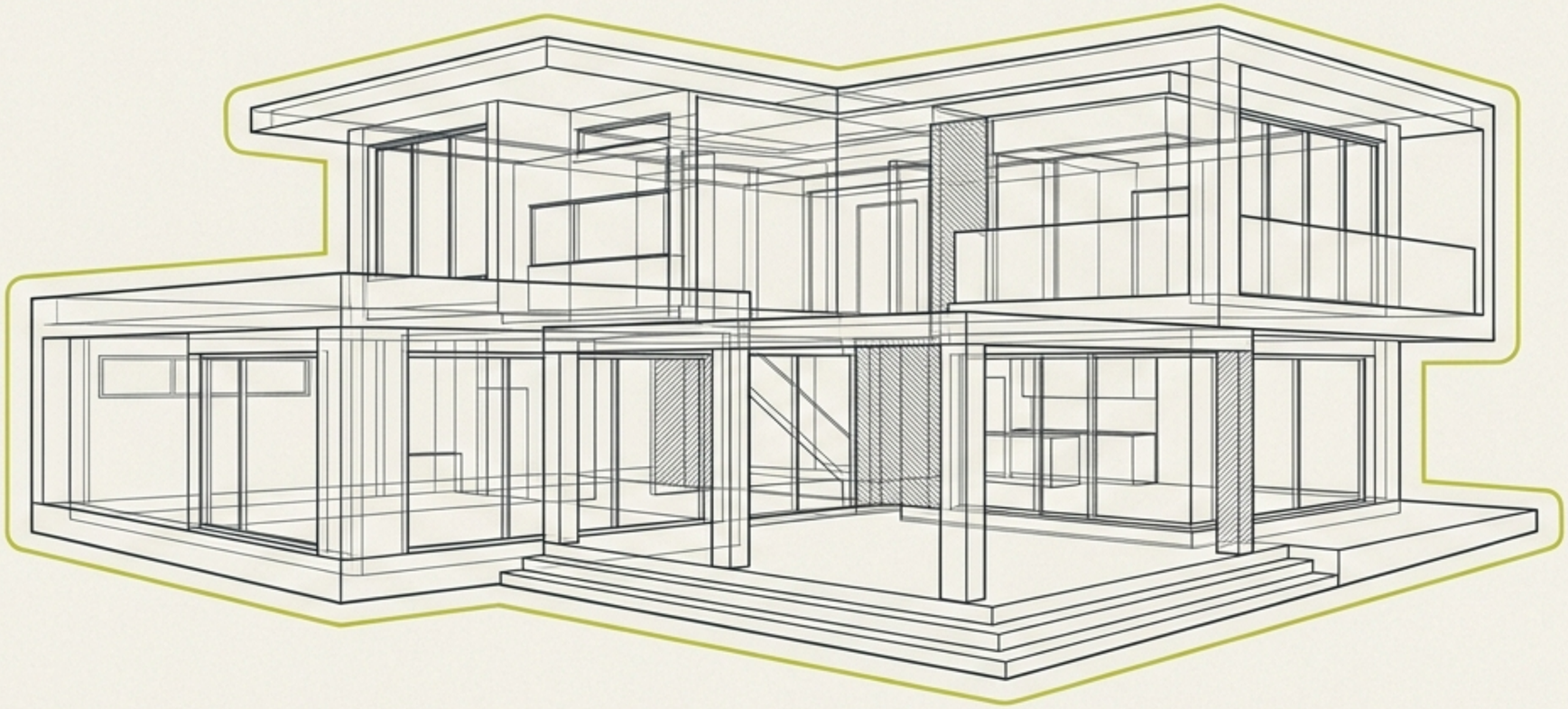


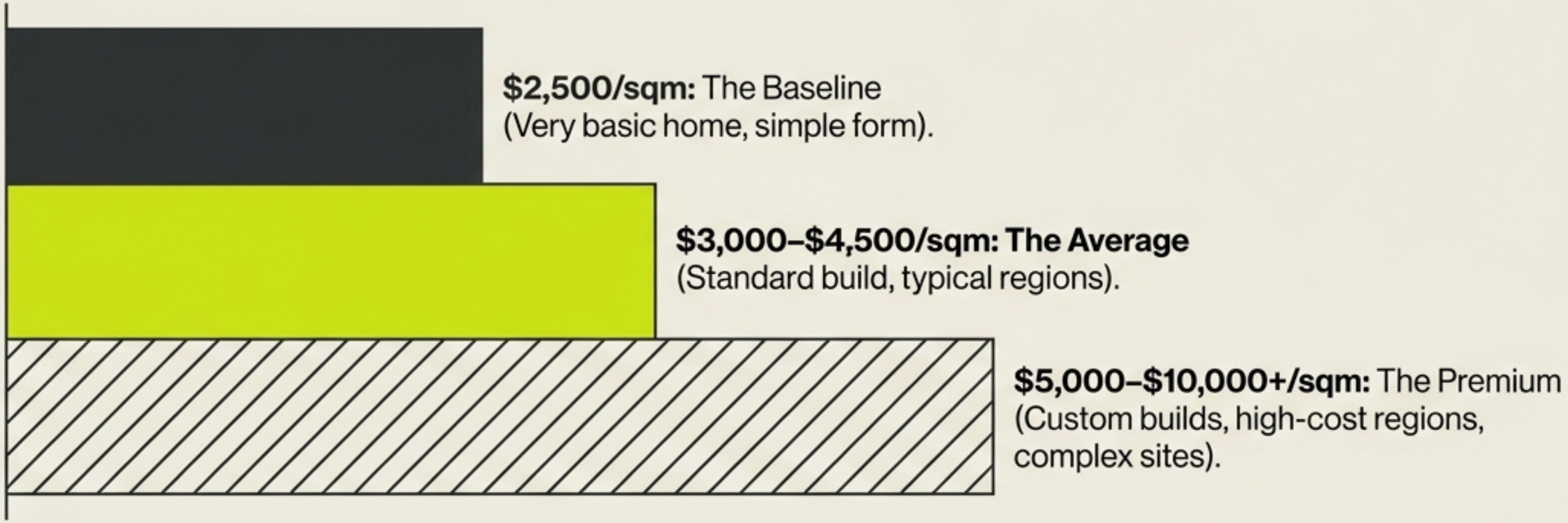
The Architectural Dossier: Passive House Economics in Aotearoa

A forensic breakdown of what it costs to build—and live in—a high-performance home in New Zealand.

PREPARED BY ECOTECTURAL HOME BUILDERS

The Baseline Reality of New Zealand Construction

Building in New Zealand is an expensive baseline. Based on 2026 data, a typical home costs between $3,000 and $4,500 per square metre. These figures reflect standard, code-minimum construction before any high-performance upgrades are considered.



$2,500/sqm: The Baseline
(Very basic home, simple form).

$3,000–$4,500/sqm: The Average
(Standard build, typical regions).

$5,000–$10,000+/sqm: The Premium
(Custom builds, high-cost regions, complex sites).

Form Factor: Where Budgets Escalate

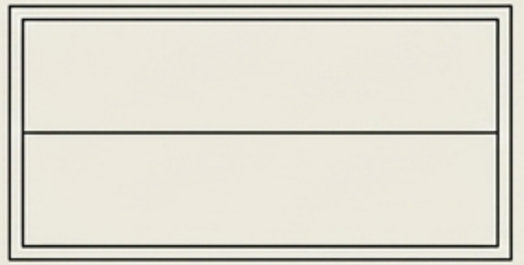
Key Insight: Complexity equals cost.

Variables Box

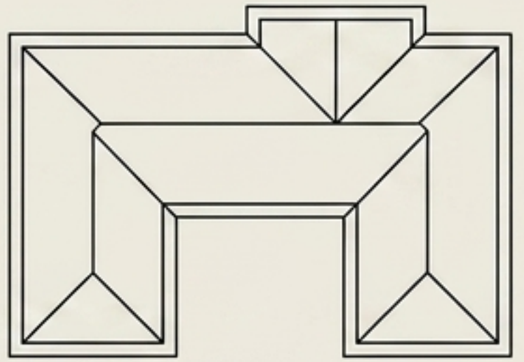
- Size: Smaller homes have higher sqm costs due to the fixed concentration of expensive rooms (kitchens, bathrooms).

- **Section**: Sloping or difficult sites requiring engineering can add $150,000 to $250,000 to base costs.

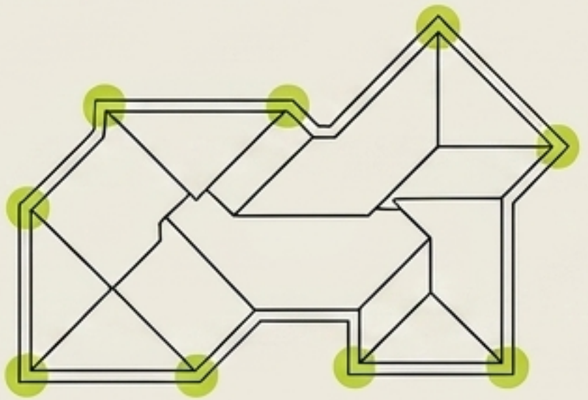
- **Structural Complexity**: Complex forms, expensive cladding, and constant plan revisions exponentially increase labour and material costs.



Low Complexity
(Base Cost)



Medium Complexity
(Cost Multiplier)



High Complexity
(Exponential Cost)

The High-Performance Paradigm

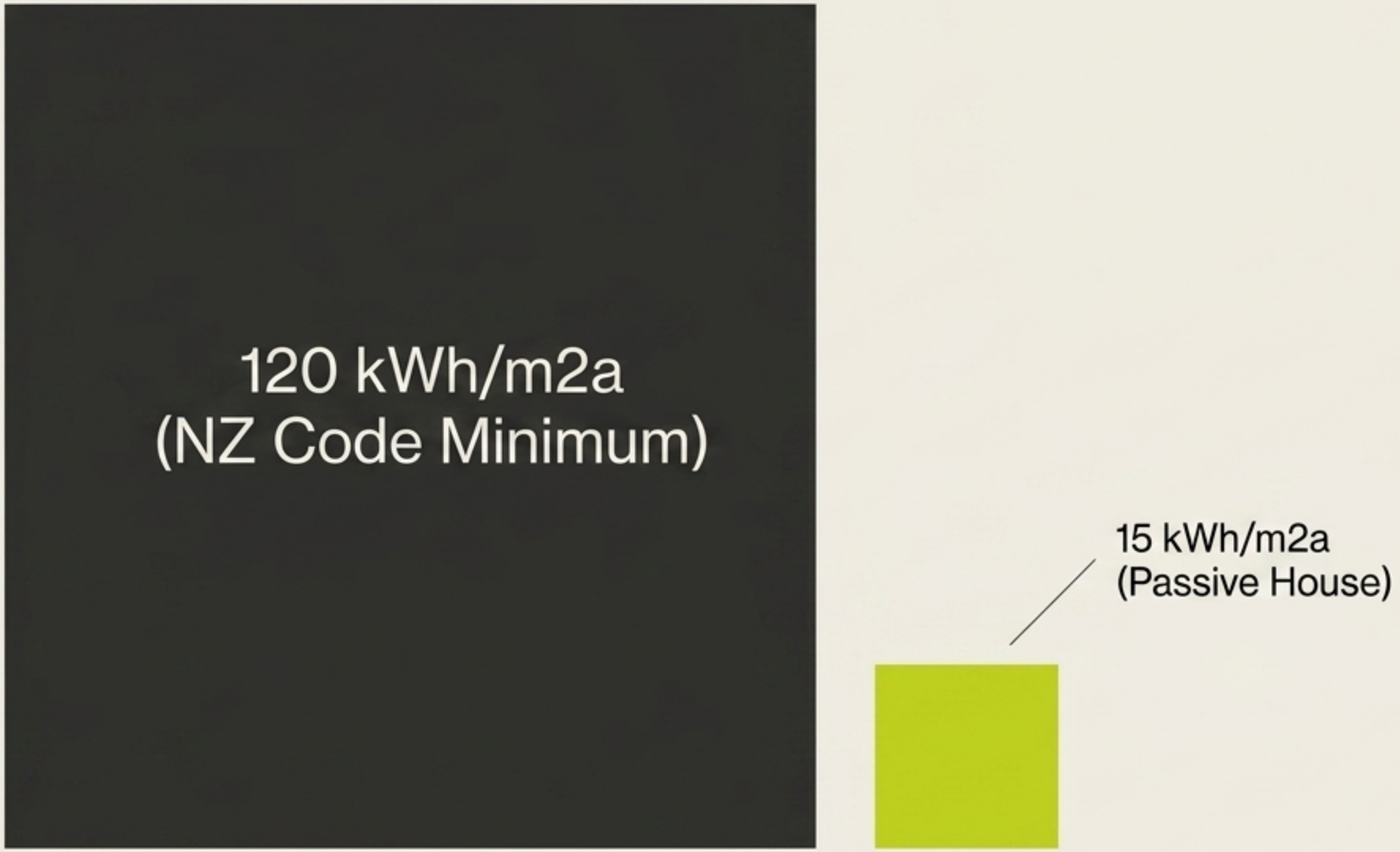
The New Zealand Building Code is a legal minimum, not a performance target.

A typical code-built home requires at least 120kWh per square metre annually just to maintain basic temperatures.

A Certified Passive House requires just 15kWh/m2a.

Up to 90% less energy required for heating and cooling.

The Energy Gap Visual



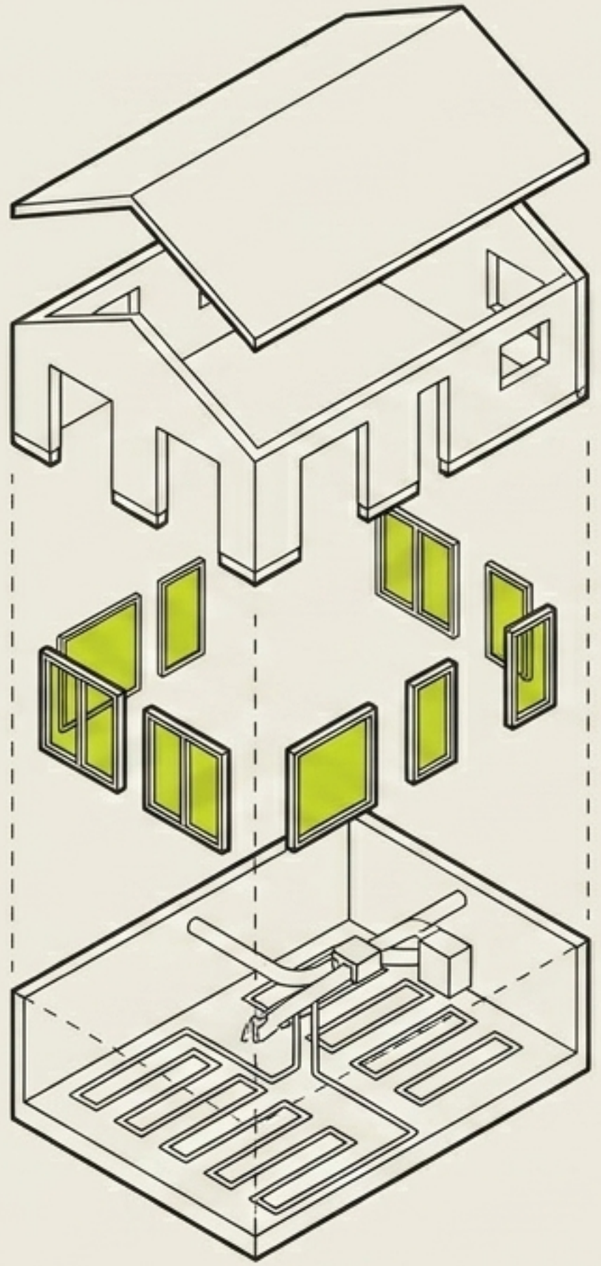
The Anatomy of a Better Standard

Dimension	NZ Code Minimum	Passive House Classic
Heating Demand	120+ kWh/m2a	Max 15 kWh/m2a
Airtightness	Often untested, drafty	Max 0.6 ACH @ 50Pa
Windows	Standard double glazing, conductive aluminium frames	Triple glazing, thermally broken, Low E, recessed
Ventilation	Opening windows, passive trickle vents	Mechanical Heat Recovery Ventilation (MHRV)
Thermal Bridging	Common, leads to heat loss/condensation	Eliminated through bridge-free design

Engineering the Premium

Achieving the Passive House standard requires a fundamental shift in how a house is assembled.

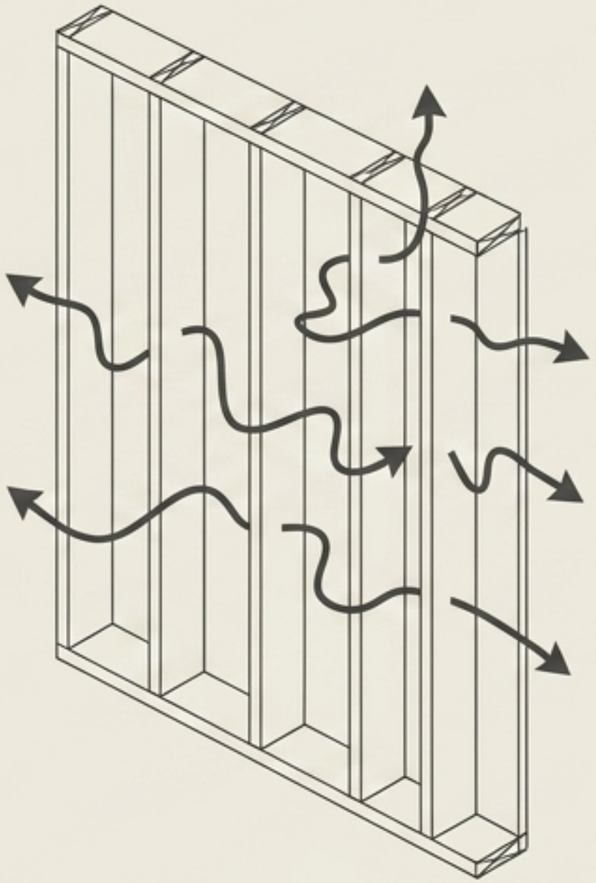
The initial capital premium is driven by three engineered components working in unison to eliminate energy waste.



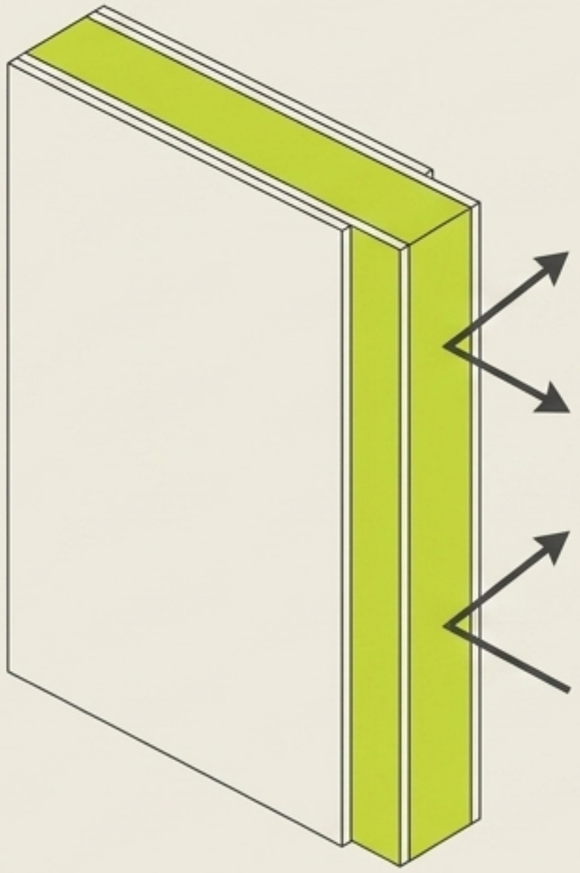
Component I: The Continuous Envelope

Standard framing creates “thermal bridges”—weak points where heat bypasses insulation through the timber. High-performance builds utilize Structural Insulated Panels (SIPs) to create an unbroken, highly insulated, and airtight thermal envelope.

Benefits: Exceptional thermal insulation, drastically reduced onsite waste, and precision airtightness required for certification.



Standard Timber Frame
(Thermal Bridges)



SIPs
(Continuous Thermal Envelope)

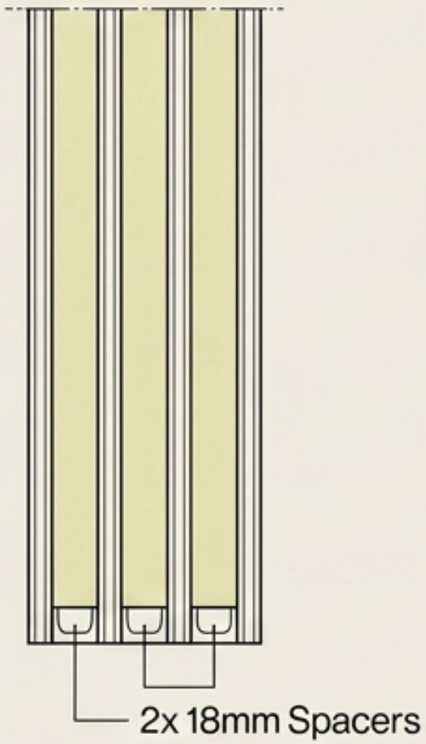
Component II: The Glazing Equation

Insight: European-manufactured triple-glazing—featuring thermally broken frames and Low-E glass—costs just ~5% more than standard double-glazing for an entire home.

A **Double Glazing (Code)**

Double Glazing
(Code)

B **Triple Glazing (Koffman European)**



Triple Glazing
(Koffman European)

Double Glazing	Triple Glazing
R-Value: 1.1	R-Value: 2.0
1x Argon Cavity	2x Argon Cavities

81% **increase in thermal efficiency.**

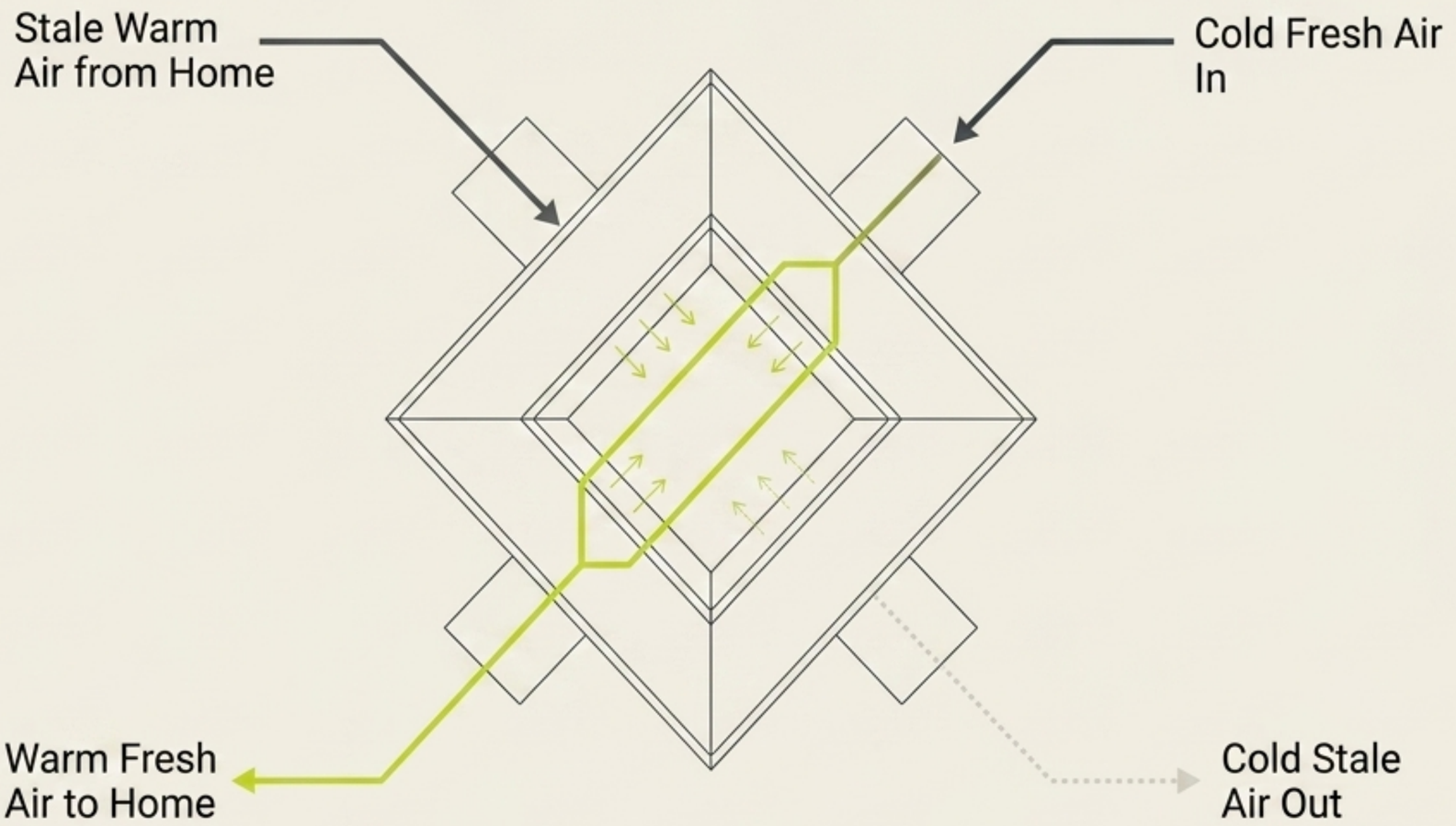
80% **reduction in noise pollution.**

40% **more energy efficient.**

Component III: The Lungs of the Home

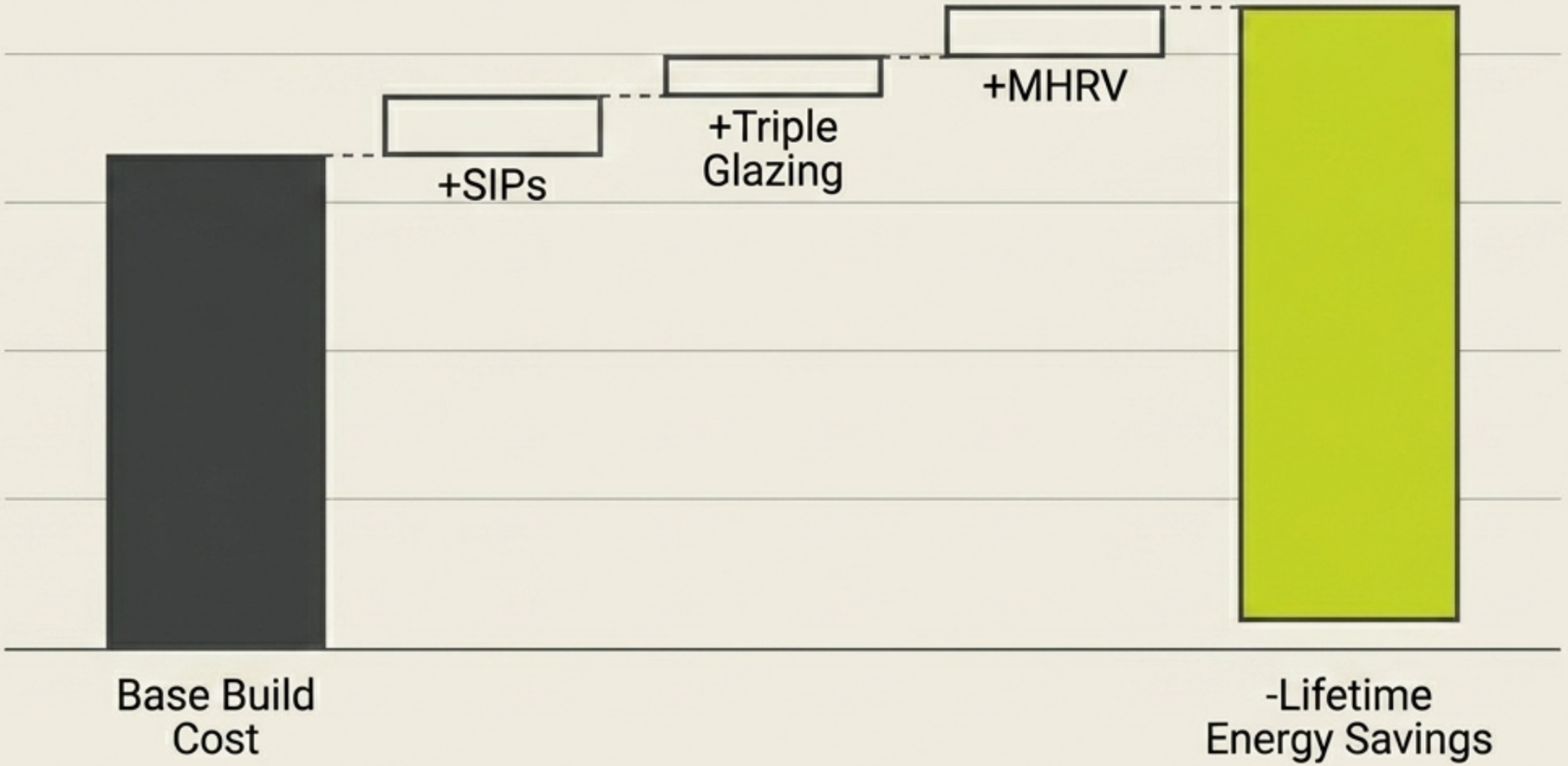
An airtight home cannot rely on drafts for fresh air. A Mechanical Heat Recovery Ventilation (MHRV) system continuously extracts stale, moist air from bathrooms and kitchens, using its heat to warm incoming, filtered fresh air from outside.

Result: 100% fresh air, zero drafts, and dry windows, sills, and doors with no condensation.

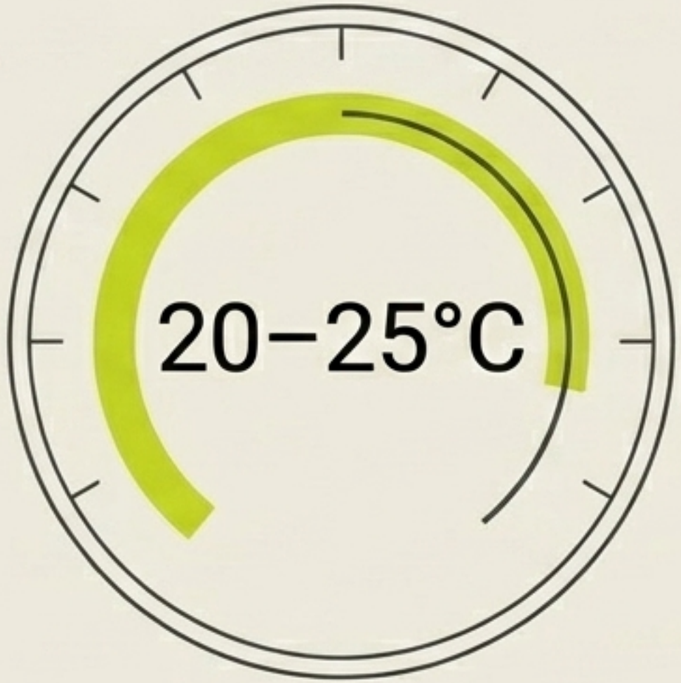


The Architecture of the Premium

The upgrades required for a Passive House represent an upfront capital expenditure (CAPEX). However, this premium acts as a fixed hedge against variable, lifelong operational expenditures (OPEX).



The Lived Yield



Temperature

Constant indoor temperature maintained year-round, regardless of external seasons.

Acoustics

Thick, recessed triple glazing buffers urban and environmental noise.

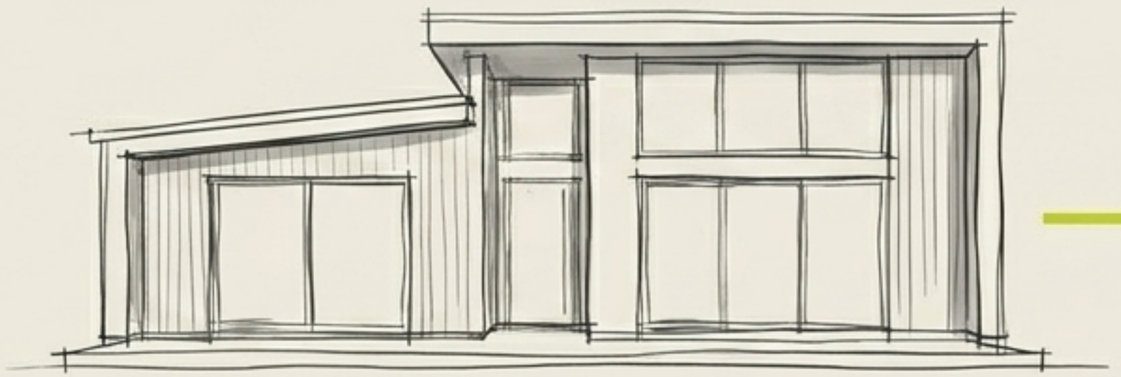
Carbon

The amount of carbon emissions saved per year compared to a standard New Zealand home.

Moving from Guesswork to Physics

Passive House certification replaces assumptions with exact mathematics. Using the Passive House Planning Package (PHPP), the home's energy consumption, heating, and cooling demands are modeled with exceptional accuracy during the design phase.

Key Insight: Every design decision is measured against performance and budget before construction begins.



14.7 kWh/m²a	3.5 ACH	11.6 ACH	0.11 W/(m²K)	--	--	11.3°C m²	210 m²	[illegible]
14.7 kWh/m²a	3.5 ACH	10.3 ACH	0.11 W/(m²K)	85%	11.3°C	13.3 m²	210 m²	[illegible]
14.7 kWh/m²a	3.5 ACH	11.8 ACH	0.11 W/(m²K)	85%	11.3°C	13.3 m²	210 m²	[illegible]
14.7 kWh/m²a	3.5 ACH	10.3 ACH	0.11 W/(m²K)	--	--	11.3°C m²	210 m²	[illegible]
14.7 kWh/m²a	3.5 ACH	0 ACH	0.11 W/(m²K)	--	85%	210 m²	210 m²	[illegible]
14.7 kWh/m²a	3.5 ACH	12.6 ACH	0.11 W/(m²K)	85%	11.3°C	0.11 W/(m²K)	210 m²	[illegible]
14.7 kWh/m²a	3.5 ACH	0.3 ACH	0.11 W/(m²K)	85%	11.3°C	13.3 m²	210 m²	[illegible]
14.7 kWh/m²a	3.5 ACH	0 ACH	0.11 W/(m²K)	--	--	210 m²	210 m²	--

Budget Architecture: Controlling the Variables

Pillar 1: Early Geotechnical Data

Securing a geotech report before locking a budget prevents six-figure subterranean surprises.

Pillar 2: Form Factor Discipline

Prioritizing simple, geometric footprints (squares and rectangles) over highly articulated structures to drastically reduce structural complexity and surface area heat loss.

Pillar 3: The 15% Contingency

Maintaining a strict 15% contingency fund from the first quote to buffer against material fluctuations and variable costs.

Redefining the Cost of Construction

Building a home in New Zealand is a major financial undertaking, regardless of the standard you choose.

A Passive House demands a higher initial capital investment, but in return, it eliminates the unpredictable variables of energy inflation, condensation degradation, and thermal discomfort.

It is not a luxury upgrade; it is the most predictable, calculable investment you can make in the lifespan of your home.