KWIKBRiX®

BUILDING AFRICA FASTER

KWIKBRiX BUILDING SOLUTION DISCLOSURE DOCUMENT

FEBRUARY 2019

OVERVIEW

The pace of life is increasing with the advent of new technologies such as cellphones, computers and their associate servers such as the internet and email. Yet, building methods and materials remain static and are not keeping up with the increases in efficiency and delivery that technology can and does afford them.

Existing building methods, whilst sound and reliable, are clumsy in their application. A high degree of skill is a pre-requisite for a quality structure to be the end result. These skills are not available in sufficient numbers and the methods are slow and tedious. This results in houses and schools taking longer to erect and the backlogs not being adequately addressed.

One brick at a time to build a wall is hardly efficient, not to mention the process of materials handling. The potential for errors to occur is enormous (the erection of the walls is the stage in the process where mistakes are most likely to be made). Bearing in mind these walls support the roof structure, it is of utmost importance that these walls are correctly and soundly built in order to create a safe and durable structure.

This high degree of skill required for building correctly limits the rate at which building projects can be delivered. Skilled workers are in short supply, whilst semi-skilled and unskilled workers stand by, sometimes unemployed and unable to contribute. At the same time Governments are experiencing backlogs in the delivery of housing and other capital projects. They are also experiencing unemployment at substantial levels and are looking at ways of alleviating it.

It is against this backdrop that KwikBrix has been introduced into the African market. The entrepreneurs behind the KwikBrix building system saw how cumbersome the traditional bricklaying process was, and for that

" KwikBrix offers high levels of strength, consistency and simplicity while remaining cost effective "

reason an easier, more affordable approach to house construction was developed. Significant efforts have been implemented to find sustainable and affordable technologies to arrest the situation of rising construction costs.

The best approach so far has been the development of technologies to increase the utilization of locally available building materials. Appropriate solution for affordable housing will vary from one location to another, however, the emphasis to use local building materials with local skilled artisans led to the eventual development of the KwikBrix Building Solution.

For the past six years we have been accompanying people on their new entrepreneurial path thanks to the KwikBrix business model which affords the opportunity of transforming entrepeneurs into successful business owners.

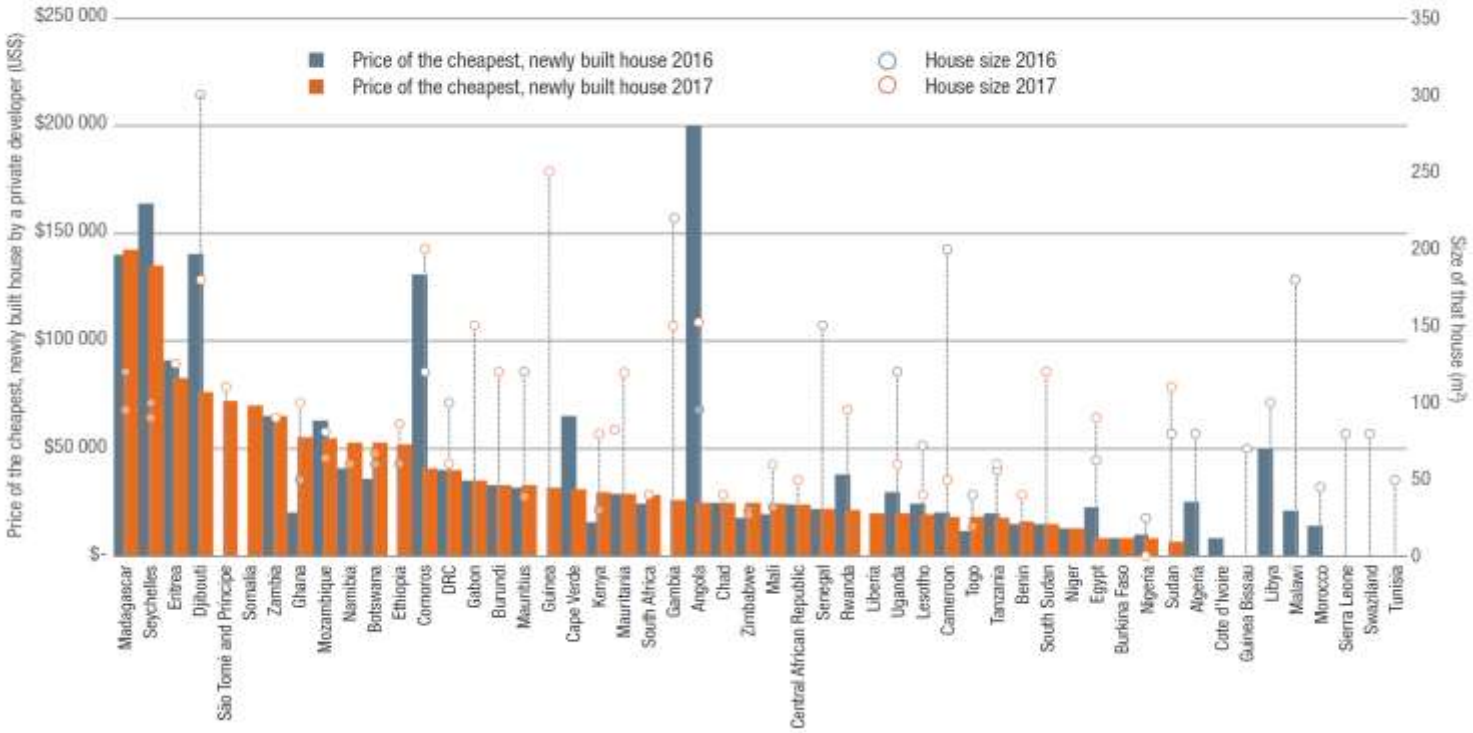
The absolute versatility and adaptability of the KwikBrix Building Solution to the most diverse territorial needs, allows you to start a KwikBrix manufacturing plant anywhere in the world and begin the process of building any type of structure.

KwikBrix offers an untapped opportunity. A significant one. If we delivered to the potential demand of African households who, in their current economies with existing finance could afford a USD$ 8500 house, would translate into 83 million houses across the continent, generating almost USD$ 480 billion of economic activity, just with the construction process alone.

KwikBrix offers a significant opportunity for investors to get their slice.

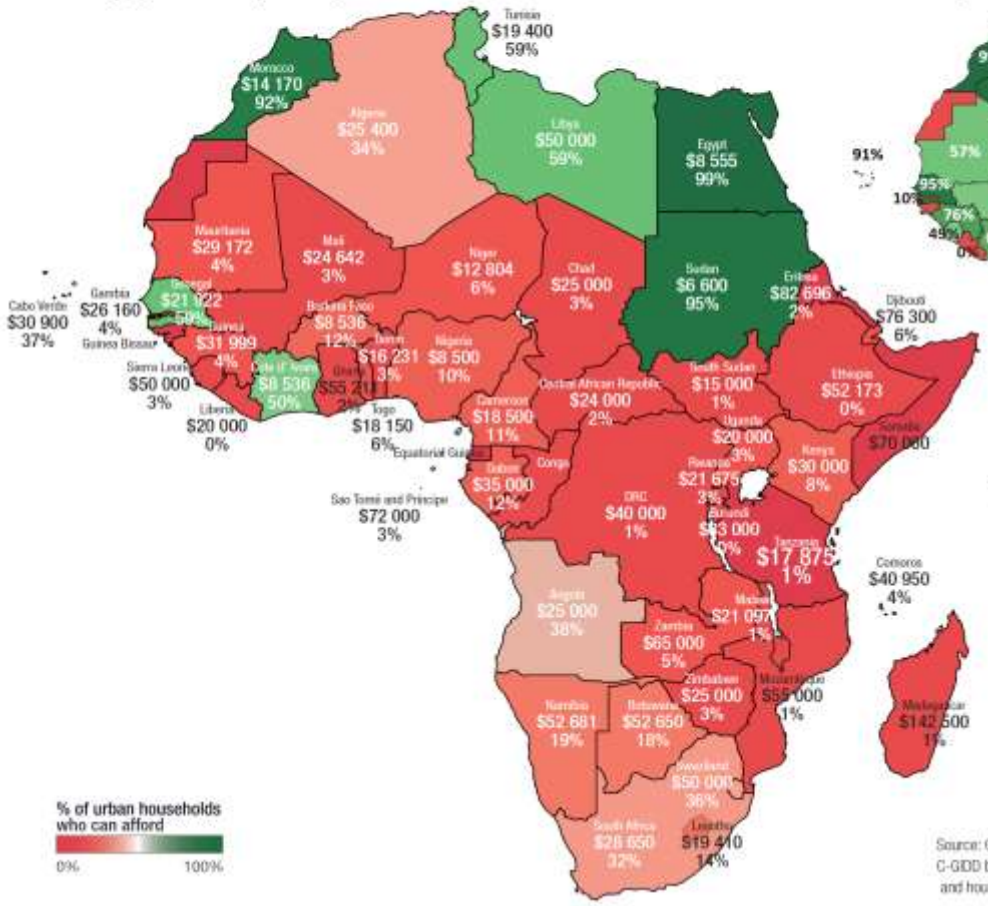
PRICE OF THE CHEAPEST, NEWLY BUILT HOUSE BY A FORMAL DEVELOPER: 2016 AND 2017

Source: CAHF Research, October 2017

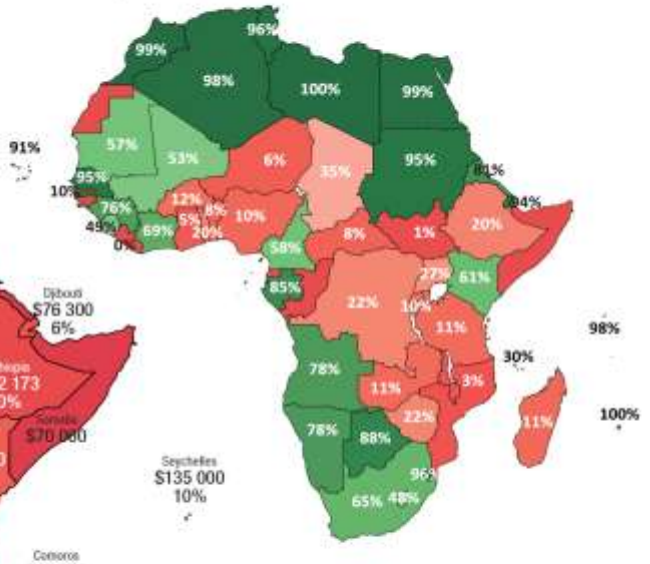


Housing affordability is a function of 3 things: household income, the price of the house, and the financing terms.

Proportion of urban households who might afford the cheapest (in US$) newly built house by a private developer, given current mortgage financing arrangements

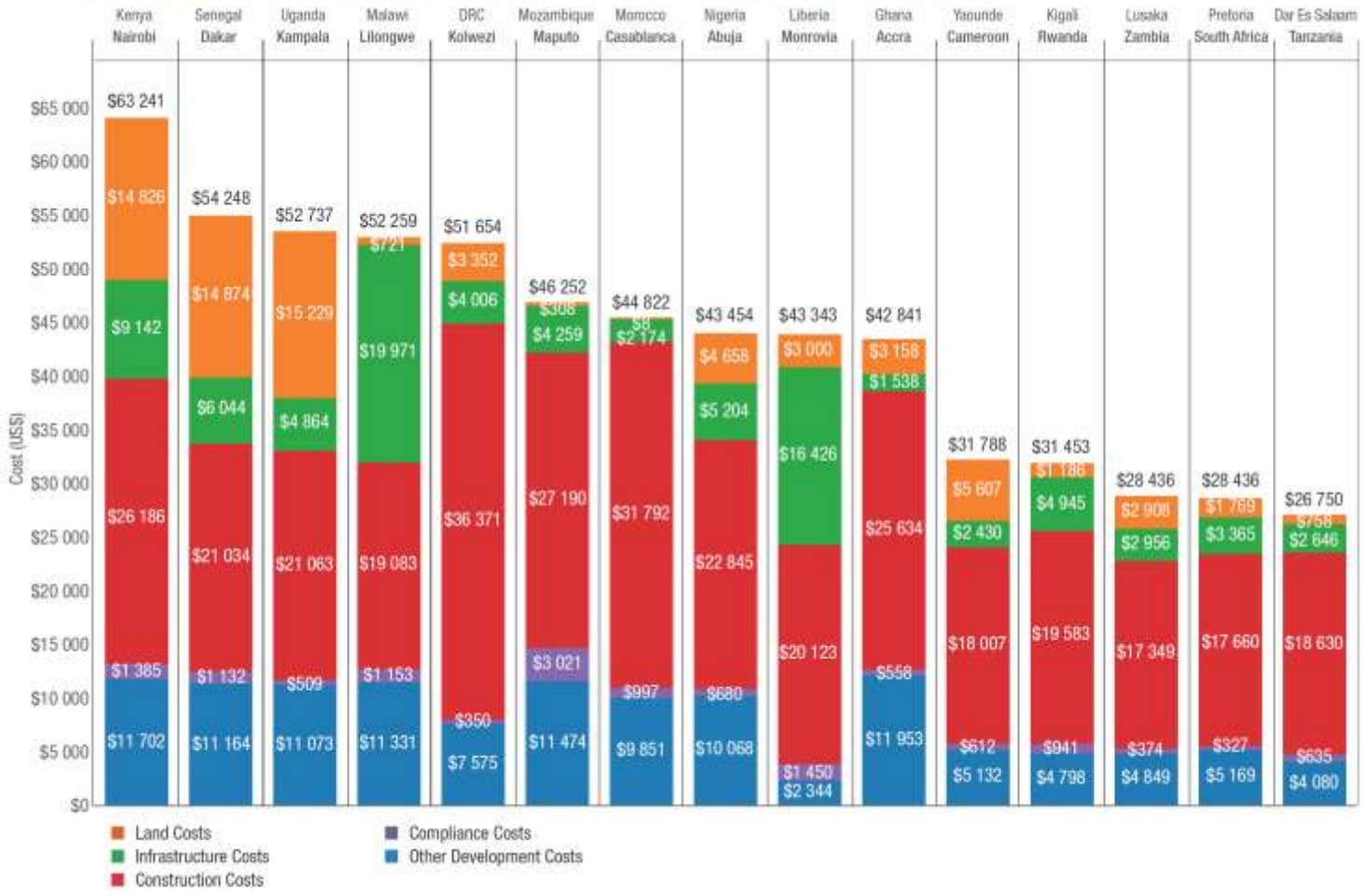


Proportion of urban households who might afford a US$7500 house, given current mortgage financing arrangements



Source: CAHF Research, 2017 & CGIDD Income Data - https://www.cgidd.com/
C-GIDD by Canback & Company is the world's only comprehensive database with GDP and household income distribution data harmonised across countries and over time.

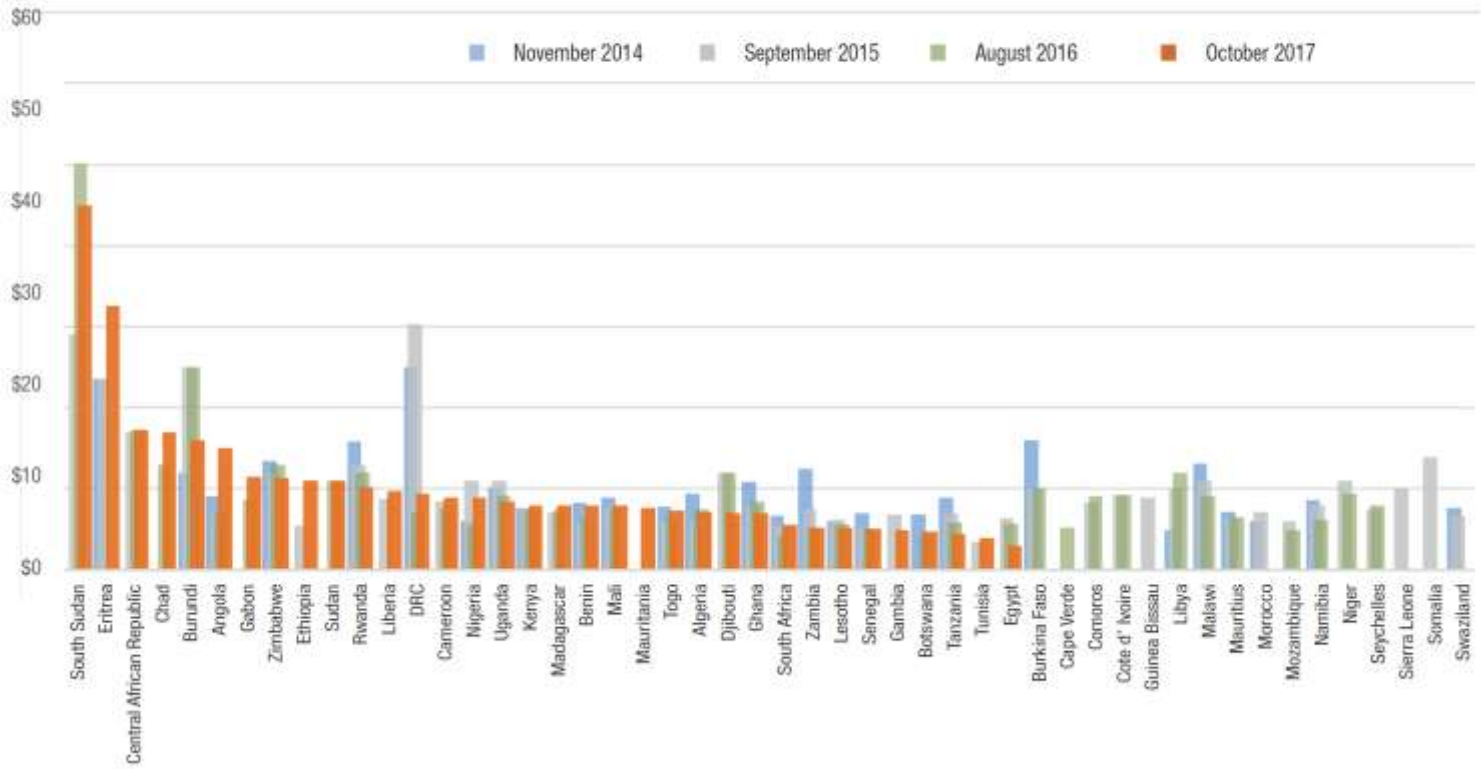
THE COST OF PRODUCING A 'GENERIC' 55M² HOUSE IN MAIN CITIES ACROSS AFRICA



Source: CAHF Research, 2017

PRICE OF A 50KG BAG OF CEMENT (US$)

Source: CAHF Research, October 2017



STATISTICS FROM AFRICA

A FOCUS ON URBAN RENTER HOUSEHOLDS IN

- Côte d'Ivoire
- Senegal
- South Africa
- Tanzania
- Uganda

	% URBAN HOUSEHOLDS THAT RENT	# OF RENTER HOUSEHOLDS
Côte d'Ivoire	54%	1.6 M
Tanzania	44%	1.2 M
South Africa	37%	4.3 M
Senegal	36%	295,000
Uganda	29%	500,000

MAIN MATERIAL FOR ROOF

TZA: Iron sheets (96%)
UGA: Iron sheets (96%)
CIV: Sheet metal (90%)
SEN: Concrete/cement (66%)
SA: Corrugated iron/zinc (51%)

MAIN MATERIAL FOR WALLS

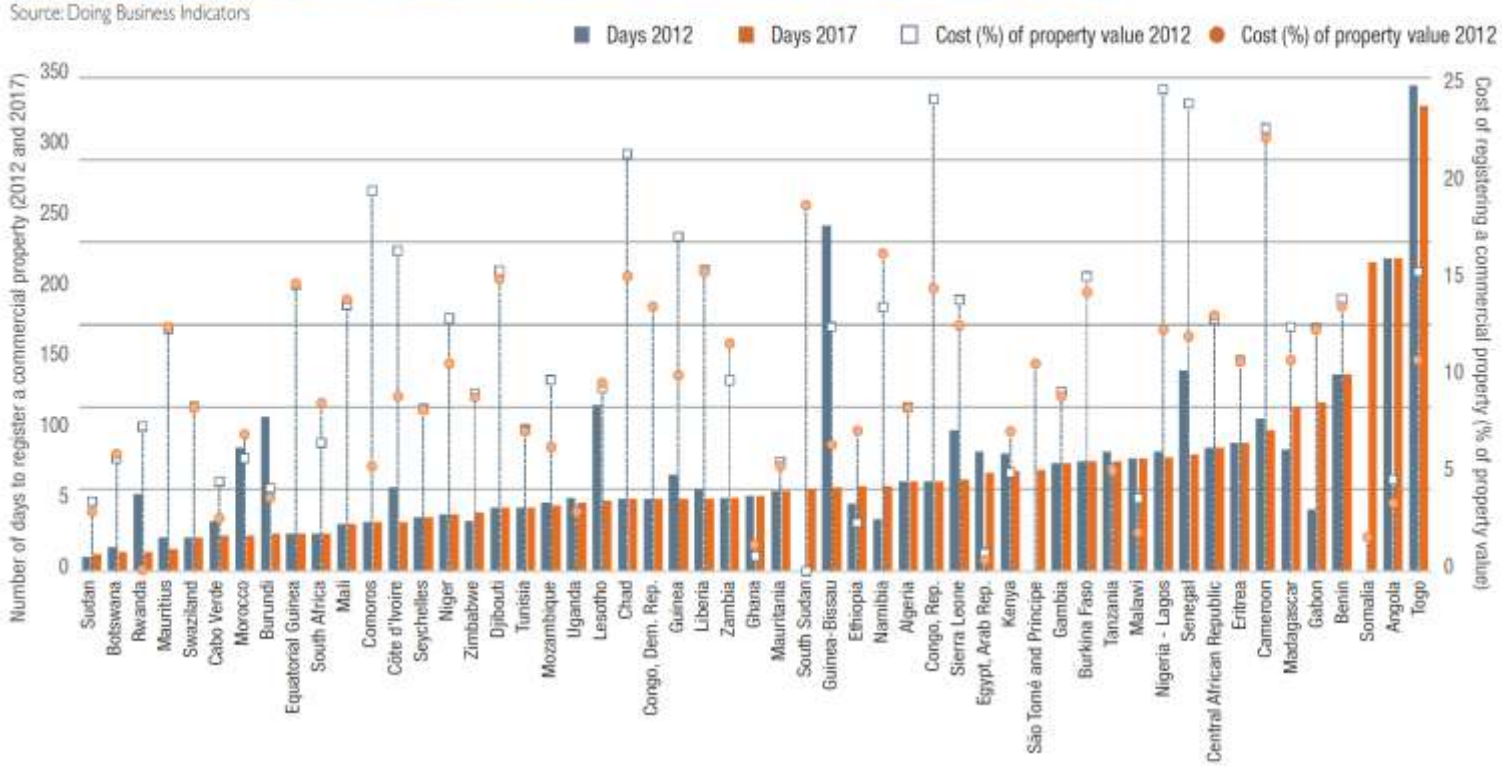
SEN: Cement bricks (97%)
CIV: Hard (cement) (81%)
UGA: Burnt/stabilised bricks (72%)
SA: Bricks (65%)
TZA: Cement bricks (64%)

	AVG HOUSEHOLD SIZE	% OVERCROWDED*
Senegal	5	47%
Uganda	3.9	52%
Côte d'Ivoire	3.4	26%
Tanzania	3.3	40%
South Africa	2.6	5%

HOUSEHOLDS ACCESS TO SERVICES

NUMBER OF DAYS, AND COST OF REGISTERING A COMMERCIAL PROPERTY: 2012 VS 2017

Source: Doing Business Indicators



" KwikBrix allows you to build 60% faster. It creates the opportunity to build 100 houses per month "

KWIKBRiX HEIGHT	**100mm**
KWIKBRiX LENGTH	**300mm**
KWIKBRiX DEPTH	**145mm**

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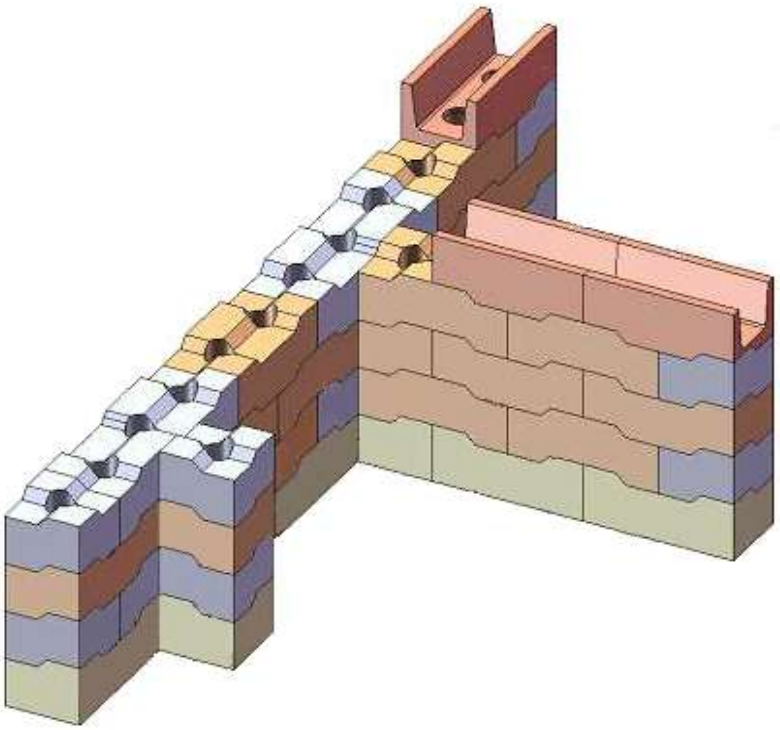

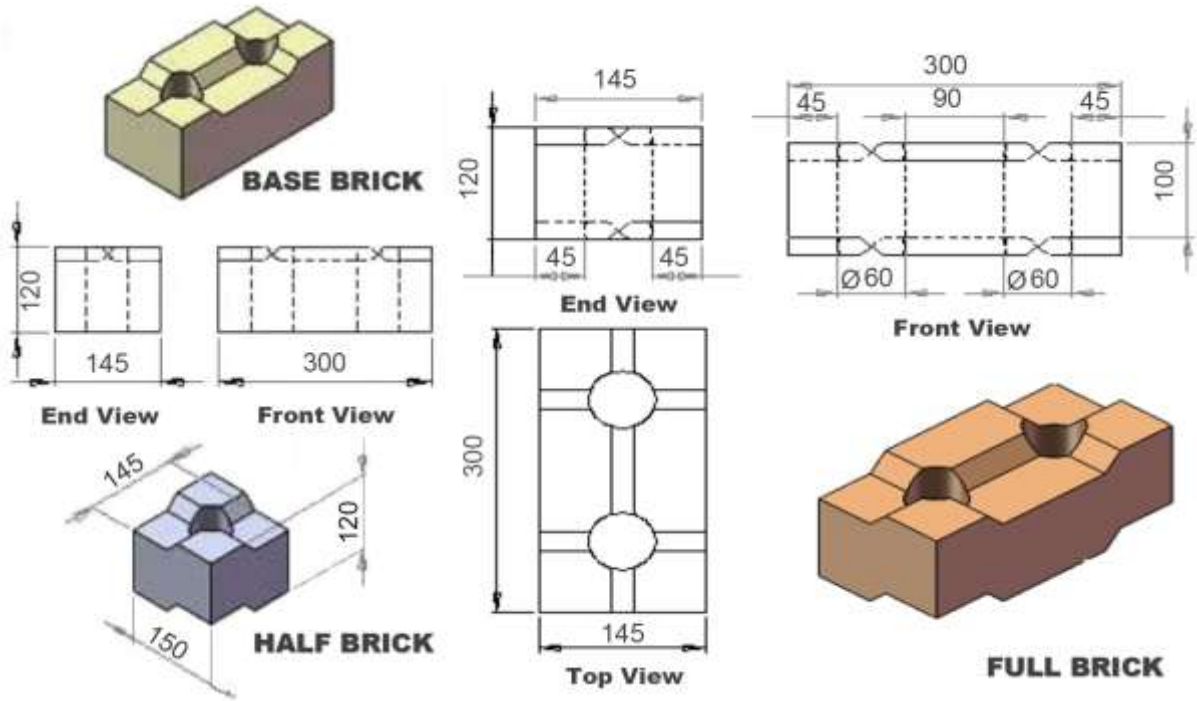

INSECT PROOF | WATERPROOF | WEATHER RESISTANT | FIREPROOF | HIGH SCREW HOLDING | ECO-FRIENDLY

** PICTURE EXCLUDES PAN MIXER + CONVEYOR FEEDER

KB8

KWIKBRiX

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KB8 (Pallet Size : 700mm x 400mm x 21mm)

The KB8DR is a static, pallet-type KwikBrix machine catering for the manufacturing of the specially designed KwikBrix as well as its foundation brick, half brick, window sill and roof plate brick.

Production capacities of 4180 KwikBrix per 8 hour shift are achieved

Features

- Height 1800mm x Width 1300mm x Length 800mm (excludes tray and pan mixer)
- Pan Mixer 1000mm diameter
- Machine Weight 500Kgs Pan Mixer Weight 500Kgs
- Heavy duty, two column design with easily replaceable bushes
- High speed single shaft 1,1Kw vibrator for vertical directional vibration
- Manual for pallet feed and mould lifting
- Three metre roller conveyor for faster product removal (optional)
- Supplied with a 200 litre turbine pan mixer
- Adjustable mould height
- Tamper brush for the cleaning of tamper shoes
- Split moulds to facilitate manual loading
- Main vibration is via a push-button switch
- Easily exchangeable KwikBrix moulds

Control Panel

- Isolator switch
- Pre-vibration timer
- Main vibration switch
- Easy operator adjustment of pre-vibration time ensuring consistent compaction and height of product

BENEFITS

ACCEPTANCE

- Kwikbrix is manufactured out of materials that are readily available and accepted by communities all across the African continent.
- The use of these traditional materials for the manufacturing of KwikBrix also means that professional entities such as architects, building inspectors, engineers and banks will readily accept KwikBrix as a building material

COSTS

- KwikBrix construction is a quicker process - on average it is 16 times faster than brick construction
- The use of local labour creates employment - it does not require specialized contractors
- Compared with conventional masonry, KwikBrix saves construction time and a large amount of mortar cost, which would otherwise be required for horizontal joints
- Without the need for high-waged skilled masons (except for the base course), by saving cement (less mortar), and with the speed of construction, building costs are lower than for standard masonry construction

" Using KwikBrix along with efficient house designs will shield you from feeling the inflationary pressure of construction "

ECO-FRIENDLY

- In areas where timber is scarce and expensive, construction with KwikBrix has environmental advantages (no de-forestation, low energy requirement for brick production and transportation)
- KwikBrix construction offers limited wastage. Only 3% on-site wastage as compared to at least 23% wastage with conventional building methods
- Conventional construction generates surplus mortar. This is commonly piled up to await collection and disposal on landfill. KwikBrix construction does not generate surplus mortar. A typical KwikBrix building site generates no more than four wheelbarrows of construction waste
- Re-use - concrete is an inert material that is easily recyclable. Old concrete that has reached the end of its service life can be reused as aggregate for new concrete mixtures. The addition of industrial by - products such as fly ash, silica fume and blast furnace slag enhance the various performance properties of concrete, whilst incorporating waste materials that would otherwise be deposited in landfills.
- Sugar Cane mills in Mozambique, Cameroon, Sudan, Kenya, Swaziland and South Africa are left with a by product called BagAsh once their sugar cane has been processed. All too often this by product leaves the mills with an environmental issue as a result of having to dump this material. Fortunately, this material can be mixed with concrete to produce the KwikBrix interlocking brick building system.

BENEFITS

PERFORMANCE

- KwikBrix is suited for construction in areas of high wind, tropical storms and cyclones
- KwikBrix walls are waterproof, as a result of the specialized skimplaster used
- KwikBrix is dimensionally stable, it will not expand or contract as a result of moisture content
- KwikBrix is invulnerable to termites, borer, fungi, mould and other organisms
- KwikBrix is incombustible, it will not burn and will not contribute fuel to spread fires
- KwikBrix offers shorter and predictable construction schedules

STRENGTH

- KwikBrix is generally much stronger than block or brick construction
- KwikBrix structures are less likely to be damaged as a result of weather, wind or earthquakes
- KwikBrix can be manufactured in a variety of ways to produce several levels of strength up to 28Mpa

" KwikBrix - an alternative method of construction designed to bring your building costs way down "

STRUCTURAL

- The structural stability and durability of KwikBrix is far greater than for comparable timber constructions. Grout holes provide the means to insert steel reinforcements in vulnerable parts of the building (corners and on either side of windows and doors), for increased wind and earthquake resistance
- KwikBrix is suited to the construction of multi-storey buildings, in the same way as for standard masonry constructions

EASE OF USE

- 16 teams can complete in excess of one hundred houses per month. Each team consists of just three labourers
- KwikBrix building sites are clean, safe and tidy
- Self-aligning, requires little bracing or special supports during construction
- No heavy equipment or electricity is required on the building site
- Can be installed in confined spaces

EMPLOYMENT

1 KWIKBRiX MACHINE PROVIDES WORK FOR

8 LABOURERS

THE BRICKS IT PRODUCES PROVIDES WORK FOR

6 SITE LABOURERS

6 KWIKBRiX PACKERS

2 POWERFLOATERS

4 REBAR INSTALLERS

6 TRENCH DIGGERS

6 BUILDING SITE PREPARERS

KWIKBRiX
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The Job Creating Building System

4 PLUMBERS

6 PLASTERERS

8 ROOFERS

8 PAINTERS

4 DOOR HANGERS & GLAZERS

2 FOREMAN

6 ELECTRICIANS

4 ADMIN ASSISTANTS

1 ARCHITECT

BUILDING SCHEDULE

All too often builders are multi disciplined on a mass housing building site. The same builder that lays the bricks is very often involved in the installation of the roof, and the windows as well.

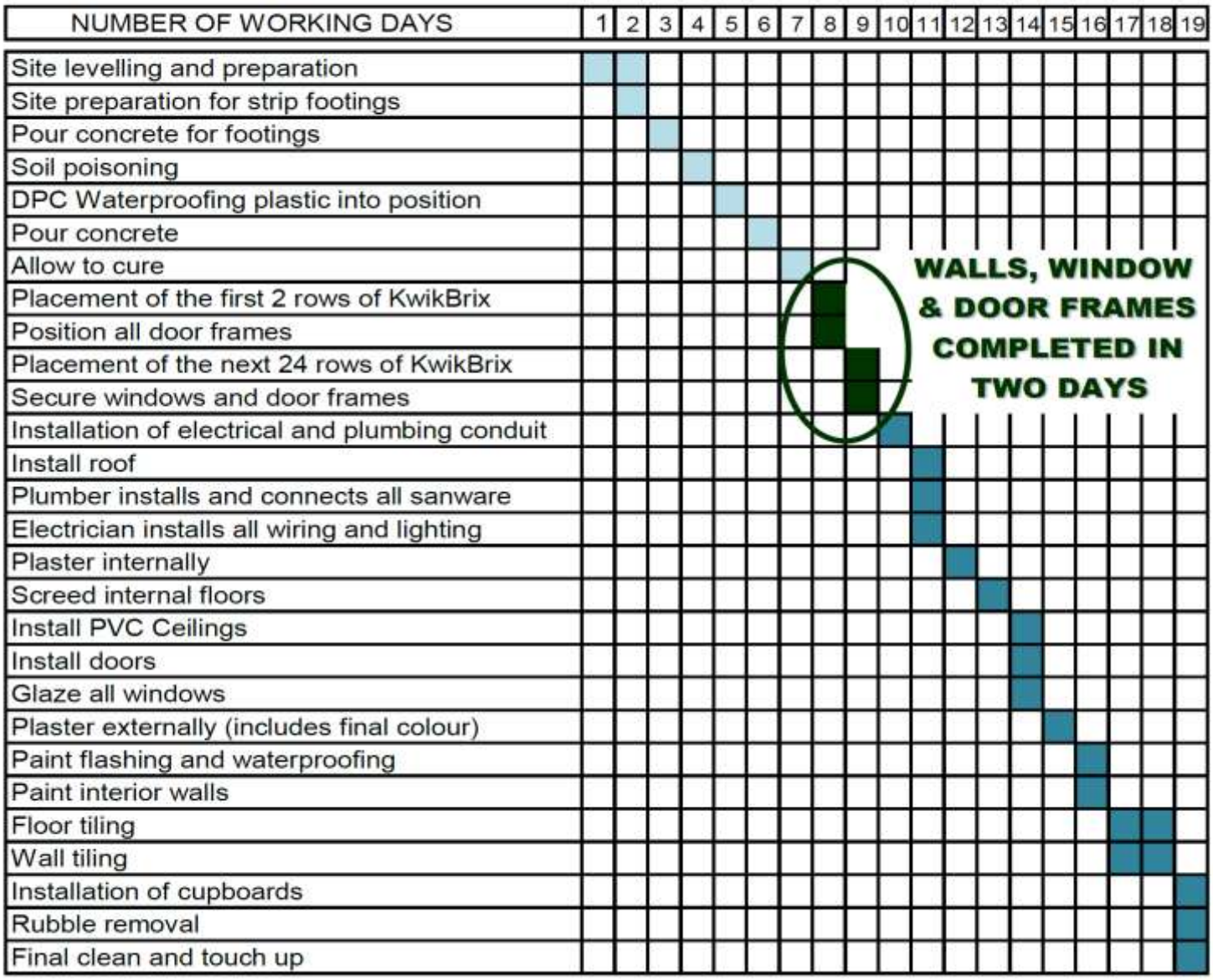
In order for any mass housing project to achieve cost savings on site, it is important to nominate specific duties for all the builders. Ideally there should be a specific team that is only involved in the construction of the foundations and floor slab. Once their task has been completed on the first slab, they move on to the next foundations and continue until such time as their complete project has ended.

Their work is then followed up by the team that only focuses on the construction of the first two rows of the KwikBrix interlocking bricks. The next team follows with the installation of all the brickwork up till roof height.

Not only does this expedite the construction process of the project, it also skills people in the particular tasks that they do. As they become more and more skilled at their task - so does their speed increase as a result of their skill.

With all the contractors becoming skilled within their particular process, the entire project is able to be completed within an earlier time frame - which in turn brings attention to the developer as a result of completing construction work somewhere around 60% faster - depending on how the project itself is managed.

KWIKBRiX BUILDING TIMELINE - 46 sqm



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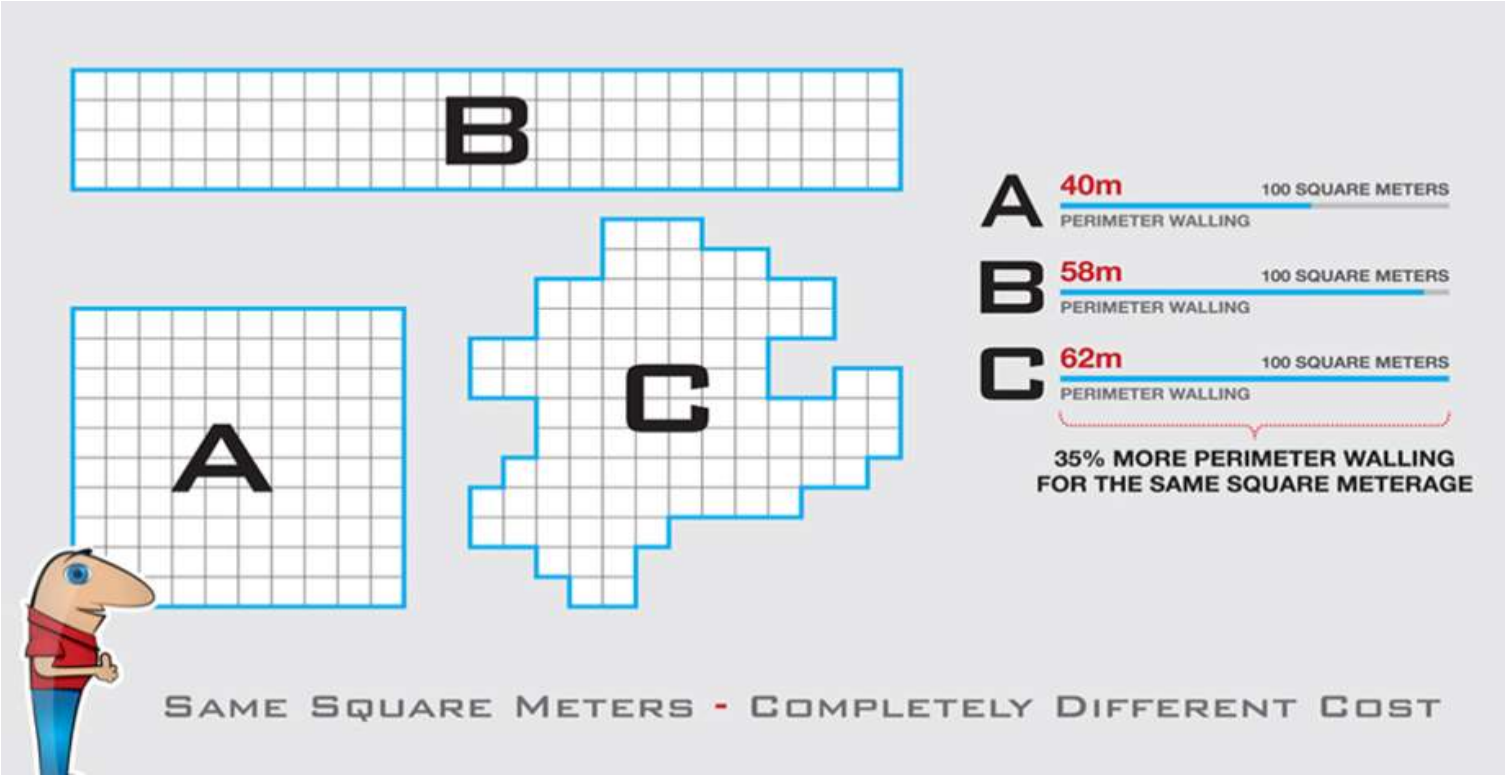
BUILDING COST

When it comes to building cost, the most common question asked is "What is the m² cost of building" ? This is a total misnomer and is something that stems from rural house contractors or inexperienced developers selling plot and plan telling prospective clients that the cost of building is x/m².

A cost per square metre is an extremely rough and rudimentary estimate which is all too often way out in price once the structure has been completely built.



Just the shape of a house alone will drastically affect its construction cost.

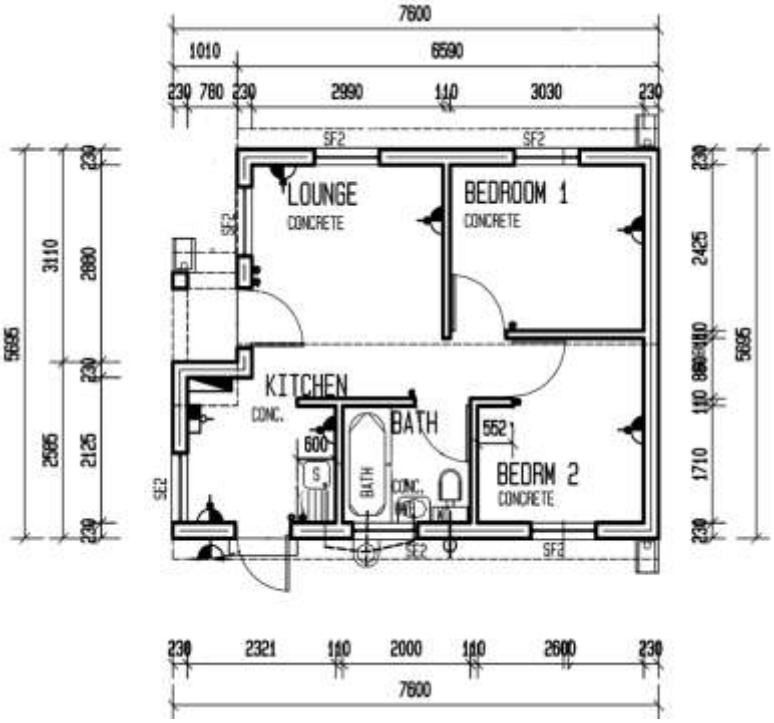
House 'A' measures 10m x 10m (square), and house 'B' measures 25m x 4m (rectangle), both are exactly 100m². But the walls of 'A' are 40m long and the walls of 'B' are 58m long. This is an extra 18m of walling - almost 50% difference. This inaccuracy alone will cost an extra USD$ 3 000.

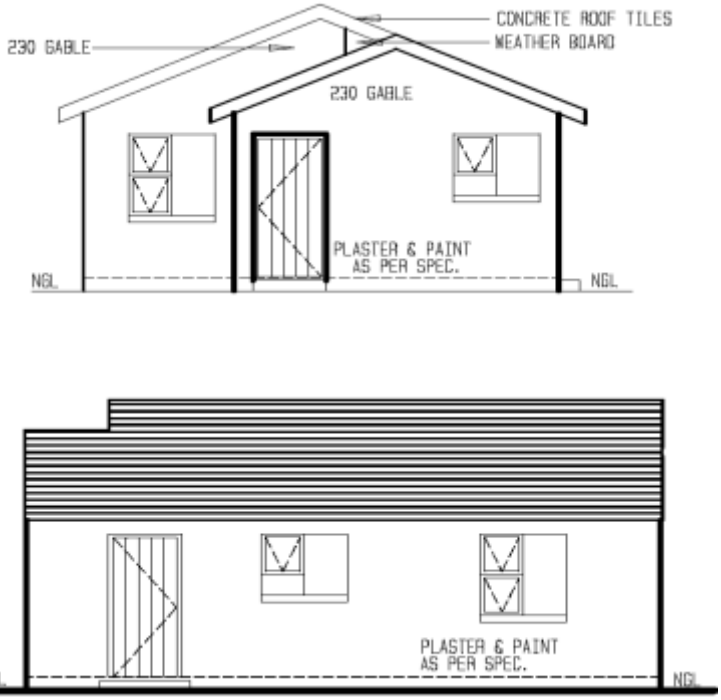
The configuration of the walls and the specifications of the build determines the price of the basic construction element. Every one of the items mentioned hereunder have a specific influence on the final price ;

- the cost of materials in the area where the structure is being built
- the type of soil will determine the type of foundation required
- whether the soil is flat or sloped
- the number and size of the windows required for the structure
- the roofing layout
- the type of roofing material that will be used
- the number of doors required within the structure
- the configuration of the electrical layout
- the size of geyser to be installed
- the specification of the sanitary-ware
- the specification regarding cupboards and tiling
- the specification of the flooring
- municipal connections of services
- type and configuration of the roof trusses being used
- ceiling specification

BUILDING COST

42 SQM





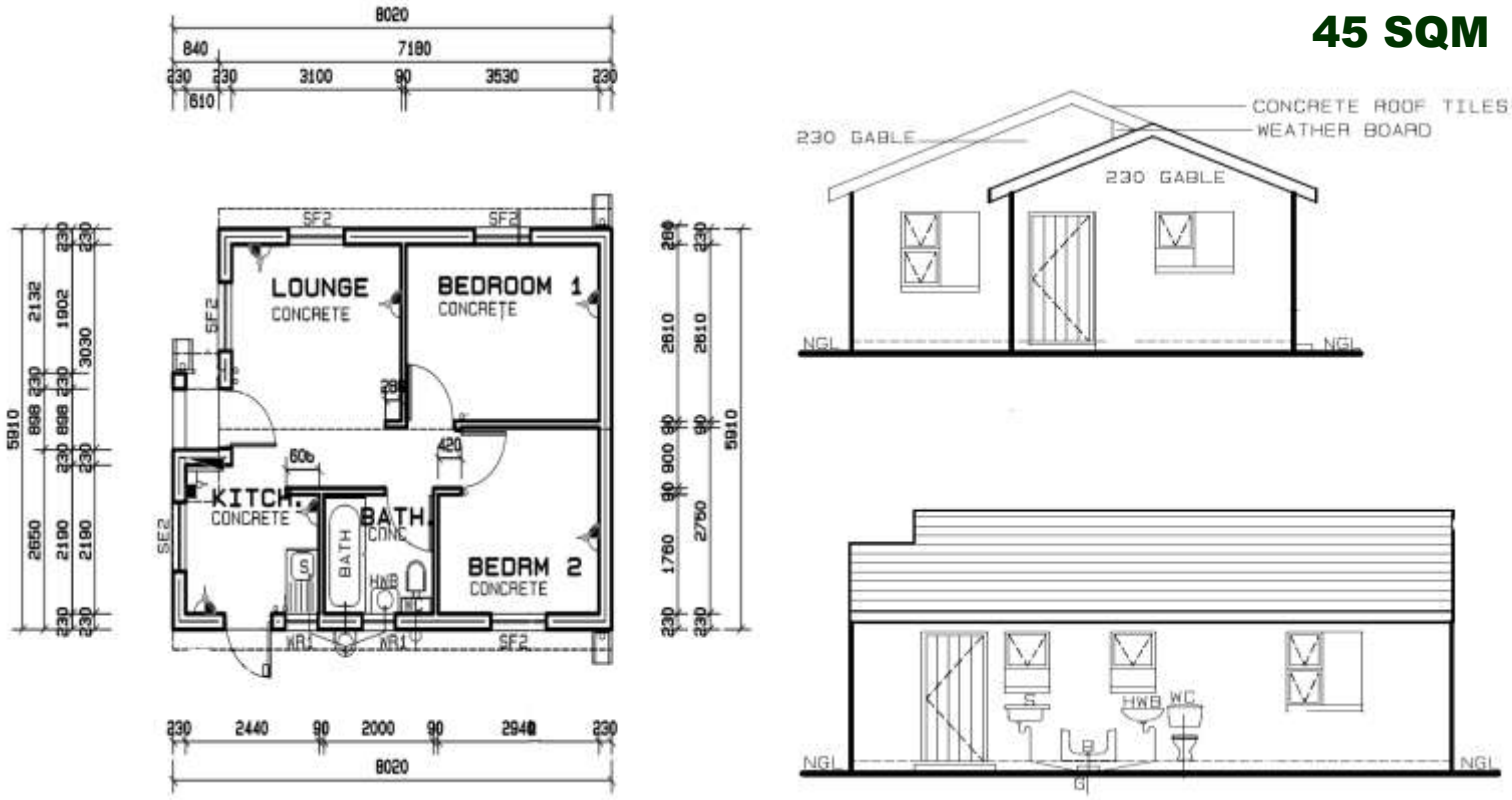
Soil Poisoning	R	10	m²
Raft Foundation @ R 480 m²	R	480	m²
KwikBrix Building Materials (R 16 075)	R	383	m²
Laying the first two courses of KwikBrix 2B + 3L	R	34	m²
Laying the rest of the KwikBrix 5L - 3D	R	79	m²
Electrical includes geyser	R	226	m²
Plumbing (Shower, toilet, handwash + Kitchen unit)	R	238	m²
Floor Tiling (Tiled throughout the house)	R	150	m²
Wall Tiling	R	50	m²
PVC Ceilings	R	160	m²
Steel Windows	R	185	m²
Steel Door Frames & Timber Doors	R	169	m²
Plastering using skimplaster @ R 25m²	R	80	m²
Steel Roof truss & Concrete Tiles	R	352	m²
Painting (Includes undercoat & waterproofing)	R	90	m²
		2 686	m²

THIS HOUSE CAN BE BUILT FOR LESS THAN R 2 686m²

146 Foundation Bricks	@	R 3.26 per brick	R	476
2780 Full Bricks	@	R 3.81 per brick	R	10 592
617 Half Bricks	@	R 1.91 per brick	R	1 180
130 Beam Channel Bricks	@	R 2.95 per brick	R	570
Steel Reinforcing 120m	@	R 6.60 per metre	R	792
3 pkts 32,5N cement included above	@	R 85 per pocket	R	255
133,2m² skimplaster	@	R 170 per bag	R	2 210

BUILDING COST

45 SQM



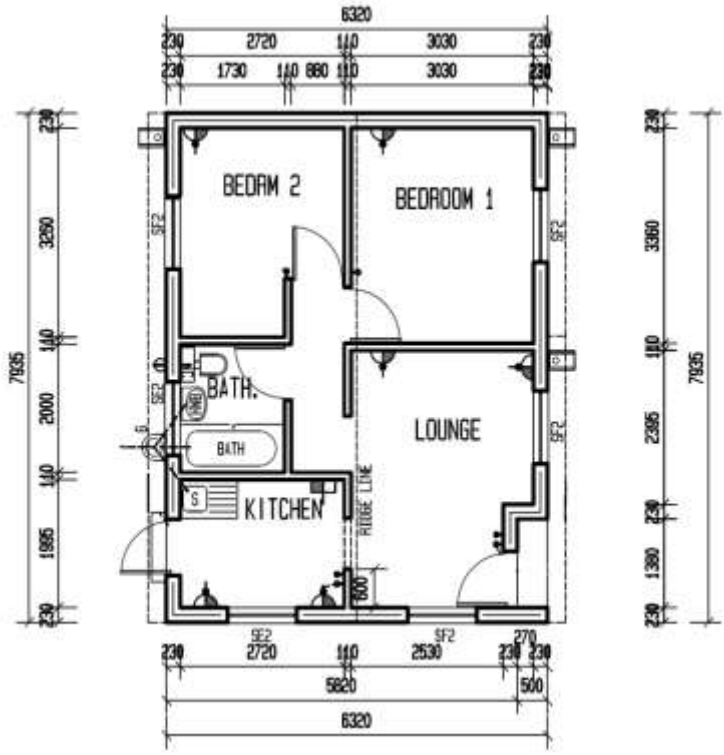
Soil Poisoning	R	10	m²
Raft Foundation @ R 480 m²	R	480	m²
KwikBrix Building Materials (R 16 819)	R	374	m²
Laying the first two courses of KwikBrix 2B + 3L	R	32	m²
Laying the rest of the KwikBrix 5L - 3D	R	73	m²
Electrical includes geyser	R	226	m²
Plumbing (Shower, toilet, handwash + Kitchen unit)	R	238	m²
Floor Tiling (Tiled throughout the house)	R	150	m²
Wall Tiling	R	50	m²
PVC Ceilings	R	160	m²
Steel Windows	R	173	m²
Steel Door Frames & Timber Doors	R	159	m²
Plastering using skimplaster @ R 25m²	R	80	m²
Steel Roof truss & Concrete Tiles	R	352	m²
Painting (Includes undercoat & waterproofing)	R	90	m²
		2 647	m²

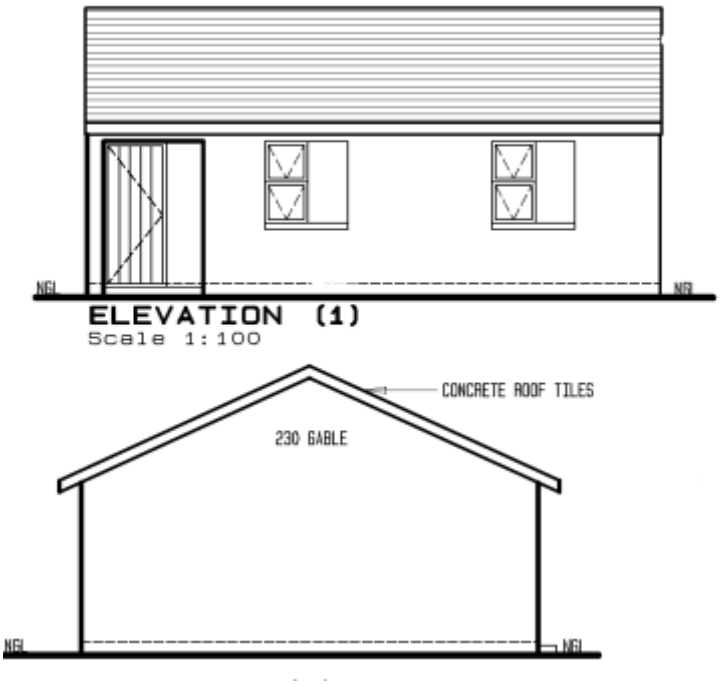
THIS HOUSE CAN BE BUILT FOR LESS THAN R 2 647m²

158 Foundation Bricks	@	R 3.26 per brick	R	516
2843 Full Bricks	@	R 3.81 per brick	R	10 832
710 Half Bricks	@	R 1.91 per brick	R	1 356
142 Beam Channel Bricks	@	R 2.95 per brick	R	419
135m Steel Reinforcing	@	R 6.60 per metre	R	891
3 pkts 32,5N cement included above	@	R 85 per pocket	R	255
144m² skimplaster	@	R 170 per bag	R	2 550

BUILDING COST

50 SQM





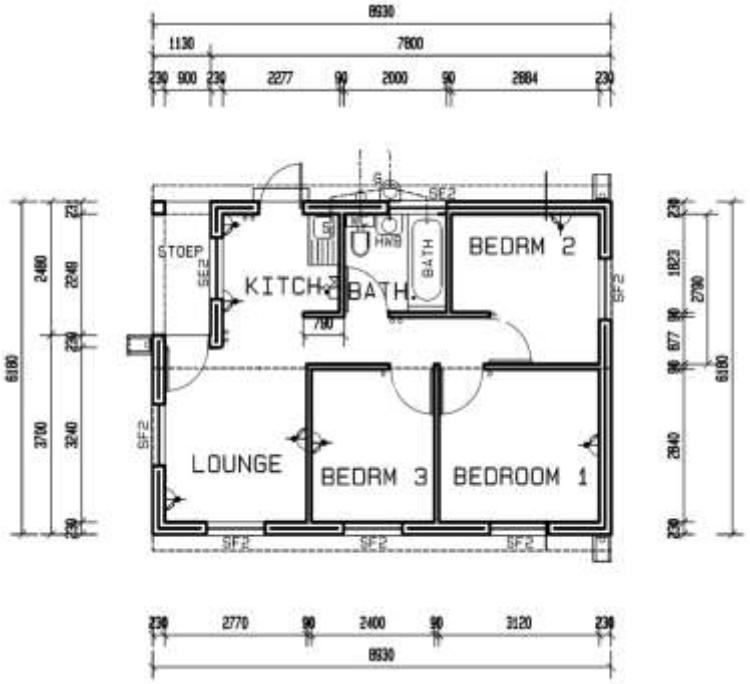
Soil Poisoning	R	12	m²
Raft Foundation @ R 480 m²	R	480	m²
KwikBrix Building Materials (R 19 694)	R	394	m²
Laying the first two courses of KwikBrix 2B + 3L	R	60	m²
Laying the rest of the KwikBrix 5L - 3D	R	80	m²
Electrical includes geyser	R	240	m²
Plumbing (Shower, toilet, handwash + Kitchen unit)	R	280	m²
Floor Tiling (Tiled throughout the house)	R	170	m²
Wall Tiling	R	60	m²
PVC Ceilings	R	160	m²
Steel Windows	R	155	m²
Steel Door Frames & Timber Doors	R	143	m²
Plastering using skimplaster @ R 25m²	R	78	m²
Steel Roof truss & Concrete Tiles	R	330	m²
Painting (Includes undercoat & waterproofing)	R	90	m²
		2 732	m²

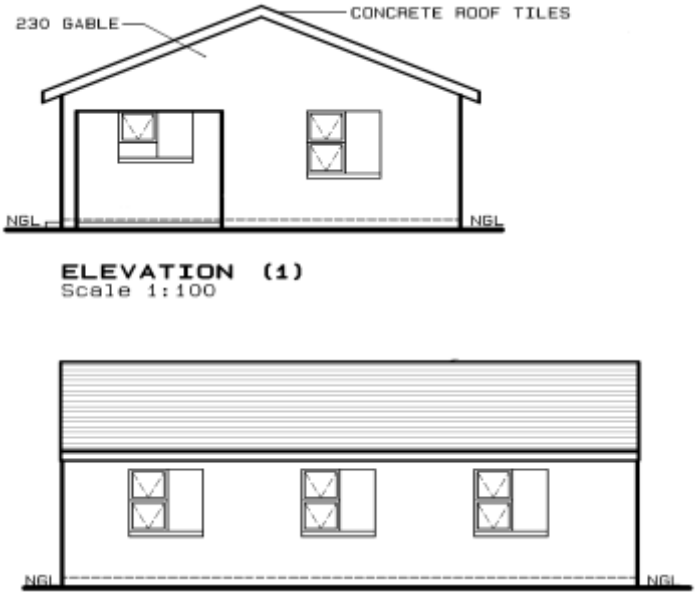
THIS HOUSE CAN BE BUILT FOR LESS THAN R 2 732m²

183 Foundation Bricks	@	R 3.26 per brick	R	596
3381 Full Bricks	@	R 3.81 per brick	R	12 882
845 Half Bricks	@	R 1.91 per brick	R	1 614
163 Beam Channel Bricks	@	R 2.95 per brick	R	481
135m Steel Reinforcing	@	R 6.60 per metre	R	891
6 pkts 32,5N cement	@	R 85 per pocket	R	510
154.8m² skimplaster	@	R 170 per bag	R	2 720

BUILDING COST

55 SQM





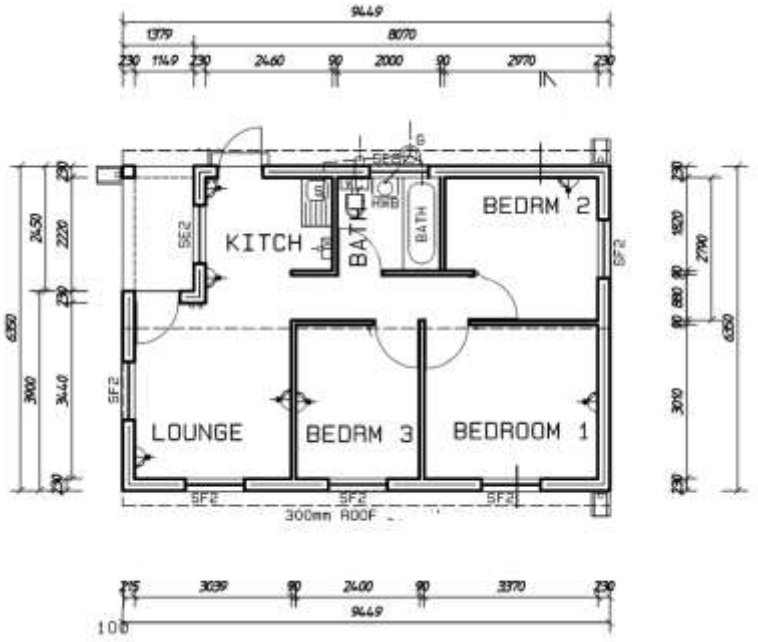
Soil Poisoning	R	12	m²
Raft Foundation @ R 480 m²	R	480	m²
KwikBrix Building Materials (R 19 783)	R	360	m²
Laying the first two courses of KwikBrix 2B + 3L	R	25	m²
Laying the rest of the KwikBrix 5L - 3D	R	60	m²
Electrical includes geyser	R	240	m²
Plumbing (Shower, toilet, handwash + Kitchen unit)	R	280	m²
Floor Tiling (Tiled throughout the house)	R	170	m²
Wall Tiling	R	60	m²
PVC Ceilings	R	160	m²
Steel Windows	R	124	m²
Steel Door Frames & Timber Doors	R	168	m²
Plastering using skimplaster @ R 25m²	R	68	m²
Steel Roof truss & Concrete Tiles	R	321	m²
Painting (Includes undercoat & waterproofing)	R	90	m²
		2 618	m²

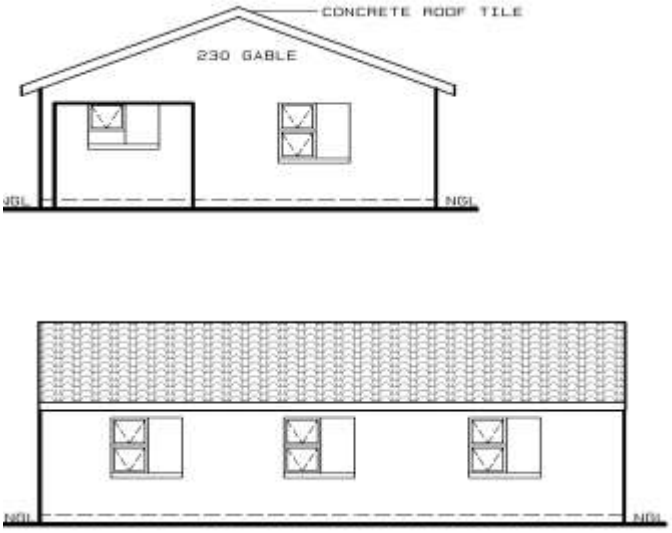
THIS HOUSE CAN BE BUILT FOR LESS THAN R 2 618m²

190 Foundation Bricks	@	R 3.26 per brick	R	620
3437 Full Bricks	@	R 3.81 per brick	R	13 095
858 Half Bricks	@	R 1.91 per brick	R	1 639
166 Beam Channel Bricks	@	R 2.95 per brick	R	490
146m Steel Reinforcing	@	R 6.60 per metre	R	964
5 pkts 32,5N cement	@	R 85 per pocket	R	425
147.6m² skimplaster	@	R 170 per bag	R	2 550

BUILDING COST

60 SQM





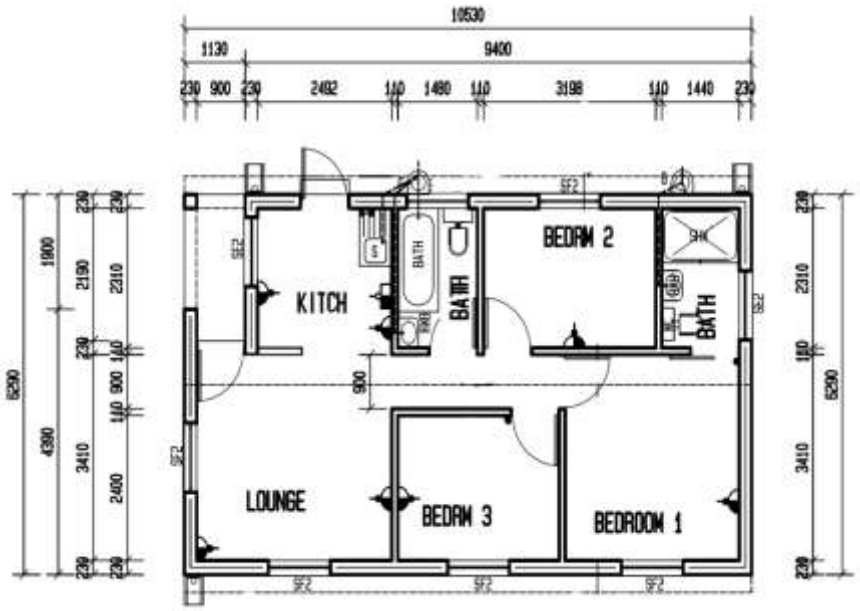
Soil Poisoning	R	12	m²
Raft Foundation @ R 480 m²	R	480	m²
KwikBrix Building Materials (R 18 041)	R	301	m²
Laying the first two courses of KwikBrix 2B + 3L	R	24	m²
Laying the rest of the KwikBrix 5L - 3D	R	55	m²
Electrical includes geyser	R	250	m²
Plumbing (Shower, toilet, handwash + Kitchen unit)	R	290	m²
Floor Tiling (Tiled throughout the house)	R	180	m²
Wall Tiling	R	70	m²
PVC Ceilings	R	160	m²
Steel Windows	R	155	m²
Steel Door Frames & Timber Doors	R	138	m²
Plastering using conventional plaster @ R 85m²	R	240	m²
Steel Roof truss & Concrete Tiles	R	311	m²
Painting (Includes undercoat & waterproofing)	R	90	m²
		2 756	m²

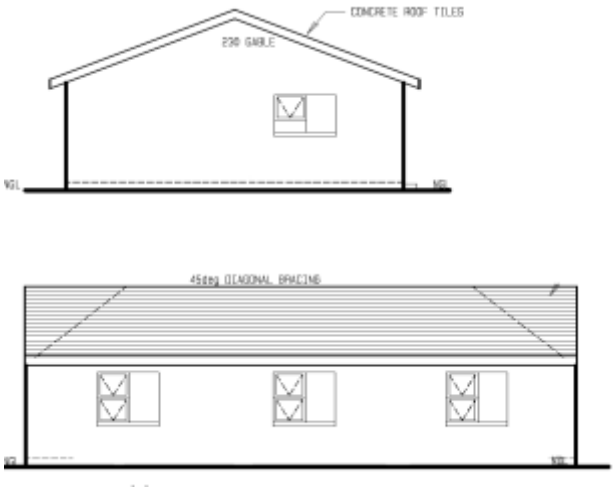
THIS HOUSE CAN BE BUILT FOR LESS THAN R 2 756m²

198 Foundation Bricks	@	R 3.26 per brick	R	646
3590 Full Bricks	@	R 3.81 per brick	R	13 678
898 Half Bricks	@	R 1.91 per brick	R	1 716
174 Beam Channel Bricks	@	R 2.95 per brick	R	514
148m Steel Reinforcing	@	R 6.60 per metre	R	977
6 pkts 32,5N cement	@	R 85 per pocket	R	510
169.2m² plastering area	@	R 85 per m²	R	14 382

BUILDING COST

66 SQM





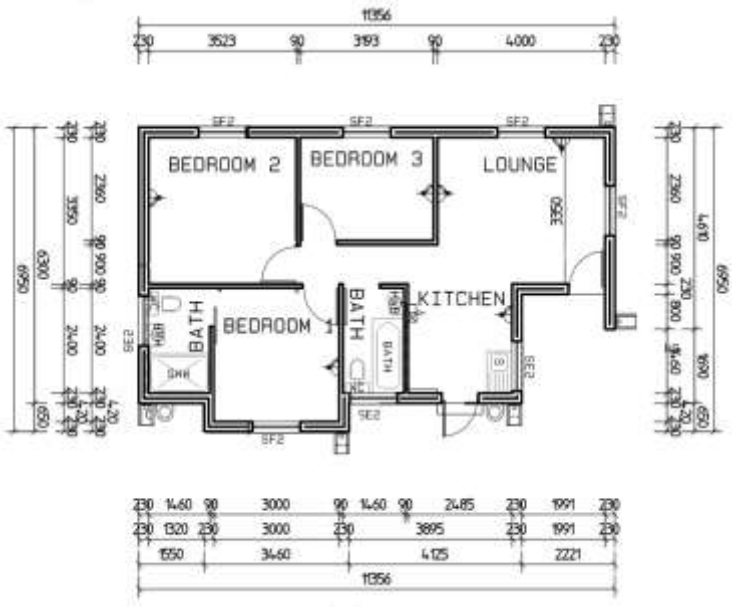
Soil Poisoning	R	12	m²
Raft Foundation @ R 480 m²	R	480	m²
KwikBrix Building Materials (R 20 027)	R	303	m²
Laying the first two courses of KwikBrix 2B + 3L	R	22	m²
Laying the rest of the KwikBrix 5L - 3D	R	50	m²
Electrical includes geyser	R	250	m²
Plumbing (Shower, toilet, handwash + Kitchen unit)	R	580	m²
Floor Tiling (Tiled throughout the house)	R	180	m²
Wall Tiling	R	130	m²
PVC Ceilings	R	160	m²
Steel Windows	R	119	m²
Steel Door Frames & Timber Doors	R	152	m²
Plastering using conventional plaster @ R 85m²	R	246	m²
Steel Roof truss & Concrete Tiles	R	310	m²
Painting (Includes undercoat & waterproofing)	R	90	m²
		3 084	m²

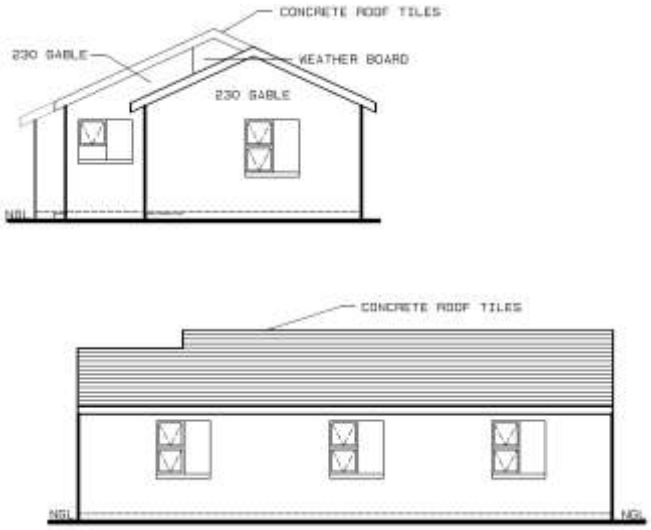
THIS HOUSE CAN BE BUILT FOR LESS THAN R 3 084m²

203 Foundation Bricks	@	R 3.26 per brick	R	662
3352 Full Bricks	@	R 3.81 per brick	R	12 772
838 Half Bricks	@	R 1.91 per brick	R	1 601
175 Beam Channel Bricks	@	R 2.95 per brick	R	517
150m Steel Reinforcing	@	R 6.60 per metre	R	990
5 pkts 32,5N cement	@	R 85 per pocket	R	3 485
190.8m² plastering area	@	R 85 per m²	R	16 218

BUILDING COST

70 SQM





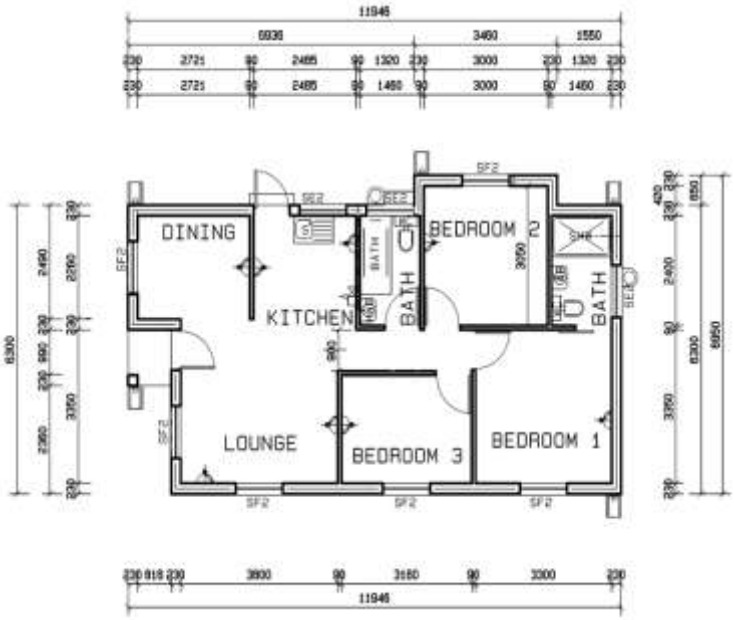
Soil Poisoning	R	12	m²
Raft Foundation @ R 480 m²	R	480	m²
KwikBrix Building Materials (R 15 138)	R	216	m²
Laying the first two courses of KwikBrix 2B + 3L	R	21	m²
Laying the rest of the KwikBrix 5L - 3D	R	48	m²
Electrical includes geyser	R	250	m²
Plumbing (Shower, toilet, handwash + Kitchen unit)	R	580	m²
Floor Tiling (Tiled throughout the house)	R	180	m²
Wall Tiling	R	130	m²
PVC Ceilings	R	160	m²
Steel Windows	R	143	m²
Steel Door Frames & Timber Doors	R	134	m²
Plastering using conventional plaster @ R 85m²	R	228	m²
Steel Roof truss & Concrete Tiles	R	331	m²
Painting (Includes undercoat & waterproofing)	R	90	m²
		3 003	m²

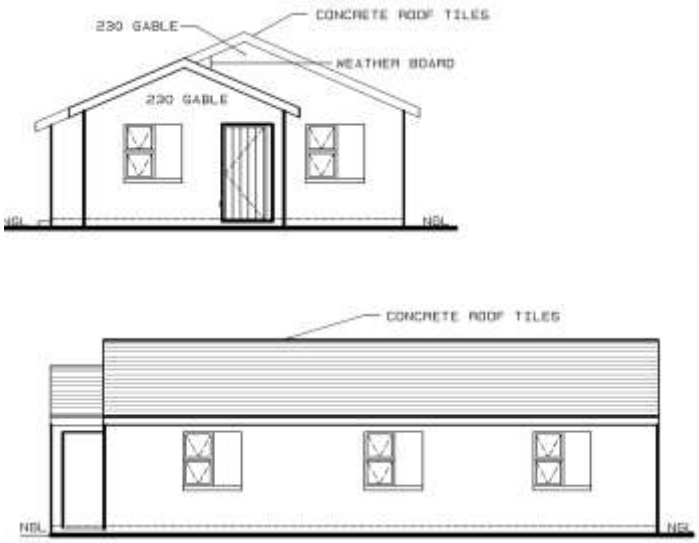
THIS HOUSE CAN BE BUILT FOR LESS THAN R 3 003m²

192 Foundation Bricks	@	R 3.26 per brick	R	626
3147 Full Bricks	@	R 3.81 per brick	R	11 990
786 Half Bricks	@	R 1.91 per brick	R	1 501
164 Beam Channel Bricks	@	R 2.95 per brick	R	484
170m Steel Reinforcing	@	R 6.60 per metre	R	112
5 pkts 32,5N cement	@	R 85 per pocket	R	425
187.2m² plastering area	@	R 85 per m²	R	15 912

BUILDING COST

75 SQM





Soil Poisoning	R	12	m²
Raft Foundation @ R 480 m²	R	480	m²
KwikBrix Building Materials (R 21 555)	R	288	m²
Laying the first two courses of KwikBrix 2B + 3L	R	19	m²
Laying the rest of the KwikBrix 5L - 3D	R	44	m²
Electrical includes geyser	R	250	m²
Plumbing (Shower, toilet, handwash + Kitchen unit)	R	290	m²
Floor Tiling (Tiled throughout the house)	R	180	m²
Wall Tiling	R	70	m²
PVC Ceilings	R	160	m²
Steel Windows	R	136	m²
Steel Door Frames & Timber Doors	R	125	m²
Plastering using conventional plaster @ R 85m²	R	204	m²
Steel Roof truss & Concrete Tiles	R	312	m²
Painting (Includes undercoat & waterproofing)	R	90	m²
		2 660	m²

THIS HOUSE CAN BE BUILT FOR LESS THAN R 2 660m²

240 Foundation Bricks	@	R 3.26 per brick	R	782
4300 Full Bricks	@	R 3.81 per brick	R	16 383
1074 Half Bricks	@	R 1.91 per brick	R	2 052
210 Beam Channel Bricks	@	R 2.95 per brick	R	620
183m Steel Reinforcing	@	R 6.60 per metre	R	1 208
6 pkts 32,5N cement included above	@	R 85 per pocket	R	510
180.0m² plastering area	@	R 85 per m²	R	15 300

BUILDING COMPARISONS

HYDRAFORM is a building block composed of soil and mixed with 8-10% cement. It is available in two specific sizes 220mm in width and 140mm in width. Their blocks are 240mm deep x 110mm in height.

A complete Hydraform manufacturing plant will cost R 650 000 on average.

PMSA sell a variety of machines that will produce a variety of block designs including an interlocking block. Their interlocking block designs vary, but generally are 320mm in length x 180mm in height x 220mm in depth.

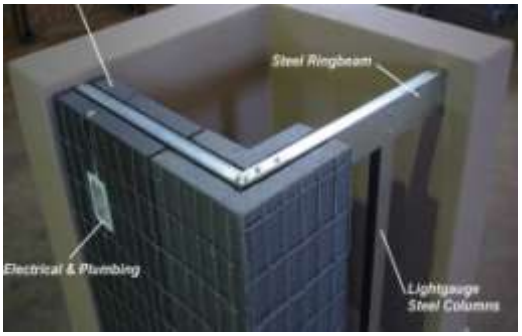
All of their block designs are manufactured using a traditional concrete mix.

The minimum cost for a complete PMSA manufacturing plant will be R 1,3M

The **MOLADI** system uses a series of plastic formwork panels which are filled with an aerated mortar to form the walls of the house

The external walls are 150mm thick and the internal walls are 100mm thick

Minimum set up cost for a 500 house project would be in the region of R 1,6M



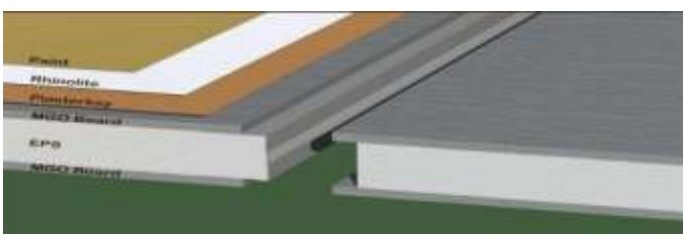
The **IMISON** system uses a sponge type material as its insulation core along with a lightgauge steel frame and 2mm wire mesh which gets plastered over with a specialised mortar

External walls are 190mm thick and internal walls are 140mm thick

Minimum set up cost for a 500 house project will be in the region of R 1,8M

The **LIGHTWEIGHT STEEL FRAME** method of building is a series of steel columns which are insulated with various materials such as rock-wool, gypsum board to create a wall thickness of 180mm thick for the external walls. This then gets covered with a cladding material of is plastered over

Minimum set up cost for a 500 house project is R 1,75M



SIPS panels are able to create a series of prefabricated homes on site. Generally they are EPS polystyrene insulated with a magna-board exterior and interior. A typical SIPS panel manufacturing facility will cost R 3,8M

A warm, dry home with...

Skimplaster

The waterproof, fibre-reinforced thin skin plaster

Applied at only 3 - 5mm thick

No wastage

Even over PVA paint and facebrick

Quick and easy, minimal skill required

For new and old construction

Carbon footprint much smaller than conventional plaster

SABS ISO 9001

SP exclusively manufactured for the

KWIKBRIX Building Solution

Supplied in 20Kg waterproof bags

KWIKDIP

CEMENT BASED POLYMER RICH THIN BED MORTAR

DESCRIPTION

KWIKDIP is a polymer rich thin bed mortar especially manufactured for the **KWIKBRIX** building system.

It is used in applications where a "dip and build" application is desired. The product is high in strength and bond capabilities, blocks bind at higher strengths up to 10 times more than standard mortar.

This results in bonds that are as strong as the bricks being used for the build.

TYPICAL APPLICATIONS

KWIKDIP is used to wet the topside of each **KWIKBRIX** and cement them when stacked on top of one another. Replace conventional mortar with **KWIKDIP** for a superior structural strength, less wastage and reduced need for on-site mortar mixing and control.

ADVANTAGES

- Economical
- Ease of application
- Crack bridging
- Non shrink
- Waterproofing
- High Bond Strength
- Non-drip formulation

TYPICAL PROPERTIES

Colour on setting	Cement Grey
Drying time	12 hours
Open time	40 minutes
Application thickness	1mm - 3mm
Compressive strength 7 days	13 - 16 MPa
Compressive strength 28 days	25 - 32 Mpa
Water requirement	12 litres per 20Kg
Yield	20 Litres per bag
Coverage	80 - 120 KwikBrix per bag

WATCH POINTS

- Fill gaps between the stacked **KWIKBRIX** if any show after placing with **KWIKDIP**
- Ensure adequate contact between the stacked **KWIKBRIX**
- Remove any wet **KWIKDIP** that presses out from the blocks when stacked

KWIKSKIM

CEMENTITIOUS SKIMPLASTER

DESCRIPTION

KWIKSKIM is a cementitious product specially formulated for the application by normal steel troweling onto a smooth **KWIKBRIX** concrete surface to seal pores and voids in the surface. The product can also be used as a textured or stipple coat to the virgin surface.

TYPICAL APPLICATIONS

KWIKSKIM is damp proof and decorates the masonry and concrete surface of **KWIKBRIX.** Can be applied to interior and exterior surfaces above or below grade.

COMPOSITION

KWIKSKIM consists of a blend of special cements, fibres, re-dispersible powders, plasticizers and proprietary activating chemicals.

COLOURS

KWIKSKIM is available in a variety of colours - grey, terracota, brown, red and yellow.

MIXING INSTRUCTIONS

- Pour approximately three quarters of the required mixing water into an empty clean container and begin slow mixing while adding the **KWIKSKIM** powder.
- Gradually add more **KWIKSKIM** powder and mixing liquid to bring the slurry to the consistency of a heavy, completely blended pancake batter.
- Stop mixing and allow the material to "flatten" for 5 minutes.
- Remix after above period. It may be necessary to add more water to obtain the correct consistency.

DIRECTIONS FOR USE

- Ensure that the surface to be coated is structurally sound and clean.
- Thoroughly mix the **KWIKSKIM**
- Saturate the mortar/concrete surface and ensure it remains wet throughout its application. Re-saturate if necessary.
- Using a standard steel trowel, apply the **KWIKSKIM** to the damp surface as thin as possible (1-2mm)
- Finish off the **KWIKSKIM** by dabbing water onto the surface with a block brush and steel troweling to specified requirements - let the coating cure for 24 hours before applying the decorative coat.

COVERAGE

The coverage rate is approximately 8 sqm per litre for the paste consistency and 12 sqm for the slurry.

Paste Consistency
One 20kg bag mixed with 13.6 litres water will yield approximately 20 litres

Slurry Consistency
One 20kg bag mixed with 20 litres of water will yield approximately 24 litres.

Cleaning Instructions

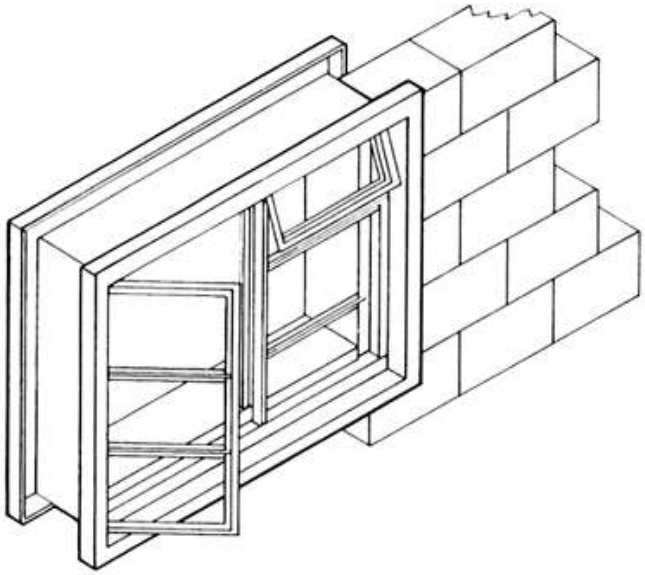
Clean all mixing and application equipment with water immediately after use. Clean any splatter or spills with water before material sets.

Packaging
Supplied in 20kg moisture resistant bags.

Environmental and Safety Precautions

KWIKSKIM contains Portland cement and is alkaline on contact with water. In case of eye contact, flood eyes repeatedly with water.

PRODUCTS



The **KWIKFRAME WINDOW & DOOR SYSTEM** is specially designed to fit the KwikBrix Building System.

It's galvanised steel frame ensures that no KwikBrix are cut in order that these frames fit into the wall space.

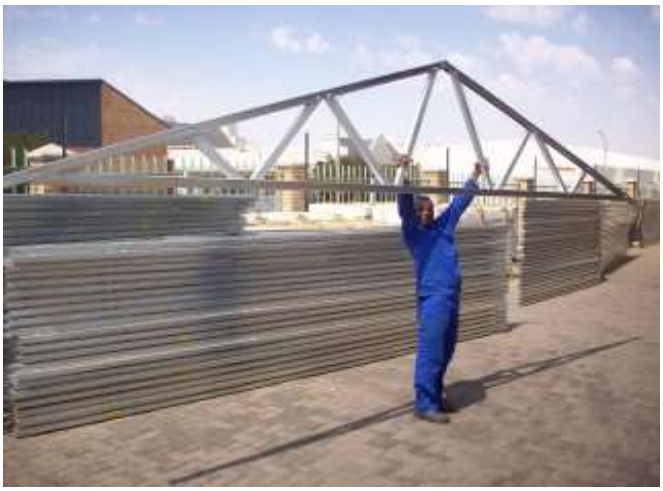
Not only does this help speed up the process, it also eliminates enormous on-site wastage as a result of rubble that would have to be removed from the building site - an unnecessary costly process.

Further benefits are that no concrete lintels are required and no window sill has to be prepared. The window frames are available in eight different sizes.

KWIKTILE is manufactured from recycled plastic waste.

It is half the weight of conventional roof tiles and much more resiliant - far less breakages.

As a result of its weight advantage, the installation process is faster and capable of producing a cost effective, thermally efficient and maintenance free roof covering.



The lightweight steel framed **KWIKTRUSS** is engineered for KwikBrix.

It is manufactured from aluminium and zinc and is knowr to last 6 times longer than galvanised steel.

Its easy on-site assembly means the average roof truss installation can be completed within 3 hours.

The lightweight PVC **KWIKCEIL** is specifically cut to suit specific KwikBrix plan designs.

This means that there is no on-site wastage costs.

The PVC ceiling produces the quick installation of a fire resistant, maintenance free, non-porous ceiling whicl also does not require to be painted.

KWIKBRIX
INTERLOCKING CONCRETE BRICK

+

KWIKTRUSS
LIGHTWEIGHT STEEL ROOF TRUSS

+

KWIKFRAME
STEEL WINDOW & DOOR FRAMES

+

KWIKCEIL
PRE-CUT PVC CEILINGS

+

KWIKTILE
RECYCLED PLASTIC ROOF TILES

=

LESS CONSTRUCTION COST
30 - 45%

LICENCE AREAS

It takes a special vision to spot special opportunities

The KwikBrix Building Solution

The African Fish Eagle is always ready for opportunities.

Entrepreneurs are the same. Always looking for lucrative business opportunities. Consider the fact that if you were to build an affordable house in Africa, a starter house to the value of USD$ 8 500 - and if this house were to be made available all across the African continent - it would be affordable to more than 50% of the population in 24 countries.

This latent demand would be equivalent to the construction of 83 million housing units.

Delivering this would generate almost USD$ 480 Billion of economic activity just with the construction of that housing and its related infrastructure and sustain 3,8 million jobs in Africa's economies.

KWIKBRiX
BUILDING AFRICA FASTER

FREQUENTLY ASKED QUESTIONS

What are interlocking bricks ?

Interlocking bricks refer to the male and female ridges on the top and bottom of the KwikBrix. These ridges lock into one another locking each of the bricks into place.

Are interlocking bricks safe to build with ?

The concept of interlocking bricks is not new. KwikBrix offers the unique feature of being able to lock on 16 different points on the brick - ensuring they lock into position. The foundation is laid in mortar as normal. Bricks from the third course are dry stacked with steel reinforcing rods placed and grouted into position on all corners and on either side of windows and doors. Steel reinforcing rods are also placed within the beam channel creating a concrete ring beam on the top of all the walls.

How strong are KwikBrix ?

The beauty of the KwikBrix technology is that the bricks can be made in a variety of ways - in accordance with the technical requirements of the project. KwikBrix can be manufactured to achieve a a variety of Mpa strengths from 5.5Mpa - 30Mpa.

Can KwikBrix be plastered ?

Yes, either with our Skimplaster product (if one is doing a low cost housing project), or a traditional plaster covering in the case of an upmarket social housing project. For the ultimate thermal coating our thermally efficient EcoPlast can also be used.

Can KwikBrix be cemented together instead of being dry stacked ?

Yes, using our specialised KwikGrip bonding cement is ideal for KwikBrix.

What type of soil is required to make KwikBrix ?

A combination of building sand and river sand is the ideal mix for the production of KwikBrix. This can be mixed with crusher dust and either a 32,5N or a 42,5N cement to achieve a very high quality, strong brick.

How many KwikBrix are required per square metre ?

34

Can KwikBrix walls be repaired if damaged ?

Yes

Can walls be drilled, chased or cut ?

Yes

Can structures be extended ?

Yes

Can the KwikBrix wall thickness be varied ?

For the sake of simplicity all walls are 145mm thick.

What type of roof does the KwikBrix building system require ?

KwikBrix does not have any restrictions with any type of roofing material or design, but we would strongly suggest that the KwikTruss system is used, since this allows for a very quick installation process.

What type of windows does the KwikBrix building system require ?

KwikBrix does not have any restrictions with regard to any type of windows. However, if it is at all feasible it would be recommended that the KwikFrame steel window system be used, since this enhances the speed of the build while still achieving a high end quality finish.

FREQUENTLY ASKED QUESTIONS

Can you build boundary walls using KwikBrix ?

It is quite possible, however, the KwikBrix building system has been designed for use primarily in mass housing projects.

Can you build multi-storey apartments with KwikBrix ?

The KwikBrix building system is recommended for double storey construction, subject to the approval of a certified structural engineer.

What sort of foundation is necessary ?

KwikBrix housing units are erected on a floating raft foundation, which is designed and certified by an independent structural engineer. The surface of the raft foundation is power floated for a smooth finish, which eliminates the need for a screed finish to the floor surface.

I just need the KwikBrix, can you assist me ?

No. KwikBrix is a comprehensive building solution of which the KwikBrix itself is merely a constituent of this technology.

Can anyone build with this technology ?

KwikBrix is a specialised building technology; but in order to ensure best practice with the application of the KwikBrix building system it will be necessary to supply KwikBrix to established contractors not traders.

Do you build for individuals or do you only involve yourself in housing projects ?

We supply the KwikBrix building technology to entrepreneurs and building contractors who undertake large scale housing projects. We do fulfil the role of a contractor. As most KwikBrix licencees will primarily focus on large scale projects, it will not always be viable for them to build privately.

Who builds the houses ?

Only KwikBrix licencees. These are individuals or organisations who have received the necessary training and adhere to the specified process and procedures involved with the KwikBrix technology.

Is KwikBrix a franchise ?

It operates similarly to a franchise operation in that each KwikBrix structure is expected to achieve the same result, regardless of its location. Each KwikBrix licencee is offered the benefit of trading exclusively within a country, without risk of having to compete with somebody else offering the same product.

Are there requirements that must be fulfilled to purchase the KwikBrix building system ?

Competence and commitment is our only primary concern.

Who designs the custom layout of the KwikBrix building system ?

Our competent staff who have a clear understanding as to the building process of mass housing projects, design the layout of the KwikBrix building system to suit the desired layout and outcome of the structure. All reinforcing within the foundation are designed by an independent contractor.

Do you have different models of KwikBrix brick making machines ?

For simplicity sake and cost effectiveness, we only produce the KB8 machine

How many houses can be built with one KwikBrix machine ?

The KwikBrix technology is cost effective due to its repetitive application. The KB8 machine will produce a total of 4180 bricks per day or 100 000 bricks per month - which is enough for the construction of 27 x 42m² houses or 297 houses per annum.

FREQUENTLY ASKED QUESTIONS

How many people are required to construct a KwikBrix house ?

This would depend on the size of the house and should time not be a crucial factor with your project, the amount of unskilled labourers may be reduced.

Do you provide support and training on your machines ?

We can either provide training on your site or at our premises in Durban. After the purchase of your KwikBrix equipment our expertise can extend to architectural services, on-site consultancy, quality management procedures and even advertising/marketing assistance.

Do we have to buy all the add-on products as well ?

No, but understand that their inclusion enhances the construction process, since each of them have been specifically designed to work with the KwikBrix Building solution. However, since each of these products have to be transported to the construction site, their landed cost will determine their financial viability.

What is your lead time for the supply of a KwikBrix machine ?

4 - 6 weeks

What are the shipping charges ?

All our shipping from Durban is done ex works through a designated shipping or transport agent.

What does ex works mean ?

Ex works shipping means that the client is responsible for loading the goods, for providing a vehicle to transport the goods and to clear the goods for export. The client bears all costs and risk involved in taking goods from our premises to the desired location.

Do you supply plans ?

Our projects department only work on architecturally designed plans, which are submitted by the individual or organization. It is envisaged that within the space of eight months a full set of plans will be available for all sizes of low cost housing, social housing, double storey houses, classrooms, schools, police stations, offices, convenience stores, training centres, gyms, prayer rooms, warehouses, laundry rooms, dormitories, French drains and ablutions.

What information do you require to supply a cost estimate ?

1. A detailed single storey plan, including room and overall dimensions
2. A section specifying the wall height, roof pitch in degrees and overhang
3. Complete window and door schedules
4. Specify the number of units required and in what timeframe

What are the costs involved with training and where does the training take place ?

Training takes place on the building site itself. The client nominates the foreman that they will be using to construct their housing project. Our team then comes to that building site and trains the foreman how to manufacture the KwikBrix as well as how to build with those Kwikbrix. Our team can be involved in the process of setting up the block-yard ensuring that it is ideally suited for a cost effective production and construction process. Cost for this is included within the purchase price.

We are not familiar with the KwikBrix process - but would like to implement it on one of our projects in Afric Would you be able to assist ?

Yes, one or two of our members (depending on the project location and size), will go to the site and establish the requirements of material supply, aggregates and block yard size. This will allow us to understand the exact cost of all materials. The client will be responsible for the costs of air flights etc.

CONTACT

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Mobile 083 445 5123
email andy @ ecobuilders . co . za

The founder member is well versed in alternative methods of construction and has applied them into numerous projects across Africa. Andy offers a wide range of experiences in consultancy, building solutions as well as project and site development skills.

KIM NICOLAY

Mobile 082 587 5172
email kim @ ecobuilders . co . za

Offers a mechanical engineering and project management expertise that has made him especially valuable in the implementation of the technical complexities of a building project. Kim's particular passion within the KwikBrix portal will be to provide training to nominated builders.

CHARLES McMULLEN

Mobile 082 463 9347
email charles @ ecobuilders . co . za

A former member of the South African Real Estate Board who brings a wealth of experience in the field of real estate and franchising. Charles will bring invaluable benefit to the KwikBrix licencees who become involved in their various property projects.

BILL ELLENS

An architectural specialist who has been involved with the KwikBrix method of construction since its inception. Bill has been designing 'green buildings' long before sustainability gained mainstream appeal. His experience creates vital cost based solutions to clients building designs.

STEVE MAARTENS

With 20 years of in depth experience in hydraulic design and with a technical understanding of the requirements of brick making machines in Africa, Steve has been invaluable in the design requirements of the KwikBrix interlocking brick making machine.

CHARLENE BATSTONE

With many years of first hand experience earned in a 10 year tenure at SARS, Charlene is our specialist tax practioner, ensuring that our organization remains tax compliant.