

Envision - a Digital Blueprint for a Smart Home of the Future

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Digital Health & Care
Innovation Centre



BE-ST



HM Government



Scotland's national innovation centre for digital health and care

Strategic vision	Research and Innovation (R&I) in digital health and care will help the people of Scotland live longer, healthier lives, create sustainable services and future skills which will allow the economy to flourish to meet global needs
National Strategic priorities	Health & Care Transformation Digital & Data Connected Ecosystem Skills Pipeline Economic Growth Net Zero International Engagement
Strategic Success Factors	▲ SCALE ▲ RESEARCH ▲ SKILLS ▲ GROWTH ▲ DATA USE ▲ INTERNATIONAL
Strategic objectives (our goals)	• Support readiness for adoption at scale through an innovation pipeline • Influence the reimagining of health and social care • Gather insights and gain traction through collaborative environments • Develop technical assets and future skills

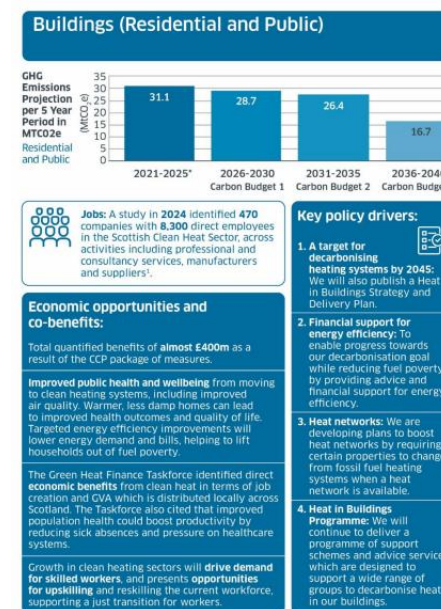
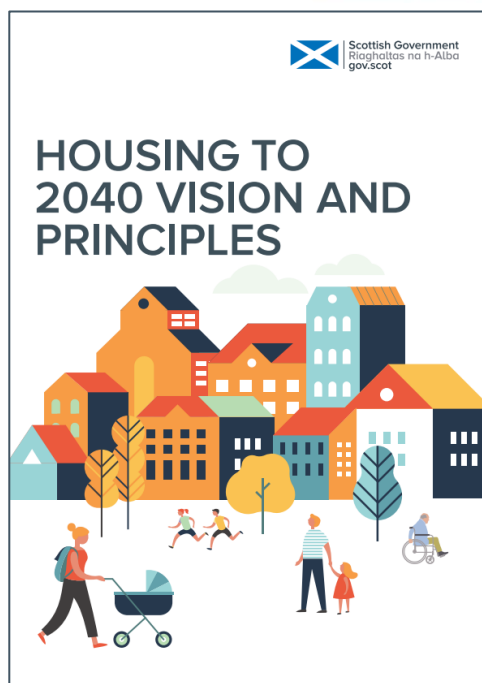
Formerly the Digital Health & Care Institute (DHI), established 2013

A world leading collaboration between UoS and GSA

Funded by the Scottish Government & the Scottish Funding Council

We work with Civic organisations, Academic institutions, Citizens and Commercial industry (SMEs through to Enterprise level organisations) and we codesign with citizens.

Strategic Alignment



Person-centred People led

'I have access to the information, tools and services I need to help maintain and improve my health and wellbeing.'

Care will be more 'people-led', with greater emphasis on choice and control

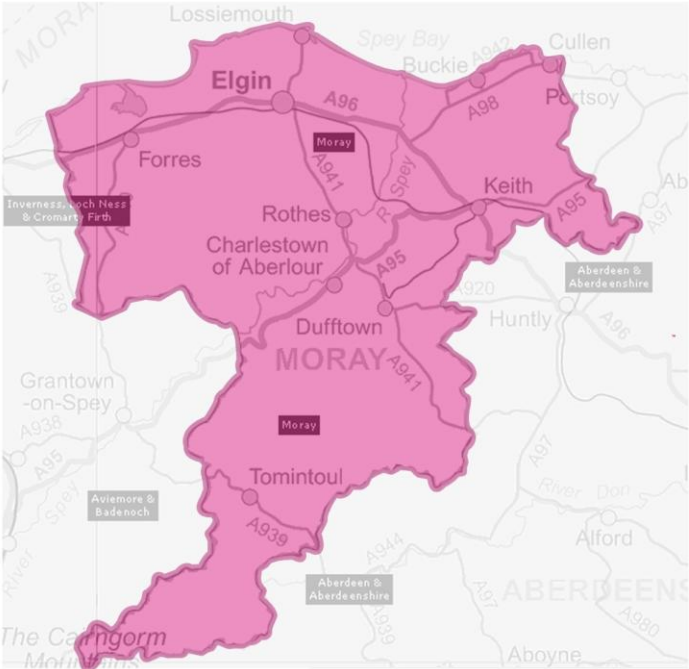
... and that digital technology and data will be used appropriately and innovatively, to:

- help plan and improve health and care services*
- enable research and economic development, and*
- ultimately improve outcomes for everyone.'*
- Co-design embedded...*
- Improve digital access to information about their own health and care and be able to record information that matters to them!*

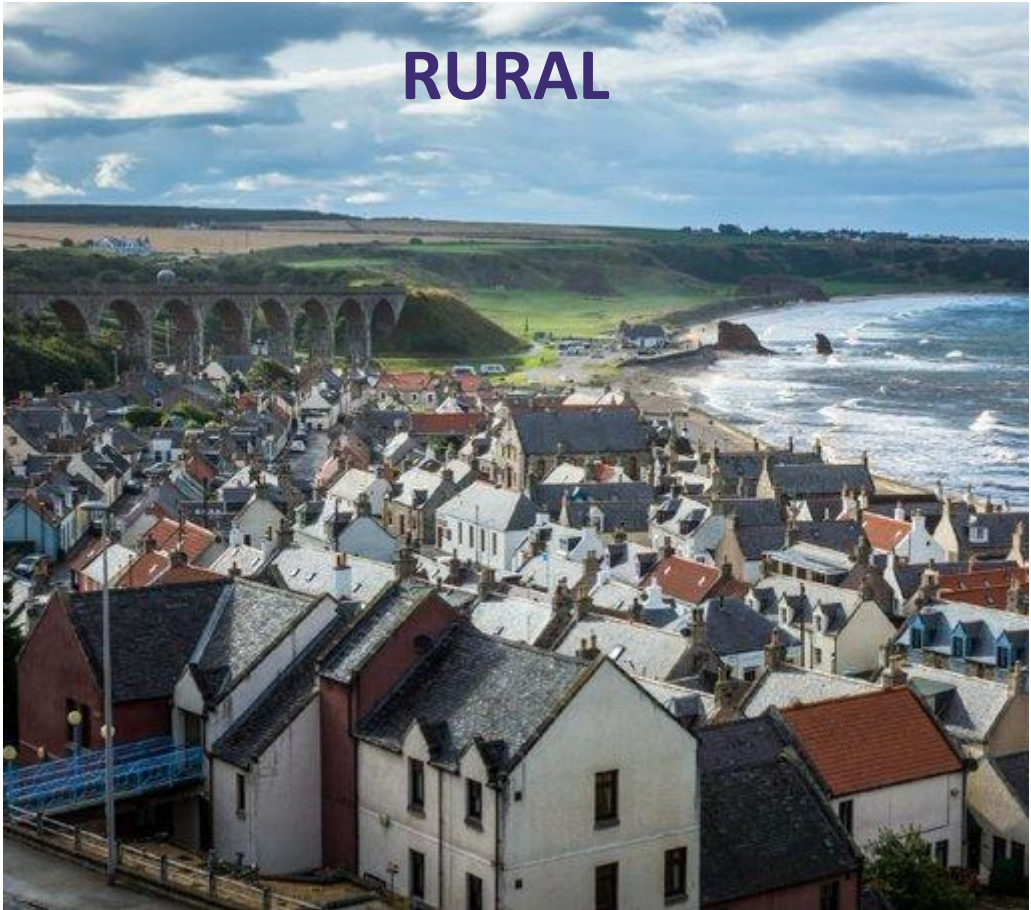
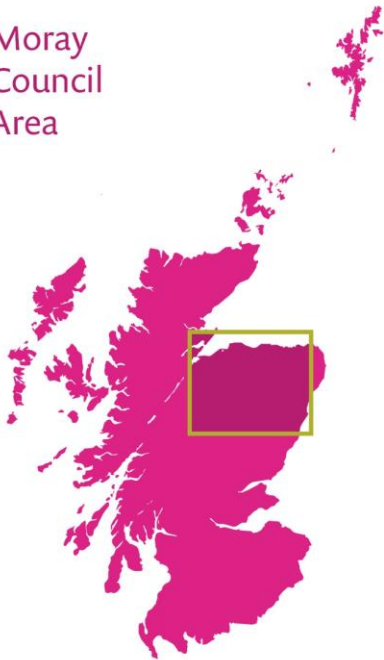
NOTE - DHI is the only Scottish Innovation Centre that has committed SG funding to complement the SFC investment

Ref: Digital Health Social Care Strategy 2017-22 and the H&C Service Renewal Framework 2025

Moray Growth Deal : Rural Centre of Excellence - North of Scotland



Moray
Council
Area



Scottish Government
Riaghaltas na h-Alba
gov.scot



UK
Government



Innovation from Tradition



Living Lab - Smart Housing and Communities

Mapping of examples of smart housing across UK to inform our approach and commission

Collaboration with BE-ST, Moray Council Housing Mix - ongoing engagement with stakeholders

Commission awarded to Architype and Evolve Capex

Established an Expert Advisory Group - housing providers, health and care, architecture and design, Scottish housing policy, planning and building standards

Launch of Blueprint 2 June 2026



BE-ST



Setting the scene

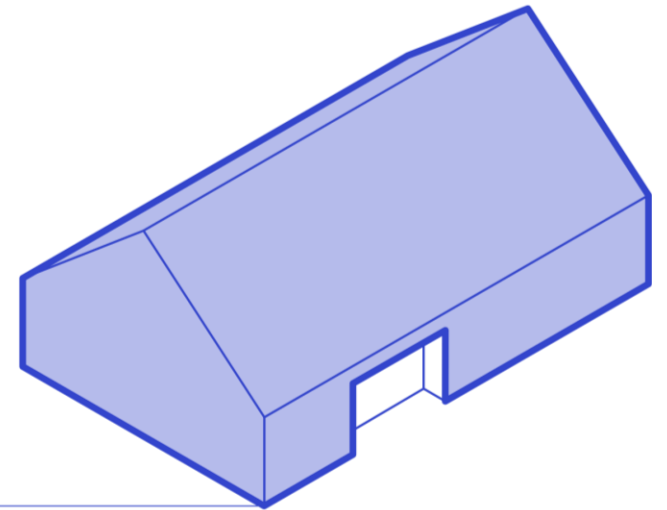


What is the blueprint?

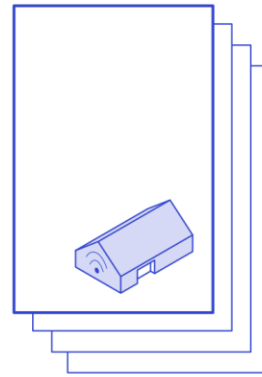
- A 'scaffold' or framework for adoption
- A guide based around 3 horizons
- A strategic model

(And what it's not):

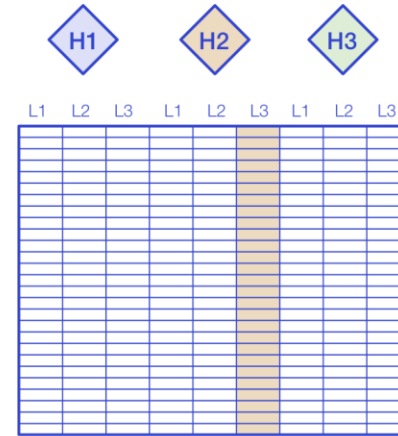
- A fixed specification
- A fully developed architectural proposal



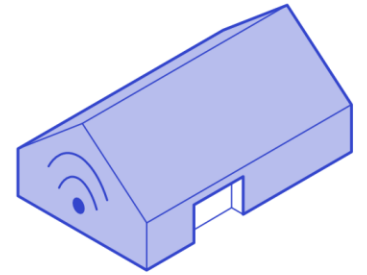
One blueprint, three tools



**1.
Guide**



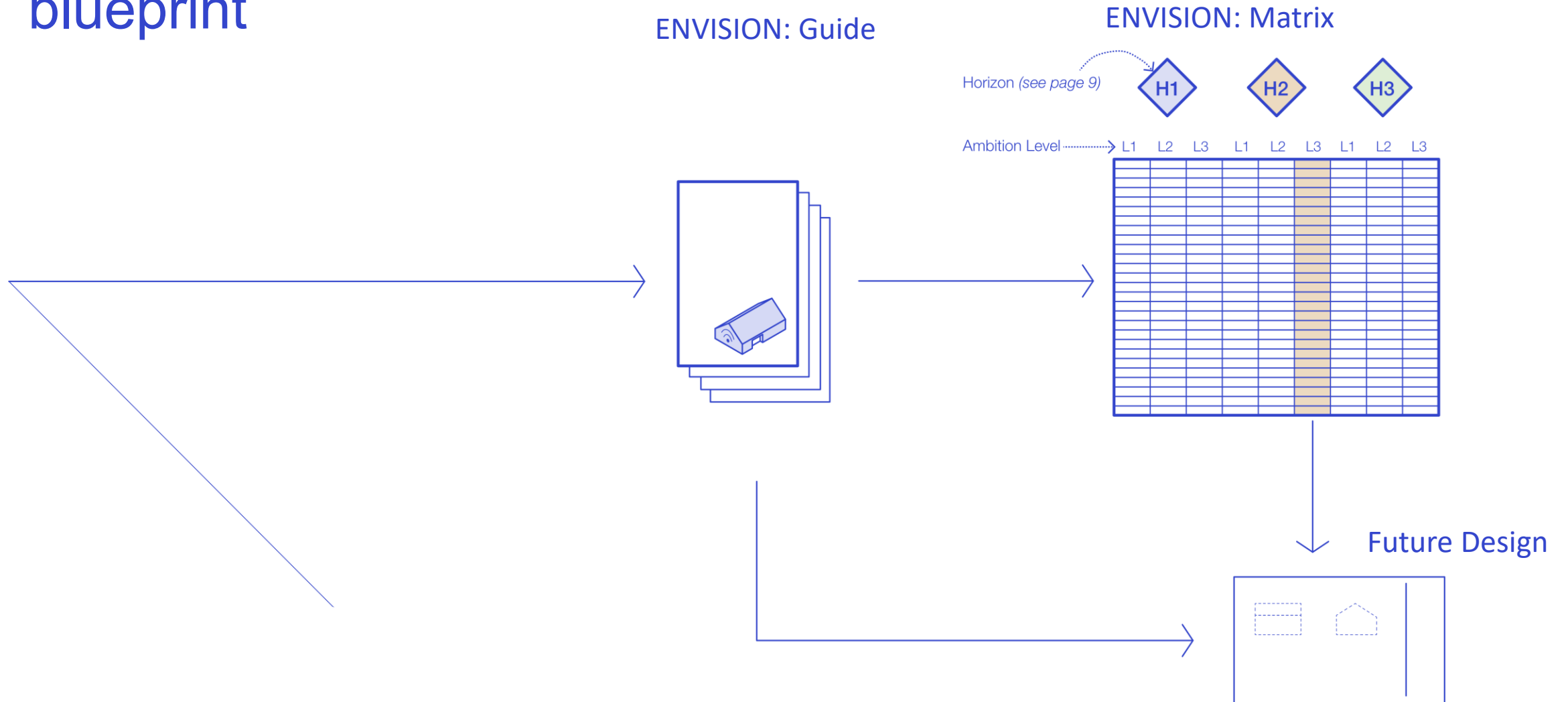
**2.
Matrix**



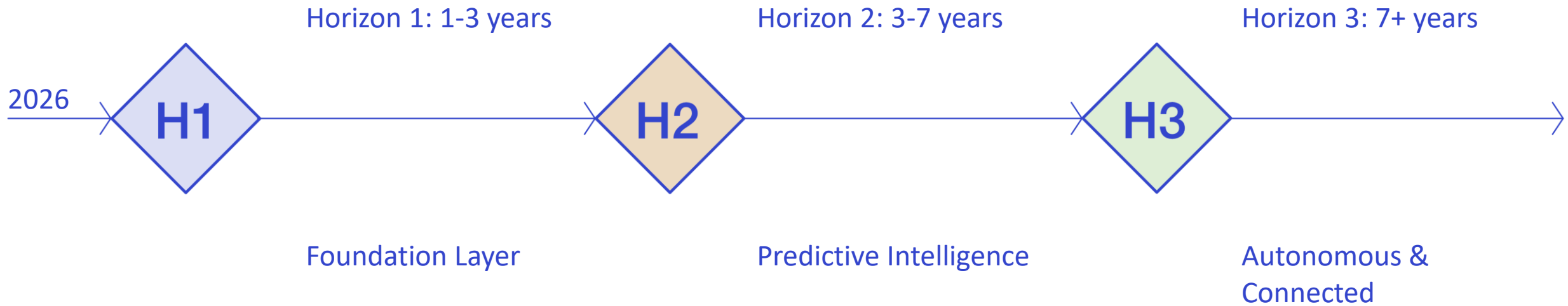
**3.
Model**

+ the Affordability Annex

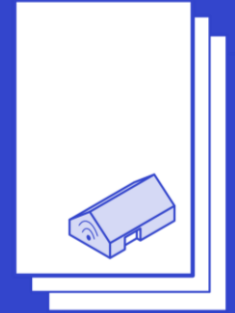
How to use the blueprint



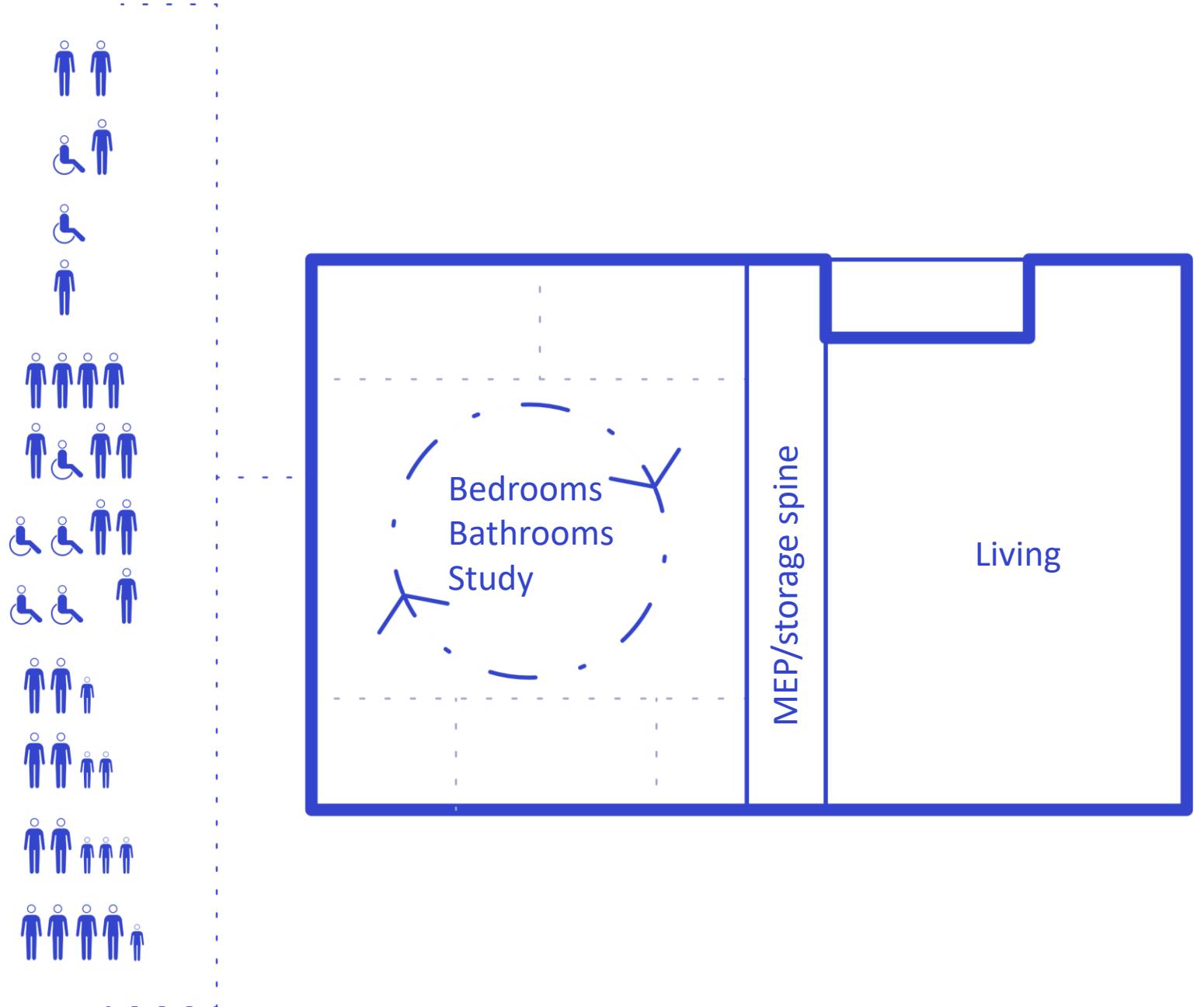
The horizons



Architecture

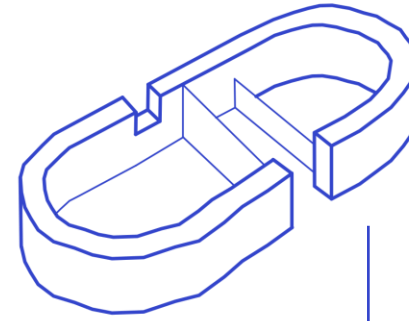


Concept

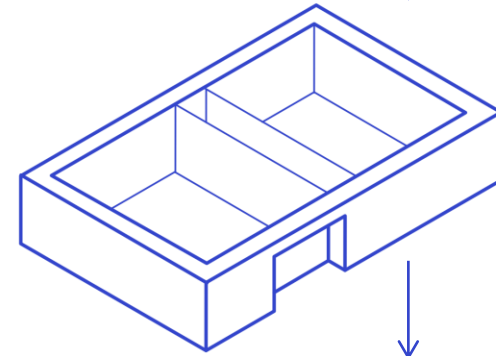


Concept

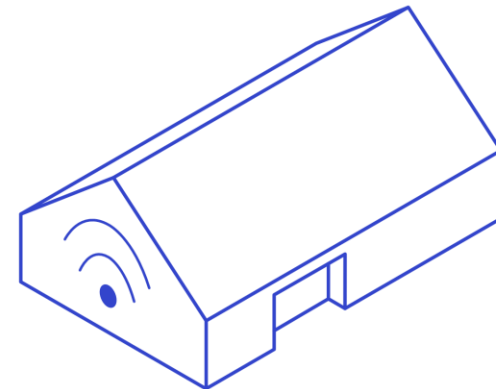
Scottish Black House
concept



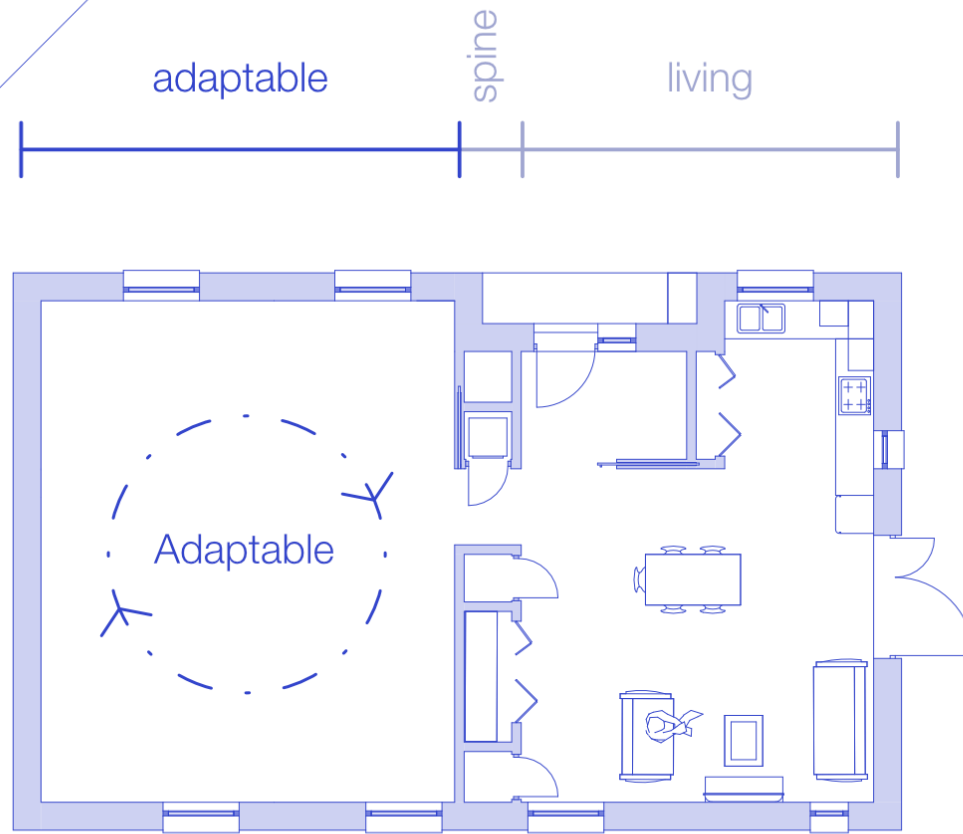
Envision concept –
living/spine/adaptable



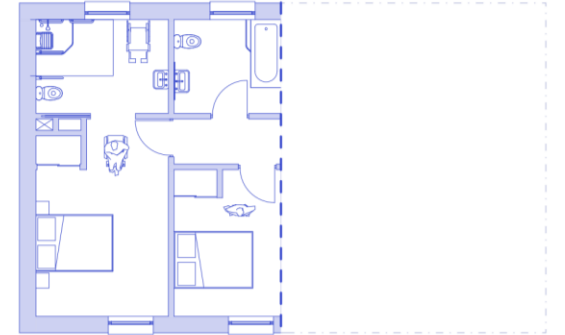
Envision traditional
massing & evolution



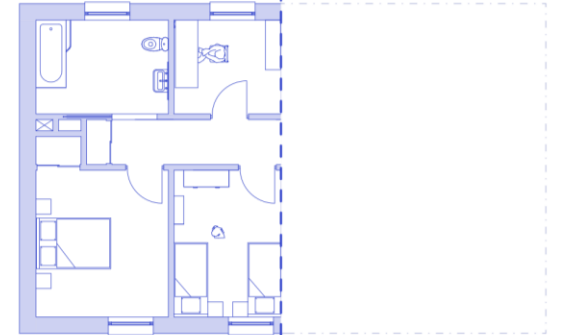
Flexibility



1 Accessible Bedroom
& En-suite
+ Twin Room



2 Bedroom
+ Office
+ Family Bathroom



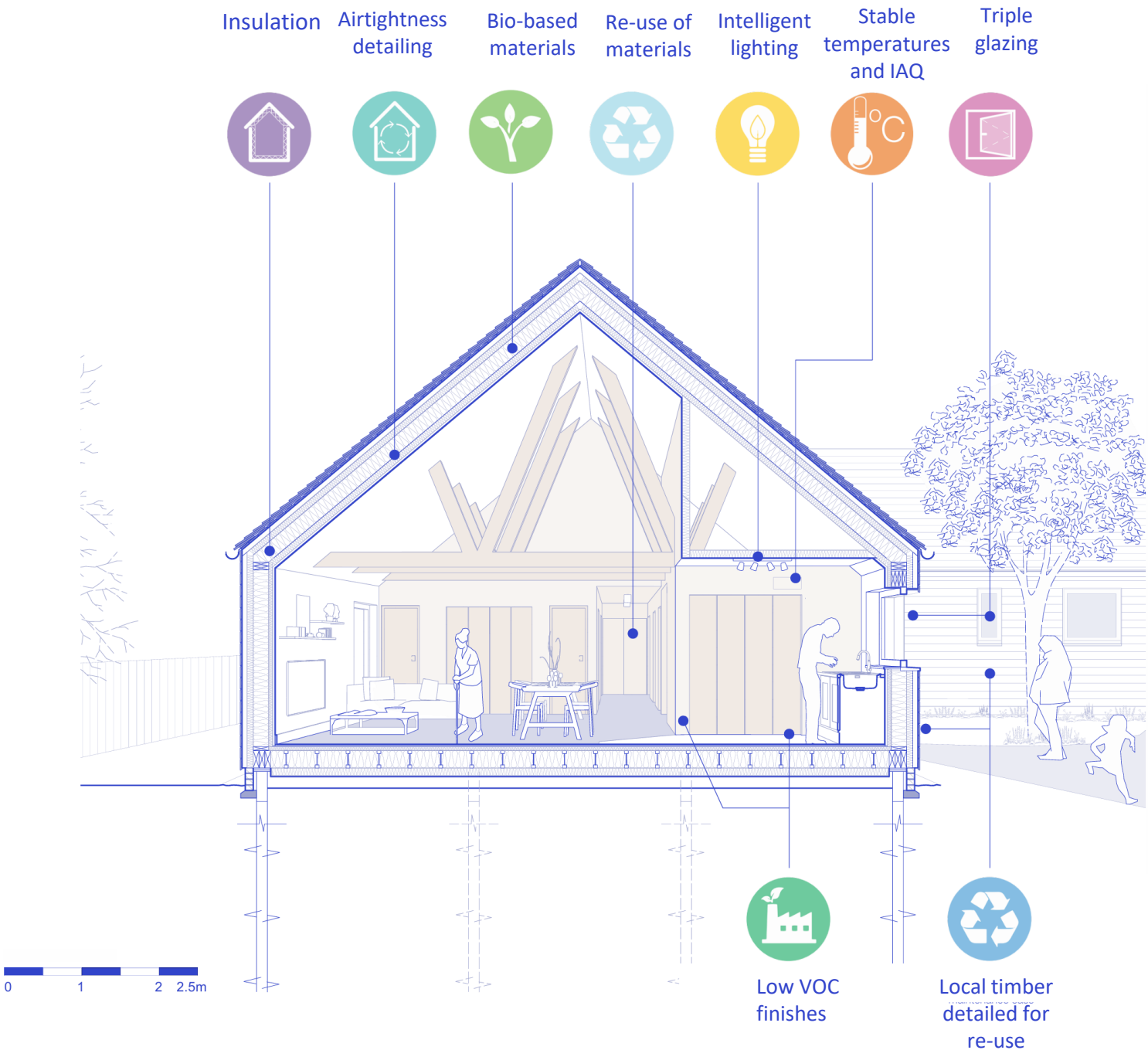
3 Bedroom
+ Family Bathroom



Features and targets

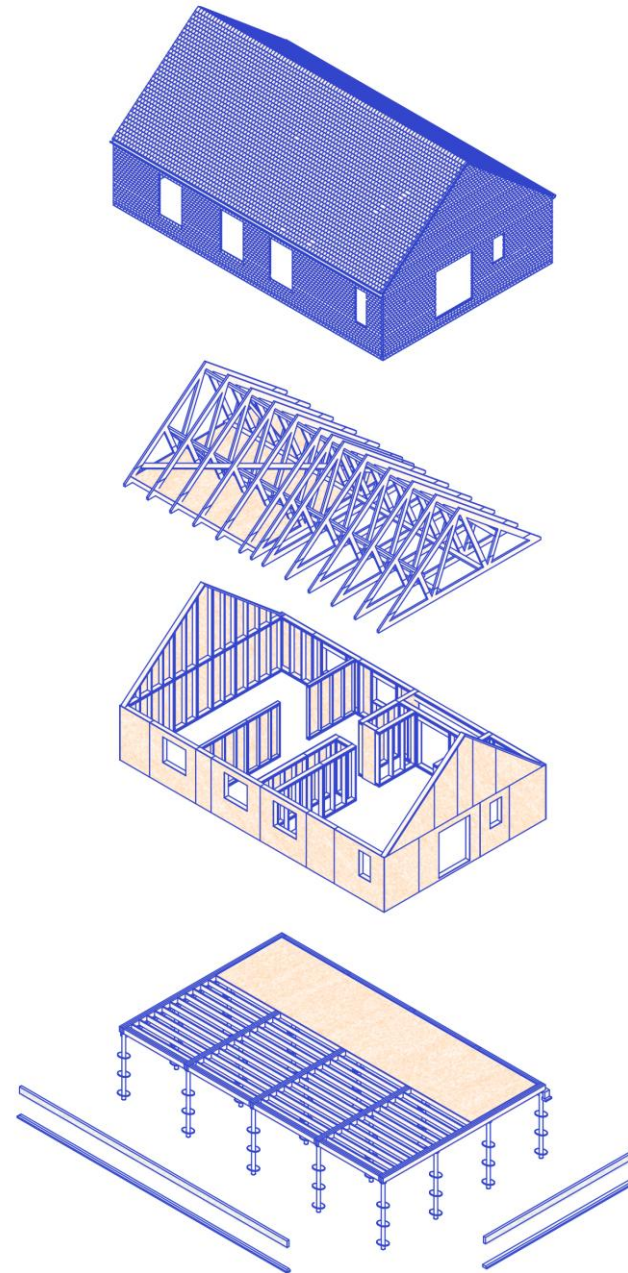


Key Operational Ambitions		
Heating Demand	or	Heating Load
15 kWh/m ² a		10 W/m ²
Cooling Demand	or	Cooling Load
15 kWh/m ² a		10 W/m ²
Airtightness		Frequency of Overheating
0.6 ACH		10% ideally < 2%
Renewable Energy Generation	or	Renewable Primary Energy
> 60 kWh/m ² (footprint)a		< 45 kWh/m ² a
Upfront Carbon Target (A1 - A5)		260 kgCO ₂ e/m ² GIA



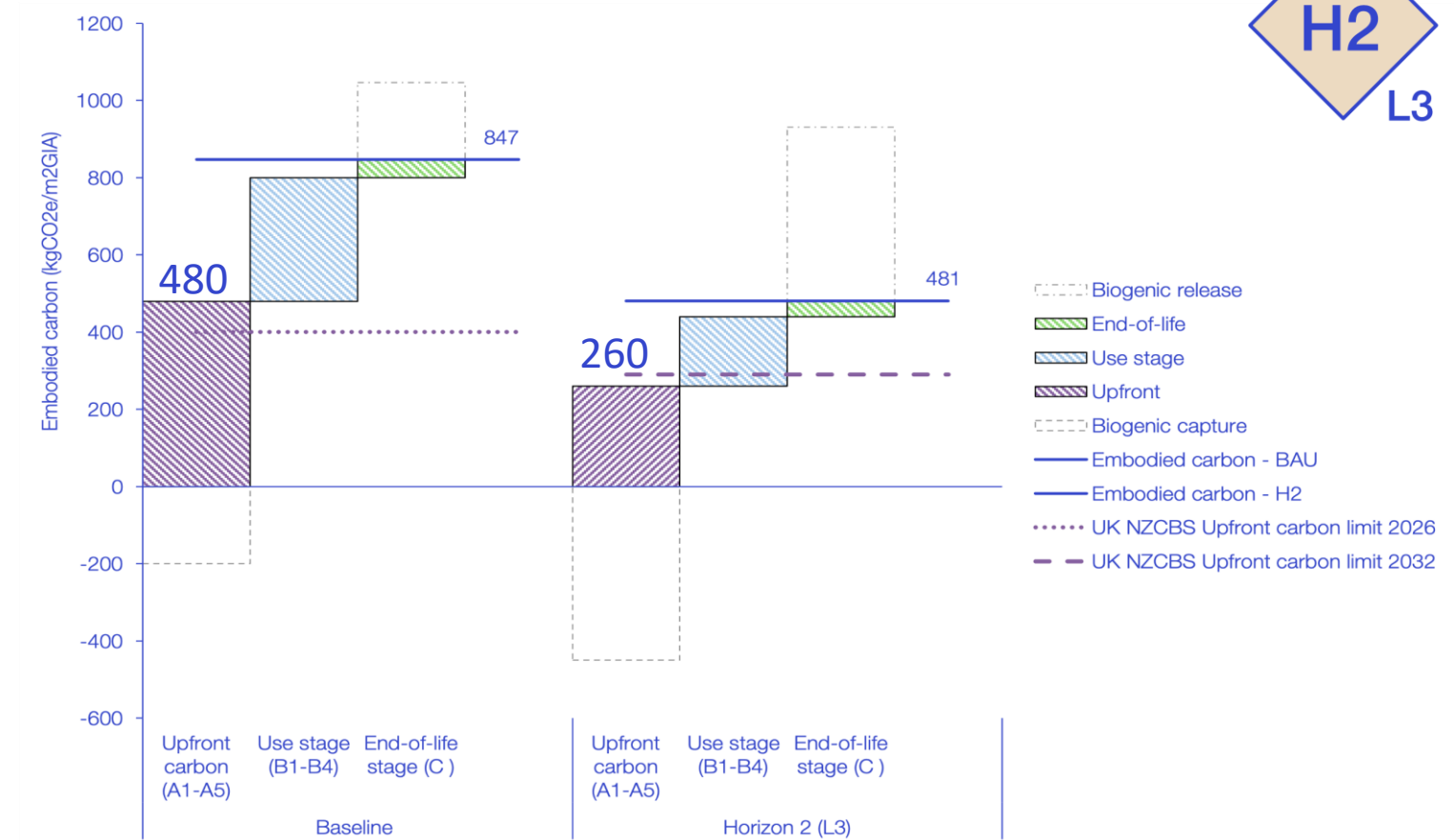
Construction

- Concrete free sub-structure
- Highly insulated timber structure
- Bio-based insulation
- Scottish timber cladding



Embodied carbon

- H2L3 Design
- Targets from UKNZCBS v1 2026
- Compared with a 2026 baseline house





Retrofit – construction considerations

- Each retrofit project is unique!
- Budget
- Potential listing or heritage status
- Construction type
- Occupation/decant strategies

Visualisations



Visualisations



Visualisations



Visualisations



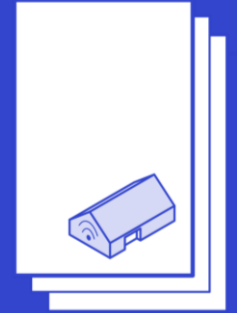
Visualisations



Visualisations



Technology



Technology starts with the outcome.



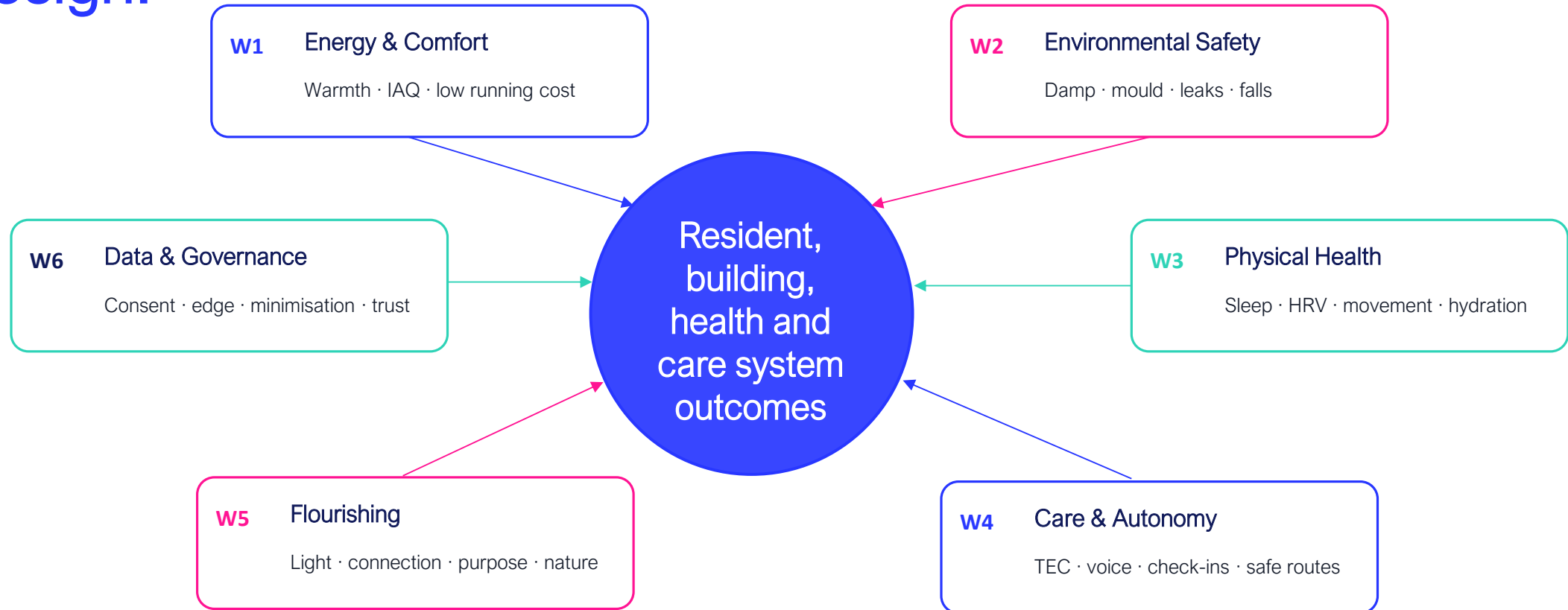
The technology blueprint works backwards from a human, housing or energy outcome, then tests what is technically viable, affordable and governable.

A practical workflow for moving from need to specification without technology for technology's sake

- 1 Define the driver**
Damp, loneliness, overheating, fuel poverty, autonomy, maintenance or carbon.
- 2 Choose the wellbeing stack**
Energy, environmental health, physical health, care, flourishing or data governance.
- 3 Determine immediacy**
H1 deployable now. H2 predictive integration. H3 regenerative intelligence.
- 4 Check connectivity resilience**
Tier 1 must work locally. Higher tiers add mesh, edge and civic-scale intelligence.
- 5 Review technology stack**
Review device list, ambition level, interoperability standard, build cost profile, confirm Home Operating System (HOS) requirements
- 6 Control the data**
Who sees what, when, why, and with whose consent.

Six stacks. One living system. Intersectional by design.

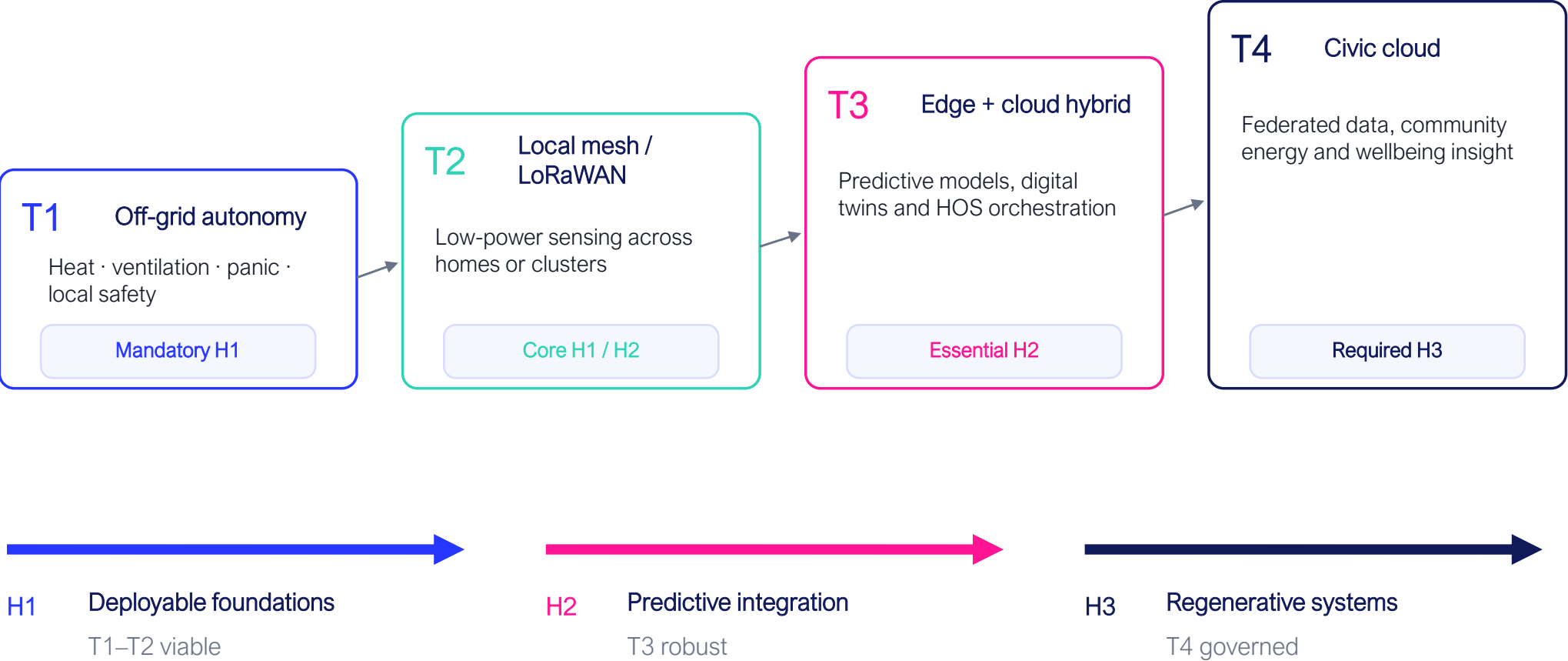
The home becomes a coherent prevention platform, not six unrelated categories of kit.



The core innovation: stop treating housing, care, energy and mental wellbeing as separate boxes. The home is where they meet.

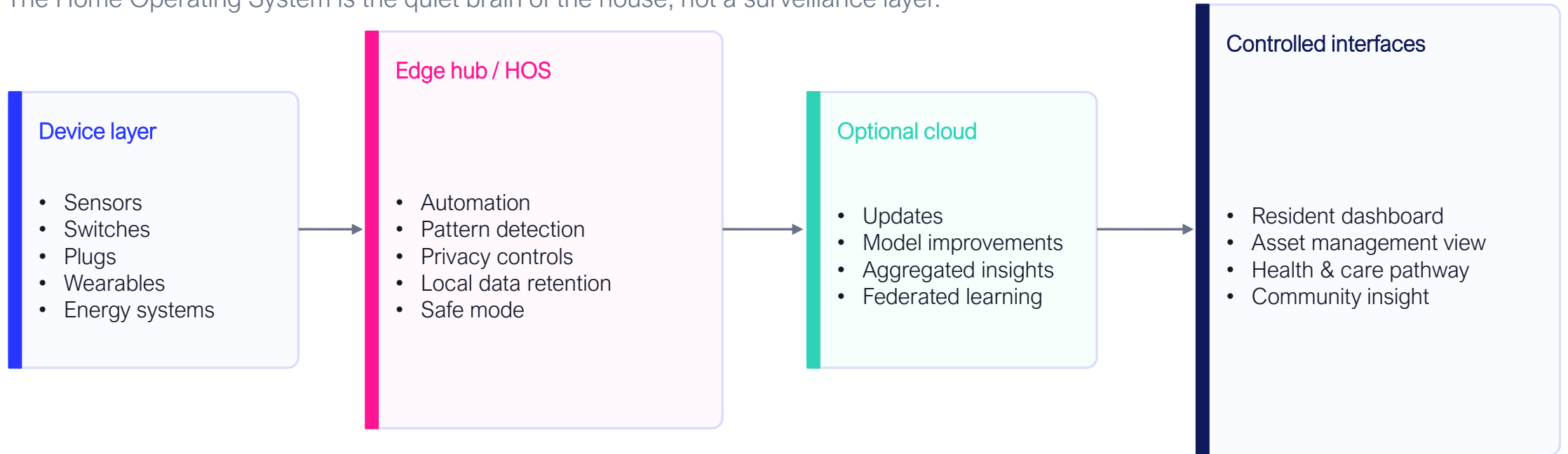
Design for rural failure first.

A rural smart home cannot depend on perfect broadband. Resilience is the architecture of trust.



Local-first. Cloud-optional.

The Home Operating System is the quiet brain of the house, not a surveillance layer.



Raw behavioural data stays local by default.

Resident control is not a feature. It is the permission structure for the entire system.

The deployable package is modest.

H1L2 creates a credible baseline: targeted digital infrastructure, not speculative decoration.

H1L2 digital capex

£4,350

per dwelling

c. 1.4% of the policy baseline

Essential now

- IAQ & damp prevention
- Leak detection
- Safety+
- Movement sensors
- Local edge hub

Targeted / conditional

- Basic TEC
- Smart controls
- Sleep/vital sensing
- Circadian lighting
- Wearables

Fund differently

- Predictive analytics
- Connectivity upgrades
- High-risk care features
- Health-facing pathways

Building Standards describe a minimum viable home.
Envision defines a minimum healthy home.

Housing

fabric + resilient
infrastructure

Health & care

prevention + supported
independence

Energy

visibility + lower demand

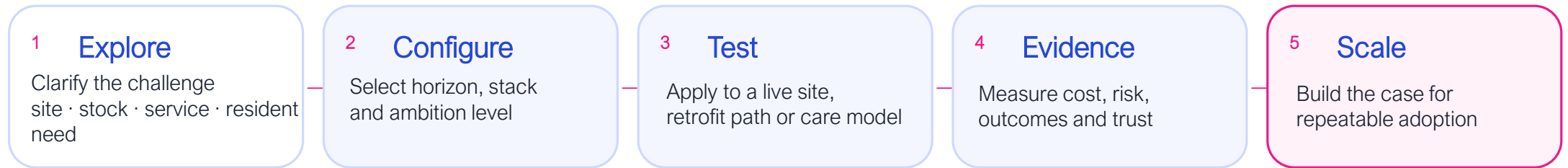
Landlord

fewer failures + better
asset data

How to get involved

From interest to evidence.

The Envision pathway converts sector curiosity into scoped pilots, costed choices and evidence for scale.



Choose the right route in.

Three levels allow interested organisations to move at the pace their governance, funding and appetite allow.

1 Blueprint Readiness Review

For organisations asking:
“Could this apply to us?”

Output: opportunity note
Use: site, stock, care or retrofit review

2 Early Adopter Design Sprint

For organisations asking:
“What would a pilot look like?”

Output: pilot brief
Use: workshop, stack selection, affordability logic

3 Pathfinder Support

For organisations asking:
“How do we deploy and prove it?”

Output: demonstrator / evidence model
Use: funded pilot, programme design, scale case

Different sectors. Same discipline: outcomes first, technology second, evidence always.

Scan below to access the report:



Impactful innovation starts here

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