

Designing and Assessing for 7 Stars

Griffith Eco Centre Presentation
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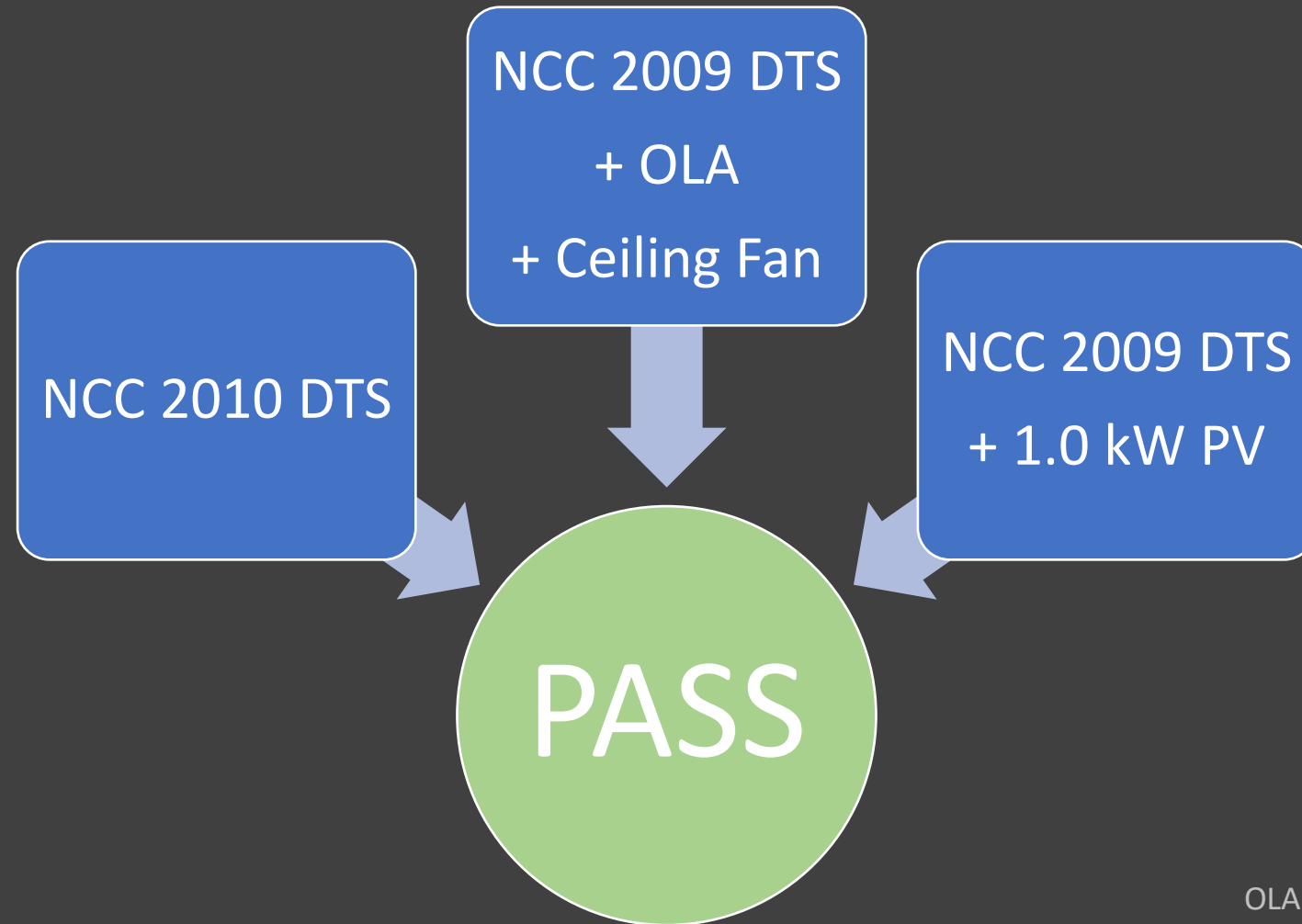
Designing and Assessing for 7 Stars

1. Introduction
2. New Legislation
3. Designers
4. Assessors
5. Conclusion / Questions



Old Legislation - DTS

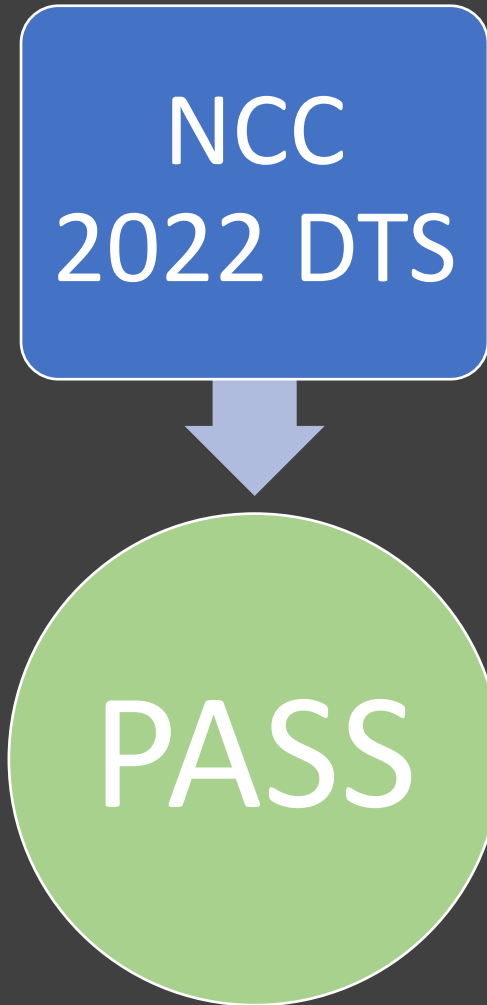
QDC MP 4.1 v1.13
allowed for
compliance via:



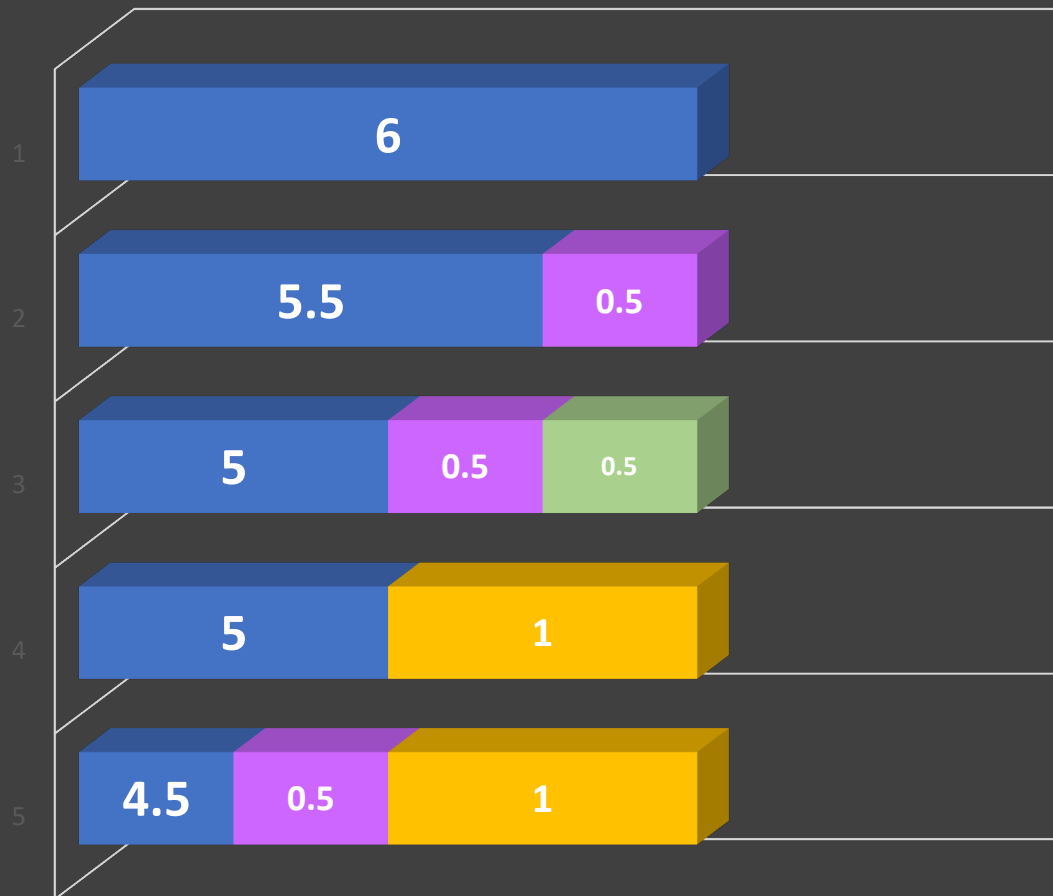
OLA = Outdoor Living Area

New Legislation - DTS

Proposed QDC MP
4.1 v1.14 allows
for compliance via:



Old Legislation - NatHERS



Old Compliance Options:

Minimum 4.5 from software

PLUS nominal credits:

OLA

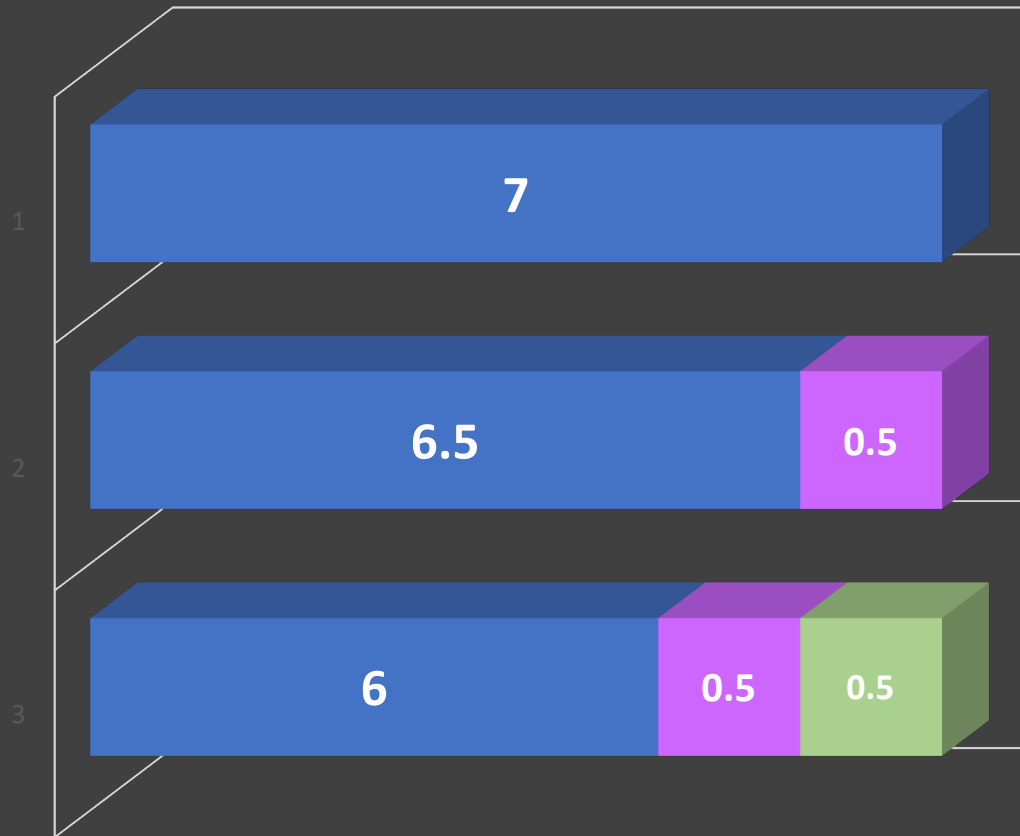
Fan

Solar

OLA = Outdoor Living Area

6 Star Rating
Max. 1.5 Star nominal credit

New Legislation - NatHERS



New Compliance Options:

Minimum 6.0 from software

PLUS nominal credits:

OLA

Fan

OLA = Outdoor Living Area

7 Star Rating
Max. 1 Star nominal credit

New Legislation - NatHERS

Class 1

4.5 Star
Software
Minimum



6.0 Star
Software
Minimum



New Legislation - NatHERS

Class 1

4.5 Star
Software
Minimum



6.0 Star
Software
Minimum

Class 2
Units

4.0 Star
Software
Minimum



6.0 Star
Software
Minimum



Designing for 7 Stars

1. Work with an accredited, skilled
NatHERS Assessor

2. Understand the NatHERS Software

- A predicted (winter) heating load in MJ/m² p.a.
- A predicted (summer) cooling load in MJ/m² p.a.
- The predicted total energy load and corresponding Star Rating eg 7.2 Stars



Designing for 7 Stars

PASSIVE SOLAR DESIGN PRINCIPALS

1. Orientation
2. Insulation
3. Thermal Mass
4. Ventilation
5. Glazing



Designing for 7 Stars

1. Orientation

- Prioritise shaded North-facing glazing
- East & West wall shading
- Neighbouring buildings are modelled



Designing for 7 Stars

2. Insulation

- Ceiling insulation has biggest impact
- R 3.5 will become new ceiling standard
- Include thermal breaks for steel framing



Designing for 7 Stars

3. Thermal Mass

- Yes, it is included by NatHERS Software



Designing for 7 Stars

4. Ventilation

- Ceiling fans give a large benefit
- Note location and diameter size on plans
- Restricted openings for Fall from Height regs
- Louvre windows - 90% openable



Designing for 7 Stars

5. Glazing

- Ventilation
- Solar Heat Gain Co-efficient (SHGC)
- Resistance to heat flow (R-Val or U-Val)
- Improve R-Value of total wall/glazing façade
 - ✓ Frame
 - ✓ Glass
 - ✓ Area - 25% rule



Designing for 7 Stars - Tips

- Use the 1.0 Star nominal credit
- Group unconditioned zones
- Take care with first floor living zones
- Light external wall and window frames
- Consider size of windows in small rooms
- Dwelling size
- Multifunctional rooms
- Manage client expectations
- Class 2 - rigid insulation for lowest level
- Include all thermal performance details in template



Designing for 7 Stars

| <u>Site Details:</u> | | <u>Sqms.</u> | <u>Energy Commitments:</u> | |
|-------------------------------------|--------------------|---|----------------------------|---|
| Site Area: | | 628 m ² | Hot Water: | System type: Stiebel Eltron DEL 18 Plus Electric Hot Water System |
| Roof Area: | | 53 m ² | | Performance |
| Conditioned Floor Area: | | 37 m ² | Cooling: | Living Area: 4kW Reverse Cycle System |
| Unconditioned Floor Area: | | 5 m ² | | Star rating: 2.5 Star |
| Total Area of Garden & Lawn: | | 200 m ² | | Bedrooms: Ceiling Fans |
| | | | | Star rating: NA |
| <u>Water Commitments:</u> | | | Heating: | Living Area: 4kW Reverse Cycle System |
| <u>Fixtures.</u> | | | | Efficiency Ratings: 2.5 Star |
| | <u>Min Rating.</u> | | | Bedrooms: None |
| All Shower Heads | 3 star | | | Star rating: NA |
| All toilets | 4 Star | | Ventilation: | Bathroom: IXL Tastics |
| All Kitchen Taps | 5/6 Star | | | Bathroom controls: NA |
| All Bathroom Taps | 5/6 Star | | | Kitchen: Exhaust Fan |
| | | | | Kitchen controls: NA |
| <u>Alternative Water:</u> | | | | Laundry: Natural Ventilation |
| Rainwater tank Capacity: | None | | Artificial Lighting: | Dedicated LED (yes or no) |
| Roof Area Diverted to tank | 0 | | | Bathroom: yes |
| Tank to be connected to | None | | | Living Rooms: yes |
| | | | | Kitchen: yes |
| <u>Thermal Comfort Commitments:</u> | | | | Bathrooms/Toilets: yes |
| <u>External Walls:</u> | Type | Timber frame / Metal | Alternate Energy: | Laundry: yes |
| | Insulation | R3.0 | Other: | Hallways: yes |
| <u>Roof:</u> | Type | Pitched, framing | | Photovoltaic system: none |
| | Insulation | R1.3 | | Cooktop / Oven: 2 plate induction |
| | Colour | Medium | | Refrigerator Space: Well ventilated |
| <u>Ceilings:</u> | Type | Plasterboard | | Outdoor clothes line: yes |
| | Insulation | R3.5 | | Sheltered outdoor clothes line: no |
| <u>Floor:</u> | Type | Suspended timber with enclosed subfloor | | |
| | Insulation | R1.3 | | |

Assessing for 7 Stars

1. Understand the Legislation

- QDC MP 4.1
- NCC 2022
- ABCB Housing Provisions Standards
- NatHERS Tech Note
- Building Act (1975)
- NCC 2022 Housing Energy Efficiency Handbook



Assessing for 7 Stars

2. Communicate clearly and Quote carefully.



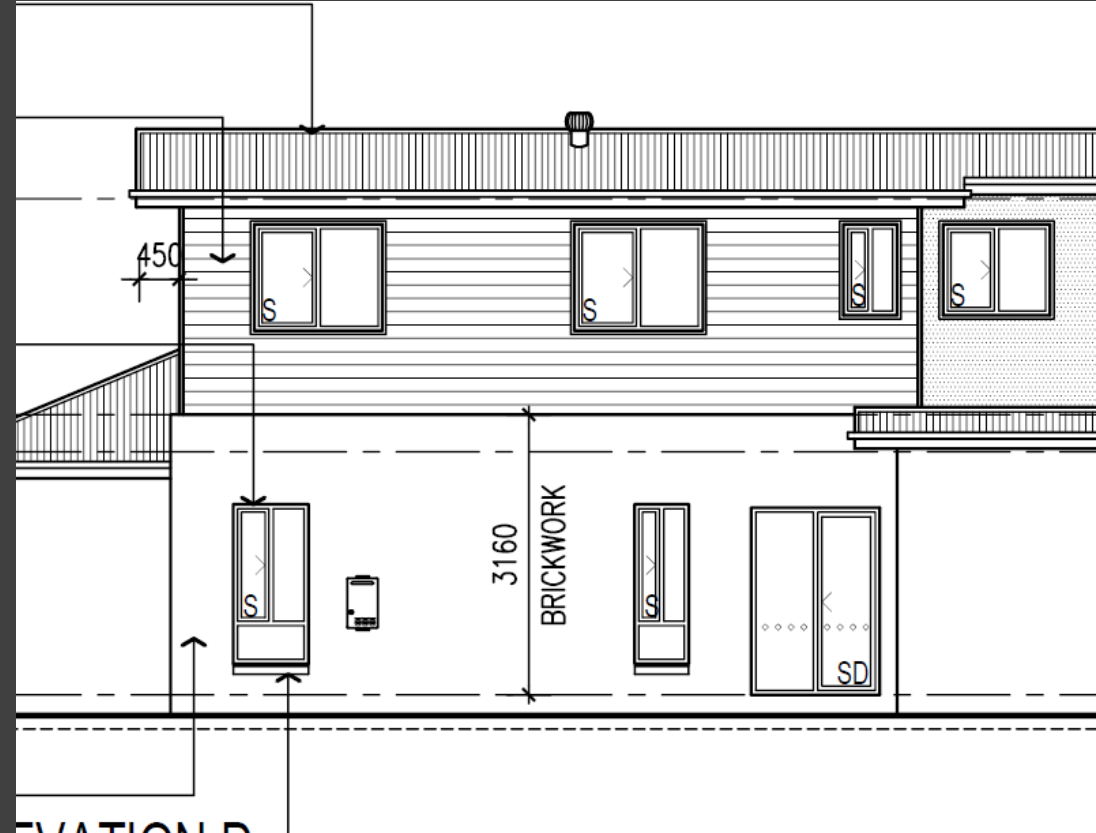
Assessing for 7 Stars

3. Assist with optimisation

| Modelling Details | | | | Wall Details | | | | | | | Floor Details | | | | | | Roof Details | | | Glazing Details | | | Penetrations | | | | | |
|-------------------|---------|---------|-------|--------------|------------|----------------------|---------------------|---------------------------------|---------------------------------|--------------------------------|--------------------------------------|----------------|-------------------------------|---------------------|----------------------|--------------------------|-----------------|--------------------|-------------|-----------------------|--------------------------|-----------|---------------|--------------|--------------------|----------------------|---------------------------|----------------------|
| Option | Heating | Cooling | Total | Exposure | Study Zone | External Wall Colour | Basement Insulation | External Framed Wall Insulation | Internal framed wall insulation | Internal block wall insulation | Concrete Wall Lining (Basement Bath) | Slab Thickness | Exposed Slab Floor Insulation | Sub-slab insulation | Slab-edge insulation | Internal Slab Insulation | Floor Coverings | GF Floor Coverings | Roof Colour | Insulation under Roof | Insulation above Ceiling | WF Colour | Other Glazing | Casement | Clerestory Louvres | Ceiling fans to Beds | Ceiling Fan to Living x 3 | Downlights coverable |
| 51 | 157.0 | 30.4 | 187.4 | Open | Bed | Med | 75mm EPS | R 3.0 | R 2.0 all | nil | nil | 200/200 | nil | R 2.5 | R 2.5 | R 3.5 to Store | exposed | Med | R 1.3 | R 5.0 | Med | 2.82/0.65 | 4.3/0.42 | 90% operable | nil | nil | no | |
| 52 | 155.4 | 29.9 | 185.3 | Open | Bed | Med | 75mm EPS | R 3.0 | R 2.0 all | nil | nil | 200/200 | nil | R 2.5 | R 2.5 | R 3.5 to Store | exposed | Med | R 1.3 | R 6.0 | Med | 2.82/0.65 | 4.3/0.42 | 90% operable | nil | nil | no | |
| 53 | 154.5 | 29.7 | 184.2 | Open | Bed | Med | 75mm EPS | R 3.0 | R 2.0 all | nil | nil | 200/200 | nil | R 2.5 | R 2.5 | R 3.5 to Store | stone | Med | R 1.3 | R 6.0 | Med | 2.82/0.65 | 4.3/0.42 | 90% operable | nil | nil | no | |
| 54 | 154.5 | 29.7 | 184.2 | Open | Bed | Med | 75mm EPS | R 3.0 | R 2.0 all | nil | nil | 200/200 | nil | R 2.5 | R 3.0 | R 3.5 to Store | stone | Med | R 1.3 | R 6.0 | Med | 2.82/0.65 | 4.3/0.42 | 90% operable | nil | nil | no | |
| 55 | 155.6 | 30.3 | 185.9 | Open | Bed | Med | 75mm EPS | R 3.0 | R 2.0 all | nil | nil | 200/200 | nil | R 2.5 | R 2.5 | R 3.5 to all | stone | Med | R 1.3 | R 6.0 | Med | 2.82/0.65 | 4.3/0.42 | 90% operable | nil | nil | no | |
| 56 | 154.8 | 29.5 | 184.3 | Open | Bed | Med | 75mm EPS | R 3.0 | R 2.0 all | nil | nil | 200/200 | nil | R 2.5 | R 2.5 | R 3.5 to store | stone | Med | R 1.3 | R 6.0 | Med | 2.82/0.65 | 4.3/0.42 | 90% operable | nil | nil | no | |
| 57 | 160.9 | 31.0 | 191.9 | Open | Bed | Med | 75mm EPS | R 3.0 | R 2.0 all | nil | nil | 200/200 | nil | R 2.5 | R 2.5 | R 3.5 to store | stone/carp | Med | R 1.3 | R 6.0 | Med | 2.82/0.65 | 4.3/0.42 | 90% operable | nil | nil | no | |
| 58 | 159.5 | 30.9 | 190.4 | Open | Bed | Med | 75mm EPS | R 3.0 | R 2.0 all | nil | nil | 200/200 | nil | R 2.5 | R 2.5 | R 3.5 to store | stone/carp | Med | R 1.3 | R 6.0 | Med | 2.82/0.65 | 4.3/0.42 | 90% operable | nil | nil | yes | |
| 59 | 148.7 | 28.4 | 177.1 | Open | Bed | Med | 75mm EPS | R 3.0 | R 2.0 all | nil | nil | 200/200 | nil | R 2.5 | R 2.5 | nil | stone | Med | R 1.3 | R 6.0 | Med | 2.82/0.65 | 4.3/0.42 | 90% operable | nil | nil | yes | |
| 60 | 138.7 | 34.5 | 173.2 | Open | Bed | Dark | 75mm EPS | R 3.0 | R 2.0 all | nil | nil | 200/200 | nil | R 2.5 | R 2.5 | R 2.5 | stone | Dark | R 1.3 | R 6.0 | Dark | 2.82/0.65 | 4.3/0.42 | 90% operable | nil | nil | yes | |
| 61 | 117.0 | 17.6 | 134.6 | Open | Bed | Dark | 75mm EPS | R 3.0 | R 2.0 all | nil | nil | 200/200 | nil | R 2.5 | R 2.5 | R 3.5 | stone | Dark | R 1.3 | R 6.0 | Dark | 1.72/0.43 | 1.78/0.37 | 90% operable | nil | nil | yes | |
| 62 | 117.0 | 15.3 | 132.3 | Open | Bed | Dark | 75mm EPS | R 3.0 | R 2.0 all | nil | nil | 200/200 | nil | R 2.5 | R 2.5 | R 3.5 | stone | Dark | R 1.3 | R 6.0 | Dark | 1.72/0.43 | 1.78/0.37 | 90% operable | y | y | yes | |
| 63 | 72.7 | 19.1 | 91.8 | Open | Bed | Dark | 75mm EPS | R 3.0 | R 2.0 all | nil | nil | 200/200 | R 2.5 | R 2.5 | R 2.5 | R 3.5 | stone | Dark | R 1.3 | R 6.0 | Dark | 1.72/0.43 | 1.78/0.37 | 90% operable | y | y | yes | |
| 64 | | | 0.0 | Open | Bed | Dark | 75mm EPS | R 3.0 | R 2.0 all | nil | nil | 200/200 | nil | R 2.5 | R 2.5 | R 2.5 | stone | Dark | R 1.3 | R 6.0 | Dark | 1.72/0.43 | 1.78/0.37 | 90% operable | y | y | yes | |
| 65 | | | 0.0 | Open | Bed | Dark | 75mm EPS | R 3.0 | R 2.0 all | nil | nil | 200/200 | nil | R 2.5 | R 2.5 | R 3.5 | stone | Dark | R 1.3 | R 6.0 | Dark | 1.72/0.43 | 1.78/0.37 | 90% operable | y | y | yes | |
| 66 | | | 0.0 | Open | Bed | Dark | 75mm EPS | R 3.0 | R 2.0 all | nil | nil | 200/200 | nil | R 2.5 | R 2.5 | R 3.5 | stone | Dark | R 1.3 | R 6.0 | Dark | 1.72/0.43 | 1.78/0.37 | 90% operable | y | y | yes | |
| 67 | | | 0.0 | Open | Bed | Dark | 75mm EPS | R 3.0 | R 2.0 all | nil | nil | 200/200 | nil | R 2.5 | R 2.5 | R 3.5 | stone | Dark | R 1.3 | R 6.0 | Dark | 1.72/0.43 | 1.78/0.37 | 90% operable | y | y | yes | |

Assessing for 7 Stars

- External and internal Colours
- R 2.0 between conditioned and unconditioned zones (including a floor to Garage below)
- Insulating under exposed floors
- Consider zones which are performing the worst and look at why: Is it the shading, the windows, the openability to other zones?
- Keep your eye on the heating and cooling caps
- Modelling upper story eaves to floor below
- Model 150mm gutters if possible
- Exposure
- Tech Note flexibility eg airlocks, Bed/Study
- Seal your chimney
- Glazing: Can separate fixed and operable
- Glazing: Modelling defaults or actuals



Assessing for 7 Stars

- 4. Revise your Report template



Questions



Contact Details

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Matters**

National

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building design profession