Driveway and Front Yard

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- The grassed areas soak up rain water, stopping runoff. They are also extra car parks or play spaces.
- The Climatewise garden has native flowering plants suited to the local climate, that attract birds and bees.
- The walled courtyard enabled the garage to be in line with the front of the house, not set back.

Construction Information

- Grass driveway: Compacted gravel with 'GEOHEX' grid above, then soil and grass. GEOHEX is an Australian made recycled plastic grid, which stabilises the ground to allow cars to drive over grassed areas.
- Plants: Native plants from 'Cool Climate Natives'.

External Finishes

- The light coloured roof and external finishes help keep the house and outside areas cooler in summer.
- Different types of timber panel boards are used on the outside of the home. It was an estate requirement for the front to have three different finishes, so brick was also used.

Construction Information

- Timber panel boards: 'Weathertex', which are Australian made of 97% hardwood timber and 3% natural wax for water repellence. Board types used are: Ecowall Smooth; Ecowall Natural; Weathergroove Smooth 600.
- Timber decking: Australian Spotted Gum Hardwood.
- Wall wrap: 'CSR Bradford' Enviroseal, sealed with tape on all edges.

Entry

- A large doormat, seat and a shoe space allow shoes to be easily removed and stops dirt being trampled through the home. This reduces cleaning and germs.
- As the hallway does not get direct north sun, the flooring is timber not thermal mass concrete.

Construction Information

- Timber seat and coat rack: Australian Red Ironbark.
- Mat: Coir, which is made from 100% natural coconut husk fibres.
- Hallway floor: Blackbutt engineered timber from 'Choices Flooring'.

Bedroom 2

- North facing windows with a wide eave above and a thermal mass concrete floor, means this room captures winter sun and shades out summer sun.
- This room has a west-facing window, which is not ideal in summer. It was included to meet the estate requirement, but has been kept as small as possible and has a low-e treatment, to reduce the impact of the hot summer westerly sun.
- A ceiling fan has been included in this room, as it is expected it may get warm due to the west window.
- A pendant light on the fan is used instead of downlights, to reduce ceiling holes.

Construction Information

- Windows: Tilt-and-turn, which means they can be opened two different ways for ventilation. They are also double-glazed, thermally broken aluminium, which means both the glazing and frames will keep the warmth in during winter and out during summer, and not result in condensation on either the glass or frame.
- Concrete floor: Burnished and finished with a natural 'Livos' sealant. Burnished concrete is less labour intensive, produces less waste and is cheaper than polished concrete.
- Insulation: Extra wall insulation was included in the areas of the west wall that are double thickness (these areas can be seen from the outside), to reduce the hot west summer sun.
- Robes: Ikea Pax range, with Fjellhamar (bamboo) doors.
- Ceiling fan: 'Big Ass' fan.

Bedroom 3

- North facing windows with a wide eave above and a thermal mass concrete floor, means this room captures winter sun and shades out summer sun.
- A pendant light is used instead of downlights, to reduce ceiling holes.

Construction Information

- Windows: Tilt-and-turn, double-glazed, thermally broken aluminium. Both the glazing and frames will keep heat in or out when needed, and not result in condensation.
- Concrete floor: Burnished with a natural 'Livos' sealant.
- Robes: Ikea Pax range, with Fjellhamar (bamboo) doors.

Garage

- This single car garage: saves space and costs; encourages other transport modes, such as electric bikes, public transport or car sharing.
- Extra cars can park in the driveway or courtyard.
- Garage door, walls, ceiling and ceiling access hole are insulated. Typically garages are not insulated.

Construction Information

- Insulated door: The garage door is insulated to reduce heat from the west sun heating the space in summer.
- Electric vehicles: A charging point is located on the internal wall. If a fast charging point is needed it can be easily retrofitted into the garage via the back of the switchboard, which is located on the outside of the southern garage wall.

Laundry

- The laundry has been located in the garage to: save space for a room not used very often; reduce washing machine noise in the home; and provide a multi-use benchtop and sink, which can be used as a laundry, garage worktop or wash-up area.
- Lots of storage has been incorporated.

Construction Information

- Benchtop: 'Paperock Ply'. This is made from exterior grade Birch plywood sandwiched either side with a 2mm layer of Paperock, which is layer upon layer of paper from renewable sources bonded with phenolic resin and heat/pressure cured.
- Cabinetry: Ikea Kungsbacka range. Uses leftovers and scrap wood in the particleboard, and recycled plastic outside.

Powder Room

- This basin is separate from the bathroom and toilet. This allows for hand washing or teeth brushing while the bathroom or toilet is being used.
- An LED solar skylight could be considered for this space. These look like a skylight, but do not put a hole in the ceiling and insulation.

Construction Information

- Vanity: Australian Red Ironbark timber decking.
- Cabinetry: Ikea Kungsbacka range. Uses sawmill leftovers and scrap wood in the particleboard, and recycled plastic on the outside.

Toilet

- The toilet has been separated from the bathroom. This allows it to be used while someone is in the bathroom.
- The window can be left open in summer for ventilation, but a ceiling fan could be added in the future.

Construction Information

- Window: Tilt-and-turn, double-glazed, thermally broken aluminium. Both the glazing and frames will keep heat in or out when needed, and not result in condensation.

Bathroom

- Neutral colours and finishes are used to reduce the bathroom dating over time.
- The exhaust fan has dampers, which stop the air from outside entering when the fan is not on. It is also vented to the outside wall (the vent can be seen from the media room).

Construction Information

- Vanity: Australian Red Ironbark timber decking.
- Cabinetry: Ikea Kungsbacka range. Uses sawmill leftovers and scrap wood in the particleboard, and recycled plastic on the outside.

Dining / Living Area

- North facing windows with a wide eave above and a thermal mass concrete floor, means this room captures winter sun and shades out summer sun.
- External sliding doors level with the deck outside, makes the spaces more accessible and flexible.
- Doors to the hallway and media room allow this space to be 'zoned' from other rooms. This reduces the area needing to be heated and cooled.
- Openable high clerestory windows and the kitchen window, allow night ventilation in summer when it is cool outside, while maintaining security.
- Pendant lights are used instead of downlights, to reduce ceiling holes.

Construction Information

- Windows and doors: Large sliding doors are Euro-style lift and slide which allows a better weather seal that traditional sliding doors. Double-glazed, thermally broken aluminium. Both the glazing and frames will keep the warmth in during winter and out during summer, and not result in condensation on the glass or frame.
- Concrete floor: Burnished with a natural 'Livos' sealant. Burnished concrete is less labour intensive, produces less waste and is cheaper than polished concrete.

Study

- This study faces into the living room, which means parents can keep an eye on what children are working on.
- A storage area for papers/folders has been tucked away out-of-sight from the main living space.
- Design allows for the study to be deleted and the bedrooms made slightly larger.

Construction Information

- Benchtop: 'Paperock Ply'. This is made from exterior grade Birch plywood sandwiched either side with a 2mm layer of Paperock, which is layer upon layer of paper from renewable sources bonded with phenolic resin and heat/pressure cured.

Kitchen

- This is a low cost kitchen, freeing up money for energy efficiency features. Note: it is cheaper to upgrade the kitchen later than retrofit windows.
- A stone benchtop was used around the wet and cooking areas, as it is less susceptible to marking.
- Electrical switches are included for the oven and microwave. This allows them to be switched off when not in use, which reduces standby power.
- Narrow shelving is used for the pantry. This helps food to not get lost in the back of the cupboard.
- The floor does not get direct north sun, so it doesn't need to be thermal mass. A floating timber floor is used, which sits on top of the concrete.

Construction Information

- Feature bench: Recycled Blackbutt timber by 'Thors Hammer' with 'Weathertex' cladding on the front.
- Cabinetry: Ikea Kungsbacka range. Uses sawmill leftovers and scrap wood in the particleboard, and recycled plastic on the outside.
- Floor: Blackbutt engineered timber from 'Choices Flooring'.

Media Room

- Located on the south, this room will stay cooler in summer and be a 'cool room' if the power goes out.
- The wider door makes it a multi-use space with the living area, while allowing it to be separated to become an extra bedroom or study.
- As this room does not get direct north sun, the flooring is timber not thermal mass concrete.
- A pendant light is used instead of downlights, to reduce ceiling holes.

Construction Information

- Windows: Triple-glazed, thermally broken aluminium.
- Floor: Blackbutt engineered timber from 'Choices Flooring'.

Master Bedroom

- North facing window and sliding door with a wide eave above and a thermal mass concrete floor, means this room captures winter sun and shades out summer sun.
- The reverse brick veneer wall (brick is on the inside rather than the outside) shows an alternative option for getting thermal mass into a room.
- A ceiling fan has been included in this room for use on warm nights.
- A pendant light on the fan is used instead of downlights, to reduce ceiling holes.

Construction Information

- Window and door: Double-glazed, thermally broken aluminium. Both the glazing and frames will keep heat in or out when needed, and not result in condensation.
- Concrete floor: Burnished with a natural 'Livos' sealant.
- Insulation: Extra wall insulation was included in the areas of the east wall that are double thickness (these areas can be seen from the outside), to reduce the hot east summer sun.
- Reverse brick veneer wall: This type of construction is good if thermal mass can't be achieved on the floors, but it does add other complexities, such as how it is finished when it abuts other walls and electrical wiring can't be easily changed once the wall is in place.
- Ceiling fan: 'Big Ass' fan with bamboo blade finish.

Walk in Robe

- A window has been included in this robe to provide natural light.
- A seat under the window allows the room to be more accessible. You can sit down when changing!
- The ceiling access hole has insulation behind it.

Construction Information

- Shelving and hangers: Ikea 'Elvarli' range, which includes bamboo (with cardboard inside) shelves.
- Floor: Blackbutt engineered timber from 'Choices Flooring'.

Ensuite

- Neutral colours and finishes are used to reduce the ensuite dating over time.
- The exhaust fan has dampers, which stop the air from outside entering when the fan is not on. It is also vented to the outside wall (the vent can be seen from outside).

Construction Information

- Timber vanity: Australian Red Ironbark timber decking.
- Cabinetry: Ikea Kungsbacka range. Uses sawmill leftovers and scrap wood in the particleboard, and recycled plastic on the outside.

Studio

- North sun is captured from the high clerestory window.
- The green roof provides added insulation, helps soak up water like a sponge in heavy rain events, but most importantly, it supports biodiversity.

Construction Information

- Green roof: Marine plywood on timber structure; waterproofing by 'Sika'; plastic drainage panels; geotextile root barrier; growing medium (50% coconut husks/cocopeat, 20% soil, 20% scoria, 10% river sand), plants and mulch.
- Window and doors: Double-glazed, thermally broken aluminium. Both the glazing and frames will keep heat in or out when needed, and not result in condensation.

Wrapping, Sealing & Insulation

- In this home all of the walls are well wrapped, all of the penetrations are well sealed and all of the walls and ceilings are insulated. This includes the garage, which is often not insulated in homes.
- Pendant lights are used instead of downlights , to reduce ceiling holes and areas that are not insulated.

Construction Information

- Wall wrap: 'CSR Bradford' breathable Enviroseal RW wall wrap and 'CSR Bradford' Enviroseal HighTack Proctor Tape.
- Wall insulation: 'CSR Bradford' Gold Hi-Performance R2.5 batts. This uses glasswool, which is molten glass made from around 80% recycled glass.
- Ceiling insulation: 'CSR Bradford' Gold R4.1 batts and 'CSR Bradford' Anticon R1.3 blanket under the metal roof.

Appliances

- Appliances are electric, energy and water efficient.
- The house is monitored for internal temperatures.

Construction Information

- Hot water: Stiebel Eltron heat pump.
- Heating/Cooling: A reverse-cycle air conditioner with a single external unit and two room units is installed for the rare occasions temperatures move beyond comfortable.
- Cooktop: Induction.

Renewable Energy

- Solar panels and a battery are expected to support the home to be zero energy or better for the year.

Construction Information

- Solar Panels: 6.6kW of solar panels from 'Mondiaux Solar' are located on the 6.3° south facing roof. The almost flat south facing panels lose around 5% efficiency, so the savings in not propping the panels up on frames were spent on the extra 1.6kW in panels to compensate for the losses.
  - The panel orientation may also allow extra earnings in late summer afternoons once time-of-day metering is introduced. This will be monitored and reported on after the first full summer period.
- Battery: 11.6kW battery located on south wall of garage.

Sustainable Living

- Food growing plants will be incorporated in the garden, in addition to the garden herbs in the verge garden.
- Quails will provide eggs for residents and manure for the gardens.
- Composting of food will use a worm farm and/or compost bin.

Construction Information

- Compost bin: Preferred type is an Aerobin 200L. The lid and walls of this are insulated to support year round composting, it is rodent resistant and it has no manual intervention, as air is distributed through the biomass by the patented aeration lung.
- Quail hutch: The hutch was a found object and the outside run area was added.

Furnishings

- Fabrics and objects within the home have been chosen based on their natural, sustainable or recycled properties, where possible.

Construction Information

- Curtains: Linen with cotton lining.
- Rugs: Cotton, wool and jute.
- Garage mat: Coir, made from 100% natural coconut husk fibres, with a natural latex backing.
- Bedding: Cotton and/or wool.
- Lounge and kitchen items: Varies, but includes recycled timber, plywood, cotton, recycled materials.