City Centre Sustainable Housing Design Competition

Workshop 2
Housing: Units, density, and self-built

Date: 27 March 2024
Time: 16:00-18:00
Venue: Online hosted by the CIB

Presenter: Francine van Tonder
join the workshops and participate in aspects of the competition brief which may be of interest.

The four workshops are outlined below, and you can register by clicking on the button below.

### Workshop 1

**Wednesday 20th March 16:00 – 18:00 SAST(GMT+2)**

- **Aims of the competition** – Jeremy Gibberd
- **The site and its context** – Riette Kotze
- **Competition Processes** – Francine van Tonder

The presentations from the workshop are available through the links above and the workshop recording can be viewed [here](#).

### Workshop 2

**Wednesday 27th March 16:00 – 18:00 SAST(GMT+2)**

- **Affordable Housing – Development and Delivery New policy (DHS)** – Ntsako Mathonsi
- **New initiatives and approaches for Human Settlements** – SijekuleMbanga
- **Housing Units self built and deposits** – Francine van Tonder

<table>
<thead>
<tr>
<th>Month</th>
<th>Date</th>
<th>Number</th>
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<tbody>
<tr>
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<td>23</td>
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Housing:

- Density,
- units,
- self-built
• Last week we looked at the site of 10 ha.
• One hectare is equal to an area of 10 000 square metres.
• Or 100m x 100m.
The 2024 site
The 2024 site
The 2024 site
• Standard RDP housing plots adhere to a minimum size of 250sqm per house (Greyling, 2009; Harrison et al., 2014)

• A low-cost housing unit of min 40 sqm.

• On a min 250 sqm site (14mx18m=252 sqm)
Density
Density
Density
Density
## Accommodation Schedule

For this proposal, our team developed one hectare of the site as per (for example) the image above/ Figure 1.

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
<th>Overall number (occupants/users)</th>
<th>Overall floor area (m²)</th>
<th>Overall coverage (m² and percentage, ex. 48%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing units</td>
<td>(Example) 35 no 2 bed, 40 m²</td>
<td>3.34 (people) x 35 (units) = 116.9</td>
<td>35 (units) x 40 m² (per unit) = 1 400 m²</td>
<td>Overall coverage: 1 400 m² Percentage: 14% (1 400/10 000) x 100</td>
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<tr>
<td>Work units</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Other amenities and/or activities in your proposal</td>
<td>None</td>
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<td><strong>Subtotals</strong></td>
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Density
### Accommodation Schedule

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<td>(Example) 35 no 2 bed, 40 m² units</td>
<td>3.34 (people) x 35 (units) = 116.9</td>
<td>35 (units) x 40 m² (per unit) = 1400 m²</td>
<td>Overall coverage: 840 m² Percentage: 8.4% (840/10000) x 100</td>
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<tr>
<td>Work units</td>
<td>None</td>
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<td></td>
<td></td>
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<td>Other amenities and/or activities in your proposal</td>
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Density
Density
Density
It encourages the exploration of alternatives to existing low-cost housing development models. Highly innovative, lateral approaches, including the application of new environmental, economic, social, and organisational models as well as drawing on self-build, sufficiency, regenerative, circular economy, mixed-use, incremental housing ideas and systems are encouraged.

Designs should show how key sustainability characteristics such as density, social cohesion, access to education, health and work opportunities and sustainable food, water, energy, sanitation and food systems can be developed by responding to local opportunities and working within existing limitations.

Teams can determine the number, arrangement, size, and type of sustainable housing. Conceptual approaches, including data (see below), should be explained to show how high-performance sustainability performance criteria, such as net positive energy and water systems and urban densities over 60 units/ha, are achieved.

The competition has a focus on environmental, economic, and social sustainability, diversity and inclusion, sufficiency, self-build, unit design, strategies for the future and innovative materials. This is reflected in the prizes that will be awarded (see Prizes) and will addressed in the workshop series (see Workshops).

Site
The site is located in Gqeberha, Eastern Cape. The closest corner is Community Street and 5th Avenue; with Walmer Primary School to the west and the Chief Dawid Stuurman International Airport to the east. The site is 3.2 Km from the Gqeberha city hall. The site is 10 hectares.

- Site coordinates for Google Earth are: 33°59'04"S 25°36'26"E
- Further site information and photos are coming soon.
Low rise, high density
• 75 units/ha
Density
Density
• What is your strategy to densify towards 60 units/ ha?
• Or to achieve more units per hectare?
• What is your strategy for the unit?
• What is your strategy for the future?
• Can those who live on the site have a hand in the densification of the site?
• Is self-built possible?
• What is your urban planning strategy for the 10 ha?
• There are 3 additional prizes specifically for those who answer these questions with abstract emerging ideas and well-resolved, beautifully presented proposals.
## Prizes

<table>
<thead>
<tr>
<th>Exhibition and Prize-giving</th>
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<tbody>
<tr>
<td>Hosted at the 18th Built Environment Conference Construction 5.0: Towards a Collaborative and People-Centered Industry, 15 July 2024 at Nelson Mandela University</td>
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<tr>
<th>Prizes</th>
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<tbody>
<tr>
<td><strong>Overall Scheme</strong></td>
</tr>
<tr>
<td>First prize</td>
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<tr>
<td>Second prize</td>
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<tr>
<td>Third prize</td>
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<tr>
<td><strong>Sustainability Prizes</strong></td>
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<tr>
<td>Environmental</td>
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<tr>
<td>Economic</td>
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<tr>
<td>Social</td>
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<tr>
<td><strong>Merit Prizes</strong></td>
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<tr>
<td>Future strategy</td>
</tr>
<tr>
<td>Self-build and sufficiency</td>
</tr>
<tr>
<td>Unit design</td>
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<tr>
<td><strong>Sponsors Prize</strong></td>
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<tr>
<td>Innovative building technologies</td>
</tr>
</tbody>
</table>
The extent to which current and future generations will experience a hotter and different world depends on choices now and in the near-term.

Adverse impacts from human-caused climate change will continue to intensify

a) Observed widespread and substantial impacts and related losses and damages attributed to climate change

Water availability and food production
- Physical water availability
- Agriculture/crop production
- Animal and livestock health and productivity
- Fisheries yields and aquaculture production

Health and well-being
- Infectious diseases
- Heat, malnutrition and harm from wildfire
- Mental health
- Displacement

Cities, settlements and infrastructure
- Inland flooding and associated damages
- Flood/storm induced damages in coastal areas
- Damage to infrastructure
- Damage to key economic sectors

Biodiversity and ecosystems
- Terrestrial ecosystems
- Freshwater ecosystems
- Ocean ecosystems
Includes changes in ecosystem structure, species ranges and seasonal timing

b) Impacts are driven by changes in multiple physical climate conditions, which are increasingly attributed to human influence

Attribution of observed physical climate changes to human influence:
- Medium confidence
- Likely
- Very likely
- Virtually certain

Units
Units
Table 1. Existing and emerging variables that inform the specifics of architectural information in the architectural design process (Adapted from: van Tonder, 2022³)

<table>
<thead>
<tr>
<th>Existing design variable</th>
<th>Emerging design variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural topology (a)</td>
<td>Climate resilience adaptation (g)</td>
</tr>
<tr>
<td>Natural topology (b)</td>
<td>Redress of imperialism (h)</td>
</tr>
<tr>
<td>Industrial thinking typology (c)</td>
<td>Economic and social fairness and foothold toward a circular economy (i)</td>
</tr>
<tr>
<td>Indigenous thinking typology (d)</td>
<td>Service provision system interception with circular approach (j)</td>
</tr>
<tr>
<td>Visual tectonics (e)</td>
<td>Amenities system interception with circular approach (k)</td>
</tr>
<tr>
<td>Technology tectonics (f)</td>
<td>Regenerative potential (l)</td>
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Units
Existing variables:

- Cultural topology (a)
Existing variables:

- Natural topology (b)
Existing variables:

- Industrial thinking typology (c)
Existing variables:

- Indigenous thinking typology (d)
Existing variables:

- Visual tectonics (e)
Existing variables:

- Technology tectonics (f)
Emerging variables:

- Climate resilience adaptation (g)
Emerging variables:

- Redress of imperialism (h)
Emerging variables:

• Economic and social fairness and foothold toward a circular economy (i)
Emerging variables:

• Service provision system interception with circular approach (j)
Emerging variables:

- Amenities system interception with circular approach (k)
Emerging variables:

- Regenerative potential (l)
Units
Units
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Units
It is estimated that between 4 and 5 million people currently reside in informal settlements in South Africa.
Self-built
Self-built
Self-built
Self-built
Self-built
Student teachers share ideas about improving informal settlements in South Africa

Published: September 14, 2021 3.15pm SAST
Self-built
Self-built
Self-built
What questions do you have for us?