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Collective Architecture

Decarbonisation Strategy 2025

Building a Net Zero Practice

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**COLLECTIVE
ARCHITECTURE**

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Introduction

This document sets out:

- Our ambitions
- Our current position
- Our strategy
- Our successes

It has been produced in collaboration with Step Up To Net Zero and we are happy to share it with our clients and partners, and hope it ignites excitement and momentum for others to push their own sustainability journeys further.

Net Zero Commitment

Net Zero is defined as achieving a 90% reduction of greenhouse gas emissions in the atmosphere, aligning with the 1.5C warming scenario as per the Paris Agreement, and offsetting the remainder as much as possible the climate impact. Collective Architecture (CA) has committed to Glasgow's 2045 Net Zero goal. This report estimates Scope 1, 2 and 3 to identify reduction opportunities.

Background

Collective Architecture is guided by a deep-rooted commitment to sustainable design and social responsibility. We are an employee-owned practice founded in 2007 who strive on being socially conscious. There are dedicated branches in energy, strategy and conservation. Our Sustainability Strategy was published in 2024 and in 2025 we signed up to work with Step Up To Net Zero to help reach our ambitious Net Zero goal. We are connected with industry bodies like RIAS and RIBA and signed up to initiatives like Architects Declare. This Decarbonisation Plan is a natural extension of our values, reflecting our ambition to lead by example to a sustainable world.

Our 47 strong team are based between our three studios in Glasgow (owned), Edinburgh (leased) and Dundee (co-share) and deliver an array of architectural projects with dedicated working groups for sustainability and energy. There are differences in the level of control and influence between the studio spaces. Glasgow is an owned building and has the freedom and inclination to make investments in its building fabric in a way that Edinburgh, a leased asset, does not. This is reflected in the report recommendations. Additionally, the Dundee studio is a co-working space within Dundee Contemporary Arts and as such have lower operational power or access to energy metrics.

Sustainable Development Goals

Decarbonisation must be coupled with broader UN Sustainable Development Goals that integrate environmental, economic and social health to align with broader global priorities. SDGs maximise co-benefits.

SDG 11 – Sustainable Cities and Communities: CA consistently prioritise the design and development of affordable, energy efficient housing to support local communities. They collaborate with local authorities, housing associations and residents. eg. Dundashill used Passivhaus principles to revitalise a derelict industrial site into a low-carbon community with excellent walkability and social housing.

SDG 13 – Climate Action: Leader in low-carbon and climate responsive design, focussing on EnerPhit certified retrofitting, Passivhaus standards and renewable technologies. CA led research on Creative Scotland Net Zero Readiness in 2024, exploring decarbonisation.

SDG 9 – Industry, Innovation and Infrastructure: CA’s work is pioneering, from Passivhaus design to zero carbon research. Civic House, nicknamed the PassivWareHaus, shows how an old industrial building can become an innovation lab for sustainable design. Retrofitted to house solar PV, an air-source heat pump and advanced insulation, it has become a cultural community venue.

SDG 7 – Affordable and Clean Energy & SDG 1 – No Poverty: Designs reduce energy demand and integrate renewable energy sources, making clean energy affordable and accessible to residents. By building social and mid-market housing, CA contributes to long-term financial resilience of its residents, especially those facing fuel poverty.



Methodology

This carbon plan uses the GHG Protocol operational control approach for greenhouse gas reporting. This ensures that emissions are accounted for based on activities over which the organisation has full authority to implement policies.

Carbon footprints standardise the seven main greenhouse gases in terms of their global warming potential, expressed as tonnes of carbon dioxide equivalent (tCO₂e). Report boundaries are limited to the Glasgow, Edinburgh and Dundee offices using the reporting period July 2024 – June 2025 as a benchmark year, ± a month for information availability. Future calculations will be recorded across the fiscal year.

For future reports, we hope to improve Scope 3 calculations by measuring the embodied carbon of our design projects. Estimates may appear to increase in future calculations as data becomes available.

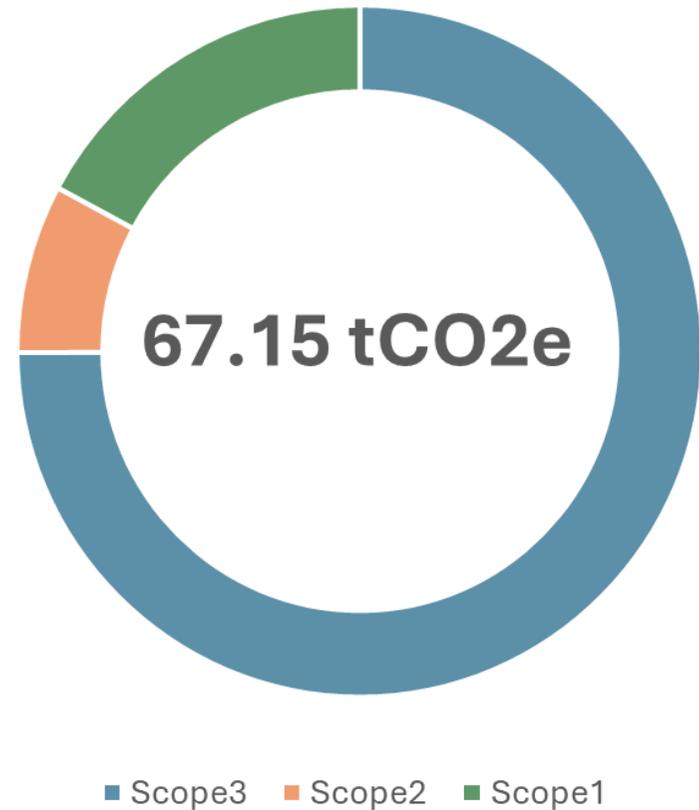
Scope 1 emissions refer to direct fuel consumption, while Scope 2 includes grid purchases of electricity (and the charging for electric vehicles). Bills and meter readings are good sources for extrapolating emissions, measured in kilowatt hours (kWh) or cubic metres (m³) and multiplied by a DESNZ conversion factor.

Scope 3 comprises of 15 categories, 1-8 being upstream (operational) and 9-15 being downstream (project based). In this carbon reduction plan, we have measured purchased goods and services (1), capital goods (2), freight (4), waste (5), business travel (6) and commuting (7). For purchased services, the conversion factor has been adopted from SME Climate Hub. Spend based metrics homogenise nuanced differences between products, but provided they are used with an awareness of their limitations, it is an accessible start.

Following calculations, an action plan will be made to tackle priority areas. The resulting strategy should be shared and agreed upon by all colleagues, because a carbon footprint is only as useful as the behaviours that emerge from it.

Analysis

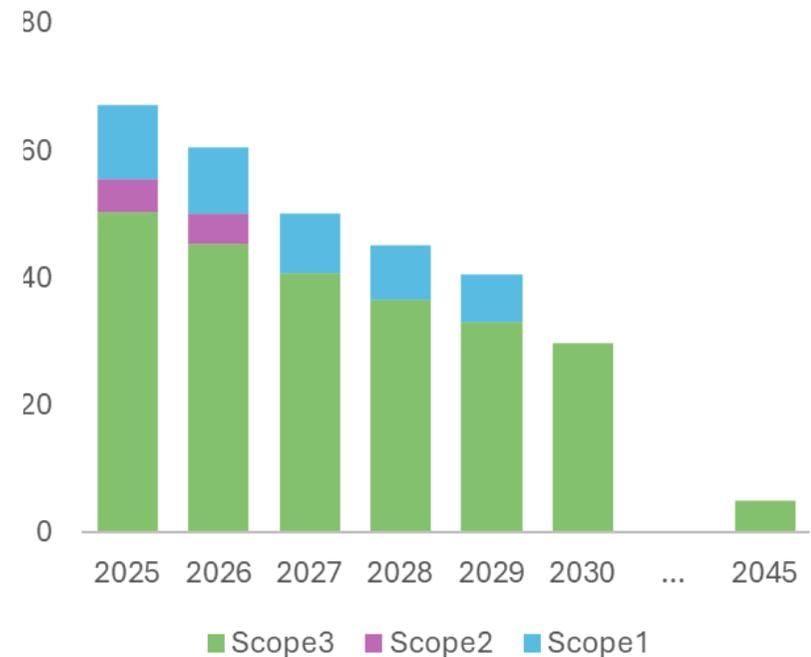
Area	Source	tCO2e	%
Scope1		11.53	17.16
Natural Gas (Glasgow)	Gas metres	9.97	14.85
Natural Gas (Edinburgh)	Gas metres	1.55	2.31
Scope 2		5.30	7.90
Electricity (Glasgow)	Electricity metres	3.5827	5.34
Electricity (Edinburgh)	Electricity metres	0.1607	0.24
Hybrid Vehicle	MOT certificate	1.56	2.32
Scope 3		50.32	74.94
1. Materials (exc food)	Soldo account	0.18	0.27
1. Food	Soldo account	4.62	6.88
1. Purchased Services	Budget 2025	36.51	54.37
2. Capital Goods	Soldo account	1.32	1.97
4. Freight	Soldo account	0.51	0.76
5. Waste	Change Waste	0.28	0.42
6. Business Travel	Travel logs	1.10	1.64
7. Commuting	Employee survey	5.73	8.53
Water	Castle Water	0.07	0.10
Total		67.15	100.00
GHG Intensity (per employee) = 1.429 tCO2e/person			



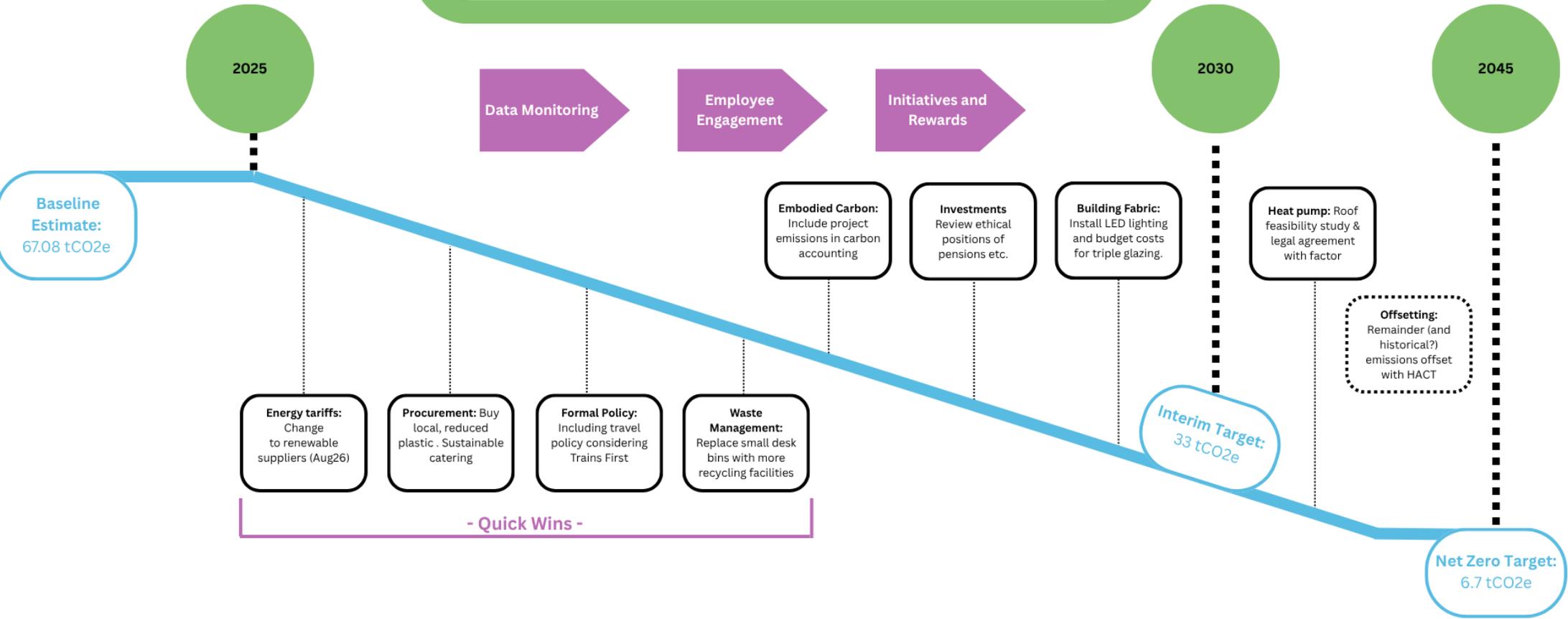
Reduction Strategies

CA will regularly monitor emissions with reduction targets of 10% from baseline year of 2025, to reach 6.7 tCO₂e by 2045 at the latest, offsetting the remainder.

Operational Focus	Initiative
1. Building Fabric	Install LED lighting (2026) and budget in triple glazing (2028)
2. Heat Pump	Conduct roof feasibility study, arrange factors agreement. Install 2040?
3. Energy Supplier	Switch to tariff that actively invests in renewable energy by Aug 2026
4. Travel	Highlight success so far. Consider Flight Free / Train First policies
5. Conscious Catering	Explore rotation of local and healthy food, eg. Sprigg and Social Bite
6. Procurement	Practice circularity and join the Buy Social Scotland pledge
7. Waste Management	Zero Waste: Replace small desk bins with larger recycling. E-waste strategy
8. Culture & Engagement	Training and momentum. Dedicated staff role
9. Data Accuracy	Finetune spend-based metrics, improved data gathering eg. commuters
10. Offsetting	Remainder (and historical?) offset with retrofit credits from HACT
11. Water	Check aerated showers / low-flow fixtures. Reduce 5% annually
12. Cloud & AI	Schedule digital declutter. Explore Climate Neutral Servers
13. Modelling	Celebrate successes here, and formalise policy on material choices
Project Focus	Initiative
11. Sustainable Materials Index	Co-produce and publish guidance document on circularity
12. Measure Embodied Carbon	Future decarbonisation plans to accounting for project emissions



Roadmap to Net Zero



So far:

2024: Published Sustainability Strategy
 2025: Commit to Net Zero Pledge. Measured Scope 1, 2 and 3 (categories 1, 2, 4, 5, 6 & 7)
 Committed to RAI and AECB

Goals:

Regularly monitor emissions and set 10% reduction target annually against baseline year
 Publish annual decarbonisation plans
 Reduce 90% emissions by 2045 (preferably earlier) and offset the rest with retrofit credits

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Project Focus and Circular Economics

Architects must meet doughnut economics, with the need for affordable housing balanced against ecological boundaries (minimising embodied carbon, supporting biodiversity, designing flood and drought resilience). By taking a proactive stance and refusing to use certain materials and practices, we can lead by example, enhance our brand and set benchmarks for ethical design, and respond to client demand for low carbon and future-proofed buildings.

Think: Design for Deconstruction, RIBA 2030 Climate Challenge.

9 Rs	Strategy
Refuse	Promote a Circular Materials Index Refuse fossil-fuel dependency, integrate renewables
Rethink	Modular design for building evolution, design-for-disassembly Role of nature, eg. green roofs, living walls
Reduce	Minimise resource consumption, incorporate passive solar and ventilation Optimise spatial design: compact, efficient floor plans Prefab and efficient dimensions reduce on-site waste and cut-offs
Reuse	Integrate salvaged and reclaimed bricks, steel, timber or facades Specify recycled-content products (concrete, insulation, tiles etc)
Repair	Choose materials/components for easy maintenance, eg. exposed services
Refurbish	Advocate for renovation and retrofit
Remanufacture	Products rebuilt to as-new condition, eg. light fixtures or elevators
Repurpose	New design function, eg. convert shipping containers into usable space
Recycle	Opt for mono-materials over composites Create material passports for future recycling

The construction industry faces mounting pressure to cut carbon, eliminate waste and safeguard human and environmental health. It is good practice and increasingly expected to minimise emissions at the design stage (categories 11 emissions from designed buildings and 12 'end' of life for designs). Choices should be governed by Circular Economics. Continuing to specify materials known for toxicity, poor recyclability or heavy carbon undermines the ambitions of CA and its clients.

Embodied carbon of our footprint could be '1000 times as significant in terms of pure carbon accounting' – Pawyn, Exploration Architecture. Embodied Carbon refers to emissions associated with buildings across raw material extraction, manufacturing and processing, transport, construction, maintenance and replacement, and end of life including demolition, landfill and reuse (Life Cycle Analysis).

RIBA 2030 Climate Challenge asks for 40% reduction in embodied carbon by 2030. We can reduce embodied carbon with a Retrofit First approach, and undertaking pre-demolition audits of existing structures.

Embodied Water - Vital when addressing resource depletion, biodiversity and SDGs. This emerging metric measures total water used to extract, manufacture, transport and assemble materials. We can take actions in material choices of low water intensity, eg. timber over concrete. Avoid high water demand like virgin aluminium. Use EPD and water footprint data. Prioritise recycled materials to cut upstream water consumption. The practice would benefit from hiring or partnering with an ecologist to perform environmental impact assessments for genuine regenerative design and enhancing the interdisciplinary nature of CA.

CA can consider avoiding projects that are harmful to the planet, eg. MoD and fossil fuels?

Sustainable Materials Index

Collective is very good at pushing low carbon energy, but there is work to be done on their low carbon materials approach. A circular economy questionnaire has been developed to ascertain client appetite for circular design principles. Barriers to sustainable uptake may include upfront costs, misconceptions over performance and aesthetics, availability and supply risk.

In anticipation of these challenges, CA should show cost comparisons over lifecycle; emphasise health, comfort and branding benefits; and provide positive case studies of these materials. Proposed below is a Circular Materials Index that CA can use to empower design decision and signpost sustainable swaps of construction materials in the design phase. This aligns with CA's values and is supposed to be collaborative and evolving.

Avoid	Why	Replace	Benefits	Suppliers
PVC (Polyvinyl Chloride)	Contains toxic chlorine; dioxin during production; hard to recycle	HDPE, Polypropylene, or bio-based plastics, linoleum for flooring	Linoleum is natural and biodegradable. HDPE is more easily recycled	
Spray Polyurethane Foam (SPF)	High embodied carbon; contains isocyanates (toxic); off-gassing risk	Cellulose insulation, mineral wool, hempcrete	Cellulose = recycled content; mineral wool = fireproof & durable	
Expanded Polystyrene (EPS)	Made from fossil fuels; high GWP blowing agents; not biodegradable	Cork insulation, wood fibreboard, dense-packed cellulose	Wood fibre is breathable and renewable; cork = carbon-negative	
Fiberglass Batt Insulation	Irritant to skin/lungs; often formaldehyde-bound; poor fit leads to gaps	Mineral wool, cotton batt, cellulose	Cotton = recycled denim; mineral wool = better thermal & acoustic performance	
Tropical hardwoods (e.g., mahogany, teak) unless FSC-certified	Linked to deforestation and illegal logging	FSC-certified wood, reclaimed wood, bamboo	Reclaimed wood reduces demand; bamboo = fast-growing & renewable	
Chromated Copper Arsenate (CCA) treated wood	Contains toxic arsenic and chromium; banned for residential use in many areas	ACQ-treated wood, thermally modified wood, naturally durable species eg. cedar	Thermal modification enhances lifespan without toxins	
Carpet and underlay with synthetic fibres & VOCs	VOC off-gassing; often petroleum-based; traps allergens	Wool carpet, recycled-content carpet tiles, polished concrete or wood floors	Wool is naturally antimicrobial; carpet tiles = easier to replace	
Standard gypsum drywall	High embodied energy; wasteful; mould-prone if wet	Recycled-content drywall, magnesium oxide board or clay plaster	MGO boards = fire-resistant and mould-resistant	
Vinyl flooring / LVT	PVC-based; off-gasses phthalates; not recyclable	Linoleum, cork, bamboo, engineered wood with low-VOC finish	Linoleum is natural and durable; cork = comfy + antimicrobial	
Aluminium (unless recycled)	High embodied carbon to produce from virgin ore	Recycled aluminium, wood, composite panels with low-carbon sourcing	Recycled aluminium uses 95% less energy to produce	
Acrylic or oil-based paints/sealants	High VOCs; harmful to indoor air quality	Low- or zero-VOC paints, natural clay/lime paints	Better for occupant health & indoor air	
Brand new fittings	Unnecessary resource use, cradle-to-grave	Reclaimed/salvaged bricks, doors etc	Reduce demand and pushes circular economy	

Environmental Achievements

Operating as a 100% employee owned practice, CA embeds sustainability into its core values via transparent, cooperative governance. Its internal structure has dedicated knowledge groups on climate strategy, sustainability methods and collective engagement. Here is just a small snapshot of recent highlights showcasing some of our climate friendly projects and initiatives in low carbon and design through efforts and successes in design, collaboration, qualifications and awards.

Low Carbon Projects

Dundashill: Platform 3a at Dundashill is Scotland's largest residential Passivhaus development, delivering ultra-efficient and affordable housing build to low-carbon standards across 90 mid-market rent homes. It sets a national benchmark in sustainable affordable housing leadership, combining social regeneration with sustainable, low-energy design.

Civic House: Retrofit work at Civic House saw heat demand reduced by 86% using airtightness, external insulation, MCHR, air source heat pump and 50 kWp PV array. Now it is a net-energy-positive community hub and workspace. It received EnerPHit Excellence.

Water Row: Water Row in Govan is designed without gas boilers, focusing on robust thermal envelopes, high retention in electric heating, and integration with landscape-led flood resilience, part of an inclusive, long-life sustainable community strategy.

Waste Reduction and Circularity:

Principles including Design for Disassembly can be seen in the Edinburgh Towers and Colours Strategy, as well as modular or adaptable projects to ensure future material recovery or reuse. There is care taken when considering recycling materials, drawing on a pre-demolition templates.

And beyond: Paisley Central Library and the Museum of Aberdeenshire and Peterhead Library show the studio's expanding influence beyond housing to cultural, civic and commercial sectors. CA share sustainability practices across broader architectural types and geographies while maintaining regenerative and community-led approaches.



Academic and industry collaborations

Collective Architecture worked with Creative Scotland and Edinburgh School of Architecture and Landscape Architecture in 2024 to map the net-zero readiness of physical infrastructure in Scotland's creative and cultural sectors, and helped shape climate-responsive policy in the built environment.

In addition to this, they have taken on key roles in academic and NGO collaboration, for example, partnering with University of Glasgow on Gallant Project with energy monitoring systems against a framework of donut economics.

The studio makes efforts to attend conferences, most recently, the International Social Housing Festival in June 2025 & the upcoming AECB Conference in September 2025.

Awards

Dundashill has won awards for 'Excellence in Regeneration and Sustainability' at the Chartered Institute of Housing Awards 2024, 'Excellence in Sustainability' at the Herald Property Awards, and the AJ100 Champion Practice 2025 for their leadership in affordable Passivhaus housing and sustainable strategy.

Civic House was recognised for a Silver Award by the Scottish Design Awards 2023 as well as the GIA Sustainability Award 2023. It was also an AJ Retrofit Awards 2023 Finalist, shortlisted for pioneering post industrial reuse.

Landscape Institute Awards - Excellence in Community Engagement Liveable Neighbourhoods

Future Cities Forum - Best Renovation & Conversion
Granton Waterfront

Saltire Awards - Saltire Medal for Best Housing Project
Bell Street Stables



Qualifications:

The practice has 7 certified Passivhaus designers and 80% of staff have taken Passivhaus training as well as a PAS 2035 accredited retrofit coordinator guides energy efficient upgrades to existing buildings.

The practice is part of AECB and RAI and working to find more initiatives to sign up to.

- Air Tightness Testing (Level 1)
- Building with Nature Assessor
- Retrofit Coordinator PAS 2035
- RIAS Conservation and Sustainability Accreditation
- UKAS ISO 14001 (Environmental Management System) accreditation

Membership:

- CIAT (Chartered Institute of Architectural Technologists)
- RIAS (Royal Incorporation of Architects in Scotland)
- SEDA (Scottish Ecological Design Association)
- Women in Property
- Living Wage Foundation

Ambitions:

The studio is making progress towards becoming B Corp certified and better understanding our environmental impact. We plan to sign up to the RIBA2030 Climate Challenge.

