R K

Maximising building use

The potential for commercial office retrofit

V1.3 (CItA)

D

Building Reuse

Sustainability

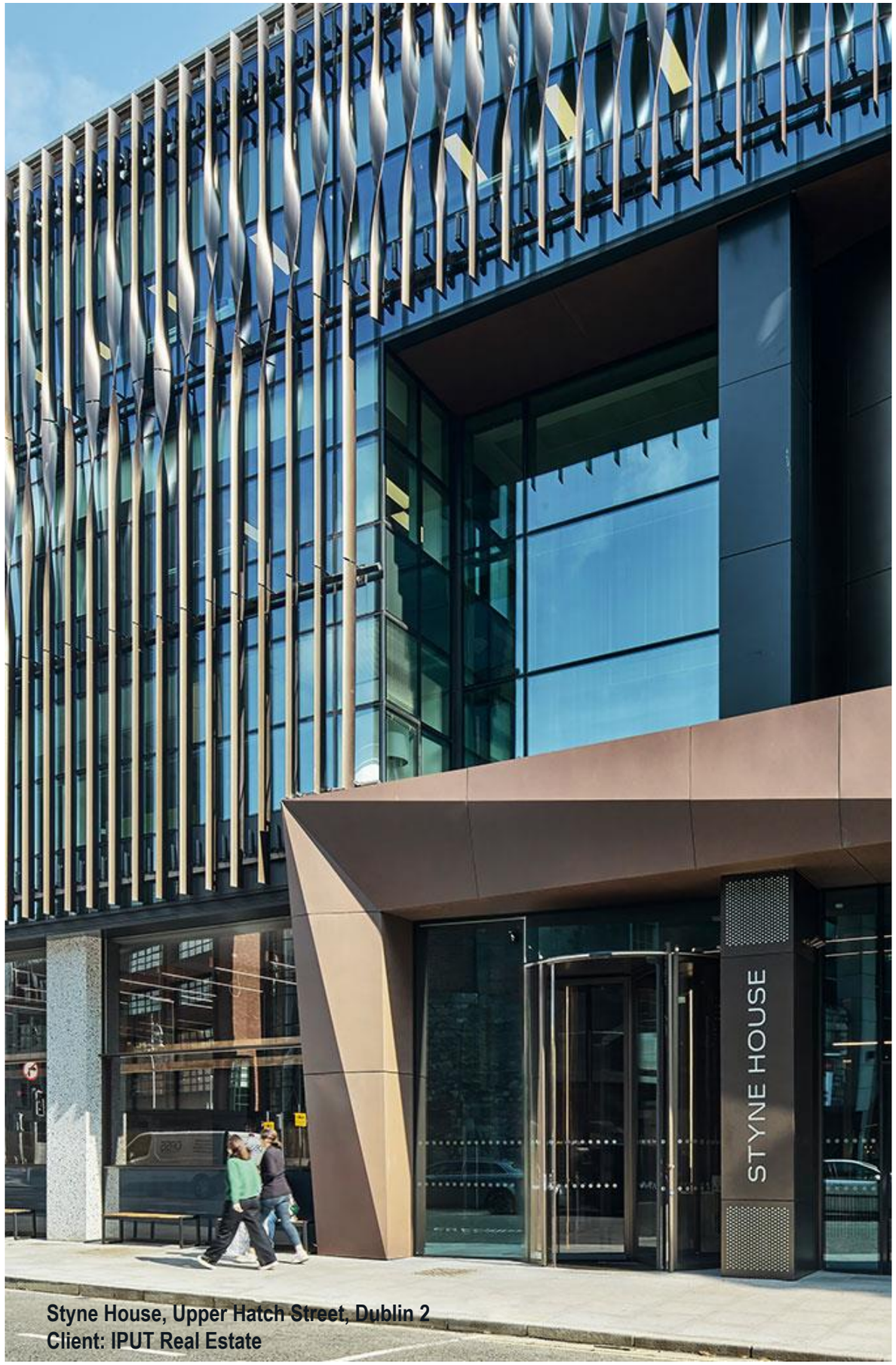
Building reuse saves embodied carbon, reduces construction waste and enables a circular economy.

Imagination

Re-use can improve existing structures into more attractive and better-quality assets.

Action

RKD have experience with this, and we are doing it with great results. What we are seeing is the potential to reinvent older, less-desirable buildings, into better ones.



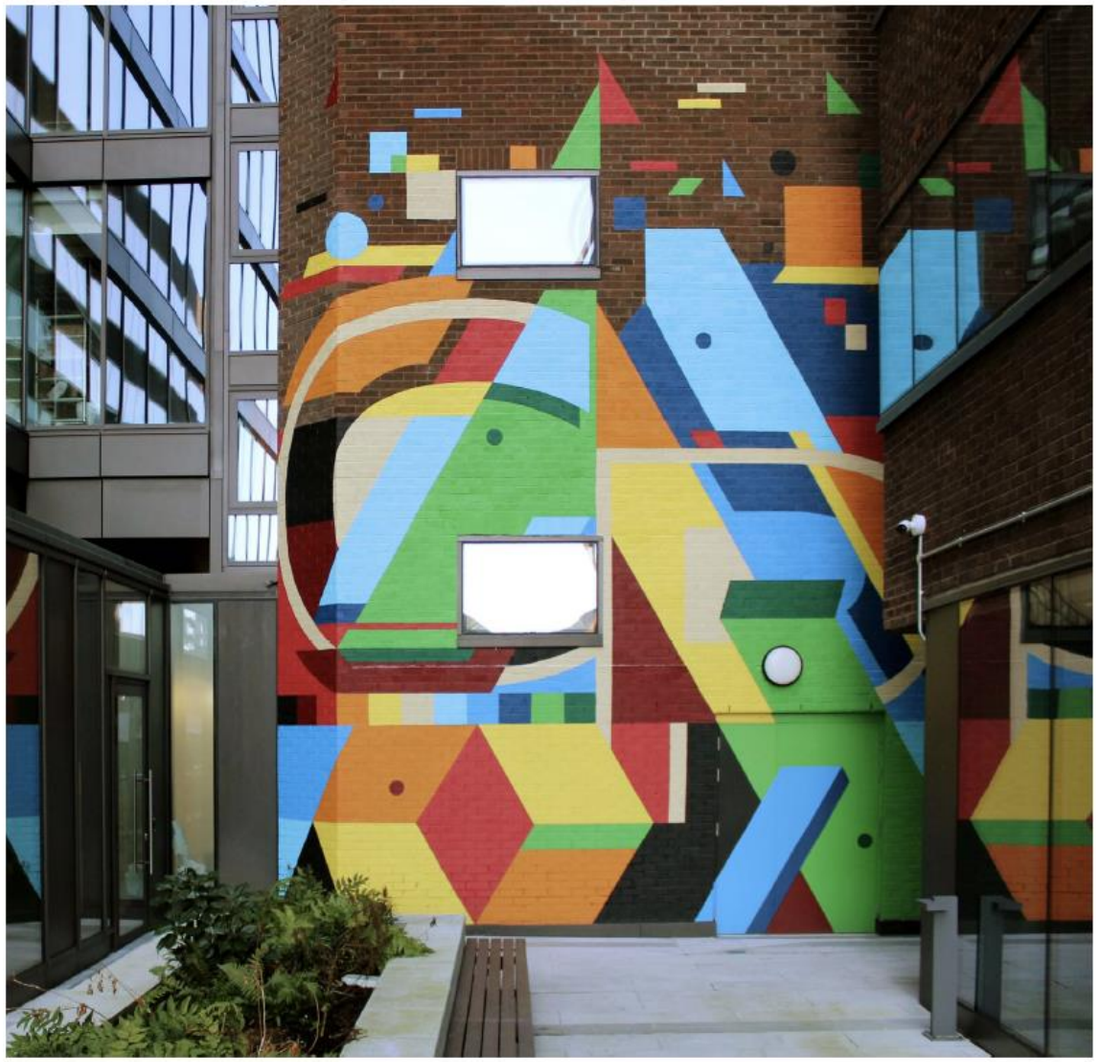
Styne House, Upper Hatch Street, Dublin 2
Client: IPUT Real Estate

Sustainability + Research

hibernia RKD

Towards Net-Zero Whole Life Carbon Emissions

Lessons from an Irish Case Study
1 Cumberland Place



DRIVING EXISTING BUILDINGS PERFORMANCE TOWARDS NET ZERO IS POSSIBLE

https://www.irishtimes.com/property/commercial-property/2023/11/29/investment-of-30m-sees-1-cumberland-place-cut-energy-use-by-63/

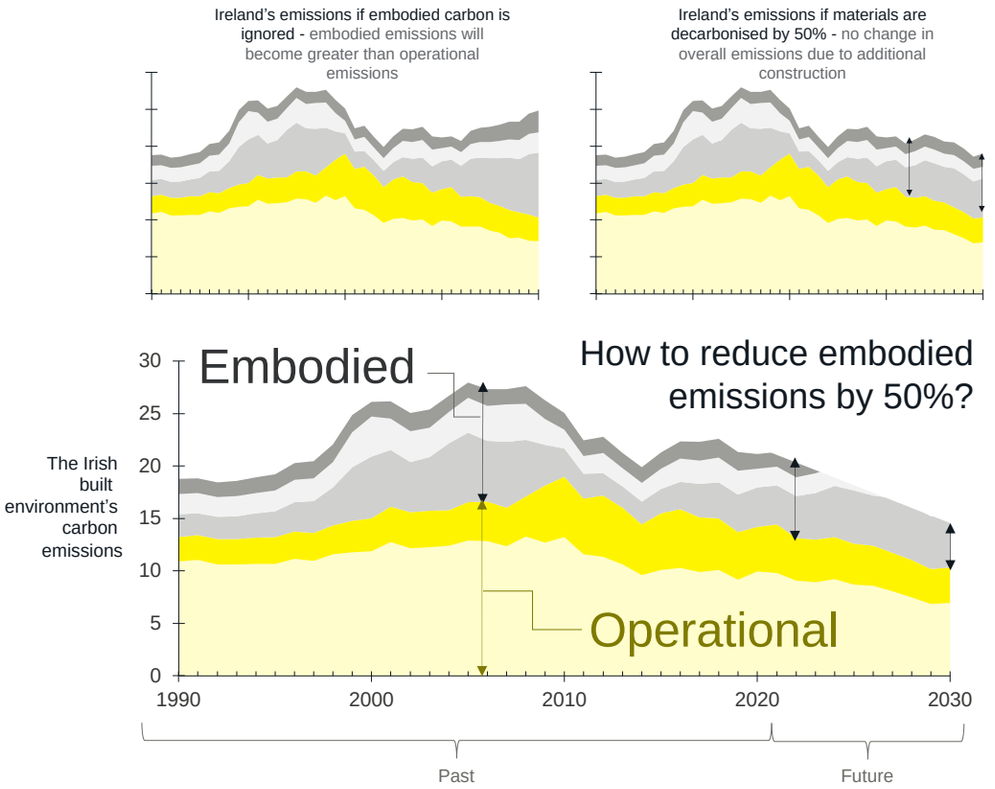
Project: Dublin Landings
Client: Ballymore

Ireland’s built environment

Ireland’s built environment accounts for 37% of national emissions.

The split is 2:1 between operational and embodied carbon

Reducing emissions through material decarbonisation is insufficient. We need to also make best use of what we already have.

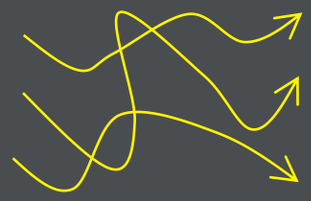


Data adapted from: R. O’Hegarty and O. Kinnane, “Whole life carbon quantification of the built environment: Case study Ireland,” *Building and Environment*, vol. 226, p. 109730, Dec. 2022, doi: 10.1016/j.buildenv.2022.109730.

Real estate match-making

Vacant spaces

- Low grade offices
- Decommissioned factories
- Derelict buildings
- …



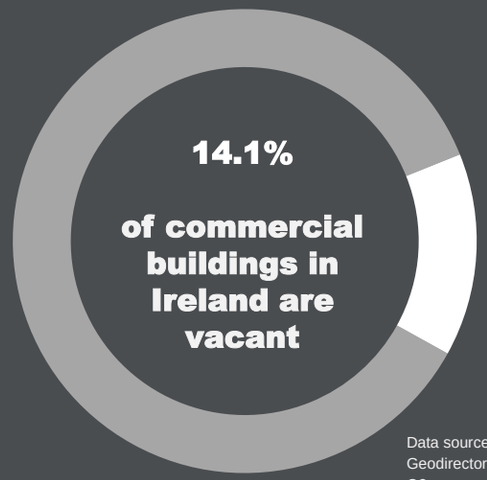
Emerging demands

- Energy efficient homes
- Educational buildings
- Manufacturing facilities
- Technology hubs
- Community centres
- A new workspace
- ...

Design thinking

Understanding empty commercial space

Nationally ▪ there are 210,607 commercial buildings in Ireland. 29,798 are vacant.



Data source: Geodirectory 2023 Q2

The vacancy rate of older buildings is at risk of increasing further

Dublin ▪ is the commercial hot spot. A quarter of commercial address point are located here and 650,321 m^2 of office space is vacant according to the JLL Dublin Office Market Report Q4 2023.

Data health check

Data on vacancy is a subject of intensive research with multiple different data sources used and analysed. The *Central Statistics Office* and the *Geodirectory* report different vacancy figures. For residential buildings there is almost a two-fold difference depending on source used. O'Callaghan and Stokes [2] succinctly describe the challenge of understanding the number and type of vacant properties: *"vacancy data has been produced as the de-facto data exhaust from other data collection priorities"* while Crowe et al. [3] reviewed the methods used across three international case studies.

What will our building stock look like in 2050?

"New buildings are more energy efficient, but 80% of buildings that will be standing in 2050 have already been built."

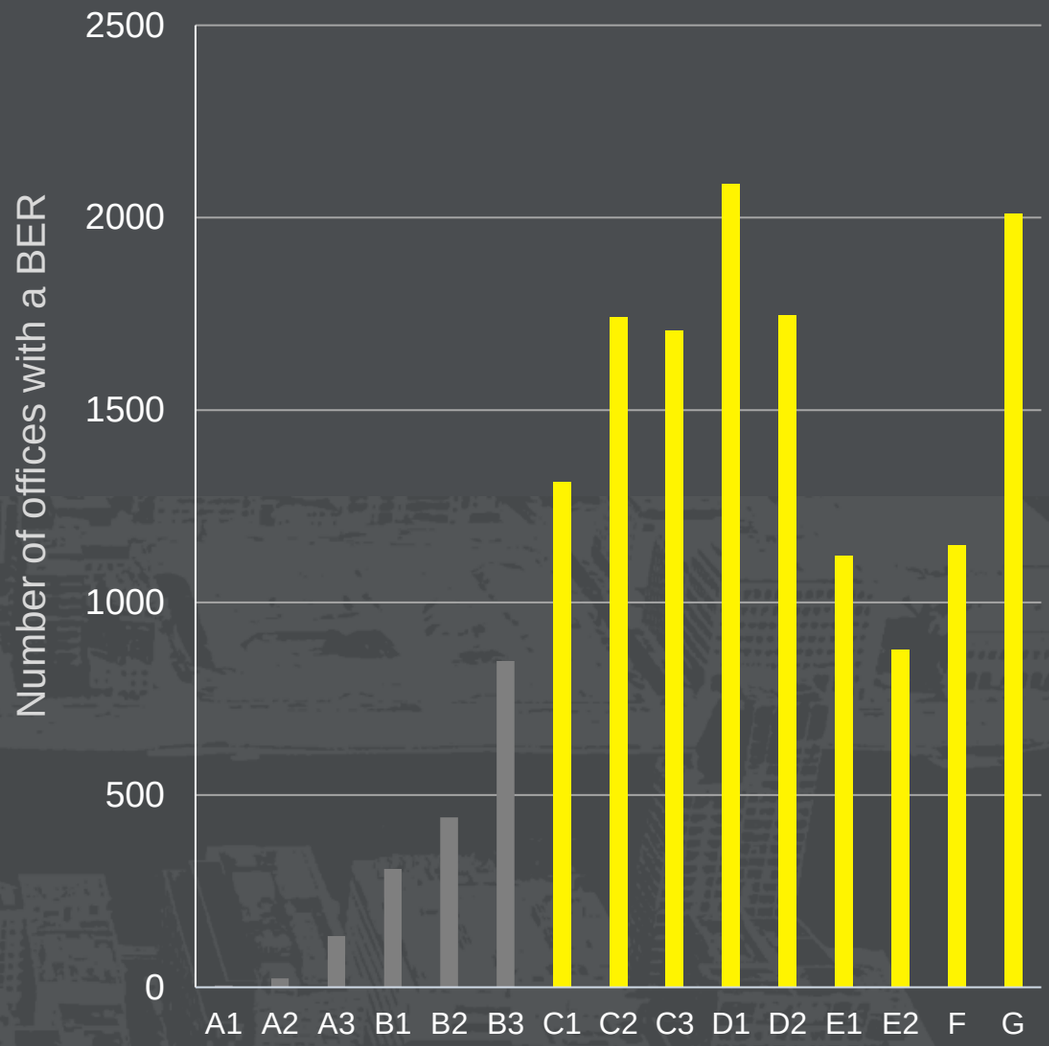
https://www.theclimategroup.org/our-work/news/energy-efficiency-measures-will-lead-way-net-zero-buildings#:~:text=New%20buildings%20are%20more%20energy,emissions%20for%20decades%20to%20come.

Solutions are needed to improve these older, poorer performing buildings

80%

of our buildings have already been built

Ireland's office stock diagnosis



85%

of Irish office buildings are below a B energy rating

Data source: SEAI non-residential Ber filtered for offices

THE MAJORITY OF OUR COMMERICAL BUILDINGS ARE FACING A CHALLENGE

WE BELIEVE THESE CAN BE THE OFFICES OF THE FUTURE

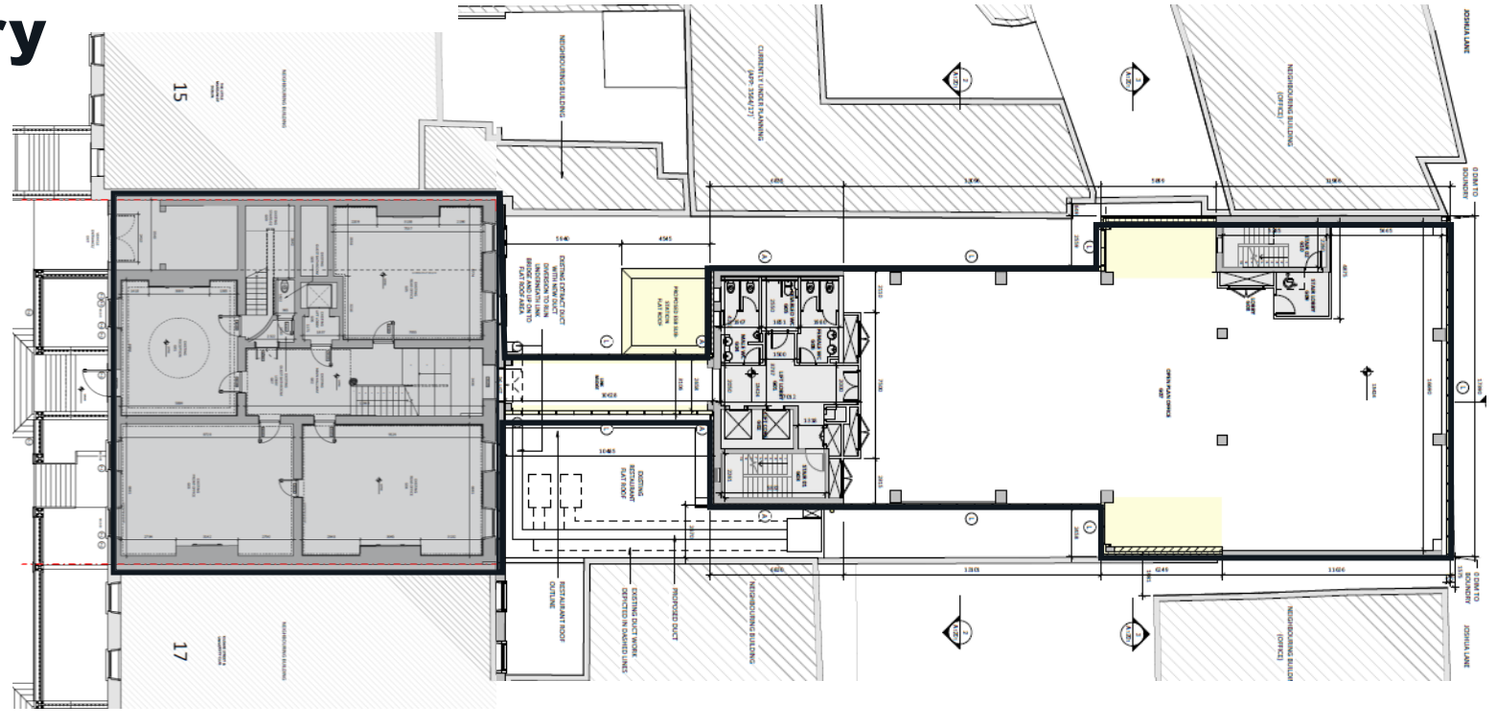
Project: 6–8 Hanover Quay
Client: Bennett Properties
Shell and Core Architect: RKD
Airbnb Fit Out Architect: Heneghan Peng Architects

16 St. Stephen's Green Case Study

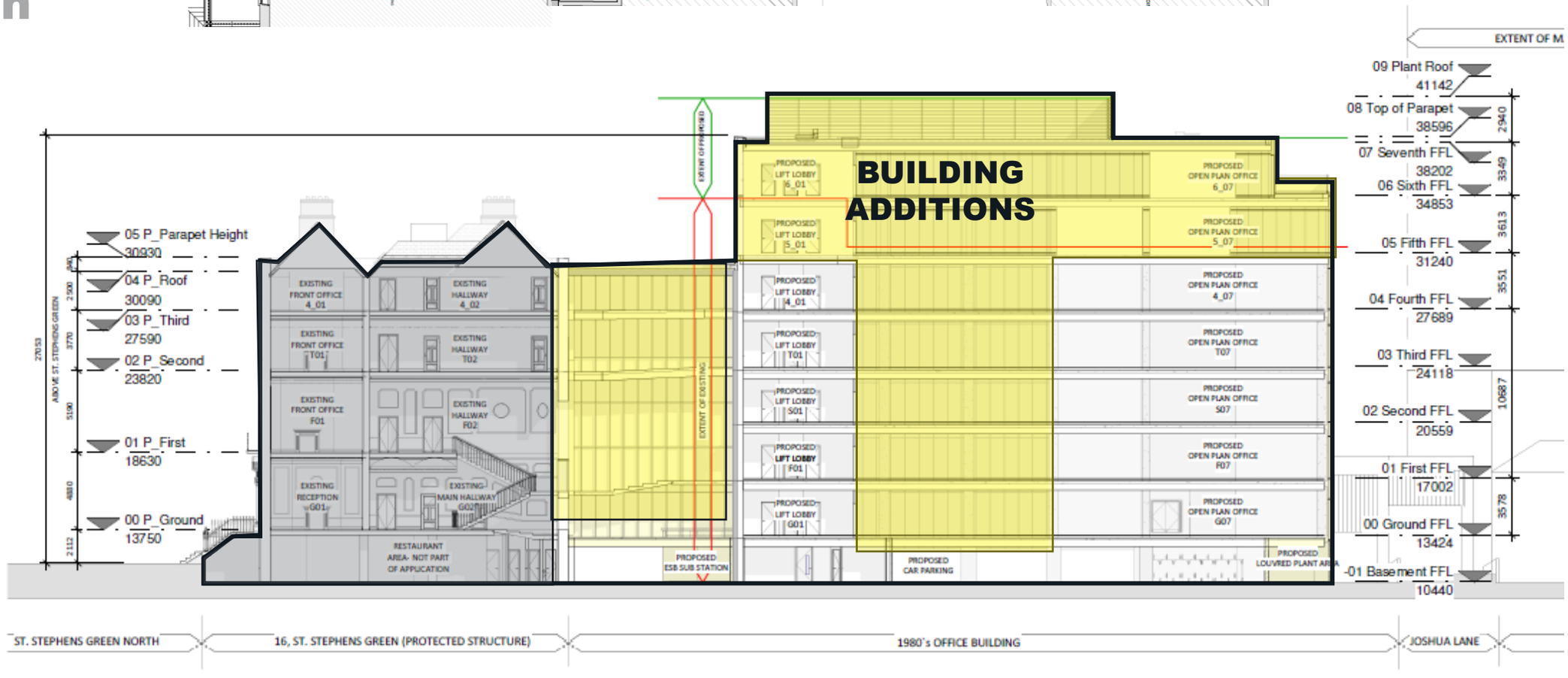
Client	October Investments
Tenant	Multiple
Location	Dublin, Ireland
Area	8,200 sq. m
Cost	€18m
RKD Team	Commercial Fitout + Interiors Sustainability

1980's extension at the rear of historic buildings upgraded to modern office standards. Historic building to the front restored and upgraded as office space/

Project Summary



Floor Plan



Long Section

HISTORIC BUILDING
(PROTECTED STRUCTURE)

LINK BRIDGE

1980s OFFICE BUILDING

Restoration + Renovation

Scope of the project
Historic Georgian Building
1980’s Office Building

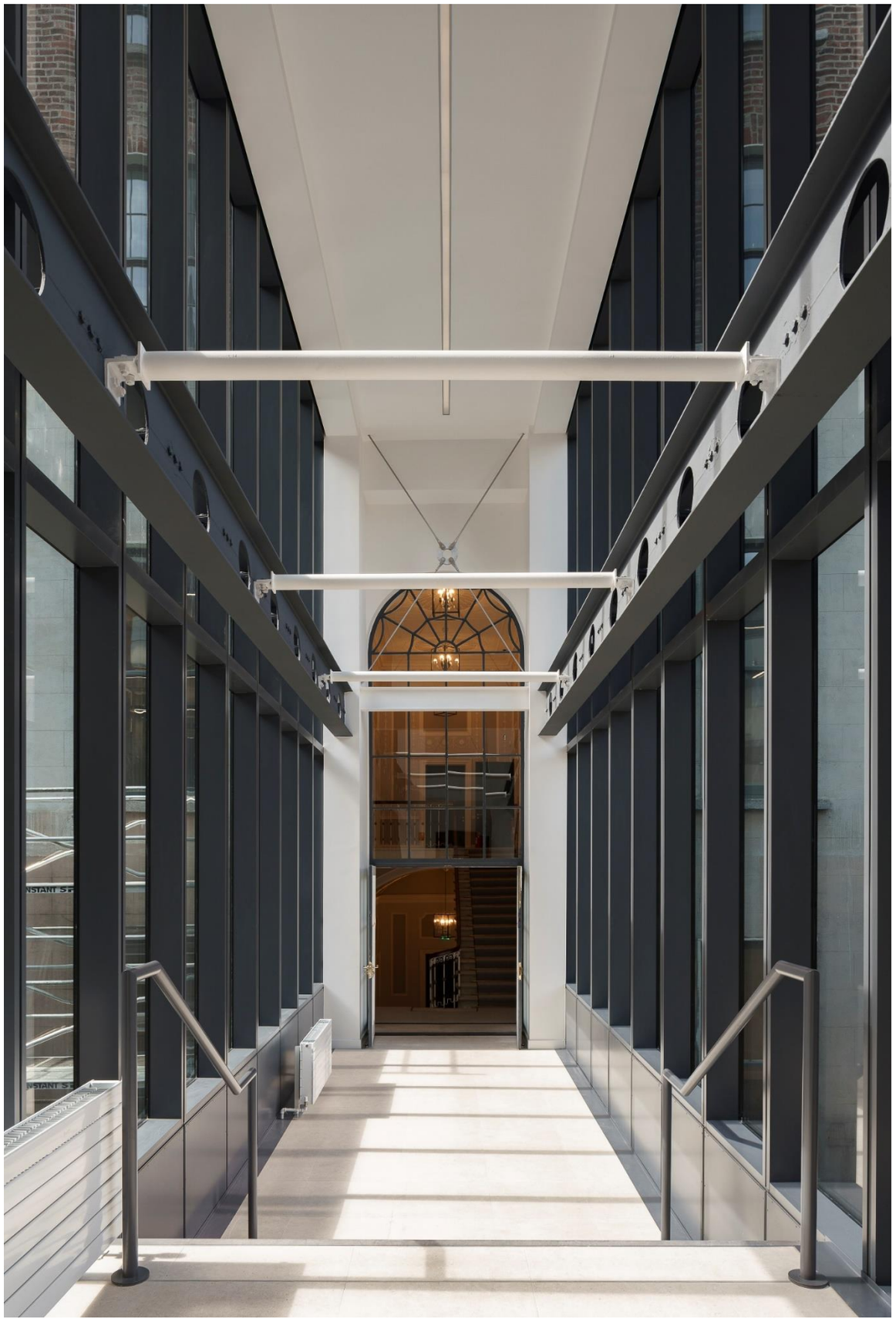
Project: 16 St. Stephen's Green
Client: October Management

Historic Georgian Building

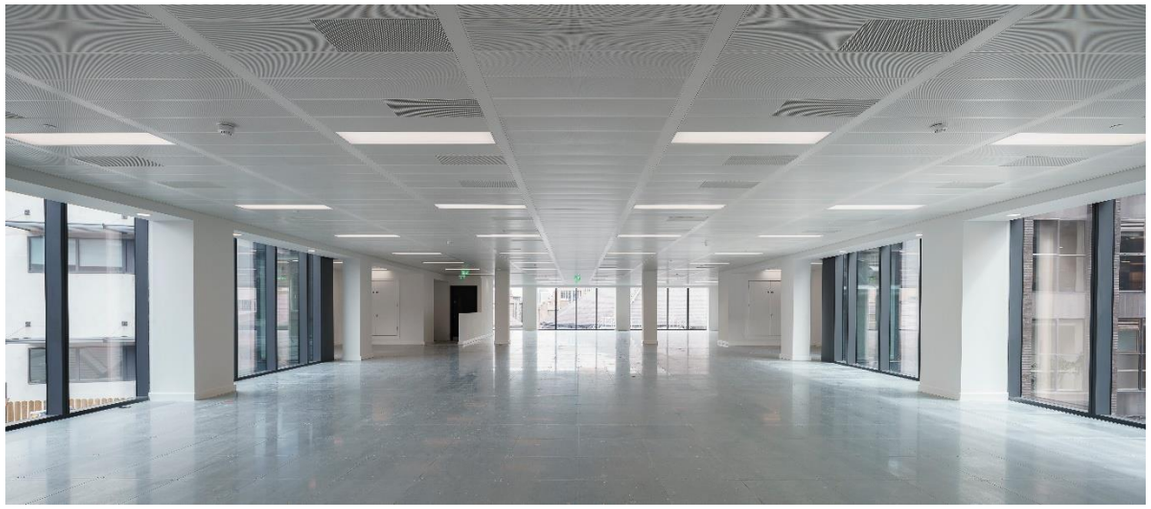
BEFORE

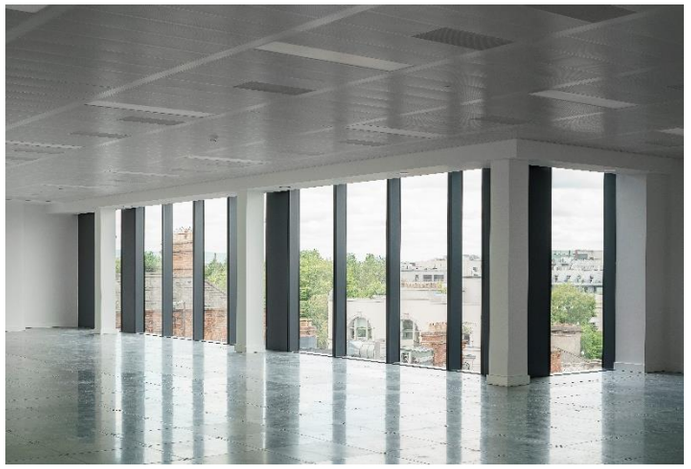
The original house was built in circa 1779
Restoration works included:

- Removal of modern hung ceilings to reveal original lath ceilings
- Removal of the ivy on the front façade
- Repointing of brickwork
- Restoration of the façade details like the stone pediments and balcony ironwork



HISTORIC BUILDINGS CAN MAKE GREAT OFFICE SPACE





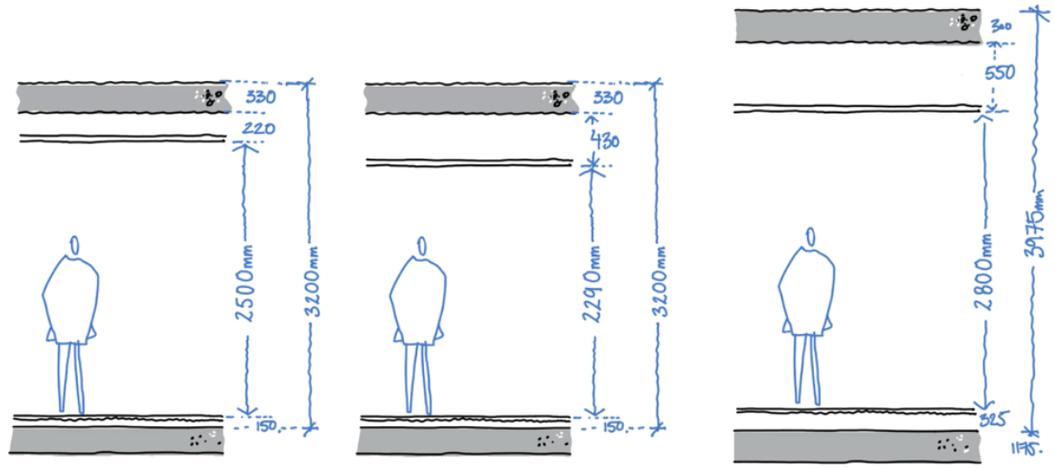
AFTER

- Cat A Fit Out
- New RAF
- New Ceiling
- Upgraded bathroom / lift / lobby stair cores

TECHNICAL CHALLENGES

Vintage 1980's Building

- **Structural repair works** to the concrete frame
  - Rebar only 25mm to edge
- **Thickening of floor slabs** to achieve required fire rating
  - 75mm with screed on top
- **Floor to ceiling heights**
  - BCO standard is 2,700mm + 600mm ceiling
  - Achieved 2,400-2,500mm on most floors
  - New build extension on top two floors okay
  - 175mm clear ceiling void for ducting and cable trays
- **Raised access floor**
  - Only 35mm clear (typically this would be 150mm)
  - Cable trays grinded into floor slab



Historic Georgian Building

- Exempt from a **Fire Safety Certificate** for single occupancy
- Challenging to achieve **multiple occupancy**
- **Conservation and restoration** challenges


1980s Building
BEFORE
D-


AFTER
A+
Sustainability
• LEED Gold / mostly achieved by location
• Mechanically ventilated with air handling units – fan coil system
• Solar panels on the roof
• New tech options for broadband
• New cycle parking facilities and showers
U.S. GREEN BUILDING COUNCIL
LEED GOLD
USGBC
WIRED
CERTIFIED
PLATINUM
BER A3
Targeted certifications.
The protected structure is exempt.

KEY TAKEAWAYS

Decision to retain was commercial rather than for ESG.

Embodied carbon was not a consideration at the time.

Demolish and rebuild could have been quicker because of the structural repair works.

Quality of existing structure needs to be assessed before making the decision to retain and renovate.

Many **design decisions** were taken on site after surveys rather than at pretender design stage.

Surveys are important at each stage existing
Survey post demolition by contractor can be point cloud 3D

Always going to be **compromises and limitations** compared to a new build like ceiling heights / fire rating etc.

Moving forward. Can we consider:

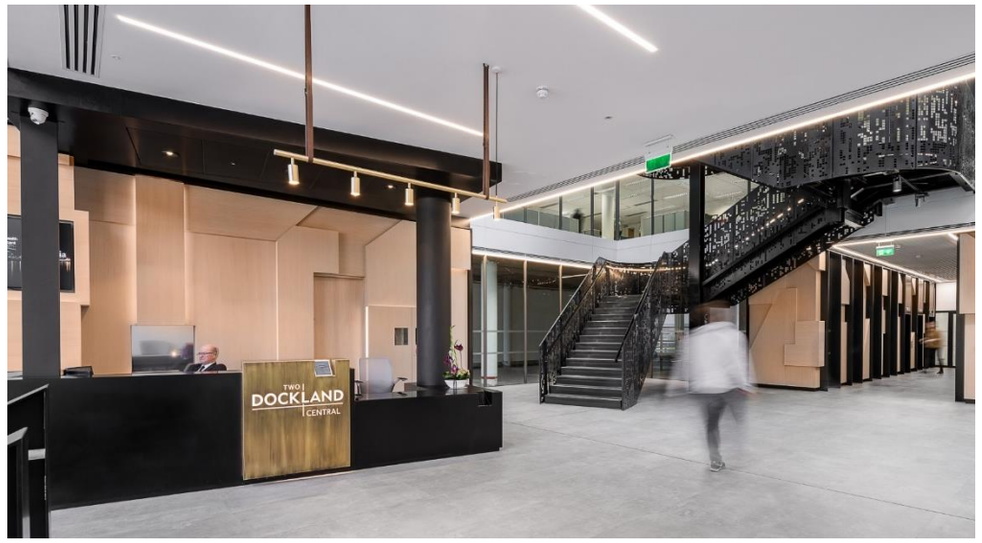
- Financial cost comparison of all the repair work versus the cost of a new frame?
- What is the financial cost comparison of all the building services replacement?
- What is the carbon cost comparison of retain versus replace?

What does the research say about the office?

Styne House, Upper Hatch Street, Dublin 2
Client: IPUT Real Estate

IDENTITY AND A RECOGNISABLE HQ FOR CORPORATE BUSINESSES

LIGHT, BRIGHT, BREATHEABLE SPACES



1+2 Dockland Central, Dublin 1
Client: Hibernia REG

Project: 20 Kildare Street
Client: Kennedy Wilson

THERE IS AN “S” IN ESG

IN A MORE DIGITISED WORLD, THE OFFICE CAN BE THE PHYSCIAL EMBODIMENT OF YOUR SOCIAL VALUES

Contemporary materials create a vibrant look and feel that is an attractive to building users. People interact in spaces that are inviting

Project: One Microsoft Place
Client: Microsoft

Placemaking is important for the attractiveness of the office

Project: 20 Kildare Street
Client: Kennedy Wilson

What else does the research say about the office?

THE WORKPLACE OF THE FUTURE NEEDS TO BE FLEXIBLE AND (AT LEAST) PARTLY DIGITAL.

The precise wording differs from one study to the next, but the core message is similar: employee's needs, personalities and objectives are all different and the workplace needs to become more flexible to adapt to these needs.

Frank Knight / Yours [7]
"The role of the workspace is undoubtedly shifting in line with rapidly changing demands. Flexibility, wellbeing, and collaboration are in - while set desks, unoccupied workspace and grey, boring offices are out."

Baranski et al. [8]
"Theoretically, this could be accomplished with a variety of available workstation options or with dynamic, functionally flexible designs."

HKS [9]
"A workspace may slide between cloudprint and footprint, requiring flexible and holistic systems"

Tudu and Singh [10]
"It is evident that technological advancement revolutionized the work culture and changed the concept of work and business practices from manual to digital, and local to global."

Dittes et al. [11]
"Along with increasing flexibility, employees also crave balance and structure when, for instance, it comes to the blurred boundaries between private and business life."

Hassell [12]
"How flexible office buildings will create value in the new world of work"

McKinsey [13]
"…in recent decades may be influencing a shift that takes work to the people, for instance, in more flexible long-term remote or hybrid models."

Accenture [14]
"supportive leadership and digital upskilling are 1.5x-2.5x as impactful in driving a "productive anywhere" mindset as the ability to work flexibly."

Deloitte [15]
"The ideal workplace is not just a physical site dictated by tradition, right, or necessity—but wherever work is best done."

Project: WeWork fit out @ 2 Dublin Landings
Client: WeWork

Old offices
Today's requirement

Centrally accessible locations

Cycling end of trip facilities

Quality **lobby + building facilities**

Access to external spaces with **landscaping**

Good local **amenities** like cafés, bars and restaurants

RKD

Collaborative solution

Understand your building | **Commercial**
Revitalise your space | **Interiors + Workplace**
Ensure environmental credibility | **Sustainability + Research**


Baggot Plaza, Dublin 2
Client: Kennedy Wilson

Making a case for Reuse

Incentives, risk, regulation and perception

The incentive to act comes in the form of risk, and there are two types that impact real estate – *physical* and *transitional* risk [16]

Physical risk is the risk imposed by a rapidly changing climate.

Transitional risks come in the form of rising costs of energy and the pricing-in of carbon emissions, building regulations, as well as market perception.

THE COST OF CARBON

Buildings which require less energy are less costly to operate for asset owners and tenants and are, hence, more attractive. Less energy = less carbon = less cost.

REGULATORY CHANGES

The latest version of the Energy Performance of Buildings Directive (EPBD) [18], targets existing buildings for the first time. The worst performing buildings will have to be renovated by 2030 or before.

MARKET PERCEPTION

Most of the world's largest companies have been measuring, reporting and trying to reduce their carbon emissions for several years

Key Challenges

There is no universal solution for building reuse

- Different buildings require a different approach.
- Categories of old building type have consistent themes:
  a) Heritage / historical buildings
  b) Vintage 60s – 90s blocks
  c) Modern 00s blocks

Potentially cost prohibitive

- There is hesitancy to spend ~ 60-80% of cost of new build and the end-product is sub-standard to a new build with low floor to ceilings, and narrow floor plates.
- Cost certainty is challenging.
  - High contingency required.
  - Unknown building conditions
  - Hard to predict compared to new building projects
- Smart technology and solutions are needed to make this work.

Building Regulation Challenges

- Older buildings generally may not comply with today's building regulations and may require upgrades to be compliant
- Building control / DAC / Fire / Heritage and planning – Costs
- Condensation / façade / building conditions

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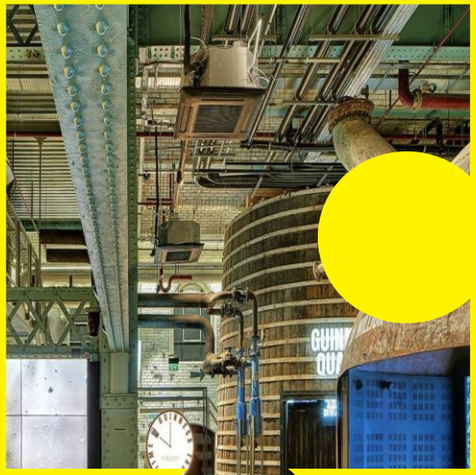

Data Centres + Technology | Life Sciences | Manufacturing + Logistics | Commercial | Education + Healthcare | Workplace + Interiors | Sustainability + research

Thank you!