

This is our impact.

Waatarua

Ascot Avenue, Remuera, Tāmaki Makaurau

37%

of global CO₂ emissions come
from the built environment

UNEP Global Status Report

20%

of New Zealand's carbon emissions
come from building & construction

MBIE — Building for Climate Change

3rd

largest residential builder in NZ.
That sector is us.

Simplicity Living

330 homes · 4 buildings · 33,300 m² measured end to end

Upfront Embodied Carbon

Life-cycle stages A1 – A5

Every building carries a carbon debt before anyone moves in. Digging the quarry, firing the cement, rolling the steel, trucking it to Remuera, running the cranes — all of it is paid up front, on day one, before the building has kept a single person warm.

That debt is upfront embodied carbon. Unlike the energy a building uses, you cannot fix it later. It is banked the moment the concrete sets.

In plain terms: it is the carbon cost of making a building and putting it up — measured before the front door is unlocked.

PRODUCT STAGE

A1 Raw materials Quarrying, mining, harvesting

A2 Transport to factory Getting it to where it's made

A3 Manufacturing Cement, steel, glass, brick

CONSTRUCTION STAGE

A4 Transport to site Trucks to Ascot Avenue

A5 Construction Plant, power, waste on site

“

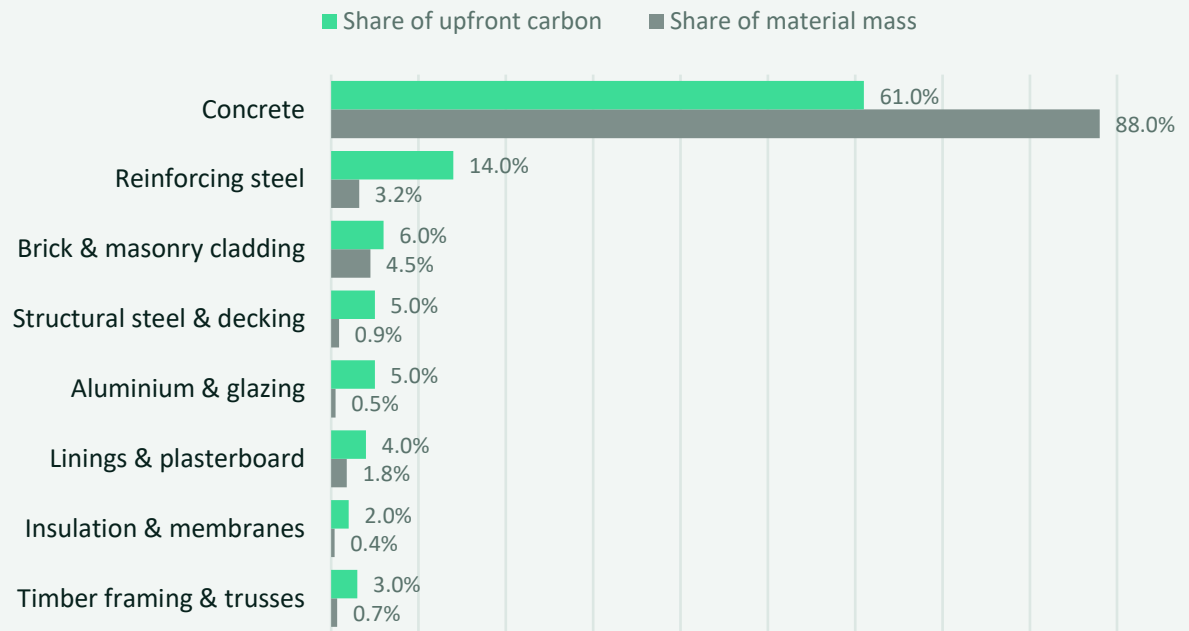
You can't manage what you don't measure.

So we measured all of it. Every pile, every slab, every window, every truck movement — modelled from the BIM, priced against verified emission factors, and checked against an independent benchmark.

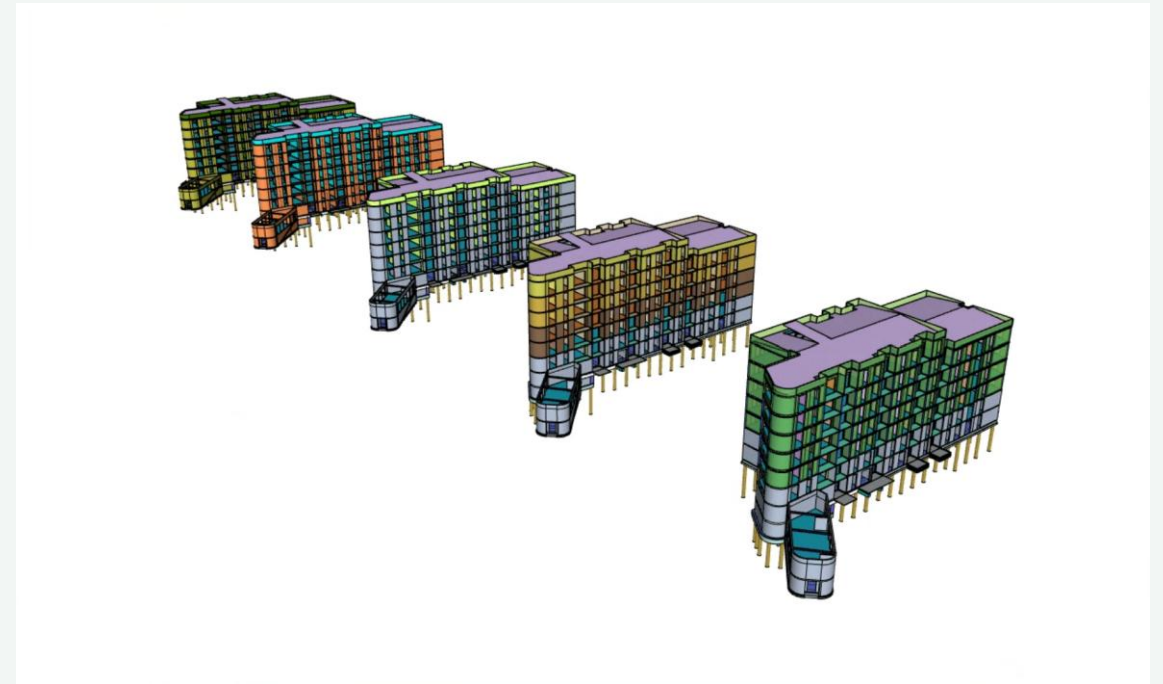
43,000 tonnes of material, modelled object by object across four buildings.

What a Simplicity building is made of

An efficient, robust and cost-effective build methodology — read straight out of the BIM model.



Concrete is 88% of the weight but 61% of the carbon. Steel is 4% of the weight and 19% of the carbon.



Waiatarua — Blocks A to D, structural and envelope models

Our number

485

kgCO₂e / m²

upfront embodied carbon, A1–A5

Averaged across all four Waiatarua buildings, per square metre of gross floor area.



33,300 m²

gross floor area modelled

16,151 t

total upfront CO₂e, whole development

50 years

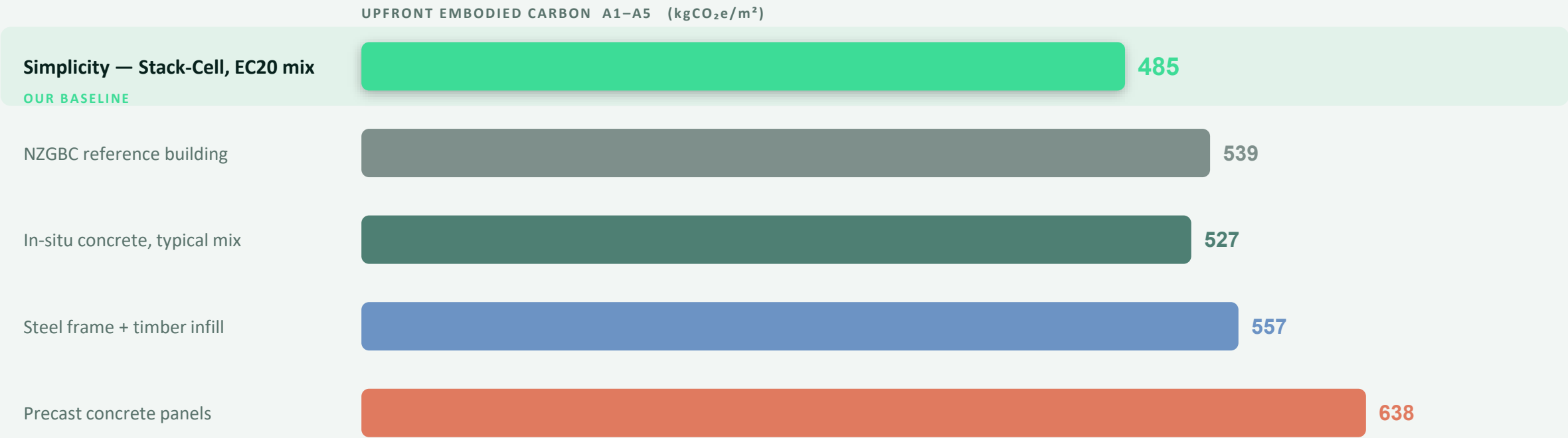
design life assessed

So how does that stack up?

Whole-building A1–A3 from the V-Quest model (Block A: 2,968,752 kgCO₂e over 6,700 m² GFA); A4–A5 per Green Star Embodied Carbon Calculator conventions.

Compared to how else this could be built

The same building, on the same footprint, modelled five ways.



10% lower vs NZGBC reference building

8% lower vs typical in-situ concrete

13% lower vs steel frame + timber infill

24% lower vs precast concrete

Percentages as published in the Ascot Embodied Carbon Report §1.03–1.4 (V-Quest structural-frame comparison, piles excluded), applied to the whole-building model. The NZGBC reference is a normalised statistical benchmark, not a specific built example.

But what about timber?

We modelled a New Zealand mass-timber alternative in full. Here is what it said.

-20%

upfront embodied carbon

CLT walls and floors with a precast services core would cut upfront carbon meaningfully.

+40%

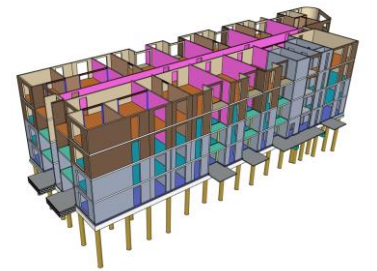
build cost

Against a typical ESG allowance of 2–3%, a 40% premium is an order of magnitude beyond feasibility.

-40%

structural weight

A lighter structure could reduce piling — a real saving, but nowhere near enough to bridge the cost gap.



Plus ~1,069 t of biogenic carbon stored in the timber itself (reported separately under MBIE guidelines).

We would rather house people.

We actively measure embodied carbon and we implement every reduction we can. But a 40% build-cost increase does not deliver the affordable homes we have promised. Balancing carbon against feasibility is not a compromise we hide — it is the decision, stated plainly.

Is there a bigger picture?

Everything so far stops at handover. But a building does not stop at handover — it stands for fifty years. It gets repainted, re-roofed, re-clad. Windows are replaced. Eventually it is taken down and the material goes somewhere.

Whole-of-life embodied carbon counts all of that. Not just the making, but the keeping and the ending.

This is where durability starts paying us back.

Brick that is washed rather than repainted. Concrete that is not replaced. Every avoided replacement cycle is carbon we never spend.

A1–A5**Making and building it**

where we started

B1–B5**Using and maintaining it**

repaints, replacements, refits

C1–C4**Taking it down**

demolition, transport, landfill

D**Beyond the boundary**

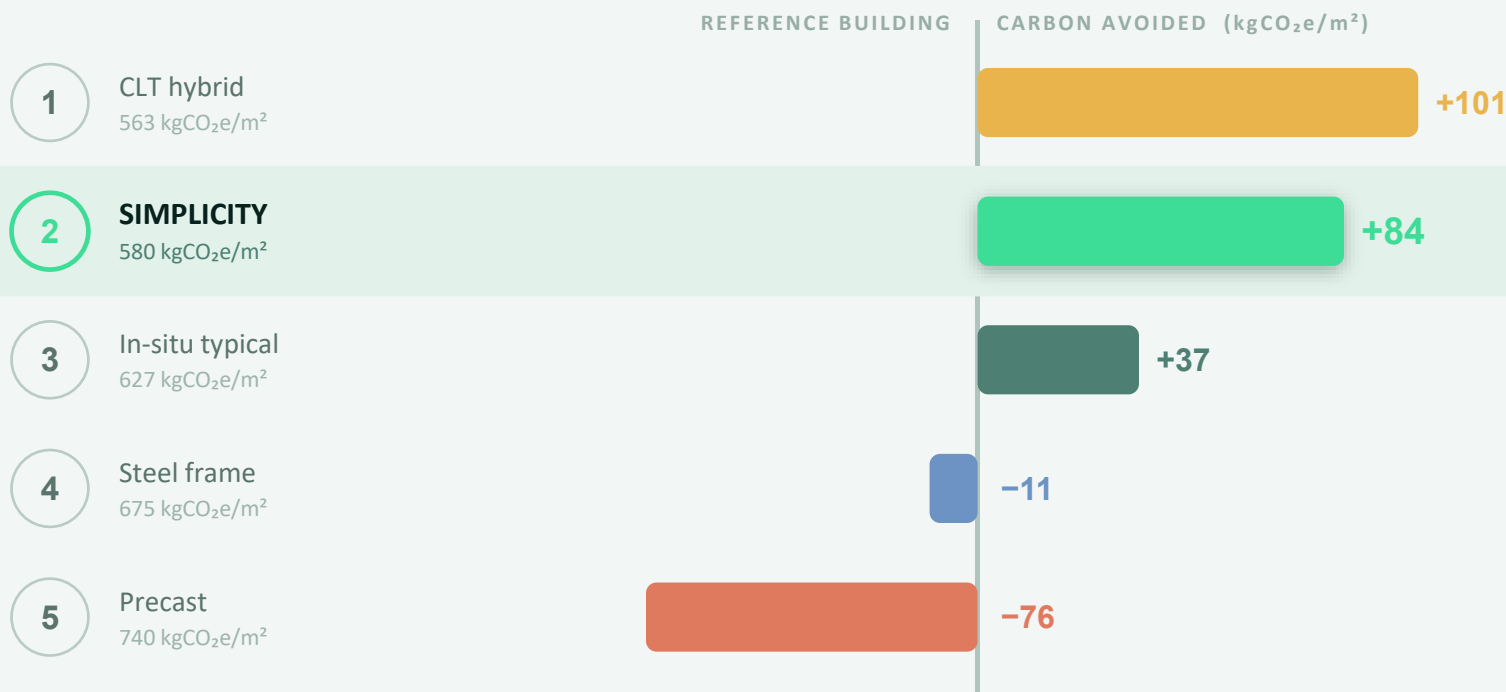
reuse and recovery credits

Whole-of-life embodied carbon

The same five methodologies, now counted across all fifty years — A1 through C4.

ROUND 1 of 3

Mass timber still leads — but the gap has closed from 20% to 3%.



The reference building is the start line. Bars to the right are carbon avoided against it; bars to the left fall short of it.

Durability is already doing the work. Timber needs replacing and its stored carbon is released at end of life; concrete and brick are simply still there in year fifty.

If we're talking about fifty years, why aren't we talking about energy?

A building consumes power every single day it stands. Over fifty years that adds up to more carbon than the concrete ever did — and it lands on someone's power bill every month in between.

Energy efficiency means two things at once.

They are not a trade-off. The same building fabric delivers both.

01

Affordability

A well-performing home costs less to heat. That is money that stays with the tenant, every week, for as long as they live there.

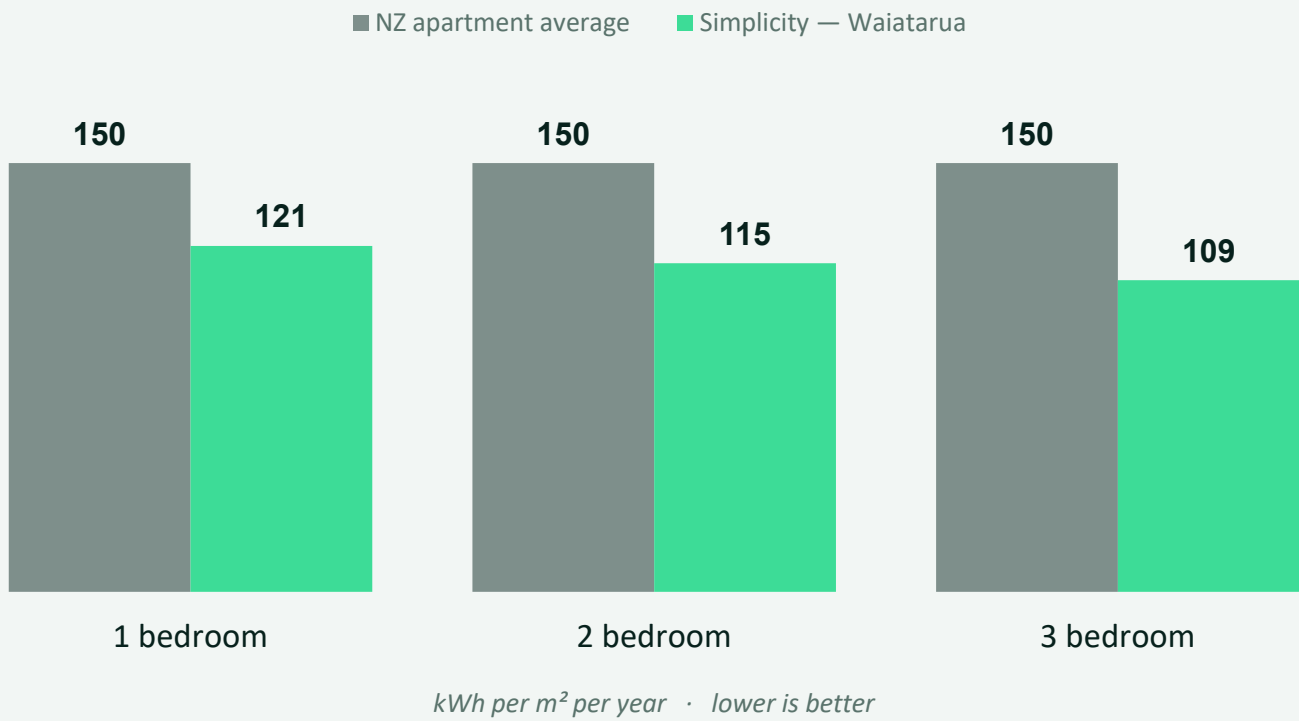
02

Emissions

Less energy drawn means less carbon emitted — and unlike embodied carbon, this one compounds year after year.

What our homes actually use

Modelled energy use intensity by unit type, against the New Zealand apartment average.



PER HOME, EVERY YEAR

1 bedroom · 50 m²
1,450 kWh less than the NZ average

\$435
142 kg CO₂e saved

2 bedroom · 70 m²
2,450 kWh less than the NZ average

\$735
240 kg CO₂e saved

3 bedroom · 95 m²
3,895 kWh less than the NZ average

\$1,169
382 kg CO₂e saved

33 kWh/m² better than average,
across the whole development

Savings at \$0.30/kWh all-in residential tariff and 0.098 kgCO₂e/kWh (MfE electricity consumption factor). Indicative modelled values pending confirmed simulation output.

Now multiply it by 330 homes and fifty years.

36.6 GWh

of electricity never drawn from the grid

\$11.0m

left in residents' pockets, not paid to a retailer

3,580 tonnes

of CO₂e avoided through fabric performance alone

Waatarua alone. 330 homes over one 50-year design life, compared with the same homes performing at the New Zealand average.

Unit mix assumed at 45% 1 bedroom / 40% 2 bedroom / 15% 3 bedroom. Confirm against the final schedule of accommodation.

Making it a fair fight

We can't hand the rival methodologies the national average and call it a win. The benefit has to be traced back to the material itself.

What we hold constant

- Identical insulation and glazing specification
- Identical envelope build-up and airtightness
- Identical heat-pump heating and cooling
- Identical unit layouts, orientation and occupancy

So the only variable left is thermal mass.

A heavy concrete structure absorbs heat through the day and releases it slowly, flattening the temperature swings the heat pump has to correct. A light structure cannot. That is a material property, and it is the only credit we claim.

MODELLLED ENERGY USE INTENSITY (kWh/m²/yr)

Simplicity — in-situ concrete

In-situ concrete, typical mix

Precast concrete panels

Steel frame + timber infill

Mass timber / CLT

NZGBC reference building

115

115

117

121

126

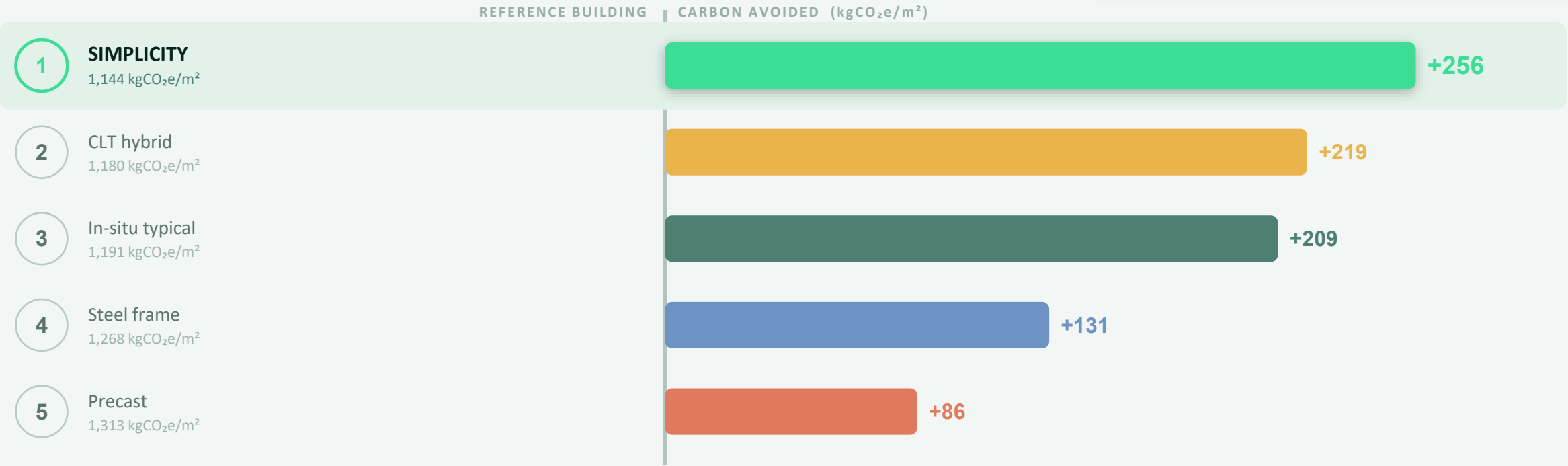
150

The reference building differs in fabric as well as mass, which is why its gap is larger.

Add fifty years of energy

Whole-of-life embodied carbon plus operational emissions — A1 through C4, and B6.

ROUND 2 of 3
The lead changes hands.



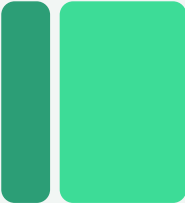
The reference building is the start line. Bars to the right are carbon avoided against it; bars to the left fall short of it.

Simplicity takes the lead. The material premium we paid at handover is repaid, and then some, by fifty years of a building that is cheaper to keep warm. Everyone moves up the board; we move furthest.

Let's look at A1–A5 one more time

Two very different halves live inside that one number.

A1–A3 · 445 kgCO₂e/m² — 92% of the total



A4 + A5 · 40 kgCO₂e/m² — 8% of the total

A1–A3 The factory gate

Set by material choice, structural design and the concrete mix. We attack this at design stage — Stack-Cell walls, EC20 low-carbon cement, optimised reinforcing rates.

DESIGN DECISIONS

A4–A5 The site

Transport to Ascot Avenue, plant running hours, crane time, temporary works, and the material that gets thrown away rather than built in.

SITE BEHAVIOUR

Everything so far has been about the left-hand block. The rest of this presentation is about the right.

How A5 is actually calculated

The Green Star calculator does not measure your site. It assumes an industry-typical one.

What the generic method does

- Applies a standard material-waste allowance — around 10% for most trades
- Estimates plant and site energy from floor area, not from meter readings
- Assumes a typical programme length regardless of how you actually build

And that is the right call

It is genuinely the best the industry can do today. Almost nobody records what actually happens on a construction site at the resolution this calculation would need — skip weights by stream, plant hours by machine, delivery counts by trade.

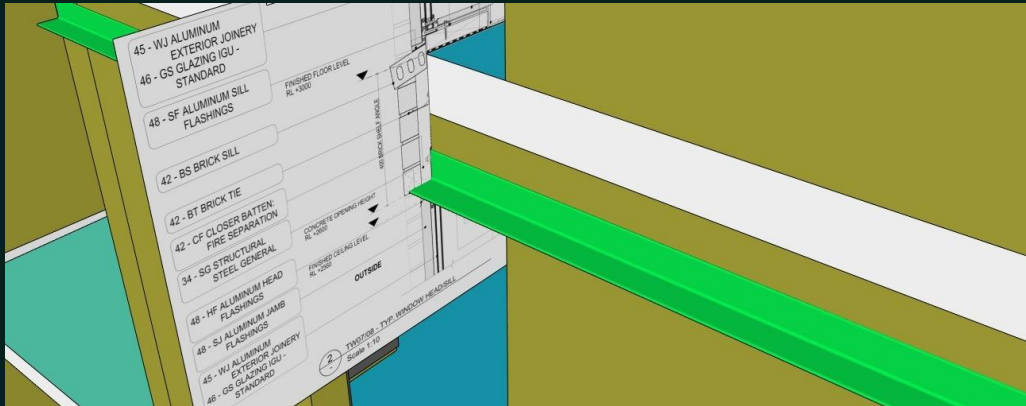
A standardised assumption applied to everyone is what makes results comparable. Simplicity uses it, and reports against it, for exactly that reason.

But what if you did have the data?

Simplicity does. We know our waste streams, our programme durations and our delivery counts, because the way we build depends on knowing them.

Built like a production line, not a one-off

Simplicity applies a Toyota-style production model to residential construction. Repeatable units, standardised details, sequenced trades and a tightly managed supply chain — the same building, built again and again, improved each time.



Standardised repetition

1

The same unit types, details and sequences across every block — so the crew is never learning the job twice.

Waste through management

2

Materials ordered to a known schedule and cut to a known set-out. Measured wastage runs near 5.2%, against the 10% the calculator assumes.

Shorter programmes

3

Faster floor cycles mean around 22% fewer site weeks — fewer plant hours, fewer generator days, fewer deliveries.

Fewer movements

4

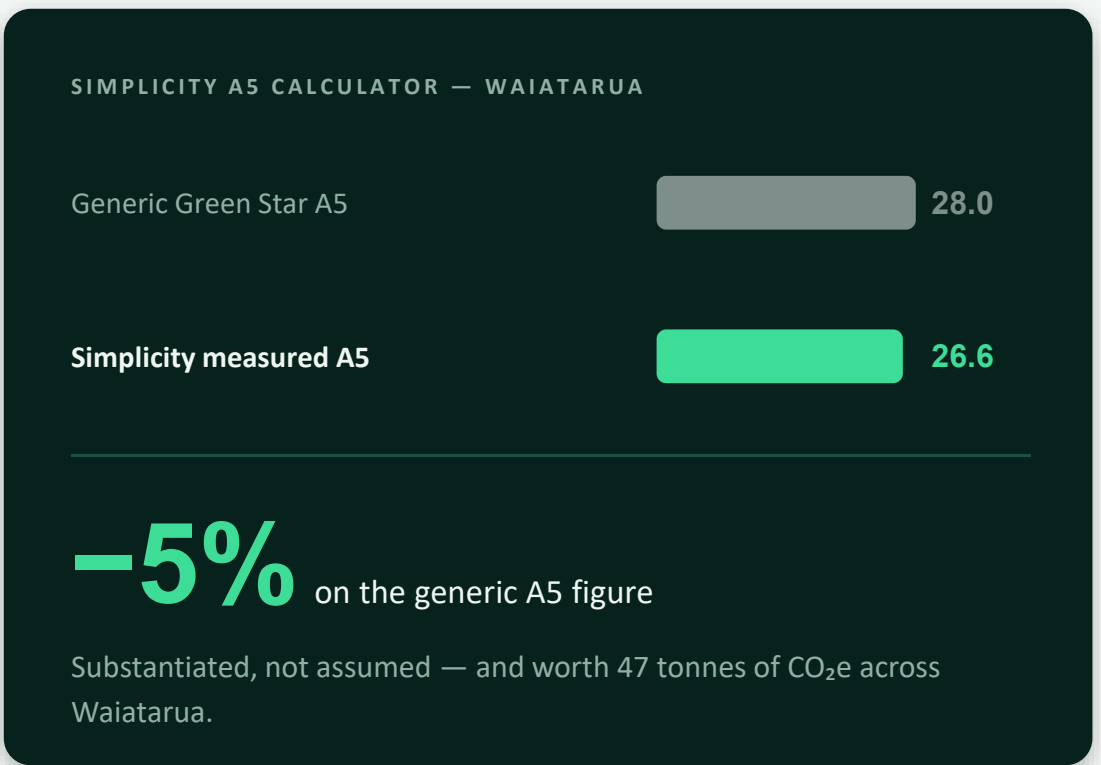
Consolidated loads and a stable supplier set cut truck movements to Ascot Avenue, which is A4 as well as A5.

So we built the calculator that rewards recording your data

This platform includes a new A4–A5 tool. Where a project team does record real site data — waste by stream, plant hours, delivery counts, programme duration — it converts that record into a substantiated construction-stage carbon figure, instead of falling back on the generic assumption.

It is open to anyone. The point is not that Simplicity scores better. The point is that measuring should be worth something.

- Waste by stream
- Plant & generator hours
- Delivery movements
- Programme duration

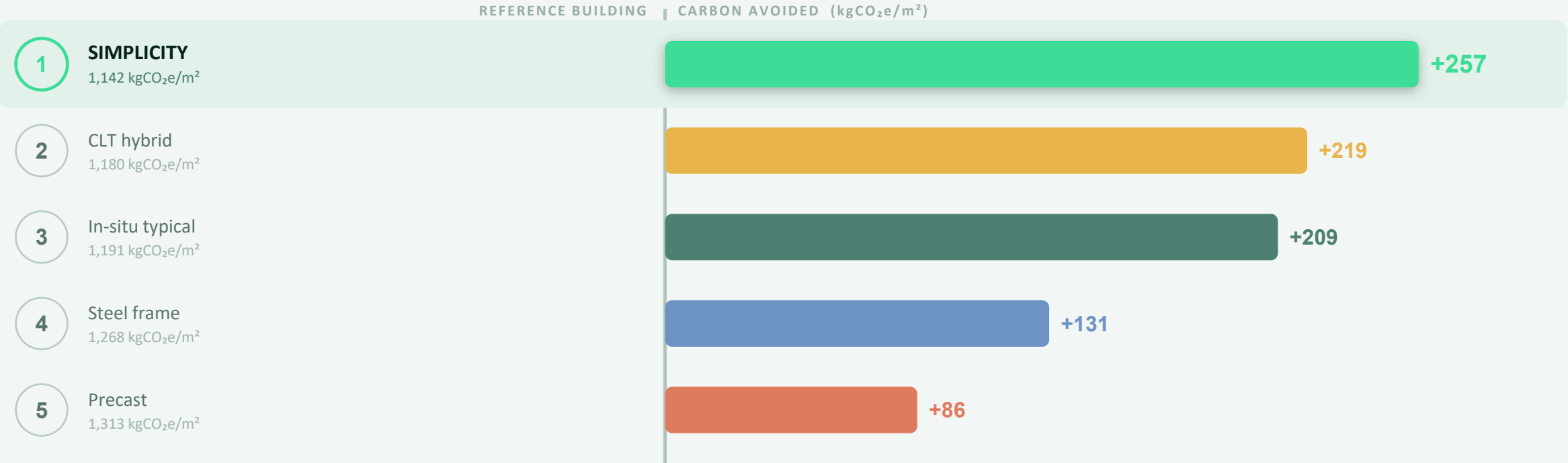


Conservative first pass. The published Simplicity platform reports a 20–38% A4–A5 advantage on productivity grounds; the figure here is deliberately held to the measured waste and programme evidence alone.

The final board

Whole-of-life carbon, with A5 substantiated from measured site data.

ROUND 3 of 3
257 kgCO₂e/m² clear



The reference building is the start line. Bars to the right are carbon avoided against it; bars to the left fall short of it.

18% below the reference building over fifty years. Ahead of mass timber, ahead of steel, ahead of precast — and every metre of that lead is measured rather than asserted.

IN SUMMARY

Judged over its whole life, our methodology is not a carbon liability. It's an advantage.

01

We measure it honestly

485 kgCO₂e/m² upfront, modelled object by object and benchmarked against four alternative methodologies.

03

We balance it openly

Timber would cut 20% more. It would also cost 40% more, and we are here to deliver affordable homes.

02

We design it down

10% below the reference building, 24% below precast — through the Stack-Cell system and a low-carbon mix.

04

We earn it back over fifty years

36.6 GWh and \$11.0m saved by residents, and a 18% whole-of-life advantage.

Methodology, sources and status

Source data

- V-Quest whole-building and structural models, Waiatarua Blocks A–D (VQ-026)
- Ascot Embodied Carbon Report §1.02–1.4 — upfront carbon, cost and mass comparison
- BRANZ LCAQuick v3.6, Ascot A Rev04 — GFA 6,700 m², 50-year design life
- NZGBC Green Star Embodied Carbon Calculator v1.01 r02

Methodology

- Life-cycle stages per EN 15978 and MBIE Whole-of-Life Embodied Carbon technical methodology
- Reference building per NZGBC Embodied Carbon Methodology v2.0
- Operational energy on EnergyPlus / OpenStudio, heat-pump system held constant
- Grid factor 0.074 kgCO₂e/kWh (MfE); tariff \$0.30/kWh all-in residential

Status — to substantiate

- Green Star LCA results for Blocks B, C and D (Block A modelled; B–D in progress)
- Confirmed energy simulation output by unit type
- Final schedule of accommodation to fix the unit mix
- Simplicity site-data record for the A5 calculator inputs
- Simplicity Living's ranking among NZ residential builders

Figures marked indicative in the deck are modelled placeholders pending the confirmed inputs listed in the third column.