

Sustainable Design

2024



3DReid

# Introduction

## Contents

- 
- 01 We aim for design resilience

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  - 02 How we support you in sustainability

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  - 03 Our experience, processes and our people
- 

The built environment—which as a society we continually shape through architecture, masterplanning and development—has a large role in securing a sustainable world for all of us to live in.

Designing places that function both excellently and sustainably is integral to our practice. We go beyond ordinary standards, using both in-house expertise in low energy design and collaborative working with like-minded partners in the construction industry, to ensure that this is achieved, and in a holistic way.

The time to act is now. We are committed to our social responsibility as architects, masterplanners and designers to safeguard our biosphere for the future.

*Thistle Centre of Wellbeing in Edinburgh.  
Crafting a non-institutional and friendly presence  
was instrumental in ensuring that the built  
environment aligned to the core ethos of the Charity.*

*We aim for design resilience*

# Opting for the long run

The buildings and masterplans that were designed with short-term thinking are the ones we are now wanting to replace or make large changes to. This often means waste and environmental damage. It's better to design resiliently in the first place. We take a holistic view of design that has resilience—and sustainability over the long run—at its core.



179 Canongate, in the heart of Edinburgh's Old Town. A significant portion of the existing urban fabric has been retained, and the contribution of the new is legible against the old.

## We aim for design resilience

If we're hoping to be on Earth 'Planet A' for the long run, we will need a built environment that's resilient for the long run.

Buildings become resilient when they retain their attractiveness over time, when they make great places, when they're made with durable, low carbon materials, when they adapt well, and when they have excellent energy performance from the outset.

Alongside resilient new build, existing buildings very often make opportunities for positive retrofit, significantly improving their performance and potential for continued life.

Masterplans for settlements become resilient when density is thoughtfully optimised, when uses are well mixed, and when transport and active travel are really well integrated. We aim to create masterplans that accept variation and change gracefully within a framework.

*"Buildings become resilient when they don't easily go out of fashion, when they make great places, when they're made with durable low carbon materials, when they adapt well, and when they have excellent energy performance from the outset."*



New Fountainbridge, Edinburgh.

## Future-proofing

We believe that an attitude of ‘future-proofing’ in architecture and planning is key. When each building contributes successfully to the creation of a great place—and ingredients of that place could already be there—we start to gain a resilient and sustainable built environment. Successful masterplans—similarly—enable the emergence of attractive and liveable places with lasting value. Specific sustainability-focussed features—for example, great solar design, or structures that use engineered timber—need to be based on this foundation.

At the core, buildings and masterplans gain resilience by being designs that people continue to value and want to keep.



Small & Medium Size Stations Competition, Network Rail.

*“Fundamentally, buildings and masterplans gain resilience by being designs that people continue to value and want to keep.”*



*Bishop's Centre, Taplow. An exemplar retail destination focused on a high quality and sensitive scheme adopting a sustainable material and structural strategy.*

*How we support you in sustainability*

# Walking the path

Working out what good sustainable design looks like is a journey on which multiple and sometimes complex challenges are met. The journey starts with gaining an understanding of context, continues through spatial planning at a range of scales, and then moves to consideration of technical aspects and construction details, often with a specific certification goal in mind. 3DReid can help throughout, and we have written our own ISO 14001 accredited Environmental Management System to guide the journey.



The urban strategy for Central Quay Glasgow puts placemaking at the heart of the design process.

## How we support you in sustainability

We are RIBA 2030 Climate Challenge and Architects Declare signatories. We respect both commitments in our own processes and in the way that we work to support you in sustainability.

The RIBA 2030 Climate Challenge sets project targets for sustainability. In support of this, our in-house Environmental Management System (EMS) has been shaped to focus on our project work and minimisation of the associated Scope 3 emissions, and adopts the RIBA 2030 Climate Challenge targets. Our EMS is reviewed and updated annually, and is independently certified as ISO 14001 compliant.

Architects Declare have set twelve points for engagement by built environment professionals. We have made our own statement of the twelve points and the processes defined in our in-house EMS reflect them.

*“Our in-house Environmental Management System has been shaped to focus on our project work and minimisation of the associated Scope 3 emissions.”*

### 01 Raise Awareness

We will:  
 Prioritise sustainability in client and team interactions  
 Make sure that practice members and all stakeholders know our targets

### 03 New Goals

We will:  
 Recognise and reward sustainability in our own work  
 Enter our best projects for sustainability awards

### 05 Evaluate Projects

We will:  
 Use energy modelling (such as PHPP or CIBSE TM54) iteratively from project inception  
 Promote the best certification process (such as BREEAM)  
 Promote lifecycle carbon assessment  
 Promote post-occupancy evaluation

### 07 Whole Life Carbon

We will:  
 Determine how lifecycle carbon will be assessed at briefing  
 Ensure that building energy use is accurately modelled and that fossil fuel use is not disguised by offsetting  
 Promote low energy, low embodied carbon design that enables circularity and re-use

### 09 Collaborate & Re-use

We will:  
 Promote the use of reclaimed materials, including structural materials  
 Promote material passporting  
 Collaborate with like-minded clients, consultants and contractors

### 11 Minimise Waste

We will:  
 Design to enable low-carbon lifestyles and active travel, and minimise car dependency  
 Promote low carbon choices in our own practice life  
 Design spatially efficient buildings that minimise waste in construction

### 02 Change Fast

We will:  
 Engage with relevant professional groups and knowledge-sharing events  
 Publicise our own approach and targets

### 04 Share Knowledge

We will:  
 Identify project-relevant sustainability knowledge at briefing  
 Share our own R&D widely  
 Consistently state our values via the channels that are open to us

### 06 Upgrade Existing

We will:  
 Promote re-use or retrofit and avoid unnecessary demolition

### 08 Regenerate

We will:  
 Promote connections to nature  
 Promote natural regeneration where opportunities exist  
 Promote the use of natural, minimally processed materials from sustainable sources  
 Be aware of the potential for 'greenwash'

### 10 Low Carbon

We will:  
 Promote the use of low carbon structural materials  
 Ensure that all team members, including specification writers, give priority to low carbon materials  
 Communicate the demand for low carbon materials to suppliers

### 12 Climate Justice

We will:  
 Advocate for biosphere protection and defend the freedom of individuals to engage in such advocacy  
 Act in support of justice with respect to the environment consistent with our capacity to effect change.

## Context as a creative resource

Our starting point is always to work with what already exists. This includes understanding opportunities for retrofit and re-use but goes beyond: a successful, liveable built environment leverages context. On each project we carefully study context, drawing on all appropriate resources. We will also work in a consultative way where needed, making sure that local stakeholders are appropriately involved.

Context is a valuable creative inspiration. The settlements that we admire repay careful analysis: what's revealed is often useful. This is a process that works at a range of scales, from urban grain and historic patterns of land use, to specifics of local traditions and techniques of building. At the same time, established building methods can often be found to underperform environmentally, and we will always recommend the best technical solution for a setting.

We have experience working in conservation areas and with listed buildings, and enjoy reinterpreting preserved building styles through new interventions so that current uses and performance standards are provided for. We aim to complement a project's historic understanding with knowledge of technical contextual aspects such as daylight, solar access, beneficial shading along with overshadowing, urban heat island effect, and the contribution of landscape design to overheating resilience.

The ideal complement to new build is retrofit: addition combined with updating of an existing building. Retrofit offers vital sustainability benefits through avoiding embodied carbon emissions; at the same time we can support sustainability in the round by evaluating the potential for deep retrofit, taking into account issues such as phasing and decanting.

We enjoy the challenge of developing value in a location so that what's new meshes with what exists to make the best environment overall.



179 Canongate, Edinburgh.

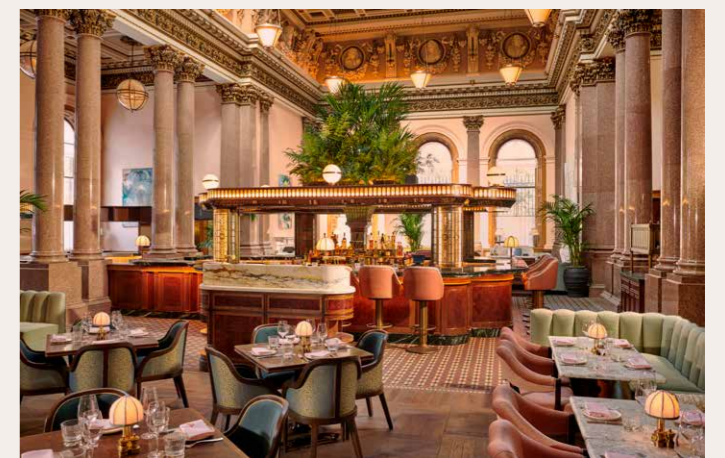
*“An ideal complement to new build is retrofit: addition combined with updating of an existing building. Retrofit offers vital sustainability benefits through avoiding embodied carbon emissions.”*



The Gleneagles Townhouse project both renews an existing building and extends it with a copper-clad 'pavilion' structure and a new masonry façade complementary to the setting.



Entrance level plan of Gleneagles Townhouse, Edinburgh.



Gleneagles Townhouse, Edinburgh.



## Understanding community

Where development has the potential to bring positive transformation to a community, we identify opportunities through effective consultation, where ideas for change are actively sought from those who stand to benefit.

We define masterplanning broadly: as an activity that sometimes only extends to immediately neighbouring sites—perhaps to demonstrate that a proposal will integrate well—but also as an activity that can set the trajectory of a district and a community. The intent is the same: to ensure the best liveability and quality of place that can be achieved. We have a special affinity with projects that can bring real change to those who use them.

Movement—by all modes—similarly holds one of the keys to positive transformation. We understand the principles of active travel and decarbonised travel, and the kinds of street and building design that best enable an integrated approach where all modes of travel become safe and enjoyable.

Ultimately, every building must in itself be fabric that people will be both emotionally and physically comfortable occupying. We approach this need in a holistic way, bringing all relevant technical aspects into the picture. We especially prioritise microclimate comfort, internal thermal comfort including overheating resilience, indoor air quality, effective low energy design techniques and the use of durable, attractive low carbon materials. Usually, designing effectively for human comfort means working closely with like-minded consultants, and we are always positive collaborators towards this goal.



*Thistle Garden Rooms building is designed to be a flexible, economic to run and sustainable facility for the future benefit of both those who are supported by Thistle Foundation and the wider local community.*

*“Where development has the potential to bring positive transformation to a community, we identify opportunities through effective consultation.”*



*Thistle community consultation event.*

## Casestudy: The Embankment, Cardiff

Use	Mixed-use
Area	13ha
Client	Vastint UK
Status	Planning Consent
BREEAM Rating	n/a
WELL Rating	n/a



*The Embankment Masterplan.*

3DReid was appointed to develop a comprehensive new masterplan for the southern quarter of Cardiff city centre, adjacent to the tidal reach of the River Taff.

- New city blocks are sized and arranged to integrate with the existing and historic city grain, promoting movement and connection;
- The river edge is treated as a new nature park; the landscape strategy is responsive to the tidal aspect of the Taff in this location;
- The masterplan integrates public transport (bus) and is close to Cardiff Central station;
- Some masterplan parcels will be built out as medium-rise point block development within the new nature park to provide a variety of dwelling types and living styles;
- Active travel is a key feature of the masterplan: new streets are friendly to walking and cycling; a percentage of streets are completely car-free and will promote safe play;
- The masterplan massing promotes compact footprints and permeability in and around buildings, maximising opportunities for dual aspect dwellings;
- Car parking is provided with a new multi-storey car park in a single location (walkable from dwellings); limited additional on-street parking is provided, with a focus on accessibility;
- The masterplan setting out dimensions allow modular construction;
- On-street delivery bays are provided for each new city block;
- Complementary uses are planned at street level, activating frontages.



## Which certification?

Certification can enhance development value and it helps in another way too: it reinforces the commitment to sustainability and quality, and can inspire the whole project team to give their best.

At the same time, certification has its own complexities; part of the challenge that shows up early is deciding which certification to pursue, and at what level.

We can support you in choosing the best certification path for a project.

### BREEAM

We have extensive experience with the BREEAM standard. Our project for the Co-operative Group at One Angel Square achieved the highest ever BREEAM score (95.16%) for a workplace building at the time of completion.

### Passivhaus

The robust energy performance requirements of the Passivhaus certification provide a way to extend standards such as BREEAM that do not specify an energy target. The practice employs several Certified Passivhaus Designers.

### WELL

The WELL standard complements other sustainability standards through a focus on occupant wellbeing.



40 Broadway, Westminster.

*“Certification ... reinforces the commitment to sustainability and quality, and can inspire the whole project team to give their best.”*



40 Broadway, Westminster

## Casestudy: 40 Broadway, London

Use	Workplace
Area	9,300 m <sup>2</sup>
Client	Tellon Capital
Status	Construction
BREEAM Rating	Excellent
WELL Rating	Platinum



40 Braoadway roof terrace.

For this workplace project in St. James's, Westminster, the client opted to pursue both BREEAM and WELL certifications. WELL Platinum was achieved with:

- Generous daylight: 30% of the regularly occupied area sits within 6m of envelope. The lighting design supports circadian physiology and the majority of the facades have operable windows;
- Healthy entry with a revolving door to slow the air movement from outdoors to indoors and an entry matt spanning the full width of the entrance doors and 3m deep;
- Main stairs that are visible before the lifts: the stairs are designed to a high aesthetic standard;
- Acoustic design to promote human comfort as a feature of all main spaces;
- Bathroom & washing facilities all designed to WELL standards;
- Generous cycling infrastructure to support active travel. Cycle parking and access to cycle maintenance tools are provided, as are lockers and changing facilities to a high aesthetic standard;
- Outdoor areas that are shaded more than half of daylight hours, including pedestrian pathways, building entrances, seating areas and other outdoor areas of congregation;
- A sense of connection to nature by use of natural materials such as timber and travertine stone, and with views to greenery throughout the common areas and workstations;
- Restorative space with an outdoor roof terrace designed for relaxation and restoration: the terrace includes seating, greenery, calming colours, textures and forms, and allows visual privacy.



*Our project experience, our processes and our people*

Experience &  
resource base



## Seamab School *Perth & Kinross*

Seamab provides care and education for children and young people from across Scotland who have more complex needs and require specialised intensive support. Up to 21 children are at Seamab, with up to 15 children in residential placements in 3 bungalows about a mile away from the school.

**Client:** Seamab Charity

**Status:** Planning approved 2022

Building work will complete in 2025

**Expertise:** Architecture & Interiors

**Sector:** Education

The proposal represents a highly energy efficient design that draws precedent from the character of its setting. Glass ratios are controlled and the envelope is well insulated with good airtightness. The building is all-electric and the roof is used for photovoltaics. While the form of the building reflects nearby farm buildings, the close up feeling of the building itself is more domestic. Building work will complete in 2025.



## New Fountainbridge *Edinburgh*

This project brings forward the regeneration of an important brownfield site close to Edinburgh City Centre which has sat empty for over 10 years. 3DReid's proposal was developed in response to the Fountainbridge Development Brief which seeks improved pedestrian and cycle connections across the Union Canal whilst re-acquainting Fountainbridge with the canal towpath.

**Client:** Vastint Hospitality B.V.

**Status:** Phase 1 completed 2021

Phase 2 planning approved, on site

**Expertise:** Architecture

**Sector:** Mixed-use, Hospitality, Residential, Workplace

The design combines two plots identified in the development brief to form a single urban block, releasing more generous public space. A variety of café and small business units at ground floor level activate the surrounding public realm and revitalise the Lochrin Basin canalside district. Buildings are set within a green space framework comprising terraced streets, courtyards and gardens.



*The development completes a network of pedestrian and cycle routes to re-connect surrounding neighbourhoods to form the heart of a new canal quarter in the city."*



## Tolworth Tower Kingston, London

**Client:** Meadow Partners  
**Status:** Resolution to grant planning, 2019  
**Expertise:** Architecture  
**Sector:** Residential

*“The existing reinforced concrete frame which includes post-tensioned elements is retained in its entirety, with the minimum of necessary alterations, allowing a major saving in embodied carbon.”*

3DReid has designed a comprehensive retrofit solution for this prominent modernist landmark, originally designed by Richard Seifert & Partners with structural engineers Arup.

The main tower element will be converted from its original office use to predominantly residential use. Working sensitively with the grain of the existing building with its pre-metric dimensions, we have planned 261 homes ranging from studios to three bed family units. Lower levels include residents’ amenity areas and a publicly accessible flexible co-working space.

The external curtain wall cladding is being fully replaced with a sympathetic interpretation of the original design, specified to current environmental standards and providing windows and coloured glass panels to replicate the original finishes. The building’s signature aluminium spandrel panels will be reinstated. The floating roof will be rebuilt and will define a set back top residential floor.



## Bishop's Centre Taplow

**Client:** Land Securities  
**Status:** Completed 2014  
**Expertise:** Architecture  
**Sector:** Retail

This exemplar retail destination focused on a high quality and sensitive scheme adopting a sustainable material and structural strategy.

A range of sustainability measures were adopted, including the use of a timber primary structure, LED lighting, facade photo-voltaics, ground source heat pumps, earth ducts, north lights and displacement air conditioning. We successfully collaborated with individual retailers to realise the project aims; PV panels are integrated with signage

A structural timber frame is used throughout, and natural light is used extensively. The project achieves a BREEAM excellent rating.





## Thistle Centre of Wellbeing, *Edinburgh*

**Client:** Thistle Foundation  
**Status:** Completed 2017  
**Expertise:** Architecture & Interiors  
**Sector:** Culture & Community

The Thistle Foundation is a charitable organisation that supports those with disabilities, enabling them to live independent lives in their own homes.

A series of complementary facilities, including a gym, consultation and training rooms and the charity's own office accommodation, are anchored around a double-height flexible 'hub' space.

Through extensive use of timber cladding, both inside and out, the project offers a warm and inviting environment for those who visit, many of whom suffer from anxiety-related conditions. Crafting a non-institutional and friendly presence was instrumental in ensuring that the built environment aligned to the core ethos of the charity.

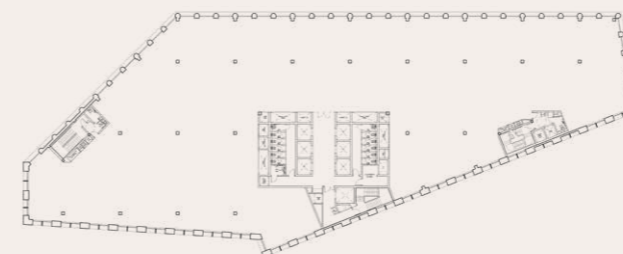


## Rosebery House *Haymarket, Edinburgh*

**Client:** Aviva Life & Pensions UK Ltd  
**Status:** Planning approved 2024  
**Expertise:** Architecture  
**Sector:** Workplace

The Rosebery House project intensifies Haymarket Terrace in Edinburgh through development of an under-utilised site adjacent to Haymarket Network Rail station.

The project achieves high operational energy performance through careful consideration of glazing ratios, envelope specification including airtightness, use of deep reveals for shading, and high efficiency building systems supplemented with photovoltaics. Embodied carbon is reduced through structural optimisation and consideration of spans. The scheme is all-electric.



Ground Floor Plan.



## Central Quay Finnieston, Glasgow

**Client:** Summix Capital  
**Status:** Planning submitted 2023  
**Expertise:** Architecture & Masterplanning  
**Sector:** Mixed-use, Residential, Workplace



This major urban regeneration project comprises residential, purpose-built student accommodation (PBSA), and commercial uses, with associated landscaping and public realm on a brownfield site.

The urban strategy puts placemaking at the heart of the design process. An understanding of the history, stories and built fabric of this place have tailored a contextual response unique to Central Quay.

The design principles of the Glasgow grid-iron urban pattern are applied to the site as a means to organically grow the city centre to the west. High density car-free neighbourhoods are organised around a recognisable network of characterful streets and spaces.

*Finnieston was previously a manufacturing centre for ceramics, originating a distinctive black and white style that has been taken as a style reference for the masterplan buildings.*



## One Angel Square NOMA, Manchester

**Client:** The Co-operative Group  
**Status:** Completed 2012  
**Expertise:** Architecture  
**Sector:** Workplace

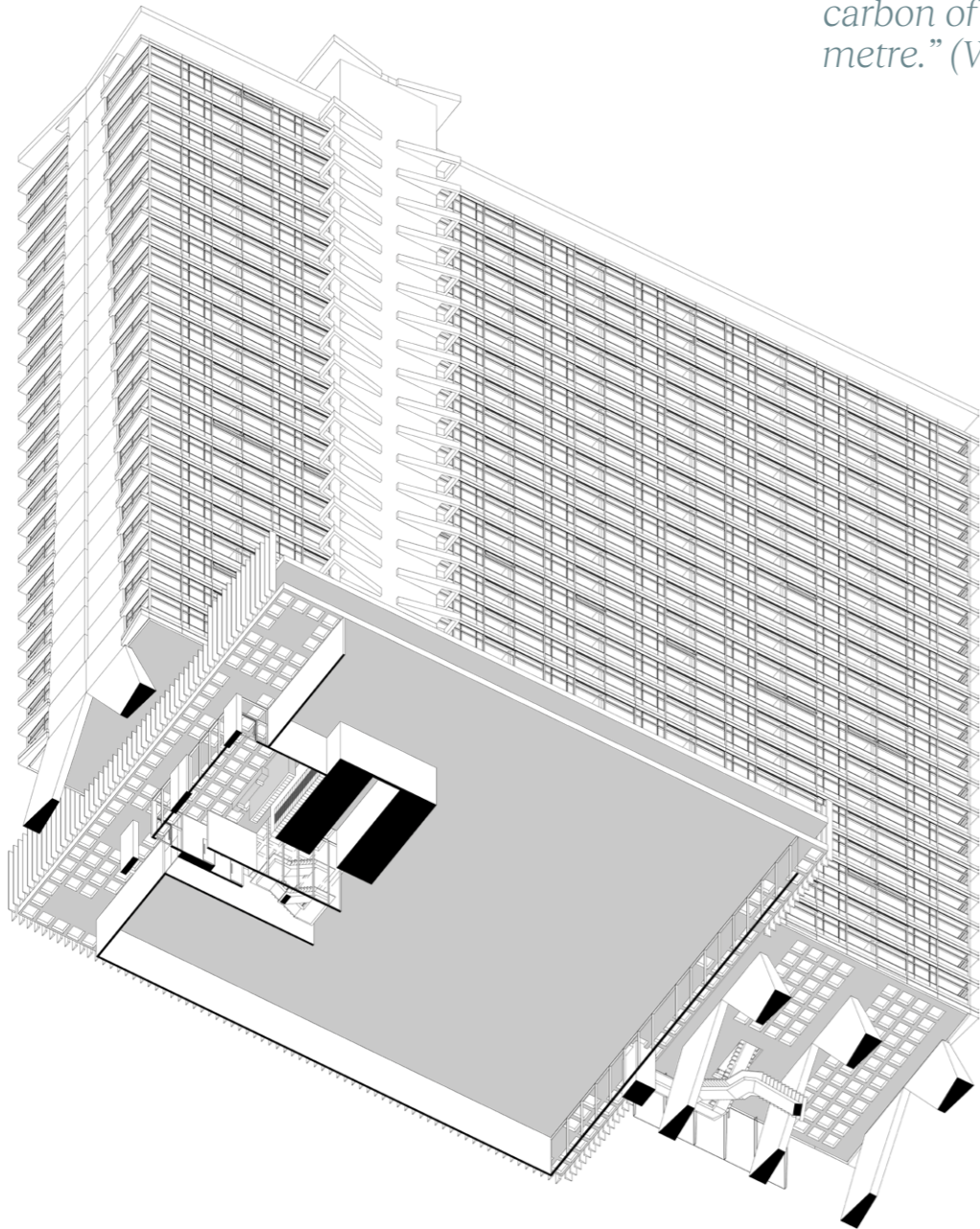
One Angel Square is a sustainable headquarters for the Co-operative Group in Manchester city centre.

The building is designed to facilitate an ambitious programme of change and transformation within the workplace, introducing flexible working practices, offering choices about how and where staff can work.

At 500,000ft<sup>2</sup> the project was at completion the largest commercial office building in Manchester, and with a BREEAM 'Outstanding' rating, scoring 95.16%, set a new national benchmark in sustainable design within the commercial sector. The project is volumetrically highly efficient and makes use of specific sustainability features such as a double skin curtain wall and pre-tempering of supply air via a ground labyrinth that is landscaped above to offer a new garden to the city.

*“Twelve distinct Co-operative businesses are accommodated within the new building, a step change in efficiency compared with the starting situation, which had the Co-operative’s premises spread across eight separate buildings and a total of 65 floors.”*

*“Reuse of an existing structural frame, with the embodied carbon already released, is the most significant way a design team can lower the embodied carbon of a structure per square metre.” (Whitby Wood).”*



*“We want every project to have the biggest benefit to community and users with the least environmental cost. We always seek to go beyond ordinary standards. Our ability to do this requires learning from completed projects, maintaining a well-defined process for sustainable design, and investing in training our people.”*



3DReid’s *Environmental Management System* is entirely written by us. It follows the requirements of *ISO 14001:2015* and documents the information required by that standard; in particular: interested parties, the scope of the EMS, practice policy and necessary actions.

## Our EMS How It Guides Projects

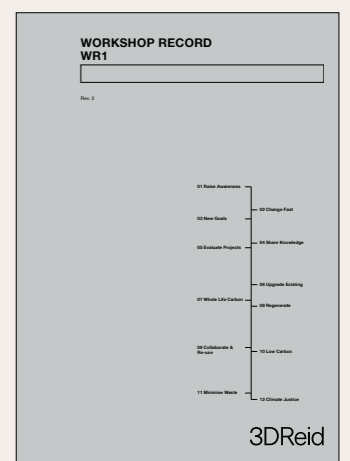
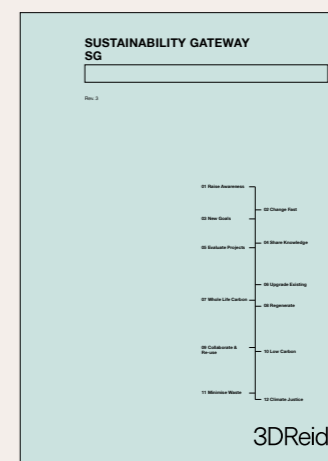
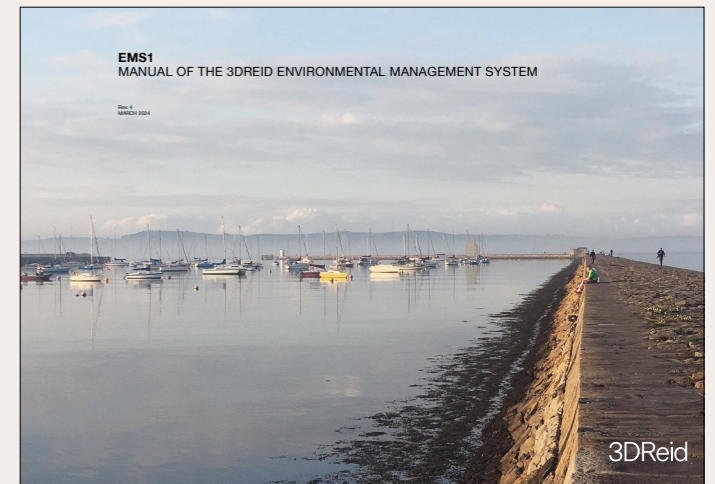
We apply an in-house environmental management system (EMS)—independently certified as ISO 14001 compliant—to all projects. Our EMS is highly focussed on Scope 3 emissions and sets energy targets for projects by sector (except where a certification process such as Passivhaus sets a higher target).

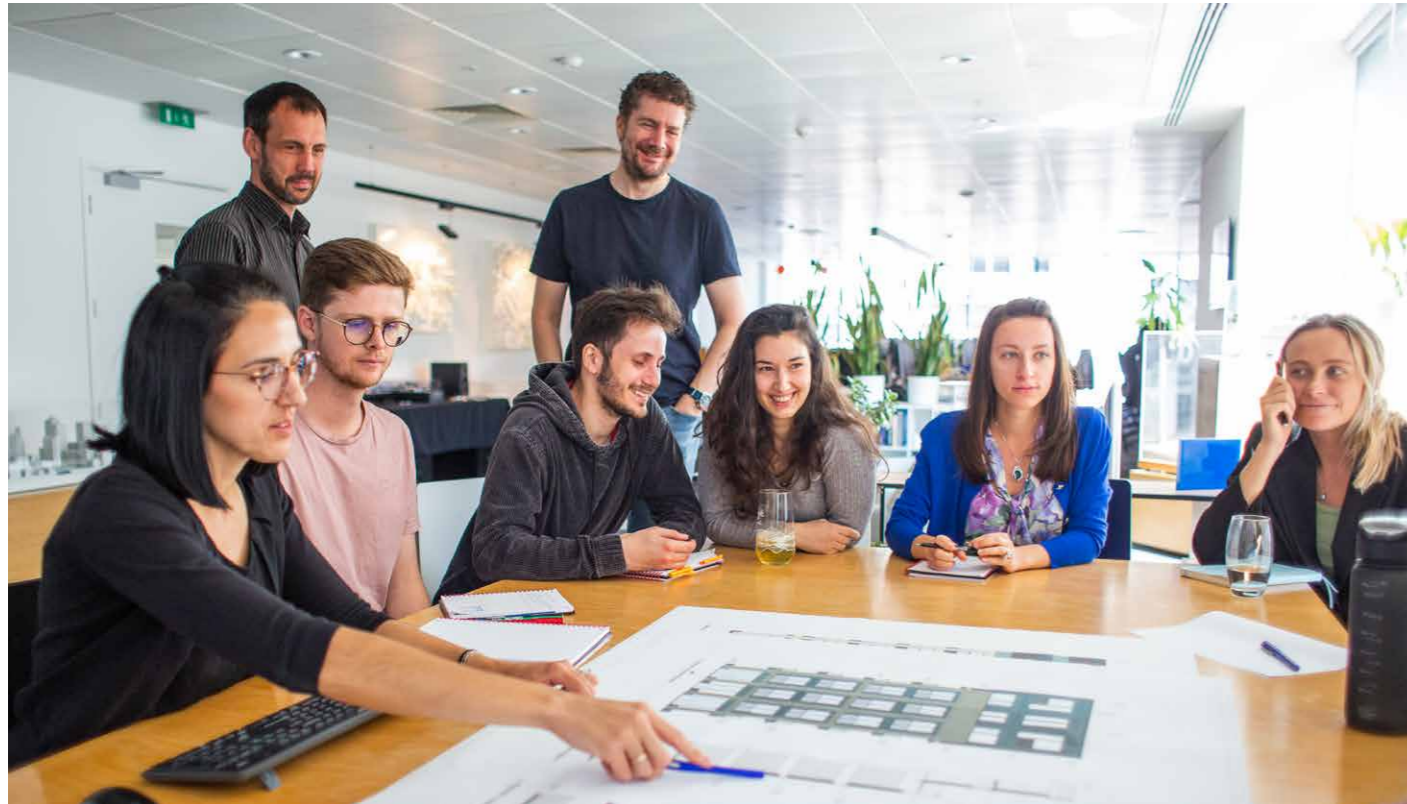
Briefing offers some of the best potential for sustainability and we aim to assist the client in setting appropriately high environmental ambitions. At briefing stage, we will assess and describe the options for certification, such as BREEAM or Passivhaus. We will also recommend a suitable energy modelling methodology, such as PHPP or TM54.

From briefing onwards, we use intensive workshopping as a way to generate, test and evolve ideas. The practice’s sustainability coaches attend workshops, and we regularly invite clients and consultants to join the process as well. This ensures that the concept for a project develops with the best potential for sustainability in all aspects. As part of this process, we assess—with consultant involvement where needed—form factor, siting, transport & access, structure, fenestration, shading, environmental servicing, envelope, materials, whole life carbon aspects such as waste minimisation and future re-use, and any other relevant environmental aspects that may be defined by the brief.

When a project transitions from RIBA Stage 2 to 3, we carry out a comprehensive ‘Sustainability Gateway’ review, defined as part of our EMS. As part of this review, we use the energy modelling strategy defined at briefing stage to check performance against the project’s defined energy targets.

Our project workshopping continues into later work stages, where we review details for environmental aspects including airtightness and thermal bridging to ensure that a high level of energy performance will be achieved. We will also monitor input from any on-site testing such as pressure testing.





## 3DReid Sustainability Team

Team	Studio	Specialisation
Jack Arnold	London	
Marinella Bononcini	London	
Nicolle Cairney	Glasgow	
Shona Common	Glasgow	
Lina Fontevedra Diaz	London	MSc Sustainability
Graham Hickson-Smith	London	
Pei Lee	Glasgow	Certified Passivhaus Designer
Euan McLaren	Manchester	
Annalisa Palo	Manchester	
Darren Park	Edinburgh	
Benjamin Pole	Birmingham	
Kiran Shah	London	Certified Passivhaus Designer
James Sheldrake	London	
Charlie Whitaker (Lead)	London	Certified Passivhaus Designer

*“We are a lively community of sustainability-engaged professionals. 3DReid has invested in assembling a group of Certified Passivhaus Designers and supports training and qualification in low energy design and related skills. Internal knowledge-sharing and workshops are key to the way we work and Sustainability is central to all our practice conversations about projects.”*

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*beautifully.*

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