

SILICAWOOD HOUSE FOR A BETTER LIVING CHALLENGE

Sustainable and affordable multi scale housing project in RSA



SYNERGIA
Progetti

UGM CONSULTANTS (PTY) LTD
Designers and community development
facilitators.



Case study for South Africa :

Better Living Challenge Project for Cape Town WDC2014

On going developments 2015 :

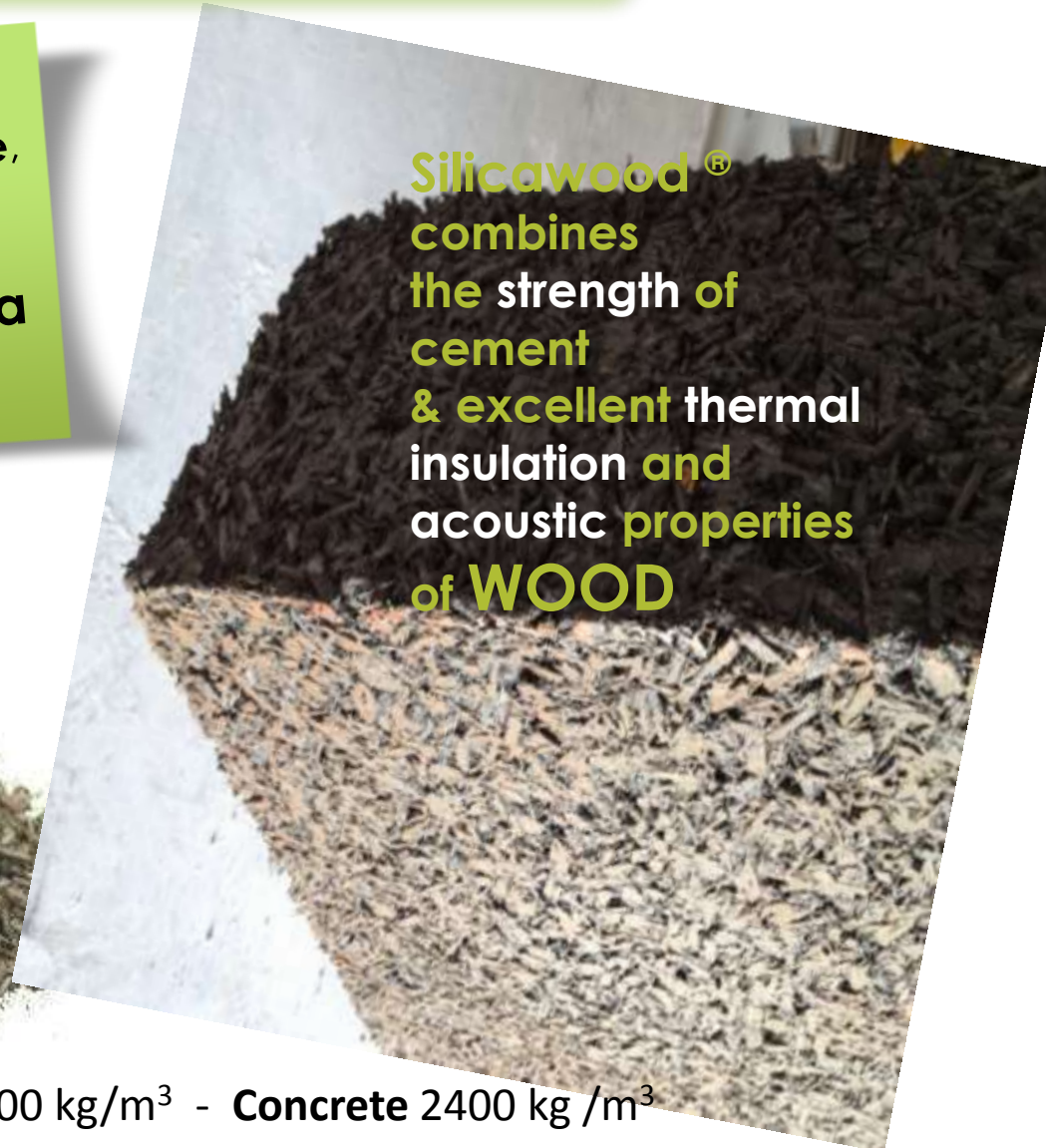
Medication Ward Structure for Imbadu Ma-Afrika Development Consortium at Khayamandi Township near Stellenbosch

Light Weight Structural Construction Material

Silicawood®

Silicawood® RAW
is a special type of concrete,
formed by the ingenious
combination of
WOOD CHIPS and **Silica**
mixed with cement

Silicawood®
combines
the strength of
cement
& excellent thermal
insulation and
acoustic properties
of **WOOD**

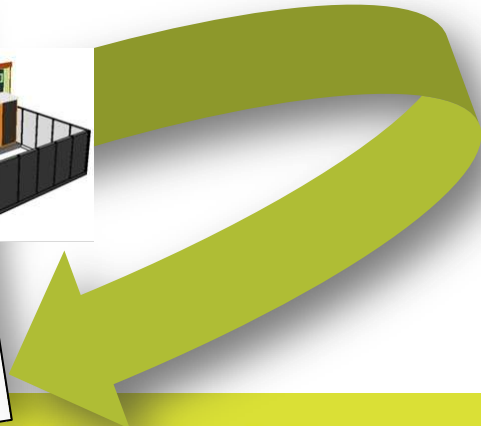


Silicawood 800 kg/m³ - **CLC** 1100 kg/m³ - **Concrete** 2400 kg /m³





A VIABLE MULTI SCALE SOLUTION TO THE LOW INCOME AFFORDABLE HOUSING PROBLEM IN RSA



BETTER LIVING CHALLENGE



The Better Living Challenge aims to gather and showcase the best home improvement solutions for low-income living.

We are on the hunt for products, services and systems that are innovative, affordable & green.
STAND A CHANCE TO WIN AND SEE YOUR IDEAS IN THE MARKET



PASSIVE NATURAL CLIMATIZATION



Optimum orientation facilitates improved thermal performance and comfort

- Solar asymmetry of building facades
- Massive building envelope with thermal and acoustic insulation
- Natural ventilation and lighting
- Sunspaces, porticos, earth integrated systems
- Indoor and outdoor microclimatic quality
- Use of renewable sources

Orientated for:

- ✓ Protecting from sun in morning and afternoon
- ✓ Maximising winter sun
- ✓ Restricting southern exposure



Solar Passive - Safe - House

INSIDE PRIVATE SPACE



Section through alcova and kitchen facing south

OUTSIDE CIVIC SPACE



North facade with a safe courtyard in the sun



Section through bed and family room facing north

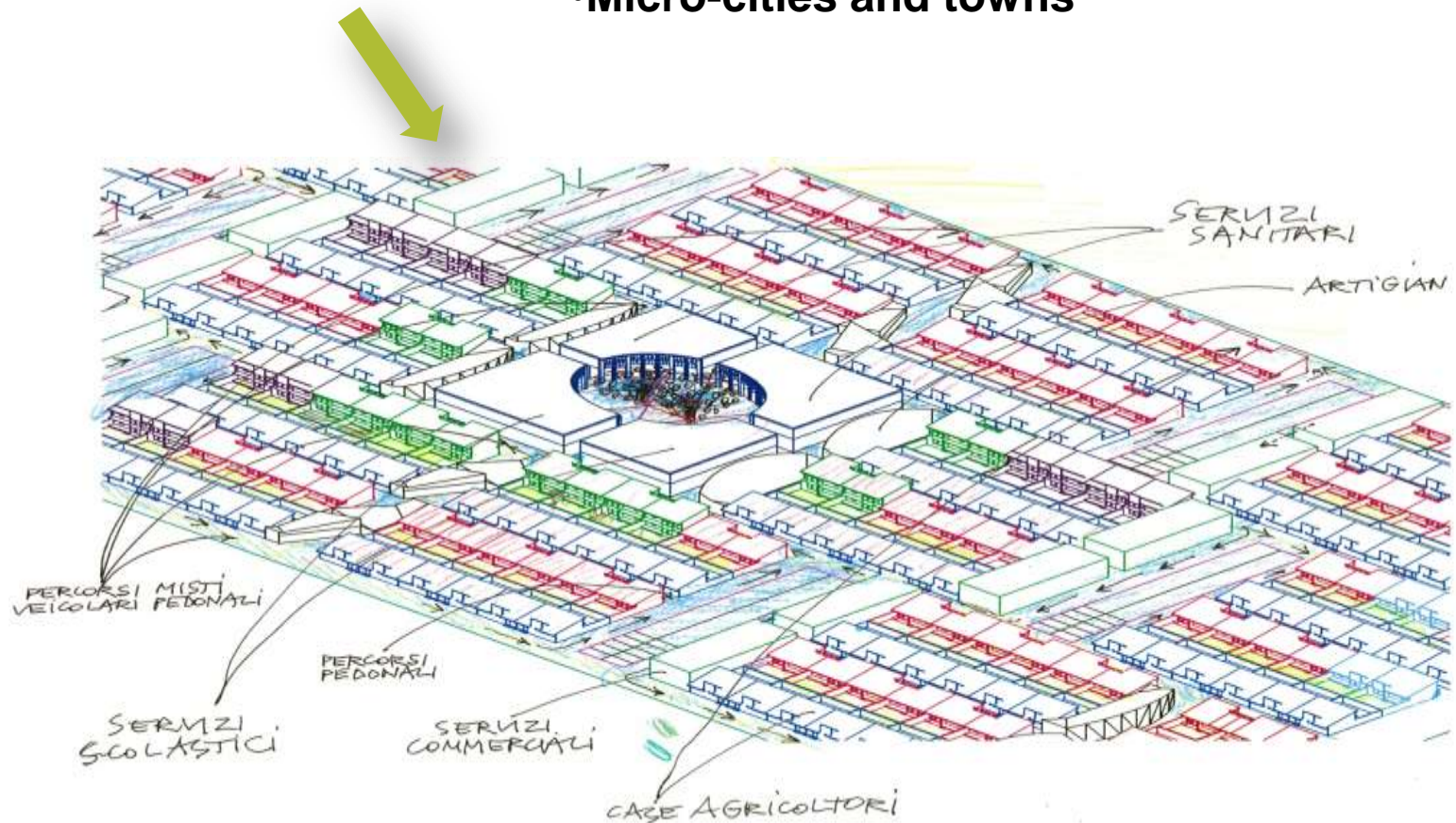


South facade facing the street with safety windows

A multi-scale approach to foster smart integrated housing energy efficient settlements



- Shared civic spaces
- Collaborative buildings smart layout
- Self sufficient micro cities settlements
- Micro-cities and towns



A multi-scale approach to foster smart integrated housing clusters to upgrade self-sufficiency and security for the dwellers

BETTER LIVING CHALLENGE: STRUCTURAL HOME

SILICAWOOD HOUSE



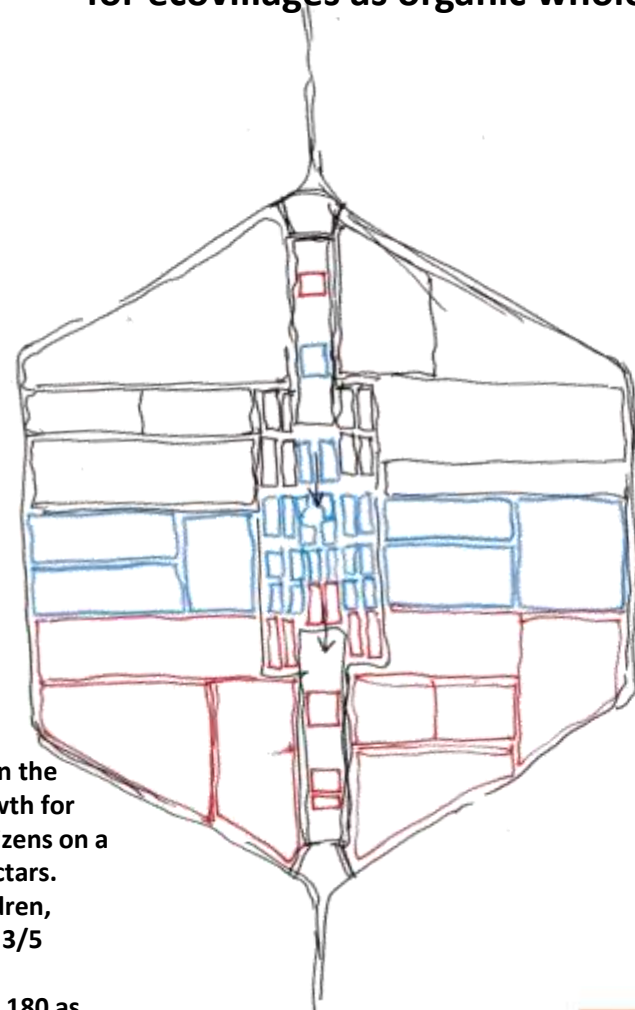
Additive process

In modern settlements as informal agglomerates



Generative process

for ecovillages as organic whole



Various steps in the micro-city growth for about 1200 citizens on a land of 120 hectares. about 1/5 children, 1/5 elders and 3/5 workers: 180 as farmers, 180 as builders, 360 as artisans and services providers.



GENERATIVE PROCESS for Micro cities developments

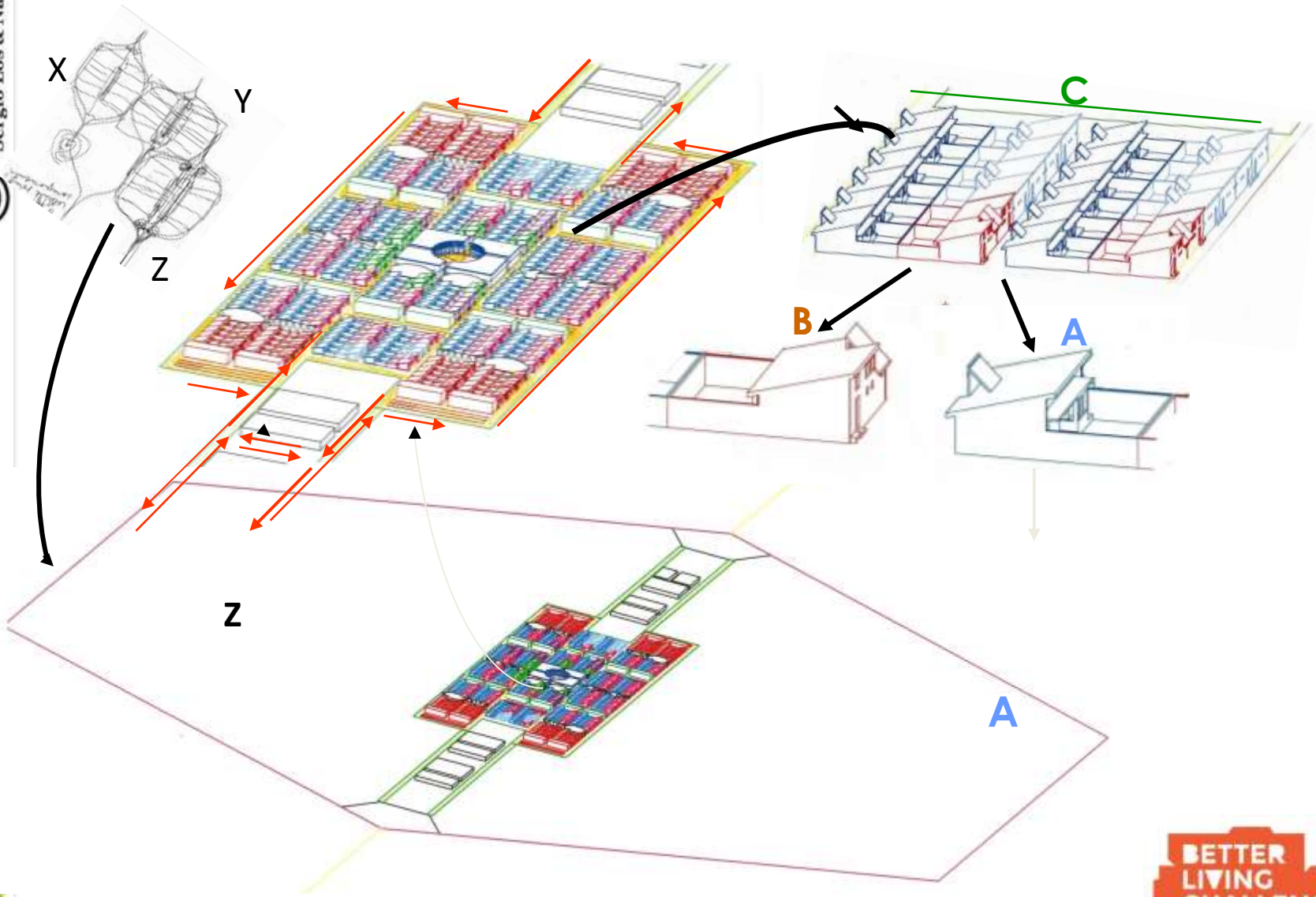
BETTER LIVING CHALLENGE: STRUCTURAL HOME

SILICAWOOD HOUSE

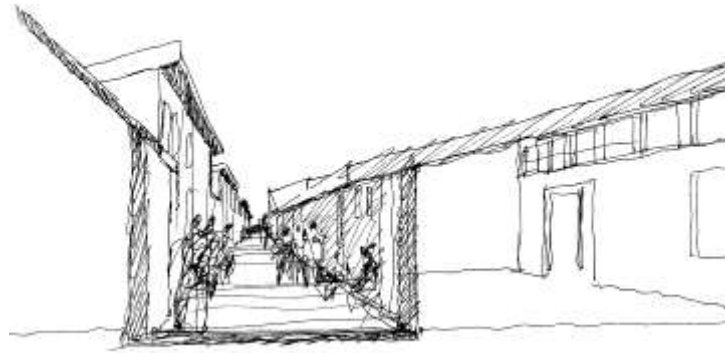
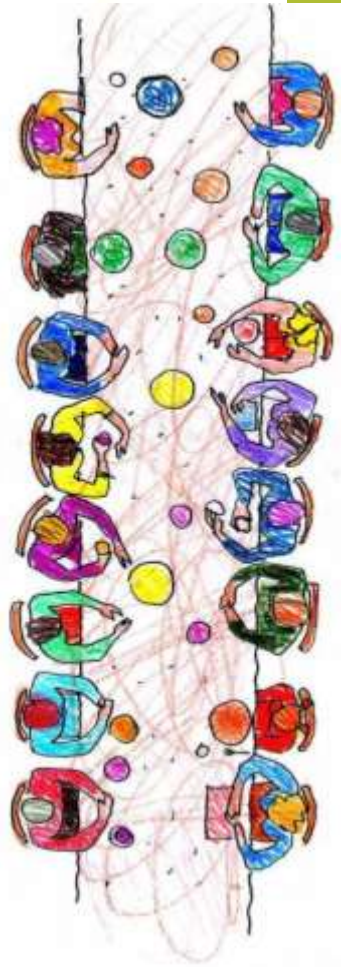
bbuilding
better housing



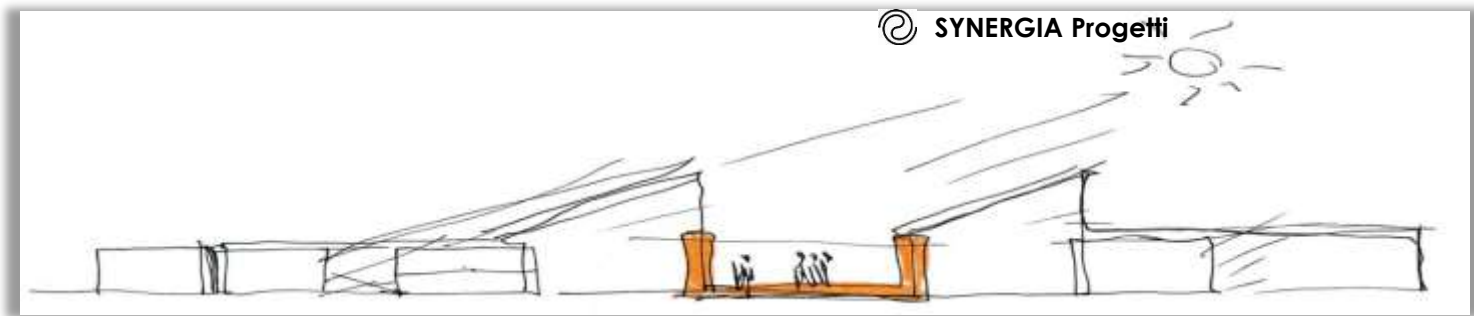
SYNERGIA progetti
Sergio Los & Natasha Pulitzer



Row House in a collaborative design



“A street is not a street by a room without a ceiling”



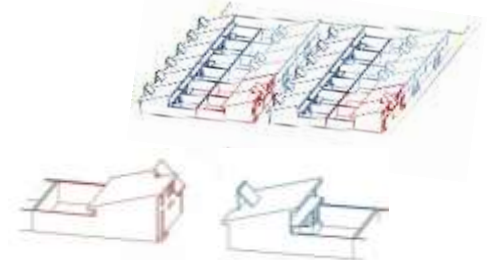
House	Heating load (GJ)	Cooling load (GJ)	Total load (GJ)	Energy Savings
Subsidy house	12,29	7,5	19,79	
SW BLC House	8,33	0	8,33	57,9%
SW Row House	7,67	0	7,67	61,2%



40 sq.m. subsidy house
 o 140 mm hollow concrete masonry block
 o 75 mm concrete slab
 o Steel roof sheet



48 sq.m. Silicawood house



48 sq.m. SW Row houses

No need for cooling during the summer

decrease of thermal energy requirements in winter for heating of about 32%,

Nation : assuming Housing backlog 2.2 million units

	per house	(GJ)	Mwh
Totale load saving (GJ)			
Energy Reduction (heating and cooling)	10,96	24.112.000	67million MWh

BETTER LIVING CHALLENGE: STRUCTURAL HOME

SILICAWOOD HOUSE



bbbuilding
beppe bonelli

UGM CONSULTANTS
(pty) Ltd

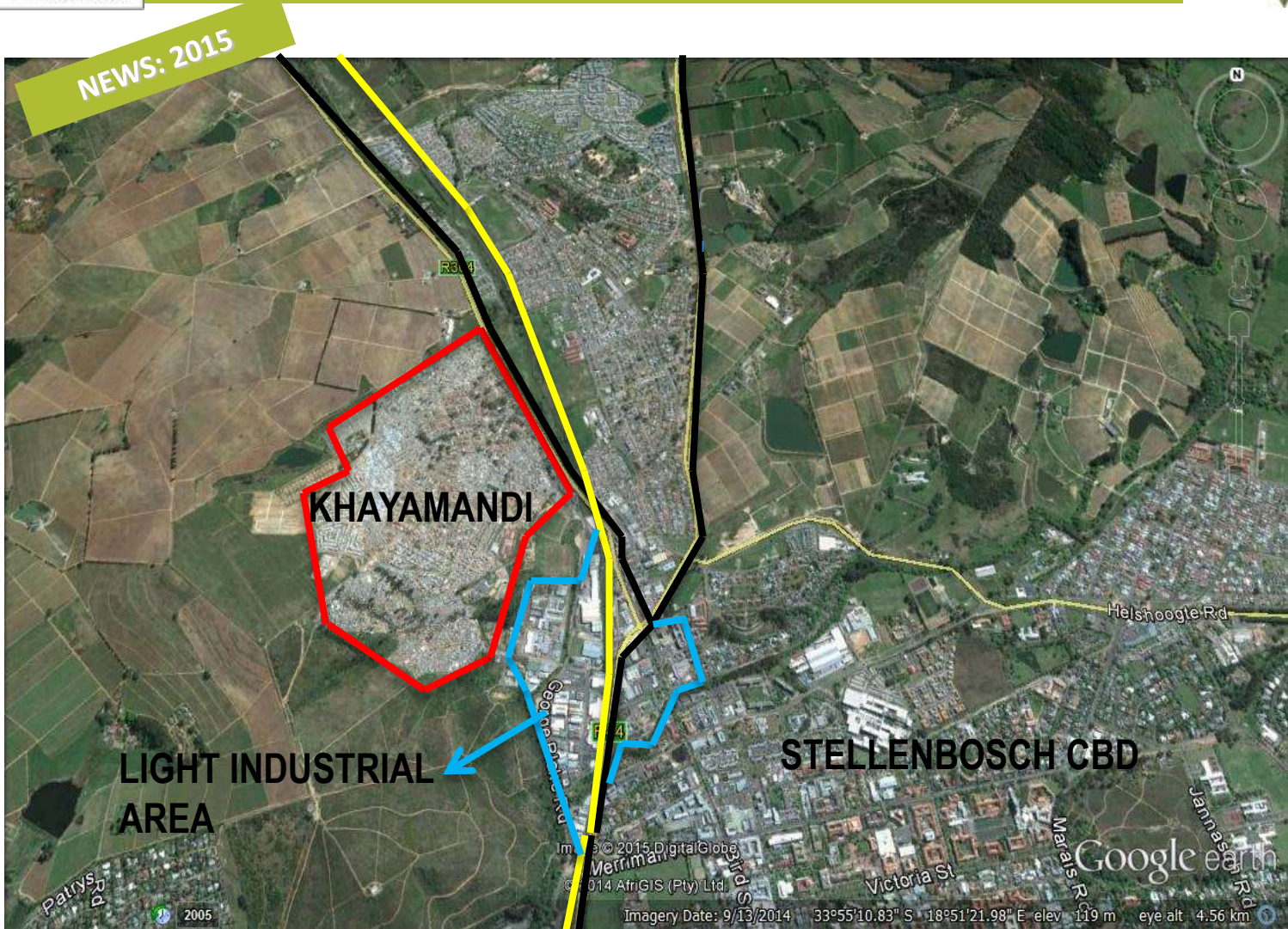
(pty) Ltd



SYNERGIA progetti
Sergio Los & Natasha Pulitzer



Silicawood BLC House becomes a Medical Ward @ Imbadu Community Kayamandi Stellenbosch

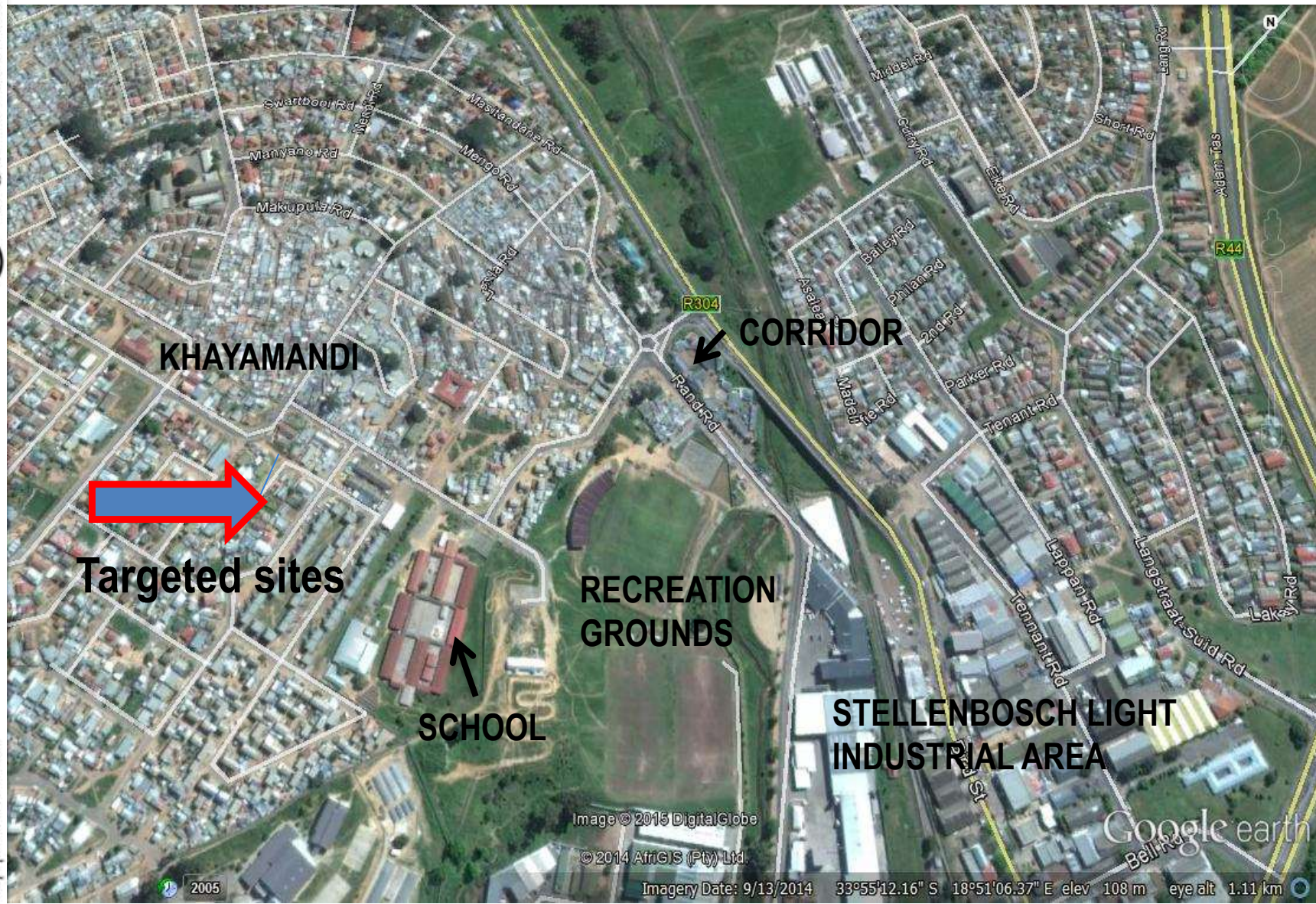


Community developments in Khayamandi

BETTER LIVING CHALLENGE: STRUCTURAL HOME

SILICAWOOD HOUSE

building beppe bonelli
UGM CONSULTANTS (pty) Ltd
SYNERGIA progetti Sergio Los & Natasha Pulitzer



2005

Image © 2015 DigitalGlobe

© 2014 ArcGIS (Pty) Ltd.

Imagery Date: 9/13/2014 33°55'12.16" S 18°51'06.37" E elev 108 m eye alt 1.11 km

BETTER LIVING CHALLENGE: STRUCTURAL HOME

SILICAWOOD HOUSE



bbuilding
beppe bonelli

UGM CONSULTANTS
(pty) Ltd



SYNERGIA progetti
Sergio Los & Natasha Pulitzer

Targeted plots in Khayandi



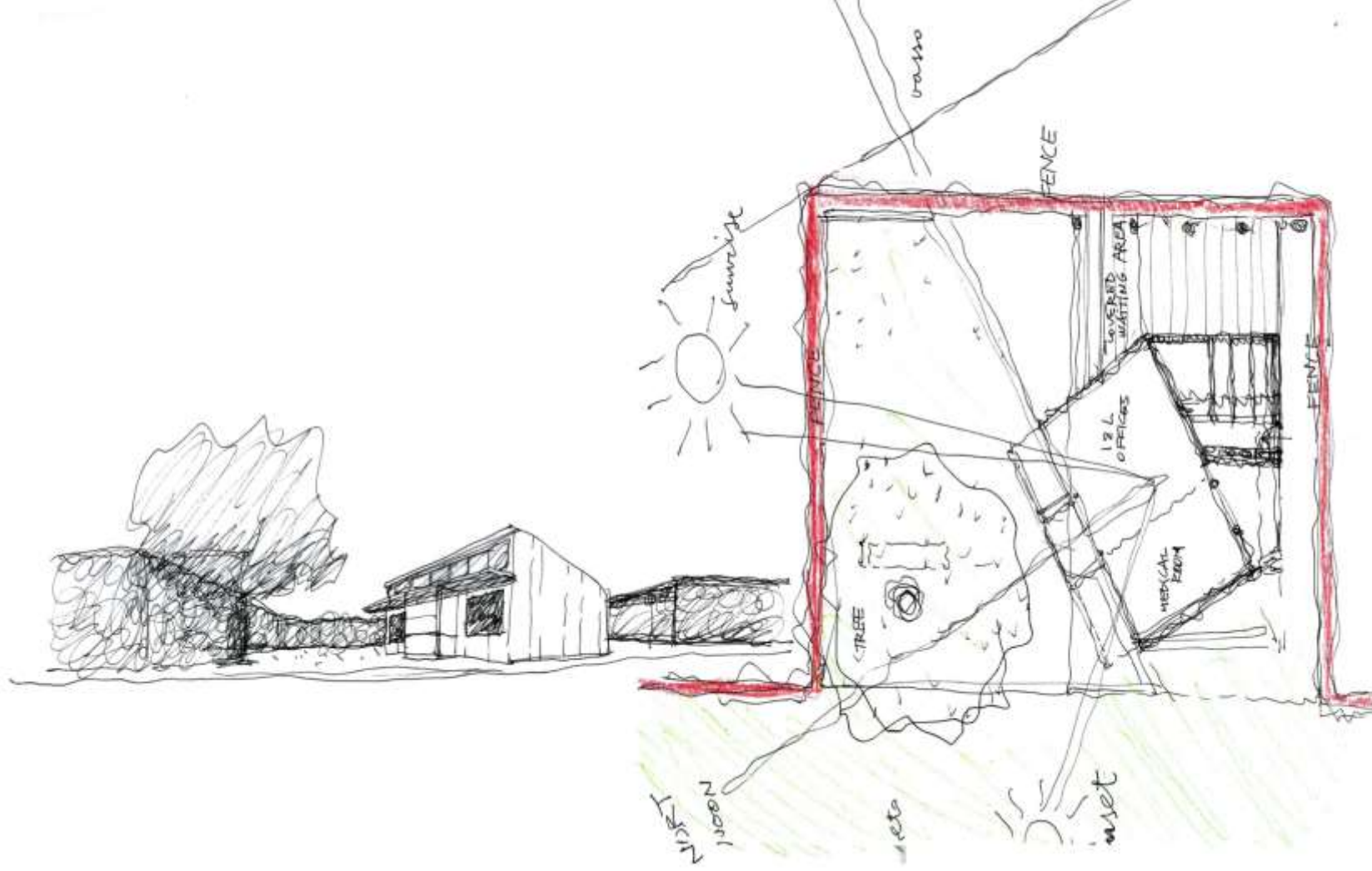


Construction site in Khayamandi

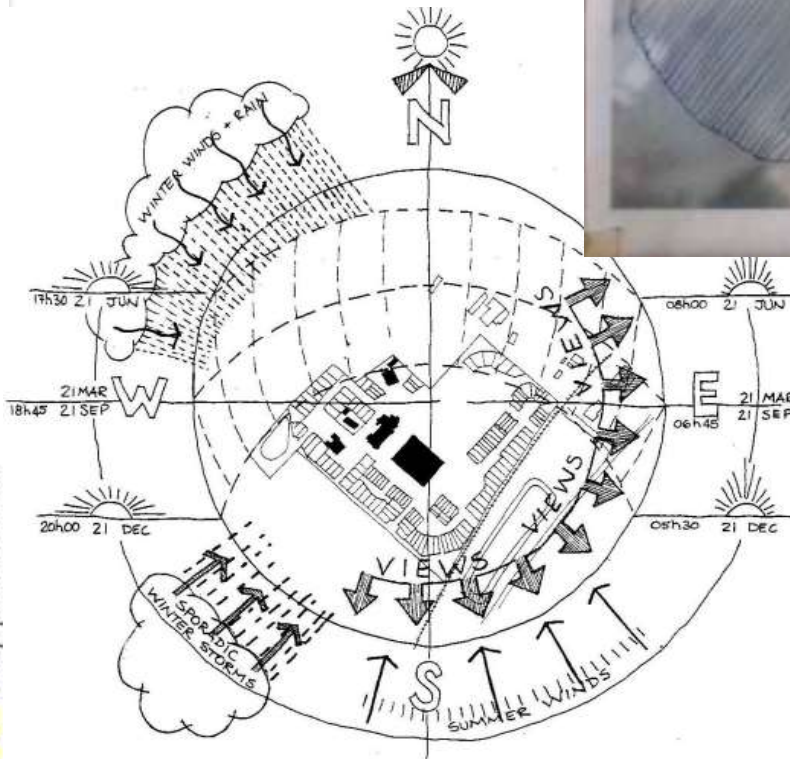
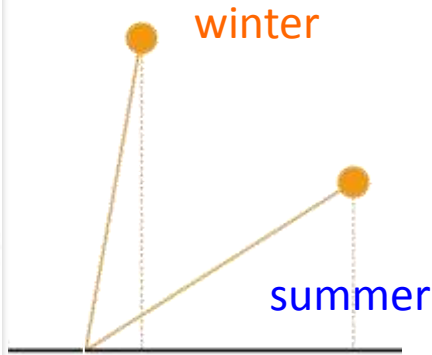




Preliminary study to re-adapt the original BLC Project to The Imbadu Khayamandi plot



Climate & Site Analysis

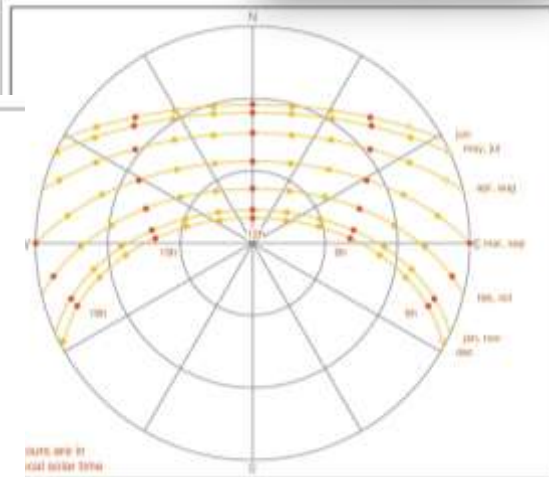


CLIMATE 1 - station data

Station :
Cape Town
ZA

Latitude : 33.90°S
Longitude : 18.53°E
Altitude a.s.l. : 17 m

Climate types :
Köppen: Csb
Troll: IV,1



IMBADU Medical Ward & Office space

BETTER LIVING CHALLENGE: STRUCTURAL HOME

SILICAWOOD HOUSE



bb building
beppe bonelli

UGM CONSULTANTS
(pty) Ltd

(pty) Ltd

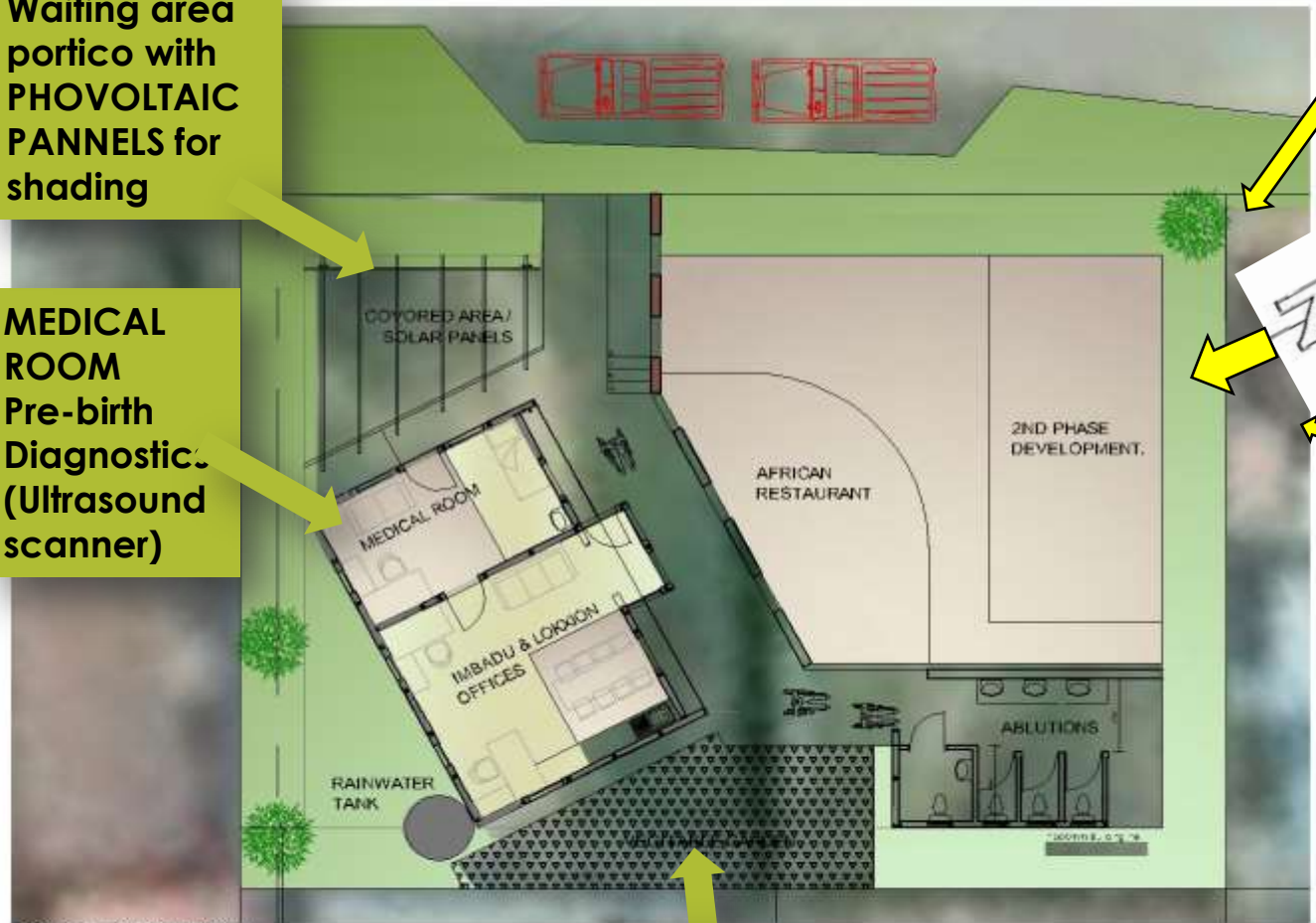


SYNERGIA progetti
Sergio Los & Natasha Pulitzer

Waiting area portico with PHOVOLTAIC PANNELS for shading

MEDICAL ROOM
Pre-birth
Diagnostics
(Ultrasound scanner)

Hydroponics veggie garden



SITE SKETCH
SCALE 1:100

UGM CONSULTANTS	
PROJECT INFORMATION	
Client Name	XXXXXXXXXX
Project Name	XXXXXXXXXX
Location	XXXXXXXXXX
Phase	XXXXXXXXXX
Date	XXXXXXXXXX
Scale	XXXXXXXXXX
Author	XXXXXXXXXX
Reviewer	XXXXXXXXXX
Approved	XXXXXXXXXX
Date	XXXXXXXXXX

BETTER LIVING CHALLENGE: STRUCTURAL HOME

SILICAWOOD HOUSE



bbuilding
beppe bonelli

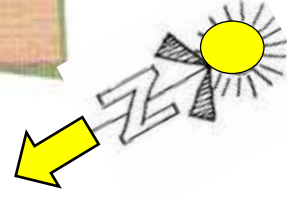
UGM CONSULTANTS
(pty) ltd



SYNERGIA progetti
Sergio Los & Natasha Pulitzer

Silicawood[®]

Gound floor layout



BETTER LIVING CHALLENGE: STRUCTURAL HOME

SILICAWOOD HOUSE



bbuilding
beppe bonelli

UGM CONSULTANTS
(pty) ltd



SYNERGIA progetti
Sergio Los & Natasha Pulitzer



BETTER LIVING CHALLENGE: STRUCTURAL HOME

SILICAWOOD HOUSE



bbbuilding
beppe bonelli

UGM CONSULTANTS
(pty) Ltd



SYNERGIA progetti
Sergio Los & Natasha Pulitzer



BETTER LIVING CHALLENGE: STRUCTURAL HOME

SILICAWOOD HOUSE



bbbuilding
beppe bonelli



UGM CONSULTANTS (pty) Ltd



SYNERGIA progetti
Sergio Los & Natasha Pulitzer



IMBADU Medical Ward & Office space

 silicawood®

greencape

 Cape Concrete
Superior precast products since 1932





- 🌀 **AFFORDABLE** (scrap wood costs less than sand and aggregates)
- 🌀 **SUSTAINABLE** (energy saving and self upgrading urban systems)
- 🌀 **DURABLE** (house is solid and quality and appreciates value in time)
- 🌀 **FAST** (relief of social tensions for housing – the builder is the owner right)
- 🌀 **LOCAL DESIGN** (nice-comfortable and living wellness)
- 🌀 **ECOLOGICAL** (large scale wood recycling is appreciable - Furthering ecological developments to reduce environmental impact)

and

MULTI SCALE BIO-CLIMATIC ARCHITECTURE

- induces large scale efficiencies
- enhancement of collaborative self sufficient live habits, and improved life styles both in the shared public open spaces and in the interiors and privacy of each single house



REFORESTATION



SCRAP WOOD

Silicawood



PREFAB WALLS



SELF BUILT HOUSES



LIGHT WEIGHT BLOCKS



VEGGIE GARDENS



SELF BUILT NEIGHBORHOODS

Assessment Checklist

- ✓ Does it improve quality of life?
- ✓ Does it reduce demand on municipal services?
- ✓ Does it reduce raw material consumption?
- ✓ Does it create a technology platform, or is it just another walling system?
- ✓ Does the technology empower the owner, or does it lock the owner into a specific system?
- ✓ Does it facilitate later expansion without diminishing the structural integrity of the building?
- ✓ Does it facilitate job creation?
- ✓ Does it reduce construction time?
- ✓ Is it cost effective?
- ✓ Does it result in improve construction quality?

SILICAWOOD HOUSE FOR A BETTER LIVING CHALLENGE

Sustainable and affordable multi scale housing project in RSA



Roberto Pane

Business Development

Mobile + 39 331 169906

Email: r.pane@bbuilding.it

Beppe Bonelli

CEO

Mobile + 39 366 4774040

Email: b.bonelli@bbuilding.it



SYNERGIA Progetti

Arch. Natasha Pulitzer

Synergia Architect Chief Designer

Mobile: +39-324 6895969

Email: n.pulitzer@synergiaprogetti.com

Prof. Arch. Sergio Los

@ I.U.A.V Venice University

Synergia Progetti Director

Tel : +39 0424 220777

email: s.los@synergiaprogetti.com

Arch. Olwethu Jack

@ UGM Consultants (pty) LTD

Tel : +27 (72) 3438480

email: olwethuj@gmail.com

UGM CONSULTANTS (PTY) LTD
Designers and community development
facilitators.