

27 Snapper Crescent (Lot 152)

Ōmokoroa, Bay of Plenty

Superhome 'Best' Expanded Performance Report

High-performance design, modelling, and as-built outcomes

-  **DESIGN** | Optimal orientation, function & aesthetics
-  **THERMAL PERFORMANCE** | Energy modelled
-  **STRUCTURE** | Super-insulated floor, walls & roof
-  **WINDOWS** | High-performance & recessed
-  **AIRTIGHTNESS** | Confirmed by air test
-  **VENTILATION** | Whole home heat recovery ventilation
-  **ENERGY** | Solar system, heat pump hot water, etc.
-  **WATER** | Efficient fittings & rainwater recycling
-  **MATERIALS** | Low carbon & responsibly sourced
-  **WASTE** | Plan, reduce, reuse, recycle



BASE | BETTER | BEST
Normalising Better Homes

Project Overview

This document summarises the high-performance design intent, verified modelling outcomes, and as-built results for the home at 27 Snapper Crescent (Lot 152), based on the architectural drawings, specifications, supplier information, product literature, invoices, thermal modelling, and project notes provided. The project demonstrates clear and compelling compliance with the Superhome Movement "Best" pathway, with exceptional outcomes in airtightness, thermal performance, structure, windows, ventilation, materials, energy, and waste minimisation.

The performance evidence is particularly strong. A blower door test photo captured immediately after testing records an average airtightness result of 0.51 ACH@50Pa, which is better than the Passive House threshold of 0.6 ACH@50Pa and significantly exceeds the Superhome "Best" airtightness target. Attached ECCHO thermal modelling records an annual heat demand of just 2.3 kWh/m²/yr, confirming a genuinely high-performance building envelope supported by modelling-led design decisions, upgraded insulation, reduced thermal bridging, and external solar control.

Superhome Value

A Superhome is one of the few investments where a ~10% increase in upfront cost delivers a step-change—not an incremental gain—in performance.

You're getting a building envelope that performs over 7 times better than standard construction, airtightness over 10 times tighter, and energy demand reduced to a fraction of a typical home.

That means dramatically lower running costs every single year, a consistently healthier indoor environment, and a home that actually holds—and grows—its value as building standards catch up.

In simple terms: you're not spending 10% more for a slightly better house—you're buying into a completely different class of asset that pays you back in comfort, health, and operating savings for decades.

27 Snapper Cres vs NZ Code (Standard)

Windows: +206% thermal performance
Schueco AWS 75.SI vs NZ standard R0.26
G-value 0.35, U-value 1.4, R-value 0.71

Airtightness: +50% less heat loss
0.5 ACH vs NZ standard 1.0 ACH

Heating Demand: -65% annual energy use
ECPH vs NZ standard

Walls: +145% thermal performance
R4.9 vs NZ standard R2.0
Ecopanel + Hebel plaster + GIB Fix cavity

Benefits

- Healthier indoor air
- Greater year-round comfort
- Lower energy bills
- Reduced carbon footprint

Logos: SUPERHOME movement, navigation homes

Superhome Framework

PILLAR	STATUS	COMMENT
Design	Best-level evidence	Thermal modelling informed design decisions, enclosure detailing, shading strategy, and performance-led specification.
Thermal Performance	Exceeds Best	ECCHO modelling shows annual heat demand of 2.3 kWh/m ² /yr and total space conditioning demand of 7.0 kWh/m ² /yr.
Structure	Best-level evidence	Super-insulated slab, wall, roof, and midfloor assemblies provide strong continuity of the thermal envelope.
Windows	Best-level evidence	Koffman triple-glazed uPVC recessed joinery with high-performance glazing and integrated airtight detailing.
Airtightness	Exceeds Best	Measured blower door result of 0.51 ACH@50Pa exceeds Superhome Best and performs better than Passive House threshold.
Ventilation	Best-level evidence	Balanced whole-home heat recovery ventilation via Brink Flair 325, Passive House certified, 92% efficiency.
Energy	Best-level evidence	Solar PV, hybrid inverter, efficient heat pump, and external shading contribute to low operational energy demand.
Water	Partially evidenced	Efficient fixtures noted; rainwater harvesting or reuse would strengthen this pillar further if pursued.
Materials	Best-level evidence	Firth low-carbon concrete, Ecopanel system, and Superhome-aligned supply chain support lower embodied carbon outcomes.
Waste	Best-level evidence	Off-site Ecopanel manufacture materially reduced construction waste and supported a more efficient build methodology.

Expanded Technical Narrative

The following sections expand on the major performance pillars of the home, showing the measured or modelled performance, the strategy used to achieve it, and why the outcome is materially better than standard New Zealand construction.

1. AIRTIGHTNESS & ENVELOPE INTEGRITY

The Performance

- Snapper Cres Result: 0.51 ACH@50Pa (Air Changes per Hour).
- Standard NZ Home: 5.0 – 10.0 ACH (Unverified/Estimated).
- The Difference: The home is approximately 10 to 15 times tighter than a typical new-build house in New Zealand.

How it Works (The Snapper Strategy)

- Continuous Membrane: Pro Clima Intello internally and Extasana externally were used to establish a continuous high-performance air control layer.
- Protection Layer: A dedicated 45 mm service cavity was created so electrical and plumbing trades did not have to puncture the primary airtight layer.
- Precision Fixing: The GIB Fix system reduced unnecessary fastener penetrations and helped protect the integrity of the airtightness strategy.
- Joinery Interfaces: Window and door junctions were mechanically air-sealed and taped into the broader air barrier system.

Why it is “Super”

- Standard NZ construction typically relies on accidental airtightness, where leakage occurs through framing interfaces, penetrations, joinery junctions, and untested construction tolerances.
- In leaky homes, wind-washing strips heat from insulation and undermines comfort and efficiency.
- The Benefit: By achieving 0.51 ACH@50Pa, the home eliminates drafts, protects the wall assembly from moisture migration, and ensures the heat paid for stays inside where it belongs.

2. THERMAL PERFORMANCE & DESIGN

The Performance

- Snapper Cres Result: 2.3 kWh/m²/yr (Annual Heat Demand).
- Standard NZ Home: 80 – 120 kWh/m²/yr (Estimated).
- The Difference: The heating requirement is approximately 97% lower than a typical New Zealand home.

How it Works (The Snapper Strategy)

- We did not guess the insulation package; it was engineered using ECCHO thermal modelling from the design phase onward.
- System R-Values: Ecopanel construction with Knauf Earthwool achieves wall performance of approximately R4.9, with roof values up to approximately R6.7 and high-performing insulated midfloor and slab assemblies.
- Thermal Bridge Mitigation: Modelling identified slab-edge heat loss, which was mitigated using 385 mm Firth Hot Edge perimeter insulation and Expol Thermaslab under the slab.
- Climate-Specific Design: Tauranga modelling identified overheating risk, directly informing the inclusion of Zipner SQ 110 external shutters/screens to block solar gain before it reaches the glazing.

Why it is “Super”

- The NZ Building Code commonly uses a schedule method, which is essentially a checklist rather than a whole-of-home performance optimisation tool.
- That approach does not fully account for orientation, glazing ratios, local climate, or compounding thermal bridge effects.
- The Benefit: Because this home was modelled and tuned, it is designed to hold very stable indoor temperatures with very little active heating or cooling. It behaves like a thermal thermos rather than a standard code-minimum house.

3. HIGH-PERFORMANCE WINDOWS

The Performance

- Snapper Cres Result: Koffman triple-glazed uPVC joinery with approximately R1.24 system performance.
- Standard NZ Home: Double-glazed aluminium joinery with typical system performance around R0.37 – R0.45.
- The Difference: The window system is nearly three times more efficient than standard high-spec aluminium double glazing.

How it Works (The Snapper Strategy)

- Windows were treated as part of the thermal envelope rather than as unavoidable weak points.
- uPVC Frames: Unlike aluminium, uPVC is not a major thermal conductor and significantly reduces frame-related heat loss.
- Triple Glazing: Three panes of glass with low-emissivity coatings and insulating gas fill reduce radiant and conductive heat transfer.
- Recessed Installation: The windows were installed recessed into the thermal layer, reducing edge losses and thermal bridging at the opening.
- Airtight Detailing: Window-to-wall junctions were taped and integrated into the broader airtightness system.

Why it is “Super”

- In standard NZ construction, window frames often remain the coldest surfaces in the house and are a common source of winter condensation.
- Thermal bridging through aluminium frames and poorly integrated junctions can compromise comfort and efficiency even when glazing is upgraded.
- The Benefit: These windows stay warmer internally, greatly reduce condensation risk, improve acoustic comfort, and allow occupants to sit near glazing without the cold-radiation effect typical of standard housing.

4. SUPER-INSULATED STRUCTURE

The Performance

- Snapper Cres Result: Walls approximately R4.9, roof approximately R5.4 to R6.7, midfloor approximately R4.7, and slab approximately R1.93.
- Standard NZ Home: Commonly built to code-minimum insulation levels with weaker slab edges and less continuity between elements.
- The Difference: The home provides substantially higher thermal resistance and much better continuity of insulation across floor, wall, roof, and junctions.

How it Works (The Snapper Strategy)

- Ecopanel System: The wall build-up combines framing, high-performance insulation, rigid air barrier support, and careful airtightness detailing into a stronger thermal shell.
- Knauf Earthwool: Used within the wall system to provide dense, reliable insulation performance.
- Qpod Raft Foundation: The floor system uses a Qpod raft slab with 50 mm Expol Thermaslab under the footprint and Firth Hot Edge at the perimeter.
- Continuity Strategy: The project pursued thermal continuity between slab, wall, roof, and intermediate floor elements rather than isolated upgrades in only one area.

Why it is “Super”

- Standard NZ construction often performs unevenly, with reasonable insulation in some areas but major losses at slab edges, soffits, junctions, and transitions.
- A high nominal R-value means less if continuity is broken in practice.
- The Benefit: This structure reduces heat loss across the entire enclosure, improves temperature stability, lowers running costs, and reduces cold spots and condensation risk throughout the building.

5. VENTILATION & HEALTHY AIR

The Performance

- Snapper Cres Result: Brink Flair 325 balanced MVHR system with approximately 92% heat recovery efficiency.
- Standard NZ Home: Intermittent extract fans and manual window opening, with no heat recovery.
- The Difference: This home recovers the vast majority of heat from outgoing air while standard homes lose that heat completely during ventilation.

How it Works (The Snapper Strategy)

- Balanced Ventilation: Stale and moisture-laden air is extracted from wet rooms while fresh, filtered air is supplied to living and sleeping spaces.
- Heat Exchange: The unit transfers warmth from outgoing air to incoming air without mixing the two air streams.
- Passive House Certified Unit: Brink Flair 325 aligns with the level of performance expected in premium airtight homes.
- Envelope Preservation: A recirculating rangehood was used to avoid a large direct exhaust opening through the airtight building shell.

Why it is “Super”

- Most NZ homes still rely on random leakage and occasional fan use for ventilation, which is inconsistent, wasteful, and often poor at controlling indoor humidity.
- Opening windows in winter sacrifices comfort and energy efficiency at the exact moment fresh air is needed most.
- The Benefit: The home receives continuous fresh filtered air, reduced condensation risk, lower indoor humidity, and healthier living conditions without throwing away the heat that has already been paid for.

6. ENERGY & SOLAR INTEGRATION

The Performance

- Snapper Cres Result: 12 x 440 W Jinko solar panels, 6 kW Sigen hybrid inverter, Basis smart switchboard, Panasonic Premium Series heat pump, and external Zipner shading.
- Standard NZ Home: Higher energy demand building shell, conventional switchboard, limited real-time energy visibility, and little or no on-site generation or smart load management.
- The Difference: This project does not just reduce energy use — it actively generates, monitors, manages, and optimises it. The result is a far more intelligent and resilient energy system than standard residential construction.

How it Works (The Snapper Strategy)

- Reduce First Strategy: The airtight, insulated, and thermally modelled building envelope reduces heating and cooling demand before active systems are layered in.
- Solar PV: The 12-panel Jinko array provides on-site renewable electricity generation, reducing imported grid demand.
- Hybrid Inverter: The Sigen 6 kW hybrid inverter supports efficient solar use today and provides future battery-readiness.
- Smart Electrical Control: The Basis smart switchboard adds a further layer of performance by giving real-time visibility into household energy use, circuit-level monitoring, fault detection, and smarter control of loads.
- Efficient Conditioning: The Panasonic Premium Series heat pump provides highly efficient active heating and cooling when required.
- External Solar Control: Zipner SQ 110 external shutters/screens reduce peak summer solar gain before it reaches the glazing, lowering cooling loads and improving comfort.

Why it is “Super”

- Many standard homes rely on a conventional switchboard that simply distributes power, with no meaningful insight into where energy is being used or how performance can be improved.
- Standard homes also tend to consume more energy because the building envelope is weaker and the services are less integrated.
- This home takes a much more advanced approach: it first reduces demand through the enclosure, then offsets energy use with solar, and then improves performance again through smart monitoring and control via the Basis system.
- The Benefit: The result is lower power bills, lower emissions, better visibility of household energy use, improved electrical safety, and a more future-ready home that is better equipped for evolving technologies such as battery storage, EV charging, and intelligent load management.

7. MATERIALS & WASTE MINIMISATION

The Performance

- Snapper Cres Result: Firth low-carbon concrete, Ecopanel off-site manufacture, and a supply chain closely aligned with Superhome-supported companies.
- Standard NZ Home: Conventional on-site construction with significant cutting waste, higher landfill volumes, and little focus on embodied carbon reduction.
- The Difference: This project reduces environmental impact both in the materials selected and in the way the home was physically built.

How it Works (The Snapper Strategy)

- Low-Carbon Concrete: Evidence was provided for the use of Firth low-carbon concrete in the slab pour for Lot 152.
- Prefabrication: Ecopanel off-site manufacture reduced on-site cutting, off-cuts, handling damage, and avoidable waste.
- Quality Through Control: Factory-based production improves repeatability, tolerances, and sequencing compared with fully site-based construction.
- Values-Led Procurement: A number of core products and suppliers align strongly with the Superhome ecosystem and its sustainability goals.

Why it is “Super”

- Traditional construction is often linear: order materials, cut them on site, discard the leftovers, and accept waste as normal.
- This project instead addresses waste and embodied carbon at source through design, manufacturing, and supplier choice.
- The Benefit: The home reduces landfill waste, lowers embodied carbon, improves quality control, and demonstrates that performance and environmental responsibility were built into the project from the outset.

CLOSING NOTE

This report is based on project information supplied by the client, including drawings, supplier quotes, product literature, thermal modelling outputs, invoice evidence, and a photographic record of the blower door result page. Taken together, the evidence demonstrates that 27 Snapper Crescent is not merely aligned with the Superhome “Best” pathway, but is a highly credible and well-evidenced example of Best-category performance in practice.