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CitA Automation Series: Automating the Blueprint

Cairn Digital Design Toolkit – Evolution of design standardisation and efficiency

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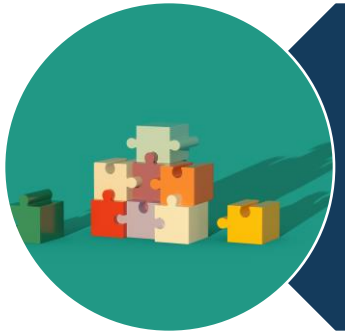
Digital Construction Manager

Built For Good

Agenda

Cairn Innovation Journey

Standardisation & Digital Design Toolkit

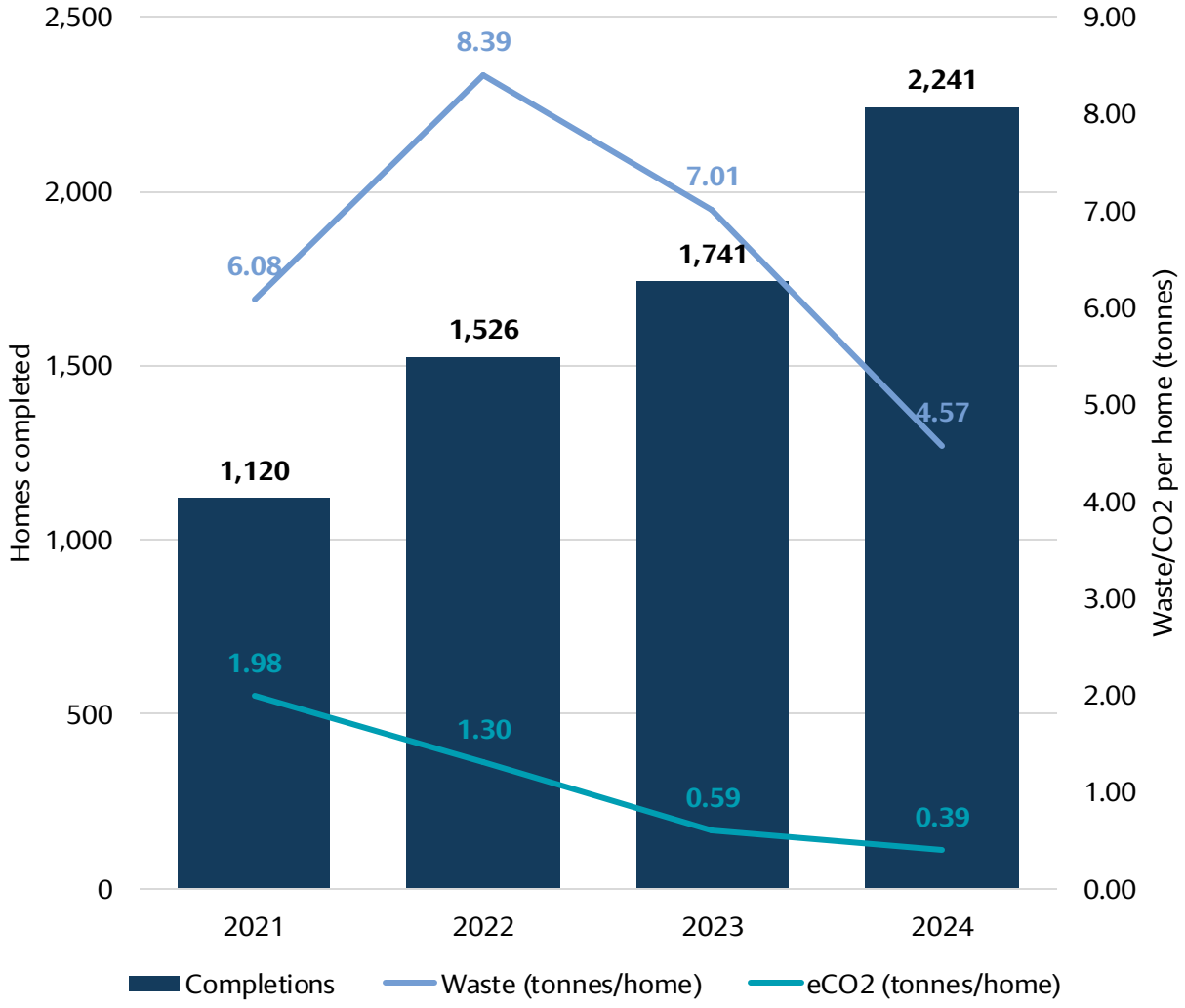


Future Evolution

Cairn Highlights

Cairn's rapid growth

Innovation driving our current trajectory



Completion growth

32%

Compound annual growth rate in completions 2020-2024

Research and innovation

15

Number of innovation initiatives being tested at any one time in Cairn's Innovation Test Centre

Reducing our impact

-74%

Decrease in total CO_2 emissions per sqm residential floor area completed, 2021 to 2024

Efficient by design

25%

Design program saving from our Design Toolkit

Leading sustainability

Passive

Over 1,800 apartments under construction to Passive House standard

Ireland's leading homebuilder

25,000

People living in a Cairn-built home

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Cairn Innovation Journey

2015/2016 — *Cairn Begins*

2017 — *Blockwork House*; *Part L Minimum A3 Rated*

2018 — *Bathroom Pods*; *Pre-Cast Columns*; *SFS*

2019 — *NZEB Heat Pumps*; *100% Timber Frame Houses*

2020 — *Soil Stabilisation*; *Apartment Technical Guide*

2021 — *Offsite Cairn Balconies*; *Standardisation Tool Kit Phase 1*

2022 — *Cairn Joins MMC Ireland*; *Launch of D365*

2023 — *EWI on Apartments*; *Cairn Technical Library*

2024 — *Passive House 1700+ Units*; *Innovation Website*

2025 — ***Cairn Digital Design Tool Kit***; ***Cairn Innovation Test Centre***

2026

9 Year Innovation Journey

We are evolving the best way to make housing in Ireland

Evolution not Revolution

Innovation with practical measurable benefits

Cairn Innovation – Integrated Process

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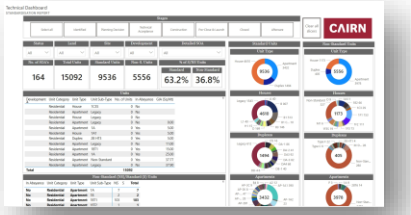
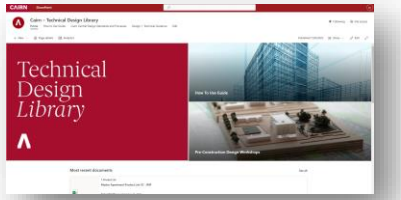
Dynamics 365

Launched 2022



Technical Design *Library*

Launched 2023



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Design Toolkit

Launched 2024

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Digital Design Toolkit

In Development 2025

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Standardisation of design

History of Standardisation – Housing

Georgian
Dublin

Haussmann
Paris

New York
Brownstones

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Library of Homes + Standardisation

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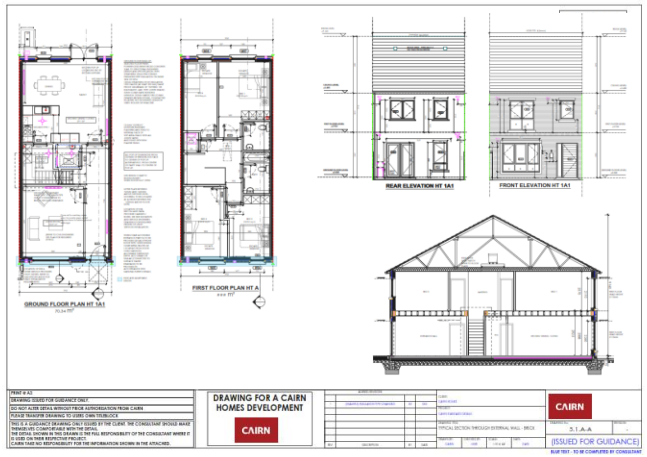
Library of Homes + Standardisation

Standardisation Tool Kit
Houses

1

Assemblies (Library of Homes)
Houses
Duplexes
Apartments



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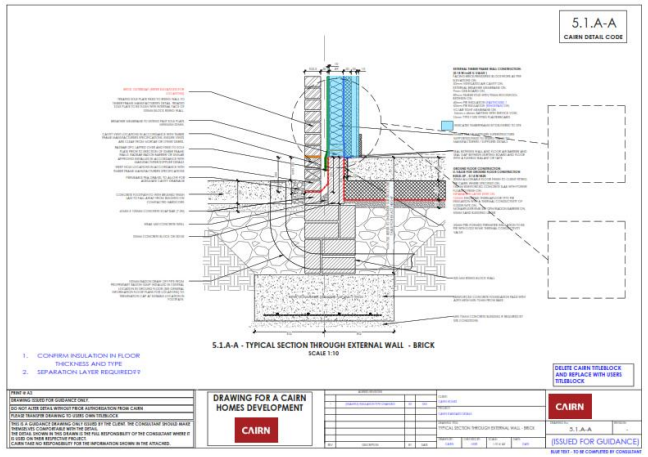
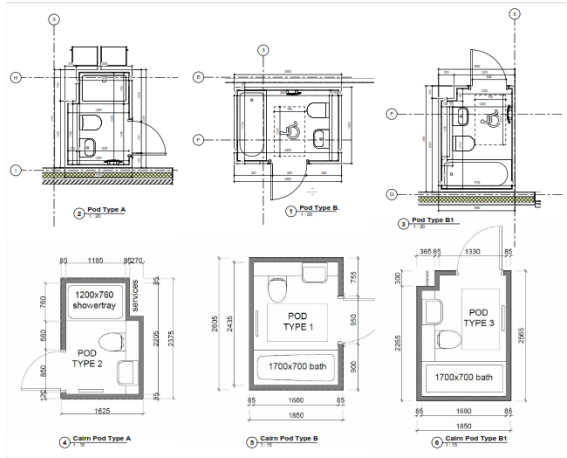
Construction Detail Library
Suite of Cairn ACDs



3

Component Library
Kitchens, Wardrobes, Stairs, Lobby
Layouts, Pods, Windows, Doors
Assist with Central Procurement



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Digital Design Toolkit

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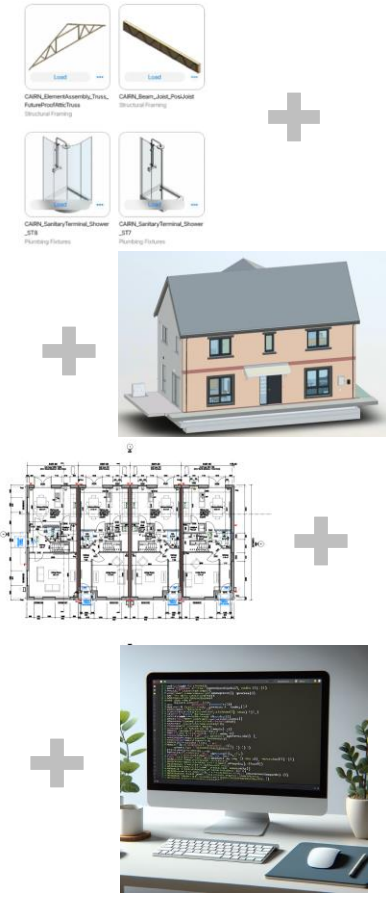
HLM Architects

Digital Toolkit Elements

Standardised Component Library aka Kit of Parts

Model and drawing of each house type



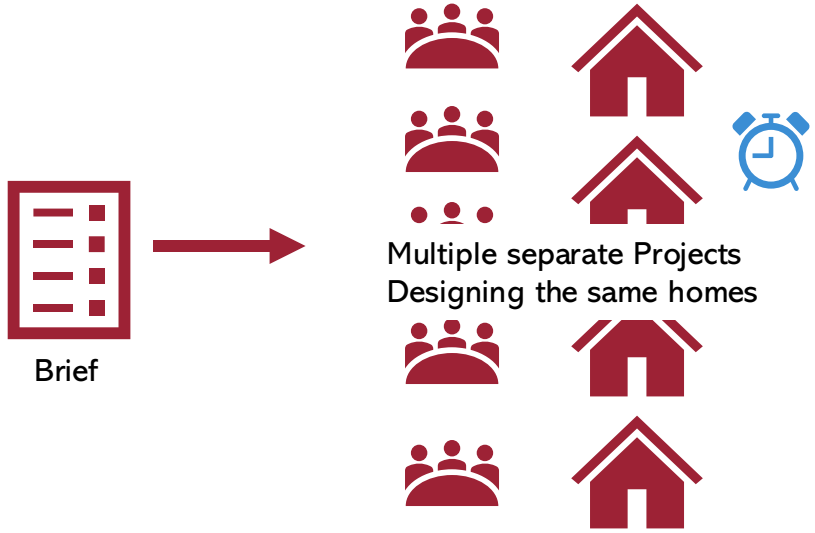
Configurator Software

House block model

Standardised Construction Drawings

The Cairn Way
Digital Design Tool Kits – A new way to Design

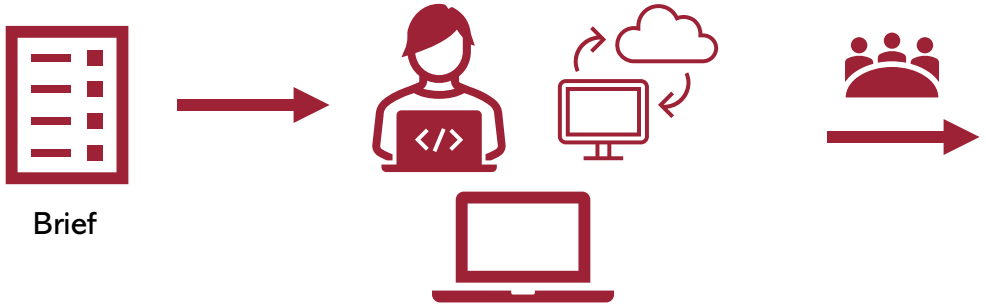
Old Way of Working



Completed Design

- Common Mistakes
- Slower
- Resource Heavy

Cairn Design Platform



Repetitive Baseline Design
Fewer errors
More standardisation

- Common Standard
- Consistency across sites
- Confidence in the design
- Updates as we evolve

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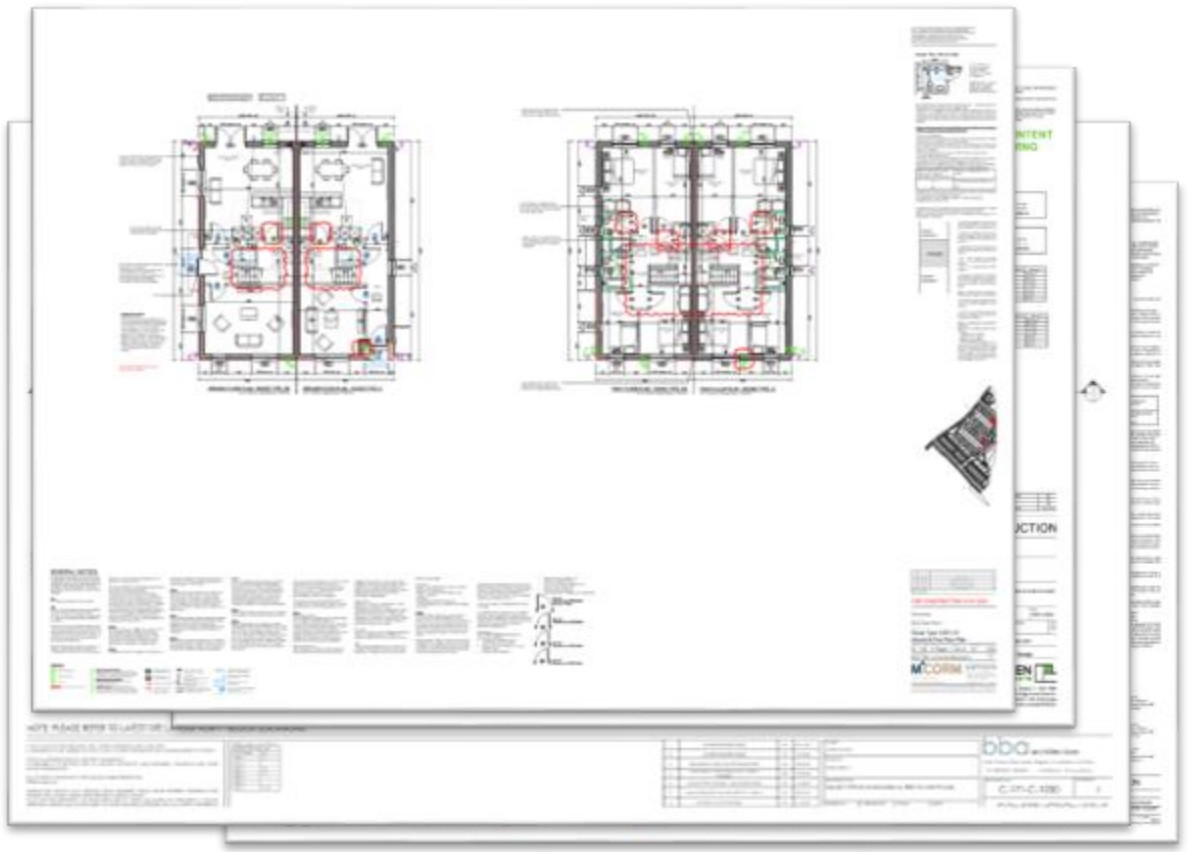
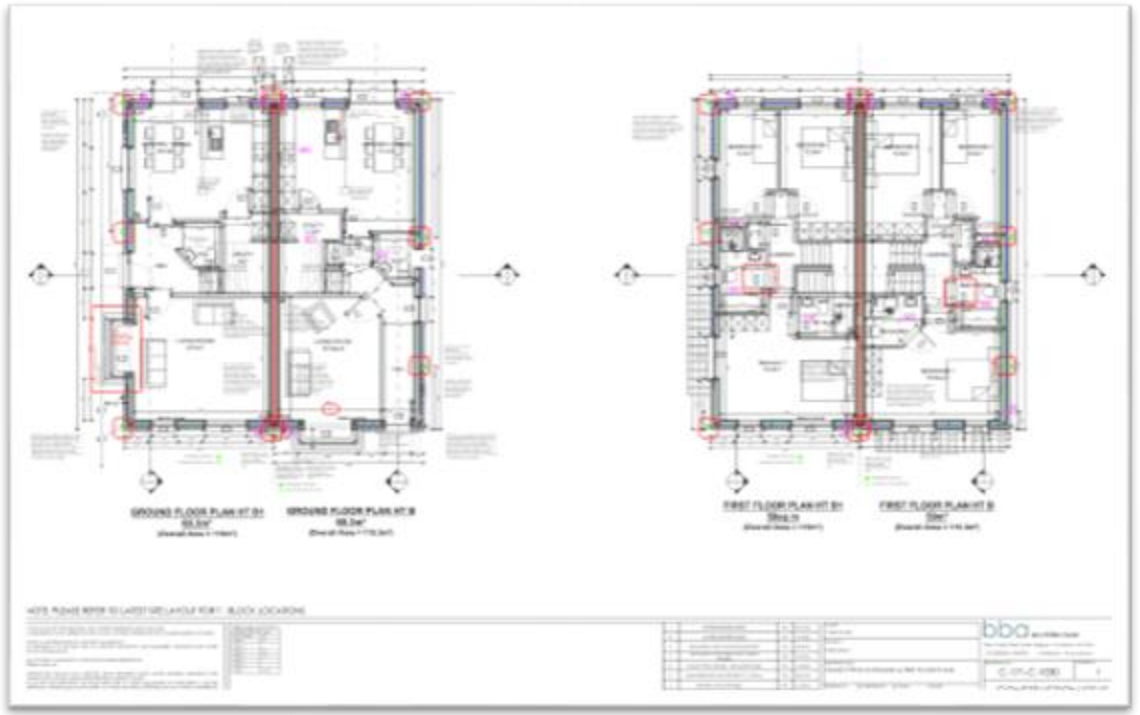
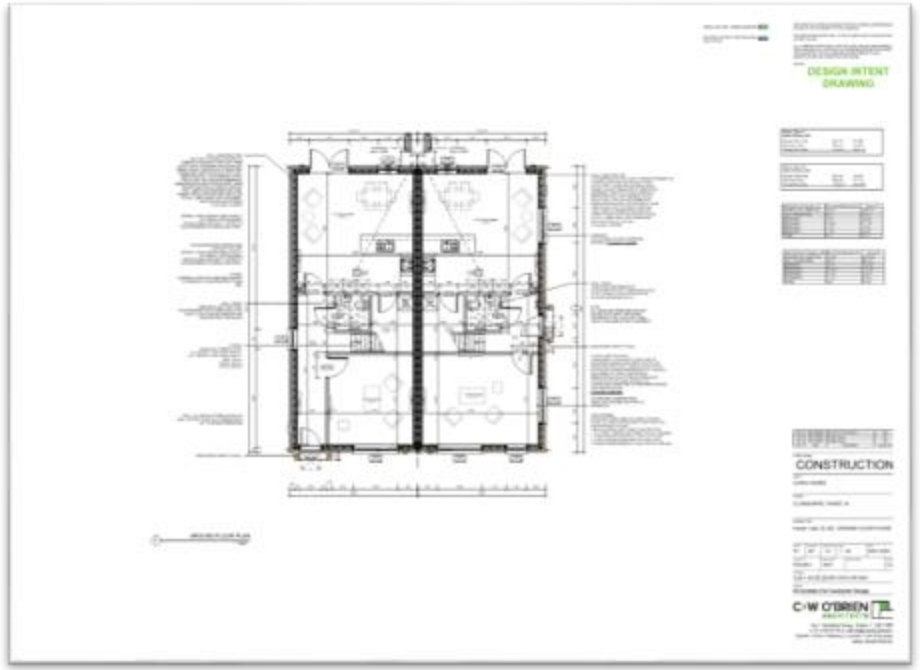
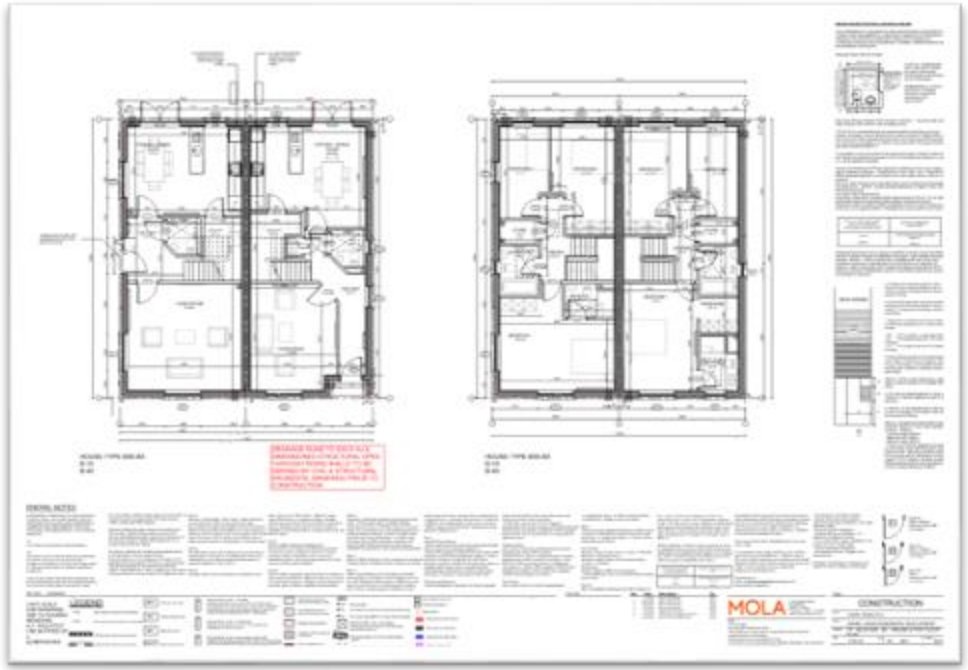
Key efficiencies for us

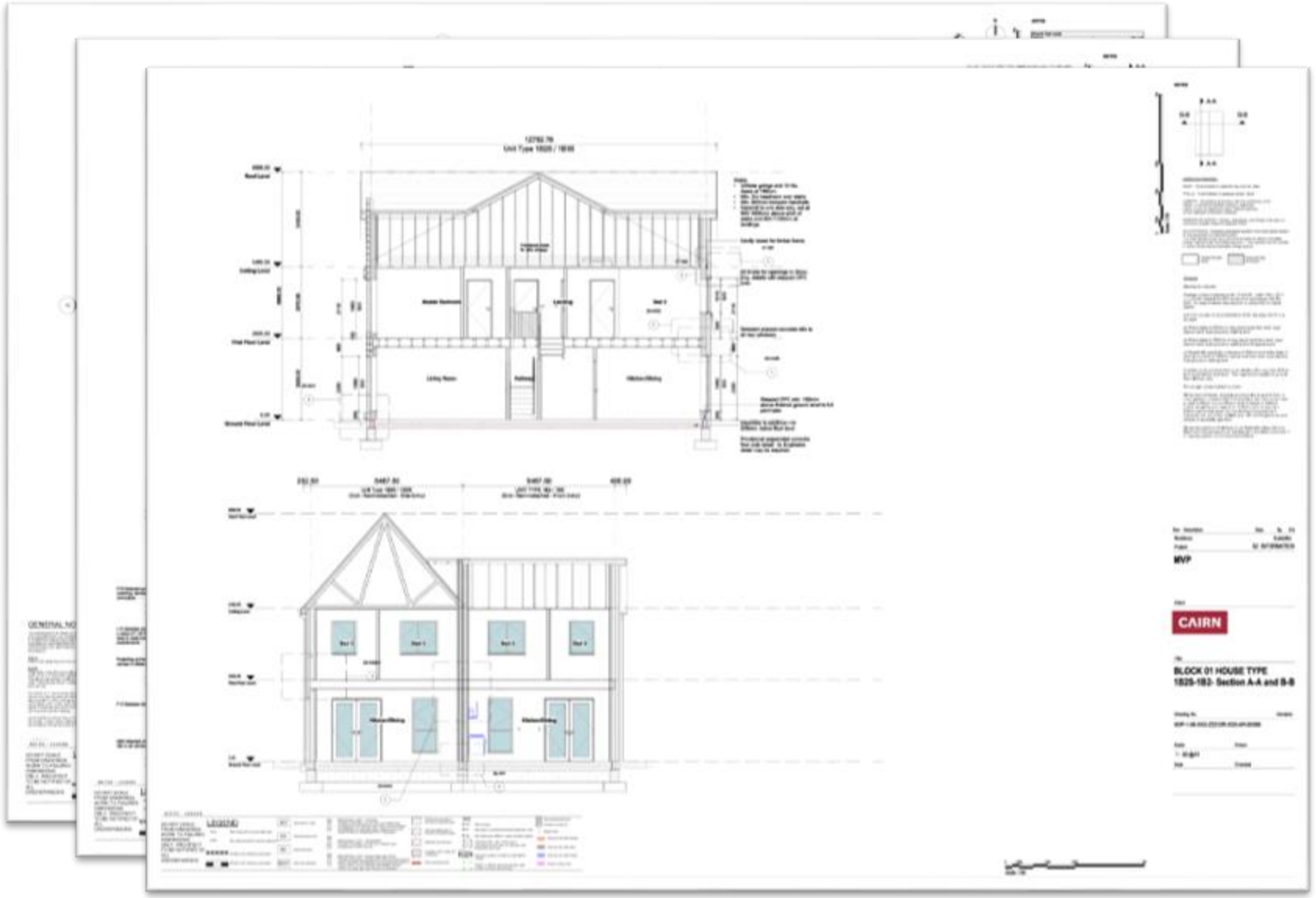





DESIGN INTENT DRAWING
CONSTRUCTION


MOLA
CONSTRUCTION

Standard drawings used across all Cairn projects



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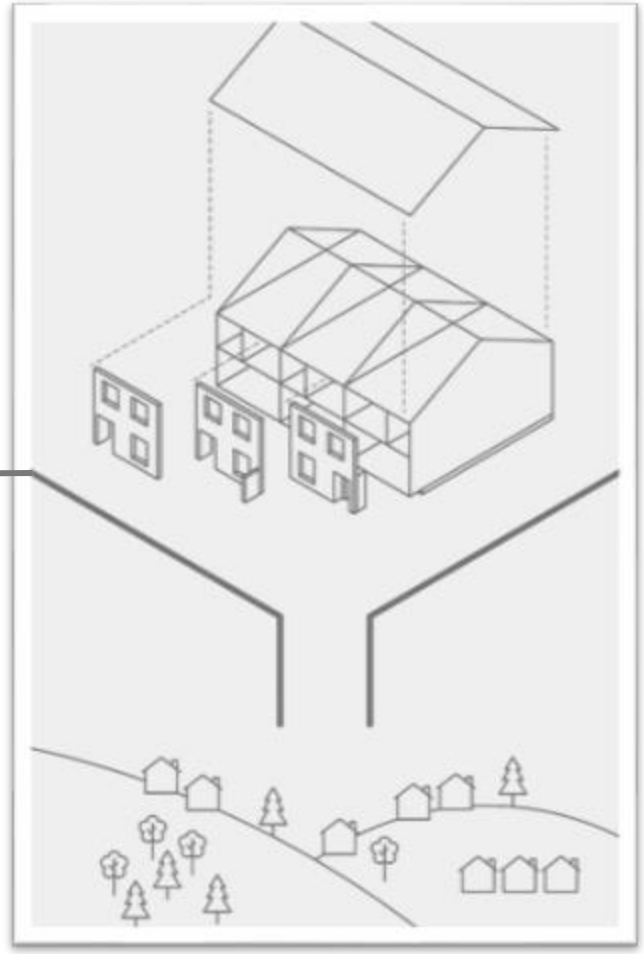
Digital Kit of Parts Benefits

80% Standardised Design

20% Site Specific Design



Harmonise
Digitise
Rationalise

Invest human resource where it counts most

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Digital Design Standardisation Toolkit Purpose

Why are we doing this?

- Create a culture of **disciplined design**
- **Limit uncontrolled changes** to design
- **Change only pieces of the puzzle**, rather than reinvent the wheel when designing a house
- **Centralise design governance** and future integration with other business functions
- Ensure predictability and **consistency in quality** of design outputs

Implications

- **Streamlined design process** by providing a standardized set of components and drawings for planning & construction phases.
- **Reduce time** spent on repetitive tasks and allow design team to focus on more complex aspects of the project.
- All future designs adhere to the same **high-quality standards**. This consistency will enhance the overall quality of the projects and reduce the likelihood of errors and discrepancies.
- **Scale** standard design process across multiple projects and replicate successful designs and processes, leading to faster design development project phases.
- **Integrate** with existing systems and processes, ensuring that it remains relevant and adaptable to future needs. This will allow for continuous improvement and updates without disrupting the design process.

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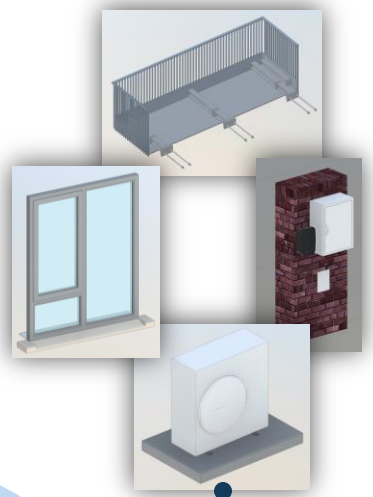
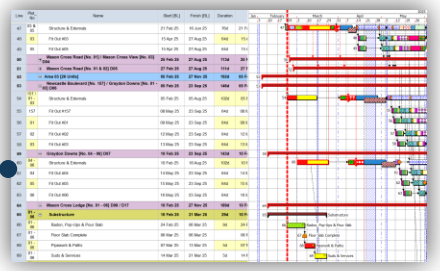
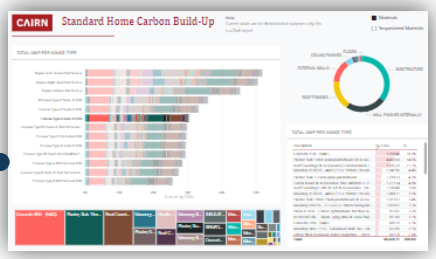
Data-driven approach & future opportunities







Site

Block

House

Component

BoQ

Programme

Carbon

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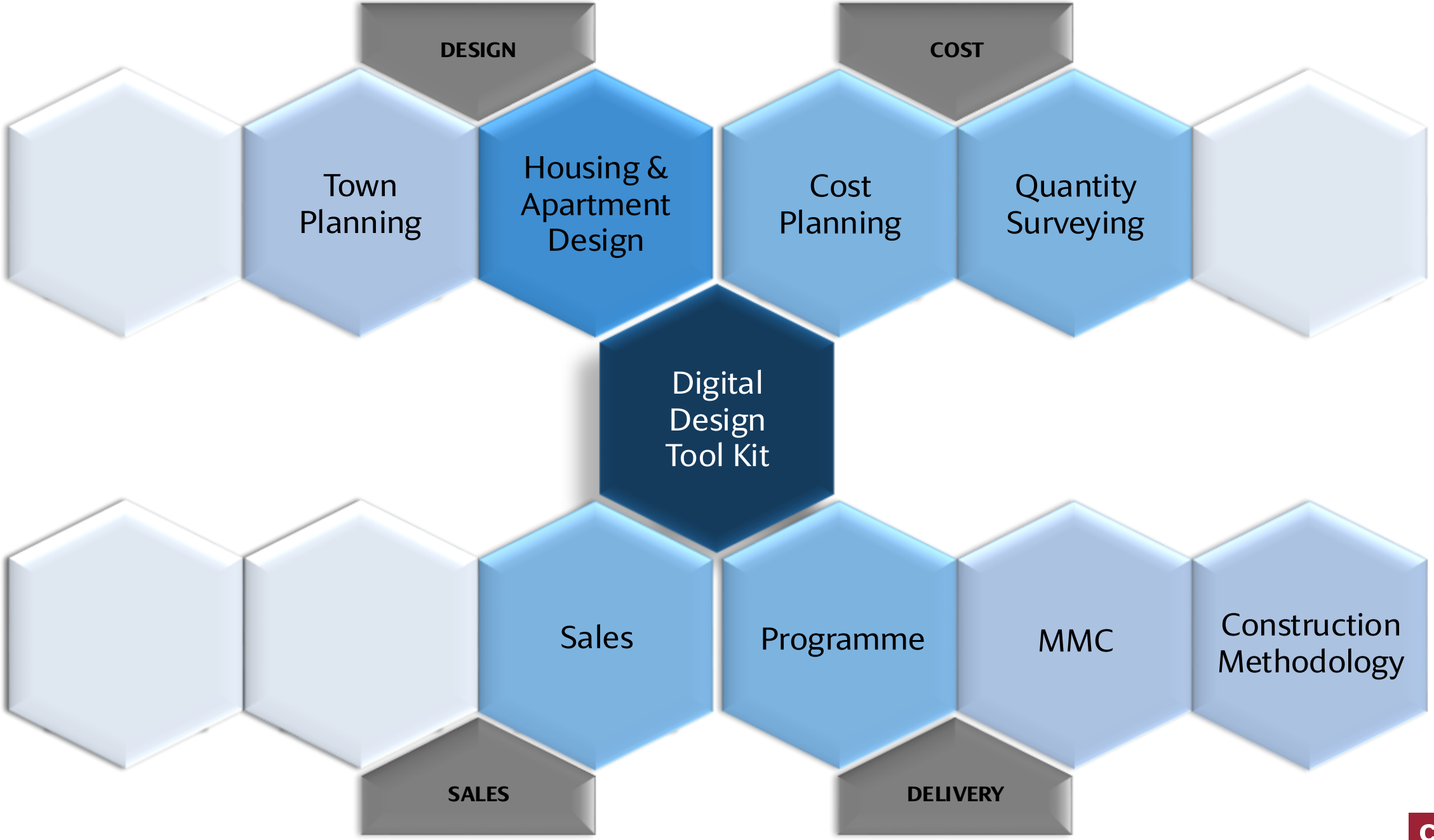
DESIGN
COST
Town Planning
Housing & Apartment Design
Cost Planning
Quantity Surveying
Digital Design Tool Kit
Sales
Programme
MMC
Construction Methodology
SALES
DELIVERY

Key takeaways

Innovation does not happen overnight. It is a process.

Successful innovation is achieved through collaboration with trusted partners.

Innovation should deliver practical and measurable benefits. A value to the business.

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Thank You

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