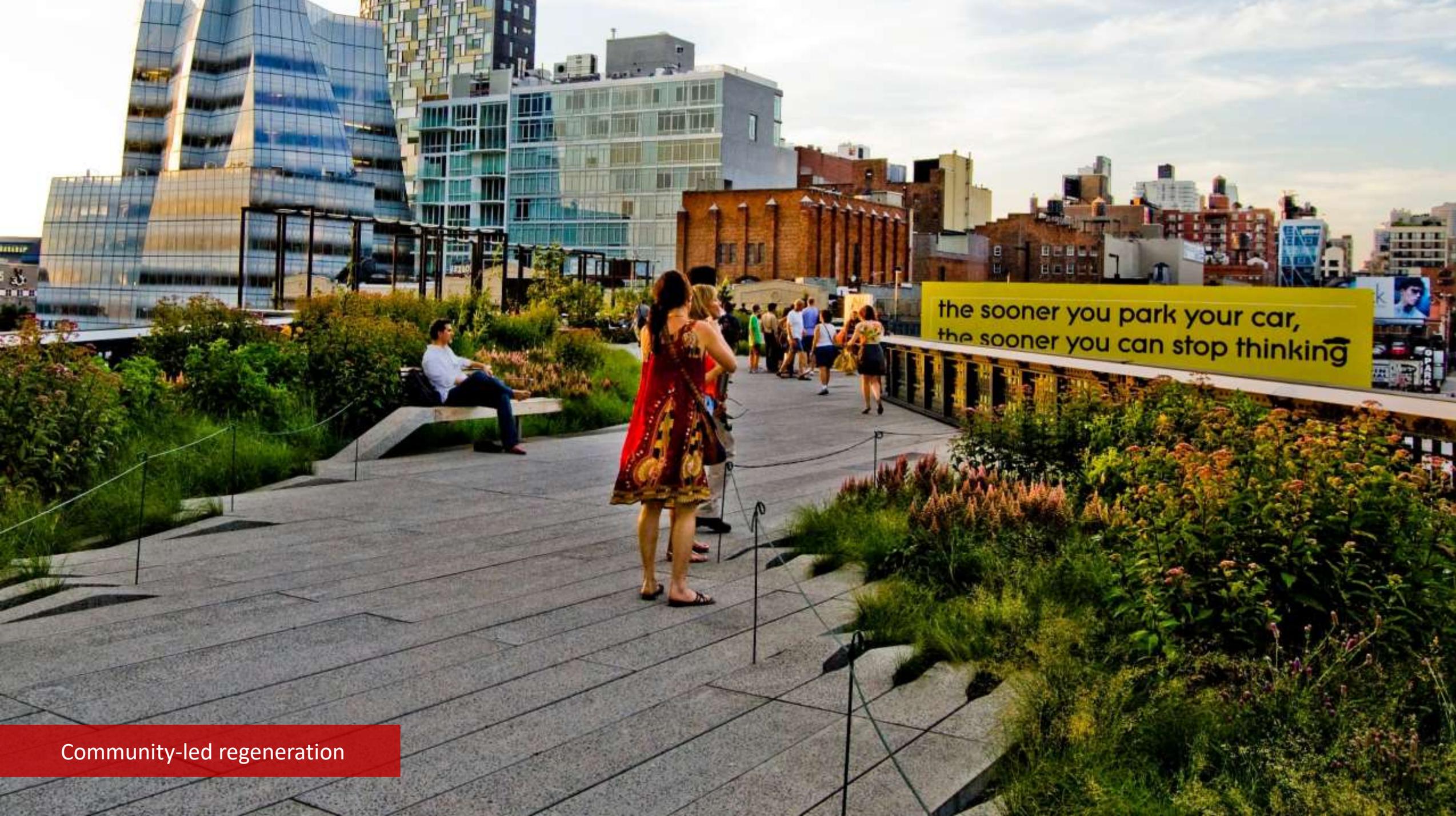
Encouraging Healthy and Sustainable Lifestyles

Supporting Urban Communities

Investing in Liveable Spaces



Retrofitting the city with nature



the sooner you park your car,  
the sooner you can stop thinking

Community-led regeneration

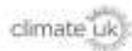


Public interventions

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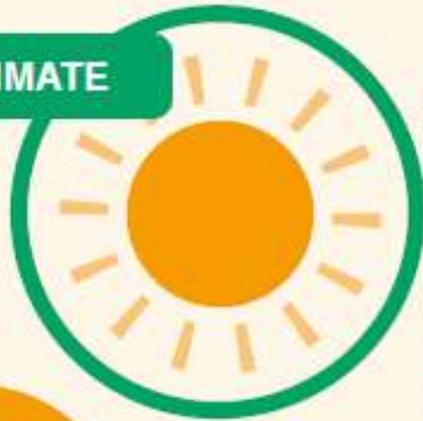
SHARPER  
Seasonal health and  
resilience for ageing urban  
populations and environments

Case studies and 'win-win' measures  
London / New York / Shanghai



# CASE STUDY: LONDON

## CLIMATE



A heatwave like the one in 2003 has a chance of occurring once every 2 years by 2080

By the 2050s, one third of summer days may exceed the current heatwave threshold (32°C by day and 18°C by night)

The ten-day heatwave in August 2003 caused over 2,000 excess deaths in the UK

The three-day heatwave in July 2009 caused over 299 excess deaths in England and Wales

46%<sup>▲</sup>

Population aged over 65 in London is likely to increase by 46% by 2030

x2

Population aged over 90 in London is expected to double by 2030

Thousands more people are expected to be affected by heat-related ill health by 2050

## PEOPLE AND CITY

## AGEING POPULATION



# CASE STUDY: NEW YORK CITY

## CLIMATE

The highest storm surge since 1920 was recorded during Hurricane Sandy

Close to half of those who died during Hurricane Sandy in 2012 were aged over 65

**90,000**

Hurricane Sandy was directly responsible for 44 deaths and damage to 90,000 buildings in New York City

Communities with stronger networks recovered faster than communities with limited social ties

**35%**

Population aged over 65 is expected to increase by 35% by 2030

By 2080 coastal flooding is projected to occur 2 to 4 times more often

## PEOPLE AND CITY

**AGEING POPULATION**

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# CASE STUDY: SHANGHAI

## CLIMATE

x4

Concentrations of respirable particles are often 4 times above WHO guidelines

Rapid urbanisation is exacerbating the UHI effect in Shanghai and the areas affected by heatwaves

x2

The built up area in Shanghai has almost doubled from 2000 to 2015

70%

By 2030 the percentage population aged over 60 is expected to increase by 70%

In combination with more frequent heatwaves, air-pollution episodes could become more frequent and acute under future climate

140%

By 2045 the percentage population aged over 60 is expected to increase by 140%

## PEOPLE AND CITY

AGEING POPULATION

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# WIN-WIN MEASURES

These measures increase the resilience of elderly people while contributing to wider sustainability and resilience benefits for cities and people. Selected examples are provided below.

## 1 GREEN / BLUE INFRASTRUCTURE

Transform as many urban areas from 'grey' surfaces to green and blue areas which increase cities' resilience to floods and heatwaves.

- ▶ The *Green Infrastructure Audit Best Practice Guide* helps to map green areas, evaluate benefits and identify opportunities in London.

## 2 AWARENESS, INFORMATION AND EDUCATION

Effective communication and access to knowledge and tools reduce vulnerability to extreme weather events

- ▶ The *Future Air – Knowledge Cards* raise awareness on the challenges, efforts and solutions around air pollution in China.

## 3 DESIGN FOR FUTURE CLIMATE

Design, build and retrofit buildings and spaces for future climate conditions while contributing to wider sustainability benefits.

- ▶ The *NYC Office of Housing Recovery Operations* worked towards ensuring the resilience of buildings in New York City to future storm surges.

## 4 COMMUNITY CAPABILITIES AND ENGAGEMENT

Promote community resilience and community-led actions to enhance preparation and response to extreme weather events. These measures and actions should proactively engage older people's knowledge and skills

- ▶ The State of New York established the *New York Rising Community Reconstruction Program* to help storm-impacted communities.

## 5 PLANNING FOR WEATHER

Enhance warning systems, emergency systems and city plans for extreme weather to ensure reliable and suitable communication channels to reach all people in cities including the most vulnerable.

- ▶ The *UK Heat Health Watch Service* acts as an early warning system forewarning of periods of high temperatures.

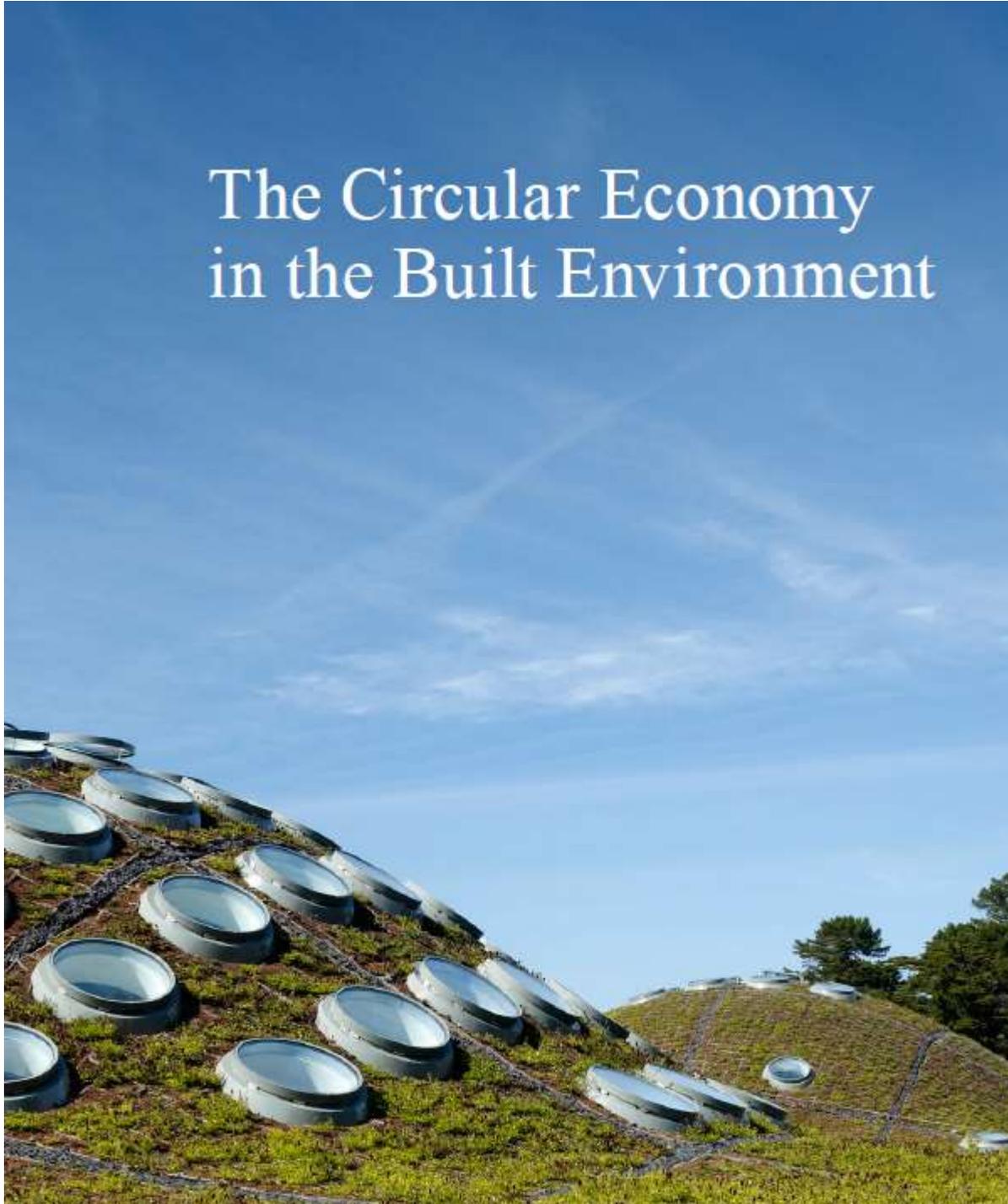


# The Future: Total Design



# The Future: The Circular City

# The Circular Economy in the Built Environment



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# Rethinking the city



ReGenVillages

# A smarter, circular city



QUALITY  
REFURBISHED  
OFFICE SUITES  
FROM  
1,950  
0161 634 0765

# Cities' potential



What will the future hold  
for Montreal?



# Total Design au Quebec



Can we do more with what we design?



Investing for the long-term



New thinking, new opportunities



# Repenser notre environnement



Q  
in Scheme



Q  
The Qinghai-Qinghai

FOOD PRODUCTION

water collected  
last night +  
45 litres

800  
pounds of carbon  
CONSUMED

Entering the  
ecological  
age



water collected last night  
+45 litres

Entering the  
ecological  
age

