
Edinburgh Home Demonstrator

*Introduction to a New
Delivery Model*

August 2023, Rev 1.0



EHD

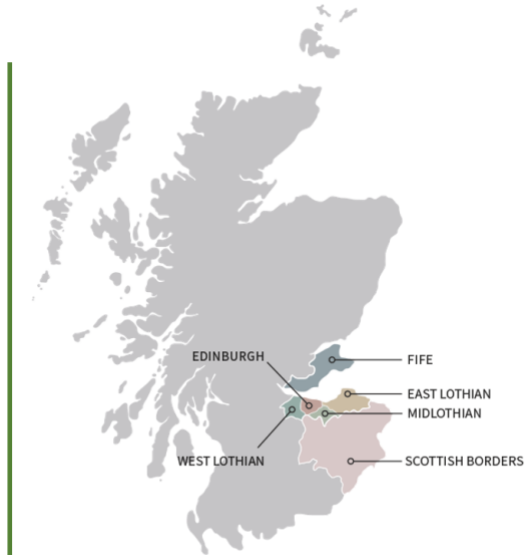
Executive Summary

The Edinburgh Home Demonstrator (EHD) programme set out a vision to develop a new approach in how we brief, design, and deliver higher performing, net-zero ready, affordable homes. This ambition was aligned with the Edinburgh and South East Scotland City Region Deal.

EHD

The Edinburgh Home Demonstrator – a new delivery model for affordable homes built to net zero standards using offsite manufacturing.

Project partners



The existing system for the procurement and delivery of affordable homes can provide challenges and barriers to achieving this vision. Through collaboration with public sector partners, industry, and academia, the EHD programme has developed a new model for the delivery of higher performing affordable homes. The programme combined research, engagement, and operational testing to develop a new delivery model that enabled the following outcomes: -

Outcomes

1. **Homes for People** – Deliver affordable homes that improve tenant health and wellbeing.
2. **Homes for Place** – Deliver high quality homes that ensure sustainable and resilient places.
3. **Homes for Sustainability** – Deliver an efficient approach in how we procure highly energy efficient homes which are net-zero carbon ready.
4. **Homes for Growth** – Deliver a collaborative delivery model with flexibility to support local, regional, and national economic growth and create the conditions for a sustainable and productive industry.

The delivery model was designed to be easily understood and scalable across different regions and geographies. The model sets out three thematic areas of policy, product, and alliance.

Delivery Theme 1 - Policy:

Through Leadership at national, regional, and local authority level, to enable funding, resources, process, and governance alignment.

Delivery Theme 2 - Product:

Through standardisation of housing typologies with mass customisation and harmonised specifications, evolving into a library of products, components, and systems.

Delivery Theme 3 - Alliance:

Through aggregated demand, agreement on collaborative procurement and alignment to industry capacity.

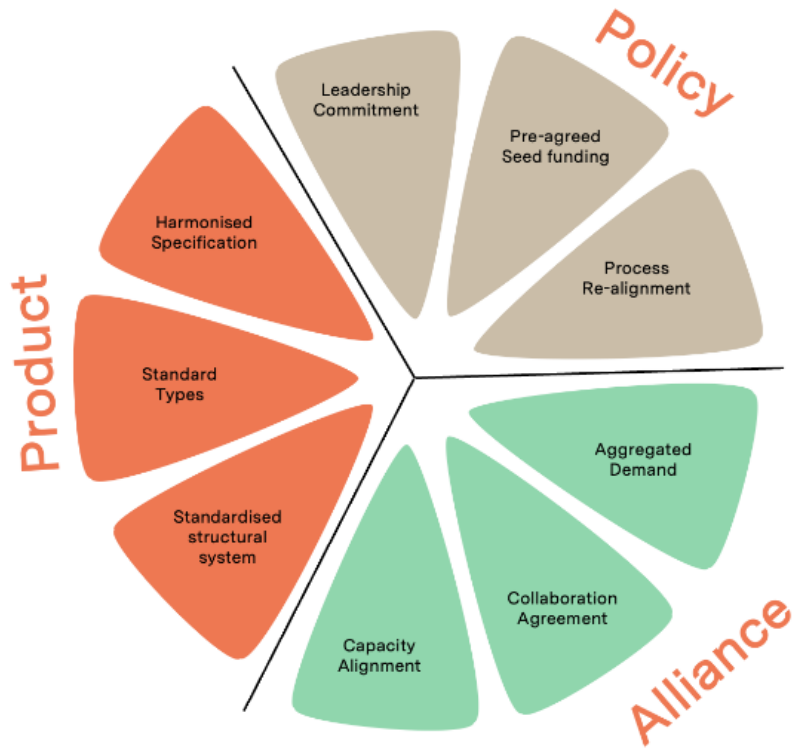


Figure 1: EHD Delivery Model for Affordable Homes

The journey to develop the new delivery model has included the operational testing through demonstrator projects. New resources have been established which include the creation of a regional pipeline for affordable homes, a new suite of housing typologies, and a design and performance standard, endorsed by regional partners.

The delivery model for affordable homes will provide a platform for whole life performance to be monitored and continually improved. It will also seek to create the conditions for a sustainable high performing industry and realise both the social and economic benefits this will bring.

Ultimately the delivery model will support the Scottish Government’s ambitions for [Housing to 2040](#) to improve housing delivery, meet climate change targets, support economic growth and create homes that best meet the needs of people and places.

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1.0 Introduction

1.1 Edinburgh Home Demonstrator

The Edinburgh Home Demonstrator (EHD) programme sets out a vision to develop a new approach in how we brief, design, and deliver higher performing, net-zero ready, affordable homes aligned to the ambitions of the Edinburgh and South East Scotland City Region Deal.

The EHD programme was jointly funded by Scottish Government and programme partners as a collaboration between Government, Local Authorities, Registered Social Landlords, industry, academia and key agencies. It commenced in October 2020 and delivered against 5 workstreams outlined below: -

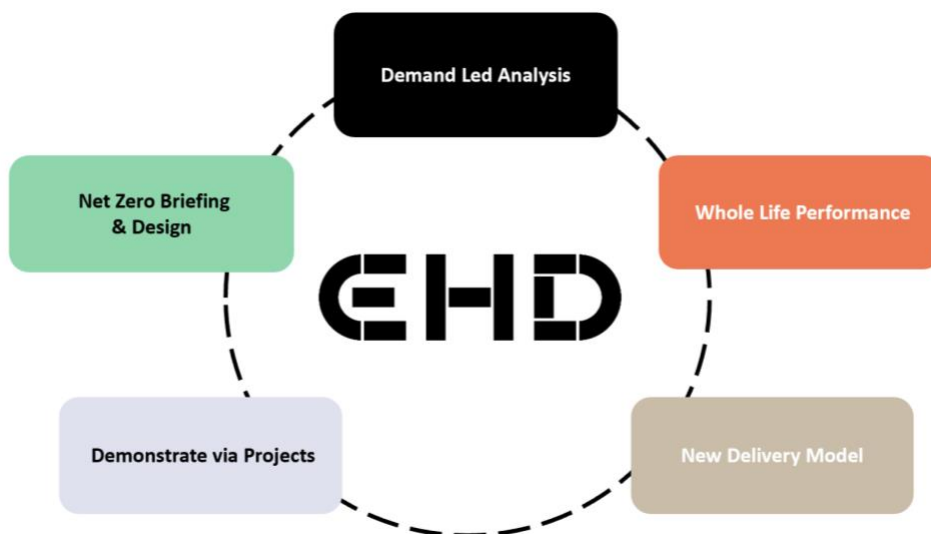


Figure 2: EHD Workstreams & Project Partners

1.2 New Delivery Model Workstream

The development of the new delivery model required a phased approach to ensure stakeholders and industry partners could collaboratively develop solutions that supported the needs and requirements of all parties. The workstream was divided into three phases: -

Phase 1 – Development & Testing Delivery Model Principles	Jan 21 – Jan 22
Phase 2 – Model Development & Future Model	Jan 22 – Oct 22
Phase 3 – Demonstration & Operational Testing	Jan 22 – Mar 23

The workstream also developed a suite of documents that include research, guidance and templates adopted within the pilot projects, which can be found on the EHD knowledge hub.

2.0 The Delivery Model for Affordable Homes

The delivery model workstream was led by Scottish Futures Trust and in partnership with EHD partners and strategic consultants, Arcadis and CAST. The workstream encompassed extensive consultations, stakeholder workshops and a review of both existing frameworks and assessment of best practice across the UK.

The design of the model identified four key enablers to support the scaling of off-site manufacturing to deliver more affordable higher performing homes: -

1. The need for assembled scale and certainty of pipeline.
2. The need for consensus to enable mass customisation of housing types, performance, and products.
3. The need for a flexible phased approach to reflect capability and maturity of supply & demand.
4. The need to demonstrate whole life benefits and value.

The new delivery model for affordable homes presents a roadmap for collaboration across three thematic areas of policy, product and alliance. Each area comprises three delivery components.

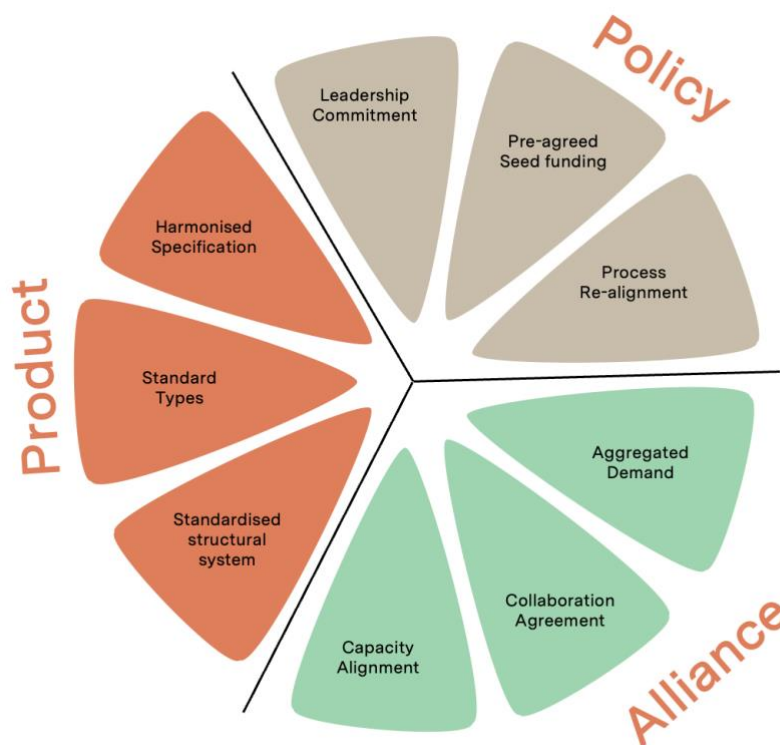


Figure 3: New Delivery Model - Thematic Areas & Delivery Components

2.1 Delivery Theme 1 – Policy

To enable the delivery model, there is a requirement for public leadership and commitment at national, regional, and local authority level. This leadership will enable resources, process alignment, and governance arrangements. Where appropriate, relevant policy should be aligned to drive standards towards higher performing net-zero affordable homes. The delivery model will also require enabling funding to procure new arrangements for delivery and collaboration.

Leadership Commitment

Commit collectively to a step change for higher performing homes through a regional design and performance standard.

Commit future housing pipeline in a co-ordinated approach to support investment and economies of scale. Support delivery of policy that will enable the need for higher performing (net-zero ready) homes.

Pre-Agreed Seed Funding

There is a requirement for seed funding to enable the new delivery model and for the enhanced performance requirements of front runner projects.

The funding will enable the procurement of new arrangements and provide resources to continue the collaboration and management of the regional pipeline and housing typologies.

Process Re-Alignment

Re-align and tailor the delivery and procurement processes, including project gateways, to enable best practice and facilitate the new delivery model. This will include an enhanced approach to whole life performance monitoring to support product refinement and development.

Figure 4: Identified barriers to MMC during the delivery process

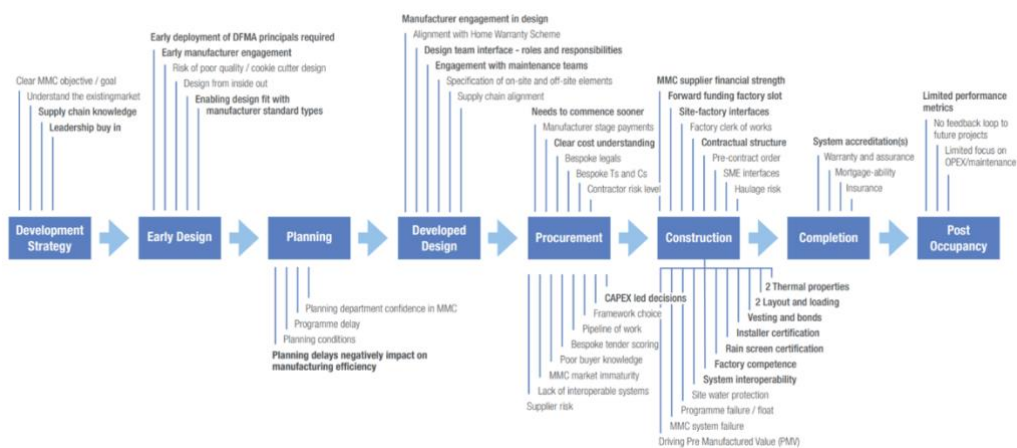


Figure 4: Identified barriers to MMC during the delivery process

2.2 Delivery Theme 2 – Product

There is a requirement to develop commitment and consensus on standardised housing typologies and performance standards. This approach will balance the requirement to enable mass customisation that is underpinned by harmonised specifications that are aligned to off-site manufacturing construction. This should evolve into a library of affordable housing products, that can be adopted at scale to drive economies and enable industry to invest and align their systems.

The standardised housing typologies and performance standards will ultimately deliver homes for people that improve tenant health and wellbeing. It will also deliver high quality homes that ensure sustainable and resilient places.

Harmonised Specification

There will be a need to agree regional design and performance standards with accompanied typologies that embed improvement beyond current baseline Building Standards compliance as a roadmap for net-zero carbon homes.

Standard Types

The delivery model will host a suite of standardised floorplans with design guidance on site assembly, materials, and costs to enable mass customisation, as part of a design library.

Standardised Structural Systems

Collaboration with industry and offsite manufacturers is required to agree standards for superstructures in terms of materials, component dimensions, and certified systems that will ensure the new product library is 'fit for the factory'.



Figure 5: EHD House Types Demonstrating Mass Customisation

2.3 Delivery Theme 3 – Alliance

The delivery model will require alliancing arrangements for public sector partners and industry to co-ordinate and collaboratively procure, deliver and monitor the performance of affordable homes.

Scaling of demand for affordable homes in line with the standardised housing typologies and design and performance standards is fundamental. The creation, management, and publication of future pipeline will support this approach and support industry to invest in infrastructure, skills, and capacity, which will ultimately support economic growth. Alliance agreements will also set out arrangements for collaborative procurement and working arrangements for the delivery model.

Aggregate Demand

The delivery model will require the creation of a regional housing pipeline of projects that are committed to common standards, typologies, and offsite manufacturing to maximise both scale and benefits realisation.

Collaboration Agreement

Collaborate as regional “buying vehicles” whereby Local Authorities, Registered Social Landlords, the Supply Chain, and potentially Private Developers, by entering into an Alliance Agreement to deliver new affordable homes using the new delivery model over an agreed timeframe.

Capacity Alignment

The delivery model will require ongoing engagement with industry to assess the capacity of manufacturers and assembly contractors, and align market capability and capacity with aggregated demand to support both competition and inclusive growth.



Figure 6: South East Region - Affordable Homes Pipeline Dashboard

3.0 Regional Alliance for Delivery

The ambition of the new delivery model was to provide a more collaborative approach that would deliver improved outcomes for both industry and organisations procuring new build affordable homes through offsite manufacturing. The initial phase encompassed extensive engagement and research into the existing needs of the supply chain, housing partners, and lessons learned from existing delivery routes.

Early engagement identified the main challenges faced by Local Authorities and Registered Social Landlords (RSLs). This highlighted capacity and skills, both presently and into the future, as a main barrier in the successful delivery of new affordable homes.

In addition, knowledge sharing and lessons from the adoption of offsite manufacturing could be improved.

Finally wider collaboration and facilitation of common design solutions would offer a more joined up approach to delivery and create the platform to achieve aligned scale to support offsite manufacturing and improve efficiencies.

"We stopped in-house construction teams, not enough through put to get good at it"

South East Local Authority Partner



Figure 7: Pilot 1 Granton Site D1 On Site

3.1 Creation of Interim Regional Delivery Partner

Building on the initial recommendations of the research and findings, Scottish Futures Trust in partnership with the City of Edinburgh Council identified resources and funding to establish an Interim Regional Delivery Partner in January 2022 to test the role and value of a new centre of expertise for the South East region.

The Interim Regional Delivery Partner provided a resource to bring together local authorities within the South East region to facilitate collaboration through: -

- **Pipeline** - Maintain and develop a regional housing pipeline for affordable homes.
- **Design & Performance Standard** – Maintain, refine and act as a steward of the EHD house typologies and performance standard.
- **Knowledge Hub** - Develop a regional knowledge hub for delivery of housing using offsite manufacturing.
- **Collaborative Procurement** – Support facilitation and testing of collaborative arrangements to support the new delivery model.

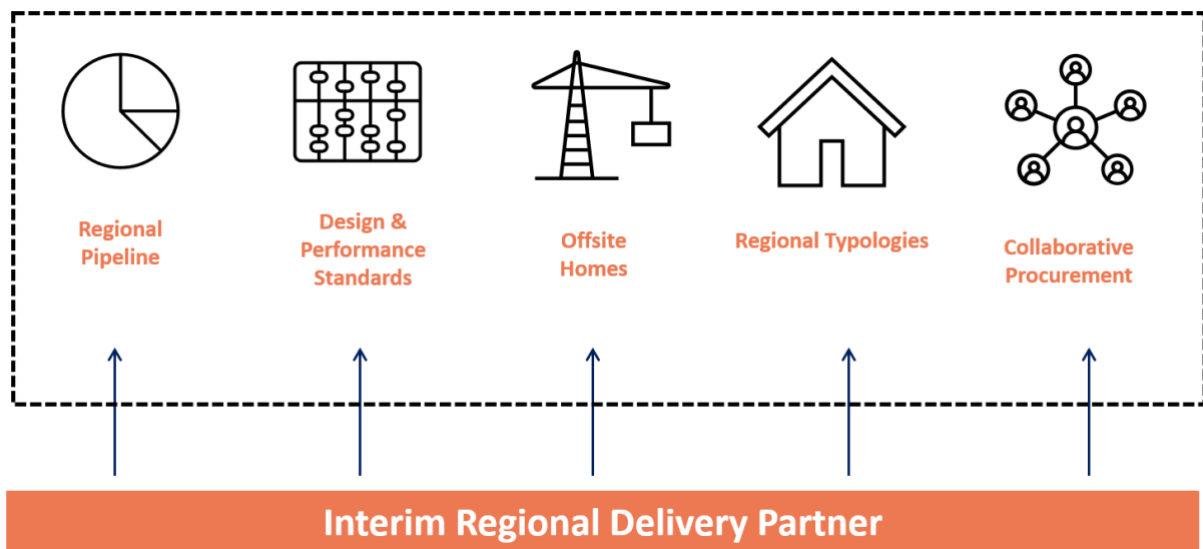


Figure 8: Interim Regional Delivery Partner Collaboration

The Interim Regional Delivery Partner also provided a forum and resource to establish the key resources developed from within the EHD programme (i.e. pipeline, house typologies, design & performance standard) as well as continue collaboration to develop the new delivery model through the demonstrator projects.

4.0 Demonstrating The Delivery Model

The EHD programme partners sought to operationalise and test emerging recommendations and aspects of the delivery model through the EHD Pilot Projects.

4.1 Pilot 2 - Greendykes Sites K&L

Industry Collaboration & System Alignment

Pilot 2 sought to test and develop the product principles of the new delivery model through the adoption of the regional typologies and the design & performance standard within a live project. The Interim Regional Delivery Partner led the facilitation of the Pilot in collaboration with both client and industry partners.

The City of Edinburgh Council brought forward the Greendykes project as the client to deliver 140 net zero ready homes with zero emissions heating and built using offsite manufacturing systems from two different manufacturers under one main contractor. The Pilot aspired to:

- Optimise initial house and flat typologies for offsite manufacturing to include panelised and modular systems.
- Develop a limited number of new house and flat typologies to be added to EHD catalogue.
- Test the EHD design and performance standard.
- Test mass customisation of the house and flat typologies.



Figure 9: Pilot 2 Greendykes KLM Masterplan

The Pilot also enabled early collaboration with industry partners to assess the new typologies for delivery and alignment to the industry partners existing systems.

4.2 Pilot 3 – Collaborative Procurement & Aggregating Demand

Pilot 3 sought to test the alliance arrangements of the delivery model through the aggregation of demand and preparatory work to develop aligned project bundles. The Interim Regional Delivery Partner led the facilitation of this Pilot in partnership with client partners from both Local Authorities and RSLs.

Utilising the pipeline management, the Pilot was initiated with a call for sites across the South East region that could be considered for collaborative delivery and procurement. Once a list of front runner sites were proposed, the Pilot then sought to appraise each site in terms of capacity, viability, risk profile and delivery requirements to mitigate risk to the collaborative procurement of the projects.

Pilot 3 collaboratively procured consultancy support to deliver a joint feasibility study that would:-

- Embed the regional typologies and understand capacity of each site.
- Understand and where possible de-risk the sites through surveys, site assessments and pre application discussions.
- Develop outline budget and programmes for delivery.

The collaborative procurement of feasibility studies across 12 sites provided cost and time efficiencies for each of the client partners and provided an early example of the benefits of collaborative procurement, albeit within the context of consultancy services. In addition, the project engaged with the contractor supply chain to look at buildability to improve the viability of the sites.

Summary

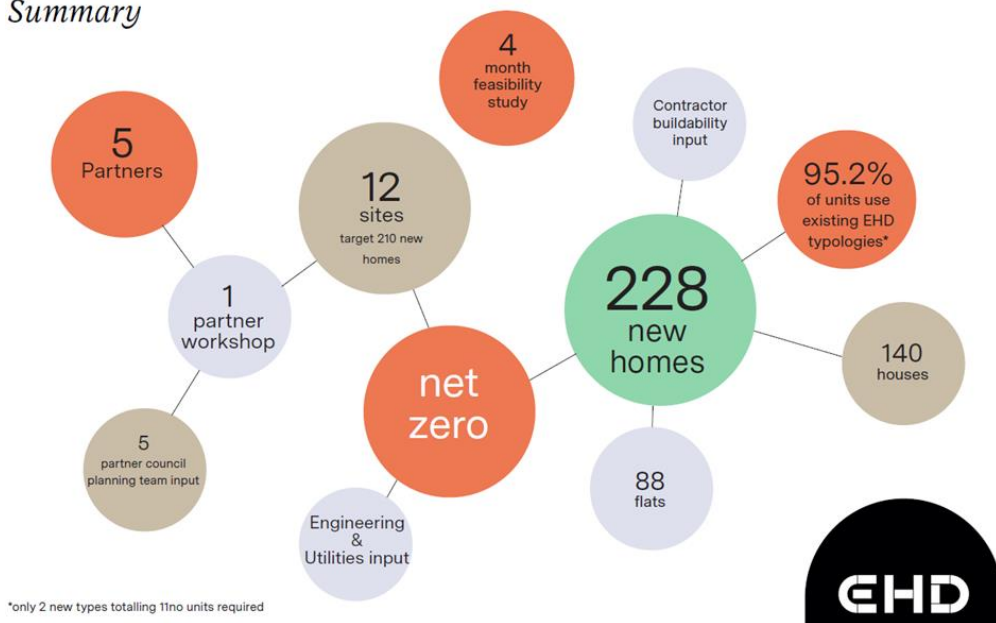


Figure 10: Pilot 3 Summary

In summary, the Pilot has tested and delivered a new approach to the aggregation of pipeline, created scale, aligned specifications, and reduced risks to support onward delivery of the project bundles.

Beyond the feasibility stage of the Pilot 3 project, procurement options were explored in terms of an initial approach to site "bundling" and how existing framework routes could be utilised.

Several frameworks were assessed to facilitate the principles of the new delivery model to enable bundling of projects, alignment of specifications and satisfying commercial and contractual obligations. Of the 13 assessed, all could accommodate elements of the procurement approach but could not deliver the end-to-end process of the new delivery model.

A procurement strategy was also developed for Pilot 3 that embedded the principles of the delivery model, as shown below and in Annexe 1.

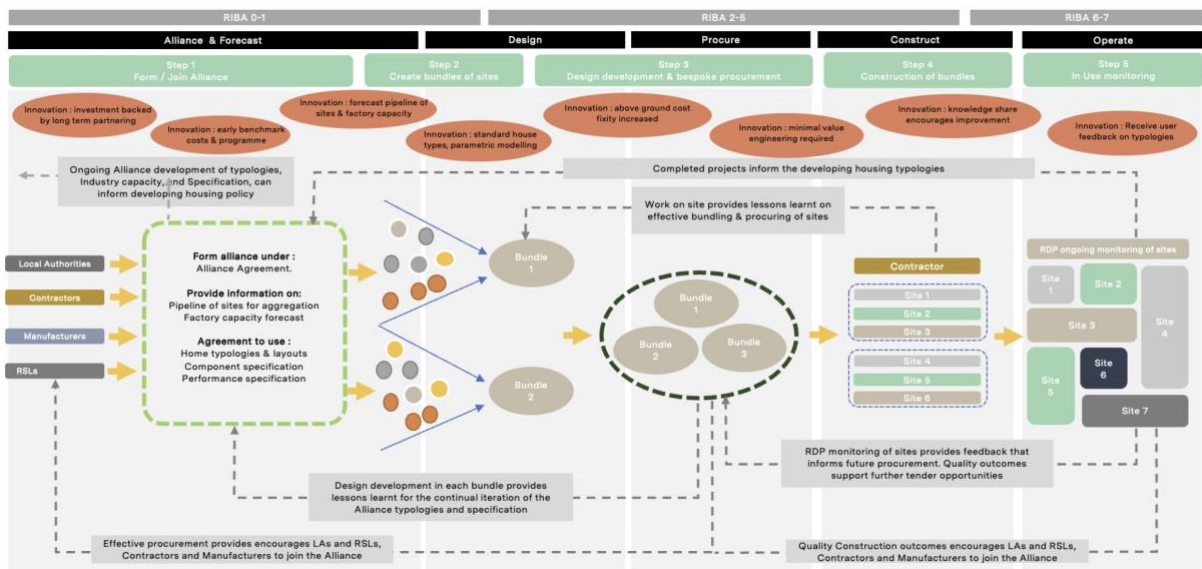


Figure 11: Procurement Strategy

5.0 Benefits of The Delivery Model

The delivery model has been designed to address identified inefficiencies and challenges in how we currently deliver affordable homes. The interventions listed below, if delivered cumulatively within the delivery model, will have a transformational impact in how we deliver affordable homes:-

- **Transparency of Pipeline** - The ability to aggregate demand and publish future pipeline, will support planning, investment in jobs and co-ordination of demand.
- **Economies of Scale**- The model seeks to create aligned scale in project 'bundles' and benefit from the associated economies of scale and cost savings this will bring.
- **De-Risk & Enhance housing Product** - Develop and work collaboratively with industry to refine an affordable housing product and typologies that will mitigate risk to delivery and improve performance of the homes, which are net-zero ready.
- **Create the Environment for MMC** - Through aligned demand and harmonised design standards for offsite manufacturing, create conditions for the MMC Industry to compete and differentiate through improved delivery and commercial terms.
- **Collaborative Delivery & Regional Alliance** - Through alliance arrangements, support knowledge sharing, aligned scale, address skills and resource challenges, and create certainty in demand for affordable homes to support industry investment in product delivery.

The EHD programme has offered a vital platform to test and develop key components, and work to date has enabled consultants to assess the incremental benefits of the interventions listed above.

The interventions and the cumulative benefits will support the outcomes identified within the delivery model to deliver homes for people, place, sustainability and growth.

The total benefits of the delivery model will only be realised when it is fully implemented and sufficient scale is established. Assessment of the cost benefits attributed to the delivery model suggest that savings in the region of 2-12% could be achieved.

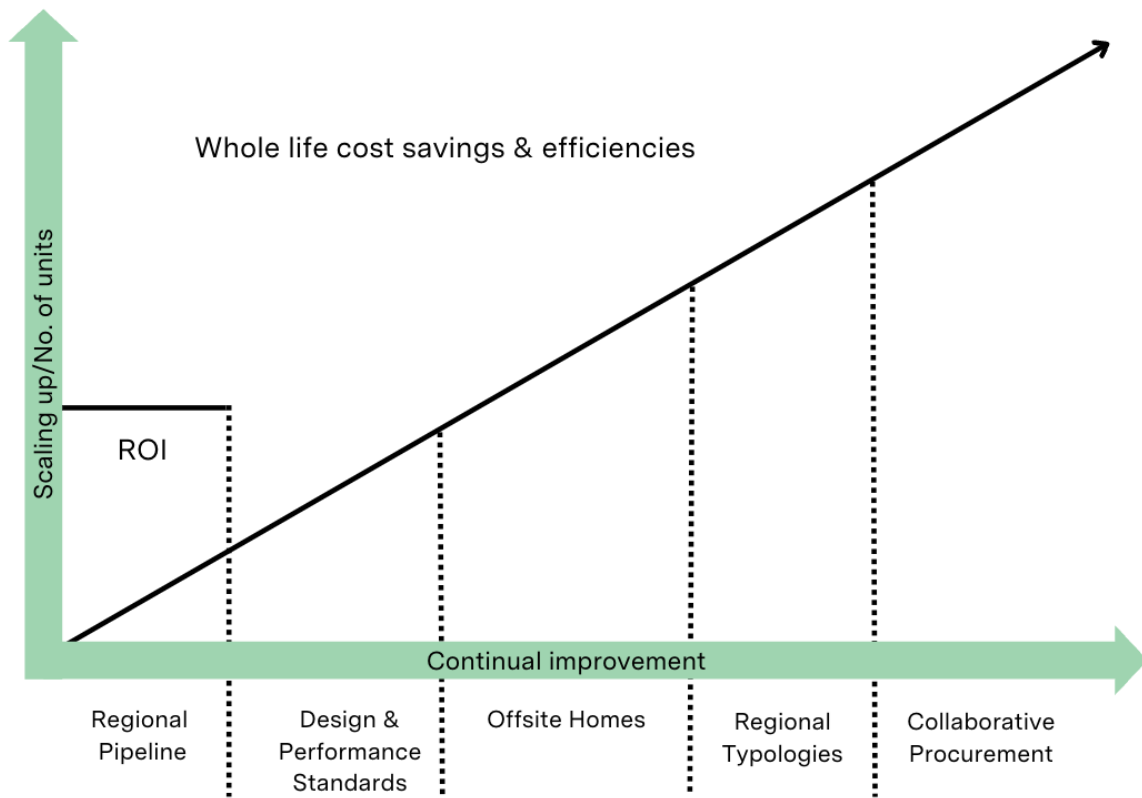


Figure 12: Regional Benefits Realisation

With over 20,000 new homes proposed across the South East Region over the next 5 years (2023/24 – 2027/28) the opportunity exists to implement the full delivery model and realise the benefits and outcomes it offers.

6.0 Next Steps

6.1 Establishment of a South East Regional Delivery Alliance

Building on the learning from the Pilots and role of the Interim Regional Delivery Partner, in January 2023, a business case was developed for a new South East Regional Delivery Alliance. This would enable a transition from the Interim Regional Delivery Partner to a sustainable centre of expertise that could continue to deliver on the ambition of the EHD programme and principles of the new delivery model.

Developed in partnership with six local authorities and the Edinburgh & South East Scotland City Region, the partners have committed resources over the next two years to establish and manage the South East Regional Delivery Alliance, to take on the outputs and resources created by the EHD programme.

The new South East Regional Delivery Alliance was formed in May 2023 and will seek to embed the principles of the new delivery model through the pipeline of future affordable homes in the coming years.

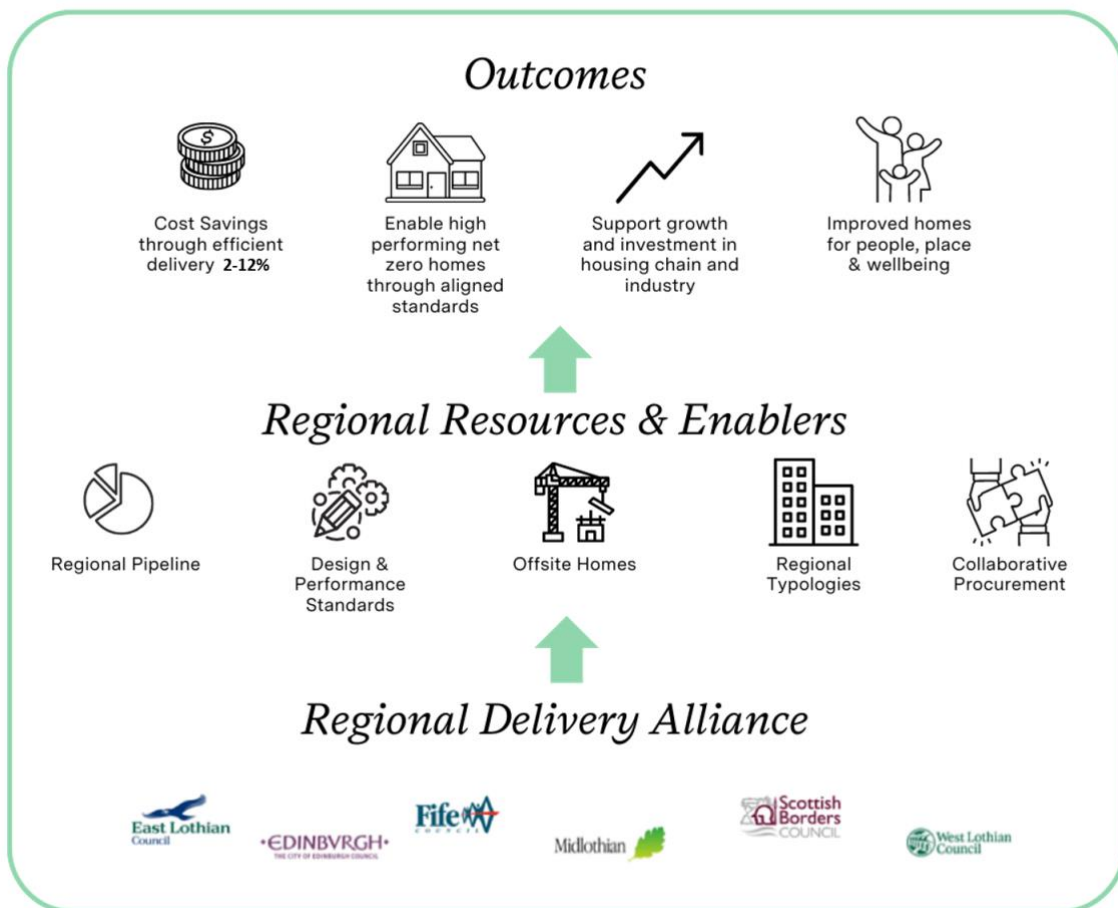


Figure 13: Regional Delivery Alliance

6.2 Phased Approach to Implementation

The development of the new delivery model for affordable homes provides a roadmap for implementation. The EHD programme has enabled the testing and development of key aspects including: -

- Development of the regional housing pipeline tool.
- Agreement and endorsement of regional house & flat typologies and design & performance standards.
- Testing and creation of project level documentation on pilot projects.
- Creation of the new South East Regional Delivery Alliance.

However, to achieve the ambition and benefits of the new delivery model, further work is required to implement and integrate the complete delivery model. The research developed a phased implementation strategy for the delivery model.

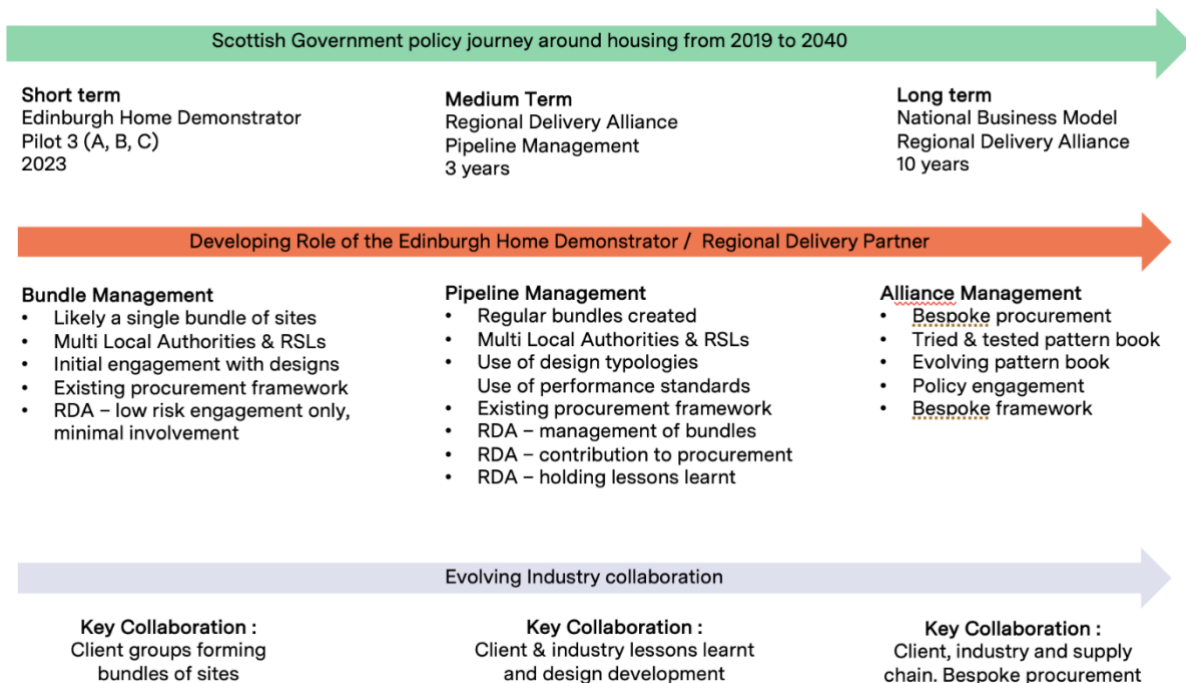
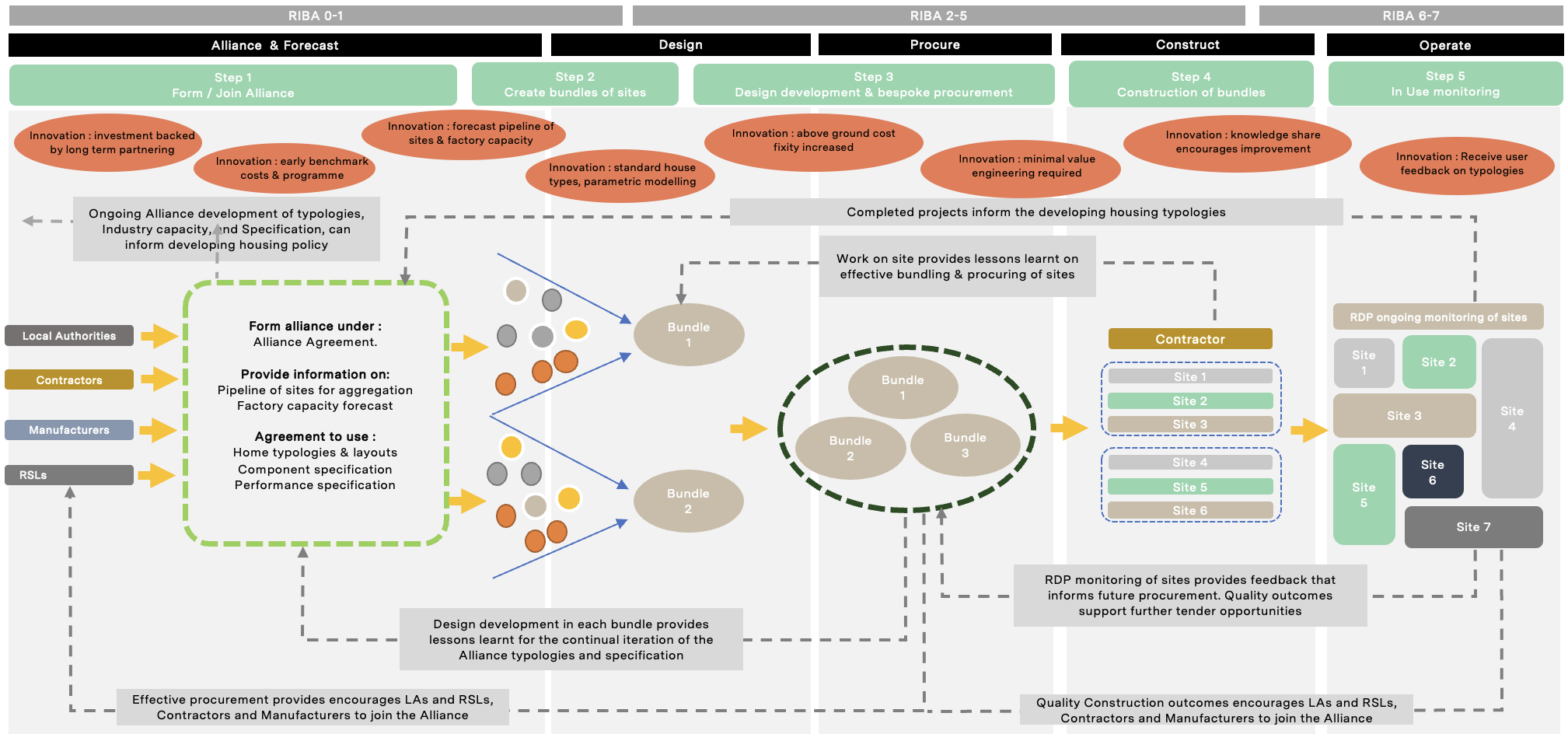


Figure 13: New Delivery Model Roadmap

Ultimately, the delivery model will support the Scottish Government’s ambitions for Housing to 2040 to improve housing delivery, meet climate change targets and create homes that best meet the needs of people and places.

Should you wish to learn more and are keen to engage with the South East Regional Delivery Alliance or employ the new delivery model on forthcoming projects, you are invited to [contact us](#).

Annex 1



Acknowledgement & thanks to the partners involved in supporting this work:-

Project partners

Built
Environment
—
Smarter
Transformation

◆ EDINBURGH ◆
THE CITY OF EDINBURGH COUNCIL


Edinburgh Napier
UNIVERSITY


OFFSITE SOLUTIONS
SCOTLAND

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SCOTTISH
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 THE UNIVERSITY
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Local Authority partners


East Lothian
Council

◆ EDINBURGH ◆
THE CITY OF EDINBURGH COUNCIL

Midlothian 

 West Lothian
Council

 Scottish
Borders
COUNCIL

Fife 
COUNCIL

Strategic Consultants

 ARCADIS

Cast 



EHD

Net zero homes built *for people to thrive.*



Built
Environment
—
Smarter
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