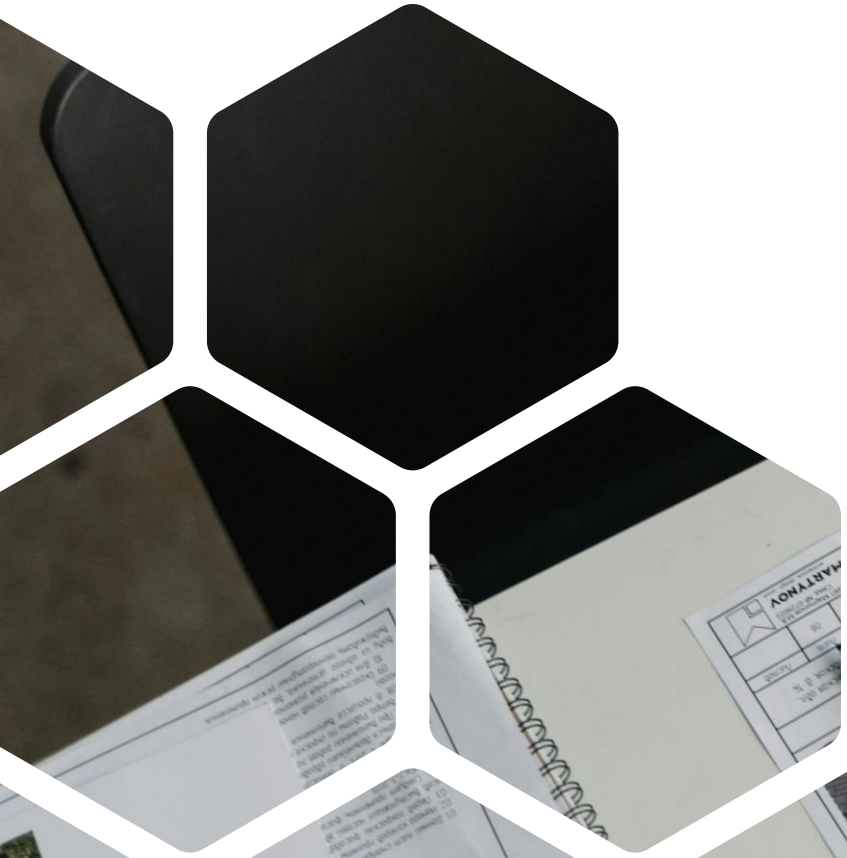
Future Homes Hub

Scaling Up Market Ready Solutions

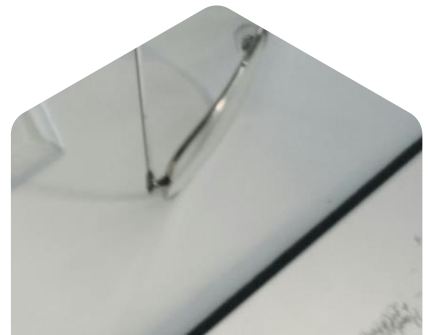
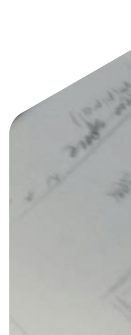
Release of initial findings on site carbon reduction

November 2026







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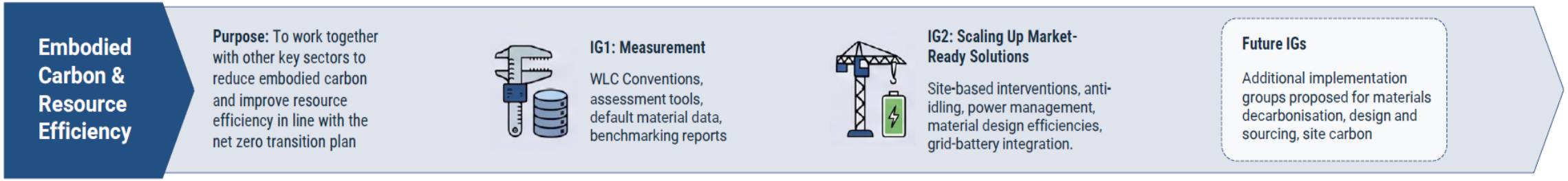
1 Introduction

Introduction: Scaling Up Market Ready Solutions

Context

Implementation Group 2 (IG2) is part of the Embodied Carbon and Resource Efficiency Board, which aims to reduce embodied carbon, improve resource efficiency in line with the FHH Sector Net Zero Transition Plan.



IG2 exists to accelerate the adoption of proven solutions that enhance business performance across the home building sector. The group's work includes identifying opportunities and supporting their implementation at scale, with a particular focus on near-term, cost-effective outcomes.

The first IG2 deliverable will be the **Quick Wins Guide,** which will present a consistent set of readily actionable solutions, that are;

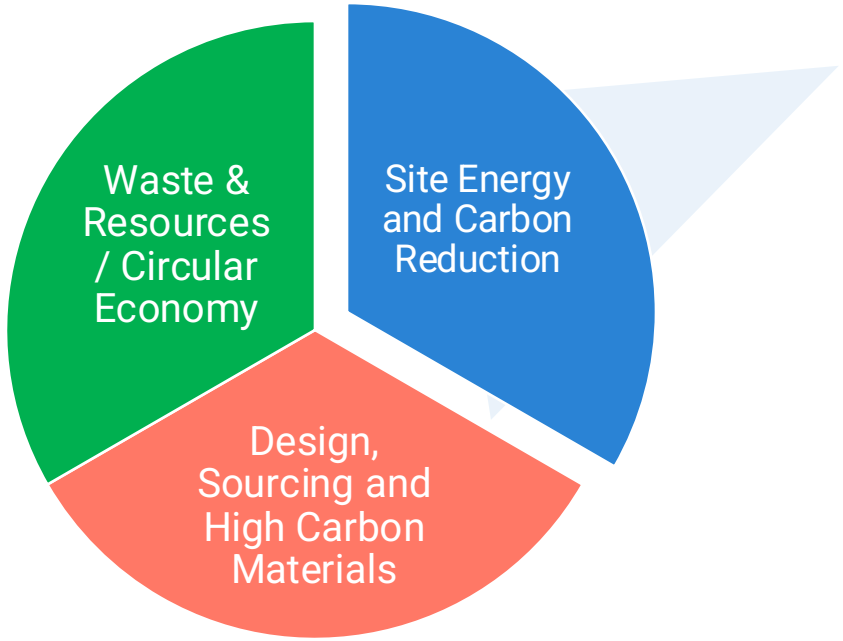
- Real-world solutions being currently adopted by one or more developers
- Tested by developer members of IG2 to determine their ease of implementation and impact
- Solutions that prioritise efficiency or cost-saving measures
- Able to make material contribution to sustainability and efficiency when adopted collectively.

Introduction: Scaling Up Market Ready Solutions

Quick Wins Guide

The output is to be shared as a 'quick wins guide' and interactive web-based tool scheduled for January 2027. The Quick Wins Guide will be structured around the topics of carbon, waste and resources and design.

This pack provides a summary of the initial output for the Site Energy and Carbon Reduction proposals, separated into four sections as below.



LOW ENERGY DESIGNED-IN	POWERING YOUR SITE	LOW ENERGY PROCUREMENT	MEASUREMENT AND MANAGEMENT
• Sites • Cabins • Show homes • Drying Rooms	• Green Electricity • HVO / Diesel Deliveries • Generators • EV Charging • Batteries (BESS)	• Plant & Equipment • Appliances & Computers • Subcontractor ideas	• Measurement & benchmarking • Plant idling & maintenance • Behaviour change • Process • Adoption

2 Low energy designed-in

Standardised Site Energy Design

Description	Standardise the energy efficient design of sites, including cabins, drying rooms, show homes, sales areas and repeatable temporary power designs.

Who	All types and scales of housebuilder

Easy to do?	Ok **Quite Easy** Easy

Advantages	•Facilitates energy cost savings •Supports faster site mobilisation •Reduced design fees and supports procurement framework leverage •Familiarity supports easier operation by site staff and repair by electrical contractors.
Watch points	•Some standardised elements may not work well on some types of sites such as small urban infill or large strategic land sites •Some sites may have specific power requirements associated with construction plant or high-end marketing lighting and appliances.

Low Energy Cabins

Description	Buy or hire low energy specification site accommodation: cabins, drying rooms, canteens etc such as high-performance insulation, uPVC double glazed windows, automatic door closers, PIRs and timed or smart heaters.

Who	All types and scales of housebuilder

Easy to do?	Ok
	Quite Easy
	Easy

Advantages	• Lower energy bills • Lower carbon emissions • Worker winter comfort.
Watch points	• Higher purchase or hire costs • Summer heatwave worker comfort.

Low Energy Show Homes

Description	Who	Easy to do?
Use smart energy management controls in show homes & sales areas, for example heating & lighting on timers, and PIR on lights, and show case technologies such as ASHPs, smart controls and underfloor heating in show homes.	All types and scales of housebuilder	Ok Quite Easy **Easy**

Advantages

- Lower energy bills
- Lower carbon emissions
- Technology show case.

Watch points

- Slightly higher construction costs
- Replacement of PIRS with switches when the show home is sold.

Low Energy Drying Room

Description	Who	Easy to do?
Replace traditional drying room with high heat blowers and extraction with a low carbon drying room using dehumidification, air movers and insulation.	Developers committed to energy and carbon reduction	Ok Quite Easy Easy

Advantages	• Much lower energy cost • Much lower carbon emissions • Slightly higher construction costs.
Watch points	• Higher purchase / hire costs • If a low-carbon unit is poorly designed, undersized or poorly ventilated it can under-perform • Worker unfamiliarity can lead to misuse.

3 Powering your site

Purchase REGO backed green electricity

Description	REGO-backed green electricity is electricity matched with Renewable Energy Guarantees of Origin (REGO) certificates. REGO certificates verify that a matching volume of renewable power was produced for the electricity purchased.

Who	All types and scales of house builder, especially those most committed to carbon reduction

Easy to do?	Ok
	Quite Easy
	Easy

Advantages	• Significant carbon reductions • May achieve cost parity with brown electricity depending on the supplier • Widely available • Official proof of renewable matching.
Watch points	• There may be a small cost premium • As the grid decarbonises the value of REGO backed electricity diminishes • The electrons still come from the shared national grid mix rather than a dedicated renewable supply.

Purchase HVO as a green diesel substitute

Description	HVO is a fossil-free, renewable diesel made from waste feedstocks like used cooking oil, animal fats, and plant residues. It serves as a "drop-in" replacement for conventional diesel that cuts net carbon emissions by up to c. 90% without requiring engine modifications or new fuel tanks.

Who	Those developers most committed to carbon reduction

Easy to do?	Ok
	Quite Easy
	Easy

Advantages	• Significant carbon reductions, plus it lowers particulate matter and NOx emissions, improving local air quality • Interchangeable with regular diesel, sites can switch back to diesel if HVO supply is tight.
Watch points	• Cost premium, which varies with supply-demand balance and linked to and set above regular diesel costs • Requires verified suppliers and certifications (such as RTFO or RFAS in the UK) to ensure genuine waste-based sustainability. • Concerns about indirect land-use change if supply chains are not strictly audited.

Fewer larger deliveries of diesel and larger bowsers

Description	Who	Easy to do?
Switching to fewer, larger diesel deliveries and higher-capacity bowsers cuts fuel costs, and reduces transport emissions.	All types and scales of house builder	Ok Quite Easy **Easy**

Advantages	• Lower fuel unit costs & reduced delivery fees • Lower transport emissions • Reduces the number of site deliveries and delivery coupling/uncoupling spillage risk • Reduced risk of running low on diesel.
Watch points	• Without mitigation, greater volumes may equate to a bigger pollution risk, especially important on sites with surface or groundwater resources.

Use a generator calculator to ensure the correct size of generator

Description	Using a generator sizing calculator involves inputting the electrical demands of all equipment you plan to run to determine the exact power capacity (in kilowatts or kVA) required for safe, efficient operation.

Who	All types and scales of house builder

Easy to do?	Ok
	Quite Easy
	Easy

Advantages	• Correct sizing reduces fuel use and costs • Reduces carbon emissions • Supports air quality and lower noise pollution.
Watch points	• Often best completed by your generator provider • A generic calculator may not fully take into account site specifics.

Battery Energy Storage Systems (BESS)

Description	Who	Easy to do?
BESS store electrical energy in large battery packs, charging from a generator, mains supply, or solar panels to power site equipment on demand. Paired with a generator, the battery handles low or steady loads and peak surges while the generator runs only when recharging is needed.	All types and scales of house builder	Ok Quite Easy **Easy**

Advantages

- Lower fuel costs and runtime
- Reduced noise and emissions
- Supplies brief high-power surges (e.g. cranes) so you can use a smaller generator or weaker grid connection
- Uninterrupted power.

Watch points

- Higher upfront cost
- Storage runs out if heavy loads continue without recharging
- Larger units require dedicated space, safe placement, and proper cabling
- Batteries degrade over time, lose efficiency in extreme temperatures, and require care to manage thermal runaway fire risks.

Switch from Traditional to Hybrid Generators

Description	Hybrid generators combine a traditional fuel-powered engine (usually diesel or HVO) with a high-capacity battery bank and an intelligent management system—and often integrate solar panels. Rather than running an engine 24/7, the system uses stored battery power for low or overnight site loads (like welfare cabins, security lighting, and tool charging). The diesel engine only kicks in to recharge the batteries at peak efficiency or to assist during heavy daytime loads, such as running tower cranes or heavy machinery.	**Who**	All types and scales of house builder	**Easy to do?**	Ok **Quite Easy** Easy

Advantages	• Large fuel savings - often over 50% • Reduced Emissions and air quality benefits • Lower maintenance and longer lifespan. • Silent operation when diesel-based generation is not running • Uninterrupted power.
Watch points	• Higher upfront and hire costs • Not cost-effective for short projects • Technical complexity • Less effective for constant heavy loads.

Install EV Charging

Description	Installing EV charging on a construction site to power vans and staff electric and hybrid vehicles.

Who	All types and scales of house builder

Easy to do?	Ok **Quite Easy** Easy

Advantages	• Lower running costs • Lower transport emissions • Cleaner, quieter operations.
Watch points	• Upfront and groundwork costs • Power and grid limits • Damage risk • Charging delays and bay blocking • Prohibit EV charging while generators are still on site.

4 Low energy procurement

Purchase or Hire of Energy Efficient Plant and Equipment

Description	Construction machinery, site tools, and temporary power systems designed to perform work using less fuel or electricity. This includes fuel efficient plant (e.g.forklifts, telehandlers, excavators and dump trucks) which may have idling reduction systems. Efficient and/or electric equipment (e.g. concrete mixers, air compressors, pumps, compactors, drills, saws, nail guns and angle grinders) and LED lighting can also be sourced.

Who	All types and scales of house builder

Easy to do?	Ok **Quite Easy** Easy

Advantages	• Lower running costs • Reduced emissions and improved air quality.
Watch points	• Higher upfront costs are possible • The Supply Chain Sustainability School (SCSS) Plant Group resources and CIRIA's Environmental Good Practice on Site Guide (C811) useful documents to help with selection.

Purchase Energy Efficient Appliances and Computers

Description	Mandate ENERGY STAR or TCO Certified business laptops. Select appliances than run 24/7 (e.g. fridges) on their A-G ratings.

Who	All types and scales of house builder

Easy to do?	Ok
	Quite Easy
	Easy

Advantages	• Lower energy bills • Lower carbon emissions.
Watch points	• Complex efficient appliances may be more sensitive to voltage spikes and fluctuations on sites powered by generators • A small C rated appliance may use less total energy than a large A rated appliance. • The quality and longevity of appliances that run for small amounts of time in a day may be more important than their energy rating • Harsh operating conditions increase breakage and reduce time to pay back purchase costs through energy savings.

Ask subcontractors if they offer products and services that can help reduce energy use

Description	Subcontractors work directly with their materials and equipment every day and can bring fresh specialist ideas to reduce construction site energy to the table.	**Who**	All types and scales of house builder	**Easy to do?**	Ok Quite Easy **Easy**

Advantages	• Access to specialist expertise and potential competitive advantage • Potential cost and carbon savings • Stronger relationships and shared accountability.
Watch points	• Higher upfront costs may be incurred, but savings are not guaranteed • Subcontractors may pitch proprietary product • They may lack the technical data or certification needed to prove that their suggested alternatives actually perform as promised.

5 Measurement and management

Process to routinely collect energy consumption, energy cost and carbon data

Description	Who	Easy to do?
Set up a data system to collect diesel, electricity and natural gas consumption data, with reference to finance systems to determine cost and the most recent government carbon conversion factors to determine carbon emissions. Use the data to benchmark site and business performance.	All types and scales of home-builder but complex data management systems are mostly applicable to larger home builders	Ok Quite Easy **Easy**

Advantages

- Highlights high-usage costs and anomalies, and out-of-hours waste, enabling corrective action
- Benchmarks and league tables can promote internal competition and better performance
- Supports corporate reporting and disclosure, SBTi net zero targets, and SECR and ESOS assessments
- Supports embodied and whole life carbon assessments.

Watch points

- Requires upfront set up, including processes and systems, training and (possibly) software
- Ongoing administrative overhead
- Without strong quality checks, missing data, complex diesel procurement routes, and use of multiple fuels can skew energy, carbon and cost figures.

Plant Idling and Maintenance

Description	Who	Easy to do?
Heavy machinery (such as excavators, telehandlers, and dumpers) often spends a high percentage of its operating hours idling, burning diesel without doing productive work. Reducing idling time on plant and equipment cuts fuel costs. Routine maintenance schedules, checks & repairs on plant equipment can ensure smooth and efficient operation of site plant and catch faults early, contributing to lower energy consumption.	All types and scales of house builder	Ok Quite Easy **Easy**

Advantages

- Lower running costs
- Reduced emissions and improved air quality.

Watch points

- Operator frustration and workflow delays
- Enforcing an anti-idling policy usually requires investing in telematics systems to track idle data, auto-shutdown timers, or site-wide behavioural training
- In cold or wet weather, operators often leave machines idling to keep the cab heater or demister running
- Very frequent stop-start cycles put extra strain on batteries, alternators, and starter motors.

Behaviour Change

Description	Who	Easy to do?
Behaviour change requires minimal expenditure and can deliver quick wins compared to technology upgrades. This can include ensuring lights, heating and equipment are turned off over night; setting thermostats and the timing of heating and cooling equipment correctly; ensuring windows and doors are shut when heating or cooling systems are on; not bringing in extra heating or cooling; and briefing site security and cleaners to turn off lights as part of their work.	All types and scales of house builder	Ok Quite Easy Easy

Advantages

- Low upfront cost and fast impact on cost and carbon.

Watch points

- High workforce and subcontractor turnover make it hard to maintain consistent habits without continuous inductions
- Tight build schedules, resource constraints, and health and safety pressures often push energy and carbon habits down the priority list
- Risk of failure or backsliding without senior management reinforcement.

Company Process

Description	Who	Easy to do?
Formalising energy efficiency into company processes helps embed it into the business culture. This could include integrating into tenders, pre site start checklists, on-site inspection checklists, management inspections, and functional processes. Alternatively, it can be embedded into more formal environmental or HSE management systems.	More applicable to larger home builders	Ok Quite Easy Easy

Advantages

- Clarity and accountability
- Consistent approach across sites.

Watch points

- Upfront implementation effort, reduced flexibility and checklist fatigue
- Trade contractors may view formal energy rules as obstacles to productivity.

Adoption

Description	Who	Easy to do?
Developers pay the energy bills for facilities such as streetlights and pumping stations until they are adopted.	All types and scales of home-builder	Ok Quite Easy Easy

Advantages	• Transfer the energy cost and carbon emissions to those with final responsibilities.
Watch points	• The adoption of infrastructure on new-build housing estates is notoriously slow because councils and water companies face resource shortages, strict technical standards must be met before handover, and multiple bodies must sign off in sequence.