Green Urbanism - Kosovo informal settlement upgrade
Case Study

Gita Goven
Partner in charge, ARG Design
ARG Design, P.O Box 13936
Mowbray, Cape Town, 7765, South Africa
Phone: + 2721 448 2666
E-mail: gita@argdesign.co.za

Abstract
Post apartheid subsidised housing has delivered poorly constructed single units on plots as dormitory settlements, increasing economic and social exclusion and urban sprawl at gross densities of 50 to 60 du/ha. The resultant impact of travel costs, accessible provision of civic facilities, infrastructure costs and land availability are unsustainable. Although a major proportion of informal settlement in the Cape Metro are located in two clusters that are well located for access to jobs in the surrounding central business districts and upper income areas; the low education and skills level precludes the majority of this sector of the population from access to jobs in the growing economy. In this context of poverty; basic hunger, poor health and HIV/AIDS, violence and fire risks are core to the challenge of sustainable settlement upgrade.

The design of Kosovo informal settlement upgrade uses principles of a hierarchy of places, spaces and movement systems, appropriate building typologies to minimise relocation, sustainable infrastructure design and greening, building and operational efficiencies, effective land use and care of the environment; to improve health, safety and security, optimise community and livelihoods opportunities and sustainable resource use and regeneration.

The project scopes the opportunity to co-ordinate key government departmental budgets, canvass corporate social responsibility investment and redirect government budgetary under-spending and reactive investment, e.g. transport subsidies due to urban sprawl.

Surrounding land uses are motivated to promote mixed use, subsistence food, education, training and skills opportunities to optimise access to jobs and skills.

Computer modelled capital costs are contrasted with current norms and recurrent commuter costs from more marginalised settlement relocations to motivate selective replication.

1 Background- Informal settlements
An escalating Metropolitan housing backlog standing at 71% of total provincial backlog, limited housing funding and beneficiary affordability, limited well located land for housing and deteriorating and capacity constrained infrastructure is cost prohibitive to achieve current norms of subsidised housing provision. The Western Cape Metropolitan informal settlements represent approximately 42% of the total housing backlog. Policy debate thus focuses on sustainable in-situ housing and densification strategies. (Fig 1a-c)
1.1 **The Housing Subsidy**
Qualification for subsidised housing is above 18yrs, married or single with children, income below R3500/month, South African Citizen, first time property owner. The value of the housing subsidy in Metro Cape Town is R 46 000. R15 000 to R 20 000 goes into the infrastructure and serviced site provision, leaving an inadequate sum for quality and size of top structures. Note that one US dollar is equivalent to approximately seven South African rand.

1.2 **The Informal Settlements Challenge**
Approximately 70% of higher density informal settlements including Kosovo are located on the low-lying Cape Flats land in two clusters22(Fig2). Although spatially, environmentally and economically marginalised; these settlements are centrally located with the key Central Business districts around them. They are however not yet fully serviced and would add to the capacity demand on key infrastructure and services23. (Fig 3a-3d). These CBD’s have enjoyed the greatest recent economic growth mainly in the business, services and tourism sectors for which the skills in the informal settlements do not match24(Fig 3e-f).

The benefits of good location have to be upheld and underpinned through economically, socially and environmentally sustainable human settlement upgrade, for a future where the sustainability of fuel and energy, soil renewal and water and well-located land for settlement are the premium (Fig 4a-4d).

1.3 **Kosovo Context**
5400 households are located on 26.5 ha of land at gross density of 210 du/ha, and average of 2.13 persons per household (Fig 5).

Overcrowding, a high water table, poor soil conditions, wind driven winter rain, wind blown sand, high summer temperatures are the design challenges.

Seasonal fires and floods, personal safety and security, poverty and hunger, and grey water and solid waste pollution aggravated by a high water table add to health risks and a lack of basic wellbeing.

1.4 **Key Demographic Trends**25
This community has a young age profile, lower than average shack occupancy, and a lower proportion of migrants from the rural areas.

1. 33.39% single person households-25.33% male and 8.06% female
2. 30.6% single headed households with dependents - 21% single female headed and 9.6% single male headed
3. 21.55% married household heads – 3.45 female headed and 18% male headed households
4. 25.5 % households composition – unknown
5. 1.28% disabled, self-declared and pensioners
6. 55.2% employable of which 46.5% employed and 53.5% unemployed
7. 14.3% rural migrants, 73.66% from surrounding settlements and 12.3% from elsewhere.

---

22 City of Cape Town- GIS Department
23 City of Cape Town, Infrastructure and Services- various Departmental Reports
25 From Africon 2004 – Kosovo demographic survey fort he City of Cape town
2 Design Approach

The design connects Kosovo to the surrounding context and facilities, addresses place-making, density and typology, and movement systems. The household size and numbers are addressed as primary determinants within cost effective layouts, unit and plot sizes (Fig 7).

Implementation starts with a rudimentary upgrade process in 2006/2007 which provides access, water, grey water, safe sanitation, waste reduction and removal, some fire fighting services, overhead cable electricity and most importantly the public and green spatial realm. The housing upgrade process 2007/2012 vacates and fills low-lying land for building; new 3 storey social housing on the railway reserve land and the adjacent provincial land is used as temporary housing in the rollover upgrade process. The rudimentary vacuum sanitation26 and service courtyards allow the servicing and urban greening to proceed, while the upgrade takes place. The water supply, sanitation, and grey water reticulation is extended from the rudimentary courtyards structure to the households with no abortive costs. Integrated services design optimises soil, water, energy and nutrients recapture and productive re-use.

2.1 Density and land use

A computer tool was used to cost a range of typologies, densities and plot sizes including the norm27. The combination of 35% non residential to 65% residential land use with 60% households in 3 storey social housing and 40% in row housing allows optimisation with no decanting.

2.2 Typology and lifestyle choices

The 3 storey mixed use row housing and courtyard housing is located nearest the station precinct, and roads are defined by 2 or 3 storey edges. Courtyards provide safety and surveillance features, community living and value to the large single headed households and retired and disabled group with accommodation for singles on upper floors. The remainder of the site has row housing plots. Row housing offers a range of location and lifestyle choices. All typologies allow tenants rooms (Fig 7-11).

2.3 Hierarchy of road and movement systems

Movement routes prioritise pedestrians; optimise lighting, underground services and shade trees (Figs 8a-c, 9a-d). The 15 m wide east-west High Street is the external connector route, 12.5 m north-south main roads allow taxi and service vehicle access as well as surface and reticulated storm-water, 5m pedestrian lanes hold shade trees and street courts as outdoor rooms, and 3m streets are the pedestrian household access ways and living spaces.

2.4 Special places and spaces

The Department of Local Government and Housing through the Inter-Governmental Relations Forum, facilitates private sector, municipal and provincial department’s investments in specific well-located and proactive health, safety, security and educational opportunities and places while the Municipality delivers the housing upgrade.

- **Informal Station Market** – a location for affordable local economic and retail activity
- **Urban Square** - locates the building centre, and the future town centre for this local area
- **High Street courtyards** - washing areas, grey water reticulation to street trees, waste collection and sanitation collection points, bike and tricycle cart services for internal circulation and servicing and places for local goods and services provision (Fig12a).
- **The Early Childcare Development / Community Courtyards** in the row housing areas are for 0-6 year olds during the day, with a greenhouse above for seedlings and

---

26 Roediger Vacuum Sanitation System
27 Professor Del Mistro R, ARG Design, 2006, a computer based affordable housing resources and cost modelling tool
sprouts/nutrition program. The spaces are multipurpose spaces for the community after hours. The kiosks house washing areas, eco-sanitation, organic waste wormeries, eco detergents, and green energy products. It is proposed that these units are staffed by municipal trained Environmental Health Stewards in charge of safety and security, to maintain the squares and co-ordinate staff, youth and community efforts in the upkeep and maintenance of the blocks, streets and courtyards they are located in (Figs12b, 13a-c). Similar spaces and facilities will be located in the ground floor central wings of the 3storey courtyard housing.

- **Street Social Courtyards** along the pedestrian lanes allow for local shops and service providers with surveillance from the adjacent houses (fig 12c).
- **The Main Road Service Courtyards** are the sites for the municipal waste containers and fire hydrants. These and local service courtyards have washing and sanitary collection points and urinals (fig 12a-b).
- **Primary School Site** - a modest footprint is used to locate this age group as a priority. School sessions could be held in morning and noon sessions to maximise space use.
- **High School** - next to the regional park in proximity to the track facility.
- **A Regional Park** facility on the sports track site to the East is to be redesigned as a soccer, track and sports venue for Schools, clubs and community use.
- **Skills Training and Adult Education Centre**. Existing premises will be upgraded and reused as a local and regional training facility with for community development workers, environmental health stewards, construction workers and materials and furniture manufacture as some training components.

2.5 **Sustainable water, waste, food, energy, biodiversity and materials strategies**

26.5 ha of railway reserve land is suitable for urban agriculture and integrated waste management purposes (Fig14-16). In the context of new infrastructure capacity requirements being imminent the overall proportional costs for an integrated ecological sanitation solution would compare well with the bulk reticulation plus the remote processing facility as the norm alternative. In addition a system of greened courtyards, streets and green roofs is proposed. On site sand and recycled wood and iron will be utilised. Over time local food timber and medicinal plants can be harvested. The overall benefits of these items outweigh the capital or facilitation cost but will need to be designed, modelled and computed. All housing units to have solar water heaters and low energy lighting.

These localised integrated waste and food management and operations are able to generate up to 1 200 local jobs and livelihood opportunities, and 12 000 food allotments of 16 m² each.

3 **Higher density/norm cost benefit scenarios**

The proposed development costs an average of R17 500 per unit more than the RDP norm. Based on research done by Prof. del Mistro of University of Cape Town, The South African government guideline is that a maximum of 10% income should be spent on transport. His calculations show that the relocation from Kosovo to an RDP norm settlement a minimum of 5 km away will incur a state subsidy of R16 600/annum/commuter. Clearly it is more cost effective for the state to pay for well-located higher density housing units at a once off additional cost of R17 500/ unit.

4 **Conclusion**

This design exploration opens the way for pragmatic, comprehensive and viable engagement by all role players. In the end it is not what it costs to do that counts but what it costs not to do it that has to be computed.
Aknowledgements
ARG Design Team Members
Sabena Favaro - Project and Design Support
Penny Unsworth - Graphics and Documentation Support
Tali Bruk - ARG Design Paper Revie

References and selected Literature Review
Kosovo Informal Settlement Upgrade Case Study
Holcim Forum 2 - paper submission - March 2007


Gasson, B. 2002. “Conceptualising the ecologically sustainable city: frameworks and a case study.” Presented on behalf of the School of Architecture and Planning, University of Cape Town at the 40th Congress of the IERM: Green Cities Sustainable Cities Congress. Midrand, South Africa. 18-21 November 2002..

Professor Del Mistro R, ARG Design, 2006, a computer based affordable housing resources and cost modelling tool


Winkler, H. 2005 October 18. “Climate Change Mitigation in South Africa: challenges and opportunities.” Presentation on behalf of the Energy Research Centre, University of Cape Town delivered at the DEAT National Climate Change Conference.
Figure 1a. Western Cape Housing Backlog by District

Figure 1b. No’s of shacks in Metro Informal Settlements

Figure 1c. Cape Town housing backlog

Cape Town backlog to 2005 in need priority
After DPLGAH, 2006, Western Cape Strategy for the Development of Sustainable Human Settlements-Final Draft, p 90, 103

<table>
<thead>
<tr>
<th>Type</th>
<th>Percentage</th>
<th>Number</th>
<th>Land required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal areas</td>
<td>50 - 60%</td>
<td>120,000</td>
<td>+ 35% relocation</td>
</tr>
<tr>
<td>Backyards</td>
<td>20%</td>
<td>45,000</td>
<td>+/- % Relocation?</td>
</tr>
<tr>
<td>Over-crowding</td>
<td>26%</td>
<td>60,000</td>
<td>+/- % relocation?</td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td>225,000</td>
<td></td>
</tr>
<tr>
<td>Serviced site-top structure</td>
<td></td>
<td>20,000</td>
<td>NIL</td>
</tr>
<tr>
<td>Gap</td>
<td></td>
<td>15,000</td>
<td>NEW</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>260,000</td>
<td></td>
</tr>
<tr>
<td>Current formal households</td>
<td></td>
<td>731,541</td>
<td></td>
</tr>
<tr>
<td>Annual projected growth-market</td>
<td></td>
<td>9,000/annum</td>
<td>NEW</td>
</tr>
<tr>
<td>Annual projected growth-subsidy</td>
<td></td>
<td>11,000/annum</td>
<td>NEW</td>
</tr>
</tbody>
</table>

Note: from this data that the 2005 housing backlog represents approximately 26% of the total metro households.
Figure 2. City of Cape Town Context: Informal Settlement Locations
Figure 3a. Rail Network: Passenger No’s & Frequency

Figure 3b. Potential Bus Corridors

Figure 3c. Potential Minibus Taxi Corridors

Figure 3d. Composite Poverty Map

Figure 3e. Location of Investment Projects above R10 mil. outside MSDF Corridors

Figure 3f. Location of Investment Projects above R10 mil. inside MSDF Corridors
Figure 7. Settlement Master Plan
Figure 8a. 15m High Street

Figure 8b. 12.5m Main Roads

Figure 8c. 5m Pedestrian Lanes

Figure 8d. 3m Street
Figure 9a. Street Facing Row Housing

Figure 9b. Main Road 3-Storey Row Housing

Figure 9c. High Street 3-Storey Mixed Use

Figure 9d. 3-Storey Courtyard Housing
Figure 10. Row Housing Typologies

Ground Floor

Shared Courtyard

A area: 9.8 m²
B area: 19.6 m²
Indoor Area: 29.8 m²

A Indoor area: 28.8 m²
B Outdoor area: 10.8 m²

Ground Floor

First Floor

A Indoor area: 57.6 m²
B Outdoor area: 10.8 m²
Figure 11. Courtyard Housing Typology
Figure 12a. High Street Courtyard

Figure 12b. ECD/Community Courtyard
Figure 13a. ECD/Community Courtyards

Figure 13b. ECD/Community Courtyards Elevation

Figure 13c. ECD/Community Courtyards Section
Figure 14. Vacuum Sewer System linked to Biogas Treatment
Figure 15. Waste reduction/composting & recycling system
PHILLIPI - Overview of Railway Reserve Land
URBAN AGRICULTURE PROPOSALS

Figure 16. Urban Agriculture