ovens & king builders
high performance homes

Inner Urban Sustainable Home

The Vision

The Inner Urban Sustainable Home is a cutting-edge example of thoughtful residential construction. Designed Freedom of Design and built by Ovens & King Builders – a company with over 37 years of experience in creating award-winning homes in Victoria's North East – this project exemplifies the integration of high-performance design, energy efficiency, and aesthetic appeal. The home was conceived as a modern, eco-conscious sanctuary that prioritises environmental responsibility without compromising on luxury or comfort.

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A primary goal of the project was to create a home that aligns with the highest standards of energy efficiency while delivering an exceptional living experience. The design brief called for a residence that would achieve net-zero operational energy use, reducing environmental impact, and provide long-term cost savings for its occupants. By incorporating advanced building techniques and premium materials, the project aimed to set a new benchmark for sustainable housing in the region.

Design Features

Architectural Excellence

The home's design seamlessly blends functionality with visual appeal. Key features include:

- **Design Response:** The site has significant slope, leading down to the adjacent creek. The decision to go to a split-level slab, sited above potential flood levels was a positive response to those constraints.
- **Indoor-Outdoor Flow:** The dining and family areas open effortlessly to an alfresco space and western verandah, offering picturesque views of One Mile Creek.
- **Natural Light and Ventilation:** Raked ceilings in the kitchen, dining, and family areas enhance spatial volume while maximizing daylight and airflow.
- **Durable Façade Materials:** A combination of 'Pure White' masonry bricks, Silvertop Ash timber cladding, and Colorbond Dominion metal cladding ensures both longevity and aesthetic sophistication.

Solar Passive Design Principles

The home's orientation and layout were carefully planned to optimise energy efficiency using the key aspects of Solar Passive design:

- North-facing orientation captures winter sunlight while minimizing summer heat gain.
- Thermally efficient uPVC window frames, double-glazed for sound and energy control, enhance the performance of the house while allowing light and comfort.
- Strategic window placement promotes cross-ventilation, reducing reliance on mechanical cooling.
- Glazing area's on the Southern elevation are reduced, minimising heat loss in Winter.

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Sustainability Initiatives

Energy Efficiency

The Dixon Street home incorporates state-of-the-art energy-saving technologies. The result is reflected in the **First Rate 5-star rating of 8.3-stars**:

- **High-Performance Insulation:**
  - Ceiling insulation (R7.0), high density wall batts (R2.7), and under-slab insulation (R2.55 XPS) create a complete and effective thermal envelope.
- **Airtight Construction:**
  - Pro Clima Solitex Extasana breathable wall membranes ensure superior weatherproofing and airtightness.
  - Taped joins and penetrations in the membranes control air movement.
  - Plaster linings were fitted to reduce air permeability to just 2.64 ACH (air changes per hour), well below conventional construction levels.
- **Renewable Energy:**
  - A 10 kW solar photovoltaic system offsets grid electricity use, supporting the home's net-zero energy goals.
- **Water Efficiency**

  Water conservation measures include:
  - Two 3,000L rainwater tanks connected to toilets and garden irrigation systems.
  - Efficient plumbing fixtures that reduce mains water consumption.
  - Carbon Neutral Blocks for the Future
    - The external masonry creates high quality, sustainable structure using architectural coloured building blocks comprising a high-quality engineered sand made from processed recycled glass aggregates. All Carbon Neutral building block products from Island Block & Paving are third party verified by Global Greentag and are also Global Greenrate Level A certified.

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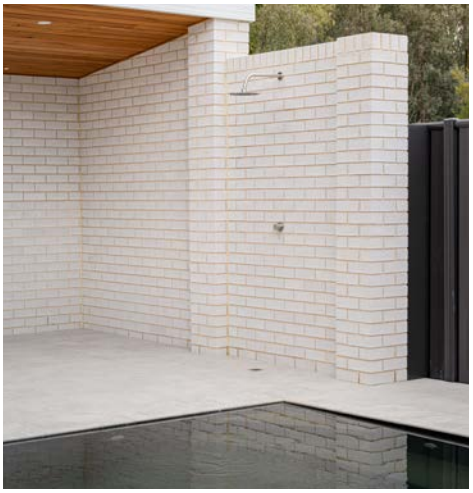

- **Smart Systems Integration**

  The home features advanced mechanical systems for optimal comfort and energy savings:

  - Mitsubishi Heavy Industries ducted split systems provide zoned climate control.
  - A Stiebel Eltron Heat Recovery Ventilation (HRV) system retains up to 94% of heat energy while ensuring fresh indoor air and a healthy environment in a relatively air tight home.
  - A Sanden Eco Plus heat pump hot water system operates at five times the efficiency of conventional units.
  - A small re circulating pump, triggered by room sensors, moves hot water through the system, reducing water waste.
  - Smart Switch electrical controllers provide great function and flexibility.

Construction Quality

Foundation and Structure

The home's foundation is built for stability and thermal performance:

- A split-level waffle pod slab system with reinforced concrete piers ensures structural integrity.
- Prefabricated wall frames and roof trusses made from termite-resistant pine enhance durability.
- Carbon Neutral Blocks for the Future blocks are manufactured with Tech-Dry water-repellent additives, providing a low maintenance wall finish. Carbon Neutral building block products from Island Block & Paving are third party verified by Global Greentag and are also Global Greenrate Level A certified.

Premium Finishes

Attention to detail is evident throughout the home:

- Custom joinery by R.M. Clayton Joinery elevates functionality and aesthetics throughout the house.
  - Ceasarstone waterfall benchtop and splashbacks.
  - Blackbutt timber shelving as features in the Kitchen.
  - Integrated dishwasher.

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- Large Butlers pantry.
- Blackbutt shelving to Master Bedroom as well as a window seat.

- Flooring materials include vinyl planks, premium carpets with soundproof underlays, and high-end tiles.
- Multilayer Haymes Ultra-Premium coatings provide a flawless finish on walls, ceilings, and timber elements.

Cost Effectiveness

While the construction cost per square metre reflects the use of premium materials and sustainable technologies, the long-term operational savings significantly enhance value:

- Estimated heating and cooling cost reductions of 30-50% due to high-performance insulation and airtight construction.
- Solar power generation offsets electricity bills significantly, contributing to net-zero greenhouse emissions and minimal operational costs.
- Durable materials like Colorbond roofing and Carbon Neutral Blocks minimize maintenance expenses over time.
- Thermal efficiency features future proof the home against regulation changes.

A Truly Great Result

The Inner Urban Sustainable Home is more than just a residence – it is a blueprint for the future of sustainable living. By executing innovative design and including advanced building technologies and practices, Ovens & King Builders have created a home that is not only environmentally friendly but also luxurious and comfortable. This project demonstrates that sustainability can go hand-in-hand with architectural excellence, setting a new standard for high-performance homes in Australia.