

THE ARCHITECTURE OF COMFORT

Demystifying Passive House, Homestar, and SuperHome
for the New Zealand Climate.

Ecotectural Home Builders

THE BASELINE REALITY

16.1°C

The average night-time bedroom temperature in standard New Zealand homes.

Dangerously below the WHO healthy minimum guidelines, yet remains culturally normalized.

50%

Nearly half of all New Zealand homes report visible mould, with 33% experiencing regular, pervasive dampness.

9/10

Nine out of ten respondents believe their home is a "healthy place to live," despite regular shivering, condensation, and mould.

The gap between the
The gap between the perceived standard and the architectural ideal is vast.

THE PHYSICS OF PERFORMANCE

01 / Airtightness

Stopping leaks. Eliminating uncontrolled drafts and air movement through the thermal envelope to protect against hidden moisture and massive energy loss.



02 / Super Insulation

Thermal retention. Continuous, bridge-free insulation scaled to the regional climate, creating a 'thermos flask' effect that effortlessly maintains 20–25°C year-round.

03 / Mechanical Ventilation

Fresh, dry air. MVHR systems continuously extract stale, moist air from bathrooms and kitchens while pre-warming filtered fresh air drawn from outside.

THE FRAMEWORKS

SUPERHOME

The Baseline Shift

Definition: An open-source NZ movement advocating for homes built significantly beyond the failing minimum building code.

Role: The essential stepping stone. A deliberate rejection of the standard code-minimum build in favor of practical, baseline high performance.

HOMESTAR (V5)

Holistic Sustainability

Definition: The NZGBC's comprehensive rating system (6 to 10 stars) covering energy, health, water, waste, materials, and embodied carbon.

Role: The broad environmental benchmark, heavily prioritizing thermal comfort and introducing absolute energy caps in its V5 iteration.

PASSIVE HOUSE

The Apex of Physics

Definition: The uncompromising international standard for ultra-low energy, absolute thermal comfort, and zero performance gap.

Role: The ultimate benchmark for indoor climate engineering. Total mastery of airtightness, insulation, and ventilation.

THE COMPARISON MATRIX

	HOMESTAR V5	PASSIVE HOUSE
PRIMARY FOCUS	Broad holistic sustainability (water, waste, carbon, materials, energy).	Absolute thermal comfort, health, and ultra-low operational energy.
ENERGY METRIC	Points system, but v5 introduces absolute energy intensity caps (replacing the flawed reference-model approach).	Strict absolute caps. Space heating demand must not exceed 15 kWh/m2a. ●
MODELING ENGINE	ECCHO (Energy and Carbon Calculator for Homes), built entirely upon PHPP principles.	PHPP (Passive House Planning Package) — the gold standard with over 30 years of monitored performance data.
ENVELOPE INTEGRITY	Blower door testing required for 8+ stars; sets limits on infiltration and addresses junction moisture (fRsi).	Uncompromising airtightness (0.6 ACH n50) ● and verified bridge-free construction.

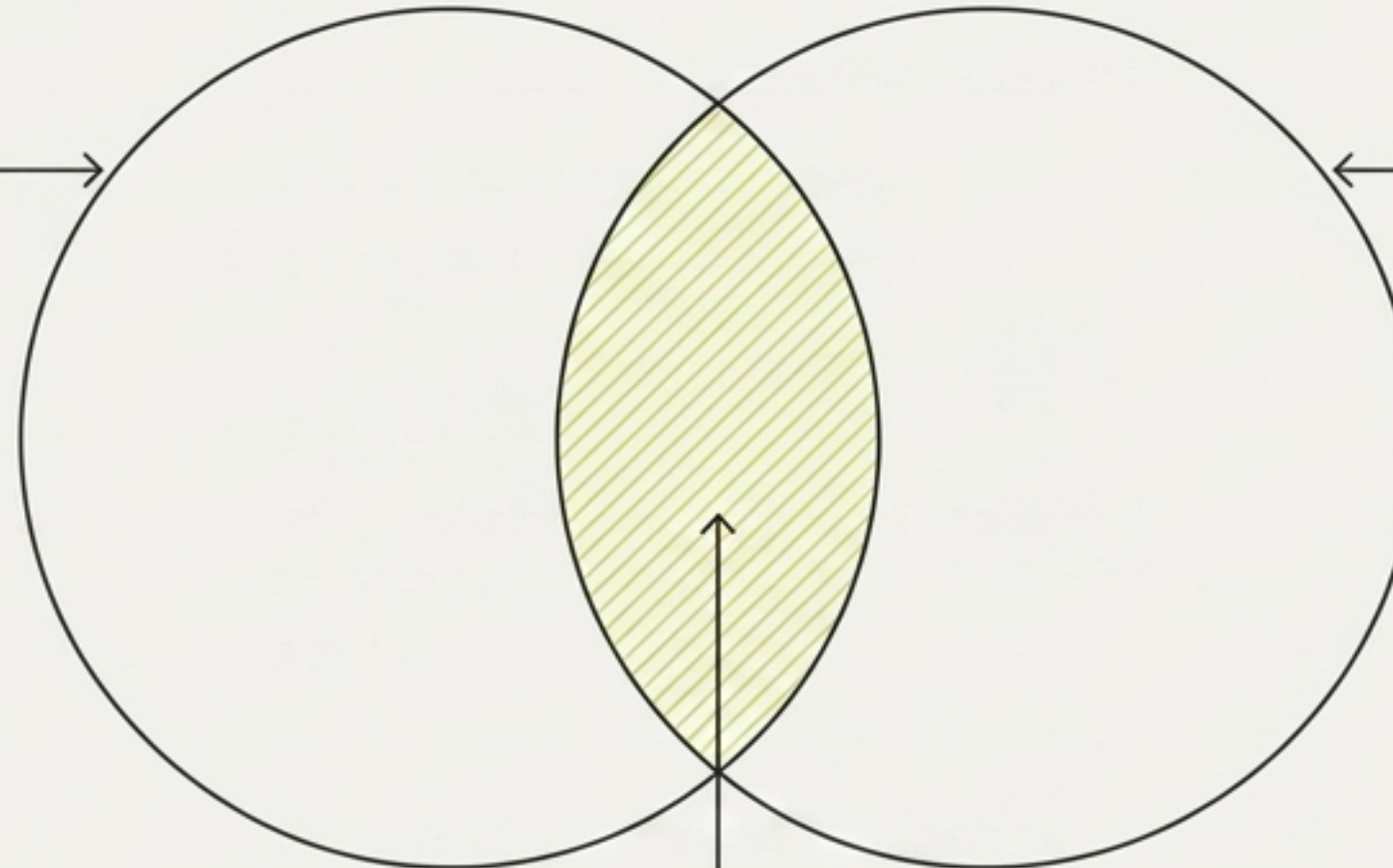
THE SYNERGY

PASSIVE HOUSE FOUNDATION

Delivers absolute thermal comfort, eliminates the performance gap, and requires exactly 15 kWh/m²a maximum energy use.

HOMESTAR V5 AMBITION

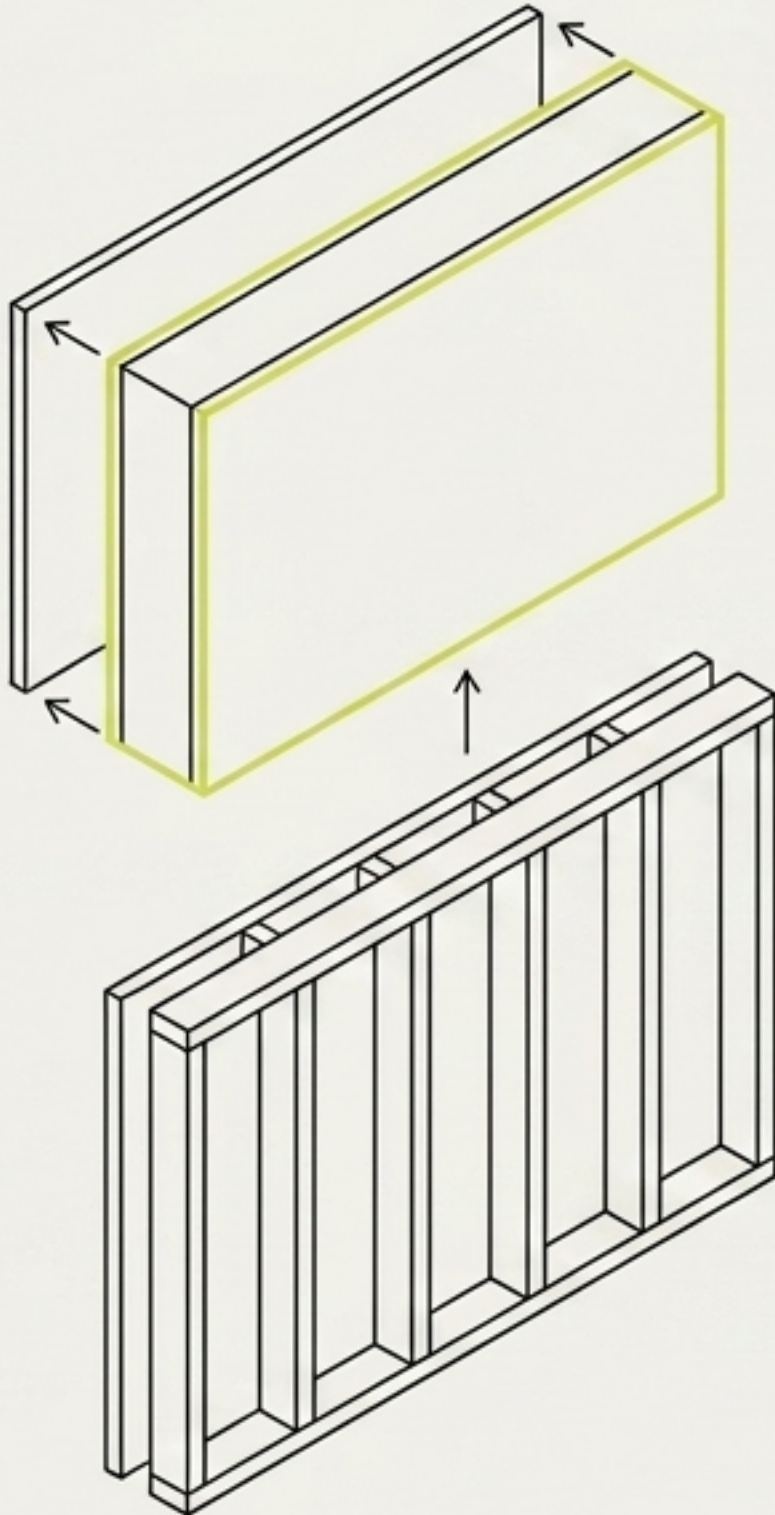
Requires holistic metrics across daylight, water conservation, low VOCs, and waste reduction.



THE CROSSWALK

They are not mutually exclusive. A Certified Passive House automatically captures massive Homestar point allocations in Energy, Comfort, Ventilation, and Moisture control. Building to Passive House standards provides the ultimate foundation to achieve a world-leading 10-Star Homestar rating.

THE ENVELOPE BLUEPRINT: STRUCTURAL INSULATED PANELS



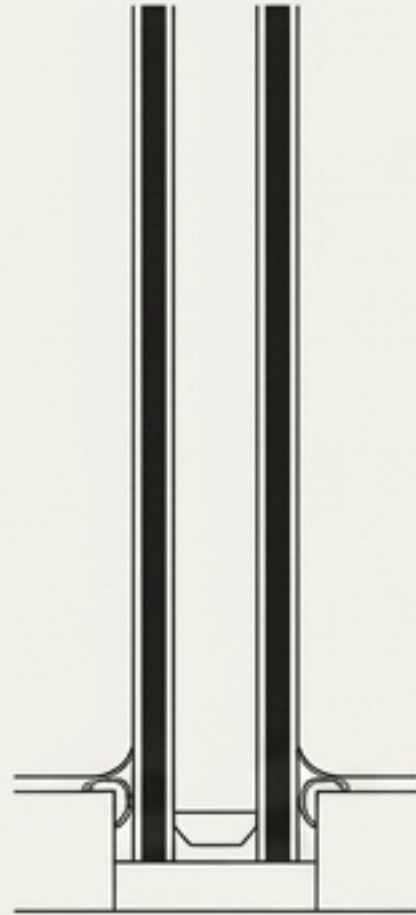
PERFORMANCE SIPS (ADVANCED ENGINEERING)

- Delivers continuous, exceptional R-values.
- Inherently bridge-free architectural design.
- Built-in airtightness from the factory.
- Significantly speeds up construction time while reducing on-site waste.

TRADITIONAL TIMBER (90mm / 140mm)

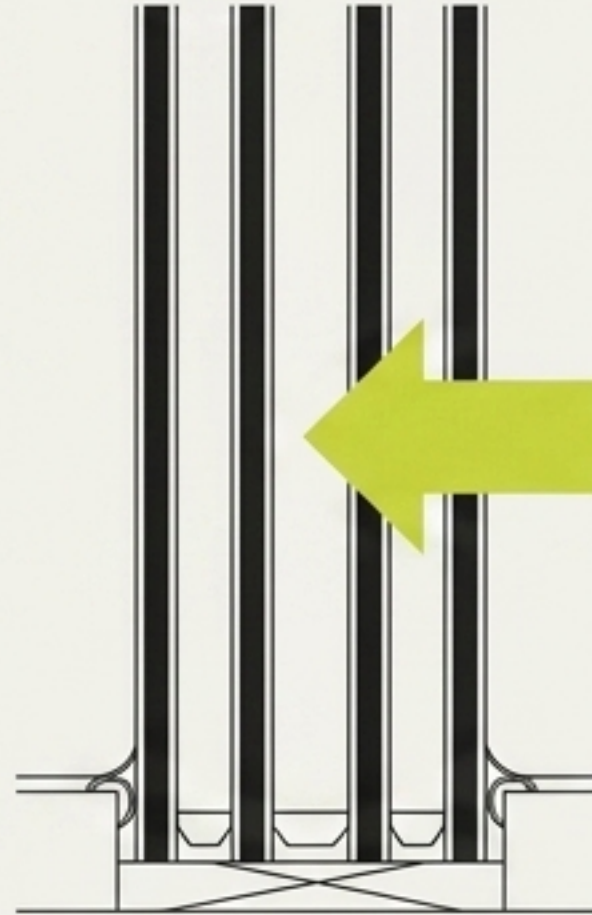
- Highly conductive thermal bridging through every stud.
- Inherently prone to air leakage and moisture.
- Requires complex, multi-layered wrapping and extensive taping to achieve even baseline performance.

THE THERMAL BATTLEGROUND: GLAZING



STANDARD DOUBLE GLAZING

Two panes, single cavity,
standard spacers.



KOFFMAN EUROPEAN TRIPLE GLAZING

Three panes, dual cavities, argon
injection, warm edge spacers,
thermal breaks.

THE VULNERABILITY

Up to 50% of a home's heat is lost through standard windows via radiation, conduction, and air leakage.

THE LEAP

Upgrading from standard double to Koffman triple glazing jumps the R-value from 1.1 to 2.0 — an 81% increase in absolute thermal efficiency.

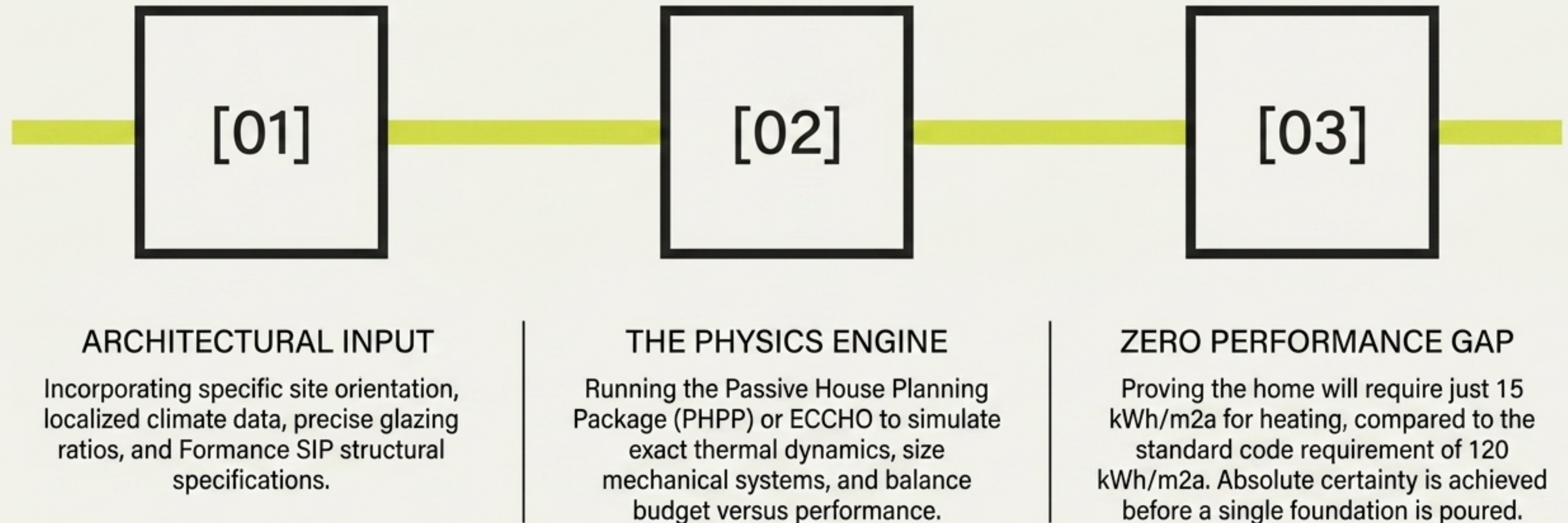
THE ENGINEERING

Achieved via 2x18mm warm edge spacers, Argon gas injection, Planitherm XN Low-E coatings, thermal breaks, and recessed installation.

THE ECONOMICS

Driven by European economies of scale, whole-house triple glazing commands only a ~5% premium over locally sourced double glazing, while simultaneously delivering up to 80% noise reduction.

THE PROOF: ENERGY MODELING



THE ECOTECTORAL STANDARD.

Whether the goal is the uncompromising precision of Passive House, the holistic environmental benchmark of a 10-Star Homestar, or the practical baseline shift of a SuperHome, the physics of comfort remain identical.

We deploy advanced predictive energy modeling, continuous SIP envelopes, and European triple glazing not to chase certificates, but to engineer the ultimate luxury: a warm, dry, fundamentally healthy home.