ULI Greece & Cyprus Annual Conference | 27 June 2023

Resilience through Reuse…
A Vision for Sustainable Urban Landscapes

Dan Ringelstein
Director - Cities, Planning & Design | Arup

Dan Ringelstein

Director - Cities, Planning & Design – Arup

I've lived in:
Chicago
Boston
Paris
London

Education: Univ of Illinois,
Arch School of Versailles France,
MIT / Harvard, Cambridge USA

joined Arup in 2022
after 28yrs at SOM
(9yrs in Chicago, 19yrs in London)

Arup - Who are We…?

Total Design

Acoustics | Architecture | Audiovisual | Bridge Design | Building Design | Civil Engineering | Construction Planning | Commissioning | Cost Management | Development Planning | Electrical Engineering | Energy Consulting | Environmental Consulting | Façade Engineering | Facilities Management | Fire/Life Safety Consulting | Geotechnical Engineering | Highway Engineering | Infrastructure | Impact and Blast Engineering | Information Technology and Communications Consulting | Laboratory Design | Lighting Design | Logistics Consulting | Management Consulting | Maritime Engineering | Mechanical Engineering | Offshore Engineering | Plumbing Engineering | Project Management | Rail Engineering | Risk Consulting | Security Consulting | Seismic Design | Structural Engineering | Sustainability Consulting | Transport Planning | Tunnel Engineering | Vehicle Design | Venue Consulting | Visualiztion and Modeling | Water Engineering | Wind Engineering

ARUP

We are built upon an **enduring legacy**…

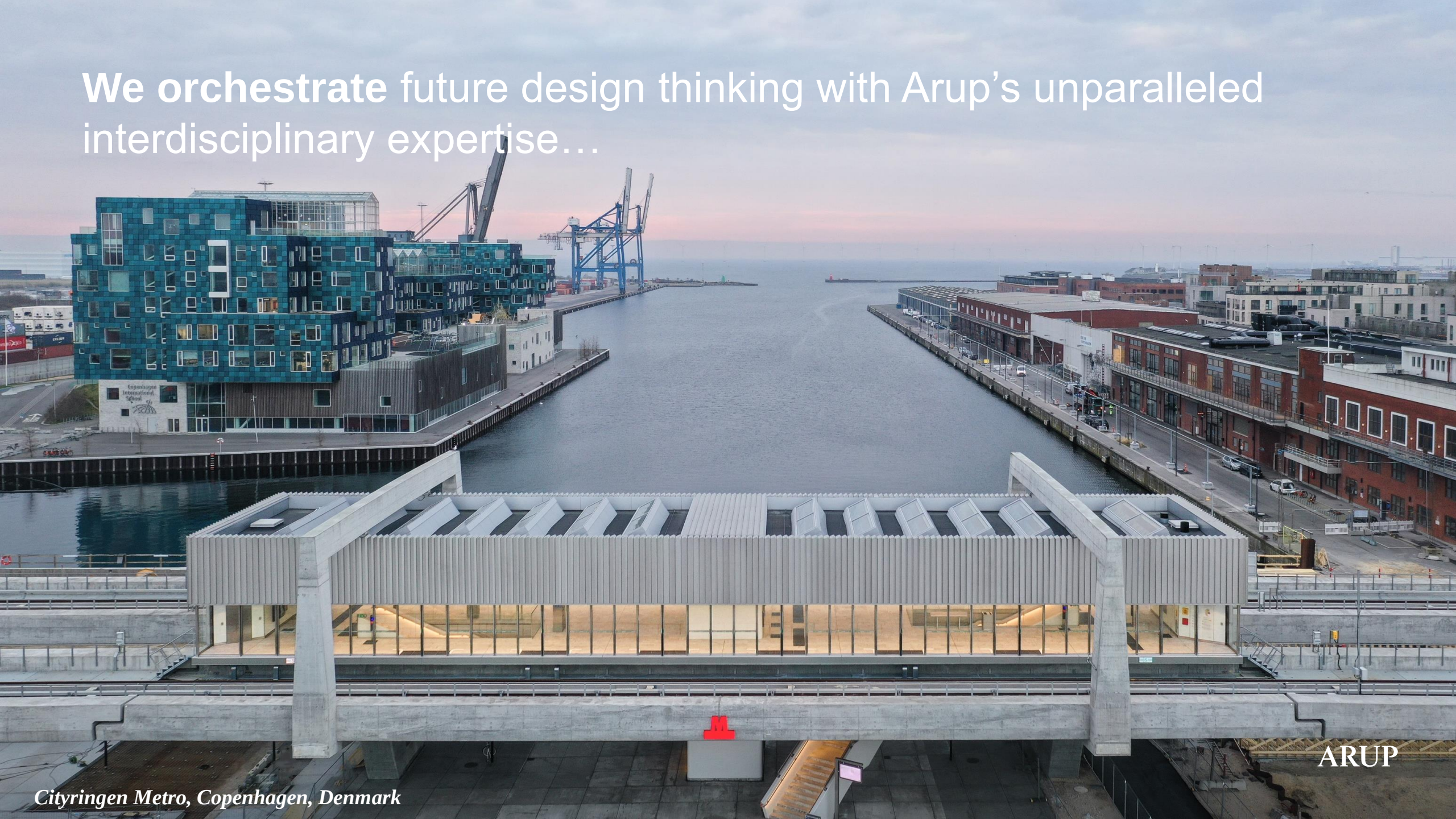
ARUP

We lead our clients towards excellence and sustainable outcomes…

ARUP

HS2 Interchange, Birmingham UK

We orchestrate future design thinking with Arup's unparalleled interdisciplinary expertise…

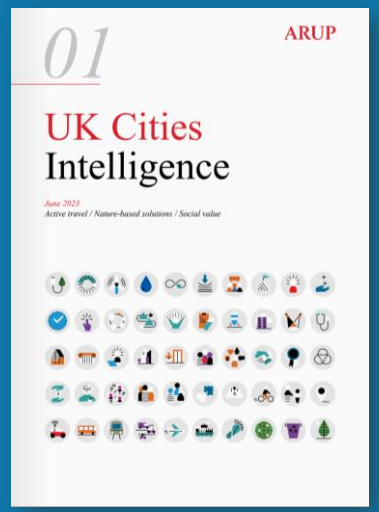


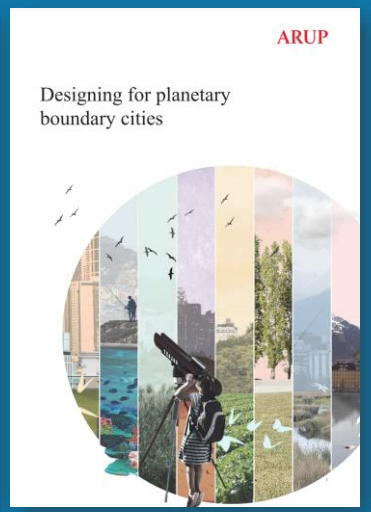
ARUP

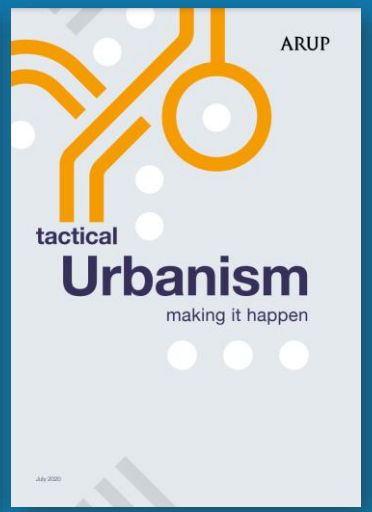
Cityringen Metro, Copenhagen, Denmark

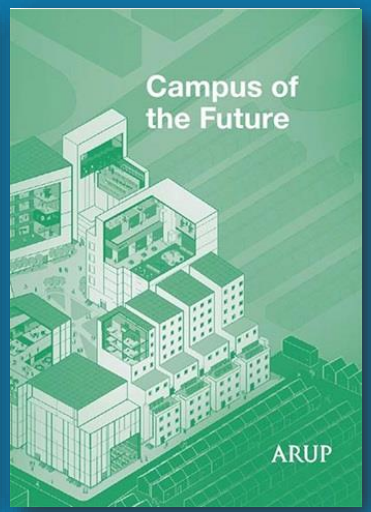
ARUP

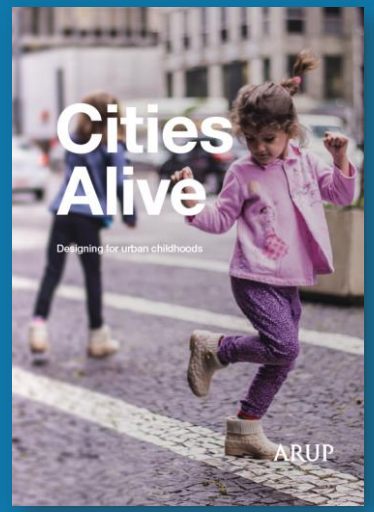
We design informed by deep research in a wide range of today-centric topics…

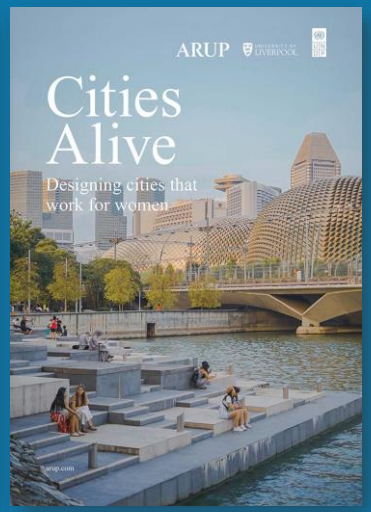


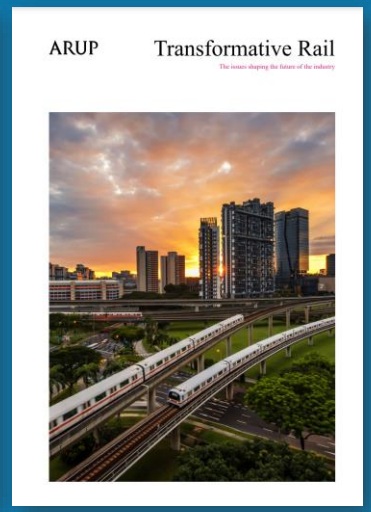


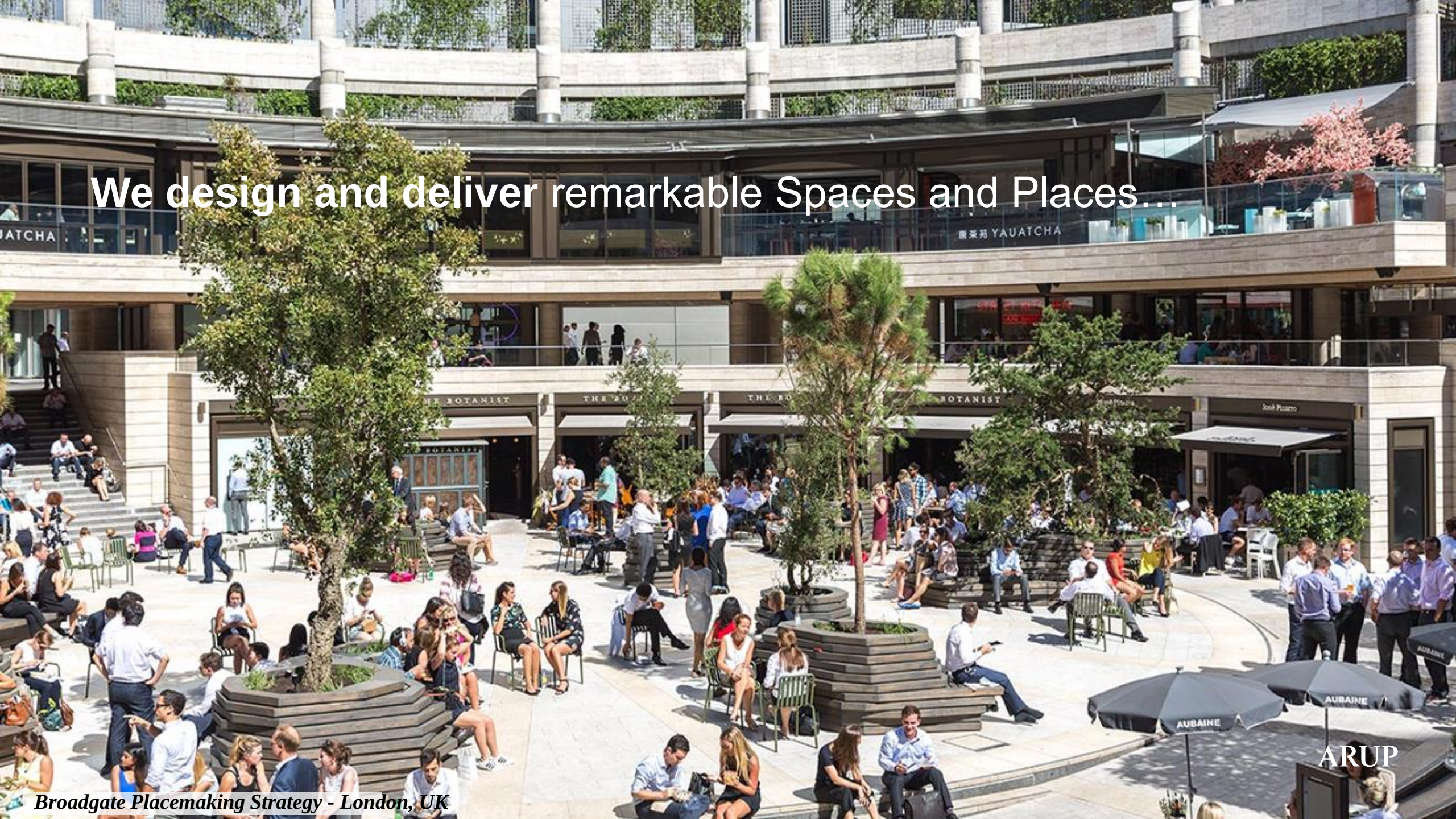












Broadgate Placemaking Strategy - London, UK

The Setting

ARUP

During the next 2 decades, over **80 billion m²** of new and rebuilt buildings will be constructed in urban areas worldwide.

* Source: UN Report

60% of the entire stock of the world,

Equivalent of building and rebuilding a NYC every 35 days

Massive change is coming… it is imperative to promote **positive change**

* Source: UN Report

Reuse vs.

Rebuild

Drivers for Transforming and Reusing Existing Buildings

Financial

Cost effective – Lower cost than demolition and rebuild

Faster to complete – Quicker to bring back to market

Environmental

Low carbon – Cut embodied carbon,

when compared to demolition and new build

Waste and resources – Divert materials from waste and saves natural resources

Placemaking

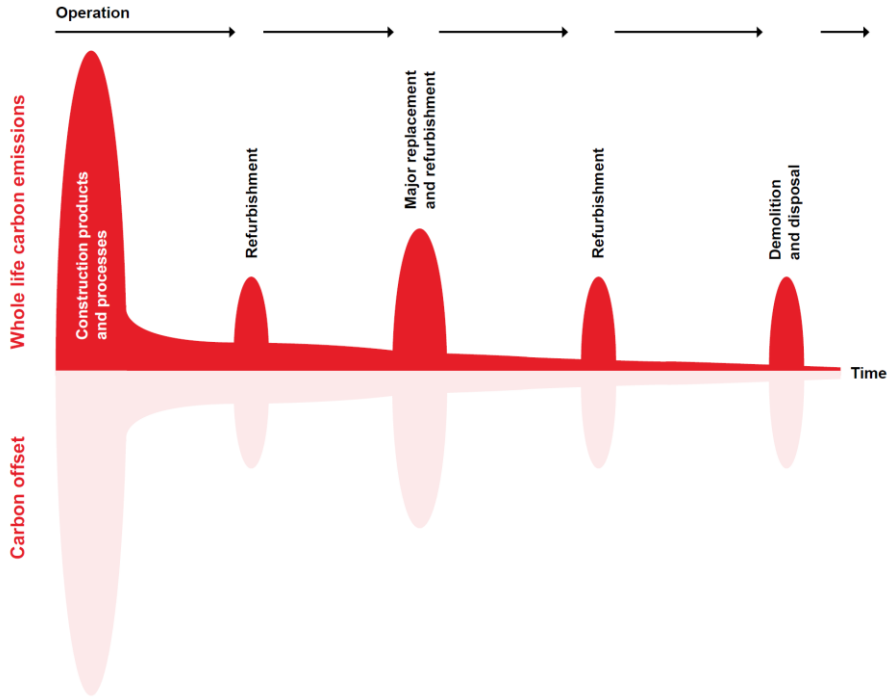
Heritage value - Preserve, refresh to create a unique identity.

Socially positive – Can create positive changes within communities and meet local needs

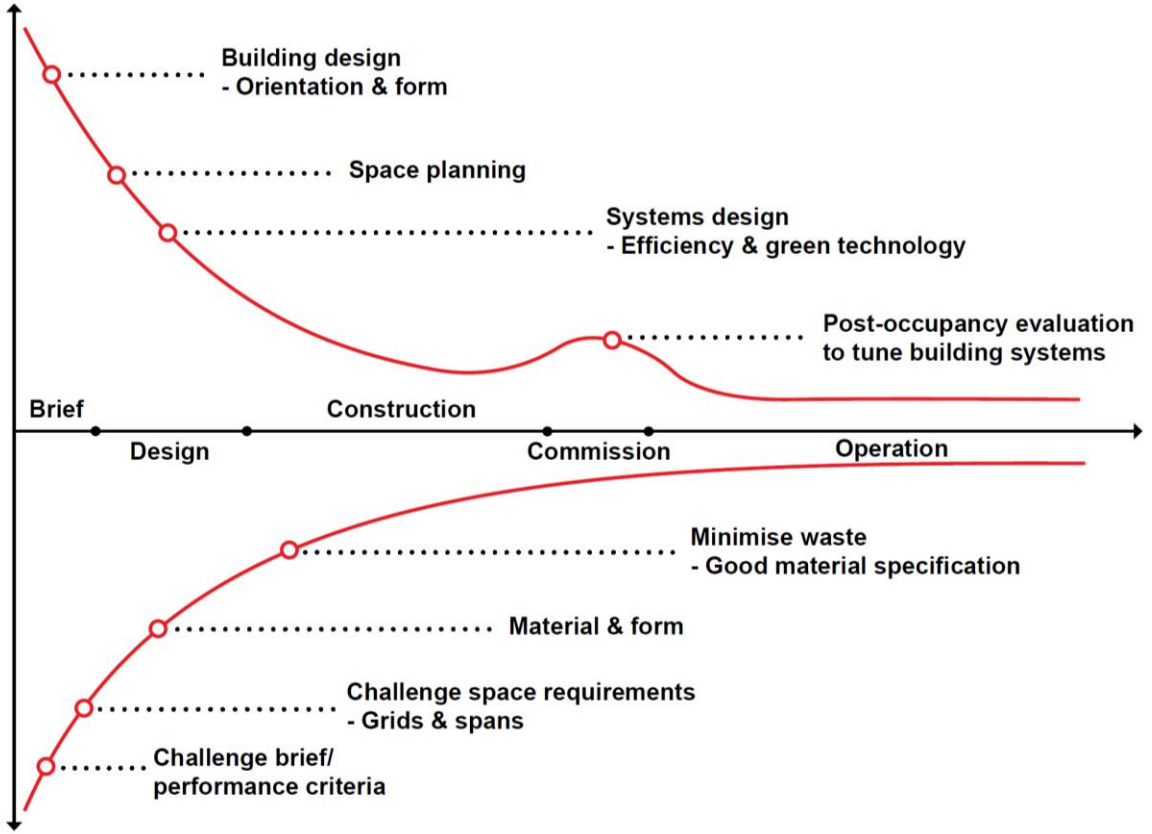
Reuse vs. Rebuild

Whole lifecycle emissions

we must take account of whole life emissions. **There are many trade-offs between operational and embodied carbon emissions, starting with the decision about whether to demolish or repurpose.** Newly constructed buildings are more energy efficient operationally, but their construction generates significant embodied emissions.



Reducing Operational Carbon



Reducing Embodied Carbon

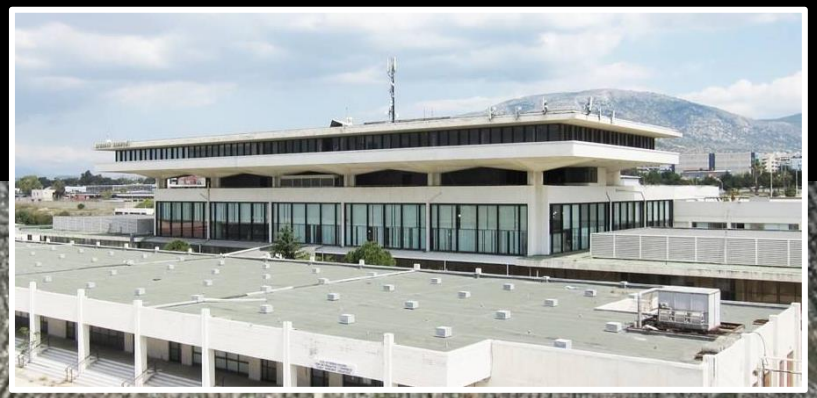
No single building should ever be one thing…

Drivers for Transforming and Repurposing the Built Environment

Along with environmental benefits, transforming and reusing existing buildings often delivers greater commercial and social returns than demolishing and reconstructing.

It can be far more cost-effective for clients, create characterful places for occupiers and preserve heritage value for communities.

Hellinikon - Athens, Greece



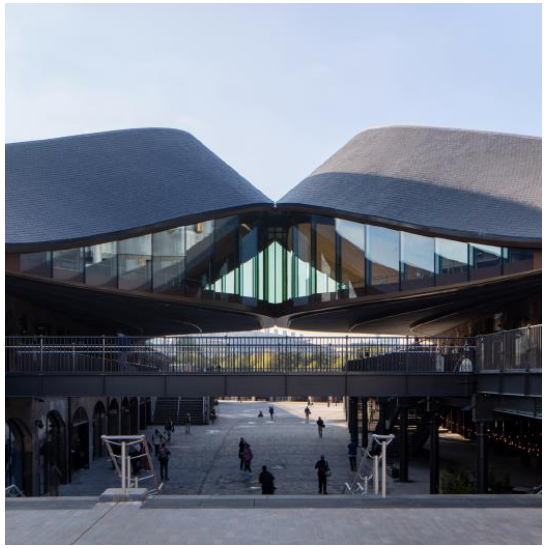
Types of Reuse

ARUP

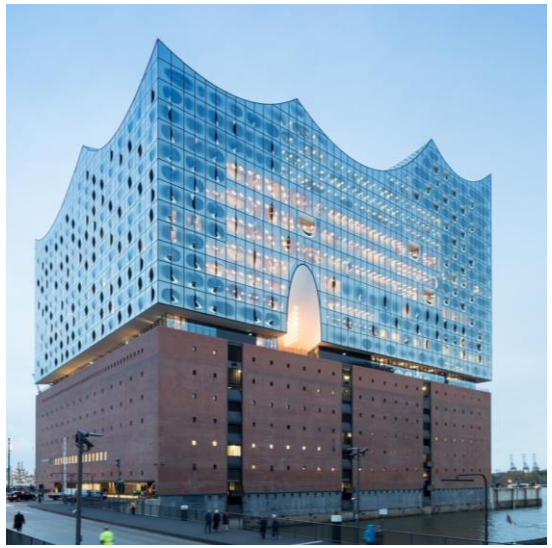
Retrofitting / Repurposing the Built Fabric

1. Proactive Reuse

2. Adaptive Reuse



3. Expansive Reuse



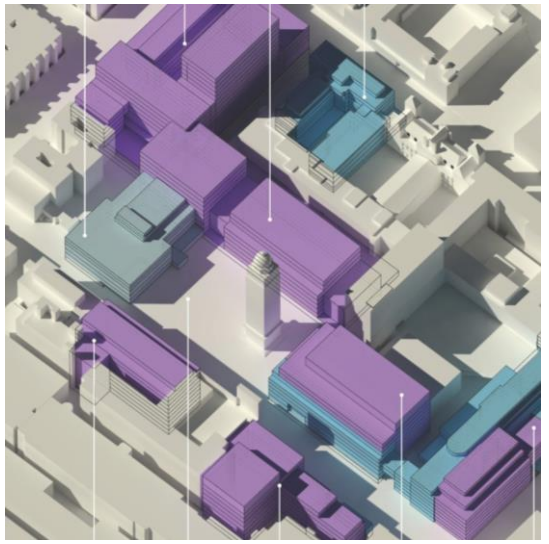
4. Meanwhile Use

Retrofitting / Repurposing the Built Environment

1. Proactive Reuse

2. Adaptive Reuse

3. Expansive Reuse

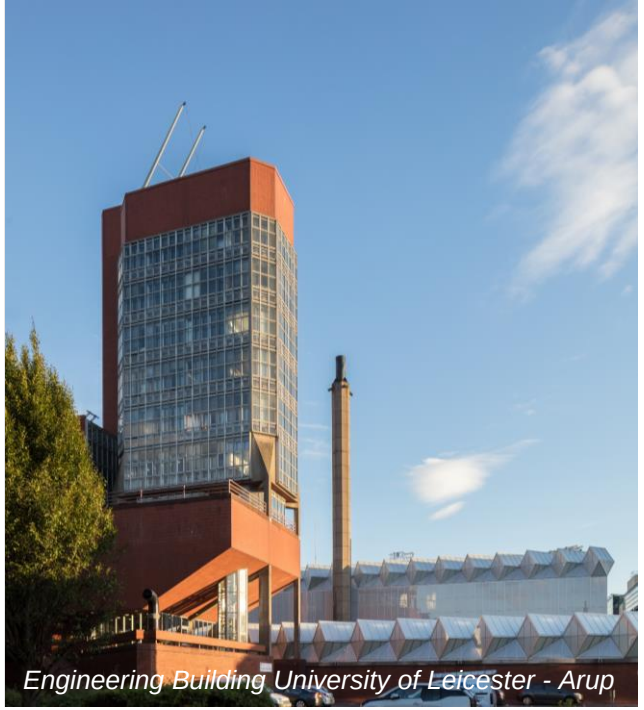


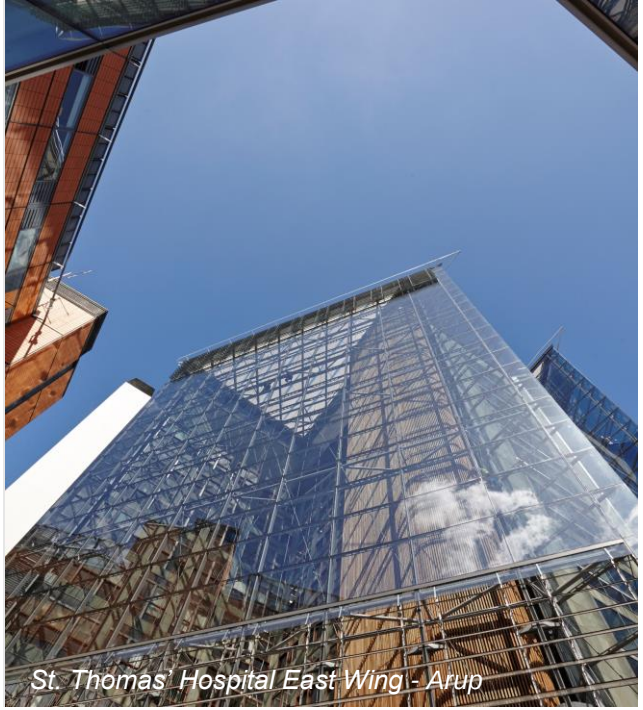
4. Meanwhile Use

Proactive Reuse (Refurbishment)

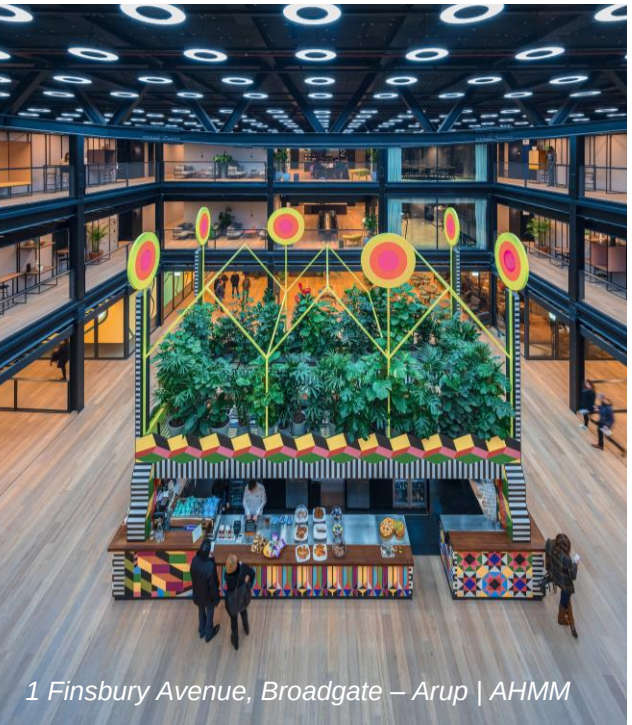
Enhancing performance and extending the life of existing buildings and urban fabric

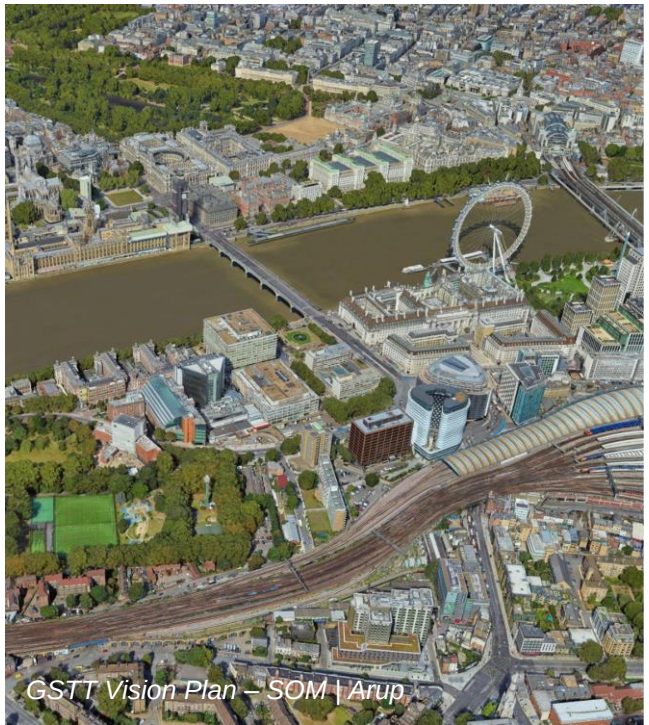

The Grand Hotel - Arup


Engineering Building University of Leicester - Arup


St. Thomas' Hospital East Wing - Arup


Broadgate Circle Public Realm – Arup


1 Finsbury Avenue, Broadgate – Arup | AHMM


GSTT Vision Plan – SOM | Arup


Bradgate Circle, London - Arup


St Pancras Station, London

LONDON (UNITED KINGDOM)

Bow Bells House

Office Refurbishment

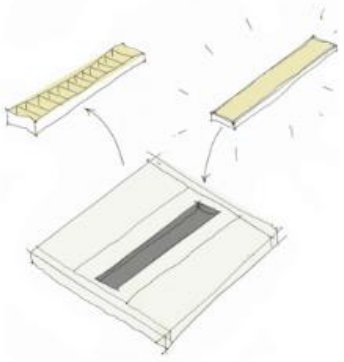
Early insight into embodied carbon has informed our clients decisions about retention and scope. Rapid analysis & visualisation in the teams' Revit model identified the raised floor as having the greatest potential to save embodied carbon.

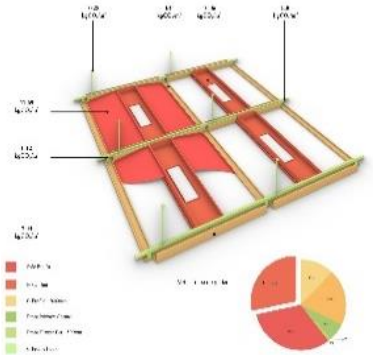
Client

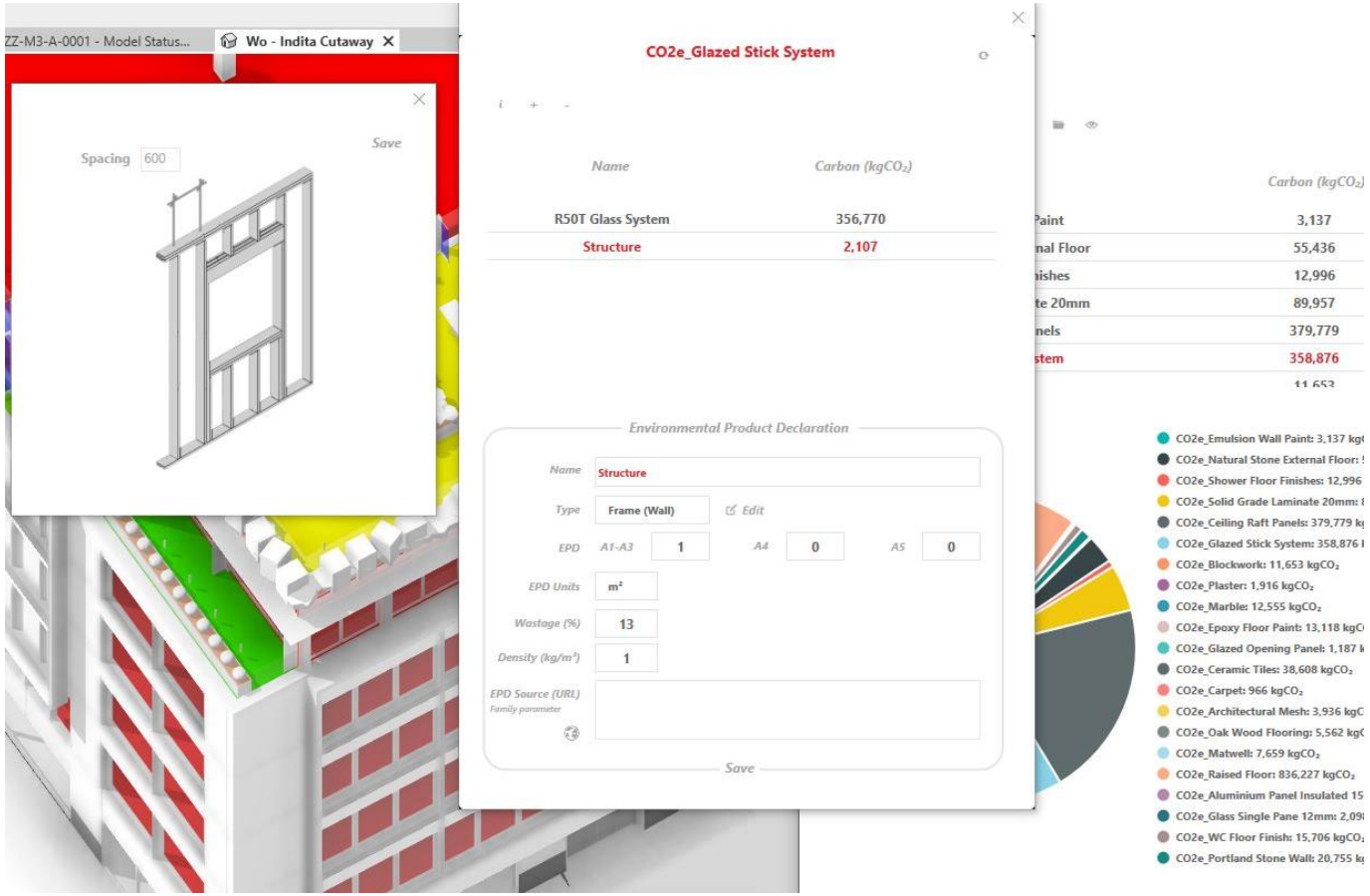
PATRIZIA

Fubon Financial

Arup Carbon Calculator *(Indita)*





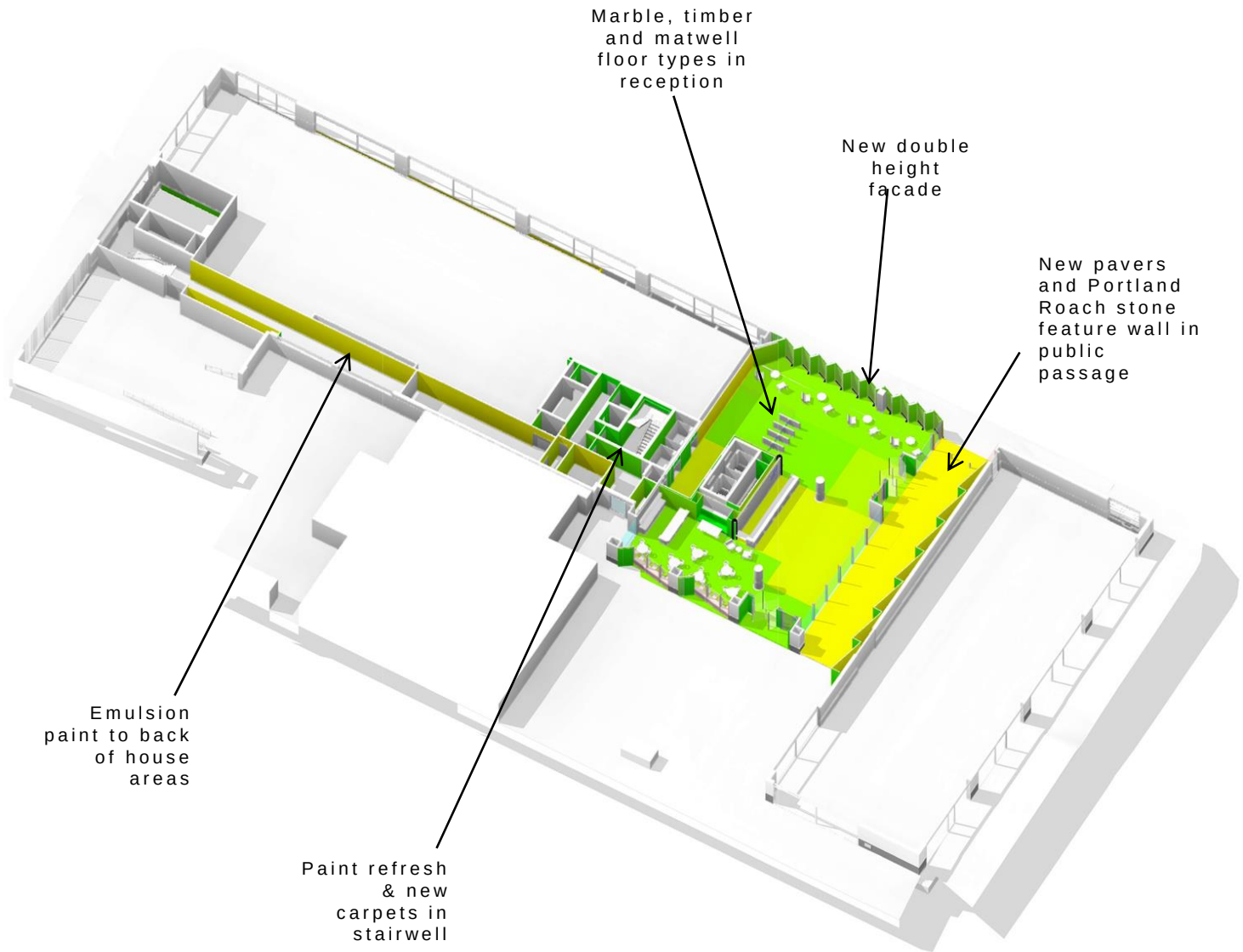


A New Initiative at Arup

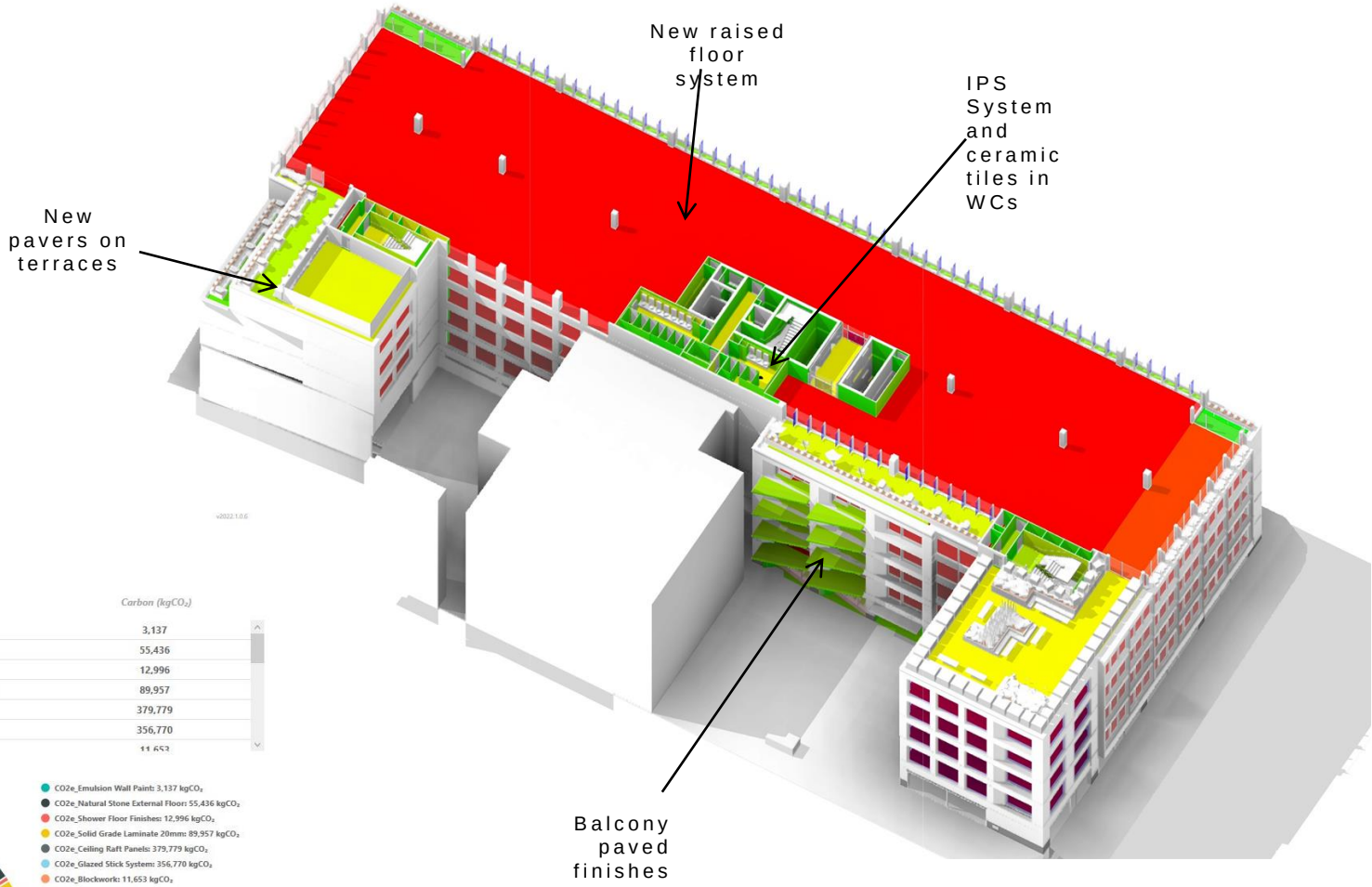
Following Cop 26 Arup has committed to doing whole life carbon assessments across all its projects. For embodied carbon we can currently do this only at a very high level that is unlikely to provide data with enough fidelity to inform detailed material choices

Within a new services distribution tool within Indita in Revit, material assemblies or components can be loaded from our Veracity database, with pre-determined carbon values based on manufacturers EPDs and the ICE Database. Alternatively, you can add carbon data for specific products for more accurate calculations.

Reception Refurbishment

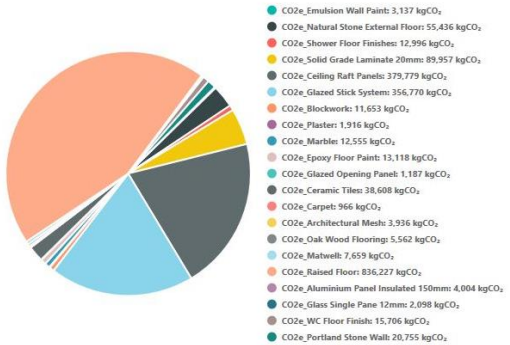


Office Floorplate & Terraces Refurbishment



ARUP Indita

Name	Carbon ($kgCO_2$)
CO2e_Emulsion Wall Paint	3,137
CO2e_Natural Stone External Floor	55,436
CO2e_Shower Floor Finishes	12,996
CO2e_Solid Grade Laminate 20mm	89,957
CO2e_Ceiling Raft Panels	379,779
CO2e_Glazed Stick System	356,770
CO2e_Blockwork	11,653



Total: 1,874,024 $kgCO_2$

LONDON (UNITED KINGDOM)

Broadgate Estate Transformation

LONDON (UNITED KINGDOM)

Broadgate

Before 2012

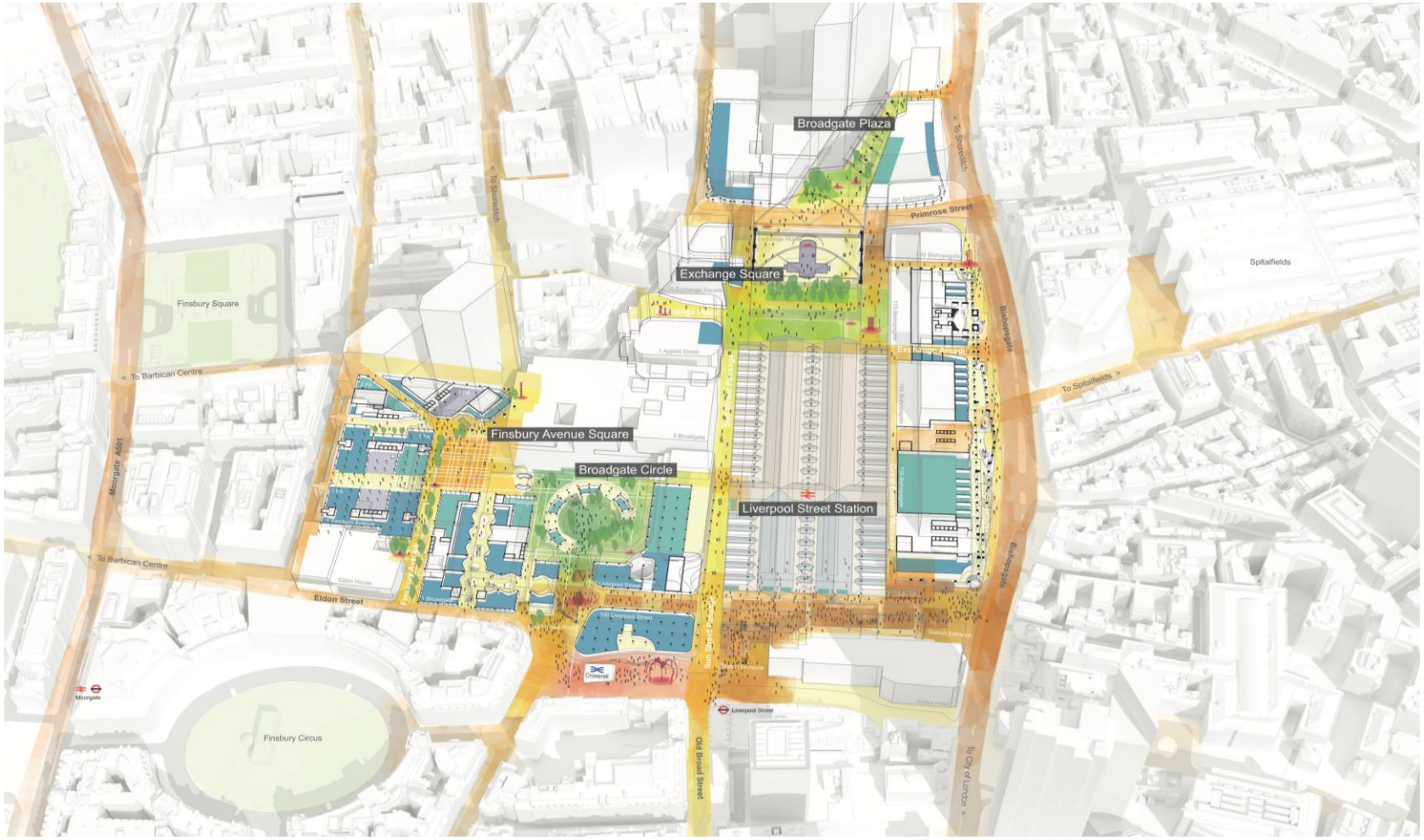
LONDON (UNITED KINGDOM)

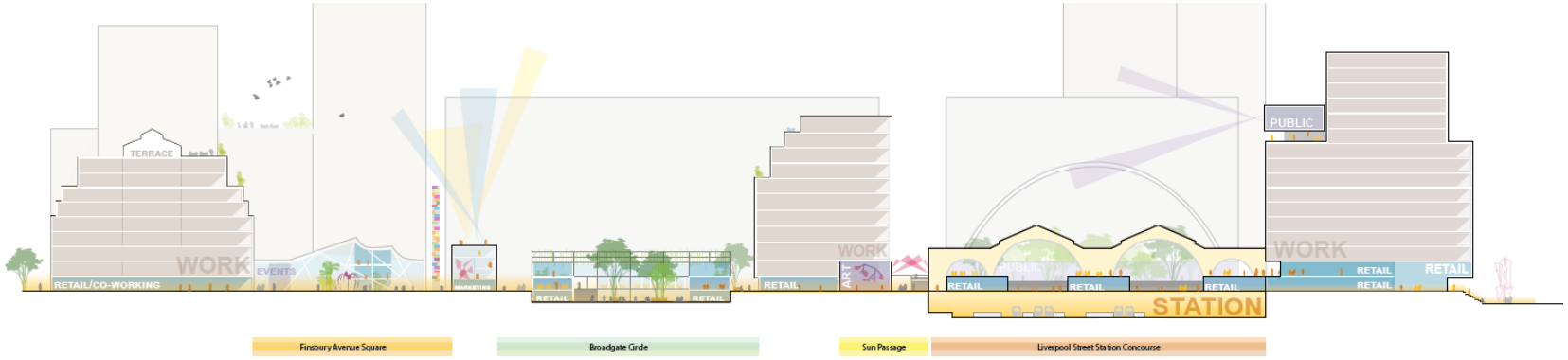
Broadgate

The Plan

- An ‘integrated mixed-use urban district’
- Well-connected to Liverpool Street Station and to its vibrant neighbouring districts including the City of London, Shoreditch, Spitalfields, and London’s booming technology quarter around Old St.

A significant gateway site to the City of London





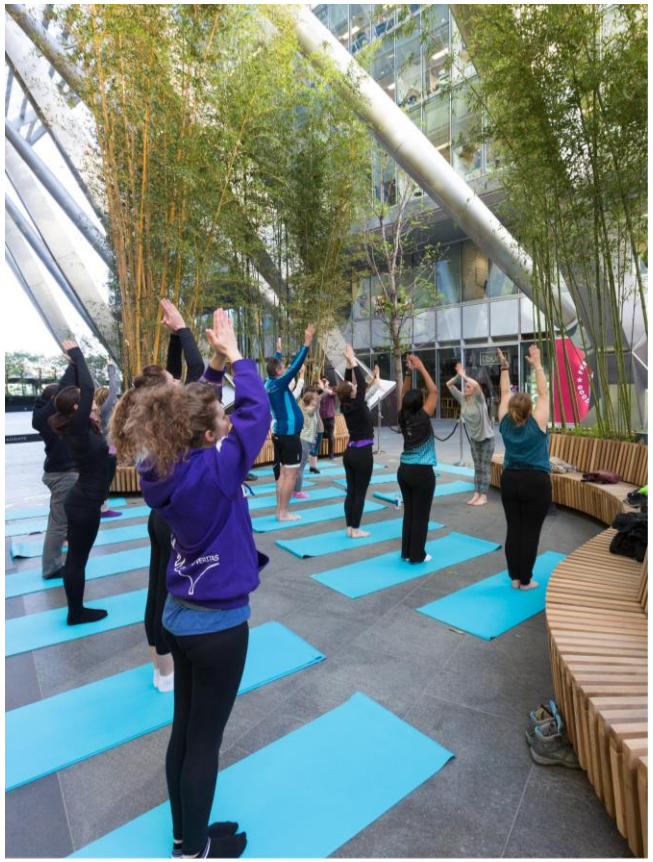
LONDON (UNITED KINGDOM)

Broadgate

The Plan

Anticipating Increased Activity and Footfall to Fuel Curated Local Events

- **‘Creative Curriculum’** - run with Open City including artists, architects and British Land volunteers, which enables hundreds of local children to understand and explore the art and architecture design process, from idea to production.
- **Archikids!** - an interactive design and engineering festival by Open City included six festival events at Broadgate.
- **London Design Festival** - Broadgate hosts art installations and events as part of year-round events programming.




唐茶苑 YAUATCHA
THE BOTANIST
AUBAINE
AUBAINE


100 Liverpool Street – London, UK

LONDON (UNITED KINGDOM)

Guy’s & St. Thomas’ NHS Trust Vision Plan

Harefield Campus
Harefield Hospital

Chelsea Campus
Royal Brompton Hospital

Westminster Bridge Campus
St Thomas' Hospital
Evelina Hospital

London Bridge Campus
Guy's Hospital

Part of London's network of healthcare and life-science centres

Harefield Campus
Harefield Hospital

Chelsea Campus
Royal Brompton Hospital

Westminster Bridge Campus
St Thomas' Hospital
Evelina Hospital

London Bridge Campus
Guy's Hospital

Today

Acute Hospitals
GFA ~ 50,000 - 200,000 m²
Highly specialised & critical care
Ambulatory care
Urgent Care
Co-located Clinical & Academic Research Activity

Community Sites
GFA ~ 2,500 m2
Ambulatory care
Consultations
Prescriptions

Home / Virtual
GPs
Consultations
Prescriptions

Tomorrow

Acute Hospitals
GFA ~ 50,000 - 200,000 m²
Highly specialised & critical care

Proximate Hubs
GFA TBC m²
Highly specialised consultations
Co-located Clinical & Academic Research

Ambulatory Centers / Community Diagnostic Centres / Integrated Care Hubs
GFA TBC m²
Ambulatory care
Low Complexity Surgery
Imaging
Social
Urgent Care

Home / Virtual
Virtual
Consultations
Prevention
GPs
Consultations
Prescriptions
R&D
Admin

A Distributed Campus of Care

Tactical transformations

Pilot a shared proximate virtual consultation space.

Repurpose South Wing and improve the public realm to create amenities.

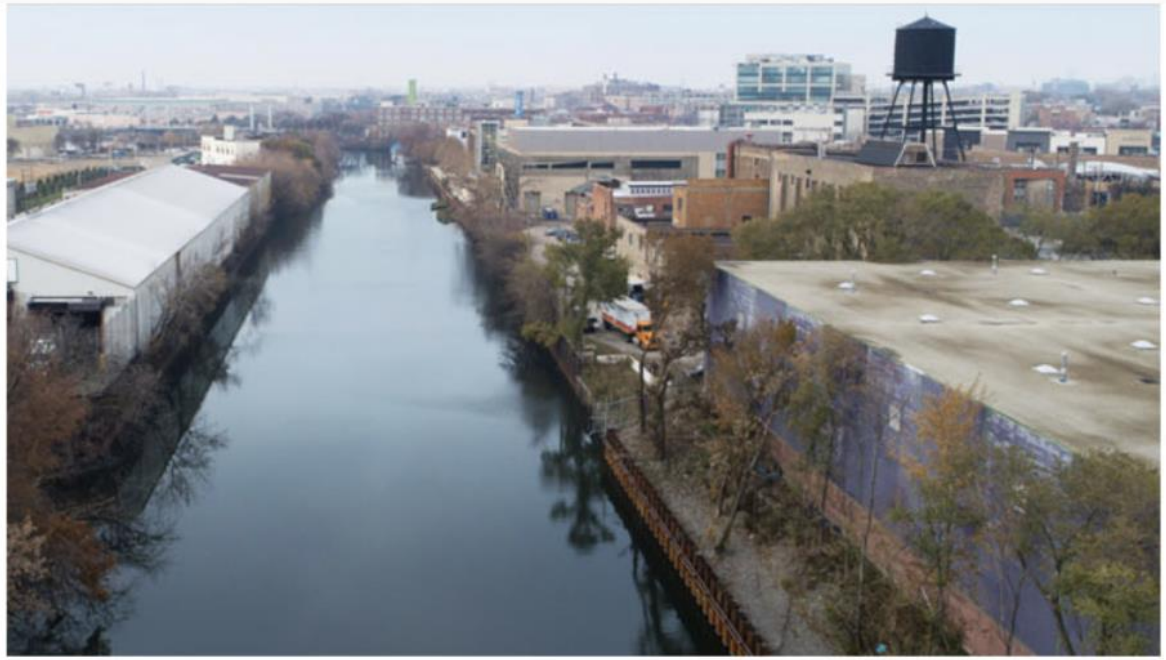
Test the ability to increase ambulatory functions in an existing community site.

Rethink circulation to optimise space and improve wayfinding experience.

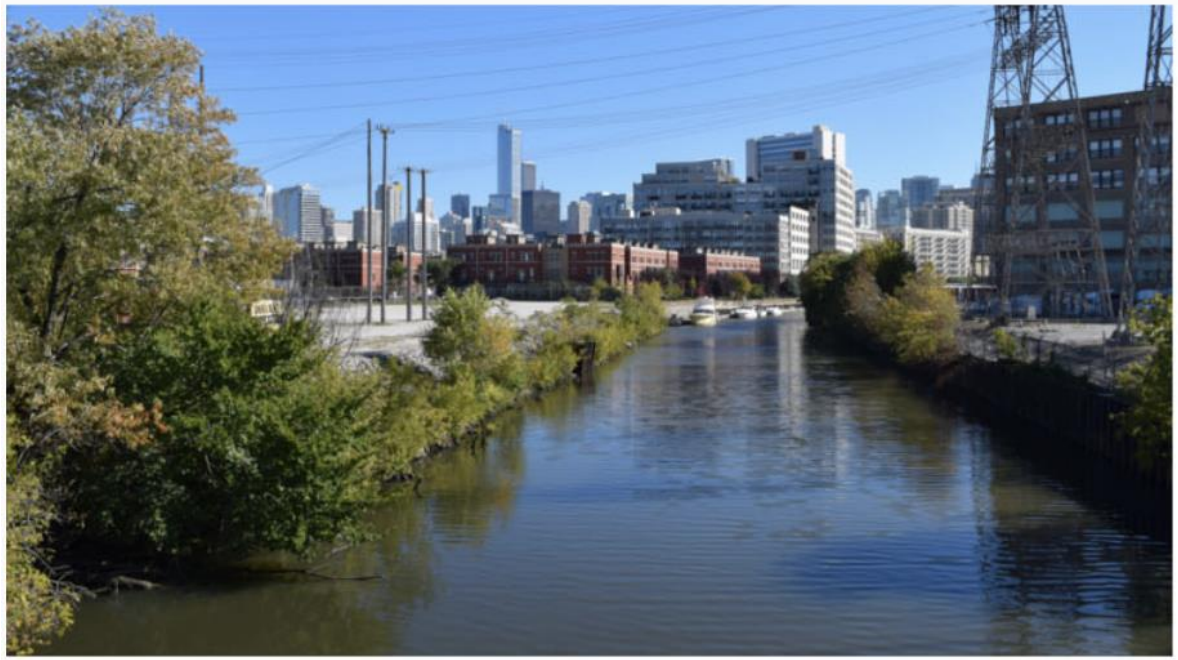
CHICAGO (UNITED STATES)

Wild Mile


CHICAGO DOCK CO



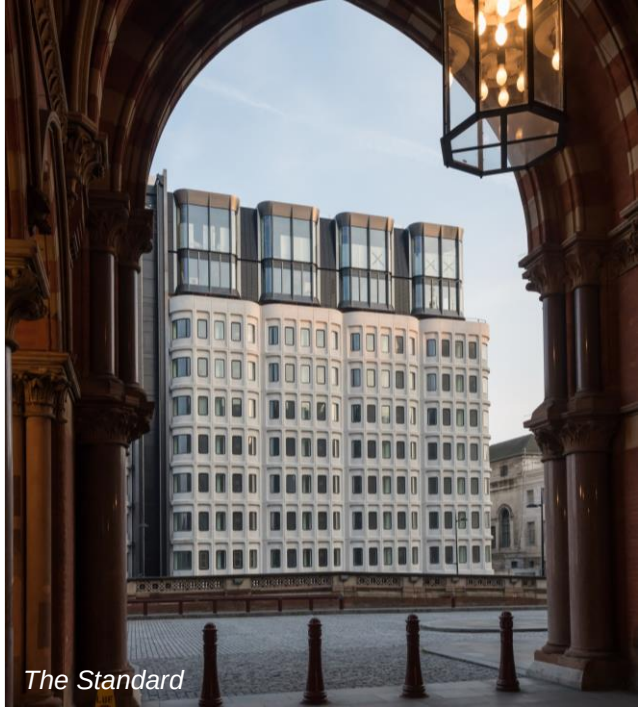

Waste Management
Mural
Art Platform
Habitat Sculptures
Access Platform
Green Roofs
Roof Camping?
Education Platform
REI
Kayak Launch



Adaptive Reuse

Creating new futures for existing buildings and neighbourhoods.

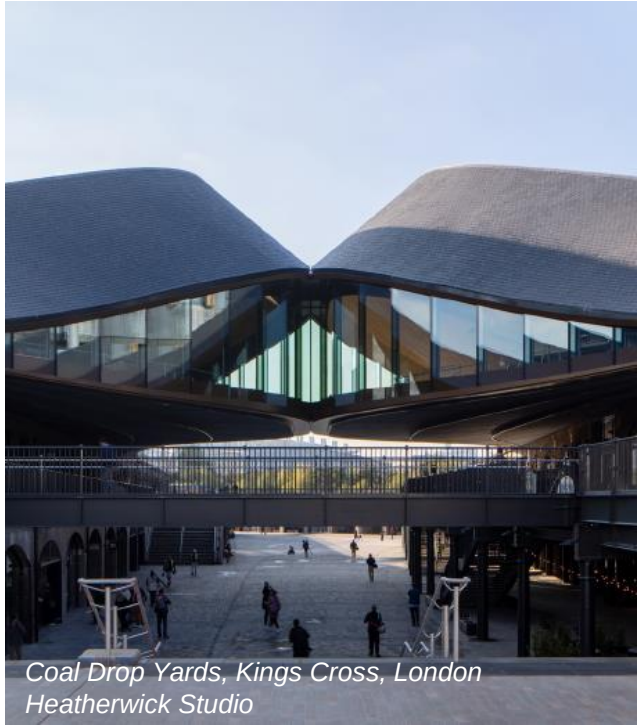

Gasholders, Kings Cross


The Standard


Here East


BBC White City


Museum of Contemporary Art, South Africa, Heatherwick Studio


Coal Drop Yards, Kings Cross, London Heatherwick Studio


Tate Modern, Herzog & de Meuron


Former US Embassy London, David Chipperfield Architects

LONDON (UNITED KINGDOM)

BBC White City

170,000m2

mixed use hub

432

new homes (Phase 1)

3 acres

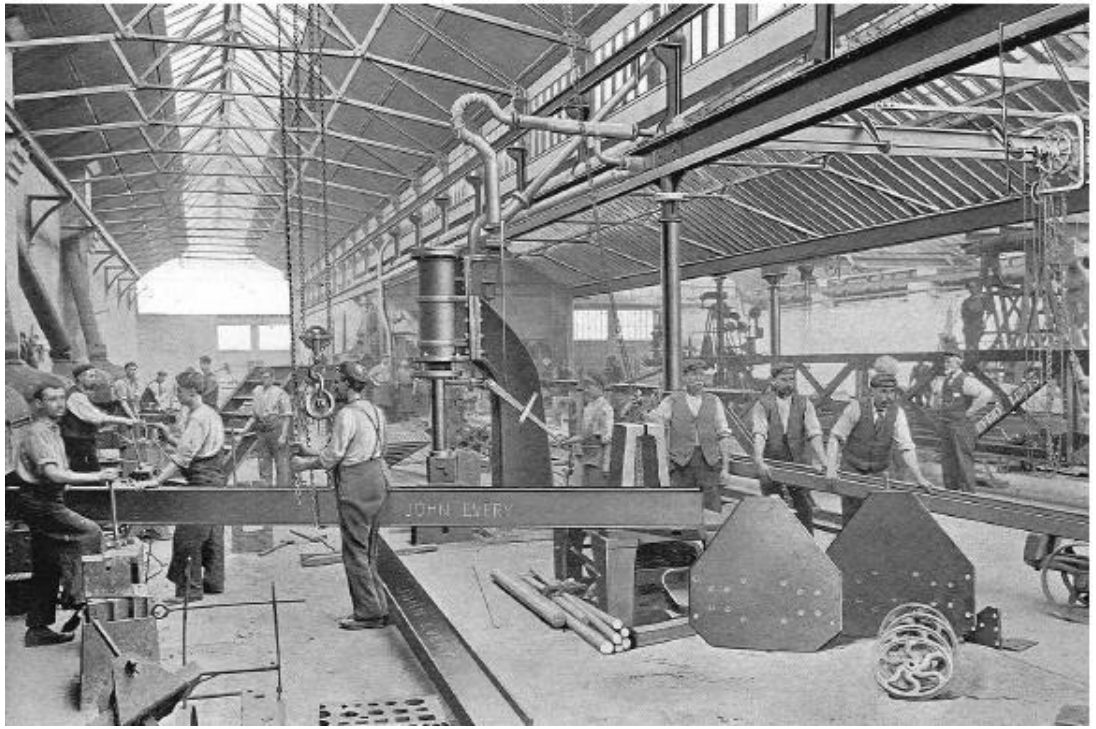
of revitalised public spaces

BBC White City

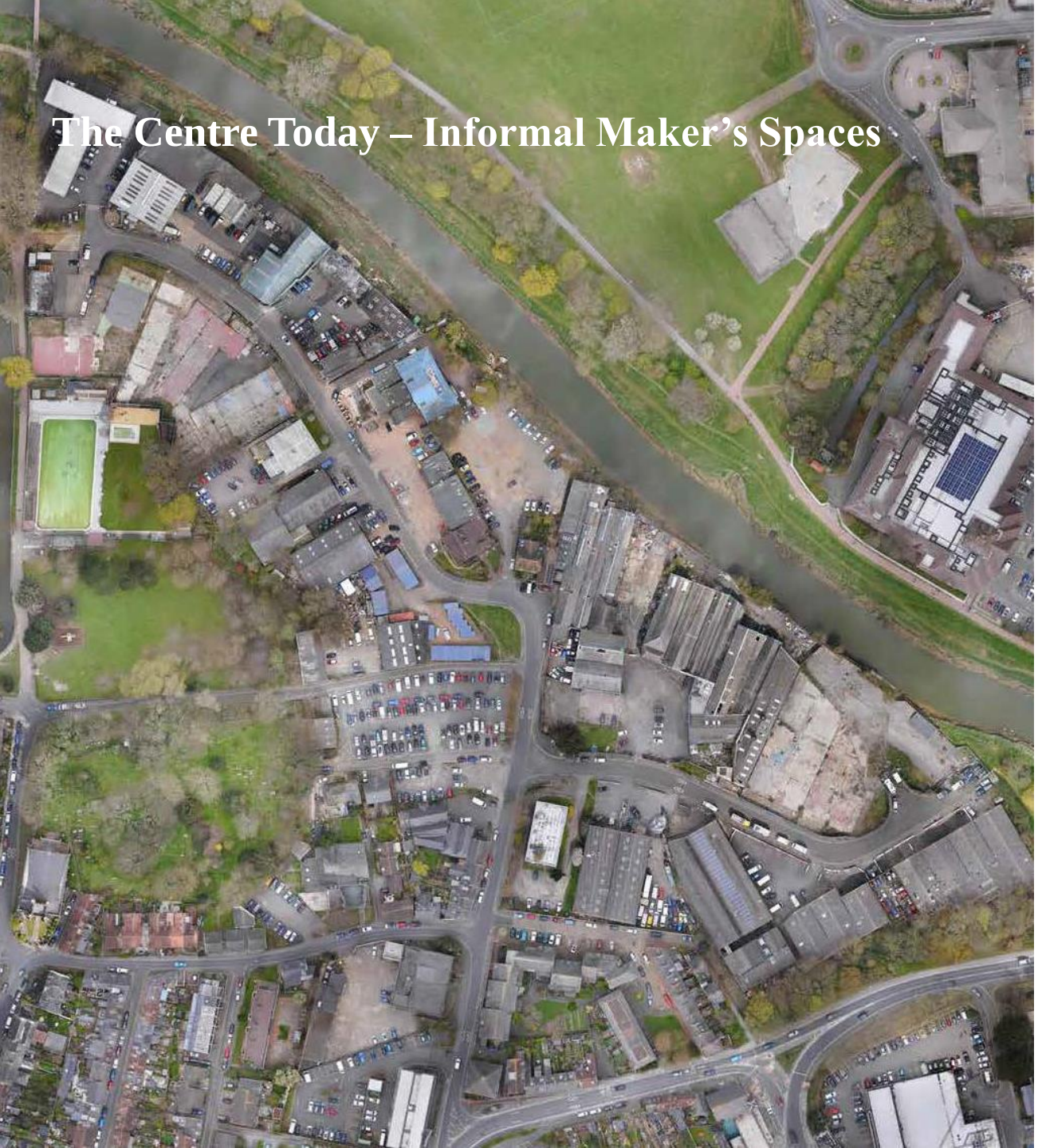
LEWES (UNITED KINGDOM)

The Phoenix Project

Industrial Heritage – Former Iron Works



The Centre Today – Informal Maker's Spaces



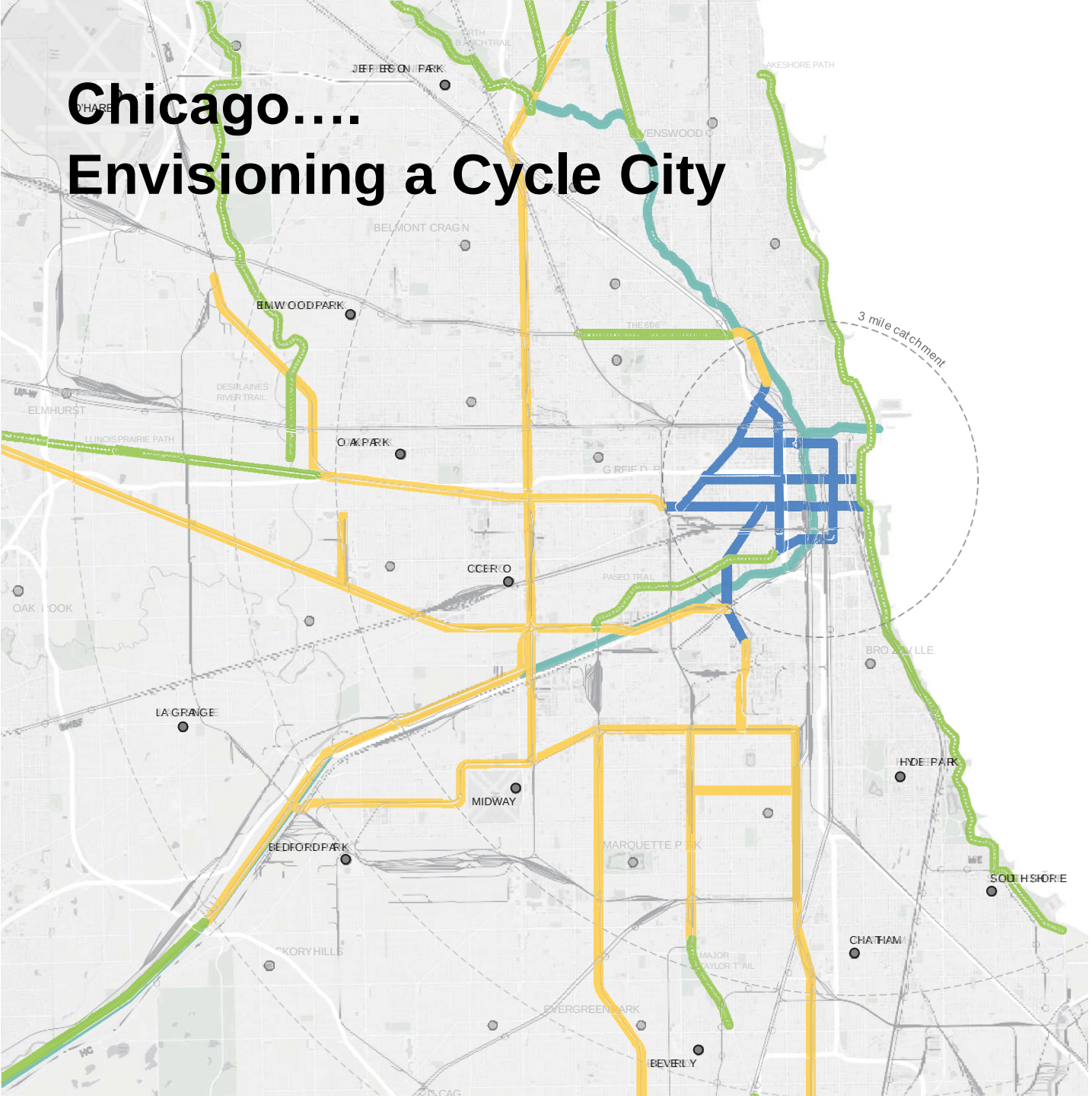
The Future Plan

Retrofit and repurpose industrial heritage

CHICAGO (UNITED STATES)

The 606 Rail to Trail Project

Chicago….
Envisioning a Cycle City



A robust city bike network

Total trail system

226 mi

Existing bikeways

41% 93mi

New cycle freeways

42% 96mi

Streets

9% 19mi

Rivers

8% 18mi

From: University of Illinois at Chicago Student Group Project
Professor Phil Enquist

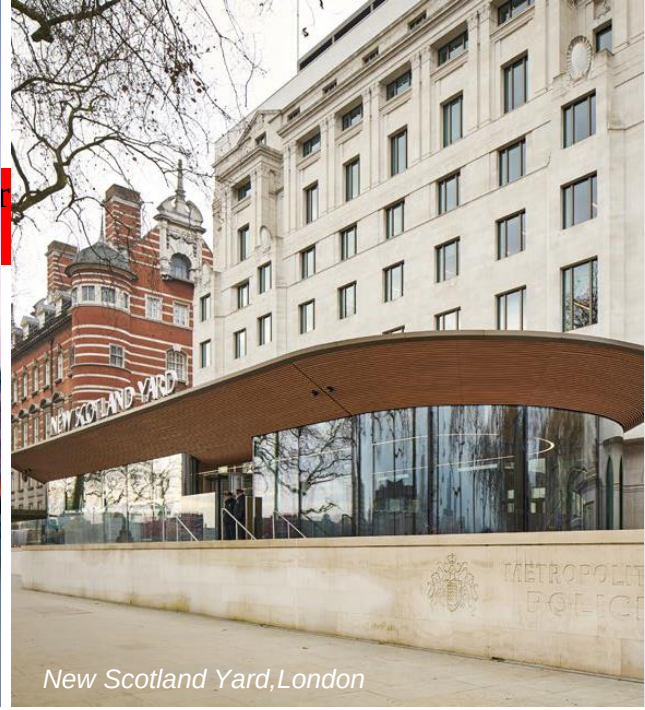
Expansive Reuse

Upgrading and adding new space to existing buildings and urban districts


1 Triton Square, London

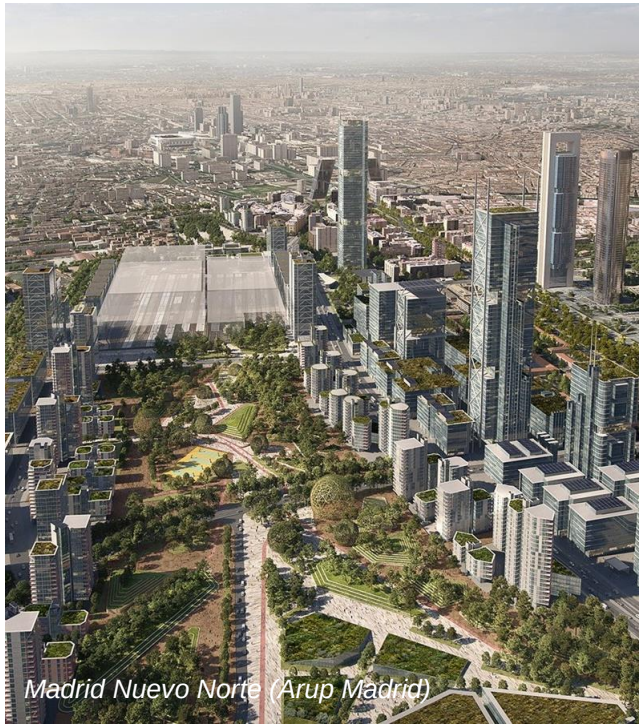

Royal Academy of Arts, London

Sea Containers House



New Scotland Yard,London


CaixaForum Madrid - Herzog & de Meuron


Madrid Nuevo Norte (Arup Madrid)


3XN Tower Sydney


The Standard, London - Arup

LONDON (UNITED KINGDOM)

1 Triton Square

43%

cost saving compared to typical commercial building

40,000

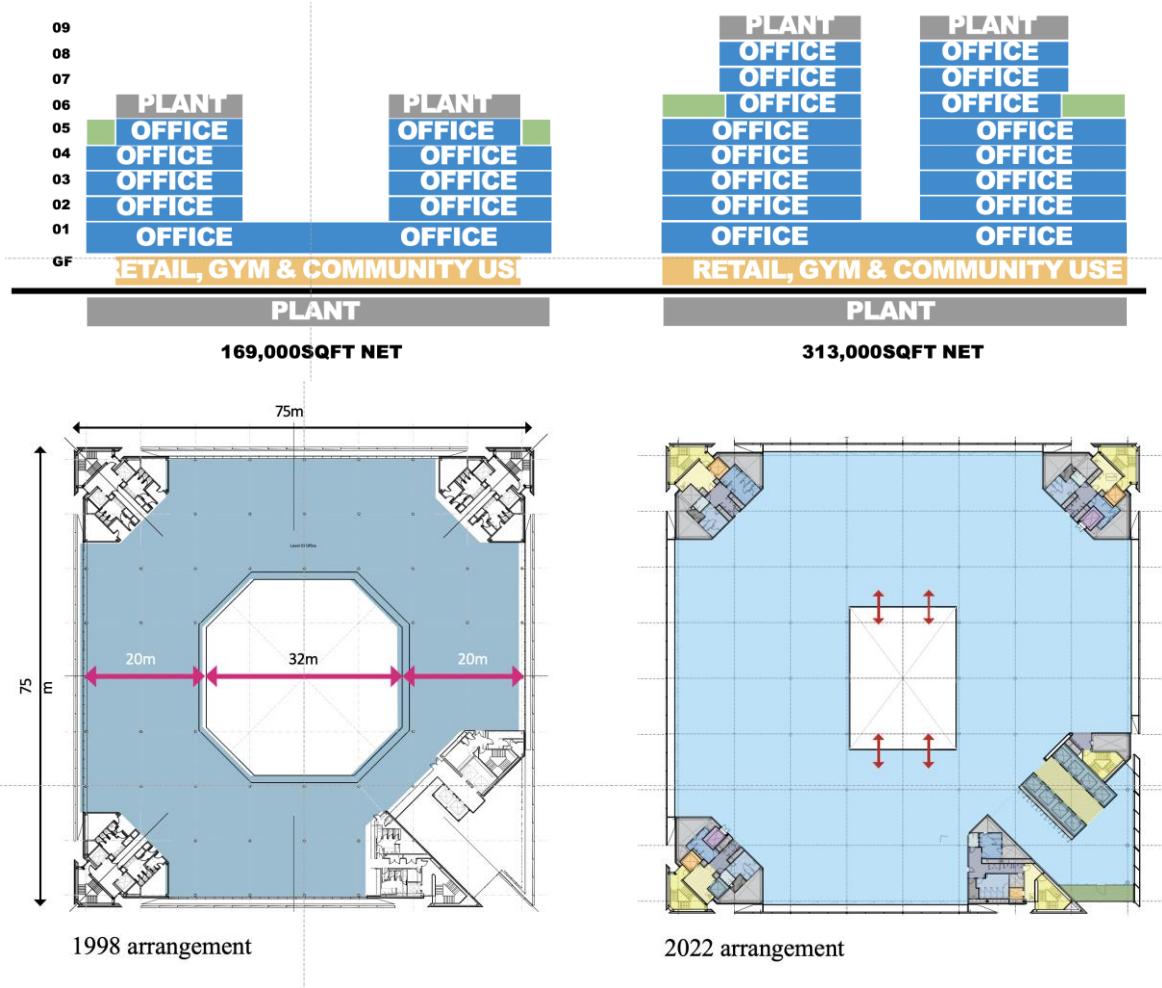
Tonnes carbon saved

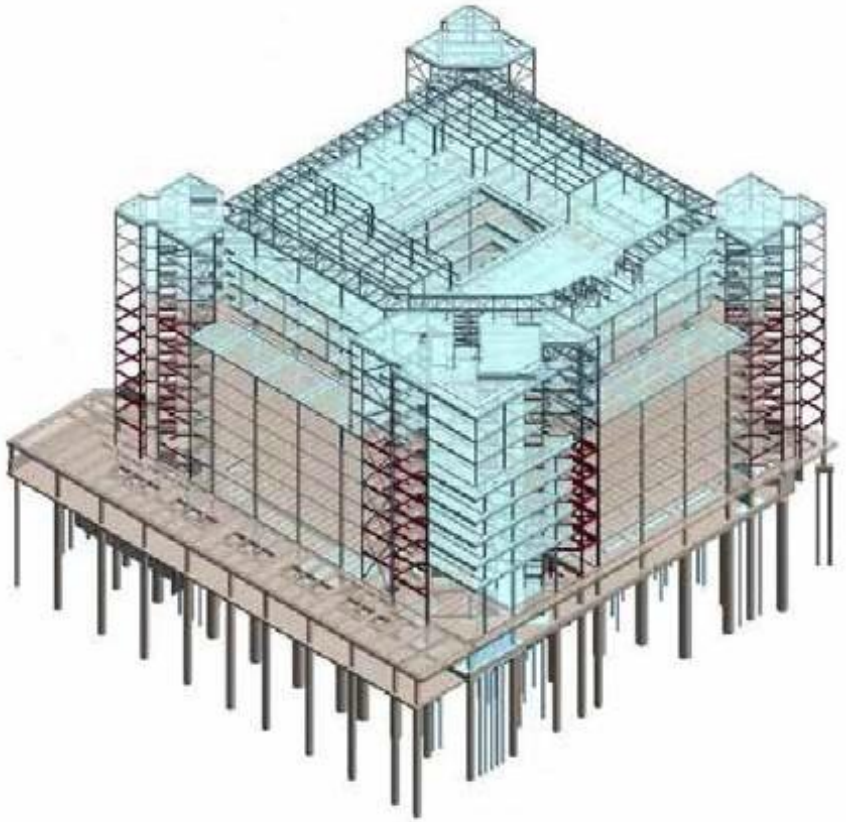
30%

faster to completion vs typical new build

LONDON (UNITED KINGDOM)

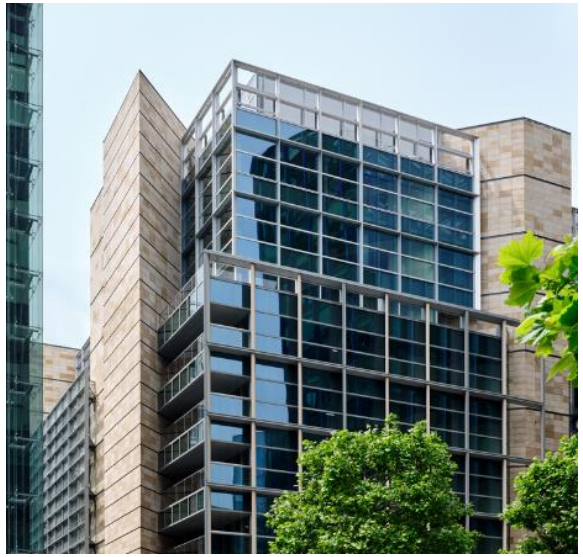
1 Triton Square





LONDON (UNITED KINGDOM)

1 Triton Square



LONDON (UNITED KINGDOM)

1 Triton Square

Circular Facades

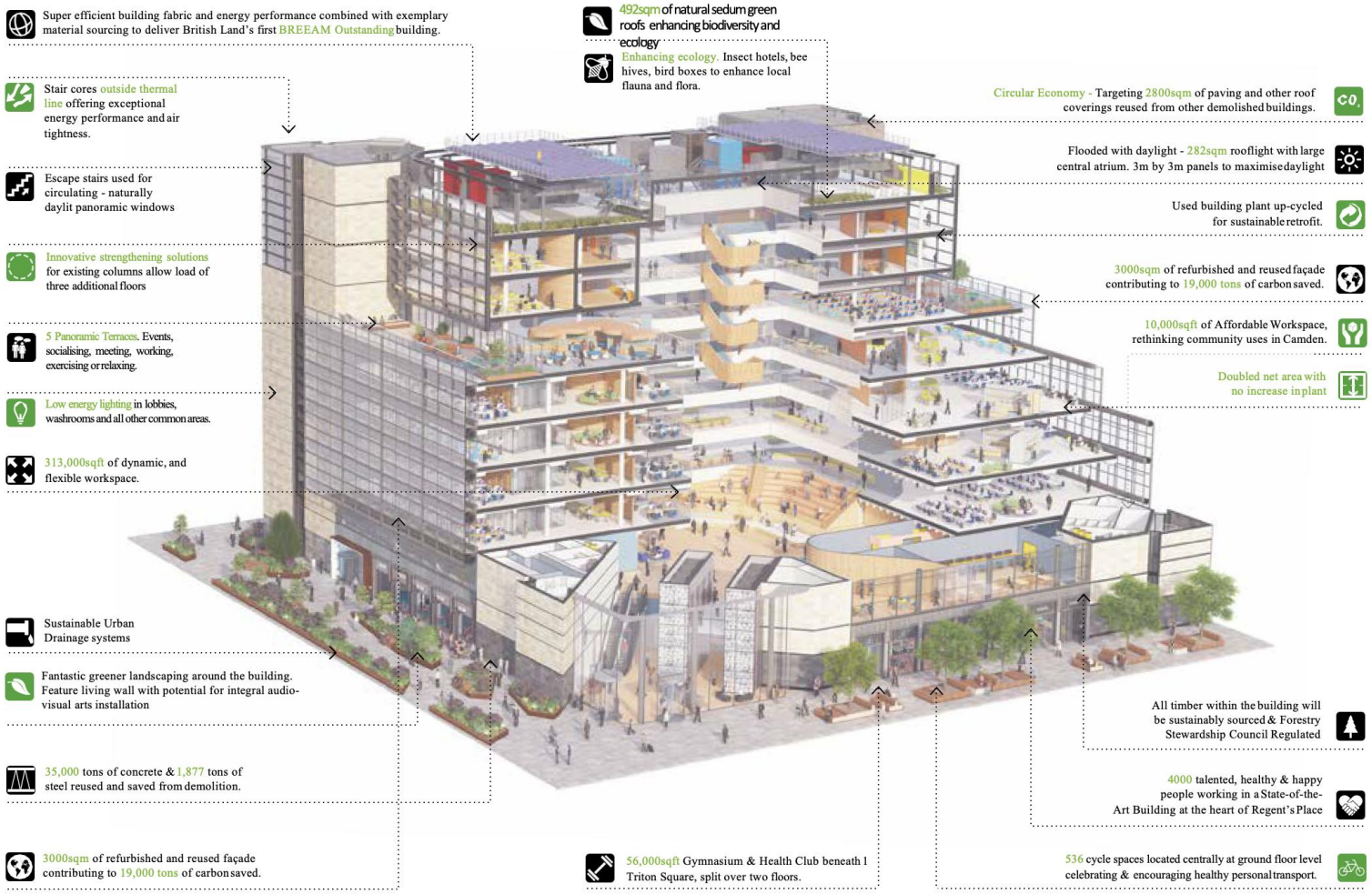
Temporary offsite facility set up within UK to reduce transport emissions

Each panel of the external envelope removed, inspected, cleaned and seals and gaskets replaced

Replacement double glazed units inserted into retained and refurbished horizontal spandrels

.

BREEAM Outstanding – 92.3%



BREEAM New Construction 2014
Office
New Construction (Shell and Core)
Overall Score: 92.3%
Rating: Outstanding

Category Scores	0 10 20 30 40 50 60 70 80 90 100
Management	100
Health and Wellbeing	60
Energy	86
Transport	100
Water	89
Materials	69
Waste	89
Land Use and Ecology	90
Pollution	92
Innovation	70

Signed for BRE Global Ltd., Melanie Forester

26 August 2021
Date of Issue

LONDON (UNITED KINGDOM)

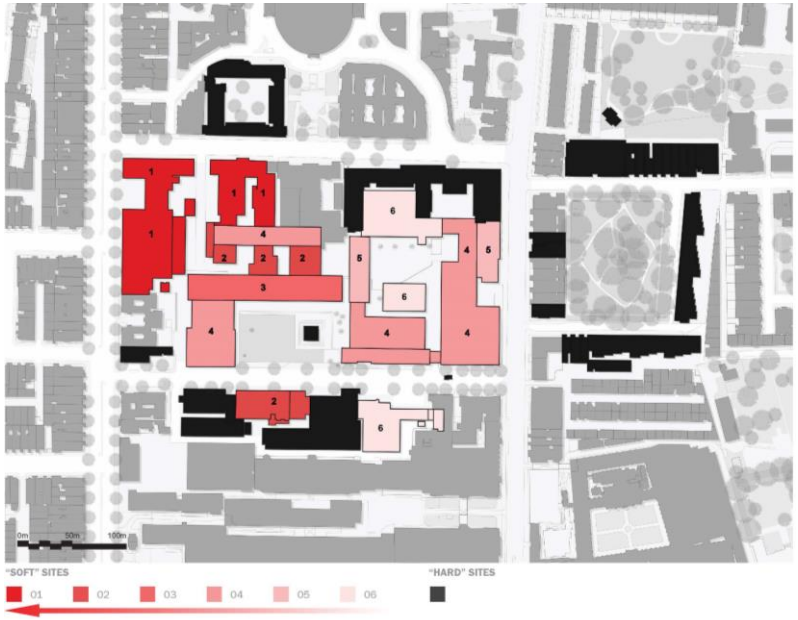
Imperial College London

LONDON (UNITED KINGDOM)

Imperial College London – South Kensington Campus

LONDON (UNITED KINGDOM)

Imperial College London – South Kensington Campus

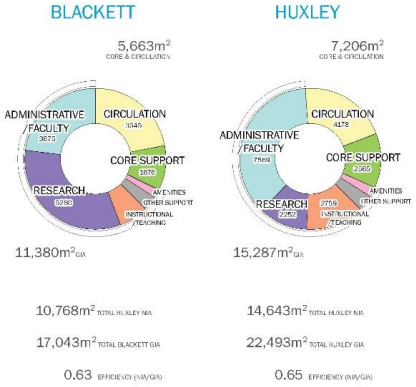


Utilisation

Analysis and Assessments

Blackett & Huxley

Areas by Program



10,768m² TOTAL HUXLEY NIA

17,043m² TOTAL BLACKETT GIA

0.63 EFFICIENCY (NIA/GIA)

14,643m² TOTAL HUXLEY NIA

22,493m² TOTAL HUXLEY GIA

0.65 EFFICIENCY (NIA/GIA)

TOTAL

26,419m² TOTAL NIA

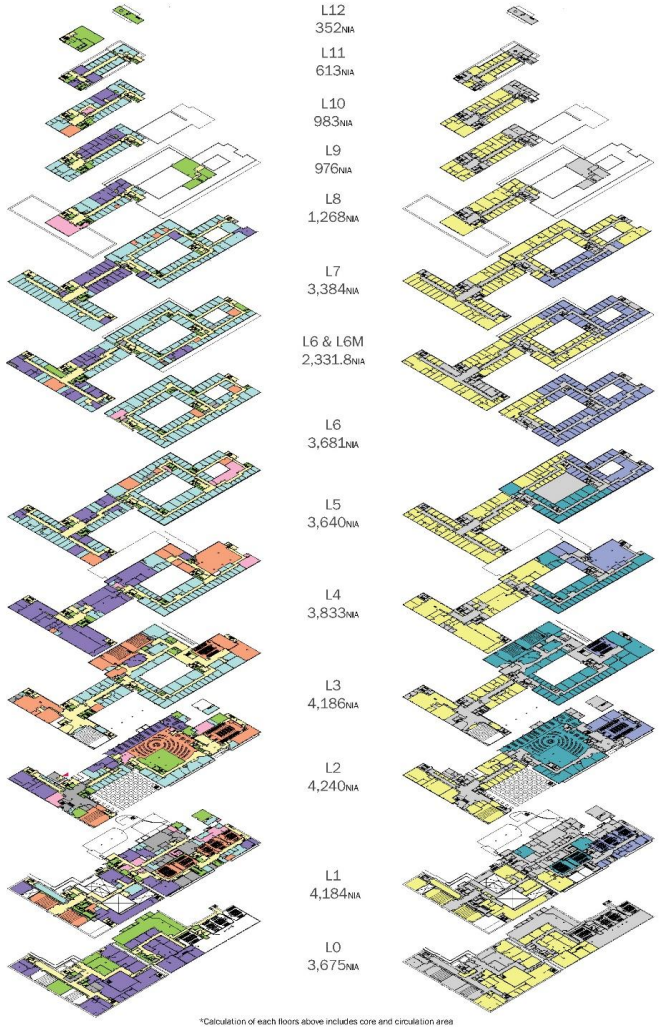
+11,964m² TOTAL CORE & CIRCULATION NIA

+1,153m² TOTAL COLUMNS & PARTITIONS

= 39,536m² TOTAL GIA

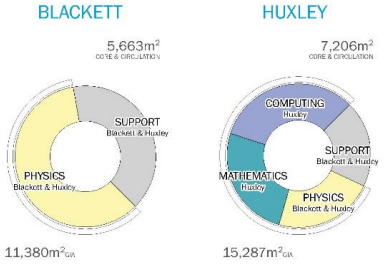
0.66 EFFICIENCY (NIA/TOTAL GIA)

Refer to Appendix for Spatial Definitions



*Calculation of each floors above includes core and circulation area

Areas by Department



Blackett & Huxley are occupied by the Departments of Computing, Mathematics and Physics. The buildings are comprised of dry labs and teaching spaces.

LONDON (UNITED KINGDOM)

Imperial College London – South Kensington Campus

Refurbishment / Expansion

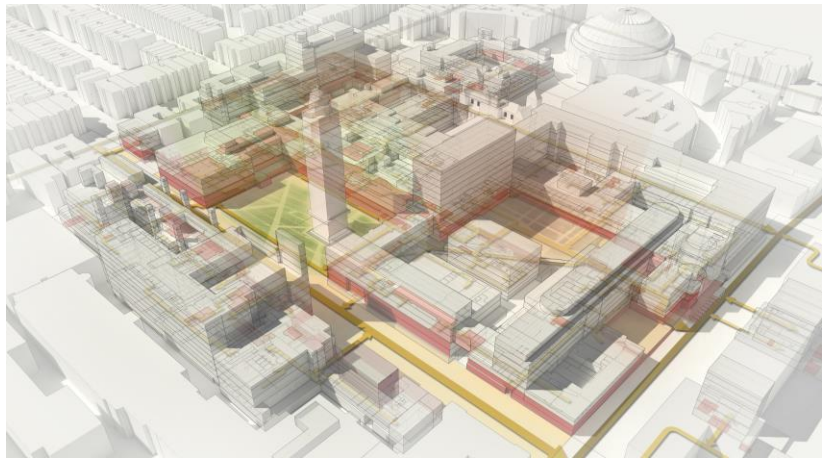
Academic / Dry Lab / Office | Academic / Dry Lab / Office | Wet Lab

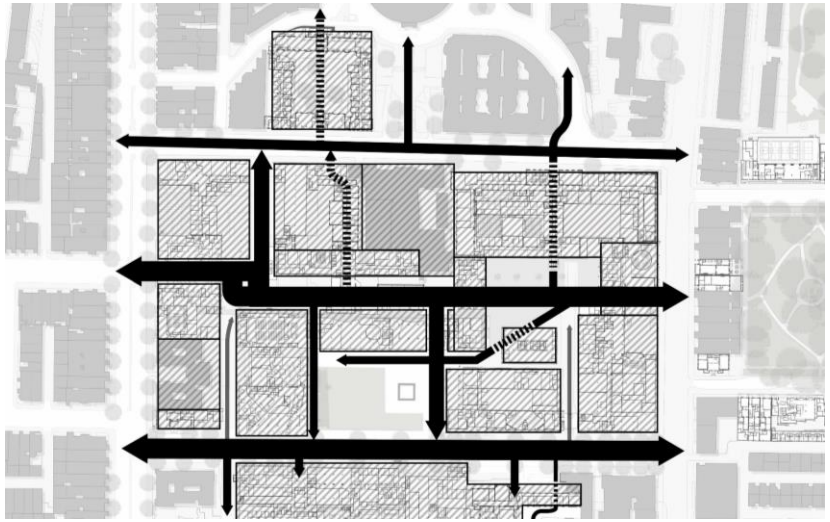
Redevelopment

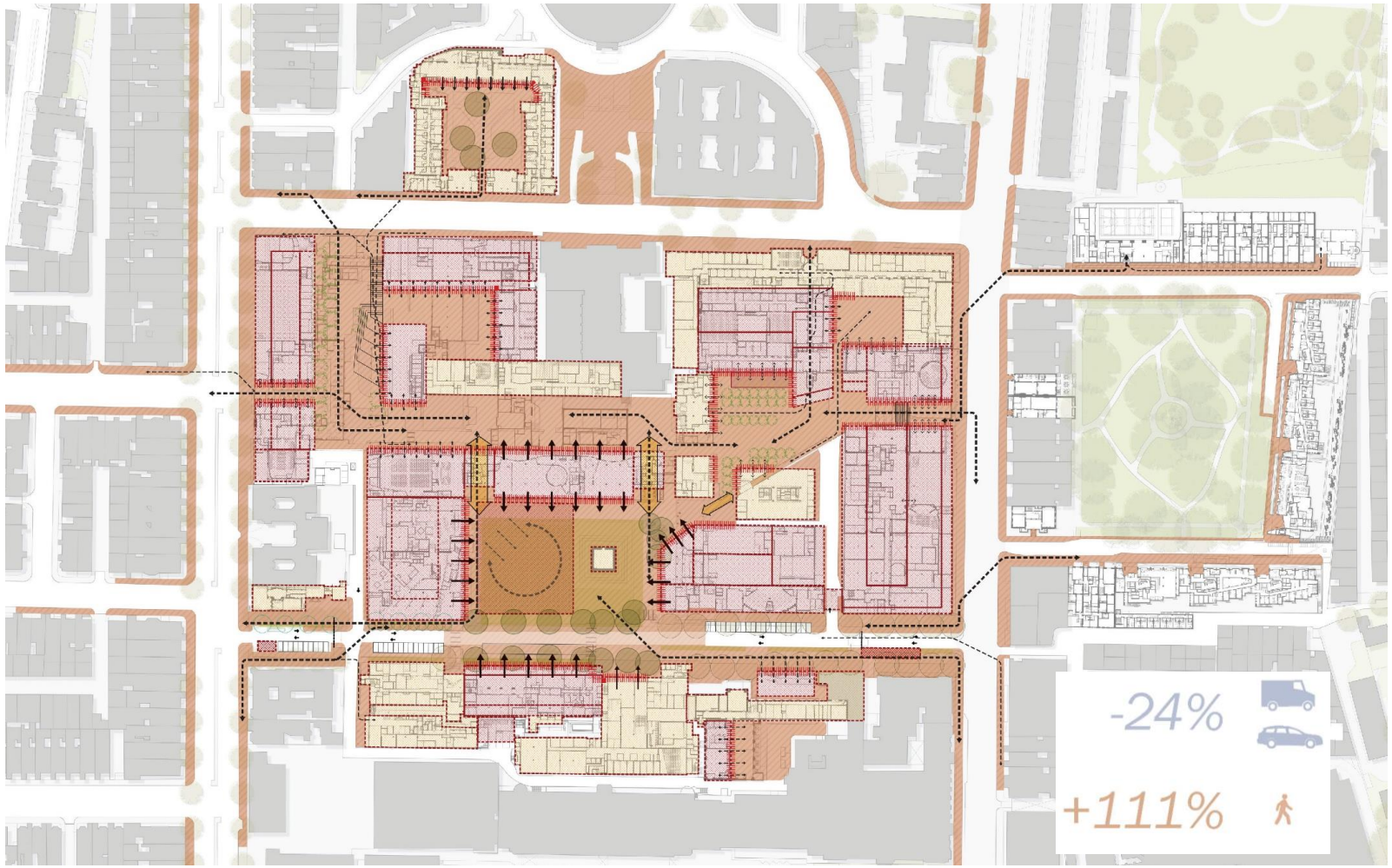
Academic / Dry Lab / Office | Wet Lab | Wet Lab

LONDON (UNITED KINGDOM)

Imperial College London – South Kensington Campus

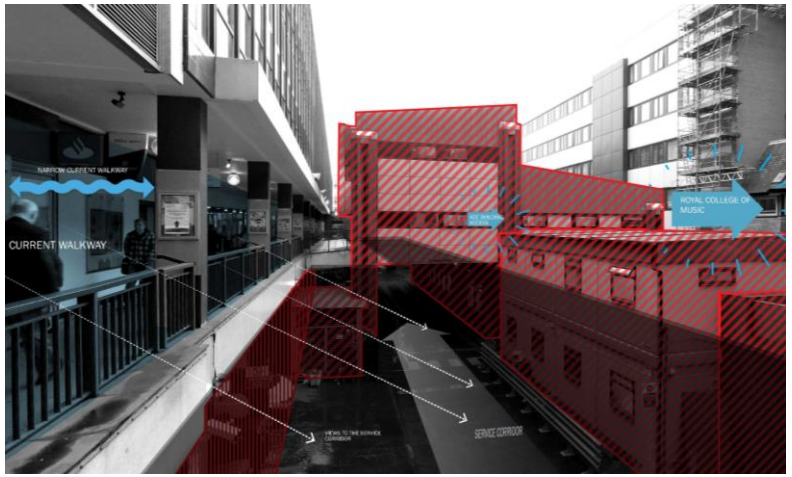


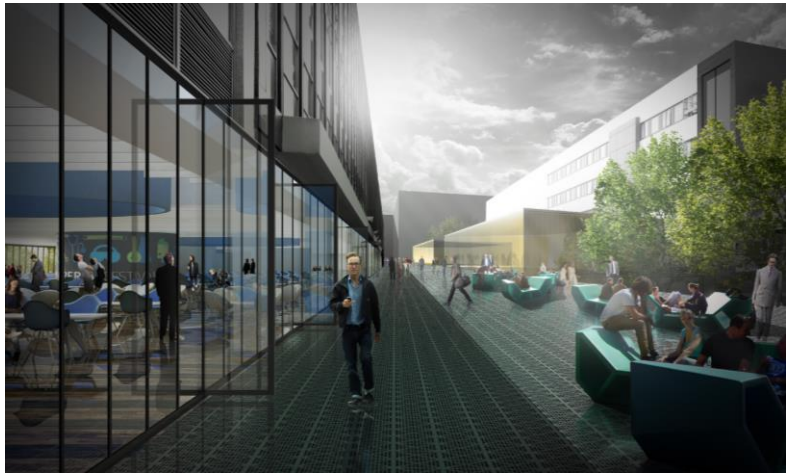




LONDON (UNITED KINGDOM)

Imperial College London – South Kensington Campus



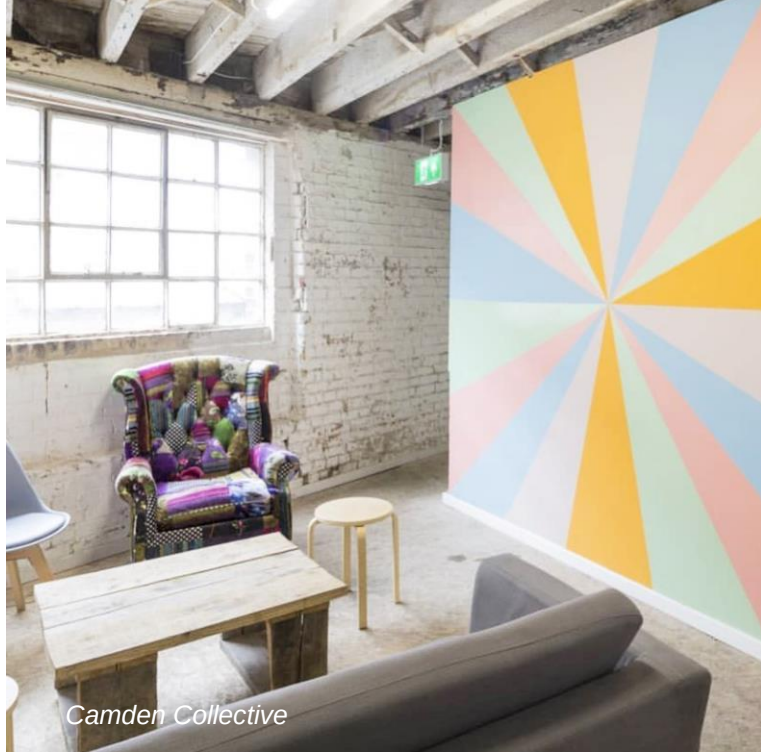


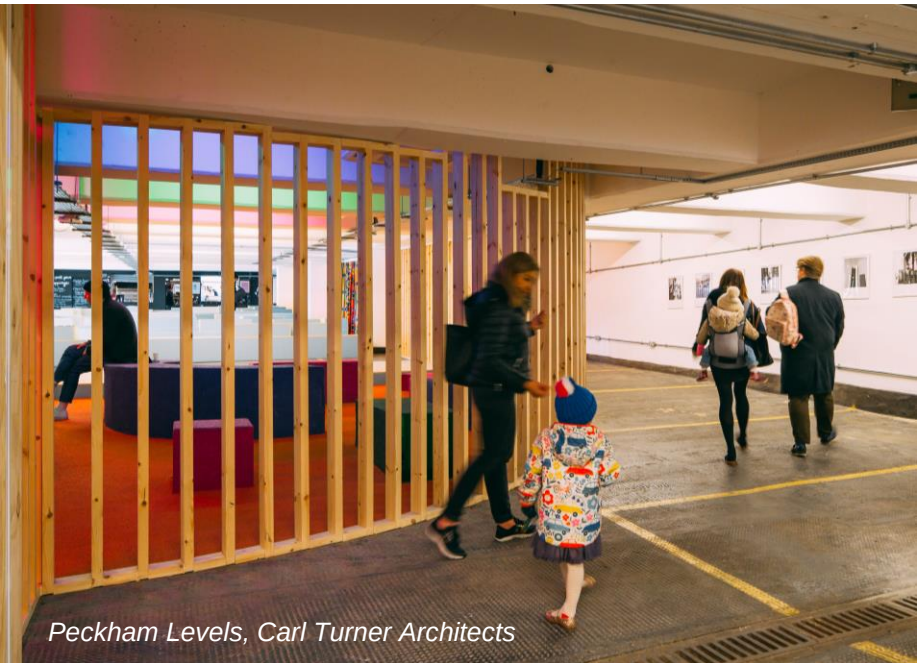
Meanwhile Reuse

Creating immediate impact as a catalyst for longer term positive change


College Square, Croydon, Fiona Hartley and Ellie Fox Johnson

Aberfeldy Street , Jan Kattein Architects


Camden Collective


Peckham Levels, Carl Turner Architects

Eccleston Yards


Sayer Street , Jan Kattein Architects

LONDON (UNITED KINGDOM)

Ebury Bridge

100%

electric buildings

5+

reuses of structure

17 tonnes of CO2eq

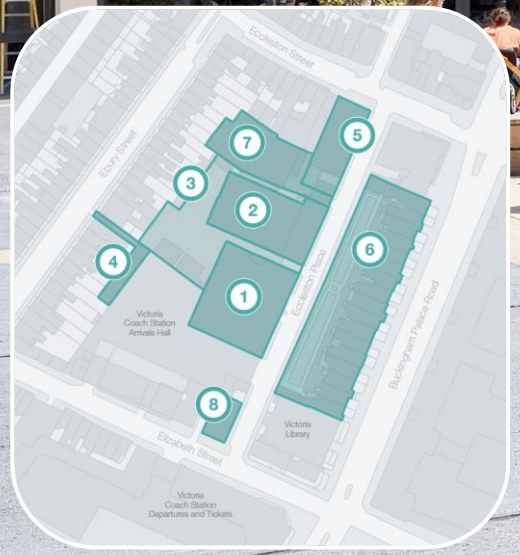
saved in foundations

LONDON
(UNITED KINGDOM**)**

Ebury Bridge

LONDON (UNITED KINGDOM)

Eccleston Yards



LONDON (UNITED KINGDOM)

Eccleston Yards

ENGAGEMENT SPECTRUM

Each anchor represents a specific and targeted use that falls within a spectrum of engagement. It is possible, and even likely that anchors can be applicable in multiple stages along this gradient.

Spark: How did you know SW1 was changing? What caught your eye? Where did you see it?

Engage: What was the thing that made you want to visit SW1? Why did you change your routine to see it?

Cultivate: What is the thing that makes you want to come back? Again and again? Or stay?

Establish: How has SW1 and Eccleston Place established itself? What is it known for?

LONDON (UNITED KINGDOM)

Eccleston Yards

LONDON (UNITED KINGDOM)

Eccleston Yards

A new destination for Belgravia

- Maximise architectural merit: Enhance the character and appearance of the conservation area.
- Reuse & Adapt: Meet modern sustainability standards.
- Vibrant public realm.
- Active retail frontage and restaurants
- Connect to the local streets with a network of new passageways.
- Flexible and unique workspace to attract a vibrant mix of businesses and creative jobs

LONDON (UNITED KINGDOM)

Eccleston Yards

Life at the Yards revolves around this central courtyard, which is both an anteroom to the buildings around it and a place in itself.

It now hosts pop-up screenings, food festivals and sporting events, while local artists have taken occupation of the space by painting murals around its walls.

ULI Greece & Cyprus Annual Conference | 27 June 2023

Resilience through Reuse…
A Vision for Sustainable Urban Landscapes

Dan Ringelstein
Director - Cities, Planning & Design | Arup