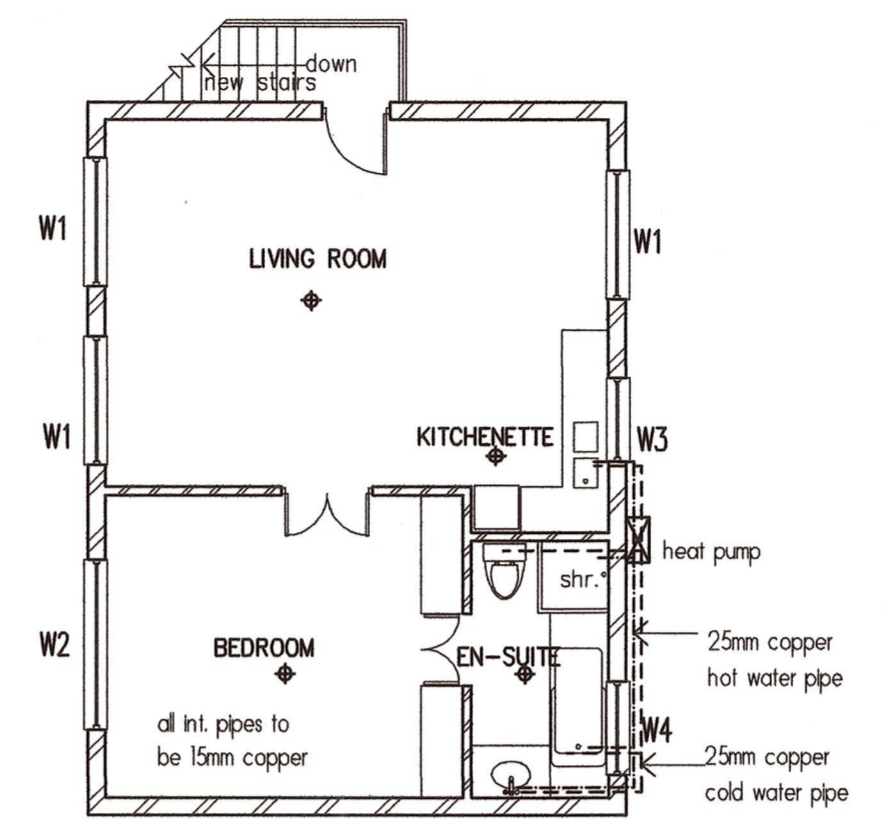


GROUND FLOOR PLAN / SITE PLAN 1: 100



Energy Demand - Ancillary Unit
 5 W/sqm Allowed
 5 W/sqm x 67,00 sqm = 335,00 Kwh/sqm.a - Allowed
 lights = 4 x 12w = 48w
 or 48w / 67.00sqm = 0,71
Energy Consumption
 Allow 5 kwh/sqm.a
 Assume lights are on from 17:00 - 22:00 each day/year, 7 days a week
 52 weeks x 7 days x 5h = 1820 h.a.
 Lamp = 48w or 1820h.a = 87,360 kwh.a - Achieved

Fenestration -Ground Storey
 Climate zone 5
 Max conductance = 1.4
 Max Shgl = 0.11
 Max conductance = 1.4 x 23,92 = 33,488 sqm
 Max Shgc = 0.11 x 23,92 = 2,63 sqm
 PH - E - Value A x U x E A x U = 11,92 x 2,41 = 28,72 sqm
North East Elevation
 D1 P/H - 2000/2100 = 0,95 6,72 x 0,62 x 0,28 = 1,16 Achieved Conductance
North West Elevation
 D2 P/H - 11000/2100 = 5,23 5,14 x 0,62 x 0,17 = 0,54
 1,70 sqm - Shgc Achieved

Fenestration -Ancillary Unit
 Climate zone 5
 Max conductance = 1.4
 Max Shgl = 0.11
 Max conductance = 1.4 x 58,32 = 81,64 sqm
 Max Shgc = 0.11 x 58,32 = 6,41 sqm
 PH - E - Value A x U x E A x U = 10,88 x 5,6 = 60,92 sqm
South East Elevation
 W1 P/H - 700/1200 = 0,58 - 2 off 4,08 x 0,77 x 0,64 = 2,01
 W2 P/H - 700/1200 = 0,58 2,70 x 0,77 x 0,64 = 1,33 Achieved Conductance
North West Elevation
 W4 P/H - 700/900 = 0,77 1,03 x 0,77 x 0,35 = 0,27
 W3 P/H - 700/900 = 0,77 1,03 x 0,77 x 0,35 = 0,27
 W1 P/H - 700/1200 = 0,58 2,04 x 0,77 x 0,42 = 0,65
 4,53 sqm - Shgc Achieved

Water Notes: Ancillary Unit
 1: 150L High pressure geyser.
 2: Pressure control valve to be 350mm above geyser.
 3: Copper to be used, stroke 0 externally with 350mm centers holder bats.
 4: Internal use to be stroke 2 copper.
 5: cold water from geyser to have direct connection with pressure control valve then to geyser to achieve even pressure balance on taps.
 6: All copper used to have a min. R Value of 1

Hot water Usage: calculations
 From 6am to 6pm hot water supply will be by heat pump
 From 7pm till 5am next day hot water supply will be geyser by electricity.
 Average = 2 person per Bedroom
 usage of 2 persons = 40L each x 2 = 80L per day
 80L x 365 days per year = 29 200L per year
 50% Heat pump = 14 600 per year
 50% by electricity = 14 600 per year
 R Value of pipe insulation = 1,0
 Heat pump to have a constant temprature of 55°

Roofs - New
 material = Blue Marley
 Thermal conductivity = K. Value = w/mk.
 Thickness of material = U. Value
 $U = \frac{1}{R}$ $R = \frac{1}{U} = \frac{0,040w/mk}{1} = 0,040m/sqm.k$
 $\frac{1}{0,040w/sqm.k} = 25sqm$
 Roof zone 5 (downward) unventilated Requirement = 2,17sqm kw
 Roof = 0,067.00 kw
 $2,7 - 0,067.00 = 2,633$
 $\frac{2,633}{25} = 0,105 = 0,100sqm$
 Roof insulation to have a R Value of 2,17

R - Values	
Glasswool pipe insulation	= 1,0
External walls	= 0,35
R - Values (Roofs)	
Roof tiles	= 0,48
Ceiling Gypsum	= 0,06
Roof insulation	= 2,17
Blue Marley	= 2,17
Total Roof R-Value	= 2,71

Legend

	- Round recessed fitting with 12w screw type bulb
	- Hot water pipe
	- Cold water pipe
	- Heat Pump

DEVIATIONS TO APPROVED PLAN NO. 239 04 06 AND NEW ANCILLARY UNIT ON ERF 1577 DURBAN NORTH AT NO. 31 NORTHUMBERLAND PLACE FOR: J. D. & M. J. RIBBINK

OWNERS SIGNATURE:

mike patterson
 ARCHITECTURAL STUDIOS
 63A NORTH BEACH ROAD WESTBROOK 4399
 C 0721437462 L 0328660188
 mike.patterson24@gmail.com

drawn: mp
 scale: 1: 100
 date: 21.11.2022
 dr no.: 1906 - 05 3of3

Jai Jeewanlall
 ARCHITECTURAL ENERGY EFFICIENCY CONSULTANTS
 360 Umbilo Road Durban 4001
 cell.072 452 5140
 jai.arch@vodamail.com