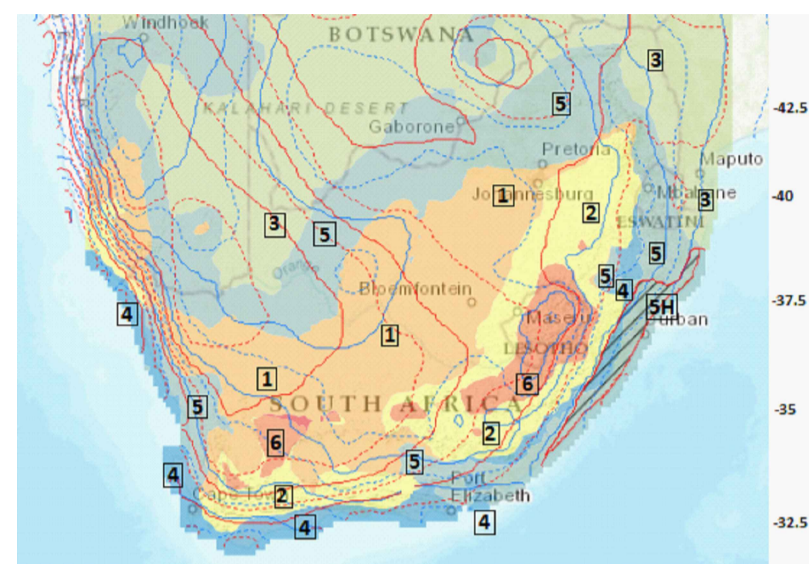


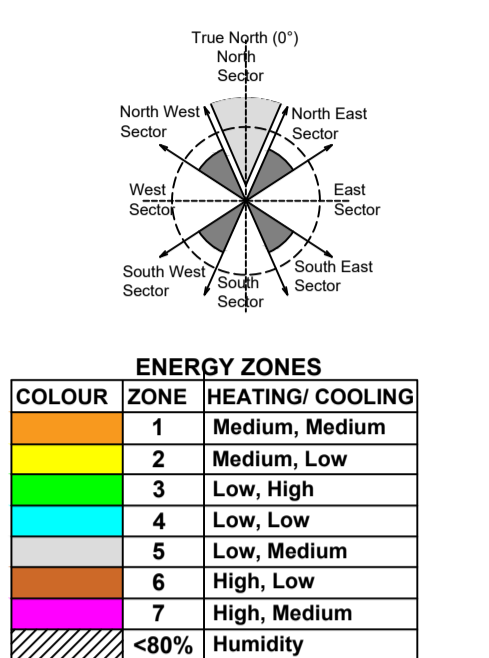
ENERGY ZONE, ORIENTATION & OCCUPANCY OF BUILDING

Class of Occupancy	H4 Dwelling
Design Occupancy Time	24hrs per day / 7 days per week
Town	Willowmore
Energy Zone	2
Heating/Cooling	Medium, Low
Province	Eastern Cape
Longitude (°E)	23.487
Latitude (°S)	33.295
SCCP Area	No
Max Annual Energy Consumption	100 kWh/m ² /a
Max Annual Demand Intensity	66 VA/m ²
Building Orientation	North



STRUCTURE AREAS

Total Nett Floor Area (NFA)	
Ground Storey	50 m ²
First Storey	50 m ²
Second Storey	50 m ²
Third Storey	50 m ²
Fourth Storey	50 m ²
Total Floor Area (TFA)	
Total Floor Area	50 m ²



EXTERNAL WALLS

Minimum R-Value requirement

Wall Type:	Buildings other than Category 1	Walls: Surface density GREATER than 270 kg/m ²
CR-Value (h)	0.6	50mm Cavity Wall
Minimum requirements		50mm Cavity Wall

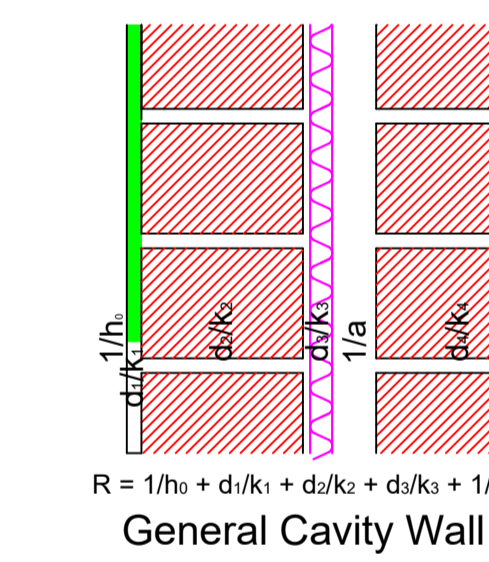
R-Value: OBTAINED

Wall Assembly Material	Conductivity (W/m.°C)	Thickness (m)	Resistivity (m ² K/W)	
Internal Plaster	0.6	0.015	0.025	
Brickwork	0.7	0.230	0.329	
External Plaster	0.6	0.015	0.025	
Total R-value Achieved				0.379

Conclusion:

Wall complies with minimum R-value required of 0.6 m²K/W for external walls IN ACCORDANCE WITH REQUIREMENTS OF CLAUSE 5.5

Walls built with FBX, FBS and FBA clay bricks and high-density concrete face bricks and blocks do not need to be plastered. All other walls need to be plastered internally and externally.



General Cavity Wall

SERVICES: Lighting

Lighting : Power Density ALLOWED

Building class: Density allowed:	4 W/m ²
Total floor area:	150 m ²
Max. Power Density: Allowed	600 W

Lighting : Power Density: OBTAINED

Power (W) rating	QTY	Hours in use/ day	Sub Total W
50	50	50	50
50	50	50	50
50	50	50	50
50	50	50	50
50	50	50	50
50	50	50	50
Watt Achieved			50 W

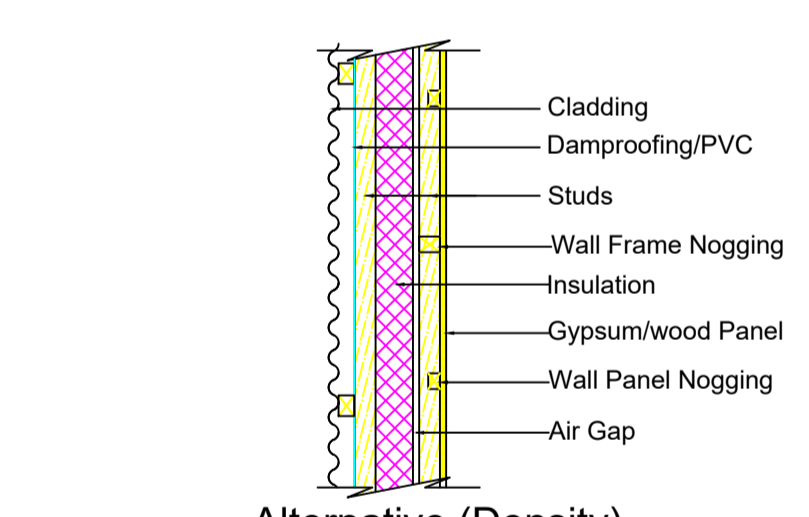
Total light Power Density: OBTAINED 50 W/m²
Available Power Density - For Lights 50 W

Conclusion:

IN ACCORDANCE WITH REQUIREMENTS OF CLAUSE 6.2 (POWER DENSITY OBTAINED < POWER DENSITY ALLOWED)

6.2.2 The use of light-emitting diodes (LED) and compact fluorescent (CFL) in occupancies H3 and H4 shall be deemed to comply with the requirements of 6.2.1. Any other lighting technologies used in occupancies H3 and H4 shall not exceed the lighting power density values set out in table 12.

6.2.3 Occupancy and daylight sensors shall be installed in occupancies, excluding those classified as H3 and H4 in terms of Regulation A20, and these occupancy and daylight sensors shall be so installed that no area serviced by a specific sensor is more than 100 m².



Alternative (Density)

ROOF ASSEMBLY

Roof Type: Fine thatching grass or reed

THATCH ROOFS

R-Value	3.7	m ² K/W
Thick	210	mm

Other Roofs

Min. Total R-Value Required	3.7	m ² K/W
Direction of heat flow	up	
Min total R-Value of roof & Ceiling Materials	0.30 to 0.35	m ² K/W
Min. added R-Value insulation	3.35	m ² K/W

Is Roof Vented: Non ventilated roof space

Type roof construction: Pitched roof (>=10°) with horizontal ceiling

R-Value: OBTAINED

Roof Assembly Material	Thickness (m)	Conductivity (W/m.°C)	Resistivity (m ² K/W)	UP	DOWN
Internal Plaster	0.015	0.6	0.025	0.025	
Brickwork	0.230	0.7	0.329	0.329	
External Plaster	0.015	0.6	0.025	0.025	
R-value Achieved				0.379	0.379

R-Value: OBTAINED

Insulation Material	Thickness (m)	Conductivity (W/m.°C)	Resistivity (m ² K/W)	UP	DOWN
Internal Plaster	0.015	0.6	0.025	0.025	
Brickwork	0.230	0.7	0.329	0.329	
External Plaster	0.015	0.6	0.025	0.025	
R-value Achieved				0.379	0.379

R-Value: OBTAINED

Wall Assembly Material	Conductivity (W/m.°C)	Thickness (m)	Resistivity (m ² K/W)	
Internal Plaster	0.6	0.015	0.025	
Brickwork	0.7	0.230	0.329	
External Plaster	0.6	0.015	0.025	
Total R-value Achieved				0.379

Conclusion:

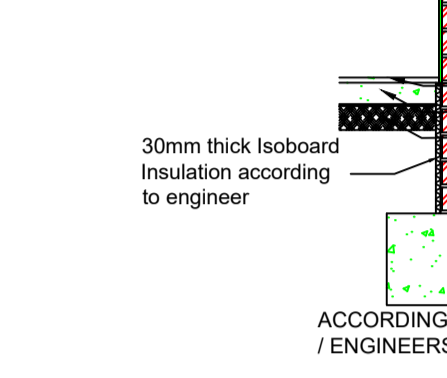
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FENESTRATION

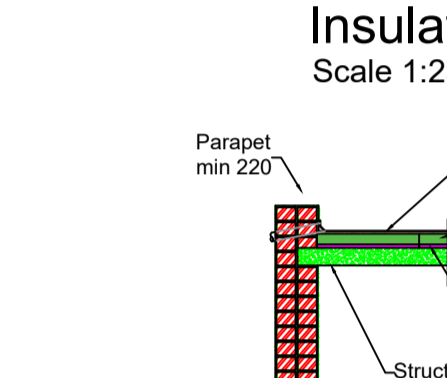
Nett Floor Area	Fenestration Area	% Fenestr
GROUND FLOOR	50 m ²	50 %
1st FLOOR	11.388 m ²	11.388 %
2nd FLOOR	22.776 m ²	22.776 %
3rd FLOOR	22.776 m ²	22.776 %

DO NOT COMPLY: Greater than 20% Total fenestration area/nett floor area for this storey. In accordance with requirements of Clause 5

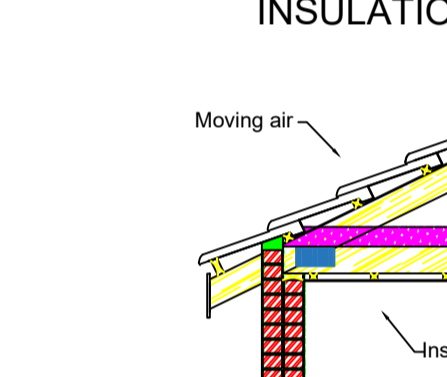
General Slab Insulation Detail



UNDER SCREED INSULATION



BUILT UP ROOFS



Room



TYPICAL HOT WATER SOLAR SYSTEM GEYSER ACCORDING TO SABS 0254 NTC

TYPICAL HOT WATER HEAT PUMP SYSTEM GEYSER

SERVICES: Hot Water Supply

Occupancy Classification: Dwelling house: Category 1

Average annual hot water usage: 64 L/p/d

24h Water Storage Requirement: 45 L/p

No. of Persons: 4 Per Day/ 24 Hours

Total 24h Water Storage Requirement: 180 L

Thermal Insulation Requirements

Internal diameter of Hot Water Service Pipe: >80 mm

Minimum Required R-value for Pipe Insulation: 1.5 SANS 10400XA Table 11

IN ACCORDANCE WITH REQUIREMENTS OF CLAUSE 6.1.6

XA2: At least 50 % (volume fraction) of the annual average hot water heating requirement shall be provided by means other than electrical resistance heating including but not limited to solar heating, heat pumps, heat recovery from other systems or processes and renewable combustible fuel.

Conclusion:

NOTES/ ASSUMPTIONS: NONE

Occupancy Classification H4 to be provided with min 90 L Water Storage

The following types of water heating technology may be used to meet the requirements of Regulation XA:

- Domestic solar water heaters that comply with 6.1.2; OR
 - Domestic heat pumps that comply with 6.1.3;
 - Sustainable source timber and invasive vegetation;
 - Biogas;
 - Natural gas;
 - Liquid Petroleum Gas; and
 - Heat recovery from building or external processes.
- If electrical resistance heating elements are used to supplement the above listed technologies, the supplementary heating may be used only to the extent of 50% of the annual average hot water requirements by volume.

FLOORS

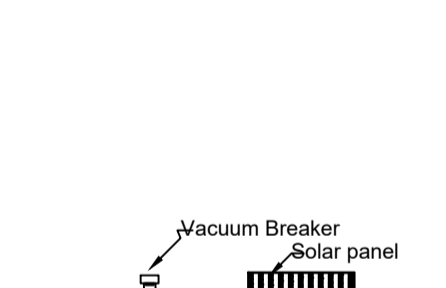
Floor Construction

Floor Slab on the ground	Yes
Concrete slab on Ground	Yes
In Slab Heating	Yes
Suspended Floor Slab	No
Suspended floor in building envelope	No
In Slab Heating	No

Floor Insulation Requirements

Floor Slab on the ground	Yes
Perimeter insulation required	1 m ² K/W
Min. Insulation required of R-Value	SANS 10400XA Clause 5.4.1
Under Floor insulation required	Yes
Min. Insulation required of R-Value	1 m ² K/W
SANS 10400XA Clause 5.4.1	
Suspended Floor Slab	No
Floor Slab on the ground	No
Perimeter insulation required	N/A
Min. Insulation required of R-Value	SANS 10400XA Clause 5.4.2
Under Floor insulation required	No
Min. Insulation required of R-Value	N/A
SANS 10400XA Clause 5.4.2	

Room



TYPICAL HOT WATER SOLAR SYSTEM GEYSER ACCORDING TO SABS 0254 NTC

TYPICAL HOT WATER HEAT PUMP SYSTEM GEYSER

WYSIGINGS REVISIONS

NO.	DATUM DATE	BESKRIVING DESCRIPTION
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ORIGINAL DRAWING No.

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BEVOEGDE PERSOON-COMPETENT PERSON

KOBUS BURGER SACAP NO. 00215 S-MOBILE: 082 821 4422 kobus@kmidraughting.co.za

TEKENAAR HANDTEKENING - DRAUGHTSMAN SIGNATURE

DATE - DATE

SKEMA - PROJECT

NEW DWELLING ON STAND ##### FOR #####

EIENAAR HANDTEKENING - OWNER SIGNATURE

DATE - DATE

TEKENING - DRAWING

CALCULATION SHEET

MUNICIPAL APPROVAL

TEK. No. - DWG. No.

PAGE 1/2

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CALCULATION SHEET:

- Building envelope
- Orientation
- Shading
- Fenestration
- Floors
- External walls
- Roof assembly
- Building sealing
- Services
- Hot water supply
- Lighting
- Air conditioning

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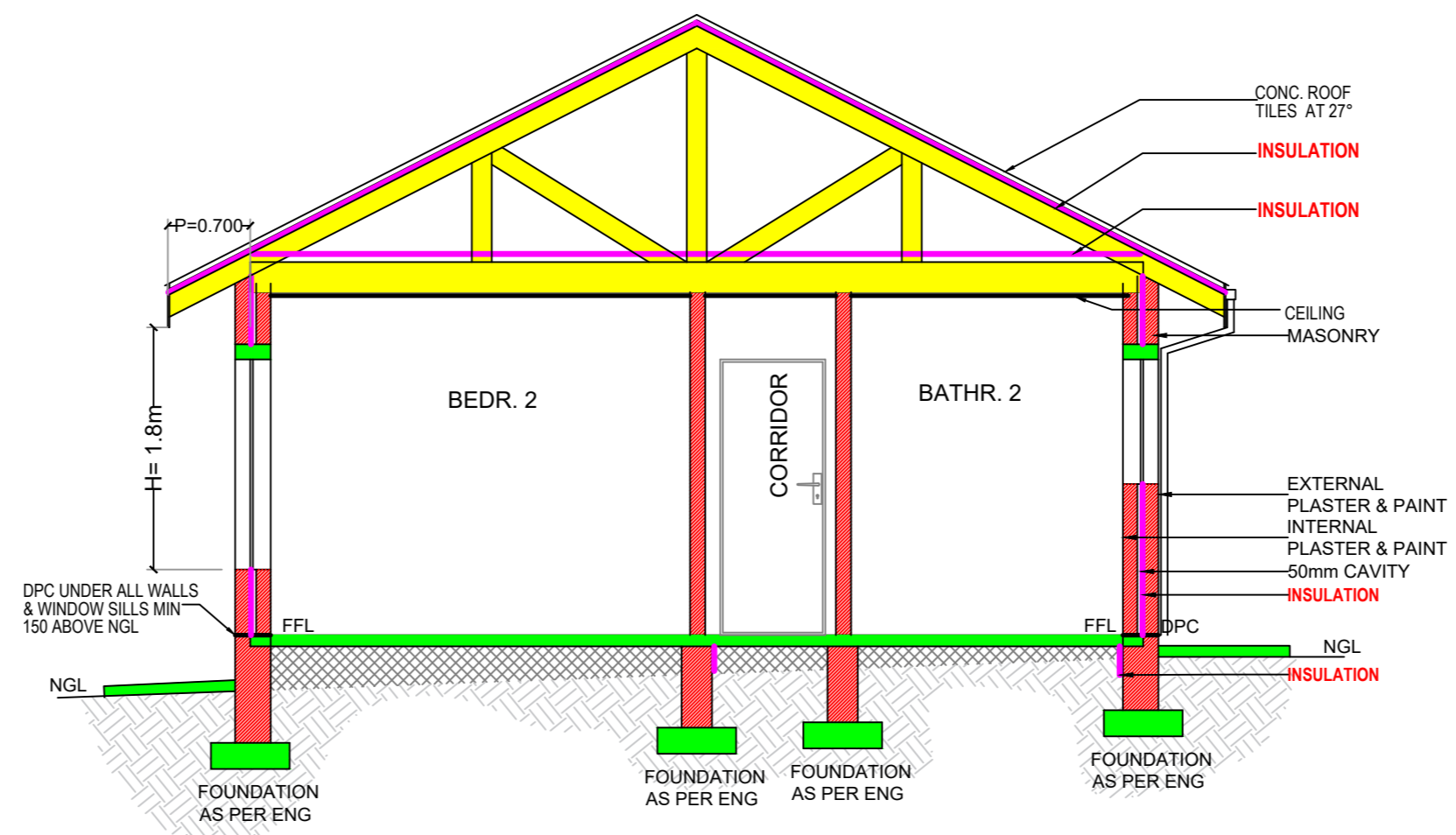
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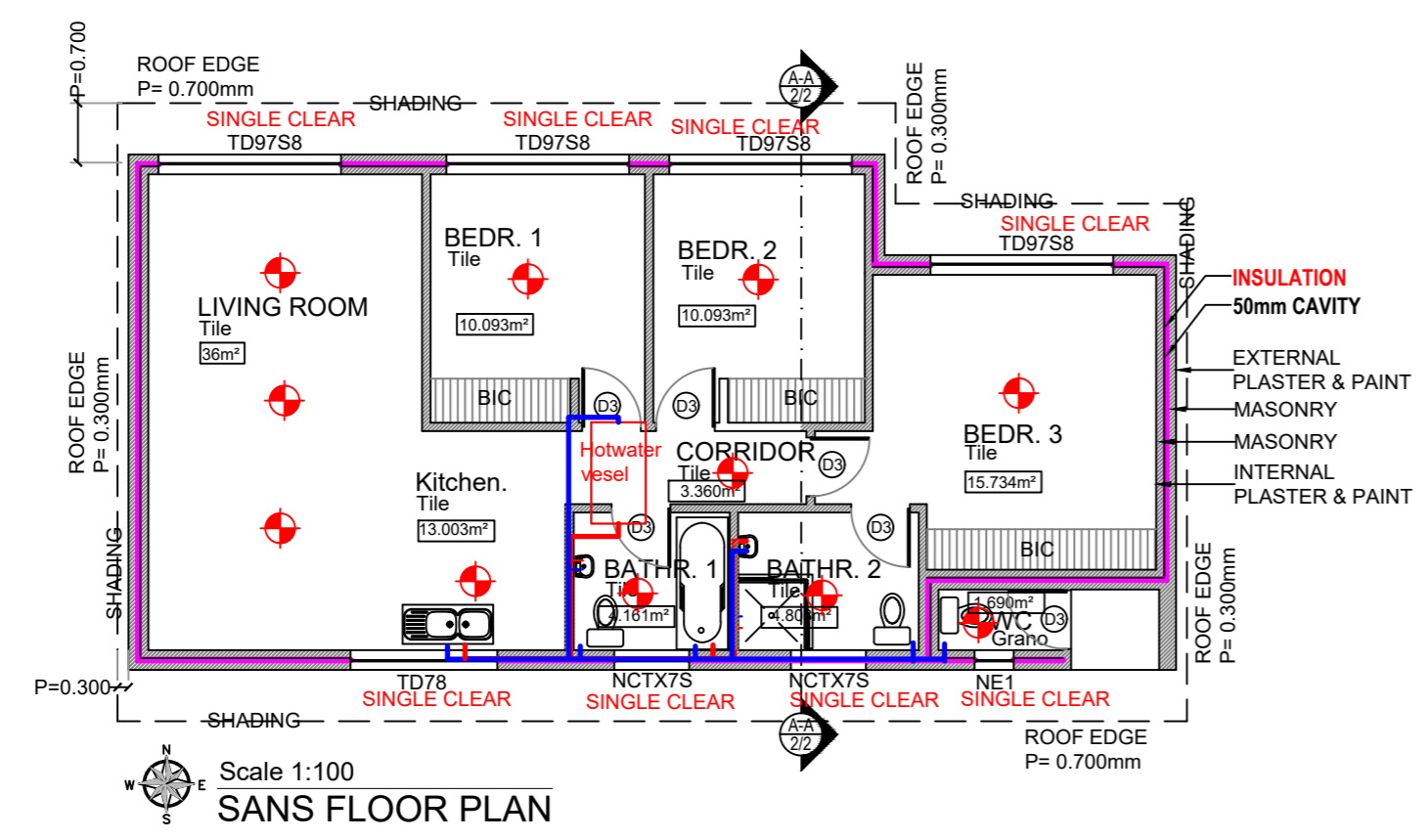
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CALCULATION SHEET:

- 5 Building envelope
- 5.1 Orientation
- 5.2 Shading
- 5.3 Fenestration
- 5.4 Floors
- 5.5 External walls
- 5.6 Roof assembly
- 5.7 Building sealing
- 6 Services
- 6.1 Hot water supply
- 6.2 Lighting
- 6.3 Air conditioning

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