



The Rose Seidler House

Harry Seidler, 1950

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TECHNOLOGY 3

Tutor: Rosanna Blacket

Part 1

The original



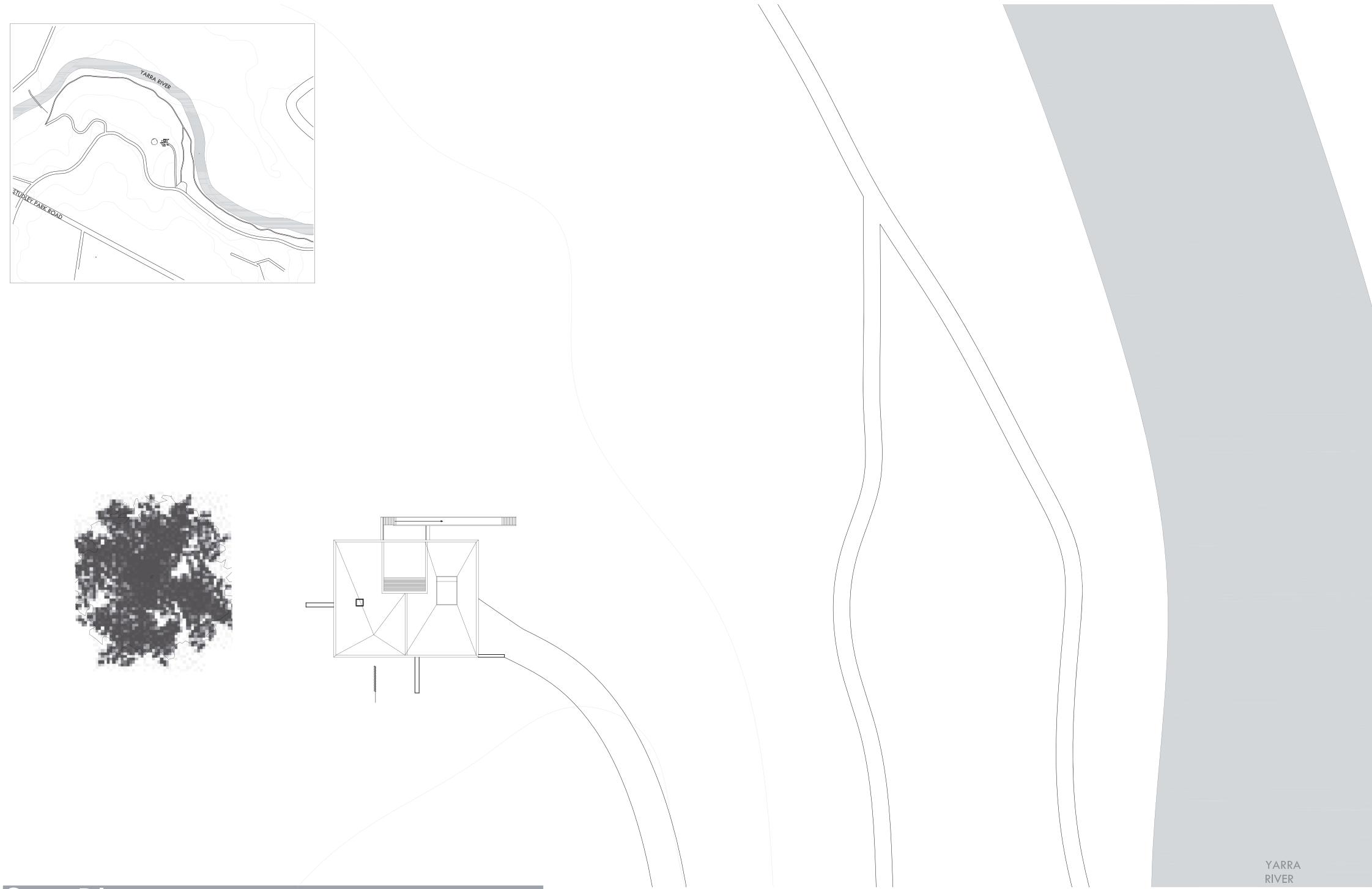
- Built on extensive property of 16 acres in Woollahra, NSW, on the edge of the public reserve Ku-ring-gai Chase
- The property is on a slope and looks north towards panoramic views
- Due to ample ground, and a desire for a **single outlook**, the building is freely exposed on all sides so that varying views of the surroundings become part of the interior.
- Plan separates living and sleeping and joins them with a **central play space**. This area can be used in conjunction with the two alcove - type children's rooms, by closing a free hanging heavy curtain – or it can be incorporated into the adults living space.
- Separation of the outdoor living areas on sides of the house provide children play spaces, next to the service yard for easy supervision from the kitchen. The adult outdoor living spaces formed by a wind sheltered open air 'room' which is practically part of the general living area with its decorative mural
- Access to the garden is provided by a fully suspended plywood core ramp which was intended to lead to a swimming pool
- The rectangular mass of the building is hollowed by the **open centre** and the two story open well piercing the building vertically and **admitting sunlight** to the open play space below.
- In the plan the building seems to be anchored to the landscape with the sandstone retaining walls.





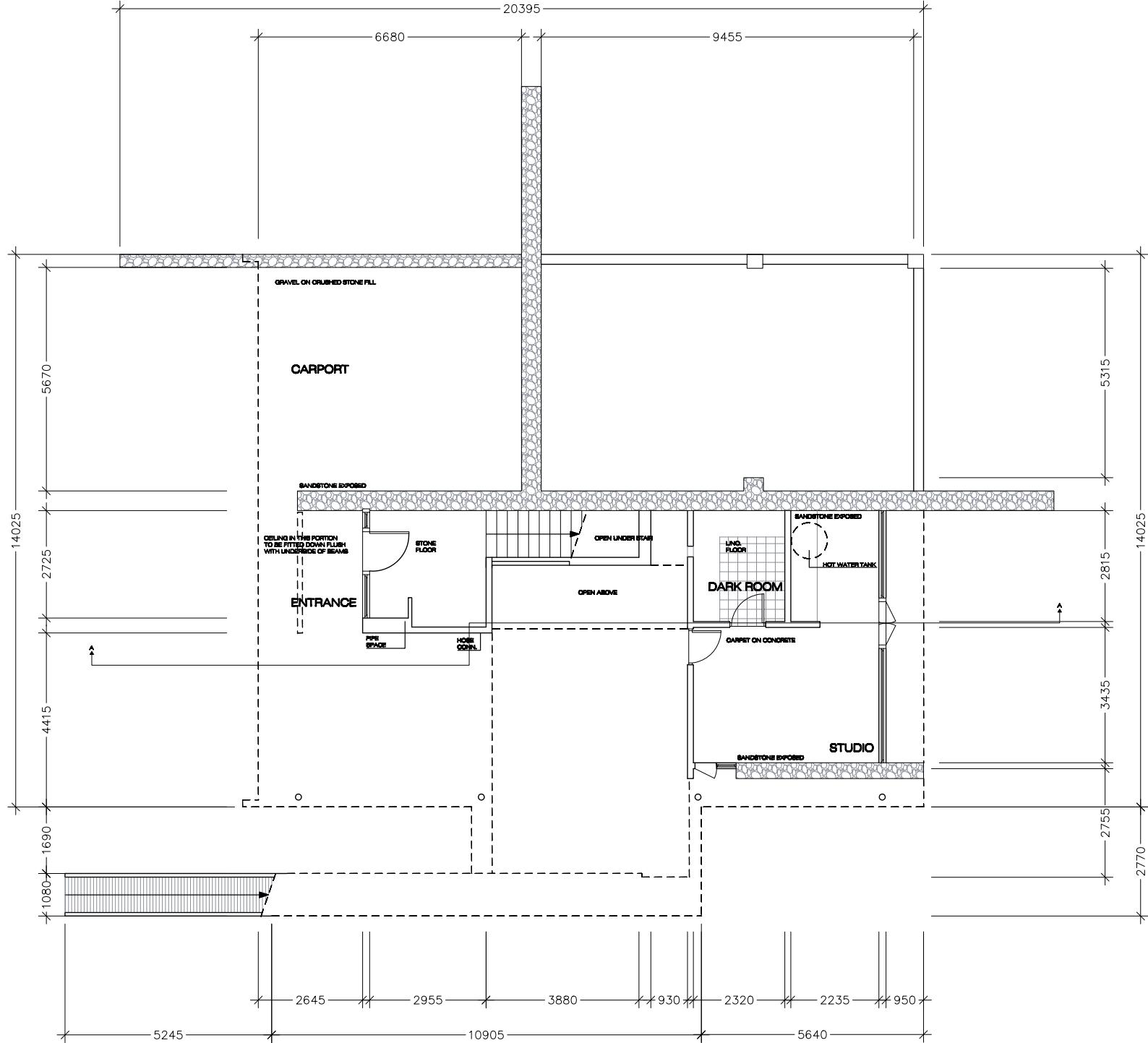
- Strong use of geometry. The juxtaposition of formal rectilinear elements
- had a Viennese tendency to see life in terms of theatre
- focussed more on the idea and the procedure when designing rather than the style
- Inspired by the conception of architecture as being essential contemporary and **constructed out of the material and experiences of the 20th century**. A conception not fixed, but one that was fluid and capable of reinterpretation
- Seidlers design philosophy was based on an important methodology of approach, which brings into unison considerations of social use, technology and aesthetic expression.
- This 3-sided simultaneous design process, comes from Seidler's teachers and mentors; **Gropius** and **Breuer** in the USA and **Niemeyer** in Brazil with whom he studied and worked before commencing practice in the 1950s.
- Seidler house was pivotal for Australian architecture because of its cultural contrast rather than its technical – which was distinct to its thoroughness- seidler architecture was a mixture of American modernism, and peers Gropius, Breuer, Albers and Niemeyer
- **Purity of form** were undiluted by historical residues or other stylistic impurities
- The Design of all of Seidlars Buildings, large or small, aims to become a "gesamtkunst werk", a totally integrated work of art, with interior design, furnishings, equipment and selected artworks receiving equally dedicated attention to become a cohesive whole.
- Studied at Harvard under Gropius and Breuer
- An Australian, learned his profession in the us and practiced in Australia
- Walter Gropius – Harvard club is Boston: "my intention is to introduce a method of approach which allows me to tackle a problem according to its particular conditions... it is not so much ready-made dogma that I want to teach, but an attitude to the problems of or generation which is unbiased, original and elastic
- Albers taught Seidler to focus on the **essentials of geometric structure**, along with a more detached aesthetic orientation. The principle of tensional composition – the balance of unequal and the exploitation of strong visual contrasts counterpoint.
- Rose Seidler house references Le Corbusier's Villa Savoie, Prissy. Not in specific terms but as in simular spatial relationships between the living area ad the terrace, and the terrace to the centre stairs as ell as the garaging of the car.
- The design of the Rose Seidler house comes from the design of 'foxbrough'
- People were most impressed with the light grey walls with mild grey carpets. Intersected by black wall cabinets, desks and kitchen benches. Red, yellow and blue were used on doors and curtains
- The ramp shows the connection with the environment
- The Rose Seidler house uses the plan that was made famous by Breuer. It was rectangular, economical to construct and simple to expand.



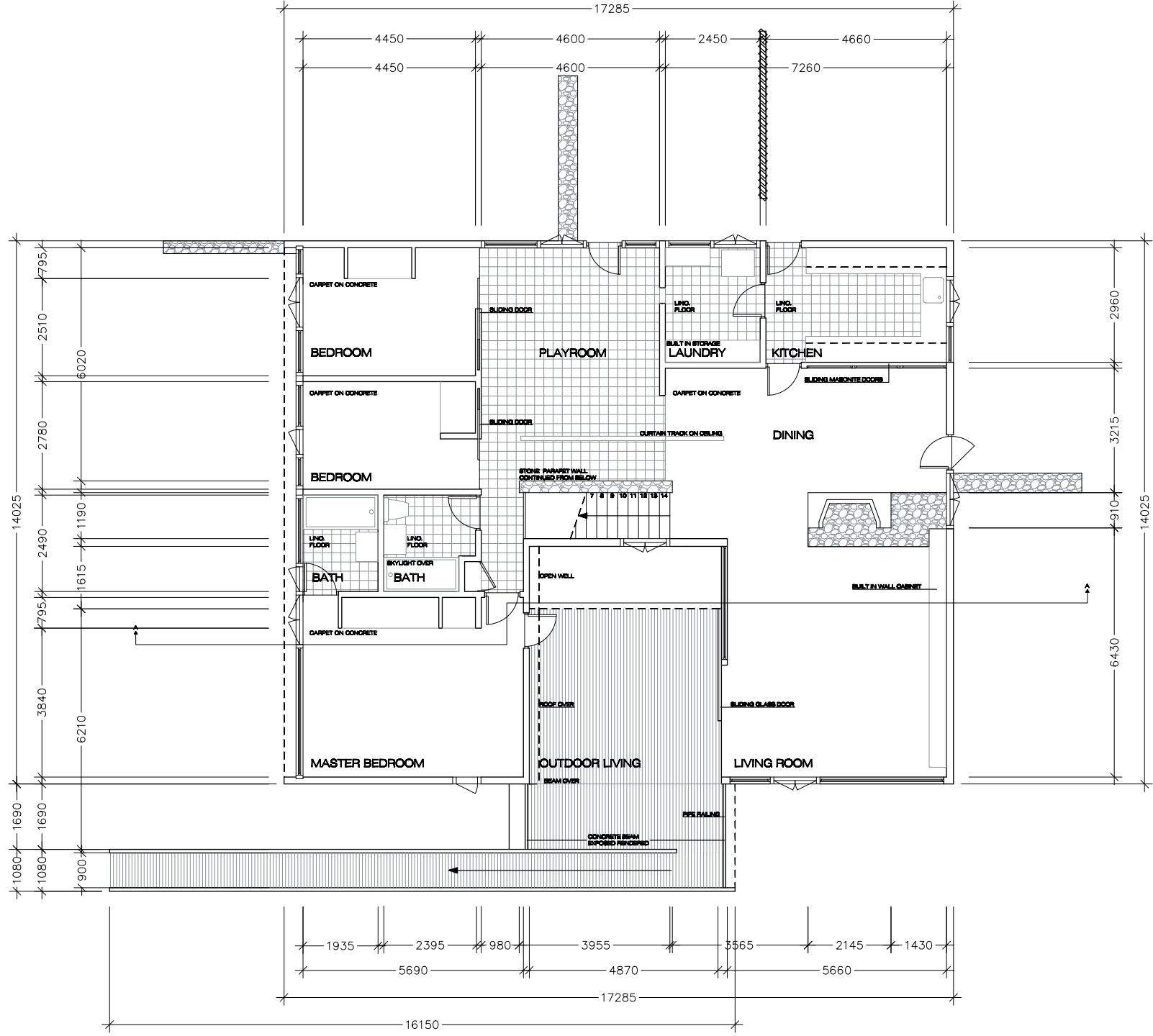


Site Plan

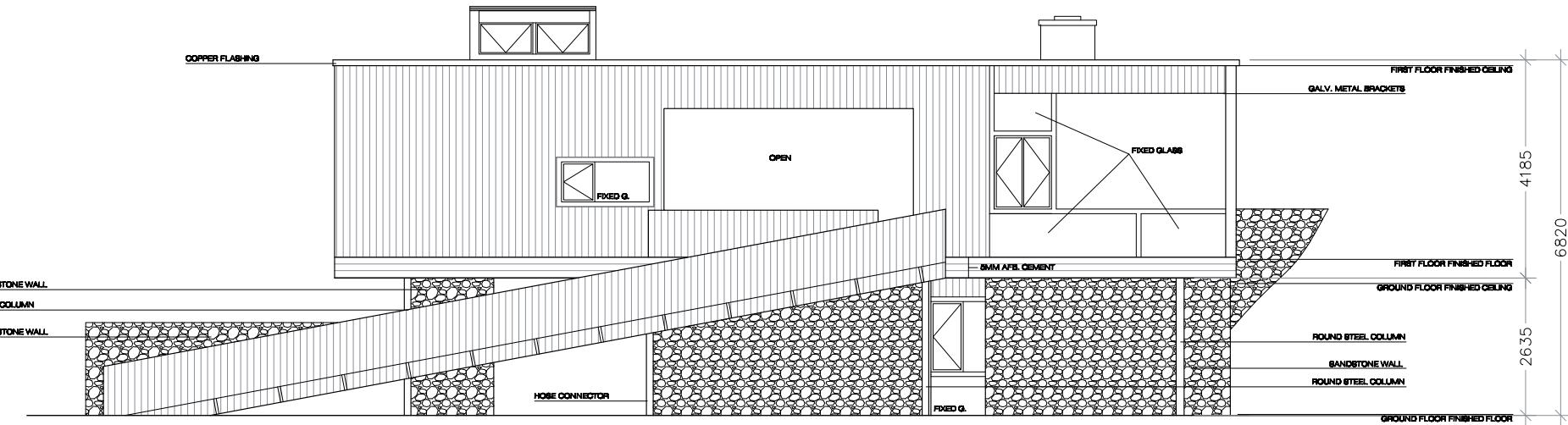
YARRA
RIVER



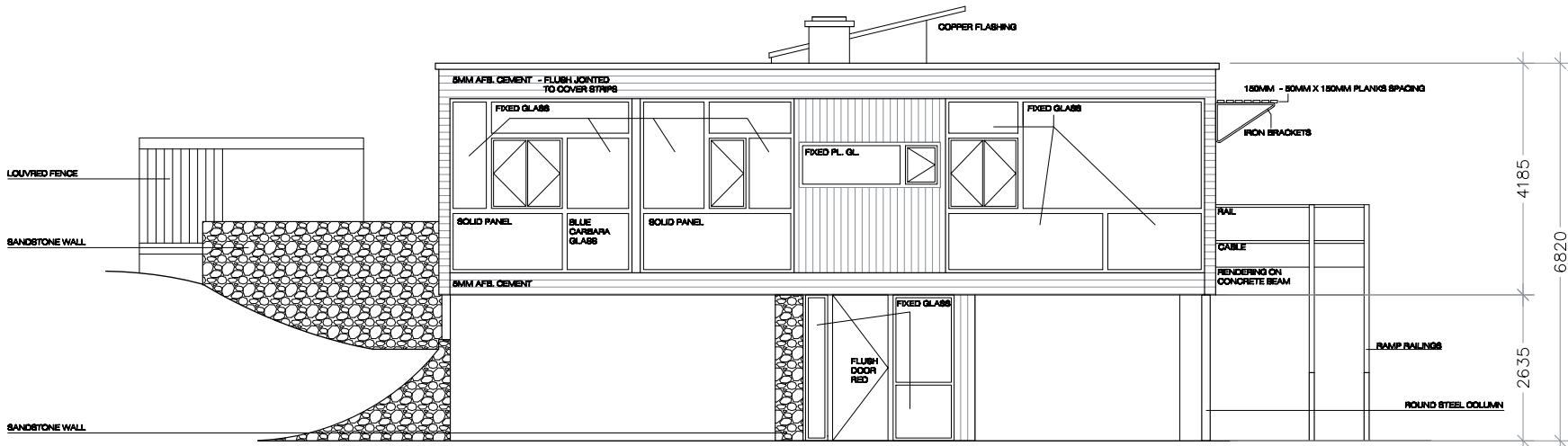
Ground floor plan



First floor plan

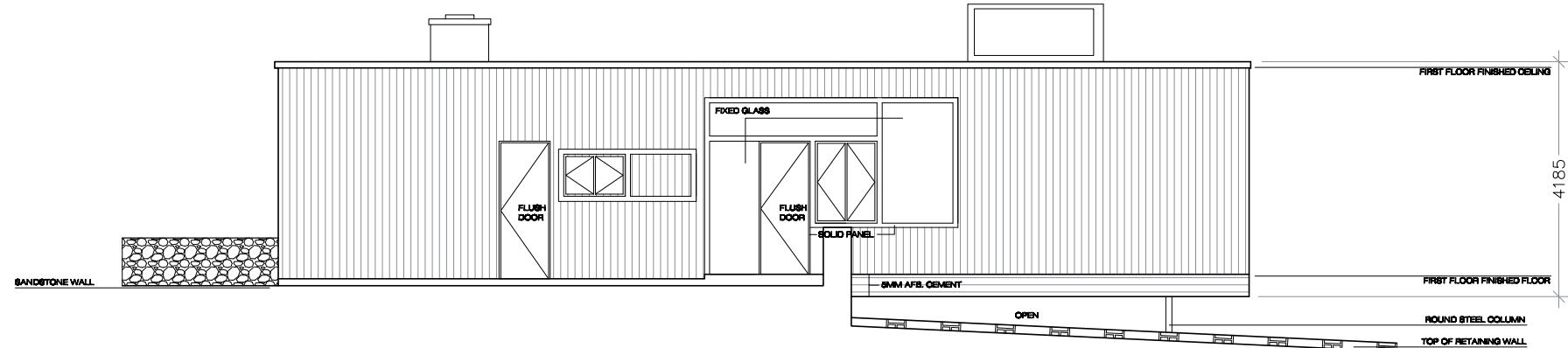


NORTH

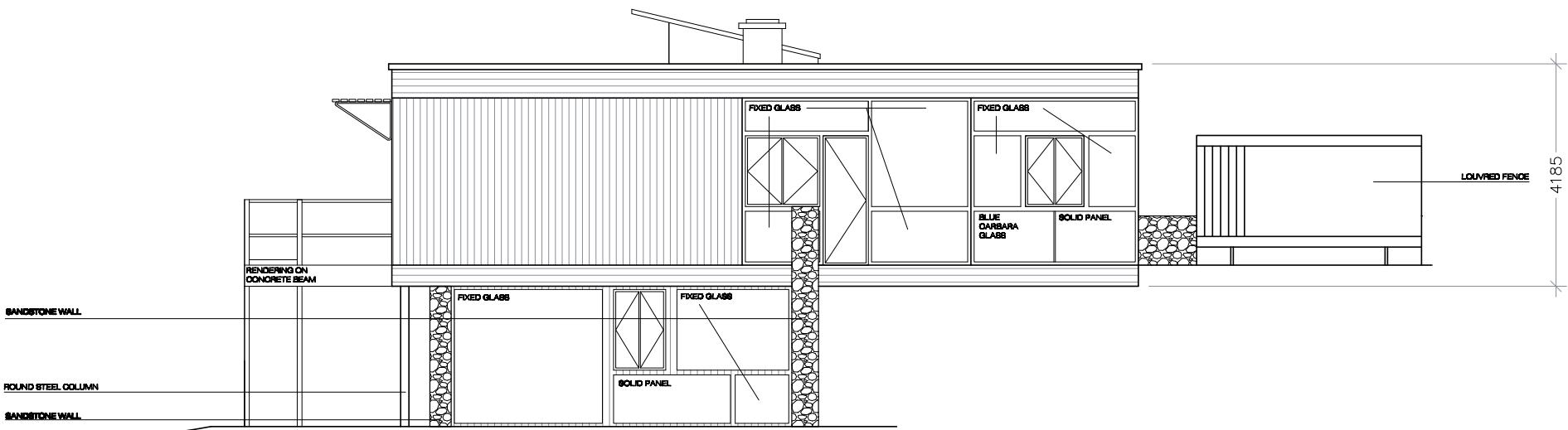


EAST

Elevation

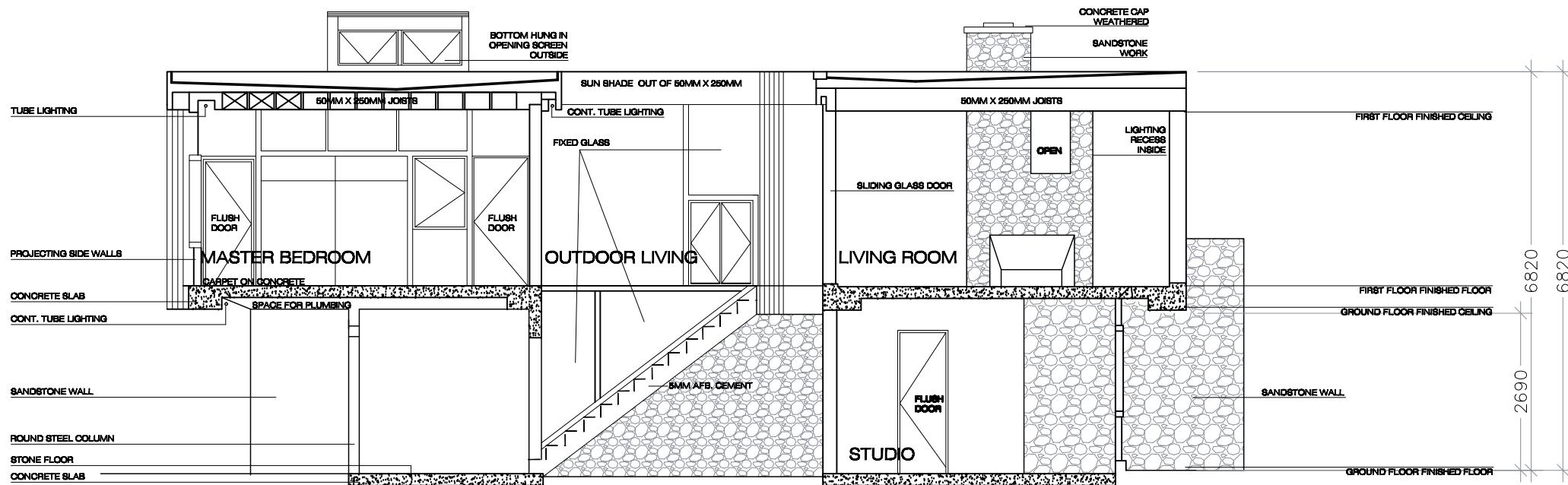


SOUTH



WEST

Elevation



Section

Part 2

The evaluation

FOUNDATION: on solid rock. Lower floor walls: Sandstone off the site

FLOOR: suspended reinforced concrete on 100mm diam. pipe columns, edge beams and 2 way reinforced slabs.

WALLS: 100mm X 50mm oregon studs 450mm o/c, diagonal 25mm rough boarding, tarpaper, finished with 100mm T. G. V-jointed Oregon boarding.

WINDOW FRAMES: 150mm X 50mm Oregon rebated frames and standard zinc sprayed steel casements with bronze roll-up fly screen .

GLASS: 6mm plate, rough cast and Vitrolite (H. J Lancaster Pty. Ltd.).

MURAL WALL AND RAMP CORE: 22mm Reswood waterproof plywood (Ralph Symonds Ltd.)

ROOF: 255mm X 50mm Oregon joists 460mm o/c, diagonal rough boarding, 100mm - 50mm cellconcrete insulation, 4 ply Flexstone 7kg asbestos felt, white marble chips finish (Roof & Building Service Pty. Ltd.).

WALL INSULATION: 50mm Insulwool (Insulwool Products Pty. Ltd.).

FLASHING: 16 gauge copper.

DOORS: Flush hollow core, waterproof.

FLUOR. LIGHTING: 40 watt hot cathode tubes.

FLOOR TILES: 300mm X 300mm Asphalt tiles (Colonial Sugar Refining Co. Ltd., Building Materials Division).

HOT WATER SYSTEM: 80 gall. electric storage heater (Joseph Auto Hot Pty. Ltd.).

FURNITURE: Black stained solid core cabinets (P. E. Kafka)

CURTAINS: Crepe rayon (Burlington Mills Australia Ltd.).

FirstRate Report



YOUR HOUSE ENERGY RATING IS: ★
in Climate: 21

1 STARS
SCORE: -88 POINTS

Name:

Ref No:

House Title: Rose Seidler House

Date: 25-08-2009

Address:

Kew

Reference: B:\UNI\SECOND YEAR\...\PART 2\ENERGY RATING_09

IMPROVING YOUR RATING

The table below shows the current rating of your house and its potential for improvement.

Star Rating	POOR		AVERAGE			GOOD			V. GOOD			
	0 Star	★	★★	★★★	★★★★	★★★★★	★★★★★★					
Point Score	-101	-100	-63	-62	-29	-28	-11	-10	6	7	18	19
Current	-88											
Potential	-88											

Incorporating these design options will add the additional points required to achieve the potential rating shown in the table. Each point represents about a 1% change in energy efficiency. This list is only a guide to the range of options that could be used.

Design options

Additional points

This rating only applies to the floor plan, construction details, orientation and climate as submitted and included in the attached Rating Summary. Changes to any of these could affect the rating.

Appliance Ratings

Heating: Not Installed

Cooling: Not Installed

HotWater: Unknown Hot Water System / Unknown Rating

NOTE: The appliance ratings above are based on information provided by the applicant and are included for information purposes only.
They do not affect the House Energy Rating of the dwelling.

ORIENTATION

Orientation is one of the key factors which influences energy efficiency. This dwelling will achieve different scores and star ratings for different orientations.

Current Rating	-88	★
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Largest windows in the dwelling:

Direction : East

Area : 44 m²

The table below shows the total score for the dwelling when these windows face the direction indicated.

Note that obstructions overshadowing windows have been removed from all windows in these ratings to allow better comparisons to be made between orientations.

ORIENTATION	POINT SCORE	STAR RATING
1. East	-88	★
2. South East	-89	★
3. South	-84	★
4. South West	-91	★
5. West	-93	★
6. North West	-91	★
7. North	-81	★★
8. North East	-85	★

FirstRate Mode
Climate: 21

RATING SUMMARY for: Rose Seidler House, Kew

Assessor's Name:

Net Conditioned Floor Area: 476.0 m²

Feature	Winter	Summer	Total			
CEILING	-30	-18	-49			
Surface Area: 64 Insulation: -113	0	0	0			
WALL	10	4	15			
Surface Area: 0 Insulation: 0 Mass: 0	-18	-2	-20			
FLOOR						
Surface Area: 2 Insulation: -4 Mass: 17	0	1	1			
AIR LEAKAGE (Percentage of score shown for each element)						
Fire Place 59 % Vented Skylights 13 %						
Fixed Vents 0 % Windows 15 %						
Exhaust Fans 2 % Doors 5 %						
Down Lights 0 % Gaps (around frames) 5 %						
DESIGN FEATURES						
Cross Ventilation 1	1	-1	0			
ROOF GLAZING						
Winter Gain 2 Winter Loss -1	-6	-21	-27			
WINDOWS						
Window Direction	Area m ²	%NCFA	Point Scores			
			Winter* Loss	Winter Gain	Summer Gain	Total
N	15	3%	-8	11	-2	0
E	53	11%	-25	20	-11	0
S	8	2%	-3	1	-1	0
W	39	8%	-18	14	-8	0
Total	115	24%	-53	47	-21	-27

* Air movement over glazing can significantly increase winter heat losses. SEAV recommends heating/cooling duct outlets be positioned to avoid air movement across glass or use deflectors to direct air away from glass.

The contribution of heavyweight materials to the window score is 6 points	Winter	Summer	Total
RATING	★	SCORE	-43 -36 -88*

* includes -8 points from Area Adjustment

Detailed House Data

House Details

HouseTitle	Rose Seidler House
Suburb	Kew
FileCreated	25-08-2009

Location	Rural
Is there More than One Storey ?	Yes
Is the Stairwell Separated by Doors ?	No
Is the Entry open to the Living Area ?	No
Area of Heavyweight Mass	16m ²
Area of Lightweight Mass	0m ²

Climate Details

State	VIC
Town	Melbourne
Postcode	3000
Zone	21

	<u>Sealed</u>	<u>UnSealed</u>
Chimneys	0	1
Vents	0	0
Fans	3	0
Downlights	0	0
Skylights	0	1
Utility Doors	3	0
External Doors	0	6

Floor Details

ID	Construction	Sub Floor	Upper	Shared	Foil	Carpet	Ins RValue	Area
1	Concrete Slab on ground	No Subfloor	No	No	No	No	R0.0	238.0m ²
2	Suspended Slab	NA	Yes	No	Yes	Carp	R0.0	238.0m ²

Unflued Gas Heaters	0
Percentage of Windows Sealed	76%
Windows - Average Gap	Small
External Doors - Average Gap	Small
Gaps & Cracks Sealed	Yes

Wall Details

ID	Construction	Shared	Ins RValue	Length	Height
1	Weatherboard	Yes	R0.0	127.0m	3.9m

Ceiling Details

ID	Construction	Shared	Foil	Ins RValue	Area
1	Flat - Suspended Slab	Yes	Yes	R0.0	238.0m ²
2	Flat - Framed	No	No	R0.0	238.0m ²

Window Details

ID	Dir	Height	Width	Utility	Glass	Frame	Curtain	Blind	Fixed & Adj Eave	Fixed Eave	Head to Eave
1	S	2.3m	2.6m	No	SG	STEEL	CW	No	0.0m	0.0m	0.0m
2	S	0.9m	2.5m	Yes	SG	STEEL	CW	No	0.0m	0.0m	0.0m
3	W	3.0m	3.0m	Yes	SG	STEEL	CW	No	0.0m	0.0m	0.0m
4	W	3.0m	4.0m	No	SG	STEEL	CW	No	0.0m	0.0m	0.0m
5	W	3.0m	6.0m	No	SG	STEEL	CW	No	0.0m	0.5m	0.5m
6	N	0.9m	1.7m	No	SG	STEEL	CW	No	0.0m	1.5m	1.0m
7	N	0.6m	2.0m	No	SG	STEEL	CW	No	0.0m	0.0m	0.0m
8	N	3.0m	4.0m	No	SG	STEEL	CW	No	0.0m	0.0m	0.0m
9	E	3.0m	6.0m	No	SG	STEEL	CW	No	0.0m	0.5m	0.5m
10	E	3.0m	3.0m	Yes	SG	STEEL	CW	No	0.0m	0.5m	0.5m
11	E	3.0m	2.6m	No	SG	STEEL	CW	No	0.0m	0.5m	0.5m
12	E	0.8m	2.5m	No	SG	STEEL	CW	No	0.0m	0.5m	0.5m
13	E	3.0m	4.5m	No	SG	STEEL	CW	No	0.0m	0.5m	0.5m
14	E	3.0m	1.0m	No	SG	STEEL	CW	No	0.0m	3.0m	0.5m

Window Shading Details

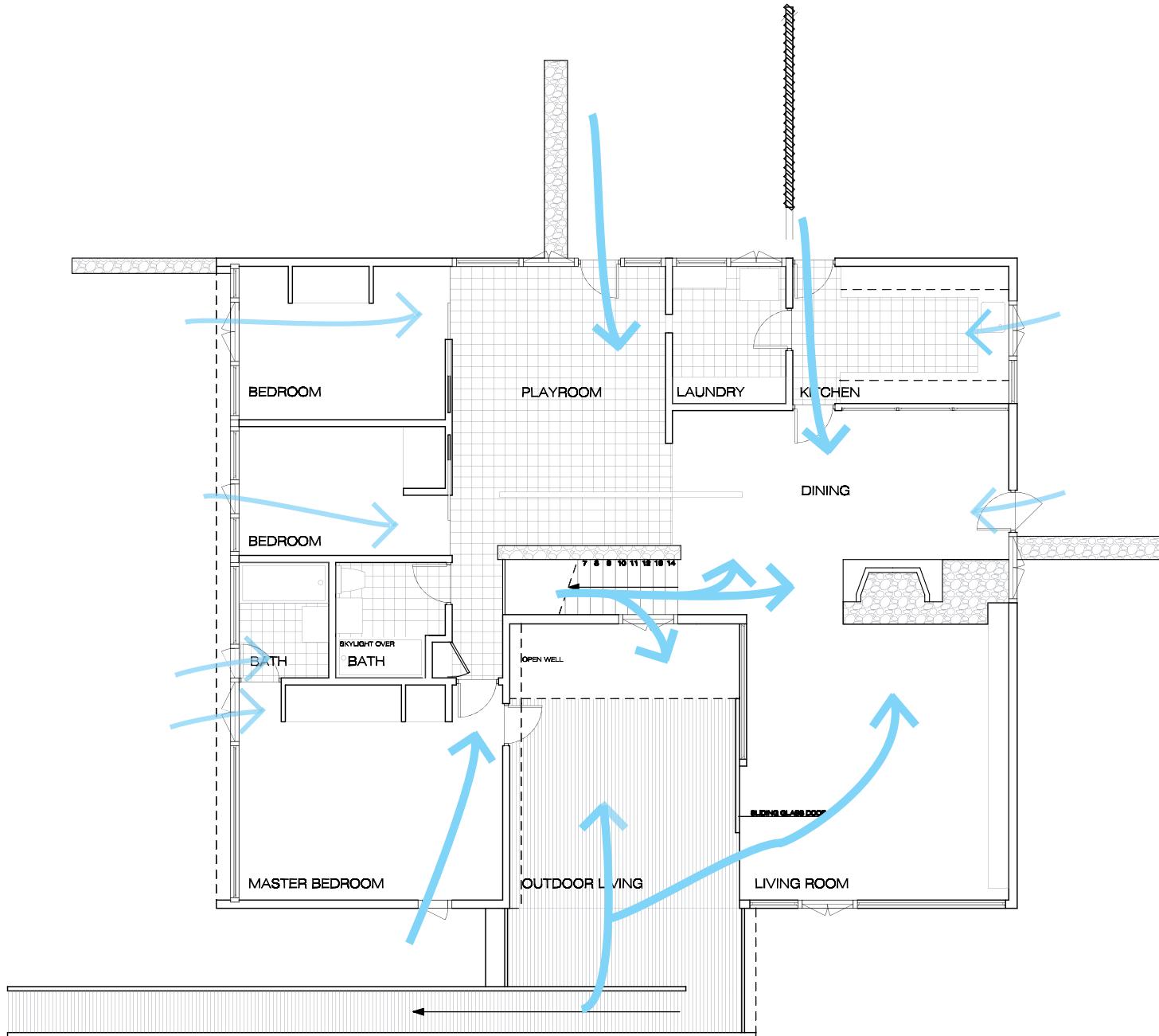
ID	Dir	Height	Width	Obst	Obst Height	Obst Dist	Obst Width	Obst Offset	LShape	LShape Left Fin	LShape Left Off	LShape Right Fin	LShape Right Off
No shaded windows													

Sky Light Details

ID	Dir	Tilt	Type	Shade	Utility	Width	Length
1	N	30 degrees	Double Clear	No	Yes	2.1m	3.6m

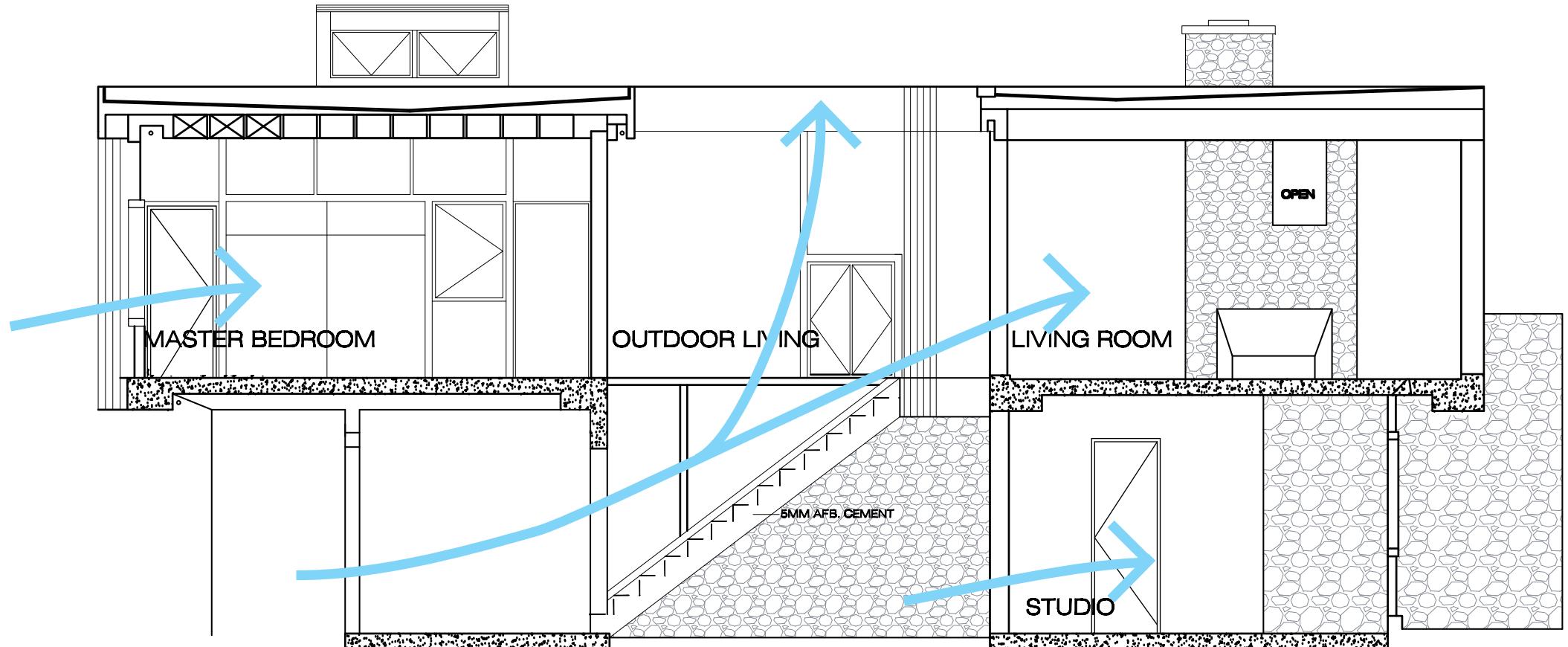
Zoning Details

Is there Cross Flow Ventilation ? Good



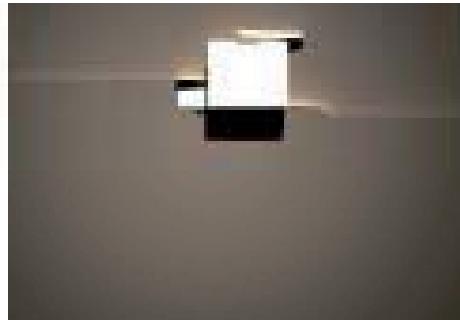
Ventilation diagrams

↓
N





5 nm FWHM



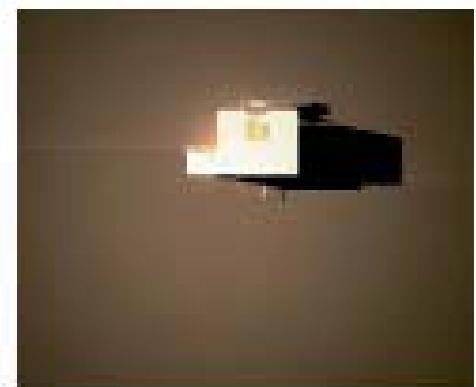
12 nm FWHM



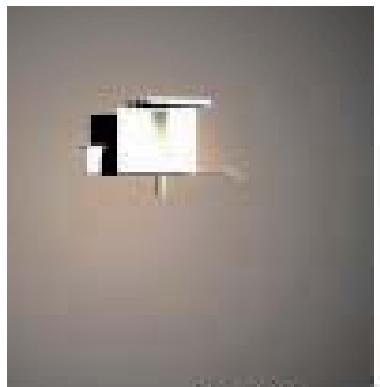
5 nm FWHM



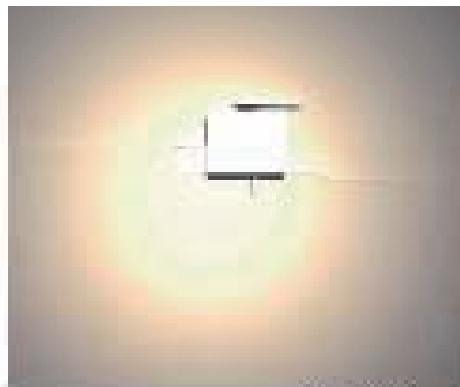
12 nm FWHM



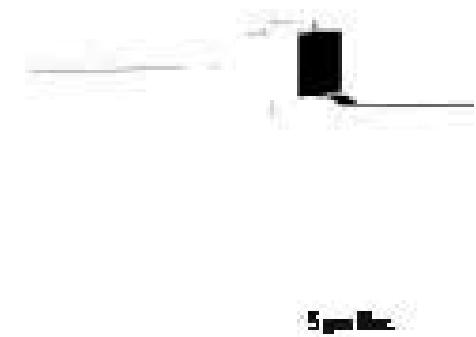
5 nm FWHM



5 nm FWHM

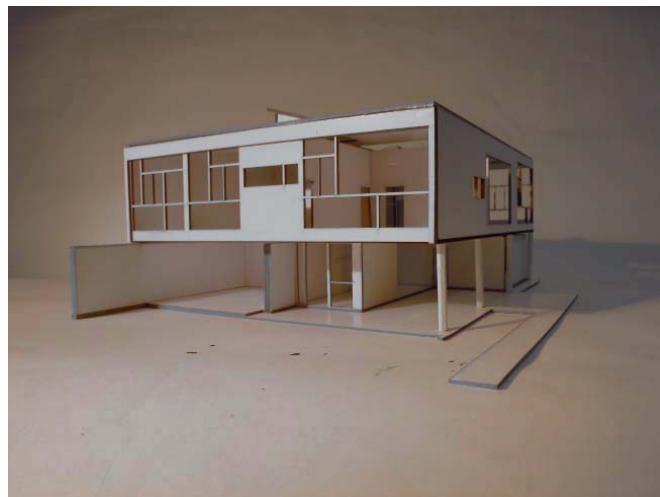


12 nm FWHM



5 nm FWHM

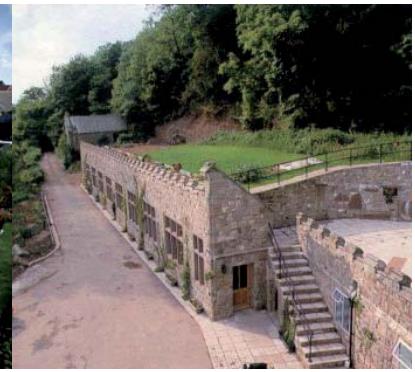
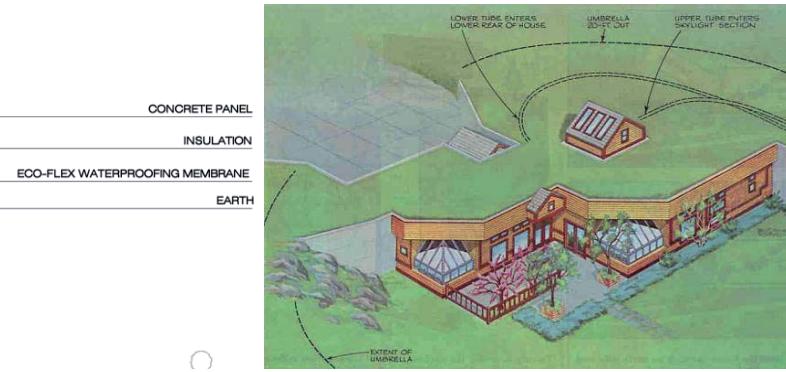
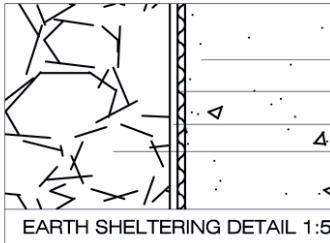
Sun diagrams



Model of original house

Part 3

Material and servicing techniques



Benefits:

- Takes advantage of earth's thermal mass. The earth's thermal mass absorbs and retains heat. The heat is released to surrounding areas such as an earth shelter. Because of earth's high density, temperature change occurs slowly. This is known as thermal lag.
- relative constant temperature.
- Protection from natural elements.
- Energy savings.
- Substantial privacy.
- Efficient use of land in urban setting.
- Low maintenance requirements.
- Takes advantage of passive solar design.

Construction methods:

Walls most commonly used are reinforced concrete. On the outside of the concrete a waterproofing system is applied. Most frequent system includes a layer of asphalt onto a heavy grade waterproofing membrane is affixed followed by a final liquid sealant which maybe sprayed on. One or more layers of insulation board is required. After walls are complete the earth is back-filled into the remaining space.

Structural methods:

Reinforced concrete is the most commonly used material. Untreated wood rots within 5 years. Steel can be used, but needs to be incased by concrete to keep it from direct contact with the soils which corrodes metal. Bricks and CMU's are also possible options. Alternative options such as Grancrete and Hycrete are available.

Waterproofing methods:

Reinforced concrete is the most commonly used material. Untreated wood rots within 5 years. Steel can be used, but needs to be incased by concrete to keep it from direct contact with the soils which corrodes metal. Bricks and CMU's are also possible options. Alternative options such as Grancrete and Hycrete are available.

Insulation: Requires insulation on the exterior - not interior. Provides protection for waterproofing membrane. Two main types of insulation are; closed celled polystyrene sheets and spray on foam.

Earth Sheltering



Furniture:



Doors:



Flooring:

Reclaimed timber from old buildings, old bridge and wharf sections, railway sleepers, etc. can be used for flooring, furniture and facade treatment. The reuse of previously used timbers provides an alternative to wasteful new and expensive materials.

Reclaimed timber

Environmentally Friendly products we have looked at:

Flooring: plantation bamboo

Insulation: glaresheild

Thermal mass: concrete slab stone

Extrude east eave as a shading devise

Heating: hydronic heated slab

Water: grey water recycling (biological treatment)

Flashing: polythene or EPDM

Frame: stud wall frame

Windows and External doors: sustainable durable wood

Interior walls: hardboard – wood faced hollow core

Stairs: reclaimed timbre

Ceiling joists: coconut fibre, felt or sisal

Sealant: silicon

Paint: natural paint, stain or varnish

Mineral paint for exterior

External steel work: powder coating

Drainage: vitrified clay for below ground drainage

Rain water drainage: EPDM – lined timbre gutter

Pipe work: polyethylene, polybutylene, polypropylene

Paving: concrete slab w/ recycled aggregate

Reclaimed timbre studs & doors

Materials Used

FLOORING: Bamboo Plantation

Environmentally sustainable – Style Plantation Bamboo Flooring is an attractive alternative to hardwood floors, and is the product derived from the forests of a fully sustainable, environmentally friendly and rapidly growing renewable resource.



Insulation: glaresheild

Air-Cell Glareshield features an anti-glare coating on the upper/outer surface and high polish aluminium foil for the under/inner surface separated by a fire-retardant polyethylene cell structure.

The semi-permanent anti-glare surface makes it more comfortable for tradesmen during the installation of walls and roofs

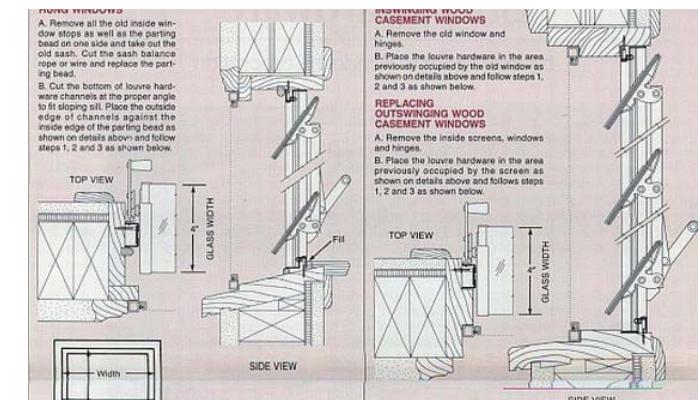
this insulation is a clean, safe, fibre-free insulation designed to replace conventional fibre based batt and building blanket insulation in commercial and residential buildings. It is installed into the walls, roofs, ceilings and floors as a vapour barrier and insulation blanket all in one.

Air - cell is manufactured without the use of toxic or reactive adhesives. This product is extremely durable over time.



Louvers - above the exterior deck

the louvers above the outdoor living area, enables the possibility to open up the space, and let the winter sun in, or close it off and enjoy the benefits of the shade in summer. it is beneficial in terms of passive heating and cooling.



Materials Used

Frame: stud wall frame

Windows and External doors: sustainable durable wood

Interior walls: hardboard – wood faced hollow core

Stairs: reclaimed timbre



Materials Used

Concrete

the retaining wall, between the earth and the House, will be made from some sort of sustainable concrete.

we have looked at aircrte - "Building with solid external walls provides a speedy form of construction that takes full advantage of Aircrte's unique combination of light weight, strength and superior thermal performance" - www.aircrete.co.uk

and also Envirocrete, which has been used in australia in sustainable buildings such as Council House 2.



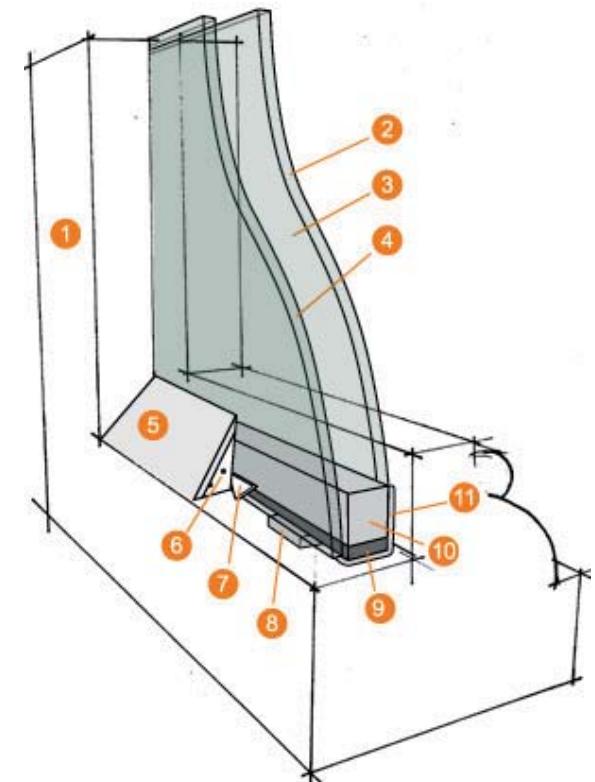
Materials Used

Double Glazing

benefits of double glazing:

- less CO₂ emitted, a more comfortable, stable environment
- Up to 25% of heat can be lost through windows of modern homes.
- However, modern low-emissivity glass allows the sun's heat and light to pass through the glass into the building, but it will prevent the heat from leaving the room.

1. Window frame
2. 3mm Low-E float glass inner pane
3. Gas filled cavity
4. Outer Pane
5. Paint overlapping onto the glass by 1-2mm
6. Modified putty
7. Sprig
8. Hardwood spacer
9. Perimeter Seal
10. Aluminium profile
11. Sealant



Grey Water

Advantages

Treated wastewater can be used to flush toilets, water gardens and even to wash clothes. By using wastewater as a resource rather than a waste product you can:

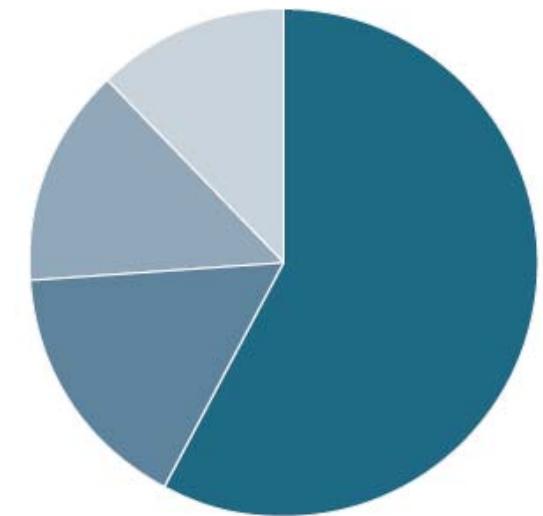
- > Reduce water bills.
- > Use less water resources.
- > Irrigate your gardens during drought water restrictions.
- > Cut down the amount of pollution going into our waterways.
- > Help save money on new infrastructure for water provision and wastewater treatment. Wastewater re-use decreases the demand on infrastructures for sewage transport, treatment and disposal, allowing the infrastructure to work better and last longer.

Disadvantages

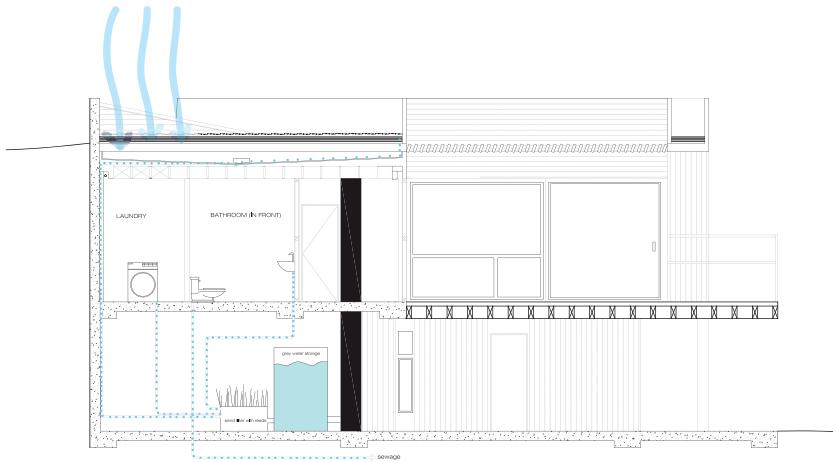
The disadvantages of reusing your wastewater also need to be considered. Currently, one of the main disadvantages for most households is the financial cost of installing and maintaining a re-use system. The attractiveness of the investment would depend on:

- > The extent of centralised wastewater treatment services available where you live.
- > The price of water in your area (urban) or scarcity of water (rural).
- > Whether you are replacing an existing system or starting from scratch.
- > The length of time you intend to live in your current house.
- > The type of system you install – annual operating and maintenance costs vary between systems.
- > Whether a restrictions free, reliable water supply is valuable to you. Wastewater Re-use will provide a much more reliable secondary source of water than common rain tank installations.

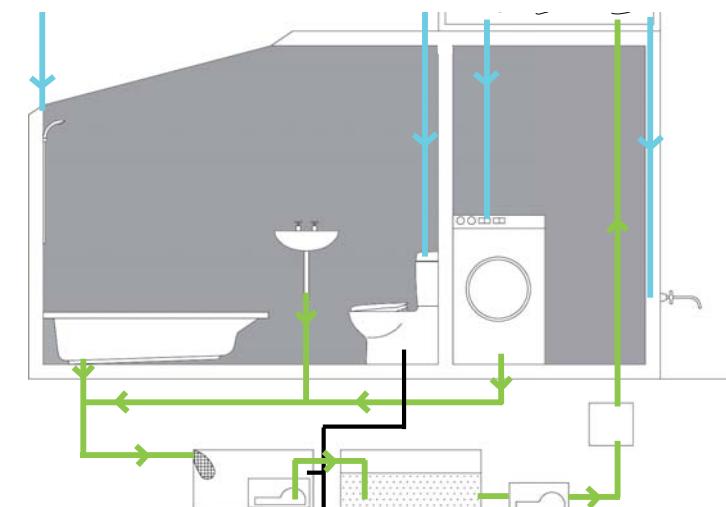
Waste Water inside the home



ROSE SEIDLER HOUSE GREY WATER DIAGRAM



Systems Used



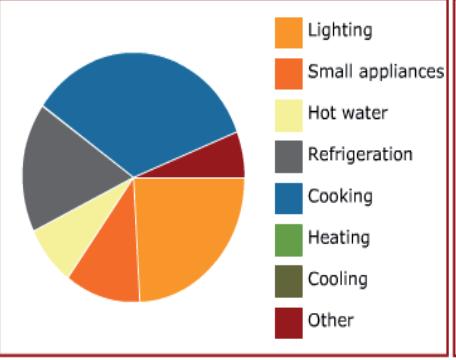
Energy Research

 **Energy efficiency calculator**

disclaimer  

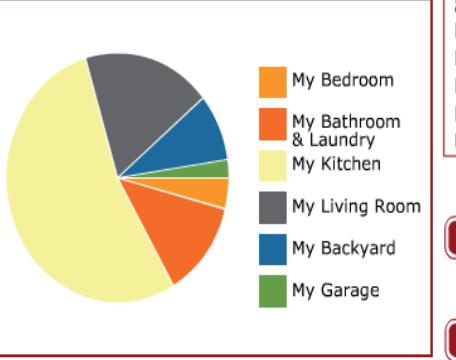
Results

Energy consumption by appliance



Lighting	Blue
Small appliances	Orange
Hot water	Yellow
Refrigeration	Grey
Cooking	Dark Blue
Heating	Green
Cooling	Dark Green
Other	Red

Energy consumption by room



My Bedroom	Yellow
My Bathroom & Laundry	Orange
My Kitchen	Light Yellow
My Living Room	Grey
My Backyard	Dark Grey
My Garage	Green

Progress

- Introduction
- My Bedroom
- My Bathroom & Laundry
- My Kitchen
- My Living Room
- My Backyard
- My Garage
- My Results**

< previous

reset

*Scroll over each section of the pie to view statistics.

Total energy usage

Estimated energy costs per quarter: \$319.93

Estimated energy costs per year: \$1279.71

[view your energy summary](#)

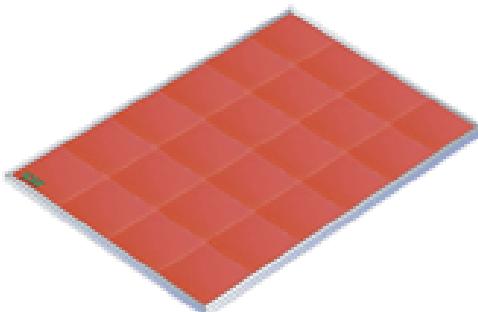
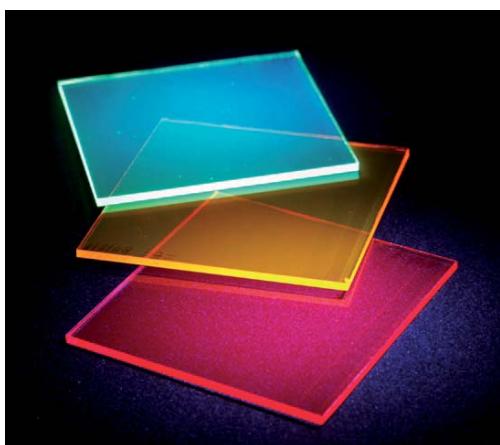
Your CO₂ emissions 

A household producing 7.98 tonnes of co₂ per year is equivalent to 2.71 cars driving on the road per year.

Systems Used

		Cooking energy source: Electricity	Hot water energy source: Electricity	Heating energy source: Electricity	Billing state : VIC	
		Use	Star rating	Cost per qtr	Cost per year	CO ₂ emissions per year (kg)
My Bedroom	Home computer	3 hrs/day		\$10.62	\$42.46	272.55 kg
	Alarm clock	7 hrs/week		\$0.22	\$0.89	5.74 kg
	Portable television	4 hrs/day		\$7.38	\$29.50	189.35 kg
	Portable stereo	2 hrs/day		\$1.12	\$4.47	28.69 kg
	Electric blanket	1 hrs/week		\$0.17	\$0.69	4.44 kg
	Other small appliances	4 hrs/day		\$4.47	\$17.88	114.76 kg
	Lighting	8 hrs/day		\$17.88	\$71.52	459.02 kg
	Subtotal:			\$41.86	\$167.41	1074.55 kg
My Bathroom & Laundry	Washing machine (cold water)	5 cycles/week	4	\$6.85	\$27.40	175.89 kg
	Clothes dryer	0 cycles/week		\$0.00	\$0.00	0.00 kg
	Iron - dry	6 hrs/week		\$17.56	\$70.24	450.83 kg
	Iron - auto	hrs/week				
	Bath	4 no/week		\$9.58	\$38.31	245.91 kg
	Shower	9 min/day		\$0.87	\$3.46	22.23 kg
	Hair dryer	10 min/day		\$4.97	\$19.87	127.51 kg
	Sewing machine	0 hrs/week		\$0.00	\$0.00	0.00 kg
	Lighting	8 hrs/day		\$44.70	\$178.79	1147.56 kg
	Subtotal:			\$84.53	\$338.07	2169.93 kg
My Kitchen	Refrigerator (single door)	1 number	6	\$14.75	\$59.00	378.69 kg
	Refrigerator (two door)	number				
	Freezer	1 number	5	\$12.07	\$48.27	309.84 kg
	Washing dishes	7 sinks/week		\$17.13	\$68.54	439.90 kg
	Dishwasher	0 hrs/week	1	\$0.00	\$0.00	0.00 kg
	Oven cooking	14 hrs/week		\$55.87	\$223.49	1434.45 kg
	Stove top (small)	7 hrs/week		\$13.04	\$52.15	334.71 kg
	Stove top (large)	7 hrs/week		\$20.49	\$81.95	525.97 kg
	Microwave	4 hrs/week		\$17.03	\$68.11	437.17 kg
	Small appliances	3 hrs/week		\$7.98	\$31.93	204.92 kg
	Lighting	8 hrs/day		\$44.70	\$178.79	1147.56 kg
	Subtotal:			\$203.06	\$812.23	5213.21 kg
My Living Room	Space heater	0 hrs/day		\$0.00	\$0.00	0.00 kg
	Central heating	0 hrs/day		\$0.00	\$0.00	0.00 kg
	Television - LCD	21 hrs/week		\$15.09	\$60.34	387.30 kg
	Television - Plasma	0 hrs/week		\$0.00	\$0.00	0.00 kg
	Stereo	2 hrs/week		\$1.63	\$6.53	41.94 kg
	VCR/DVD	5 hrs/week		\$0.33	\$1.33	8.54 kg
	Air conditioning (evaporative)	0 hrs/day		\$0.00	\$0.00	0.00 kg
	Air conditioning (split cycle)	0 hrs/day		\$0.00	\$0.00	0.00 kg
	Air conditioning (wall unit)	0 hrs/day		\$0.00	\$0.00	0.00 kg
	Lighting	8 hrs/day		\$74.50	\$297.99	1912.60 kg
	Games console	0 hrs/day		\$0.00	\$0.00	0.00 kg
	Vacuum cleaner	5 hrs/week		\$21.28	\$85.14	546.46 kg
	Subtotal:			\$112.83	\$451.33	2896.84 kg
My Backyard	Outdoor lighting	2 hrs/day		\$11.17	\$44.70	286.89 kg
	Pool (filter pump)	0 hrs/week		\$0.00	\$0.00	0.00 kg
	BBQ	2 hrs/week		\$29.72	\$118.89	452.56 kg
	Spa	0 hrs/week		\$0.00	\$0.00	0.00 kg
	Subtotal:			\$40.89	\$163.59	739.45 kg

Green Sun - Coloured Solar Panels



Systems Used

These Coloured Solar Panels are produced by Green Sun Energy, and are based on a concentration of photovoltaic, where visible and uv light is concentrated, with out concentrating the heat.

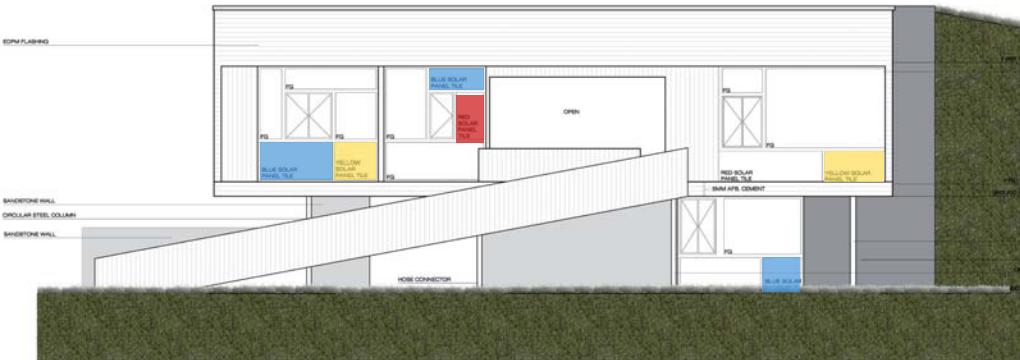
The main difference in comparison to another CPV technologies are

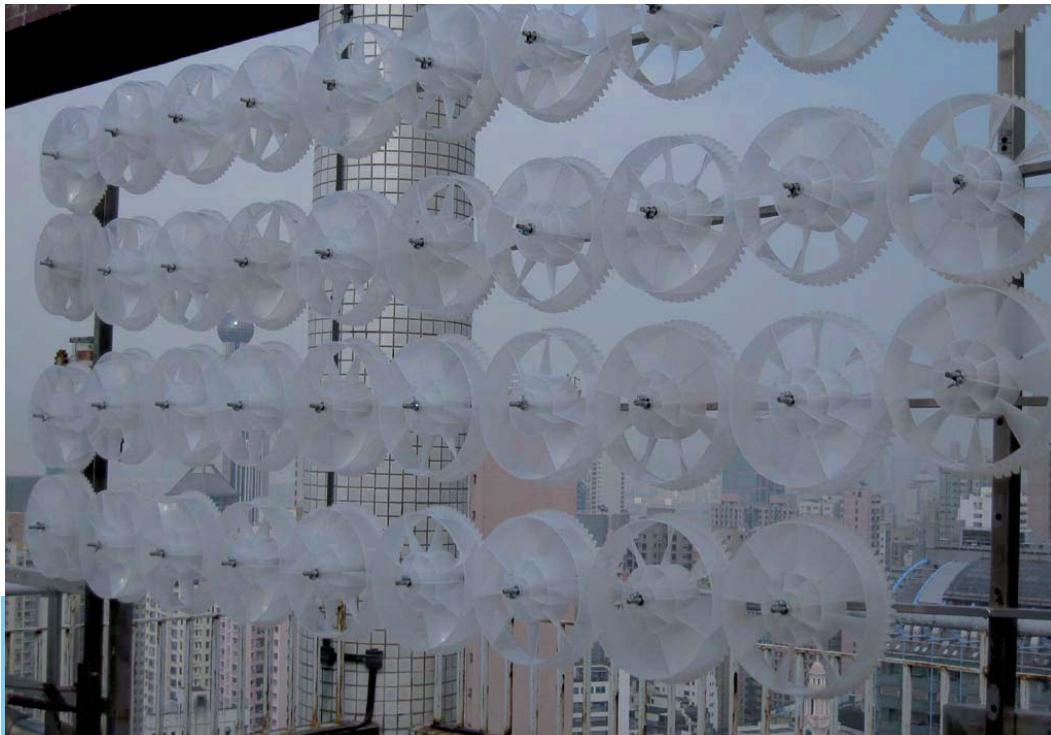
- uses diffused light
- flat panel
- low maintenance
- wider market potential
- can be made in different shapes
- uses simple non exotic and non toxic raw materials.

When comparing it to other solar technologies such as thin film, these coloured solar panels demonstrate higher efficiency, lower cost, a fraction of investment for tooling, easier integration in to buildings.

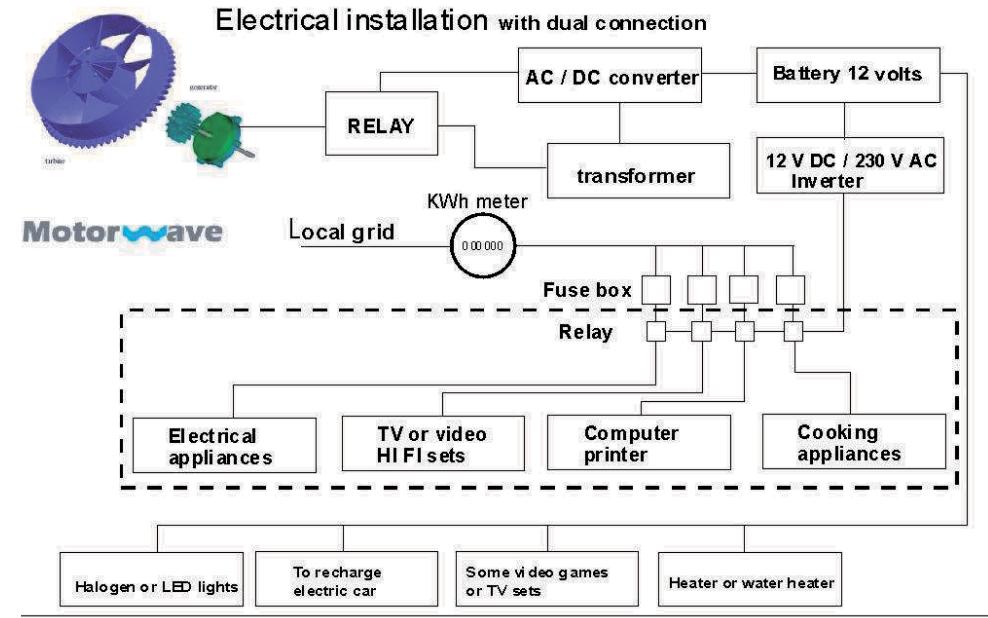
Key Advantages of the GreenSun Technology

- Less Silicon Used
- GreenSun solar panels are 20% silicon
- Competing solar panels are 100% silicon
- Higher Conversion Efficiency
- The Green Sun panel will have a conversion efficiency rate of up to 20%
- Thermal Stability – No Cooling Mechanism Needed
- The Green Sun panel only captures visible light, thus reducing heat pressure on the solar panel and eliminating the need for a cooling mechanism.
- Standard solar panels require separate cooling mechanisms because they capture all forms of light and thus generate unnecessary heat.
- Use of Diffused Sunlight – No Tracking System Needed
- The Green Sun panel uses diffused light instead of direct sunlight to provide more hours of production. This eliminates the need for a tracking system and does not restrict the panels to rooftops.
- Standard solar panels require large apparatus surface areas
- Solar Cells Applied on the Side of the Panel
- Green Sun technology applies individual strips along the edges of glass or plastic modules.
- Green Sun panels are made of common, nontoxic, and inexpensive materials.
- Each 1m x 1m panel will produce 200 watts of electricity

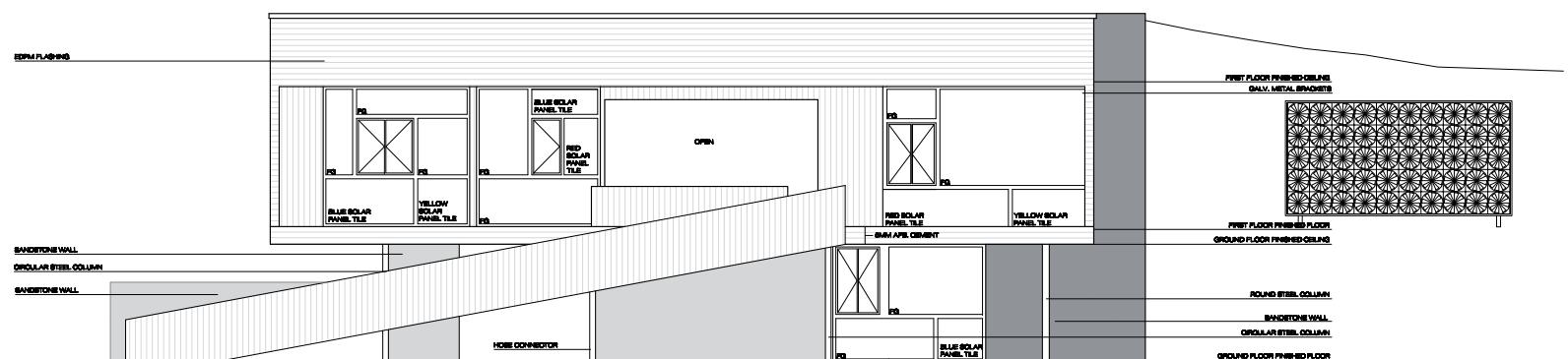




Motorwave is a series of small wind turbines which can be made into a screen of any size. We are using Motorwind turbines to power majority of the electricity in the Rose Seidler house. It will be a similar size to Harry Seidler's original wind break; however will be positioned on the other side of the house, to catch more of the Melbourne winds, which provided the house with more power. The turbines need only a small amount of wind to produce power. The amount of power which it produces changes depending on the amount of wind, however due to the Melbourne climate, and positioning of our wind turbines, we are confident that along with our other energy systems, this will be able to provide enough power.



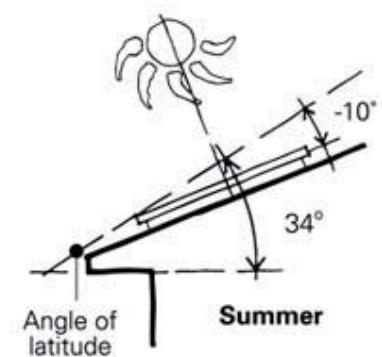
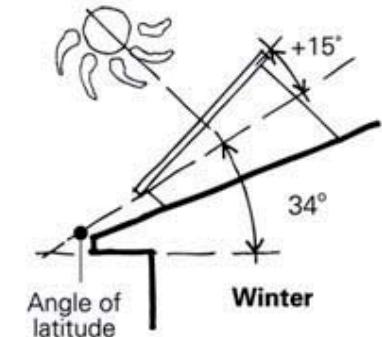
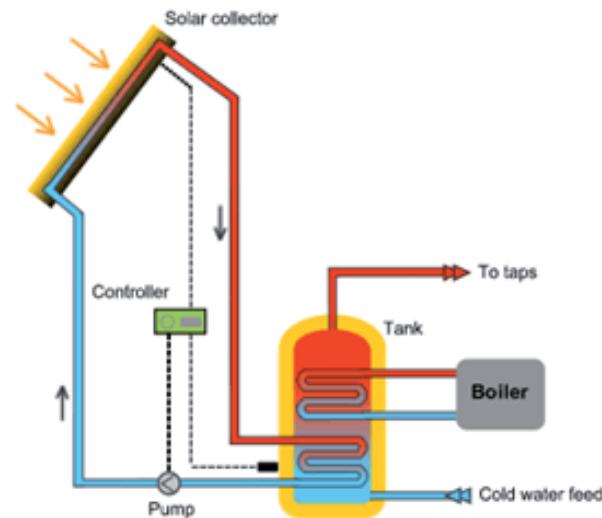
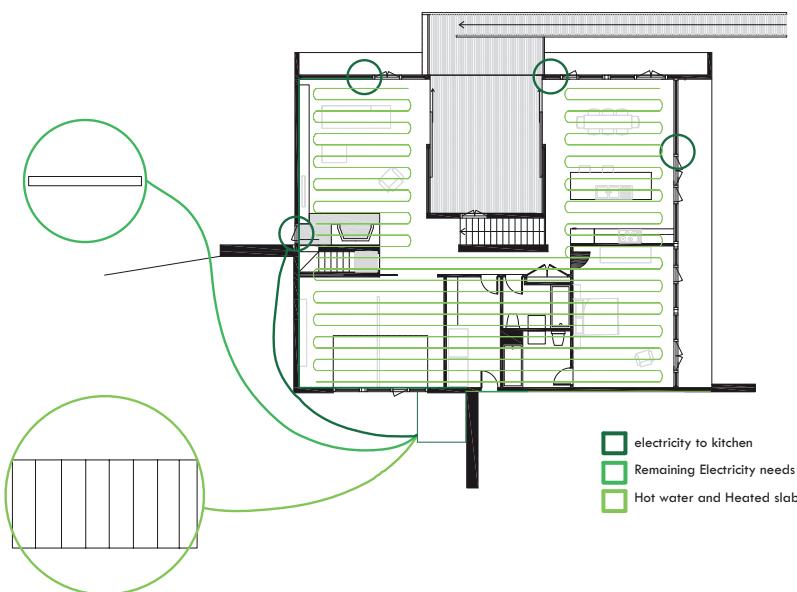
Many houses now use for lighting low voltage halogen or LED lights .such lights can be connected to a 12 V power supply directly by connecting directly to the 12 V battery there is less wastage and since there is no need anymore for all individual transformer it will be much cheaper .even some heaters can be connected directly to 12V power supply .The 12VDC /230 or 110 VAC converter can be of lower power 12 Vdc is the safest power source .children can not get electrocuted .



Systems Used

Solar Panels

we will be using mcommon photovoltaic solar panels to heat the water, and also for the hydronic heated slab.



Solar panels should face due north.

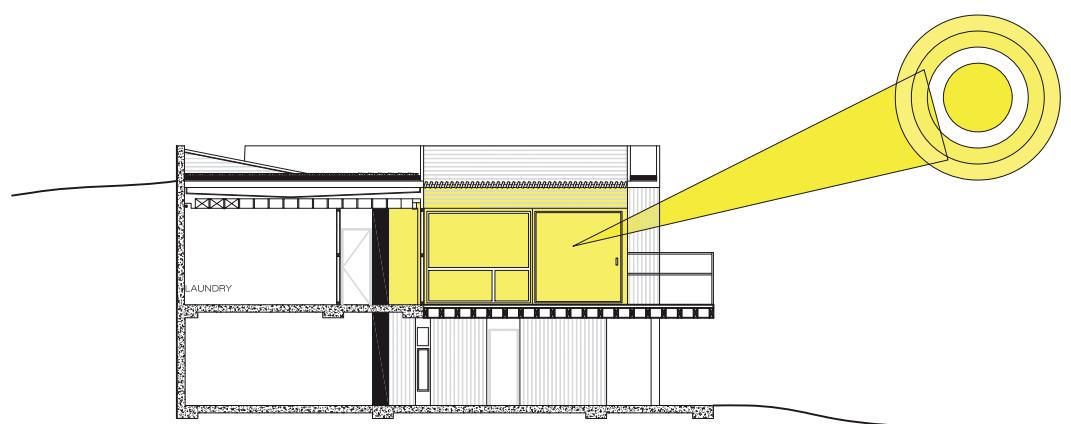
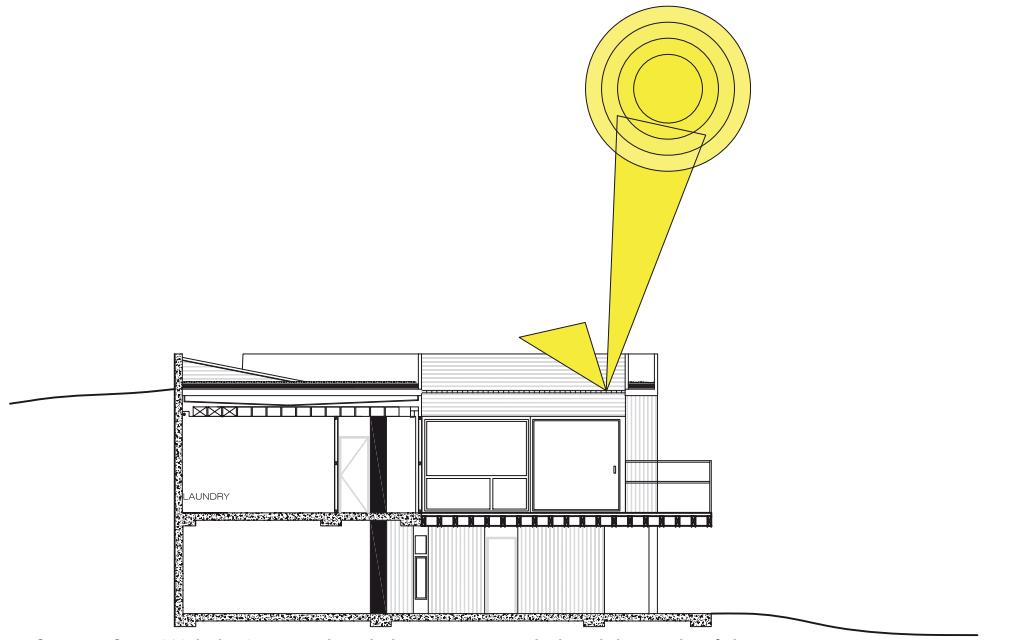
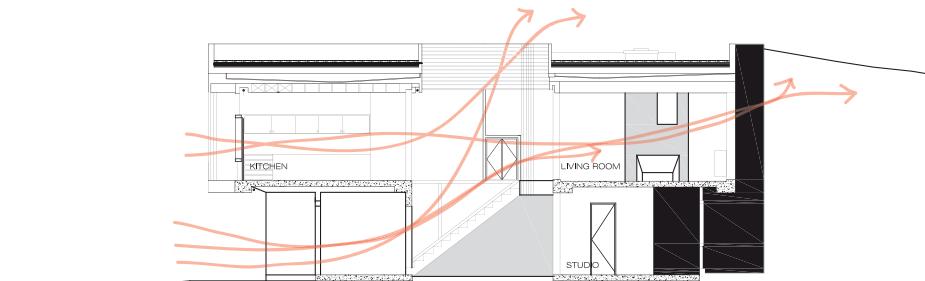
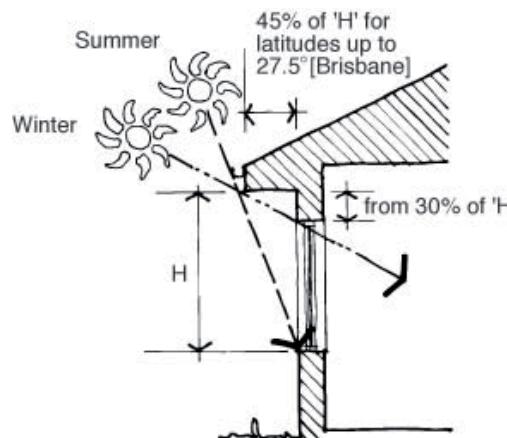
Systems Used

Our Solar panels are located to the side of the house, rather than on the roof, as our roof is already being utilised as a green roof. By having the solar panels placed here, it means we can change the angle of them, so that they can always be capturing the highest possible about of solar energy. These solar panels would then connect up to the house, where there energy would then be used to heat up the hot water tanks, and also heat up the water for the hydronic heated slab, which is our main heat source.

Passive Heating and Cooling

Shading - we have used extended eaves and louvers to enable passive heating and cooling of the house.

Ventilation - we have also looked closely at the best way to provide cross ventilation through the house. This helps the house cool down in summer, without the need for air conditioning.

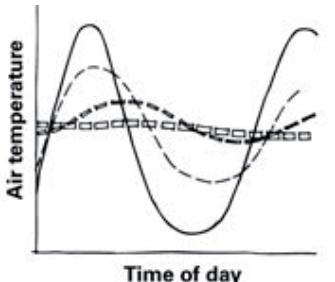


Systems Used

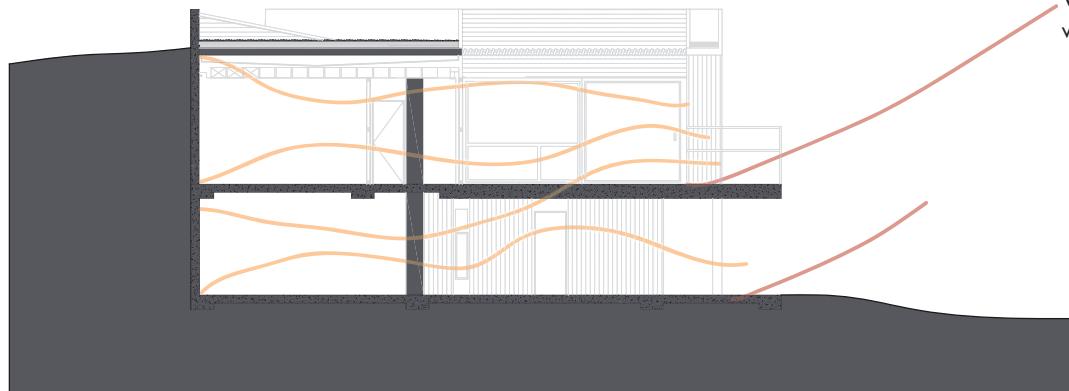
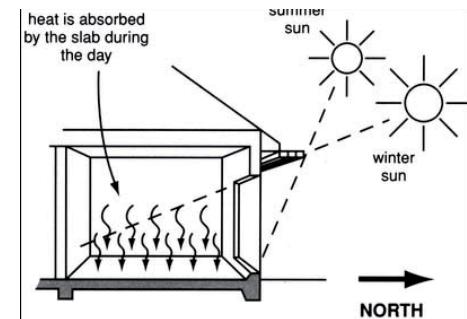
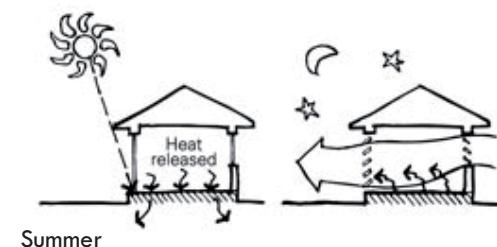
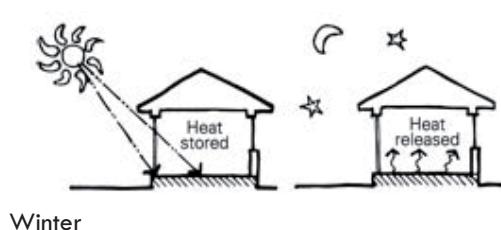
Thermal Mass

Advantages of Thermal Mass -

Thermal mass acts as a thermal battery. During summer it absorbs heat, keeping the house comfortable. In winter the same thermal mass can store the heat from the sun or heaters to release it at night, helping the home stay warm.



- Outdoor temperature
- light timber-framed building
- - Heavy building with external insulation
- - - Heavy building set into and partially covered with earth



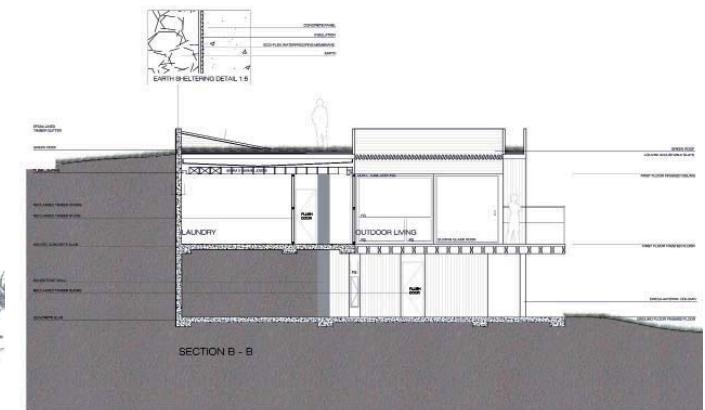
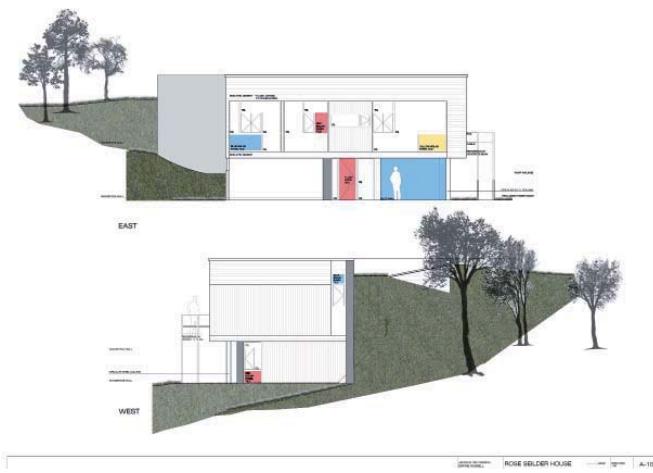
Winter Sun Heats up the slab and also the earth which surrounds the earth

The connection with the earth keeps the building at a stable temperature throughout the day. In winter the earth is heated up through the sun and in summer it keeps its cool for a longer period of time. The green roof also adds to this stable temperature, as more of the building enclosed by the earth.

Systems Used

Part 4

re-design



In our redesign of the Rose Seidler House we wanted to maintain Seidler's principles while reinterpreting them into the Australian context. To achieve this our major moves were; to earth shelter a corner into the landscape, to extend the eaves on the north and east elevation to provide adequate shading, rearranging of floorplans to make the living areas face north to maximise solar penetration.

re-design specifications:

Foundation: on solid rock. Lower floor wall: Sandstone off the site.

Floor: suspended re-inforced concrete pipe columns, edge beams and hydronic heated slabs.

Walls: steel studs and hardboard- wood faced hollow core.

Window frames and doors: sustainable durable timber.

Glass: double glazed. Stairs: reclaimed timber.

Ramp: sustainable durable timber.

Wall insulation: glareshield.

Water systems: rainwater and grey water tank.

Flashing: EDPM.

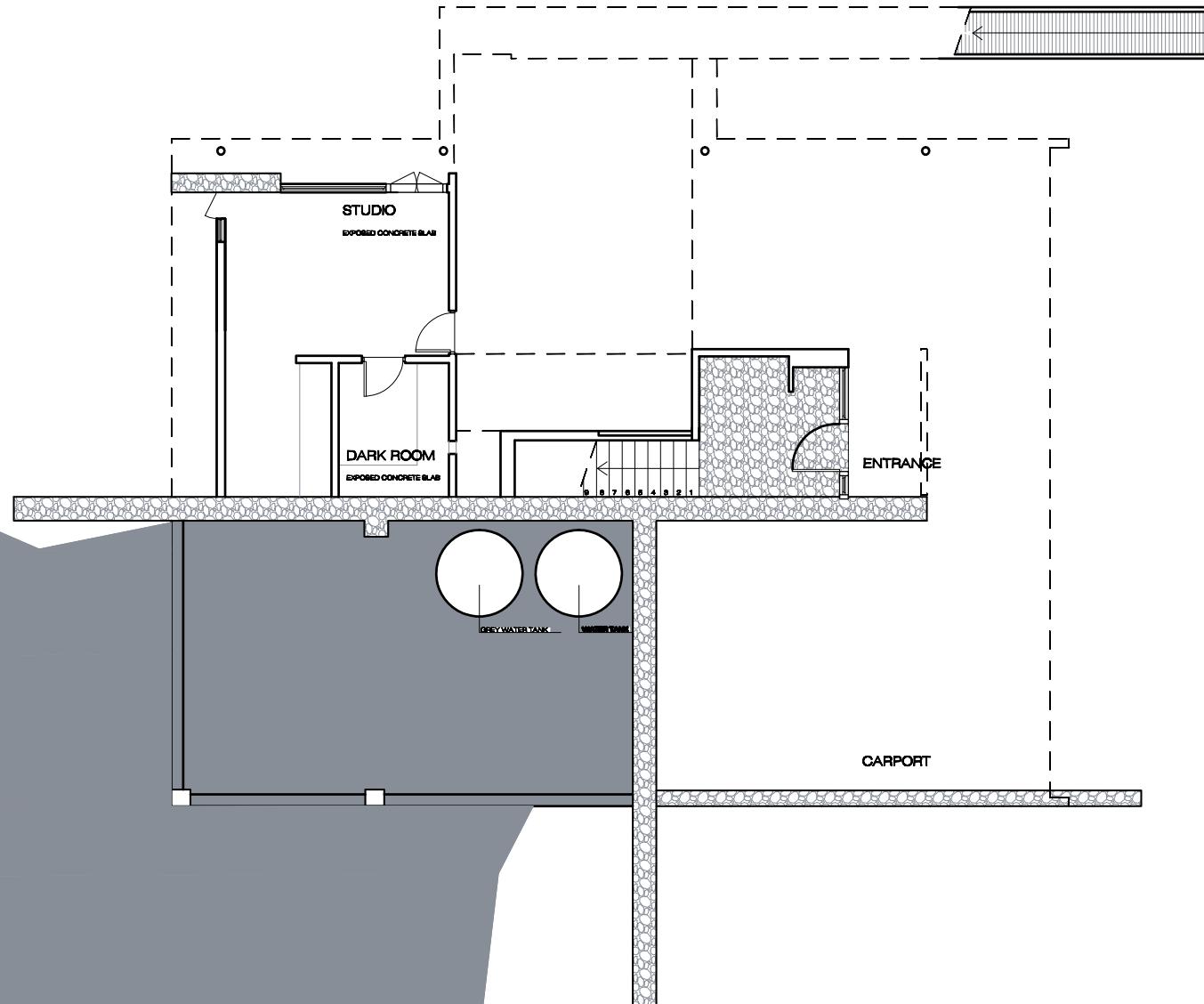
Paint: natural paint stain and varnish, mineral paint for exterior.

Drainage: vitrified clay for below ground drainage.

Pipework: polyethylene.

Paving: concrete slab w/ recycled aggregate.

Earth sheltering and green roof: reinforced concrete, liquid asphalt, close celled polystyrene and eco-flex for waterproofing.



JACQUELINE O'BRIEN
SOPHIE RUSSELL

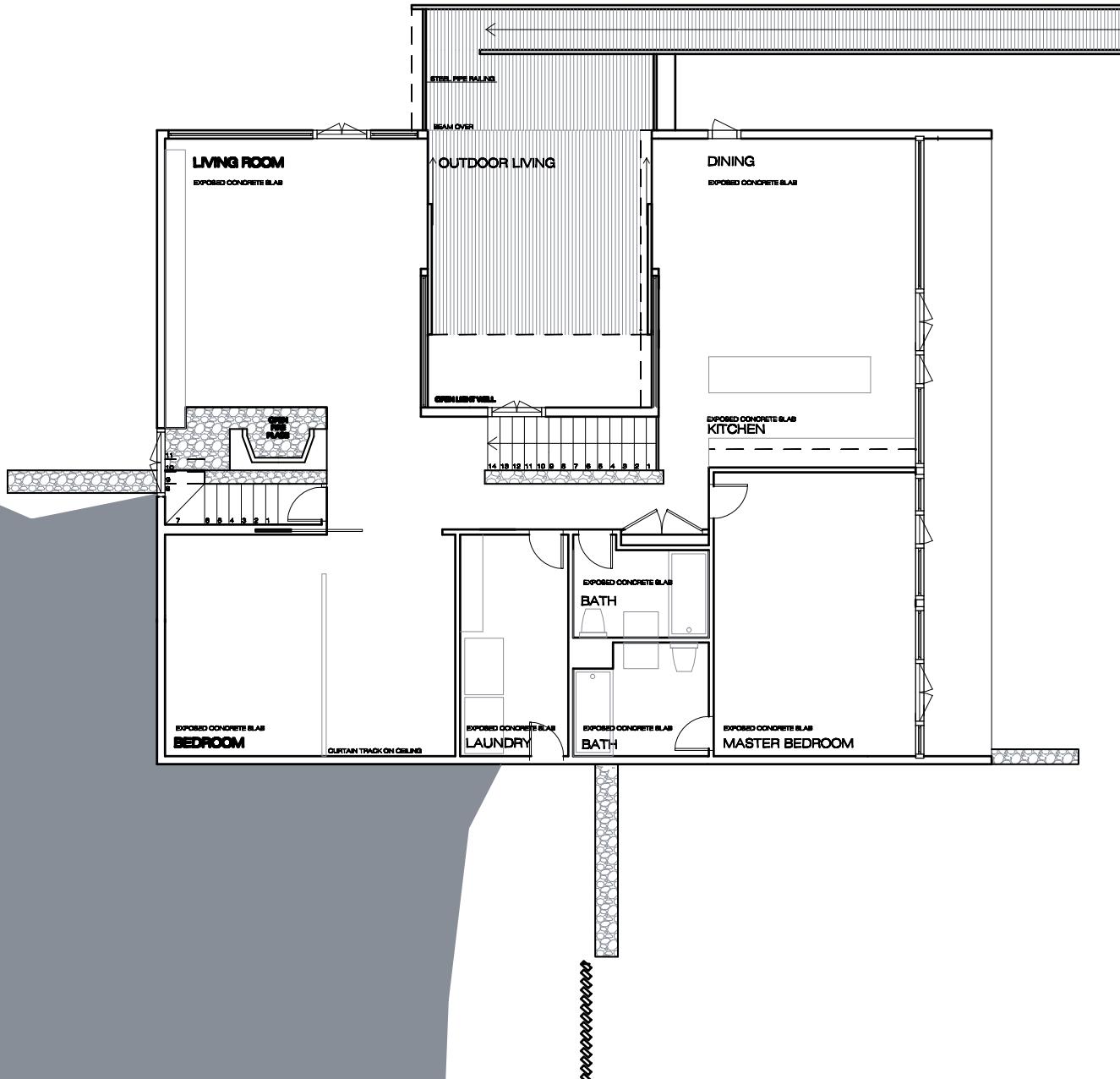
ROSE SEILDER HOUSE

.....KEW

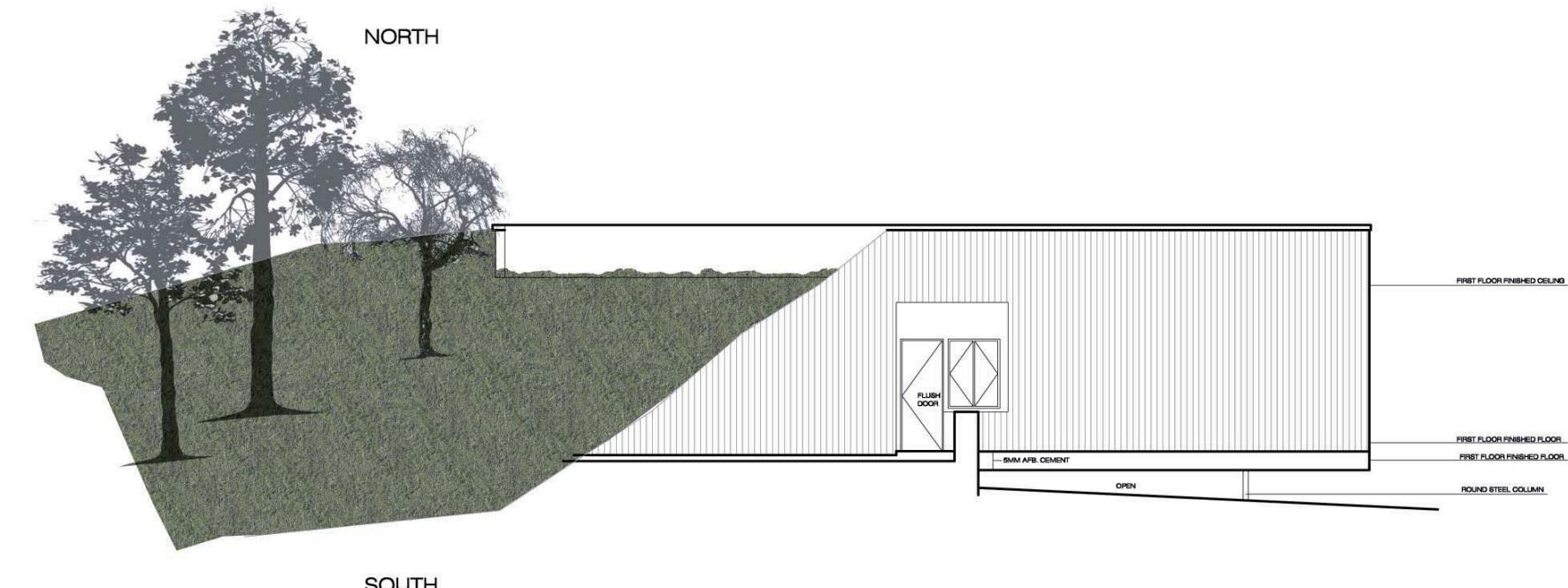
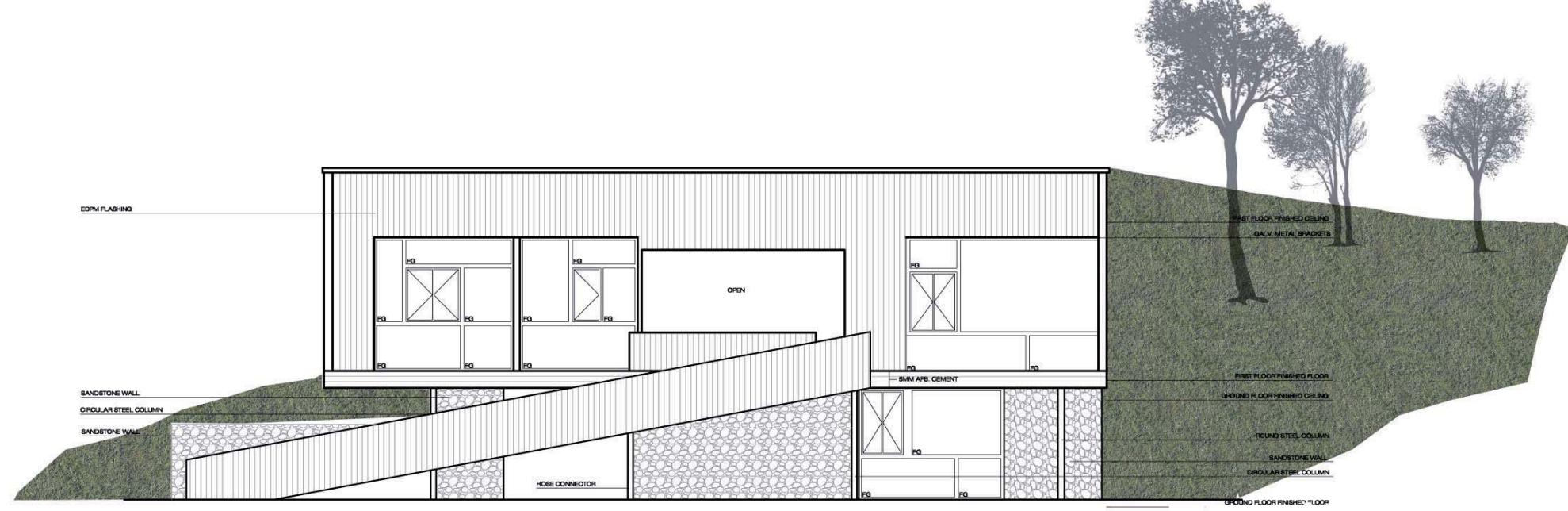
PLAN
1:100

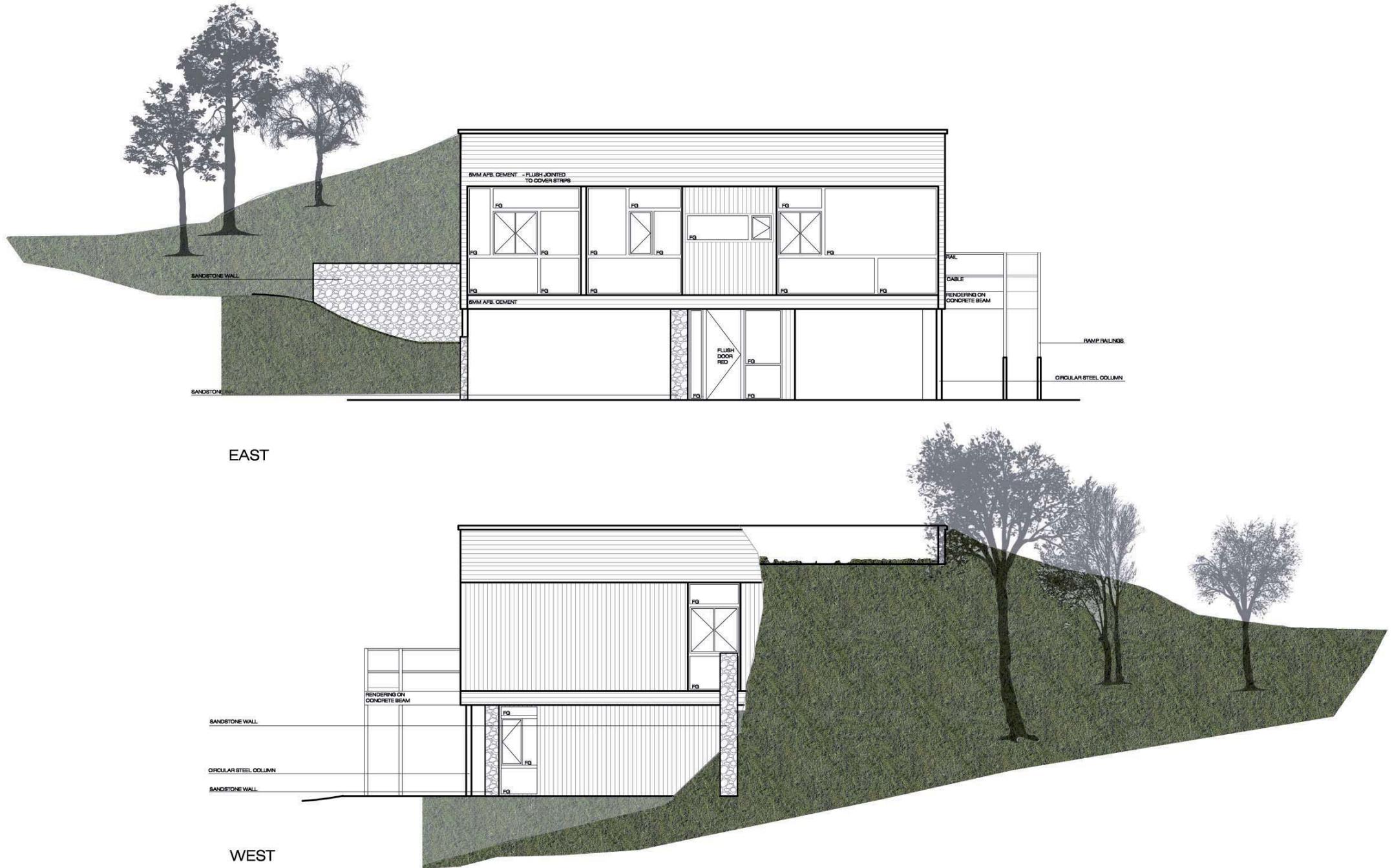
A-101

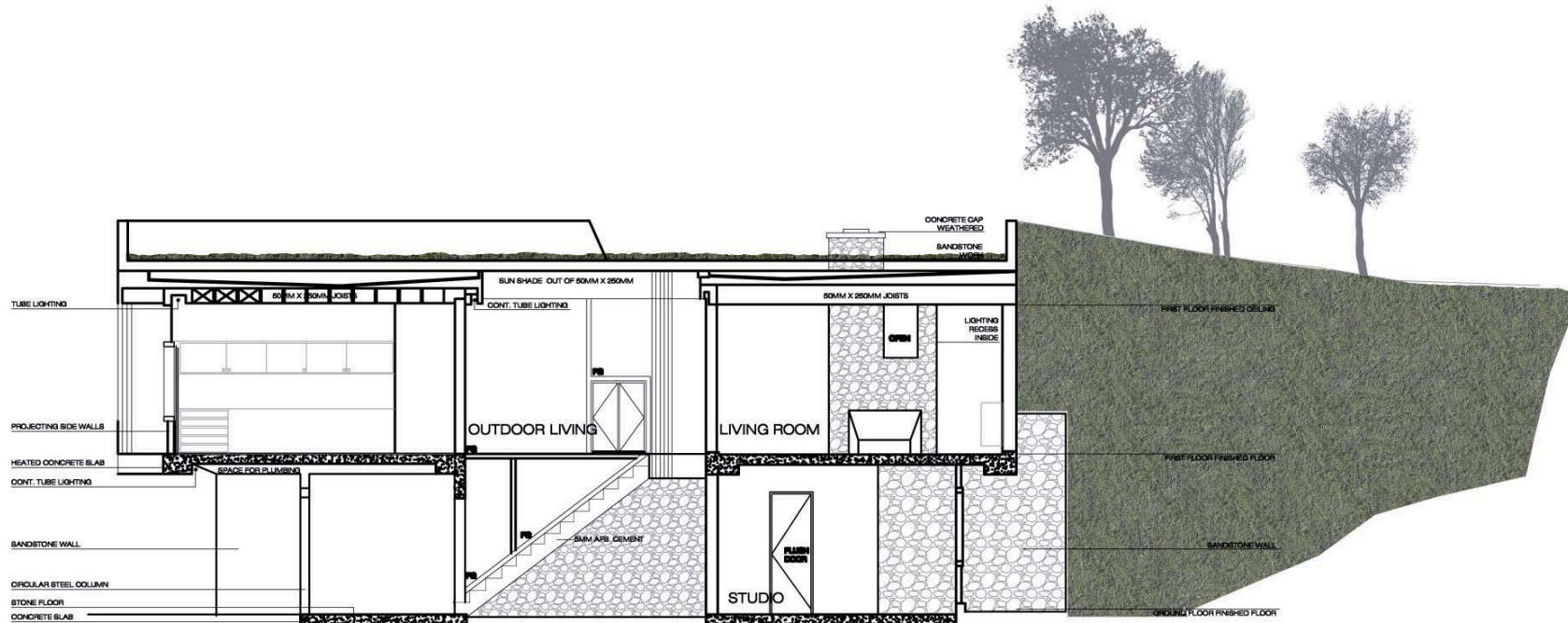
Intial re-design



N
↗







SECTION A - A



Exterior view



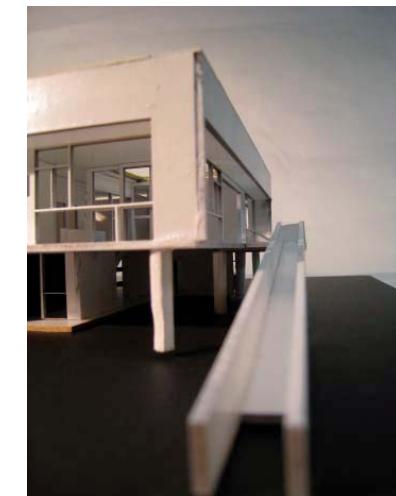
Interior view from kitchen

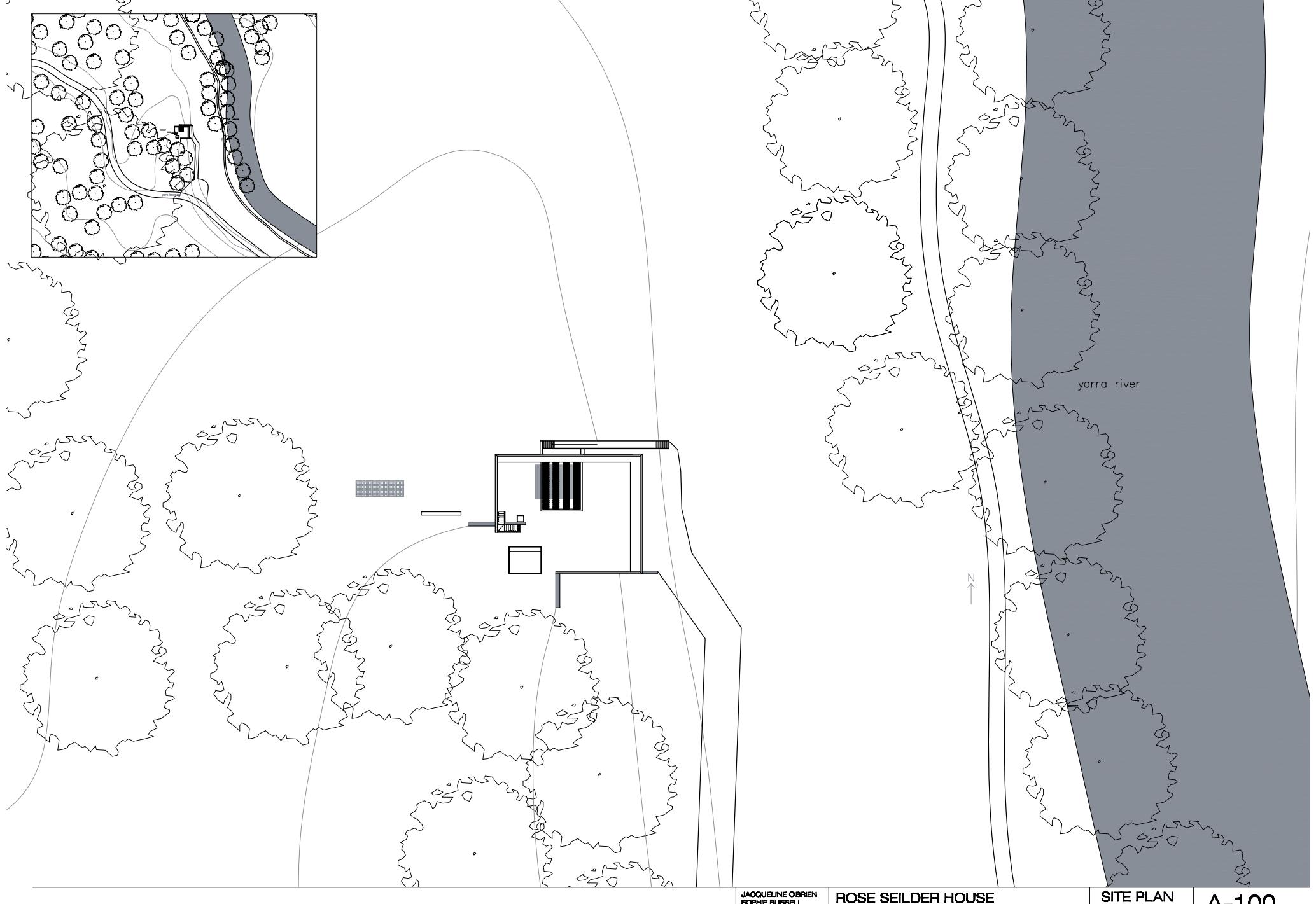


Exterior view



Model of eco-redesign





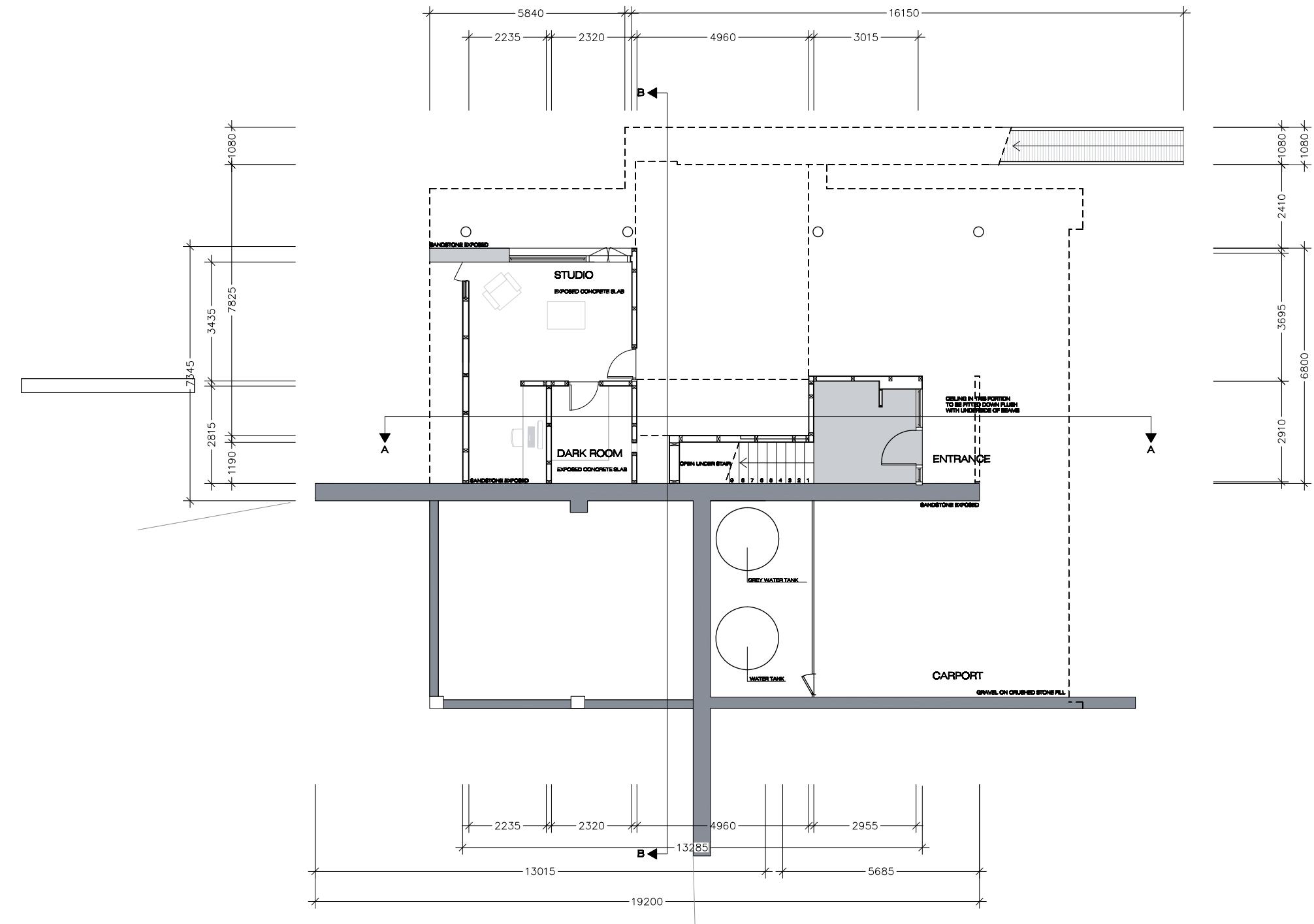
JACQUELINE O'BRIEN
SOPHIE RUSSELL

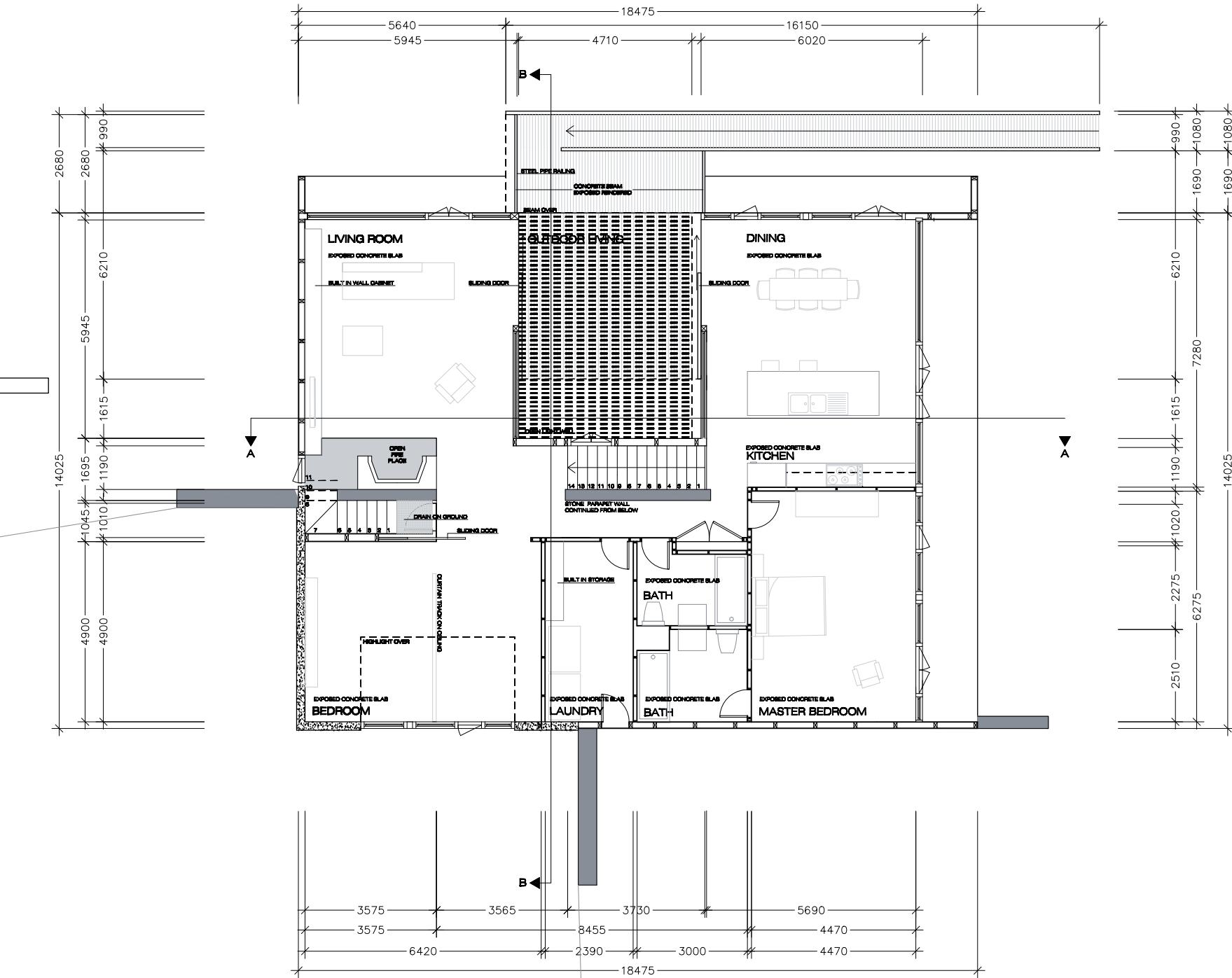
ROSE SEILDER HOUSE
STUDLEY PARK KEW

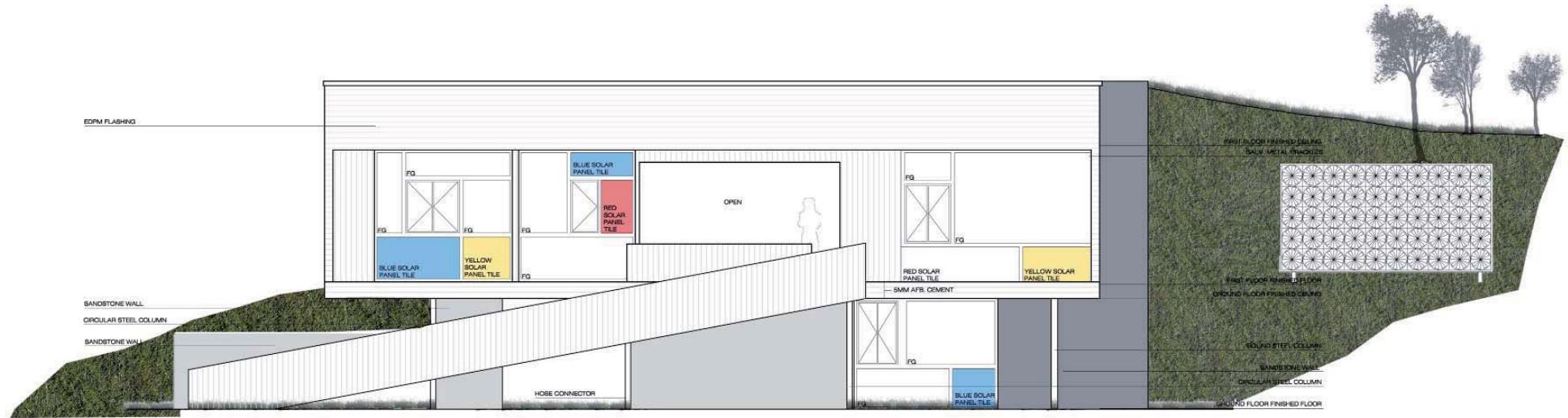
SITE PLAN
1:200

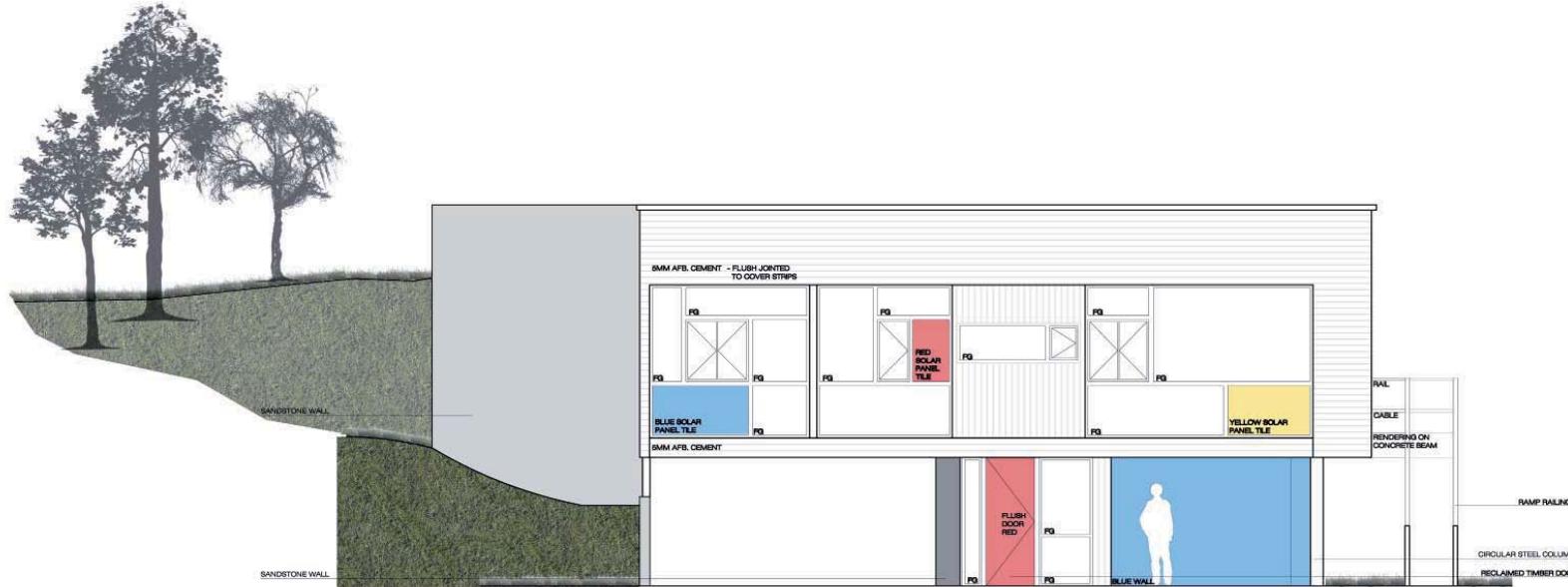
A-100

Final drawings

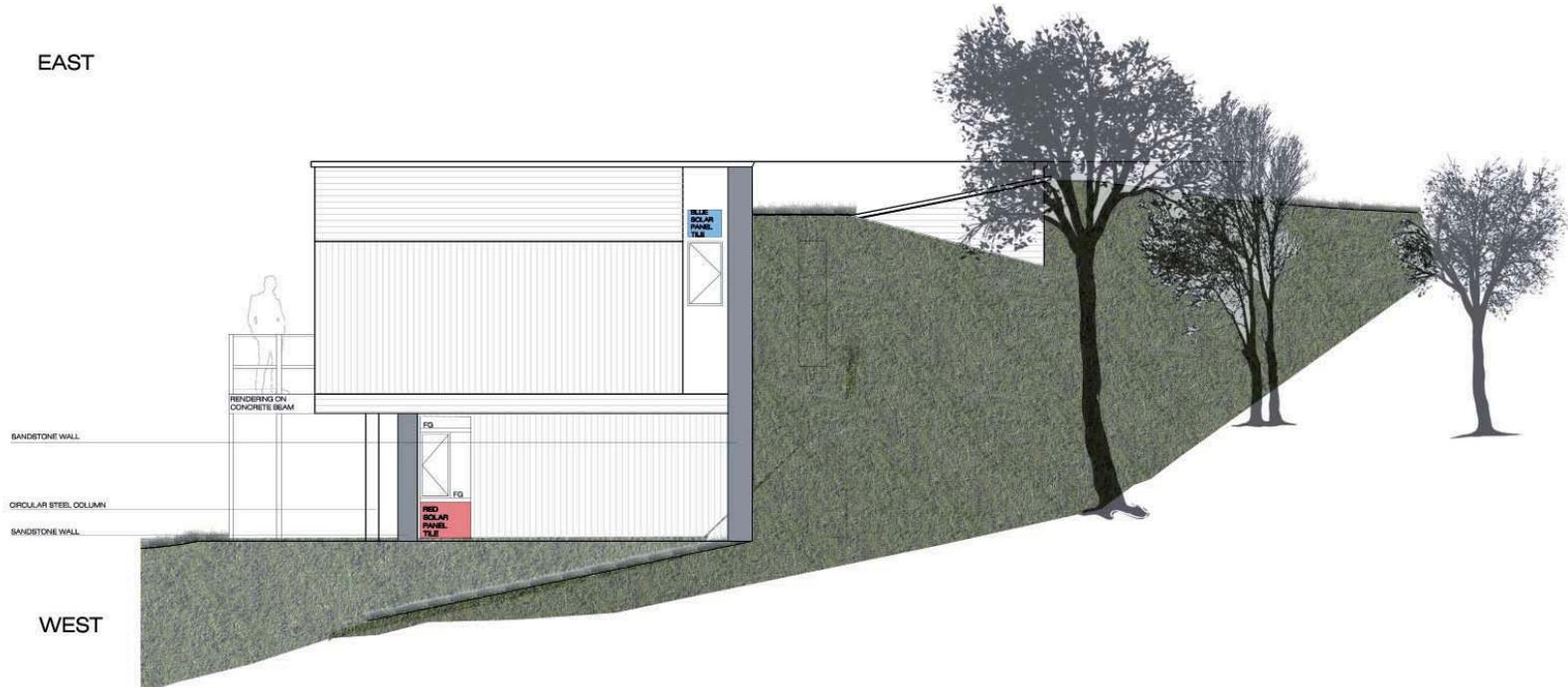


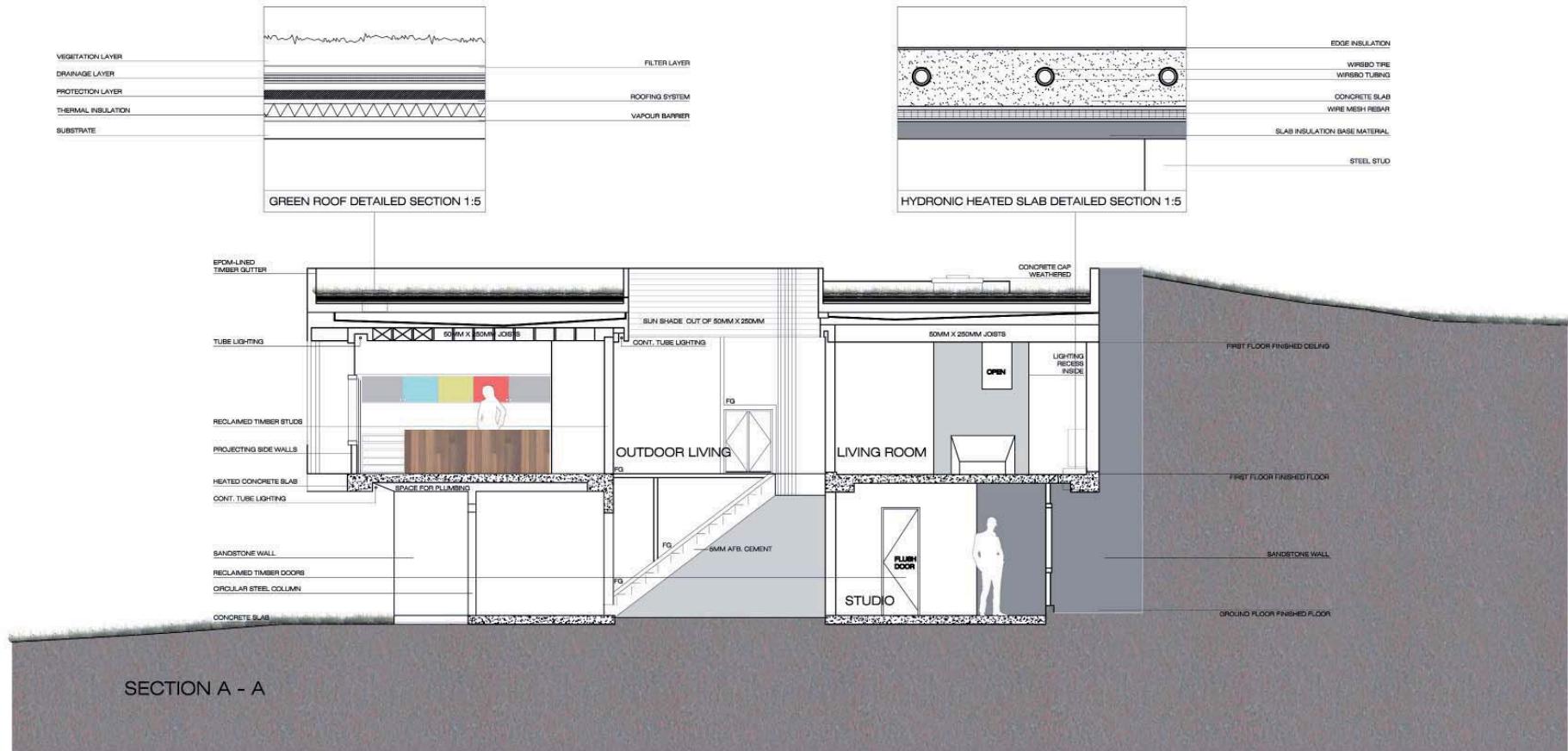


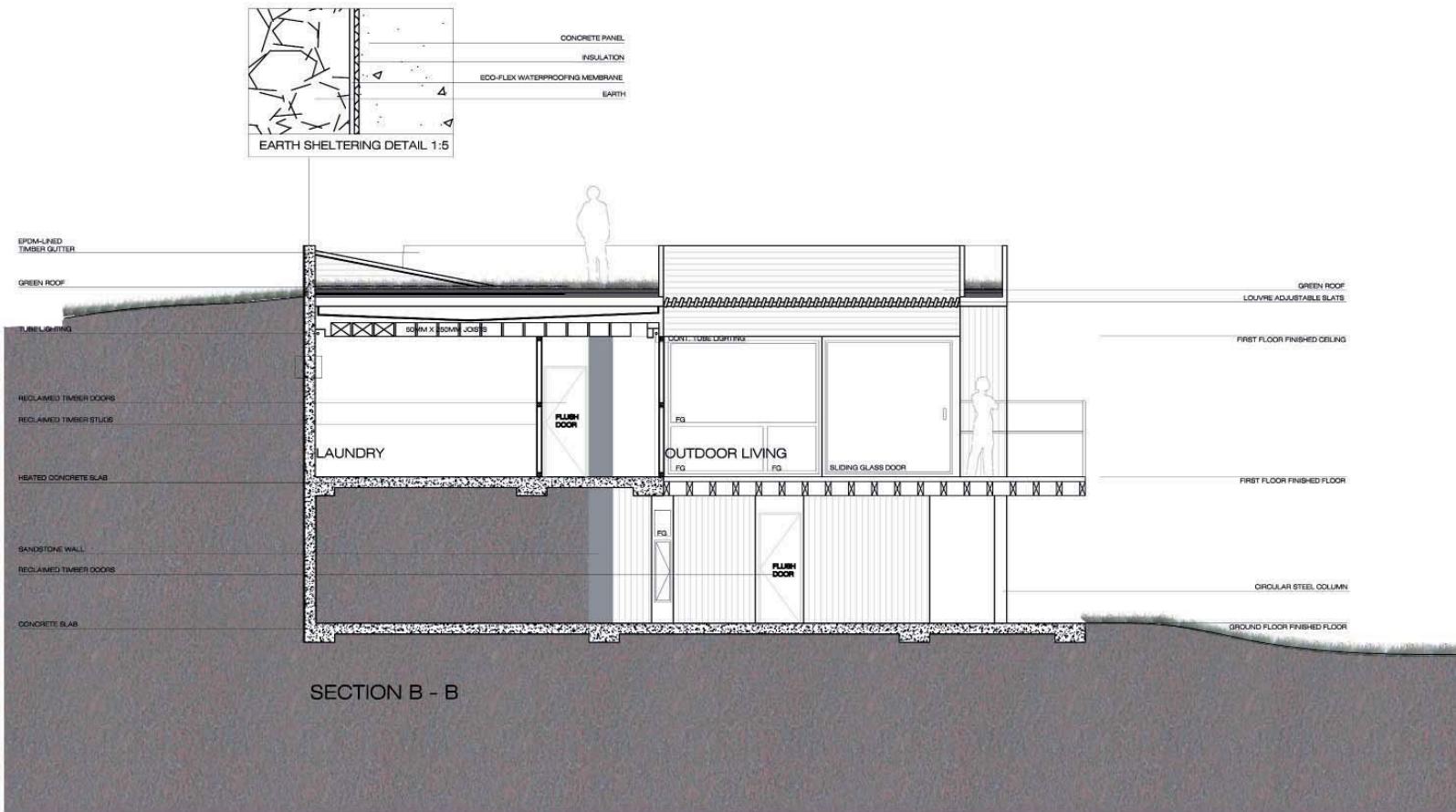




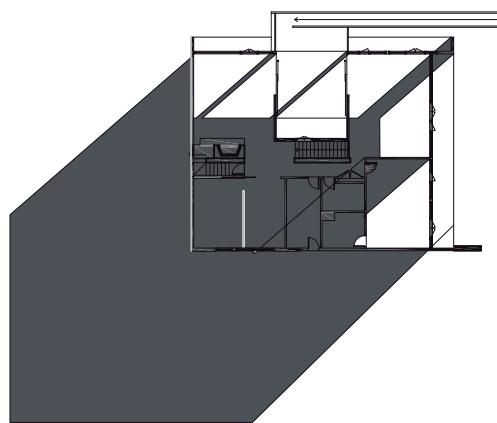
EAST



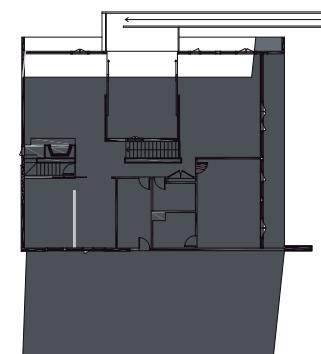




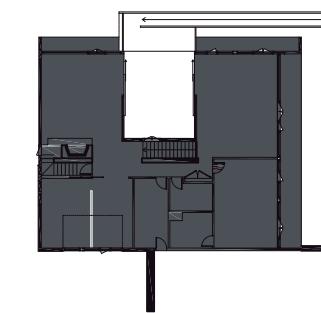
9am June



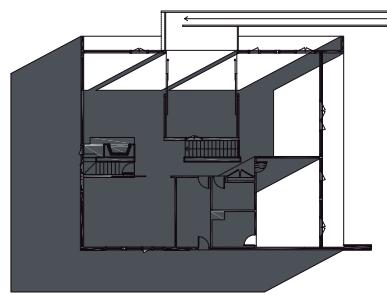
12pm June



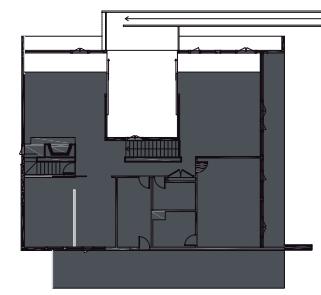
5pm June



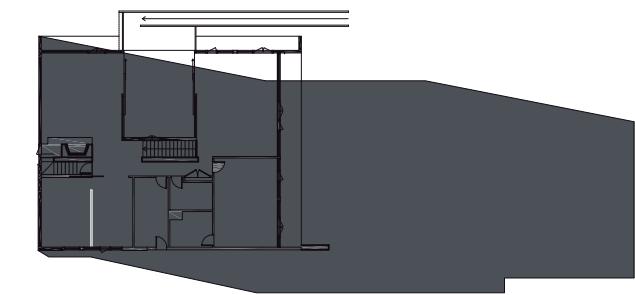
9am Sept



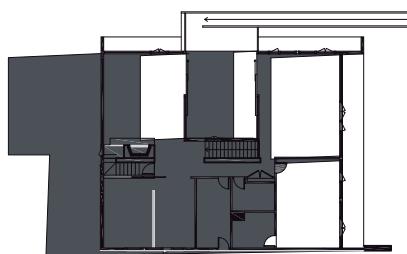
12pm Sept



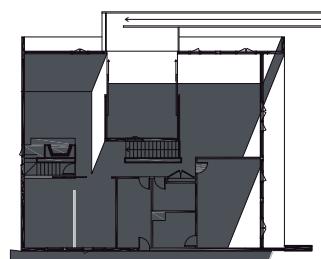
5pm Sept



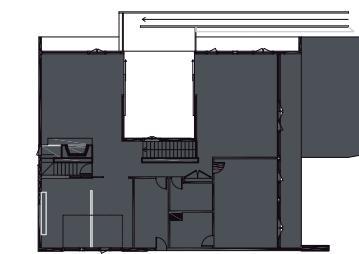
9am Dec



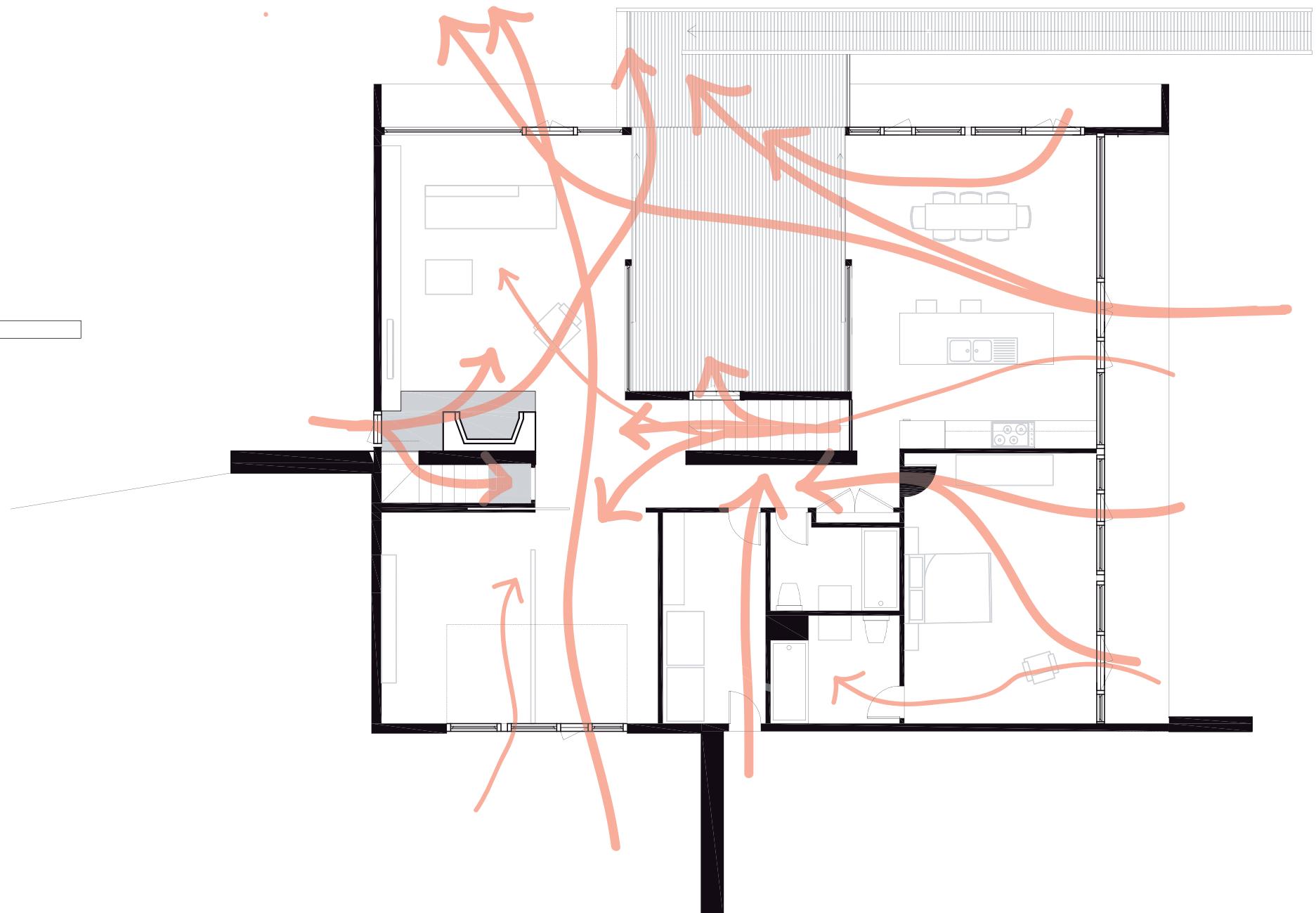
12pm Dec



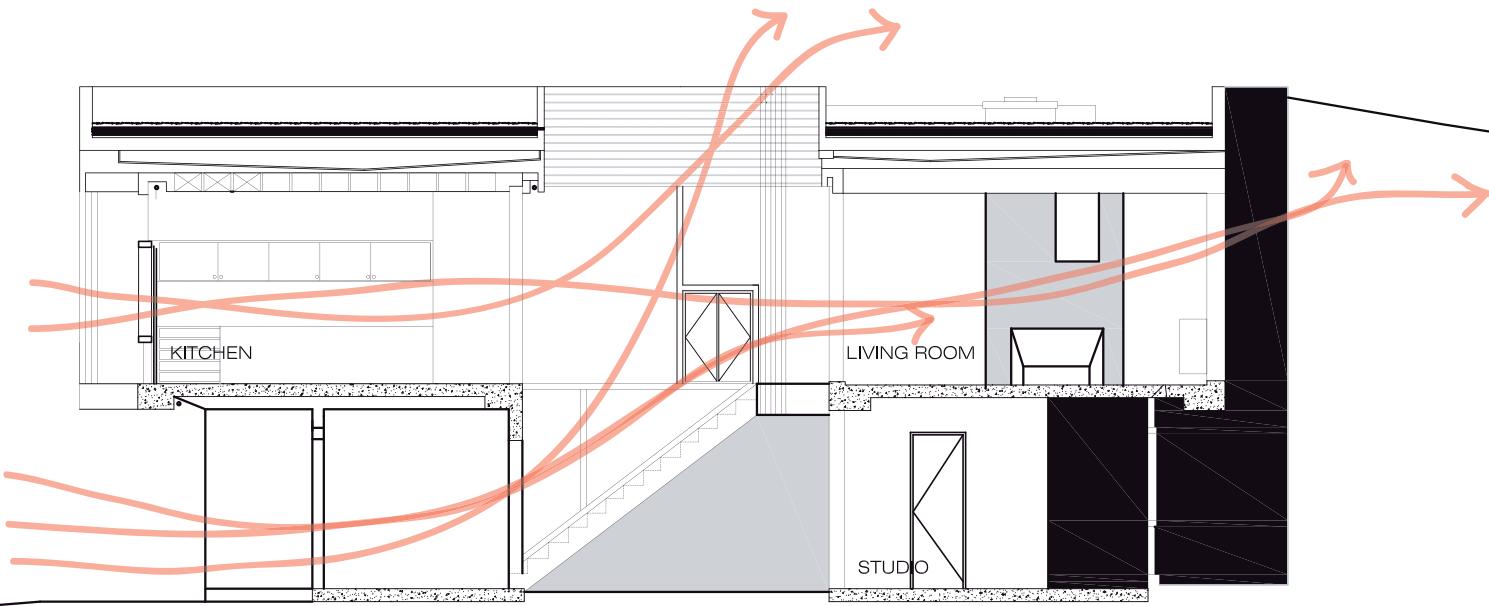
5pm Dec

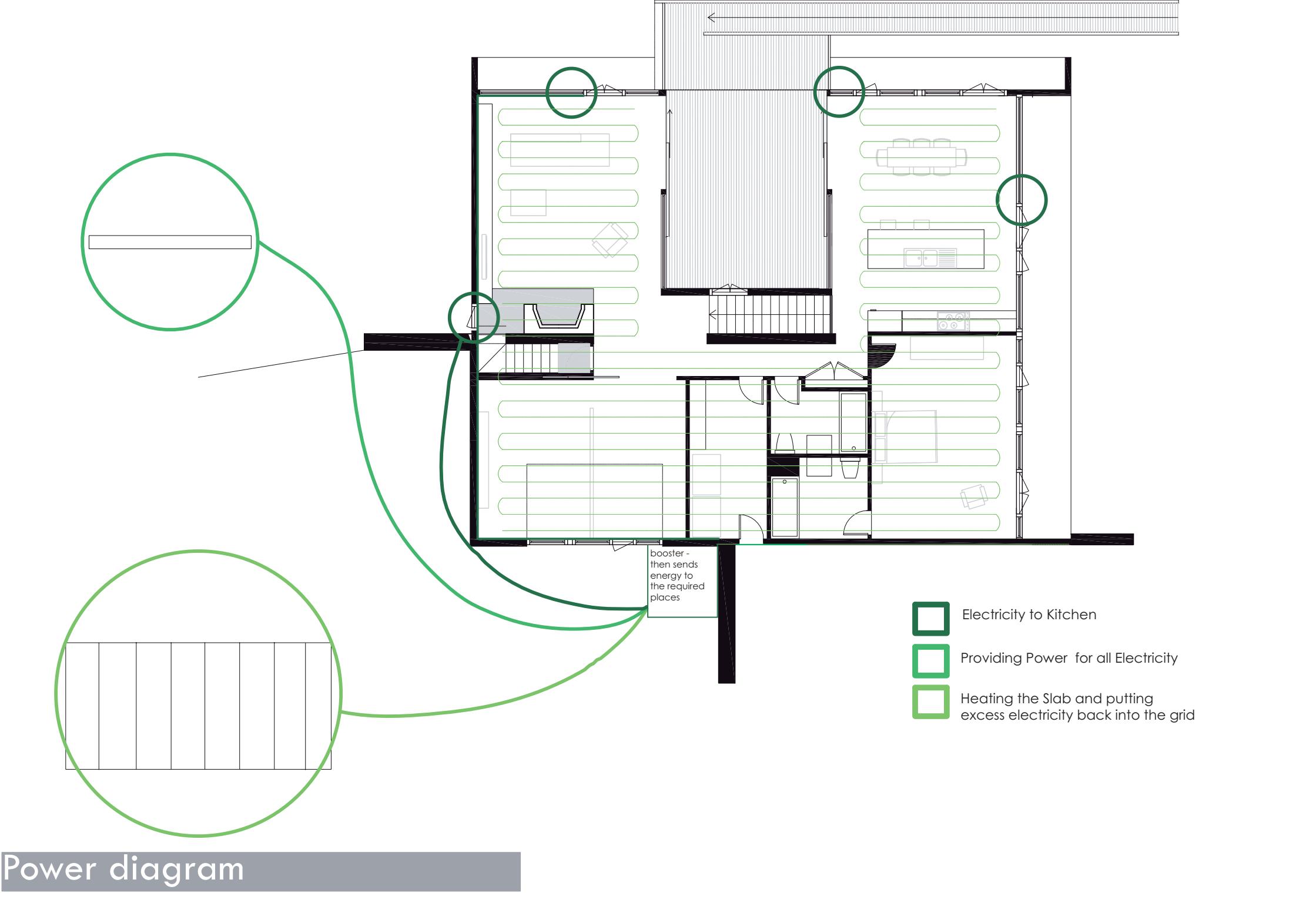


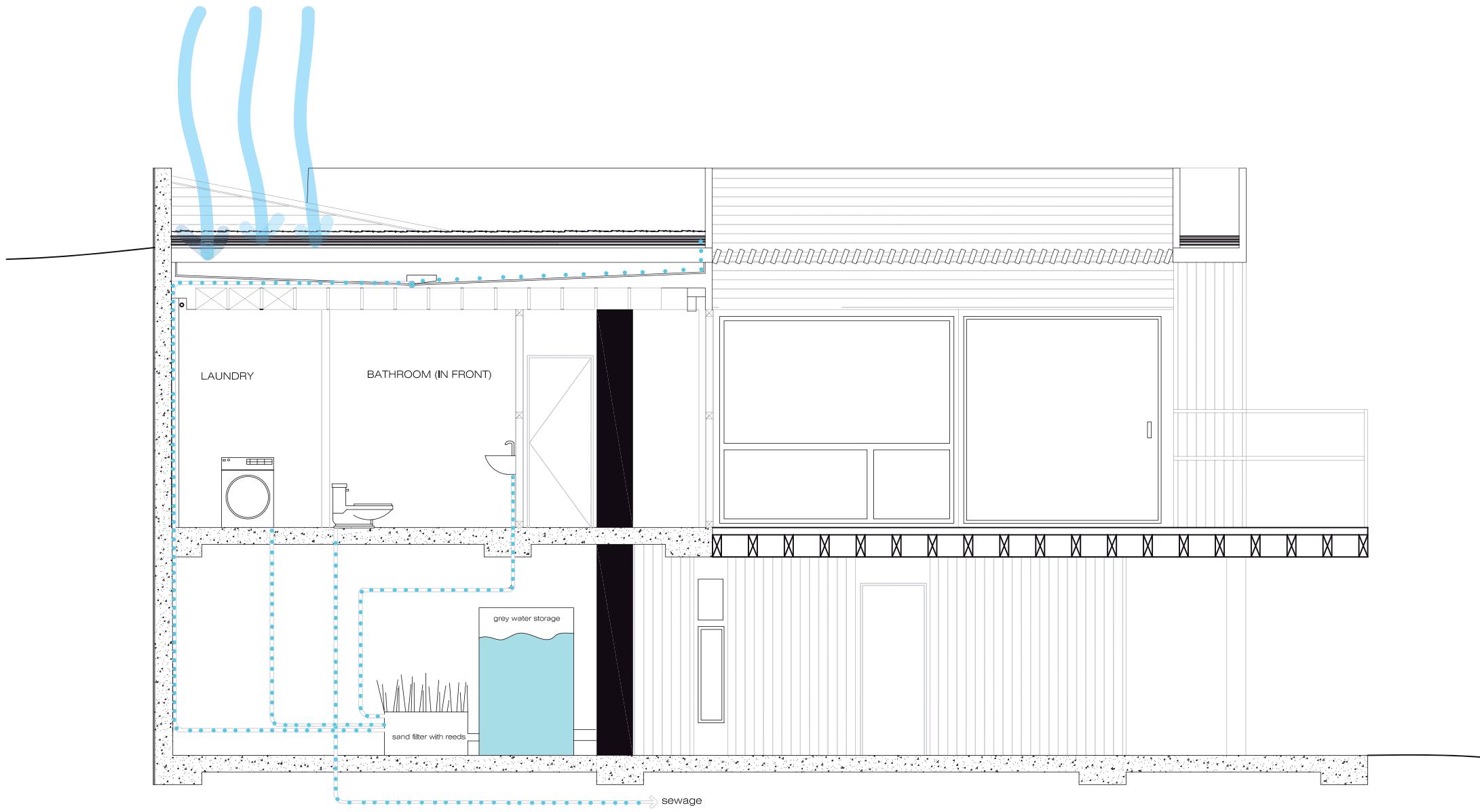
Shading diagrams



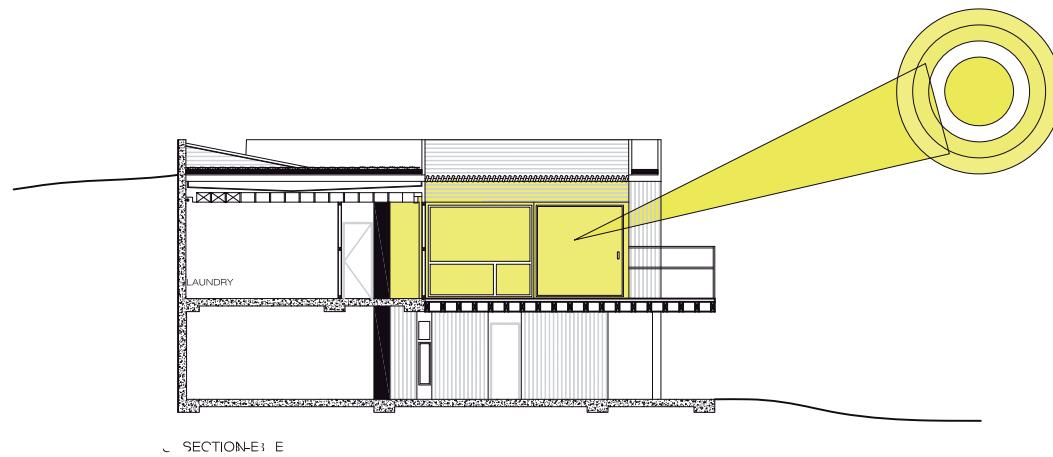
Ventilation diagram



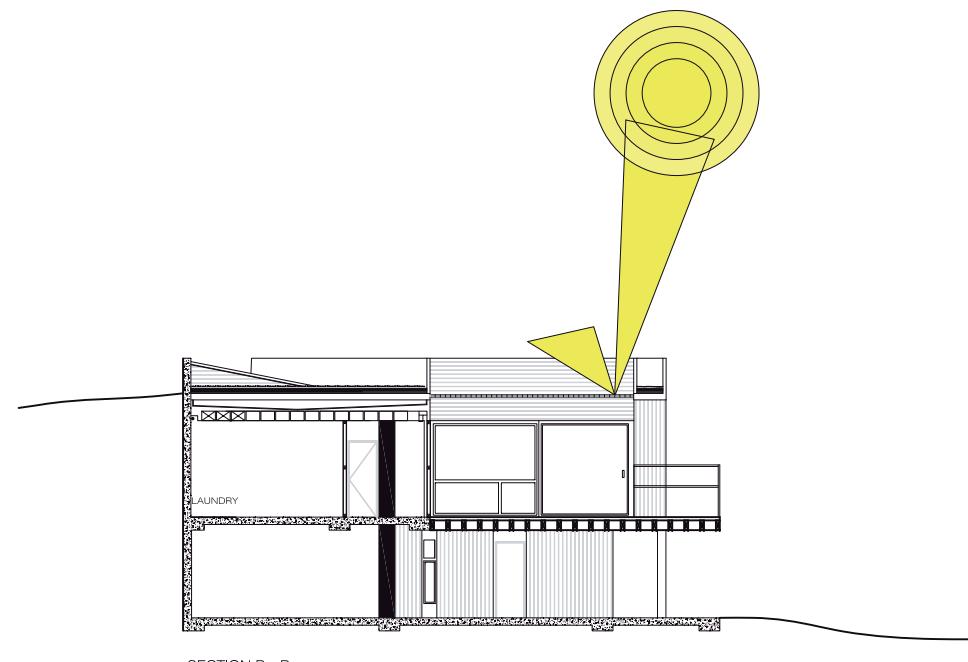




Water diagram



SECTION E-E



SECTION B-B

Thermal mass diagram

FirstRate Report



YOUR HOUSE ENERGY RATING IS: ★★★★★★ 6 STARS
in Climate: 21 SCORE: 32 POINTS

Name: Ref No:

House Title: Rose Seidler House Date: 12-10-2009

Address:

Studley Park, Kew

Reference: B:\UNI\SECOND YEAR\...\\TECH 3\PART 4\09

ORIENTATION

Orientation is one of the key factors which influences energy efficiency. This dwelling will achieve different scores and star ratings for different orientations.

Current Rating	32	★★★★★
----------------	----	-------

Largest windows in the dwelling;

Direction : North

Area : 45 m²

The table below shows the total score for the dwelling when these windows face the direction indicated.

Note that obstructions overshadowing windows have been removed from all windows in these ratings to allow better comparisons to be made between orientations.

ORIENTATION	POINT SCORE	STAR RATING
1. North	32	★★★★★
2. North East	23	★★★★★
3. East	17	★★★★★
4. South East	9	★★★★★
5. South	13	★★★★★
6. South West	17	★★★★★
7. West	28	★★★★★
8. North West	31	★★★★★

This rating only applies to the floor plan, construction details, orientation and climate as submitted and included in the attached Rating Summary. Changes to any of these could affect the rating.

Appliance Ratings

Heating: HYDRONIC SLAB WATER HEATER ★★★★★

Cooling: Not Installed

HotWater: RAIN WATER TANKS?? ★★★★★

NOTE: The appliance ratings above are based on information provided by the applicant and are included for information purposes only.
They do not affect the House Energy Rating of the dwelling.

FirstRate Mode					
Climate: 21					
RATING SUMMARY for: Rose Seidler House, Studley Park, Kew					
Assessor's Name:					
Net Conditioned Floor Area: 462.0 m ²					
Points					
Feature	Winter	Summer	Total		
CEILING	12	0	13		
Surface Area: 4 Insulation: 10					
WALL	3	-2	1		
Surface Area: -1 Insulation: 6 Mass: -4					
FLOOR	7	-1	6		
Surface Area: 7 Insulation: -9 Mass: 8					
AIR LEAKAGE (Percentage of score shown for each element)	3	0	3		
Fire Place 8 % Vented Skylights 0 %					
Fixed Vents 0 % Windows 33 %					
Exhaust Fans 24 % Doors 23 %					
Down Lights 0 % Gaps (around frames) 12 %					
DESIGN FEATURES	0	1	1		
Cross Ventilation 1					
ROOF GLAZING	0	0	0		
Winter Gain 0 Winter Loss 0					
WINDOWS	30	-12	17		
Point Scores					
Window Direction	Area	Winter* Loss	Winter Gain	Summer Gain	Total
N	45	10%	-9	30	-5
E	38	8%	-7	14	-5
S	6	1%	-1	1	0
W	10	2%	-2	4	-1
Total	99	21%	-19	49	-12
* Air movement over glazing can significantly increase winter heat losses. SEAV recommends heating/cooling duct outlets be positioned to avoid air movement across glass or use deflectors to direct air away from glass.					
The contribution of heavyweight materials to the window score is 17 points					
RATING	★★★★★	SCORE	55	-15	32*

* includes -8 points from Area Adjustment

Detailed House Data

House Details

HouseTitle
Suburb
FileCreated
12-10-2009

Climate Details

0
21

Floor Details

ID	Construction	Sub Floor	Upper	Shared	Foil	Carpet	Ins RValue	Area
1	Concrete Slab on ground	No Subfloor	No	No	No	No	R0.0	238.0m ²
2	Suspended Slab	NA	Yes	No	Yes	No	R0.0	238.0m ²

Wall Details

ID	Construction	Shared	Ins RValue	Length	Height
2	Weatherboard	No	R2.0	23.0m	2.6m
4	Concrete 150mm Int+Ext	No	R2.0	14.2m	3.0m
5	Weatherboard	No	R2.0	62.5m	5.0m

Ceiling Details

ID	Construction	Shared	Foil	Ins RValue	Area
1	Flat - Framed	No	Yes	R5.0	238.0m ²

Window Details

ID	Dir	Height	Width	Utility	Glass	Frame	Curtain	Blind	Fixed & Adj Eave	Fixed Eave	Head to Eave
1	N	3.0m	6.2m	No	DG	TIMB	HP	No	0.0m	0.0m	0.0m
2	N	3.0m	4.5m	No	DG	TIMB	HP	No	0.0m	0.0m	0.0m
3	N	3.0m	1.3m	No	DG	TIMB	HP	No	0.0m	0.0m	0.0m
4	N	2.6m	3.4m	No	DG	TIMB	HP	No	0.0m	0.7m	2.6m
5	E	3.0m	6.2m	No	DG	TIMB	HP	No	0.0m	1.5m	3.2m
6	E	0.8m	2.5m	No	DG	TIMB	HP	No	0.0m	1.5m	3.2m
7	E	3.0m	4.7m	No	DG	TIMB	HP	No	0.0m	1.5m	3.2m
8	E	2.6m	1.3m	No	DG	TIMB	HP	No	0.0m	4.2m	2.6m
9	S	1.4m	1.1m	No	DG	TIMB	HP	No	0.0m	0.0m	0.0m
10	S	1.2m	3.8m	No	DG	TIMB	HP	No	0.0m	0.5m	1.8m
11	W	3.0m	1.5m	No	DG	TIMB	HP	No	0.0m	0.0m	0.0m
12	W	2.6m	1.0m	No	DG	TIMB	HP	No	0.0m	1.0m	2.6m
13	W	2.6m	1.0m	No	DG	TIMB	HP	No	0.0m	1.0m	2.6m

Window Shading Details

ID	Dir	Height	Width	Obst	Obst	Obst	Obst	LShape Left Fin	LShape Left Off	LShape Right Fin	LShape Right Off
No shaded windows											

Zoning Details

Is there Cross Flow Ventilation ? Good

Air Leakage Details

Location Suburban
Is there More than One Storey ? Yes
Is the Stairwell Separated by Doors ? No
Is the Entry open to the Living Area ? Yes
Is the Entry Door Weather Stripped ? Yes

Area of Heavyweight Mass	21.3m ²
Area of Lightweight Mass	21.3m ²

	<u>Sealed</u>	<u>UnSealed</u>
Chimneys	1	0
Vents	0	0
Fans	0	3
Downlights	0	0
Skylights	0	0
Utility Doors	0	3
External Doors	0	4

Unflued Gas Heaters	0
Percentage of Windows Sealed	68%
Windows - Average Gap	Small
External Doors - Average Gap	Small
Gaps & Cracks Sealed	Yes