

**CAIRN**



# MMC Ireland

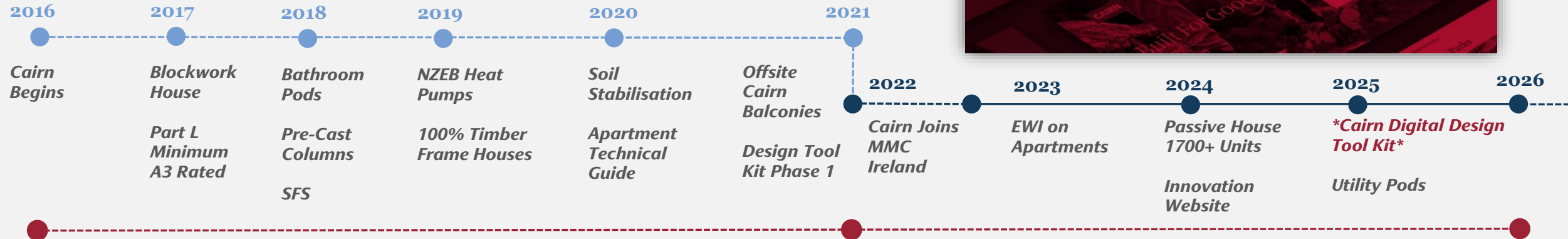
Cairn + HLM Presentation

30mins (Potential 40mins)

Built For Good



# Cairn Innovation Journey

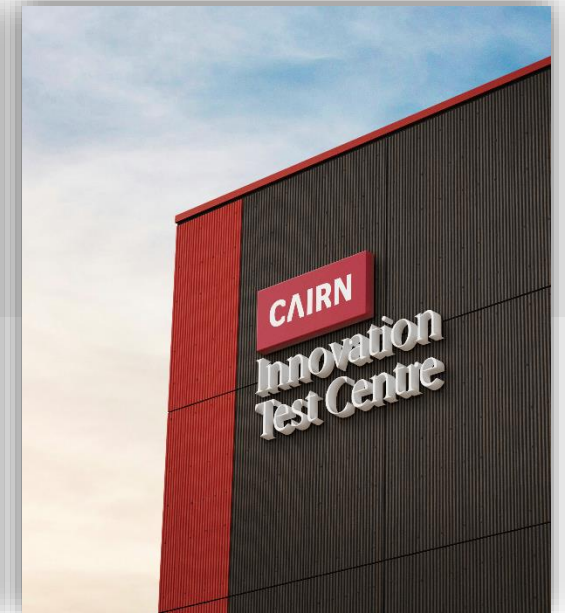


9 Year Innovation Journey

*We are evolving the best way to make housing in Ireland*

*Evolution not Revolution – Construction is appropriately a risk adverse industry*

*Innovation with practical measurable benefits*



# Key Selection of 2024 Innovation Completions



## Technical Design Library

**Status :** Launched into business, with series of functional presentations and training



## Drone Survey

**Status :** Overhaul and improvement for Cairn's Drone capability



## Innovation Test Centre

**Status:** Completion of Phase 1 of Cairn Innovation Test Centre



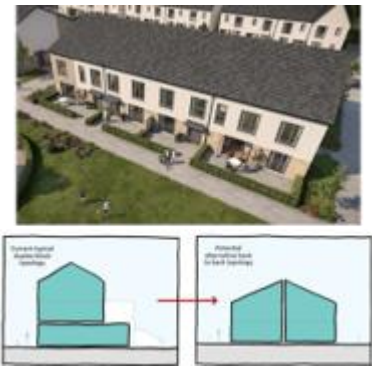
**Configurable Bathroom**  
The standard 181 and 182 interior configuration has the option of a 3-piece or 4-piece bathroom.

**Roof**  
The roof is modelled as a single element is lengthened to suit the block length.

**Configurator Panel**  
Users can configure the block using this interface to control variable features and block size

## Digital Design Standardisation Tool Kit – Houses

**Status:** Completion of Phase 1 of Cairn Design Tool Kits for increased levels of Standardisation



## New Housing Typologies

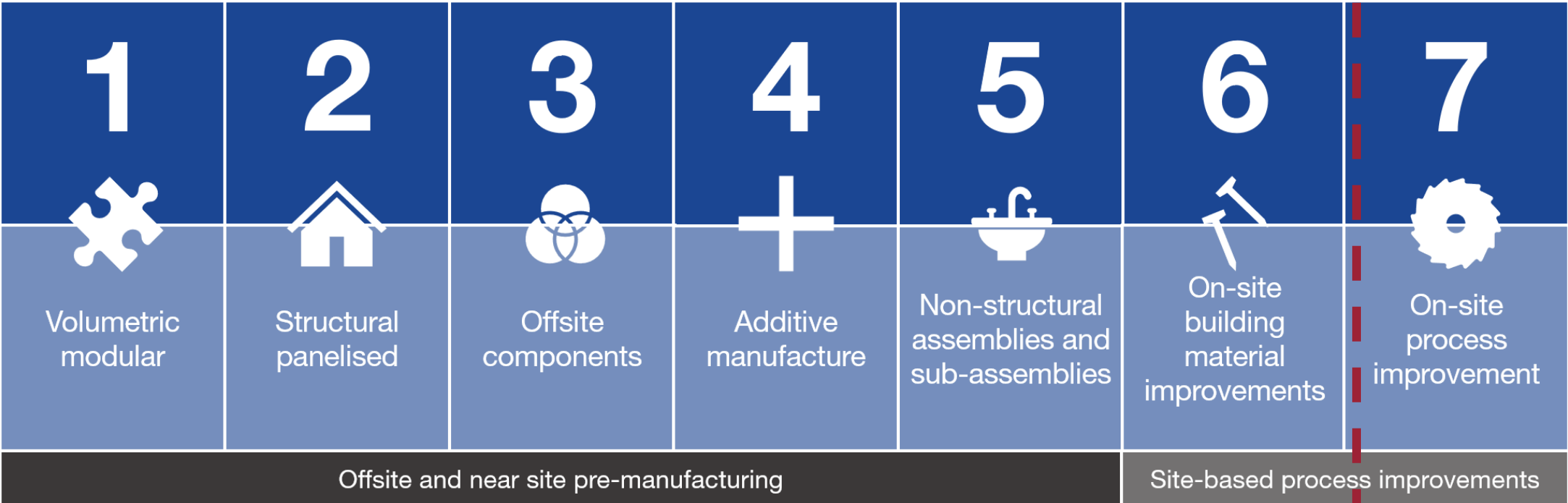
**Status:** Included in 2-3 Planning applications in 2024, first build in 2025



## Passivhaus

**Status:** Successful start with significant progress across multiple apartment development

# Modern Methods of Construction – Categories



*All 7 MMC categories on Show in Cairn Developments*

# History of Standardisation – Housing



**Georgian  
Dublin**



**Haussmann  
Paris**



**New York  
Brownstones**

# Cairn : Library of Homes + Standardisation

**Our most important innovation** is ,  
our way of working, **library** and **Toolkits**.  
This innovation allows everything else to  
happen

- **Creates a platform** for our teams to work off of.
- Holds our Catalogue of **Homes and Apartments** that have been refined over a 8+ year period
- **Lessons Learned** are fed back into the base line designs, ensuring no mistake is made twice



*Innovate, Idea,  
Researched,  
resolved, designed,  
tested and  
Developed*

## • CASE STUDY

### Innovative Housing Construction – Library of Homes

- An important element of our delivery strategy continues to be standardisation.
- We have a Library of Homes which we use to form the design and delivery of our schemes.
- The internal layout and each of our house types are broadly identical.
- Front elevation changes and tweaks to specification and finishes depending on price points are the only differentiating factor.

Cairn three-bedroom semi-detached new home: five different elevations on the same house type:



STANDARDISATION AND TECHNOLOGY DRIVE INNOVATION AND PRODUCTIVITY

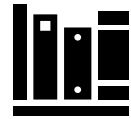
## • CASE STUDY

### Efficient and Timely Apartment Delivery – Library of Apartments

1. Similar to houses, we follow a design-led approach that is repeatable across our apartment schemes, with standard 1, 2 and 3 bed apartment layouts typical for most units in each scheme.
2. All apartment facades are different but the design and construction techniques are identical.



A REPEATABLE PROCESS THAT DRIVES  
OPTIMUM PRODUCTIVITY



Cairn Technical  
Design Library



Ready 80%



Project  
Information



Cairn  
Kit of Parts



Timber Frame  
Kits



Offsite  
Balconies



CAIRN

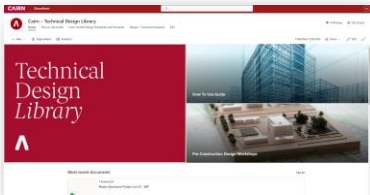
# Cairn Innovation – Cairn Suite of Digital Apps



Launched  
2022



Launched  
2023



Launched  
2024

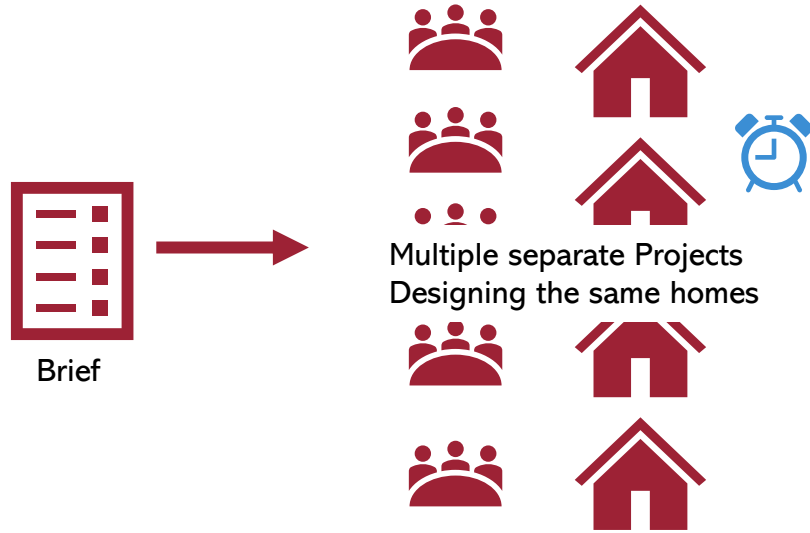


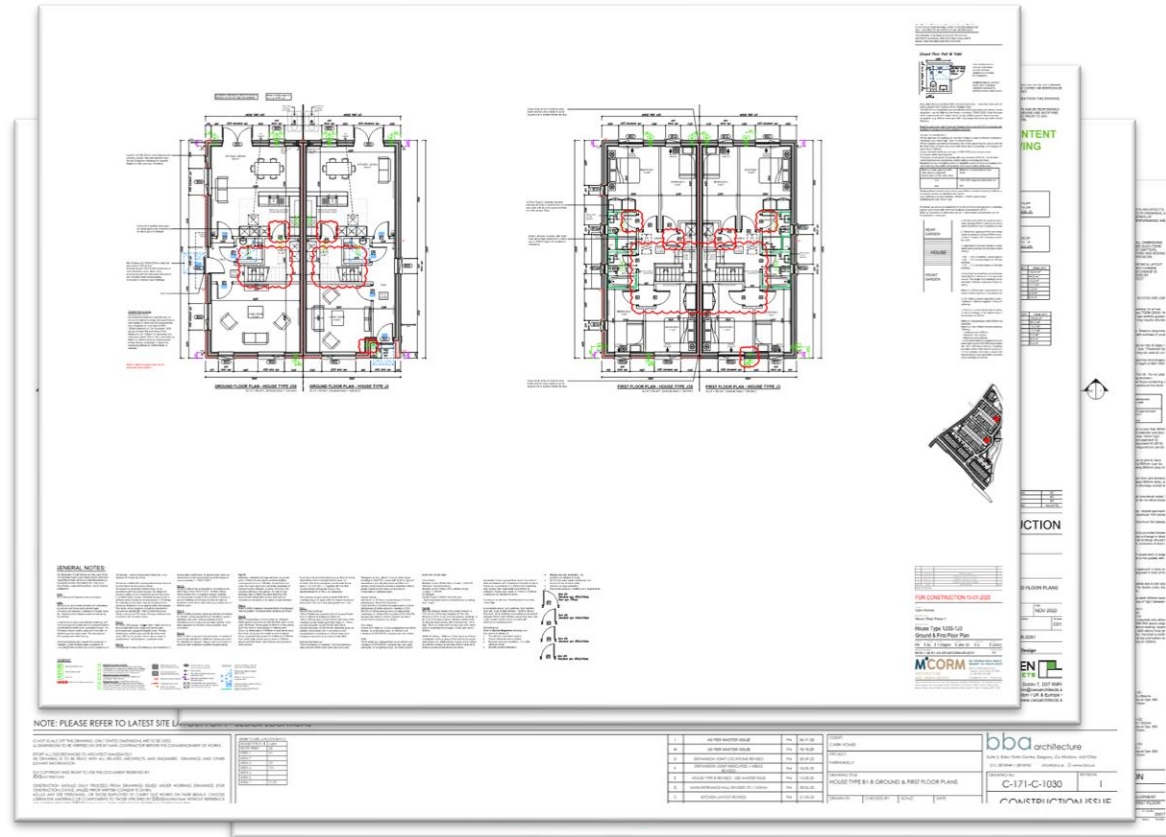
In Development  
2025



# The Cairn Way

## *Digital Design Tool Kits – A new way to Design*







# 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 functions
- Ensure predictability and **consistency in quality** of design outputs



Previewing.....  
The Cairn Digital Design Tool Kit

**CAIRN** *Digital Design Toolkit*

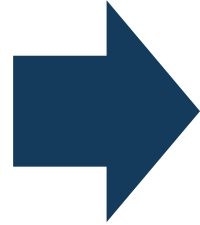
# 90% of construction companies will soon rely on data analytics tools

Those companies that can capture data, analyse it, and produce practical insights will likely enjoy lower costs, better project performance, greater efficiency, and safer workplaces.

~KPMG, 'Familiar challenges – new approaches,' 2023



# Manual Processes



# Digital Kit of Parts

## Challenges:

- Prone to errors
- Process knowledge is embedded in delivery teams making it vulnerable to team turn-over
- De-centralised decision making
- Risk of creeping change
- Not easily scalable

## Opportunities:

- Improved Accuracy
- Consistency
- Efficiency
- Improved Communication
- Better Coordination
- Data informed choices
- Captures continuous improvement
- Scalable

# Framework for future functionality

Business Case

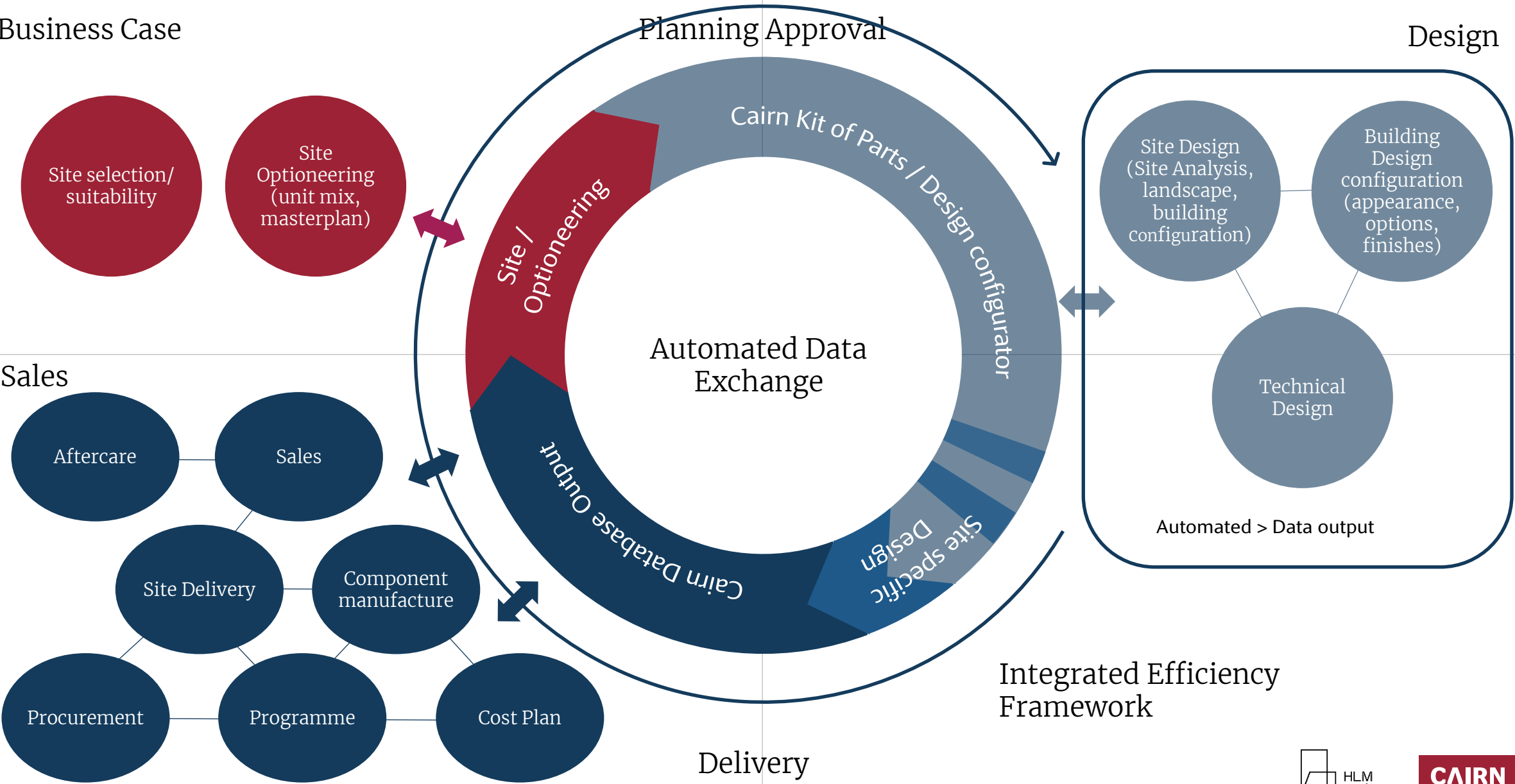
Planning Approval

Design

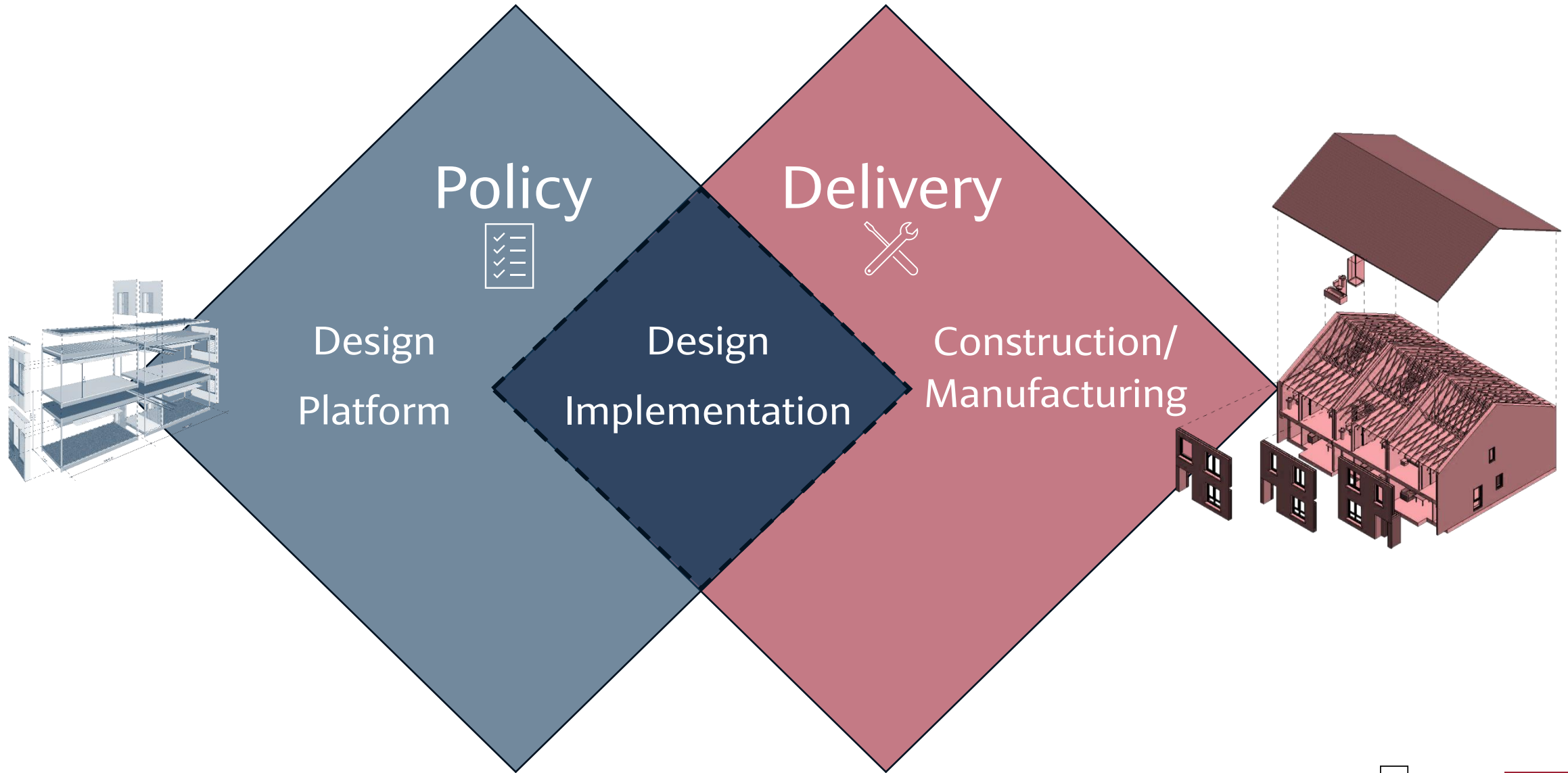
Sales

Integrated Efficiency Framework

Delivery



# Between Policy and Delivery is Design Implementation





The Compass SEN, Havering

**MMC**

Schools  
delivered  
So far...

17

Having fun creating a unique identity  
for an all-through SEN school within  
the off-site and cost parameters.

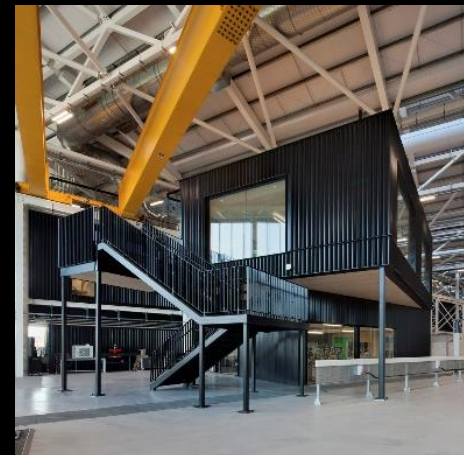
# Trent View College, Scunthorpe



Trent View College

CLT Offsite construction  
Winner of Project of the Year (Colleges) at  
Education Estates 2024 and shortlisted for  
the MMC Award.

# National Manufacturing Institute for Scotland, University of Strathclyde



# Dinton Activity Centre, Wokingham

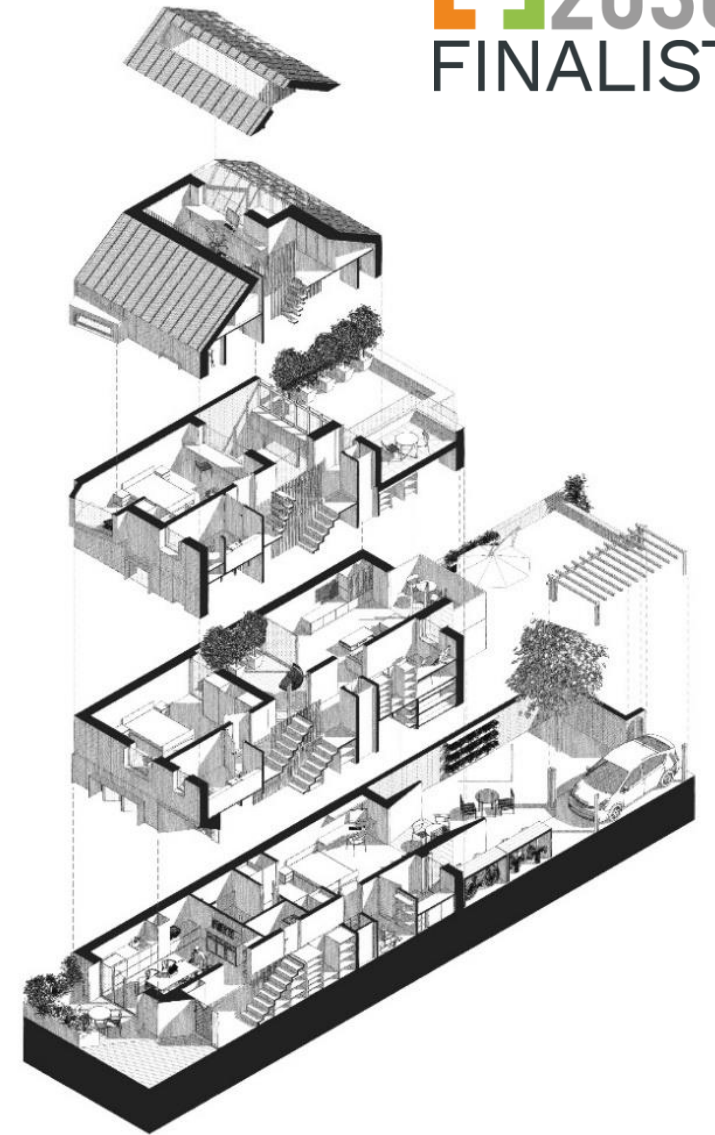
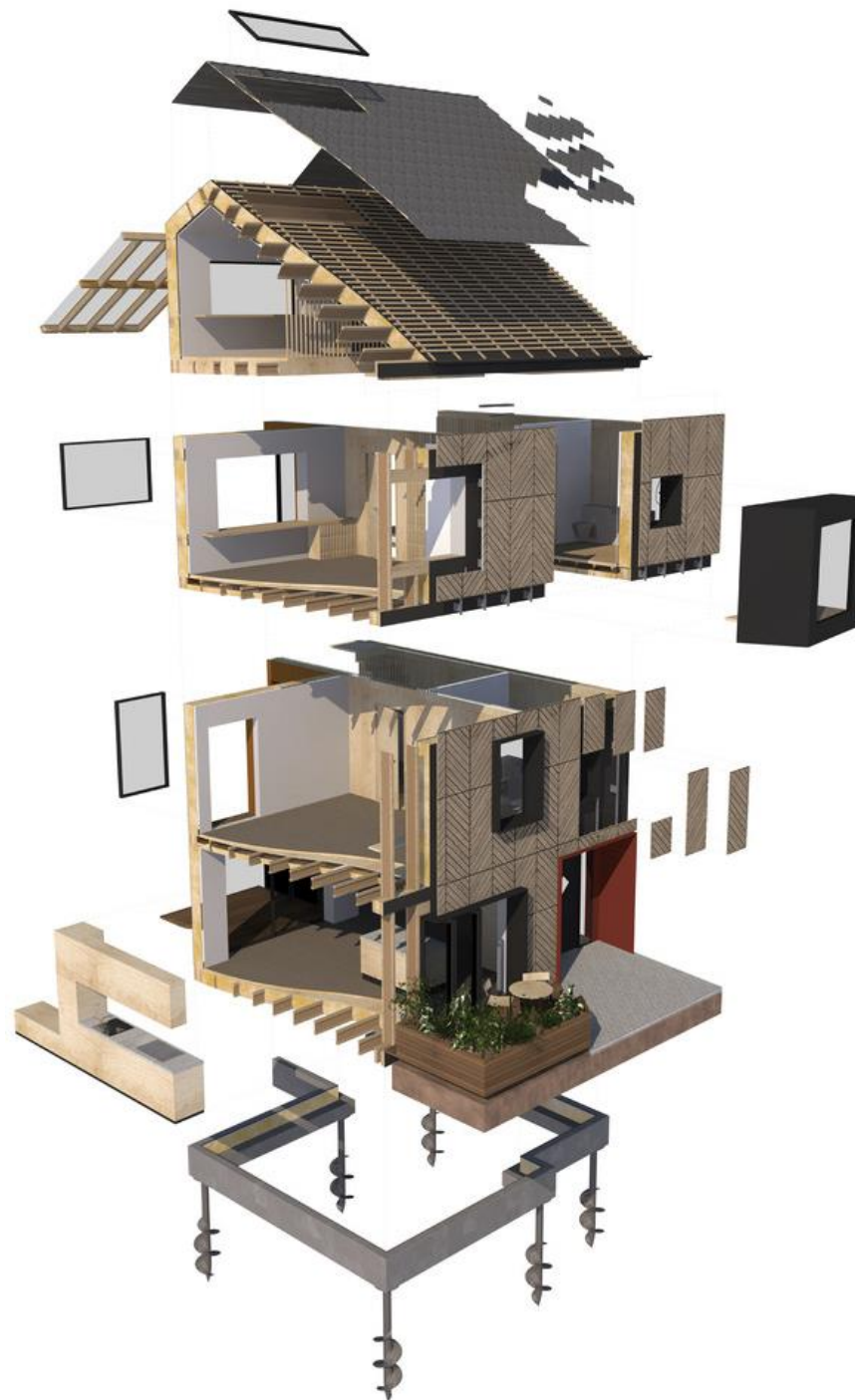




SLA Standard Design Approach  
Imjin Barracks



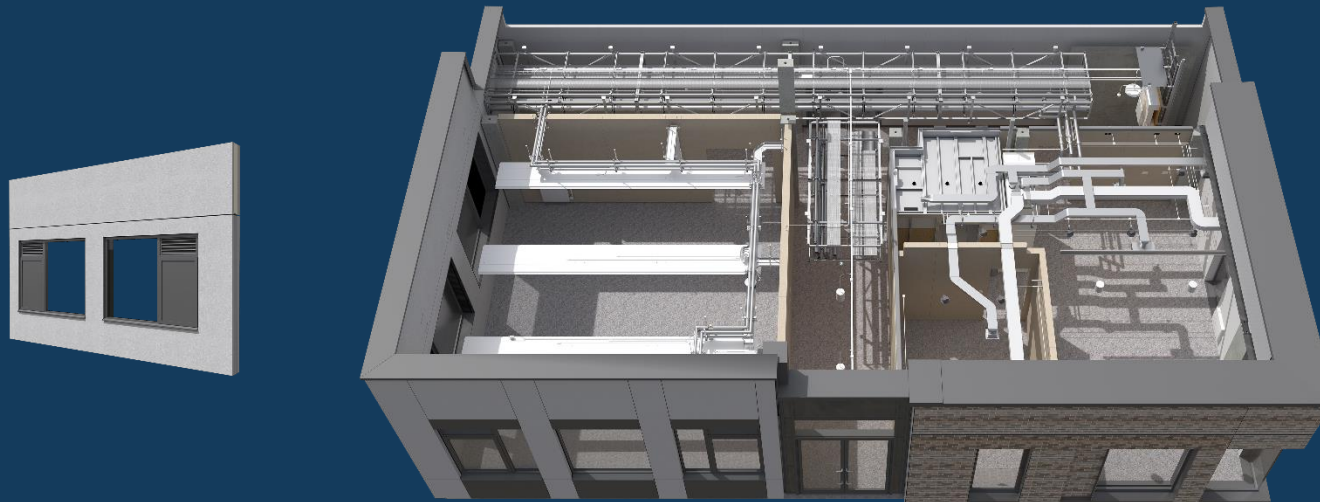
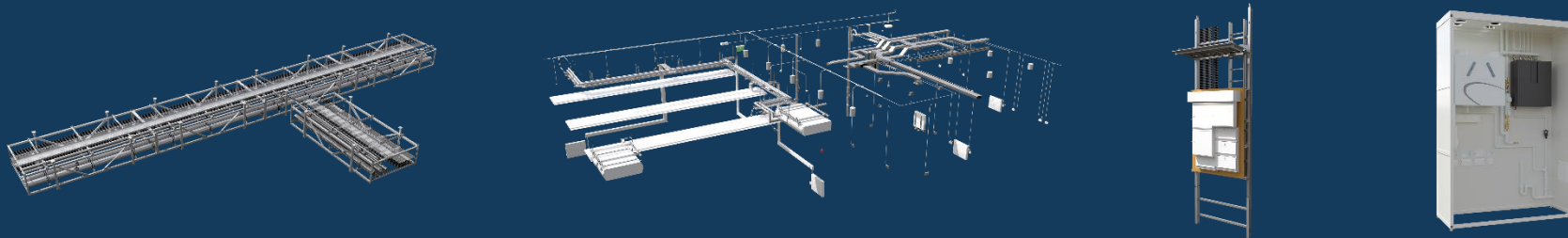
Home of 2030



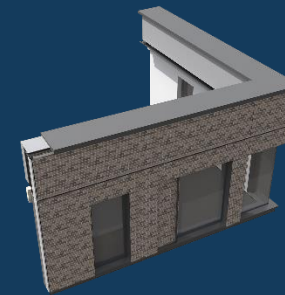
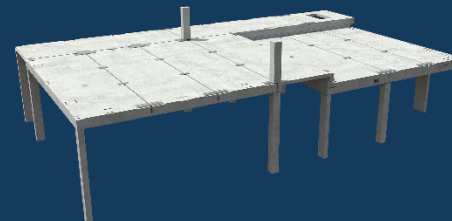
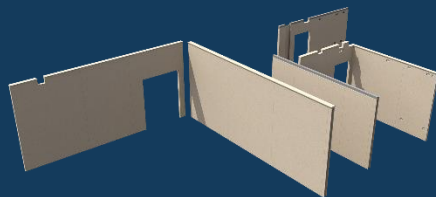
HOME OF  
2030  
FINALIST

# Cross-sector Platform KoP

AJ 100 2022  
Shortlisted



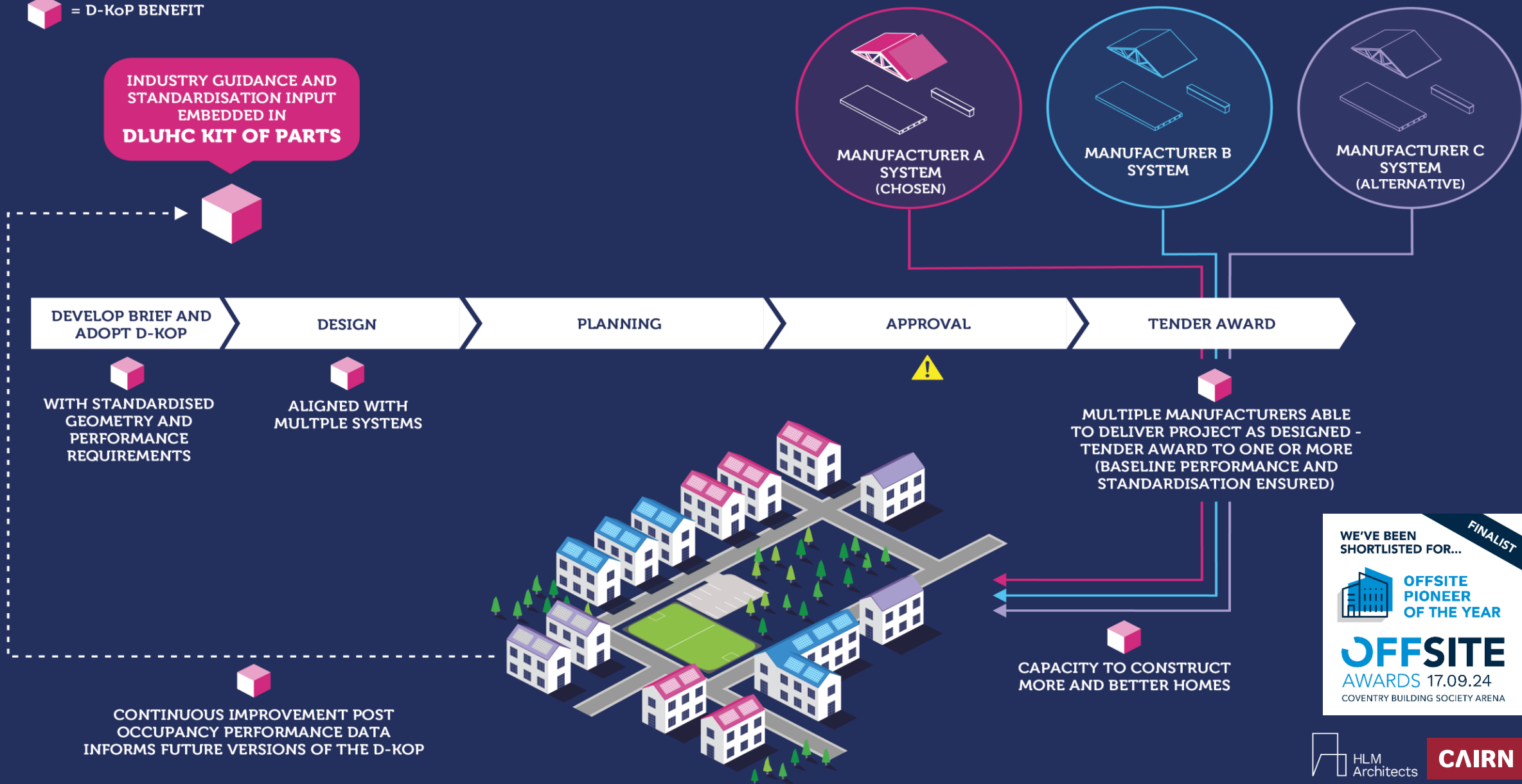
Schools and Apartments



# DIGITAL KIT OF PARTS FOR THE UK MINISTRY OF HOUSING COMMUNITIES & LOCAL GOVERNMENT

⚠ = RESIDUAL RISK (planning)

📦 = D-KoP BENEFIT



# Digital Kit of Parts platform evolution

KoP Types Design Suitability:	Early Design Concept	Specification / Product selection & design development	Detailed Design	Manufacturer / Construction level detail	Use / Post Occupancy Evaluation
Concept Design	Stage 2 KoP	◀ ■ ■ ■ ■ ■ ■	● ● ● ●	● ● ● ●	
Coordination	Agnostic KoP		◀ ■ ■ ■ ■ ■ ■	● ● ● ●	● ● ● ●
Technical Design	Product Specific KoP			◀ ■ ■ ■ ■ ■ ■	● ● ● ●

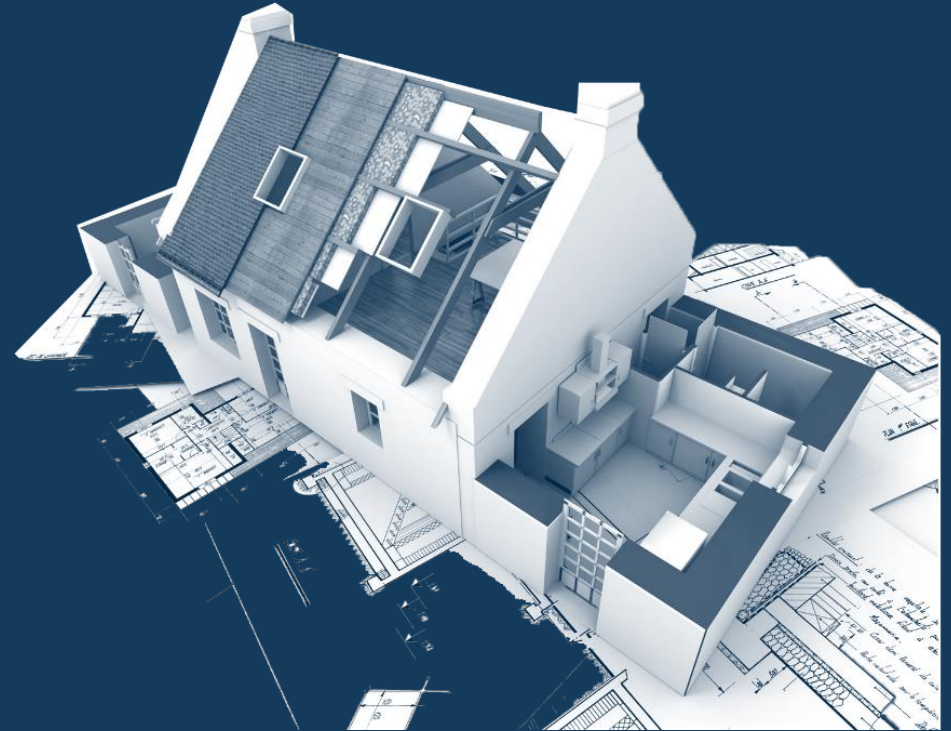
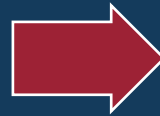
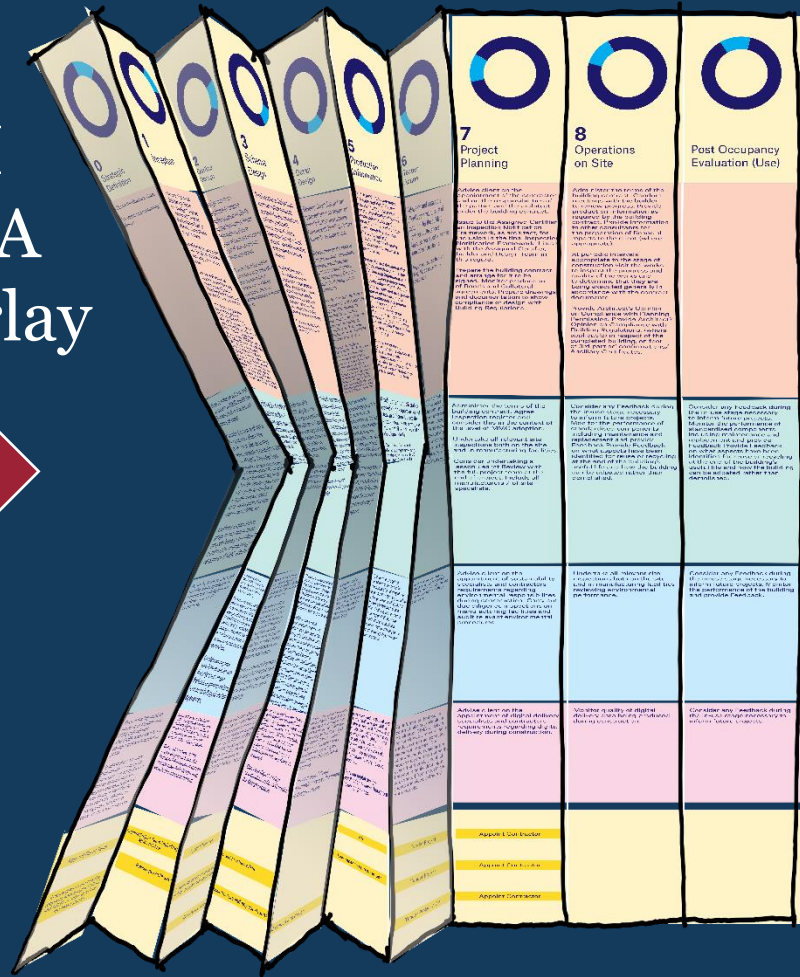
- All require:
- Standardisation
  - DfMA / Platform approach
  - Productization approach

Key:

- Known Data Input / Standardised & Fixed
- ◀ ■ ■ Informed detail & data input / output
- ● ● Learned/ Informed over multiple projects

# A Digital Kit of Parts Fundamentally Changes Delivery

RIAI  
DfMA  
Overlay

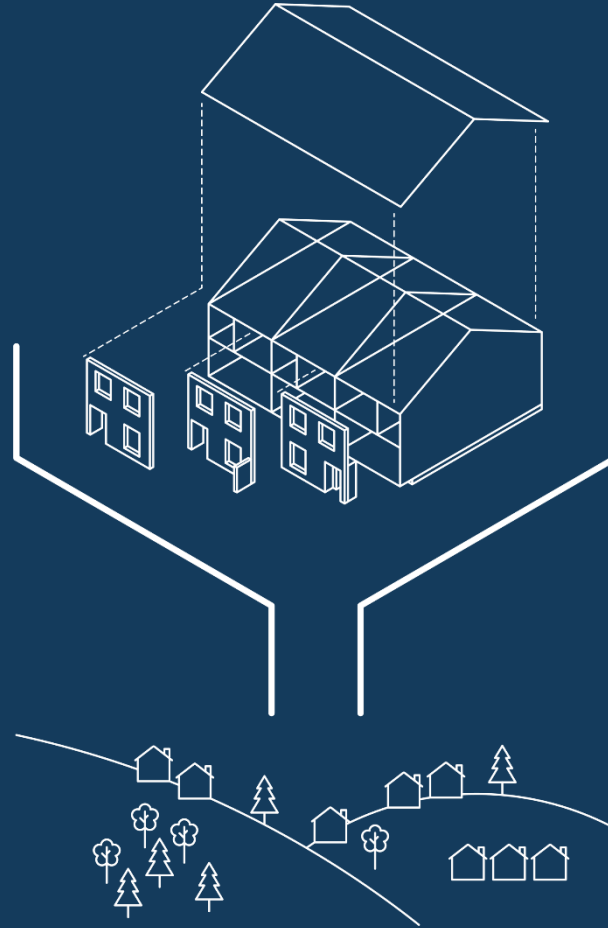


Compress design process to deliver

more, better, faster homes

# Digital Kit of Parts Benefits

**80%** Standardised Design



**20%** Site Specific Design

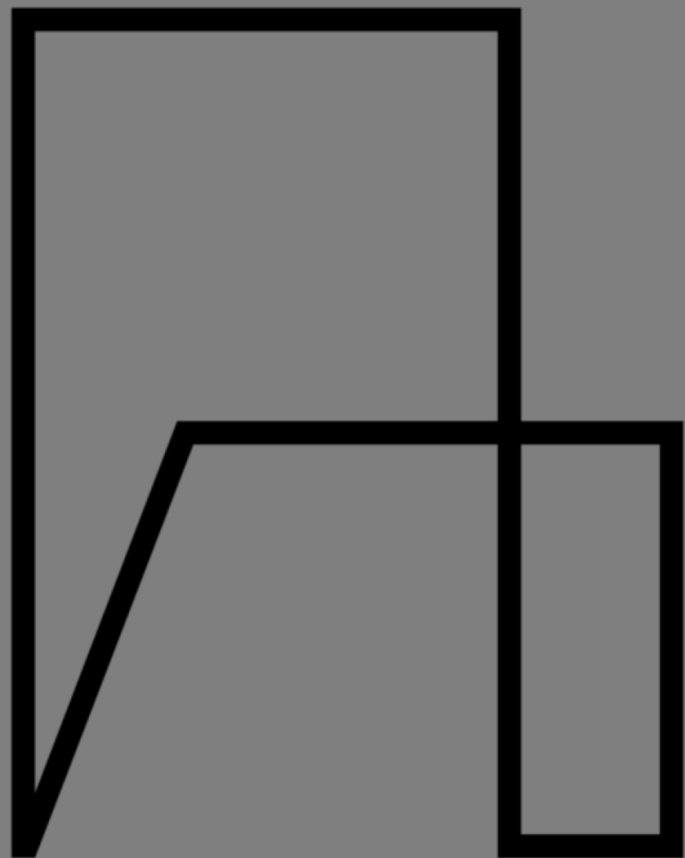
Harmonise  
Digitise  
Rationalise

Invest human  
capital where  
it counts most

# CAIRN

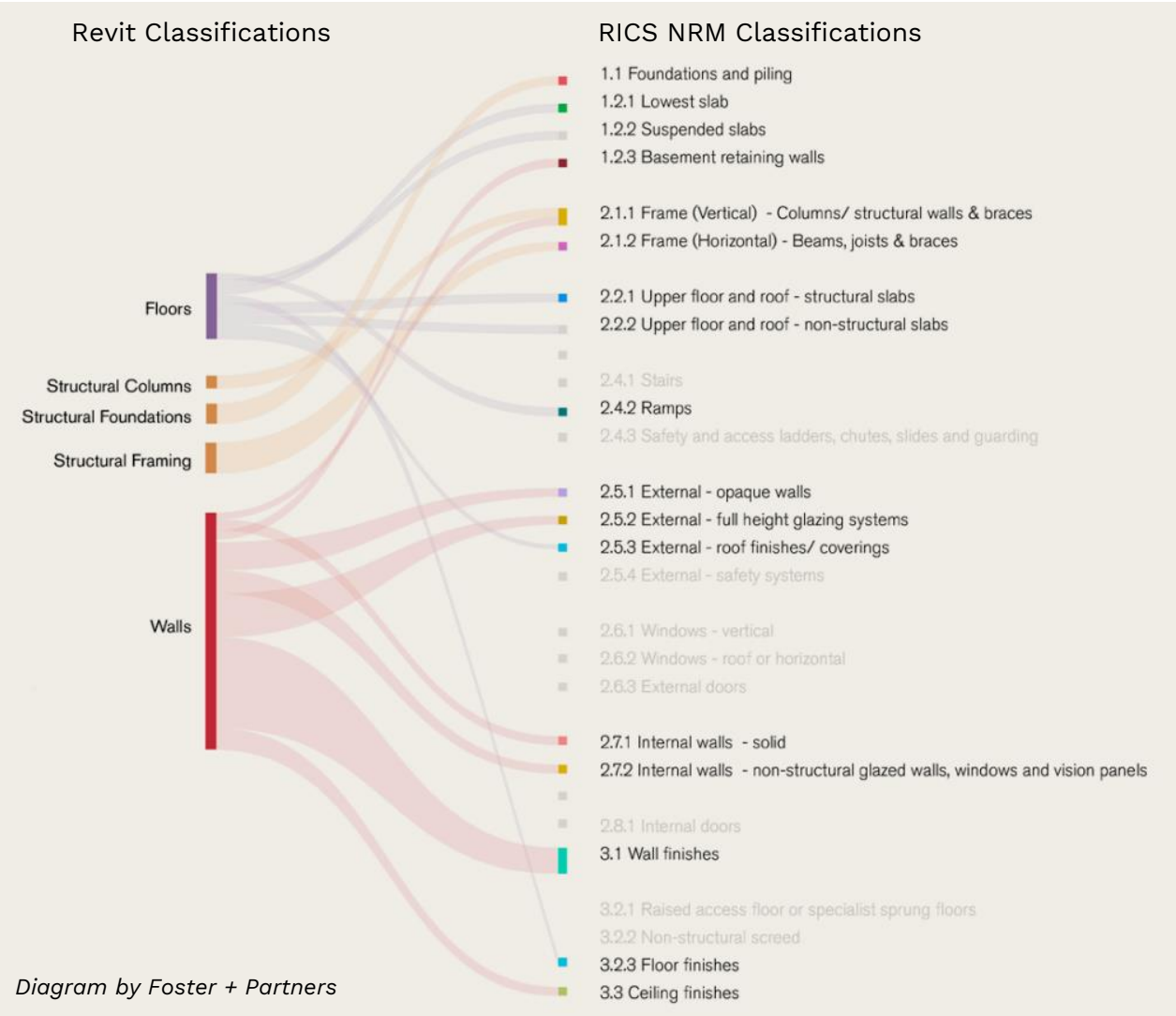


HLM  
Architects



HLM  
Architects

# Cost and Carbon – Regenerative Design and Construction Planning



OneClick LCA Embodied Carbon tool import:

Material	Old quantity	New quantity	CLASS	Comment	Building Parts	Change
Glass wool insulation, L = 0.037 W/mK, T: 50-200 mm, 140 kg/m3, KL/KT 37 (Isover Saint Gobain)	48.0 m3	50.0 m3	EXTERNAL WALL	Wall type #1	1.2.3 External walls	+4.2 %
Ready-mix concrete, normal strength, generic, C25/30 (3600/4400 PSI), with CEM I, 0% recycled binder	40.0 m3	50.0 m3	FOUNDATION	Wall type #1	2.3.2 Cooling plant and distribution	+25.0 %
Hollow core concrete slabs, generic, C30/37 (4400/5400 PSI), 0% (typical) recycled binders in cement	25.0 m3	40.0 m3	SLAB		1.2.1 Frame (beams, columns and slabs)	+60.0 %
Ready-mix concrete, normal-strength, generic, C20/25 (2900/3600 PSI), 0% recycled binders in cement	10.0 m3	15.0 m3	SLAB	Foundations	1.2.1 Frame (beams, columns and slabs)	+50.0 %
Aggregate (crushed gravel), generic, dry bulk density, 1600 kg/m3	2.34 m3	3.34 m3	FOUNDATION	Foundations	1.1 Foundations (substructure)	+42.7 %
Reinforcement steel (rebar), generic, 60% recycled content, A615	12000.0 kg	12500.0 kg	EXTERNAL WALL	For retaining walls	1.2.3 External walls	+4.2 %



**CAIRN**



# Thank You

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