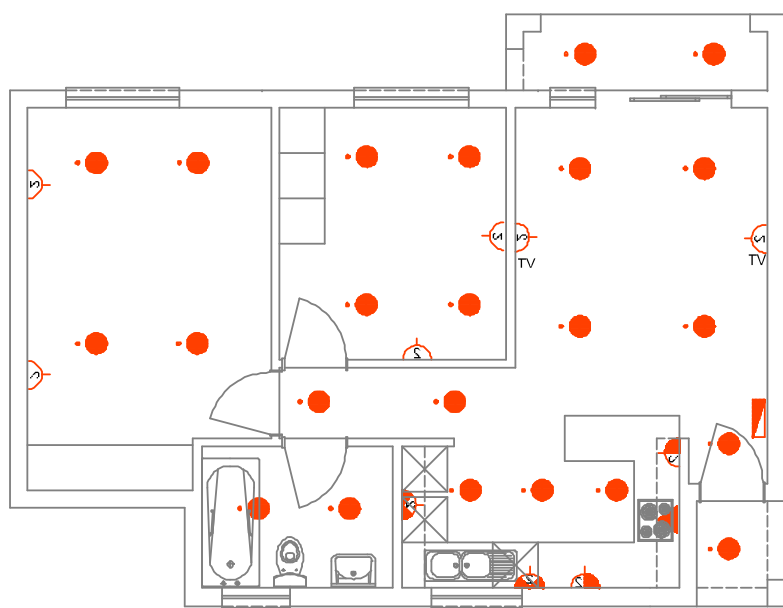
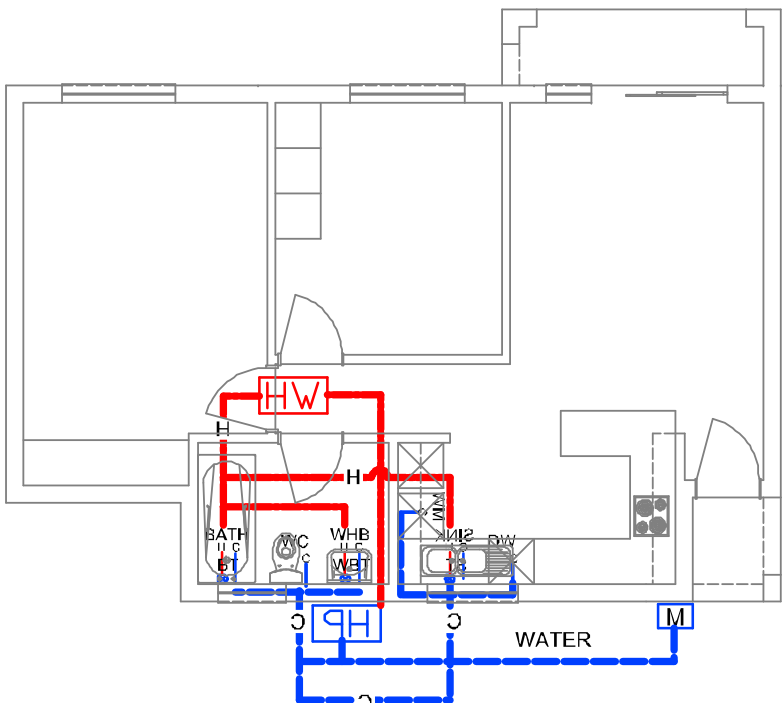


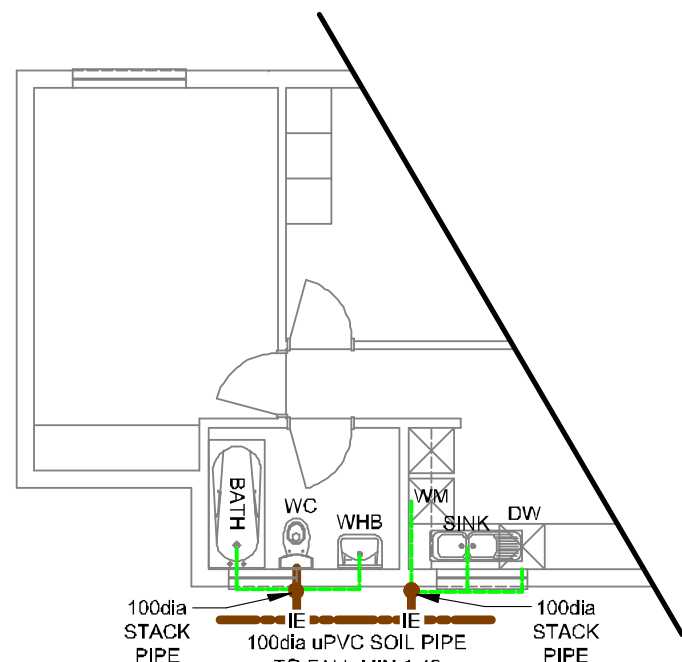
# TYPICAL 2 BEDROOM UNIT



TYPICAL 2 BEDROOM UNIT  
ELECTRICAL LAYOUT PLAN



TYPICAL 2 BEDROOM UNIT  
WATER LAYOUT PLAN



TYPICAL 2 BEDROOM UNIT  
SEWER LAYOUT PLAN

Reference	Type	Room	Power (W)	On Time (Hrs / Day)	Days Used (Days / Year)
1	Surface Mounted Ceiling Light	BEDROOM 1	5	5	365
2	Surface Mounted Ceiling Light	BEDROOM 1	5	5	365
3	Surface Mounted Ceiling Light	BEDROOM 1	5	5	365
4	Surface Mounted Ceiling Light	BEDROOM 1	5	5	365
5	Surface Mounted Ceiling Light	BEDROOM 2	5	5	365
6	Surface Mounted Ceiling Light	BEDROOM 2	5	5	365
7	Surface Mounted Ceiling Light	BEDROOM 2	5	5	365
8	Surface Mounted Ceiling Light	BEDROOM 2	5	5	365
13	Surface Mounted Ceiling Light	LOUNGE	5	5	365
14	Surface Mounted Ceiling Light	LOUNGE	5	5	365
15	Surface Mounted Ceiling Light	LOUNGE	5	5	365
16	Surface Mounted Ceiling Light	LOUNGE	5	5	365
17	Surface Mounted Ceiling Light	ENTRANCE	5	5	365
18	Surface Mounted Ceiling Light	ENTRANCE	5	5	365
19	Surface Mounted Ceiling Light	KITCHEN	5	5	365
20	Surface Mounted Ceiling Light	KITCHEN	5	5	365
21	Surface Mounted Ceiling Light	KITCHEN	5	5	365
22	Surface Mounted Ceiling Light	PASSAGE	5	5	365
23	Surface Mounted Ceiling Light	PASSAGE	5	5	365
25	Surface Mounted Ceiling Light	BATHROOM	5	5	365
26	Surface Mounted Ceiling Light	BATHROOM	5	5	365
1	Surface Mounted Ceiling Light	OUTSIDE	5	5	365
2	Surface Mounted Ceiling Light	OUTSIDE	5	5	365

## NATURAL VENTILATION

Window to floor area ratio for Storey 1 is 19.83 %

### CONSTANTS

Conductance Constant for Storey 1 is 57.64 X 1.20 = 69.17  
SHG Constant for Storey 1 is 57.64 X 0.15 = 8.65

### CONDUCTANCE

Conductance of Window is 2.25 X 7.90 = 17.78  
Conductance of Window is 2.25 X 7.90 = 17.78  
Conductance of Window is 0.81 X 7.90 = 6.40  
Conductance of Window is 1.08 X 7.90 = 8.53  
Conductance of Window is 5.04 X 5.73 = 28.88

Total Conductance for Storey 1 is 79.36

### SOLAR HEAT GAIN

#### NORTH

Solar heat gain of Window (P=750.00, G=2900.00, P/H=0.17) is 2.25 X 0.81 X 0.58 = 1.06  
Solar heat gain of Window (P=750.00, G=2900.00, P/H=0.17) is 2.25 X 0.81 X 0.58 = 1.06  
Solar heat gain of Window (P=1100.00, G=425.00, P/H=0.44) is 5.04 X 0.66 X 0.36 = 1.20

#### SOUTH

Solar heat gain of Window (P=750.00, G=2900.00, P/H=0.20) is 0.81 X 0.81 X 0.44 = 0.29  
Solar heat gain of Window (P=750.00, G=2900.00, P/H=0.20) is 1.08 X 0.81 X 0.44 = 0.38

Total Solar Heat Gain for Storey 1 is 3.99

### ARTIFICIAL VENTILATION

#### ENERGY INDEX

##### NORTHERN FACADE

10.23 x 2.890 x 0.220 = 6.51

##### EASTERN FACADE

7.83 x 2.890 x 0.220 = 4.98

##### SOUTHERN FACADE

10.24 x 2.890 x 0.220 = 6.51

##### WESTERN FACADE

7.83 x 2.890 x 0.220 = 4.98

#### NORTHERN FACADE

2.25[0.81(-0.37 x 1.00 + 1.53 x 1.00) + -0.01 x 7.90]= 1.94

2.25[0.81(-0.37 x 1.00 + 1.53 x 1.00) + -0.01 x 7.90]= 1.94

5.04[0.66(-0.37 x 0.96 + 1.53 x 0.79) + -0.01 x 5.73]= 2.55

Total for sector N is 6.42 and max allowed is 6.51 Facade Passes

#### SOUTHERN FACADE

0.81[0.81(-0.87 x 1.00 + 0.38 x 1.00) + 0.15 x 7.90]= 0.64

1.08[0.81(-0.87 x 1.00 + 0.38 x 1.00) + 0.15 x 7.90]= 0.85

Total for sector S is 1.49 and max allowed is 6.51 Facade Passes

Storey is suitable for Aircon / Mechanical ventilation

Window to floor area ratio for Storey 2 is 19.83 %

### CONSTANTS

Conductance Constant for Storey 2 is 57.64 X 1.20 = 69.17  
SHG Constant for Storey 2 is 57.64 X 0.15 = 8.65

### CONDUCTANCE

Conductance of Window is 5.04 X 7.90 = 39.82  
Conductance of Window is 2.25 X 7.90 = 17.78  
Conductance of Window is 2.25 X 7.90 = 17.78  
Conductance of Window is 0.81 X 7.90 = 6.40  
Conductance of Window is 1.08 X 7.90 = 8.53

Total Conductance for Storey 2 is 90.30

### SOLAR HEAT GAIN

#### NORTH

Solar heat gain of Window (P=1100.00, G=85.00, P/H=0.50) is 5.04 X 0.81 X 0.33 = 1.35  
Solar heat gain of Window (P=750.00, G=160.00, P/H=0.45) is 2.25 X 0.81 X 0.36 = 0.66  
Solar heat gain of Window (P=750.00, G=160.00, P/H=0.45) is 2.25 X 0.81 X 0.36 = 0.66

#### SOUTH

Solar heat gain of Window (P=750.00, G=160.00, P/H=0.71) is 0.81 X 0.81 X 0.29 = 0.19  
Solar heat gain of Window (P=750.00, G=160.00, P/H=0.71) is 1.08 X 0.81 X 0.29 = 0.25

Total Solar Heat Gain for Storey 2 is 3.10

### ARTIFICIAL VENTILATION

#### ENERGY INDEX

##### NORTHERN FACADE

10.24 x 2.890 x 0.220 = 6.51

##### EASTERN FACADE

7.83 x 2.890 x 0.220 = 4.98

##### SOUTHERN FACADE

10.23 x 2.890 x 0.220 = 6.51

##### WESTERN FACADE

7.83 x 2.890 x 0.220 = 4.98

#### NORTHERN FACADE

2.25[0.81(-0.37 x 1.00 + 1.53 x 1.00) + -0.01 x 7.90]= 1.94

2.25[0.81(-0.37 x 1.00 + 1.53 x 1.00) + -0.01 x 7.90]= 1.94

5.04[0.66(-0.37 x 0.96 + 1.53 x 0.79) + -0.01 x 5.73]= 2.55

5.04[0.81(-0.37 x 0.82 + 1.53 x 0.63) + -0.01 x 7.90]= 2.30

2.25[0.81(-0.37 x 0.96 + 1.53 x 0.79) + -0.01 x 7.90]= 1.38

2.25[0.81(-0.37 x 0.96 + 1.53 x 0.79) + -0.01 x 7.90]= 1.38

Total for sector N is 11.49 and max allowed is 13.01 Facade Passes

#### SOUTHERN FACADE

0.81[0.81(-0.87 x 1.00 + 0.38 x 1.00) + 0.15 x 7.90]= 0.64

1.08[0.81(-0.87 x 1.00 + 0.38 x 1.00) + 0.15 x 7.90]= 0.85

1.08[0.81(-0.87 x 0.87 + 0.38 x 0.81) + 0.15 x 7.90]= 0.67

1.08[0.81(-0.87 x 0.87 + 0.38 x 0.81) + 0.15 x 7.90]= 0.89

Total for sector S is 3.04 and max allowed is 13.01 Facade Passes

Storey is suitable for Aircon / Mechanical ventilation

## Energy Demand for Lighting

Class: H3

Occupancy: Domestic residences

Population: 2 people/bedroom

Energy Demand W/m²: 5

Allowed: 5 W / m²

5.00 W / m² x 70.54 m² = 352.72 W

Total - W

Surface Mounted Ceiling Light - 5 W x 23 = 115 W

Total = 115 W

Allowed: 352.72 , Used: 115.00 - Pass

OR

115.00 W / 70.54 m² = 1.63 W / m²

1.63 W / m² < 5.00 W / m² - Pass

## Energy Consumption for Lighting

Class: H3

Occupancy: Domestic residences

Population: 2 people/bedroom

Energy Consumption kWh(m² -a): 5

Allowed: 5 kWh/m² .a OR 5 kWh/m² [a = 1 year]

5 kWh/m² x 70.54 m² = 352.72 kWh

Assume lights are on for 5 hours each day

365 (Days) x 5 (Hours) = 1825 hrs

Surface Mounted Ceiling Light - 5 W x 23 = 115 W

Total = 115 W (0.12 kW)

combined kw x number of hours per year for each light = 209.30

Allowed: 352.72 kWh .a , Used: 209.30 kWh .a - Pass

## Energy Efficiency in Buildings

### Occupancy Classification of Building

Occupancy: **H4** Design Occupancy Time: **24** Hrs per Day  
Building Total Net Floor Area: **57.64** m²  
Building Total Floor Area: **70.54** m²

### Climatic Zone of Building

Climatic Zone: **1**

### Maximum Energy Demand & Consumption

#### Design Assumption for Building Classification

Max. Energy Demand: **Non-specified** VA/m²  
Max. Energy Consumption: **Non-specified** kWh/(m²)

#### Energy Demand & Consumption

Max. Energy Demand: **Non-specified** kVA (kW)  
Max. Annual Energy Consumption: **Non-specified** kWh

### Building Orientation

Orientation of windows / longer building axis: **North** Optimal orientation achieved

Dominant windows of habitable rooms or longer axis of the building to be orientated within 15 deg's of true north.

### Floor Construction

**Slab-on-ground**  
Concrete slab-on-ground? **Yes**  
In-slab heating to be provided? **No**  
**Insulation Requirements**  
Slab-on-ground  
Perimeter insulation required? **Yes** Min. Insulation R-value: 1.0 & refer SANS 10400-XA (4.4.2) / SANS 204 (4.3.2)  
Under-floor insulation required? **No**  
**Suspended floor**  
Insulation of unenclosed perimeter required? **Yes** Min. Insulation R-value: 1.5 & refer SANS 204 (4.3.2)  
Perimeter & under-floor insulation required? **No**

### External Wall Construction

**SANS 10400-XA Required R-value**  
Wall Type? **Masonry**  
Minimum R-value required: **0.35** Refer SANS 10400-XA (4.4.3) & SANS 204 - Table 4 and Advisory Note.  
Compliant masonry walling: Double-skin masonry wall, no cavity, plastered internally or rendered externally, or Single-leaf masonry wall, nominal wall thickness not < 140 mm, plastered internally and rendered externally.  
**SANS 204 Required CR-value**  
Minimum CR-value required: **100** Hours  
Advisory Note - Applicable to masonry walls only in terms of SANS 204  
Double brick wall types: **No cavity** CR-value: **40**  
CR-value of wall insufficient.

### Roof Assembly

**SANS 10400-XA Required R-value**  
Minimum Total R-value required: **3.7** m²-K/W  
Direction of heat flow: **Up**  
**Construction Type R-value**  
Basic roof assembly: **Clay tile type**  
R-value for roof covering material: **0.35** m²-K/W  
R-value for ceiling: **0.05** m²-K/W  
Required added R-value for insulation: **3.3** m²-K/W

### SANS 204 Required R-value

**Construction Type R-value**  
Roof venting: **Unventilated**  
Basic roof construction? **Conc./clay tile @ 22-45° w/ horiz. ceiling**

**Basic R-value for Roof**  
Direction of heat flow: **UP** **DOWN**  
Outdoor air film (7m/s): **0.03**  
Roof tile, clay or concrete: **0.02**  
Roof air space (non-reflective): **0.18**  
Plasterboard, gypsum: **0.06**  
Indoor air film (still air): **0.11**  
Total R-value: **0.4** m²/K/W

**Thermal Insulation**  
Minimum added R-Value of insulation required: **3.3** m²/K/W  
Generic insulation product added? **Cellulose fibre loose-fill**  
Density of generic insulation added: **27.5** kg/m³  
Thickness of generic insulation required: **135** mm

### Air Infiltration and Leakage

Max. Permissible Air Leakage (AL): **2.0** L/sm² - Operable glazing  
Max. Permissible Air Leakage (AL): **0.31** L/sm² - Non-operable glazing  
Max. Permissible Air Leakage (AL): **5.0** L/sm² - Glazed double action swing doors and revolving doors  
All with 75 Pa pressure difference when tested in accordance with SANS 613.

**Chimneys and Flues**  
Type of burning device? **----**

**Roof Lights and Skylights**  
Roof light or skylight installed? **No**

**External Doors**  
Door serves: **External Door** Refer SANS 204 (4.4.3) - Door seals / draught protection.

**Exhaust Fans**  
Exhaust fan serves: **----**

**Roofs, Walls and Floors**  
Roofs, external walls & floors and **Conditioned Space** Refer SANS 204 (4.4.2) - Construction to minimise air leakage.

### Services

**Hot Water Services** (Use actual measured data where available.)  
Type of Accommodation? **Dwelling houses - High rental : 115-140 L/capita/day**  
Assumed Hot Water Consumption? **35** L  
No. of Persons: **4** Per Day  
Assumed Daily Hot Water Consumption: **140** L  
Assumed Annual Hot Water Consumption: **50.96** kL - Based on daily design occupancy per week  
50 % of Annual Hot Water Consumption: **25.48** kL - Minimum volume of hot water to be provided by means other than electrical resistance  
or  
Daily Hot Water Consumption: **70** L - To be provided by means other than electrical resistance heating  
**Insulation Requirements**  
Internal diameter of Hot Water Service Pipe? **≤ 80** mm  
Minimum Required R-value for Pipe Insulation? **1** Refer SANS 204 (4.5.2)  
**Hot Water Vessels / Tanks**  
Minimum Required R-value for Vessel / Tank? **2** Additional insulation to manufacturer's insulation may be required to achieve this value.



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## GENERAL NOTES

### ACTS OF PARLIAMENT

All Contractors shall ensure that, before any work is put in hand, they comply with all the necessary Acts of Parliament of the Republic of South Africa.

Quality of all materials and workmanship to comply with the relevant S.A.B.S. and NHBC specification.

### GENERAL

- Contractor is responsible for correct setting out of the building, all external and all internal walls with particular reference to boundaries, building lines, servitudes, etc.
- This drawing is not to be scaled and Figured dimensions to be used at all times. All dimensions must be checked on site.
- Contractors to verify all levels, heights and dimensions on Site and to check same against the drawings before putting any work in hand.
- All Contractors are to check and ensure that all details shown on this drawing are in compliance with Local Authority bye-laws and regulations, and to report any comment, changes or discrepancies to MvdM Archi-Techs in writing.
- Contractors are to locate and identify existing services on Site and to protect these from damage throughout the duration of the works.
- Contractor should build in approved D.P.C.s wherever or not these are shown on drawings, to all external walls at each floor, beam or parapet level and to all windows, doors, grilles or other openings in external walls.
- The Contractor and / or Client is responsible for notifications of Councils and Engineers to do inspections on required stages.
- Kitchen by specialists. Layout shown on this plan is only for presentation purposes.
- MvdM Archi-Techs will not be held responsible for:
  - Building work done prior to plan approval by local councils.
  - Buildings that are not positioned or pegged out by a Qualified Professional Land Surveyor.
  - No work may commence if final fees are not settled by the clients to MvdM Archi-Techs.

**FIRE NOTE:**  
Chimney to comply to regulations as per parts "v" of NBR  
No combustible roof components shall penetrate the separating element dividing the space between the garage and the habitable room.

**GLAZING NOTE:**  
Glazing as per - SANS 10400 PART N:  
In accordance with SABS 0137-2000 code of practice - the installation of glazing in buildings.  
Typical safety glazing materials are: toughened glass and laminated safety glass conforming to SABS 1263

**DRAINAGE NOTES:**

- all drainage work to SANS 10400 PART P.
- dished gully with grass trap at all kitchens, (water tap at gully optional)
- to at all sewer pipe connections.
- ce / re at all direction changes.
- 110dia uPvc sewer pipes (sp).
- 50dia uPvc waste water pipes (wwp).
- 110dia uPvc vent pipes (vp).
- all sp invert levels min. 450mm.
- geyser installations to SABS 0254. Positioning at contractors discretion.
- all stack pipes to have an (access eye) from ducts on all storeys.
- Do not mix areas to have DHPE soil pipes

ANY QUERIES ARISING FROM ALL OF THE ABOVE OR ERRORS, DISCREPANCIES OR OMISSIONS SHOULD BE REPORTED IN WRITING TO MVDMA ARCHI-TECHS IMMEDIATELY.

Rev. No.	NAME	DATE	DESCRIPTION
0	MvdM	/ / 2017	1st ISSUE

## PROJECT TITLE

STAND 2178, TERENURE X 38

## PROJECT DESCRIPTION AND LOCATION

PROJECT FOR - DANIE KROCH  
ON ERF - 2178  
STREET - 2 EAGLE ROAD  
SUBURB - TERENURE X 38  
TOWN COUNCIL - KEMPTON PARK

**CLIENT SIGNATURE**  
**DRAWN BY** **MARNUS**  
**CHECKED** **\***<