

TOWN PLANNING INFORMATION	
ERF	PTN 13 OF ERF 2178
ZONING	MEDIUM DENSITY HOUSING
<b>CLASSIFICATION H4</b>	
<b>AREA SCHEDULE</b>	
<b>SITE AREA</b>	<b>1026 m<sup>2</sup></b>
<b>EXISTING BUILDING AREA</b>	
DWELLING (basement, 1st & 2nd floor)	515.68 m <sup>2</sup>
DOMESTIC QUARTERS (ex.garage;wc & store)	37.50 m <sup>2</sup>
	SUB-TOTAL 1
	553.18 m <sup>2</sup>
<b>PROPOSED BUILDING AREA</b>	
NEW COVERED TIMBER DECK (ground floor)	34.47 m <sup>2</sup>
NEW EN-SUITE 1 (ground floor)	5.73 m <sup>2</sup>
NEW STAIR LANDING (1st floor)	4.23 m <sup>2</sup>
	SUB-TOTAL 2
	44.43 m <sup>2</sup>
<b>TOTAL BUILDING AREA (sub-total 1 + sub-total 2)</b>	<b>597.61 m<sup>2</sup></b>
<b>PERMITTED FAR</b>	
	<b>N/A</b>
<b>PERMITTED COVERAGE</b>	
	<b>(50%) 513 m<sup>2</sup></b>
<b>EXISTING COVERAGE</b>	
DWELLING	(21.6%) 221.68 m <sup>2</sup>
DOMESTIC QUARTERS (ex.garage;wc & store)	(3.6%) 37.50 m <sup>2</sup>
	SUB-TOTAL 3
	(25.2%) 259.18 m <sup>2</sup>
<b>PROPOSED COVERAGE</b>	
NEW COVERED TIMBER DECK (ground floor)	(3.3%) 34.47 m <sup>2</sup>
NEW EN-SUITE 1 (ground floor)	(0.5%) 5.73 m <sup>2</sup>
NEW STAIR LANDING (1st floor)	(0.4%) 4.23 m <sup>2</sup>
	SUB-TOTAL 4
	(4.3%) 44.43 m <sup>2</sup>
<b>TOTAL COVERAGE (sub-total 3 + sub-total 4)</b>	<b>(29.5%) 303.61 m<sup>2</sup></b>

**GENERAL / CONSTRUCTION NOTES**

**GENERAL / CONSTRUCTION NOTES**  
 1. Boundary bearings to be exposed and demarcated.  
 2. Soil retaining in accordance with table D124 (repaired).  
 3. All slabs, beams, columns, stairs and structural reinforced concrete and structural steel work to be in accordance with structural engineers details and specifications.  
 4. These drawings are to be read in conjunction with structural, civil and mechanical engineers drawings.  
 5. All building work is to comply with the national building regulations, SANS 10400 and local municipal by-laws.  
 6. All glazing to comply with SANS 10400 part 4.  
 7. Public safety, SANS 10400 part D - all balustrading to be minimum one meter high.  
 8. All stairs to comply with part M of SANS 10400.  
 9. All facilities for disabled persons to comply with part 3 of SANS 10400.  
 Do not scale drawings, use figured dimensions only. All dimensions are, unless otherwise specified, measured in millimeters.  
 All dimensions, angles and levels to be checked on site, and any discrepancies are to be verified with the architect prior to the commencement of work. Mechanical ventilation / lighting to be by professional engineer. See appointed engineers drawings for specifications. (if required)

**FOUNDATIONS:**  
 All foundations to be as per SANS 10400 part J & H and to engineers specifications

**BACKFILL: (where applicable)**  
 Filling to be approved clean earth, well watered and compacted in layers not exceeding 150mm in depth and thoroughly consolidated, all to engineers details.

**BLOCK / BRICK WALLS:**  
 1. All walls to be SABS approved. Block/ Brick work to be laid in strict accordance with engineers specifications.  
 2. Where walls are retaining, walls to be water proofed by approved specialist prior to backfill.

**RETAINING WALLS:**  
 1. All retaining walls to be in accordance with engineers specifications.  
 2. Where walls are retaining, walls to be water proofed by approved specialist prior to backfill.

**WINDOWS:**  
 Existing - All existing windows to remain.  
 New - Treated hardwood timber frame, free of knots etc, with all junctions by specialist. Painted white to match existing windows.

**LINTELS:**  
 All lintels to comply with SANS 10400-Part K

**EXISTING DWELLING ROOF:**  
 To remain with no design changes

**TRANSLUCENT ROOF SHEETING:**  
 New translucent IFR roof sheeting fixed to SABS approved timber battens on timber rafters @ max 500mm centers - all fixed to 100 x 50mm timber posts @ equal centers to specialist details

**TIMBER DECKS:**  
 Ground floor balcony: New open slatted timber deck & substructure fixed to 85 x 80mm timber posts @ equal centers to specialist details  
 Around pool area: New open slatted timber deck & substructure to specialist details

**NEW ROOFING CONSTRUCTION & CEILING:**  
 Roof Pitch: to match existing roof.  
 With new Clay roof tiles to match the existing roof on 38 x 38mm timber battens on 114 x 38mm rafters spaced equally @ max 780mm centers, 50mm Isotherm insulation above plasterboard ceiling, achieving an R-value of 1.

**GUTTER & FASCIA:**  
 100mm half round fibre cement gutter system to match existing, complying with SANS 112007, fixed to fibre cement fascia board with fascia brackets at a maximum at 1000mm centers including outlets, connectors, expansion joints, corners, stop ends, etc. to match existing.

**DOWN PIPES:**  
 110mm diameter fibre cement down pipe, fixed to wall with holderbats, with down pipes with silicone sealed to gutter outlets, including all necessary bands, elbows, shoes etc.

**NEW TIMBER STAIRS (NORTH WEST ELEVATION):**  
 New open slatted Timber and steel construction stair case to specialist details. Stairs as per SANS 1400 Part D & M.  
 Riser: 200mm Max  
 Tread: 250mm Min

**NEW TIMBER STAIRS (SOUTH EAST ELEVATION):**  
 New open slatted Timber construction stair case to specialist details. Stairs as per SANS 1400 Part D & M.  
 Riser: 200mm Max  
 Tread: 250mm Min

**STORM WATER:**  
 Storm water reticulation to remain as per existing layout (no changes)  
 New storm water gully's to be installed as per SANS 10400 part F.

**SEWER:**  
 Sewer as reticulation to remain as per existing layout (no changes)  
 (falls - min 1:80 and max 1:6)

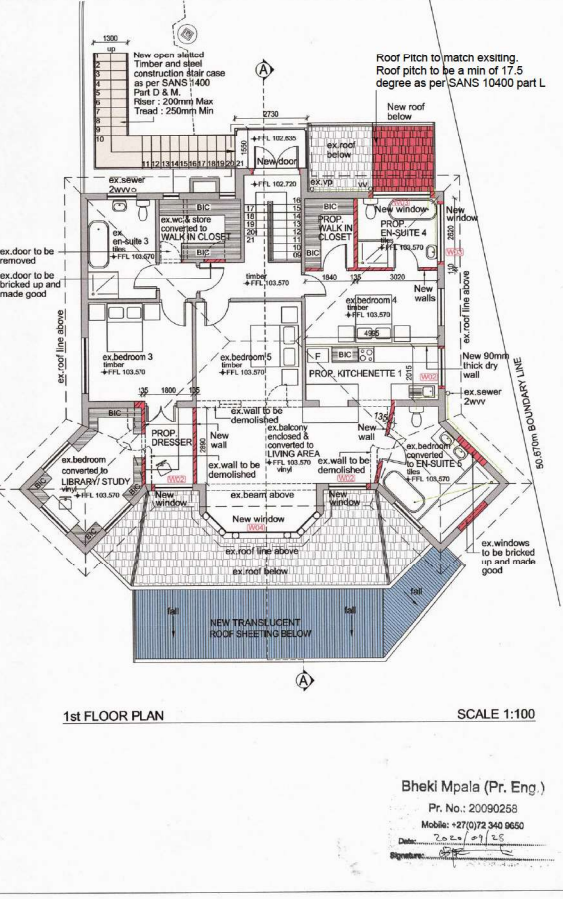
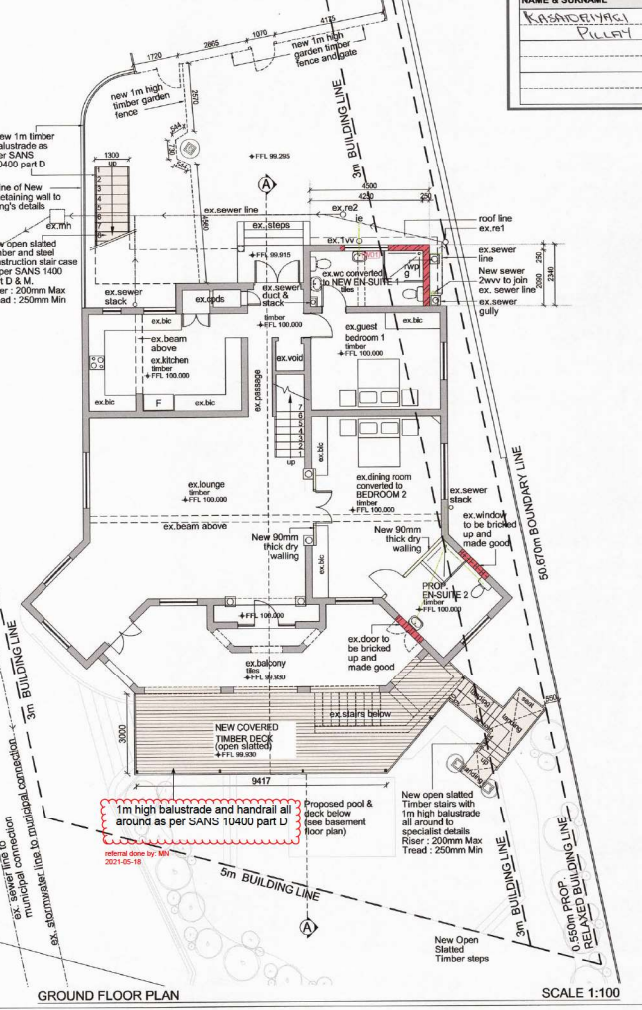
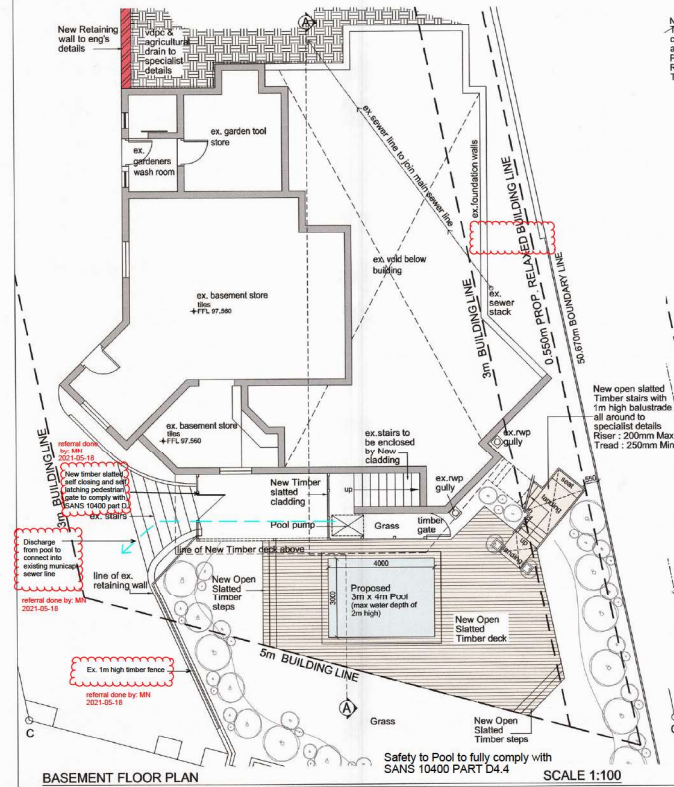
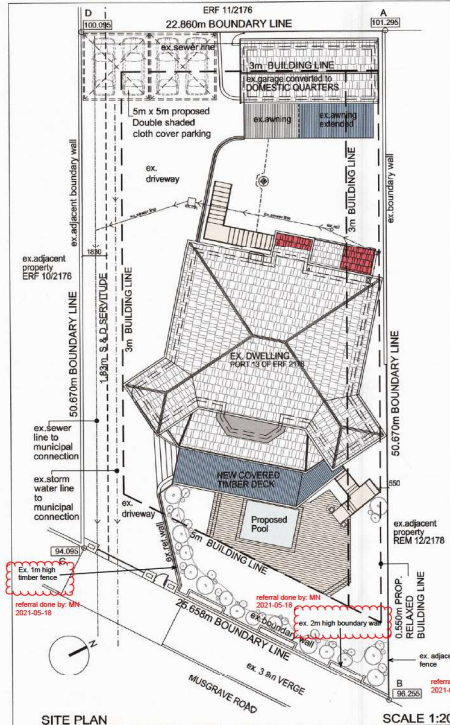
**LIGHTING & VENTILATION:**  
 Natural lighting and ventilation as per SANS 10400 - PART O  
 Natural lighting permitted: 10% min  
 Natural ventilation permitted: 5% min

**POOL NOTES:**  
 1. Pool to be RC & Gunite construction, all to engineers details with installation by an pool specialist.  
 2. Any pool fencing to be min 1.2m high with a self closing gate as per SANS 10400 part D.  
 3. Over flow to discharge onto the site; stormwater drain or natural water course as per SANS 1400 part P 4.10

**ROOF INSULATION:**  
 100mm thick Aerolite insulation by Isover with and R-value of 2.5 to be installed above all new plaster board ceilings with butt jointed layers. As per the SANS 204 Part 4.3.6.2

**NEIGHBORS RELAXATION BLOCK**

NAME & SURNAME	ID NUMBER	LOT / ADDRESS	CONTACT NO.	SIGNATURE
KAMBERANI PILLAY	4932182628	477, 481 MUGGRAVE ROAD, BEREA, DURBAN.	0829548137 K Pillay	



Client name(s): *Suzel Elizabeth Brown*  
 Client Signature(s): *[Signature]*  
 Author name: *[Signature]*  
 SACAP Reg #: *[Signature]* SACAP 4617  
 Author signature: *[Signature]*

**SUBMISSION**

**FGG ARCHITECTS**  
 159 Conry Road, Essendon 081 240 0108 081 240 0108 081 240 0108  
 156 Long Street, P.O. Box 1552, Pietermaritzburg 2000 031 260 364 1518 031 260 364 1518

Project: **ADDITIONS & ALTERATIONS TO EXISTING DWELLING AT 477 MUGGRAVE ROAD, ESSENWOOD, DURBAN ON PORTION 13 OF ERF 2178**

The **SITE PLAN MAIN DWELLING, FLOOR PLANS SITE DETAILS AREA SCHEDULE AND NOTES**

Drawn: CH Code:   
 Date: 02/2020 Drawing No: **7320 1000** Revision:   
 Scale: AS SHOWN

Bheki Mpala (Pr. Eng.)  
 Pr. No.: 20090258  
 Mobile: +27(0)72 340 8650  
 Date: 2021/07/25  
 Signature: *[Signature]*



**ENERGY EFFICIENCY OF SANS XA / 204 GENERAL NOTES**

**ORIENTATION AND SHADING:**  
 1. Orientation to be in accordance with 4.1 & 4.2 of SANS 204.  
 2. Shading - If required is to be in accordance with 4.3.5 of SANS 204. NB. Shading must be provided as permanent features which extends horizontally on either side of the window as far as it extends out or provides equivalent shading with a reveal or other shading device, such as a shutter, blind, vertical or horizontal building screen with blades, battens or slats, which:  
 - is capable of restricting 80% of summer solar radiation.  
 - If adjustable is readily operated by the building occupants.

**ROOF ASSEMBLY CONSTRUCTION**  
 To be in accordance with 4.2 SANS 10400XA (Table 7)  
 1. A roof assembly shall achieve the minimum total R-value (Table 7).  
 2. Thermal insulation shall be provided to meet the minimum R-values given in Table 7 and to be in accordance with 4.3.6.2 of SANS 204.  
 3. Reflective insulation shall be installed as per 4.3.6.2.3 of SANS 204.

**HOT WATER SUPPLY**  
 To be in accordance with 4.1 SANS 10400XA  
 1. A minimum of 50 % by volume 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.  
 2. All exposed pipes to and from the hot water cylinders and central heating systems shall be insulated with pipe insulation material with an R-value in accordance with 4.1 of SANS 10400 XA table 1 or table 13 of SANS 204.

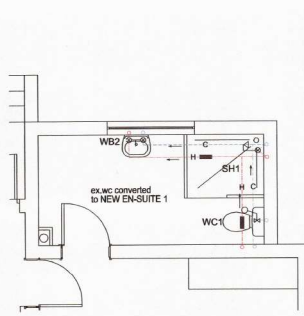
**EXTERNAL WALLS:**  
 To be in accordance with 4.4.3 of SANS 10400XA  
 1. Non-masonry to comply with requirements of 4.4.3.1 of Part XA. Walls shall achieve a minimum total R-value of:  
 Climatic zones 1 and 6: 2.2  
 Climatic zones 2, 3, 4 and 5: 1.0  
 2. Masonry walls to comply with requirements of 4.4.3.2 & 4.4.3.3 of Part XA.  
 - Walls to be double skin masonry wall (plastered or rendered) and cavity and grouted cavity wall system or 140mm single-leaf masonry wall plastered internally and rendered externally (masonry units to be 140mm before plastering).  
 - Alternatively if the wall has an R-value of not less than 0.35 m<sup>2</sup>K/W.

**FENESTRATION :**  
 To be in accordance with 4.4.4 of SANS 10400 PART XA/ SANS 204.  
 1. Buildings with up to 15 % fenestration area to net floor area per storey comply with the minimum energy performance requirements.  
 2. Buildings with a fenestration area to net floor area per storey that exceeds 15 % shall comply with the requirements for fenestration in accordance with SANS 204.

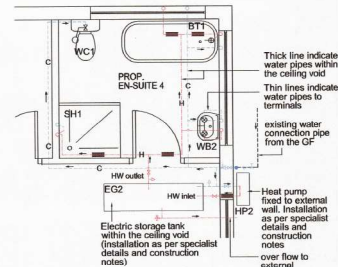
**IN-SLAB HEATING**  
 To be in accordance with 4.4.2 of SANS 10400XA - Where in-slab heating is used then insulation required under the slab. (R-value not less than 1)

**PRESCRIPTIVE ROUTE / DEEMED-TO-SATISFY OF SANS XA / 204 COMPLIANCE - FOR APPLICABLE APPLICATION ONLY**

<b>ORIENTATION AND SHADING:</b>	<b>Compliance not required</b> - Due to additions & alterations to existing building.		
<b>IN-SLAB HEATING:</b>	<b>Compliance not required</b> - Refer to SANS XA general notes above.		
<b>ROOF ASSEMBLY CONSTRUCTION:</b>	<b>COMPLIANCE ACHIEVED</b> - Required R-value = 2.7 - Achieved R-value = 3.05 (0.55 R-value + 2.50 R-value (roof assembly + 100mm thick Aerolite Insulation))		
<b>HOT WATER SUPPLY:</b>	<b>COMPLIANCE ACHIEVED - SUITABLE HEAT PUMP/ SOLAR PANEL TO BE INSTALLED TO SPECIALIST DETAILS &amp; SANS 10252</b> - Assumed Hot water consumption per L/capita/day = 100L - No. of persons = 4 people - Assumed Daily Hot water consumption = 400L (4 x 100) - Assumed Annual Hot water consumption = 146.0KL (400L x 365 days) - 50% Assumed Annual Hot water heated by other means = 73.0KL (146.0KL / 2) - Assumed Daily Hot water to be heated by other means = 200L (400L / 2)		
<b>EXTERNAL WALLS:</b>	<b>COMPLIANCE ACHIEVED</b> - Refer to SANS XA general notes above.		
<b>FENESTRATION:</b>	<b>COMPLIANCE ACHIEVED</b> - Refer to SANS XA general notes above and calculation below.		
<b>ROOM NAME</b>	<b>ROOM AREA</b>	<b>PERMISSIBLE FENESTRATION AREA</b>	<b>ACHIEVED FENESTRATION AREA</b>
EN-SUITE 1	8.8m <sup>2</sup>	1.3m <sup>2</sup> (15% of 8.8m <sup>2</sup> )	0.46m <sup>2</sup> (excluding frames)
EN-SUITE 2	13.5m <sup>2</sup>	2.1m <sup>2</sup> (15% of 13.5m <sup>2</sup> )	2.0m <sup>2</sup> (excluding frames)
EN-SUITE 4	8m <sup>2</sup>	1.2m <sup>2</sup> (15% of 8m <sup>2</sup> )	1.0m <sup>2</sup> (excluding frames)
EN-SUITE 5	16.2m <sup>2</sup>	2.4m <sup>2</sup> (15% of 16.2m <sup>2</sup> )	2.0m <sup>2</sup> (excluding frames)
Ex bedroom 5 + LIVING AREA and KITCHENETTE 1 (open plan)	54.2m <sup>2</sup>	8.2m <sup>2</sup> (15% of 54.2m <sup>2</sup> )	7.1m <sup>2</sup> (excluding frames)
DOMESTIC QUARTERS	23.1m <sup>2</sup>	3.5m <sup>2</sup> (15% of 23.1m <sup>2</sup> )	2.8m <sup>2</sup> (excluding frames)
DOMESTIC QUARTERS EN-SUITE 6	8.8m <sup>2</sup>	1.3m <sup>2</sup> (15% of 8.8m <sup>2</sup> )	0.36m <sup>2</sup> (excluding frames)

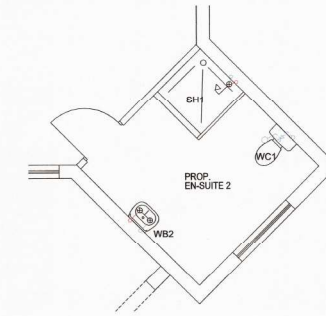


GROUND FLOOR SCALE 1:50

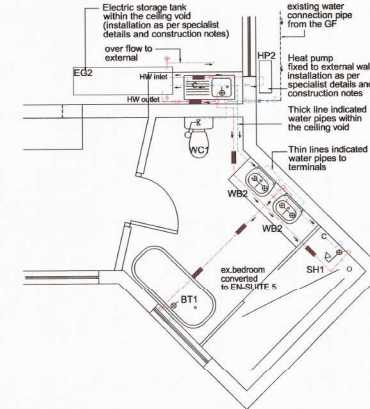


1ST FLOOR SCALE 1:50

REFER TO WATER RETICULATION CALCULATION ELSEWHERE



GROUND FLOOR SCALE 1:50



1ST FLOOR SCALE 1:50

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 Date: 2020/09/22  
 Signature: [Signature]

SHEET    /    ONLINE-COPY  
**ETHEKWINI MUNICIPALITY**  
 21040079  
 APPLICATION NUMBER

**BUILDING APPLICATION**  
 APPROVED in terms Section 7 of the National Building Regulations and Building Standards Act No. 103/1977

LOCAL AUTHORITY  
 2/07/21  
 This plan is approved on the basis of the information shown herein. Attention is drawn to the attached documentation & that this approval shall lapse ONE year after the above approval date, unless the erection of the building in terms of NBR Act 103/1977 is commenced

Client name(s): *Samuel Hlalelethu Brown*  
 Client Signature(s): [Signature]  
 Author name: [Signature]  
 SACAP Reg #:  
 Author signature: [Signature]

**SUBMISSION**



159 Owen Street, Essenvood, DURBAN 4001  
 Tel: (031) 298 5772 Fax: (031) 308 2297  
 198 Log Street, P.O. Box 1332, Pietermaritzburg 2000  
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Project: **ADDITIONS & ALTERATIONS TO EXISTING DWELLINGS AT 477 MUSGRAVE ROAD, ESSEWOOD, DURBAN ON PORTION 13 OF ERF 2178**

Title: **ENERGY CALCULATIONS WATER RETICULATION LAYOUT**

Drawn: CH Code:  
 Date: 02/2020 Drawing No: **7320 1002** Revision:  
 Scale: AS SHOWN

NEIGHBORS RELAXATION BLOCK				
NAME & SURNAME	ID NUMBER	LOT / ADDRESS	CONTACT NO.	SIGNATURE
KASHANAPPA K. K.	4101012006	477 MUSGRAVE RD, BEREA 4001	0312985772	[Signature]

**WATER SUPPLY INSTALLATIONS FOR BUILDINGS - SANS 10252-1:2012**

**GENERAL NOTES :** All water supply to be in accordance with SANS 10252-1:2012 and relevant installation standards

- Only a certified plumber is to be appointed to install the water supply and drainage and is required to issue a completion certificate with a Local Authority water and drainage completion certificate.
- SABS materials are to be used in the installation or otherwise approved by the appointed plumber and comply with the requirements of the JASWIC.
- The installation shall be done so as to avoid any induced pressure surges.
- Any rubber components used must not promote the growth of microbiological bacteria.
- All copper alloy components shall comply with SANS 6509.
- Copper tubes recommended in SANS 480 along with methods of flux or soldering in SANS 460 shall be acceptable and protected against corrosion.
- Fibre Cement pipes shall comply with SANS 1233.
- All plastic pipes must comply with the relevant standards governing plastic pipes. See SANS 10252-1:2012 Clause 5.2.3.5 / 5.2.3.6 / 5.2.3.7
- Water pipes which are in close proximity to gas, sewer, treatment plants etc. which is a potential for contamination, must be approved by Architect & Plumber prior to installation.
- All installations on site to be approved before commencement.
- Any structure on which water structures are to be situated on is to be certified by a competent person (Structural).

**Note**

- Plumber to review the Architects drawings (as Indicated only) prior to any procurement or installation and any discrepancies shall be brought to the client or Architects attention.
- Plumber to provide shop drawings or a itemized list of products and sizes for approval prior to any installation installation.
- All calculations are based on the prescriptive method of compliance with the SANS 10252-1:2012

**CONSTRUCTION NOTES :** All water supply to be in accordance with SANS 10252-1:2012 and relevant installation standards

**TERMINAL FITTINGS:** To be in accordance with SANS 10252-1:2012 Clause 5.3

- Non-residential external taps must incorporate
  - A. A self-closing device
  - B. Removable handle with a locking mechanism to prevent unauthorized use
  - C. Where applicable a demand control mechanism per operation
- All flushing devices and WC cisterns must meet the requirements of SANS 10252-1:2012 clause 5.3.2
- WC cistern overflow to discharge externally only - where visible for repairs.
- Taps, mixers and showers to be in accordance with SANS 10252-1:2012 clause 5.3.3
- Floor valves shall comply with SANS 732 and Plastic ball valves shall comply with SANS 1006.
- All WCs shall be installed with individual isolating valves.
- Urinals shall not discharge 2 litres per flush or use.

**NON-TERMINAL FITTINGS:** To be in accordance with SANS 10252-1:2012 Clause 5.4

**METERING OF WATER SUPPLY:** To be in accordance with SANS 10252-1:2012 Clause 6.1.1

**ALL PIPES:** To be in accordance with SANS 10252-1:2012 Clause 6.7

**THERMAL INSULATION :** To be in accordance with SANS 10252-1:2012 Clause 6.7.5

- Hot water vessels (Geyser) insulation : Insulation to achieve a min R-value of 2 (flexible polyester blanket or other)
- Exposed hot water pipes : All exposed hot water pipes to be insulated as per table 10 of SANS 10252. (GLASS WOOL, Snap-On Insulation blank or other)
- A. Internal dia. of pipes < or = to 80mm to have Min R-value of 1
- B. Internal dia. of pipes > or = to 80mm to have Min R-value of 1.5
- The cold water supply pipes shall also be insulated for a minimum of 1m prior to entry of a water heater storage appliance (e.g. geyser)

**FIRE INSTALLATIONS & COMBINED INSTALLATIONS** (not applicable to H4 classification): To be in accordance with SANS 10252-1:2012 Clause 6.8

**WATER SUPPLY - FOR HUMAN CONSUMPTION:** To be in accordance with SANS 10252-1:2012 Clause 7.1.2

- Stored cold water to be maintained and not exceed 20°C
- Stored hot water to be maintained at least 55°C
- Water quality should be in accordance with SANS 241.1 and SANS 241.2

**EMERGENCY WATER STORAGE SUPPLY:** To be provided in building as per SANS 10252-1:2012 Clause 7.3

- Dwellings (H4/ H3) not required to have storage tanks.

**PREVENTION OF BACK FLOW:** To be in accordance with SANS 10252-1:2012 Clause 7.4.3

**STORAGE WATER HEATER NOTES**

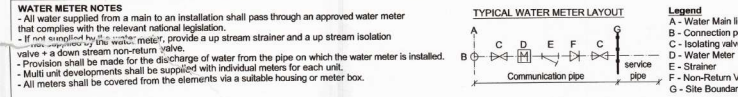
- Must comply with either SANS 131 or SANS 1350
- 22mm Ø HOT & Cold water pipes to all water Troughs, Tubs & Showers Terminal Fittings
- Hot Water Retention to be Closed Loop Systems.
- Min. 25mm Ø UIC Steel or 28mm Ø UIC Copper Pipe.
- Overflow pipes to discharge externally of building.
- Vacuum breakers that drip, must be located above the storage water heater drip tray.
- The 20mm Temperature & pressure safety valve vent pipe to discharge externally.
- All internal Water Storage Heaters to be above a drip safety tray with an overflow pipe discharging externally of the building.
- Storage water heaters to have minimum 2 supports and installed at right angles in accordance with manufacturers specifications.
- All electric units to have earth leakage protection with a compliance certificate to be issued after the completion of the installation.
- Shall be insulated to a minimum 2 R-value
- All hot water storage heaters must have timers installed and set to disconnect electrical supply during peak electrical demand periods. Where 2 or more geysers are installed, the timers shall be set so that the electrical resistance element of only one hot water storage appliance is active at any given time.
- Domestic solar water heaters shall comply with SANS 1307 & 151

**PIPE INSTALLATION NOTES**

- Pipes greater than 1m that is not installed vertically shall at least be installed with an upward slope of at least 1:100 in the direction of flow.
- Pipes supplying fittings must ideally come from a riser or dropper. Horizontal chasing must be kept to an absolute minimum.
- All pipes must be as hidden as possible. Pipes within rooms shall be chased into brickwork. Pipes externally shall be buried below ground. External rising pipes shall be chased into brickwork and plastered over where external walls are plastered. Where there is facelbrick rising pipes shall be chased into the inner skin of brickwork.
- Pipes through slabs, walls or floors shall be installed inside a 50mm PVC sleeve and laid in a straight run and single length of pipe so as to be easily replaceable in the future (clause 6.8.3)
- Where pipes cannot be suitably installed then they must be provided with vent pipe at the highest position.
- During commissioning, avoid trapping air in the pipes, avoid airlocks during operation and ensure the removal of air during filling.
- All pipes to be suitably fixed and fixings are not loose on completion.
- Installation to result in no noise or water hammer, or next to an acceptable minimum.
- An isolating valve must be installed every 30m along a pipe length
- All joining to comply with SANS 10252-1:2012 Clause 8.5
- Pipes underground 1.1m min 400mm below FGL for pipes less than Ø75mm and 750mm below FGL for pipes greater than Ø75mm.
- Inspection and testing to be done by the plumber as per SANS 10252-1:2012 Clause 9.2
- Hot water piping :
  - The length of unheated pipe shall not exceed 4 litres in Volume (Dead Leg - From the water heater to the terminal water fitting) As per SANS 10252 - PART 1: TABLE 20
  - < or = to 15mm Ø = max 12m (Linear meters)
  - > 15mm Ø and < or = to 24mm Ø = max 3m (Linear meters)
  - > 24mm Ø = max 3m (Linear Meters)

**WATER METER NOTES**

- All water supplied from a main to an installation shall pass through an approved water meter that complies with the relevant national legislation.
- If not specified by the water meter, provide a upstream strainer and a up stream isolation valve + a down stream non-return valve.
- Provision shall be made for the discharge of water from the pipe on which the water meter is installed.
- Multi unit developments shall be supplied with individual meters for each unit.
- All meters shall be covered from the elements via a suitable housing or meter box.



SYMBOLS LEGEND		Legend	
	Air-release Valve		Isolating Valve (Manual)
	Air Vessel (air chamber)		Lagging
	Automatic shut-off Valve		Single Lever Mixer
	Balancing Device (hot water control)		Thermostat Controlled Mixer
	Double Check valve Backflow Preventer		Double Lever Mixer
	Draining Tap		Non-return Valve
	Dropper		Direction of Flow
	Riser		Cold Water Pipe
	Tap (external)		Hot Water Pipe
	Tap (internal)		Pressure Control Valve with Expansion Control Valve
	Irrigation Sprinkler		Expansion Control Valve
	Isolating Valve (Manual) flanged ends		Expansion Control Valve with Vacuum Relief
	Shower (movable)		Shower head (fixed)
	Storage Water Heater		Double booster pump connection
	Fire hydrant		Fire sprinkler
	Pipe crossing (not connected)		Booster pump connection
	Fire-hose reel		

**PRESCRIPTIVE ROUTE / DEEMED-TO-SATISFY OF SANS 10252-1:2012 COMPLIANCE - APPLICABLE TO APPLICATION**

**BUILDING CLASSIFICATION :** Dwelling house (H4)

**DESIGN POPULATION :** 8 people (2 ppl per bedroom - SANS 10400 Part A21)

**OCCUPANCY USAGE :** 12h/day (estimate)

**WATER QUALITY FROM SUPPLY MAINS :** Potable

**NATURE OF SUB SOIL ON SITE :** N/A (No new sub-soil pipes to be laid)

**STATIC PRESSURE (kPa):** 600kPa (as per 7.2.1.1 of SANS 10252)

**VELOCITY FLOW RATE - ANY PIPE (M/SEC):** 3.0m/s where noise is not critical factor. (as per 7.2.1.2 of SANS 10252) 1.5m/s to 2.5m/s depending on the nature of installation & the noise levels allowable. (as per 7.2.1.2 of SANS 10252)

**PROBABLE DAILY WATER DEMAND (hot & cold)**

Table 1: Total daily water demand to be determined using Table 1 & 2 of SANS 10252 (Part 4.2.1.2)

Table 2: Dwelling house not listed on this table. (Table 2 to be used to determine the water demand. (SEE CALCULATIONS BELOW))

Fixture & Fittings	L/Day/Person Served	L/Operation	Average Litres	No. of Operations	Population	Total daily Water demand (average x population) (L/Day)
Shower	3-6L/min	4.5L/min	1.5/day	8ppl	4.5x8min x 8 x 1.5 = 432L	
Wash hand basin	4-8L/o	6L/o	2/day	8ppl	6 x 2 x 8 = 96L	
WC flushing (normal flush)	8-10L/o	9L/o	4/day	8ppl	9 x 4 x 8 = 288L	
Bath (only two en-suites)	80-90L/o	85L/o	0.5/day	4ppl	85 x 4 x 0.5 = 170L	
Drinking / food prep /cooking	18-22L	20L	2ppl	2ppl	20 x 2 x 1 = 40L	
ASSUMED TOTAL L/Day						1026L

**NB. THIS CALCULATION IS BASED ON THE NEW EN-SUITES ONLY**

**PROBABLE FLOW DEMAND (hot & cold):** Probable Flow demand (Q<sub>p</sub>) is to be determined using Table 3 of SANS 10252 (Part 4.2.2)

Formula Q = (Q<sub>p</sub>)<sup>0.5</sup> where 'n' is as per Table 4 of SANS 10252 (SEE CALCULATIONS BELOW)

Fixture & Fittings	Maximum Flow rate per fixture/ (L/min)	Minimum Flow rate per fixture/ (L/min)	Design Flow rate per fixture/ (L/min)	Design Flow pressure per fixture/ (kPa)	Qty	Total Design Flow Rate (design flow x quantity)(L/min)
Showerhead (water saving)	12L/min	8L/min	10L/min	50-100kPa	4	10 x 4 = 40L/min
Wash hand basin mixer (plain outlet)	25L/min	8L/min	10L/min	15kPa	5	10 x 5 = 50L/min
WC cistern float valve	-	3L/min	3L/min	100kPa	4	5 x 4 = 20L/min
Bath mixer valve (aerated outlet)	25L/min	15L/min	20L/min	50kPa	2	20 x 2 = 40L/min
Sink mixer (aerated outlet)	12L/min	8L/min	10L/min	50kPa	1	10 x 1 = 10L/min
TOTAL L/min						200L/min
Q <sub>p</sub> = (200) <sup>2</sup> = 24L/min						

**NB. THIS CALCULATION IS BASED ON THE NEW EN-SUITES ONLY**

**PROBABLE HOT WATER DEMAND:** Hot Water demand is to be determined using Tables 2 and 5 as per SANS 10252 (Part 4.2.3 & 4.2.3.2)

Table 5: Assumably calculates an higher DAILY HOT WATER DEMAND than the TOTAL WATER DEMAND, hence table 2 will be used.

Excluding the non hot water services/ fixtures (SEE CALCULATIONS BELOW)

Fixture & Fittings	L/Day/Person Served	L/Operation	Average Litres	No. of Operations	Population	Total daily Hot Water demand (average x population) (L/Day)
Shower (all en-suites)	3-6L/min	4.5L/min	1.5/day	8ppl	4.5x8min x 8 x 1.5 = 432L	
Bath (only two en-suites)	80-90L/o	85L/o	0.5/day	4ppl	85 x 4 x 0.5 = 170L	
Drinking / food prep /cooking	18-22L	20L	2ppl	2ppl	20 x 2 x 1 = 40L	
ASSUMED TOTAL HOT WATER L/Day						642L

**NB. THIS CALCULATION IS BASED ON THE NEW EN-SUITES ONLY**

**TERMINAL AND NON-TERMINAL SCHEDULE :** (table subject to change per application)

TERMINAL FIXTURES	Ref. on dwg	Description (basic water spec of item installed)	Qty
Wash hand basin taps	WB-1	15mm inlet pillar tap (plain outlet)	0
	WB-2	15mm inlet mixer with hot and cold separately controlled (plain outlet)	5
Bath taps	BT-1	22mm inlet mixer single lever (aerated outlet)	2
	BT-2	22mm inlet mixer with hot and cold separately controlled (aerated outlet)	0
Shower head/s	SH-1	15mm inlet single lever mixer with standard showerhead	4
	SH-2	15mm inlet single lever mixer with water saving showerhead	0
	SH-3	15mm inlet single lever mixer with hand showerhead	0
Water Close/s	WC-1	15mm inlet float/ ball valve cistern with a Floor mounted wc	4
	WC-2	15mm inlet dual flush cistern with a Floor mounted wc	0
	WC-3	22mm inlet flush valve (low pressure) Floor / wall hung wc	0
	WC-4	22mm inlet flush valve (high pressure) Floor / wall hung wc	0
Urinals	UR-1	15mm inlet Siphonic/ industrial metal urinal (automatic shut-off flush valve)	0
	UR-2	15mm inlet Wall mounted urinal (shut-off flush valve) (auto/manual/sensor controlled)	0
Bid/s	BI-1	15mm inlet single lever bidet mixer + wall mounted bidet	0
	BI-2	15mm inlet mixer with hot and cold separately controlled + wall mounted bidet	0
Sink/ prep bowl Tap/s	ST-1	15mm inlet single taps with hot and cold separately controlled (plain outlet)	0
	ST-2	15mm inlet single lever pillar mixer (aerated outlet)	1
	ST-3	15mm inlet single lever wall mounted mixer (aerated outlet)	0
	ST-4	16mm inlet mixer valve with hot and cold separately controlled (aerated outlet)	0
Wash trough Tap/s	WT-1	15mm inlet hose bib tap (plain outlet)	0
External Tap/s	ET-1	15mm inlet hose bib tap (plain outlet)	0
Washing machine	WM-1	15mm inlet with a isolating ball valve	0
Dish washer	DW-1	15mm inlet with a isolating ball valve	0
TOTAL			16

**NON-TERMINAL FIXTURES**

Ref. on dwg	Description (basic water spec of item installed)	Qty
EG-1	100L / 150L capacity electric geyser (actual capacity specified elsewhere)	0
EG-2	200L / 250L capacity electric geyser (actual capacity specified elsewhere)	2
SG-1	100L / 250L capacity solar geyser (actual capacity specified elsewhere)	0
HP-1	heat pump suitable for 100L - 150L of total hot water demand (see clause 6.4.2.1)	0
HP-2	heat pump suitable for 200L - 250L of total hot water demand (see clause 6.4.2.1)	2

**SIZING OF HOT WATER STORAGE:** As per SANS 10252 (Annex H, Part H.1.1)

- Hot water storage sizing to be determined by the following formula given in the Annex H example 1. (SEE CALCULATIONS BELOW)

Design constants :

- V<sub>1</sub> = Cold water volume required
- V<sub>2</sub> = Hot water volume required
- V<sub>3</sub> = Total hot water demand calculated (above)
- T<sub>1</sub> = Cold Water supply (20°C)
- T<sub>2</sub> = Hot Water at storage (60°C - Table 5)
- T<sub>3</sub> = Final Water Temp @ the bath (40°C - clause 7.5.1.4.1)

Volume of Cold Water Formula: V<sub>1</sub> = V<sub>3</sub> (T<sub>2</sub> - T<sub>1</sub> / T<sub>3</sub> - T<sub>1</sub>)

V<sub>2</sub> = V<sub>1</sub> - V<sub>3</sub>

V<sub>2</sub> = 642 - 321

V<sub>2</sub> = 321 (hot water volume)

V<sub>3</sub> = 642 (0.40 - 0.20)

V<sub>3</sub> = 642 (0.5)

V<sub>3</sub> = 321L (cold water volume)

**NB. THIS CALCULATION WORKS OUT TO BE 50% OF YOUR TOTAL HOT WATER DEMAND**

Volume of Hot Water Formula: V<sub>2</sub> = V<sub>1</sub> - V<sub>3</sub>

V<sub>2</sub> = 642 - 321

V<sub>2</sub> = 321 (hot water volume)

V<sub>3</sub> = 15% cold water replenishment (see clause 7.5.1.1)

V<sub>3</sub> = 398L TOTAL STORAGE/GEYSER TANK IS RGD

**PROVIDED 200L ELECT. RES. STORAGE TANK + HEAT PUMP**

**HEAT PUMP POWER RGD:** As per SANS 10252 Clause 7.5.2

Energy input required is calculated as follows. (SEE CALCULATIONS BELOW)

Formula: P = F x C x ΔT / n

Design constants :

- P = Heater power rating in kilowatts (kW)
- F = Flow rate in litres/second (L/s)
- C = Specific heat of water constant of 4.2 (kJ/L)
- ΔT = Difference in water temperatures (60° - 20° = 40°)
- n = Percentage efficiency of the heat pump (75% = 0.75 (from kwikot))

Calculations:

HEAT PUMP FOR THE 200L CAPACITY (SEE KWIKOT HEAT PUMP)

P = F x C x ΔT / n

P = (0.15 x 4.2 x 40) / 0.75

P = 6.72 (kW)

**NB. IF THE HEAT PUMP OPTION IS USED THEN A SUITABLE SIZE HEAT PUMP IS REQUIRED FOR THE TOTAL HOT WATER DEMAND AND NOT JUST 50% (see SANS 10252 Clause 6.4.2.1)**

**SOLAR GEYSER ENERGY RGD:** As per SANS 10252 Clause 7.5.3

Energy input required is calculated as follows. (SEE CALCULATIONS BELOW)

Formula: H = V x C x ΔT / n

Design constants :

- H = Solar energy in kilojoules/day (kJ/d)
- V = Total hot water demand in litres/day (L/d) (add 20% if applicable- clause 7.5.3.3)
- C = Specific heat of water constant of 4.2 (kJ/L)
- ΔT = Difference in water temperatures (60° - 20° = 40°)
- n = Percentage efficiency of the solar panel absorber (see table E.1 Annex E)

Calculations:

H = V x C x ΔT / n

H = ..... (kJ/L)

and

**SOLAR GEYSER PANEL SIZE RGD:** As per SANS 10252 Clause 7.5.3.2 (SEE CALCULATIONS BELOW)

Formula: A = H/S

Design constants :

- A = Absorber area (m<sup>2</sup>) (solar panel area on roof)
- H = Solar energy in kilojoules/day (refer to above calculation)
- S = Mean solar irradiance (kWh/m<sup>2</sup>/d) (see table 17) (convert MJ to kJ)

Calculations:

A = H/S

A = ..... (m<sup>2</sup>)

**NET HEAT POWER :** As per SANS 10252 Clause 7.5.1.3

- Heat power to be determined by the following formula. (SEE CALCULATIONS BELOW)

Formula: P = R.C.AT

Design constants :

- P = is heater power required (kW)
- R = is replacement rate of water (L/s) (see E.5 Annex E)
- C = Specific heat of water constant of 4.2 (kJ/L)
- ΔT = Difference in water temperatures (60° - 20° = 40°)

Calculations:

P = R.C.AT

P = ..... (kW)

**NEIGHBORS RELAXATION BLOCK**

NAME & SURNAME	ID NUMBER	LOT / ADDRESS	CONTACT NO.	SIGNATURE
KHAYATHI KHAYATHI	470211010156	470211010156	082 9518131	[Signature]
[Name]	[ID]	[Address]	[Contact No]	[Signature]

**CLIENT INFORMATION:**

Client name(s): *Jenny Elizabeth Brown*

Client Signature(s): [Signature]

Author name: [Signature]

SACAP Reg #: [Number]

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