



March 16, 2017

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Abstract

South Africa, like many countries of the Global South, has witnessed explosive growth in urban population in recent decades. In a post-apartheid time, the majority of urban growth has accumulated in densely populated informal settlements. These areas delivered poorly planned and constructed single unit housing lacking adequate and necessary services, leading to increased economic and social exclusion in urban sprawl, with a need for full scale settlement redevelopment.

The Kosovo Informal Settlement is one of the oldest and densest in Cape Town, South Africa, with a population of more that 26,000 in an area of 28 hectares. Kosovo is facing many challenges with poverty, hunger, poor health and sanitation, violence, environmental degradation, and fire and flood risks amplifying the necessity to hold priority in the redevelopment process.

How can you provide urban upgrading and redevelopment and meet the needs of the community sustainably? The design of the Kosovo informal settlement redevelopment used multiple planning principles, which include space and movement systems, appropriate building sizing, sustainable infrastructure design and planning, building efficiency, and effective land use. Health, safety and security, community education and opportunities, and sustainable resource use must also be considered.

Settlement land use can be developed for mixed-use opportunities such as community gardening, education, and training advancements to optimize access for employment options.

The Kosovo Informal Settlement is a community with multiple opportunities for advancement in sustainable planning if the proper leadership, community participation and redevelopment stages are introduced and carried out effectively.

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1. Introduction



Image 1.1: Kosovo Informal Settlement



Image 1.2: Local Market Shop

Cities in the Global South are fast growing, poorly planned, badly managed, inadequately resourced, and often consist of people living in difficult circumstances. Shantytowns and informal settlements have formed on the outskirts of major cities. Many have been found moving toward the major cities of South Africa. “An informal settlement is defined as an area where groups of informal dwellings that often do not meet basic building safety standards, such as wood and iron structures, have been constructed on land that the occupants have no legal claim to, or occupy illegally” (CoCT, Sustainability Report, 2005). These towns have become home to millions of South Africans. Residents often live in conditions of deprivation in unstable shelters with a floor area often less than 20 square meters (M²). The existing households are commonly constructed from scavenged materials such as corrugated galvanized iron, plastic, cardboard or timber sheeting. In multiple informal settlements shack densities exceed 200 households per hectare.

Each informal settlement receives very basic services. The City of Cape Town (CoCT) has more than 350 informal settlements within its metropolitan area. The CoCT typically provides a few communal standpipes where the residents can access potable water, a few communal toilet facilities that are often damaged or broken due to lack of upkeep and community violence, and minimal waste removal services. Few settlements have been adequately managed due to the result of illegal land settlements where local authorities have minimal jurisdiction.

The CoCT and the South African National Department of Human Settlements (DHS) are jointly planning a catalytic human settlements program termed the Southern Corridor Integrated Human Settlements Programme (SCINSP). The program will work to redevelop 27 informal settlements (Webster, 2016). DHS and CoCT will provide multiple local urban design and architecture firms the opportunity to propose a complete urban redevelopment for a number of these informal human settlements.

The Kosovo Informal Human Settlement is located in the Cape Town, South Africa metropolitan area. Originally settled in 1998 on 28 hectares of land, it is one of the oldest and most dense informal human settlements in the city.

The Kosovo Sustainable Settlement Redevelopment Program



Image 1.3: Kosovo 1992



Image 1.4: Kosovo 1999



Image 1.5: Kosovo 2016

The SCINSP seeks to improve the living conditions of two large clusters of informal settlements near the Cape Town airport, called the Airport precinct, which is made up of 12 communities, including Kosovo. These clusters are regarded as priorities to the CoCT and DHS because of their age, size, density, and poor level of services, unsuitability as well as health and safety risks.

How can you provide urban upgrading while meeting the needs of the community sustainably? By providing a sustainable urban redevelopment to the Kosovo Informal Human Settlement we have the opportunity to implement and meet the core goal of sustainable development. Sustainable development can be defined as a process for meeting human development goals while sustaining the ability of natural systems to continue to provide resources and services.

The SCINSP program promotes an integrated approach to human settlement redevelopment ensuring that economic, connectivity and livelihood issues are all considered. DesignSpace Africa (DSA) worked with SCINSP to revitalize the Kosovo community – creating, designing and planning sustainable informal human settlements for all social classes. Using SCINSP’s sustainable re-development process we can improve the households of the current residents, reduce the community risks of flood and fire disaster, and provide better access to, and opportunities for, improved livelihoods (Webster, 2016).

With a full project area of 28 hectares, we focused on a two-hectare region of the Kosovo Informal Human Settlement containing approximately 225 to 250 households.



Image 1.6: Existing Restroom Facilities



Image 1.7: Extreme Overcrowding

Kosovo is in the process of a social and developmental community restructuring. Community leaders are working with the CoCT and DSA to create comprehensive goals that address economic development, social development, and environmental protection through sustainable practices. Kosovo faces issues with overcrowding, lack of suitable and safe housing structures, ineffective infrastructure for waste disposal and removal, absence of proper public transportation, community health issues due to sub standard living environments, risks of destruction from fires and flooding due to extreme density, depletion of natural landscapes, and minimal opportunities for economic development and employment options. An urban redevelopment can address these issues while considering the impact developmental changes have on the natural environment. The residents of Kosovo moved to the Cape Town area in search of a new and better life, yet they ended up getting grounded due to the lack of facilities and infrastructure

2. Project Background

2.1 Context

20 percent of Cape Town's residents live in informal housing, which continues to be a significant development challenge for the city. The housing deficit in Cape Town is currently around 345,000 units, with 220,000 of these households living in a mix of informal settlements and backyard shacks. The CoCT has been developing an informal settlement database that categorizes settlements into four areas: (I) can be upgraded as is; (II) can only be upgraded if accompanied by de-densification; (III) cannot be upgraded for health and safety reasons; and (IV) cannot be upgraded due to land needed for other developments (Webster, 2016)

2.2 Physical Description

The Kosovo Informal Human Settlement is located in the suburb of Philippi in the Cape Flats area of Cape Town, north of the R300 and west of the Philippi Police Academy. The area is mostly flat and covered with unconsolidated sandy soils overlying



Figure 2.1: Philippi Township

Malmesbury shale bedrock (Cape Flats, 2016). There is a high water table close to the ground surface, which exacerbates risks of flooding during the winter rainy season. The average annual precipitation is approximately 515mm or 21 inches (WeatherSA, 2009).

2.3 Social Profile

In 2016, Kosovo covered an area of 28 hectares at a population density of approximately 910 inhabitants per hectare and a shack density of 230 per hectare (Webster, 2016). It has become one of the oldest and most dense informal settlements in Cape Town. Kosovo was first settled in 1998 as the result of a planned land invasion. A social survey conducted in 2006 by ARG Design indicated a young population with the majority of the residents falling in the 21-40 age group and a large number of children below six years of age (ARG Design, 2006). High levels of poverty were also recorded – the settlement has an unemployment rate of approximately 51percent. It is currently estimated that 77 percent of Kosovo residents earn a monthly income ranging from South African Rand (R)0-



R1600 per month, 1 South African Rand is equal to 0.073 US Dollar. 14 percent earn between R1601-R3200, and 9 percent earning more than R3201 a month (Adlard, 2012).

2.4 The Informal Settlement Challenges

Overcrowding, a high water table, poor soil conditions, wind driven winter rain, wind blown sand, and high summer temperatures are a few of the elements that present a challenge to designers and planners. When working toward redevelopment all of these factors need to be considered to create a new sustainable settlement plan.

Seasonal fires and floods, personal safety and security, poverty and hunger, and grey water and solid waste pollution aggravated by the high water table add to multiple community health risks. The human health related issues are just as important to consider when planning for growth and expansion. Proposed programs must strike a balance between cleaning up a community and properly redeveloping it.

2.5 Next Steps

The DHS and CoCT began the initial stages of the SCIHSP in March 2016 and the program is projected to reach completion in December 2022. The time and planning process is a collaborative effort -- city officials, community leaders, design firms, and volunteer residents must all work together to identify opportunities to transform the existing informal settlement into one that embraces sustainable development and looks toward future planning and maintenance.

3. Design Approach

The design plan was meant to create an integrated and sustainable human settlement. The goals of the plan were to provide for both low and middle-income earners, create an opportunity to live in a settlement that is inclusive and integrated, with businesses and social facilities close to residences.

The urban plan connected the selected area of Kosovo with its surrounding context and facilities. The plan addressed place making, density, typology, communal movement, participatory incremental upgrading, and mixed-use development. Varying household sizes and numbers, key communal areas, and open public spaces were determinants that helped to effect and plan layout and future design.

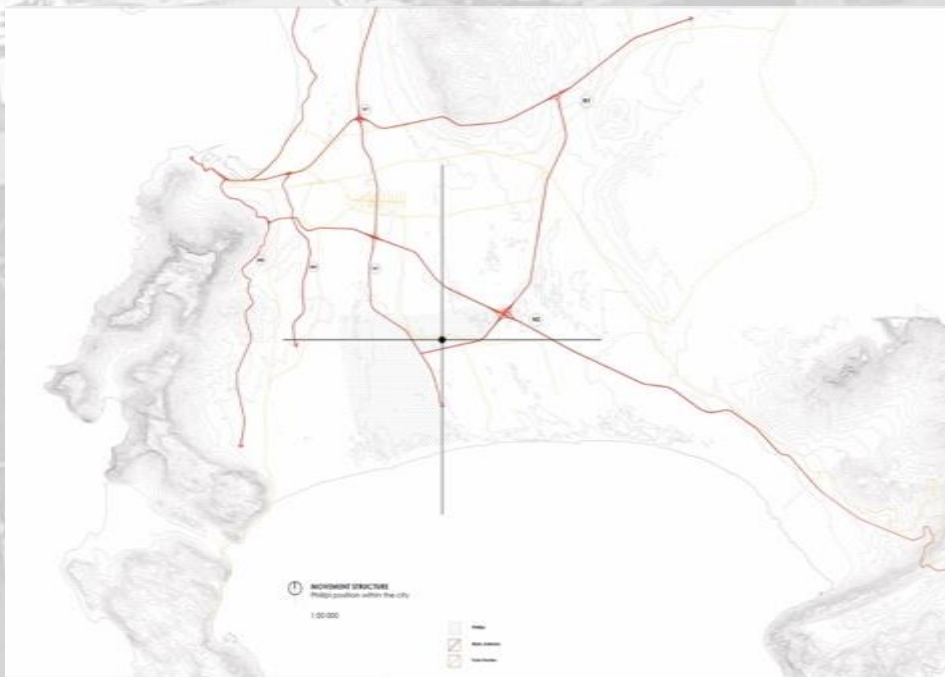


Figure 3.1: Cape Town Metropolitan Movement Structure

Implementation began with the redevelopment of a two-hectare region of Kosovo that contains between 225 and 250 households. This selected area is located along the western border and includes the main route in and out of the community. This area now includes access, water, grey water, safe sanitation, waste reduction and removal, fire fighting services, electricity, and the reintroduction of efficient public and green spaces. The



Figure 3.2: Kosovo Redevelopment Area Plan

housing redevelopment process vacates and fills low-lying land for building. Mixed-use development was used for retail and business opportunities along main transportation routes with housing above, and single and double level family housing will be built throughout the area, surrounding communal spaces.

Courtyard spaces and public pathways are utilized to build up and maintain integrated infrastructure and services that can optimize soil, water, and energy to allow for productive reuse.

3.1 Density and Land Use

The extreme density of Kosovo has been the cause of numerous issues, including health and environmental safety, since its initial settlement. Moving forward with the design planning, density and spacing of households was planned to allow for connections and movement for all residents. The existing settlement has shacks placed extremely close together, fitting any space that was available.

Within the two-hectare redevelopment area space, commercial, housing, and public spaces and units were distributed proportionally. The land was divided based on percentage use and needs creating a combination of 35 percent non-residential to 65 percent residential spaces with some overlapping connections. Mixing multiple story social housing with single level detached housing, stacked housing and commercial facilities allowed for the optimization of space with minimal resident displacement from allocated spaces.

3.2 Typology and Lifestyles

Multi-story housing, single level detached housing and stacked commercial units define the areas within Kosovo. The stacked commercial and residential units define the main transit routes populating those areas with economic opportunities and creating connections to the high-traffic routes in the settlement. The single-level detached housing plots fit together in groups of seven to create a shared courtyard while allowing for the rotation and connection of groups of seven to meet and form a larger open public green space for all residents to utilize. Multi-story units have been intermixed in the settlement area to allow for multiple family generations to be close and connected. These units provide additional space to maximize the unit development for existing residents. (Reference Figure 3.2)

3.3 Communal Movement Systems

Movement routes helped to create plans. They prioritized pedestrian versus vehicular movement, optimized lighting, utilized space for implementation of services, and allowed for reintroduction of natural elements. The main transit route was adapted to introduce a multi-modal approach that allows for private and public vehicles, and human powered transportation to move efficiently through the settlement. This route travels through the center of Kosovo, connecting the settlement and neighboring areas to all mixed-use commercial and economic developments in Kosovo and allows for additional road branches to grow, move and circulate the residential settlement.

Along with the vehicle routes, there are internal pathways and community courtyards that are regulated solely for pedestrian-friendly movement through the spaces. These pathways connect public courtyards and neighboring households to promote community cohesion, allowing frequent and safe public interactions and movement due to the lack of private motor vehicle availability.

3.4 Community Places and Spaces

Within each informal settlement upgrade there is a push to create, plan and activate well-located and proactive health, safety, security and educational opportunities and places, including:

- Informal market - an open public space for affordable, local economic and retail activity, such as weekly farmers' markets (Reference image 3.1).
- Urban squares - centralized common area for local and communal gatherings.
- Communal courtyards - spaces for washing, grey water reuse, waste collection and sanitation points, bike services for internal circulation and servicing, and areas for goods and services (Reference image 3.2).
- Early childhood development crèches - areas for 0-6 year olds during the day, and multipurpose spaces for the community after hours.
- Social streets and courtyards - located along pedestrian and vehicular lanes, allowing for local shops and economic opportunities (Reference image 3.3).

- Open, green spaces and parks - areas for active community use, including sports activities, community gardens, or cultural performances and presentations (Reference image 3.4).



Image 3.3: Social Street



Image 3.4: Community Garden

Image 3.1: Informal Market Place

Image 3.2: Communal Courtyard



3.5 Community Participation

It is imperative to gain community member participation in a redevelopment plan. The design and planning process must allow for the exchange of ideas, the development of wants and needs, the planning for maintaining the community's cohesion, and the acceptance of community opinions throughout the design planning phase in order to develop the best possible plan for residents.

Community involvement occurs beyond meetings and discussions. With an intensive land clearing and rebuilding process, residents with the ability to work and participate in the rebuild have the opportunity for economic and educational advancements. This helps residents take ownership of new structures and homes, causing them to feel a bond to their home, their community, and the areas they live in. This can motivate residents to continue to maintain the area so that it may thrive far into the future.

All aspects of the design process were approached under current conditions. Considering that there would be no issues or damaging circumstances within the social-political context in South Africa and the CoCT.

3.6 Mixed-Use Development

Mixed-use development is a type of urban development that blends residential, commercial, cultural, institutional, or industrial uses while providing pedestrian connections to all areas. Many human settlements, such as New York City, Mexico City's Avenida Insurgentes, and Hong Kong's Central Business District, have benefited from

mixed-use patterns. The benefits may include greater housing variety and density, reduced distances between housing, workplaces, and retail businesses, more compact development, stronger neighborhood cohesion, and pedestrian and bicycle-friendly environments. Informal settlements have an opportunity to enhance their community with the promotion of efficient and effective commercial spaces and buildings in the local residential community.

3.7 Sustainable Applications and Practices

Every informal settlement has goals to redevelop its spaces and create a better lifestyle for all residents. In order to do this and maintain that lifestyle, they need to understand and implement a number of sustainable practices and ideas, ranging from sustainable housing, local building material use, implementation of sustainable energy systems, proper waste management practices, efficient water and sanitation services, and the introduction of local urban agriculture.

- Sustainable housing - building in indigenous styles, constructed from locally available materials, following traditional building practice and patterns (VASSA, 2008).
- Sustainable building materials - locally produced and sourced, recycled materials that have a low environmental impact and are thermally efficient, and use of renewable resources.
- Renewable energy - obtained from natural resources such as wind and solar. Due to South Africa's climatic position and wind availability they have the potential to effectively and efficiently harvest wind and solar power
- Waste management - South Africa's standard method is disposal to land fill, but more holistic approaches through proper infrastructure and service integrated plans are achieving reduction, reuse, and recycling.
- Water and sanitation - reduction in usage through low flow and increased efficiency applications, rain water collection, grey water systems, local sewage processing and re-use in agriculture as well as implementation of 1:1 services for residents.
- Urban agriculture - enhances social justice, boosts food security, increases ecological sustainability, offers learning opportunities and responds to the needs of all within the informal settlement context.

3.8 Implementation

Once planning and design has been completed and approved, implementation of the settlement redevelopment will occur on a cluster-by-cluster basis. Cluster size will be determined by multiple factors, such as immediate need, time to complete one building redevelopment, and availability of existing open space. During the redevelopment clusters, residents will have the opportunity to stay with neighboring families and households. This will minimize lifestyle disruption and help facilitate the building of stronger community cohesion. This method was successfully practiced during the redevelopment of the Flamingo Crescent settlement in northwest Cape Town Metro (South African SDI, 2015).

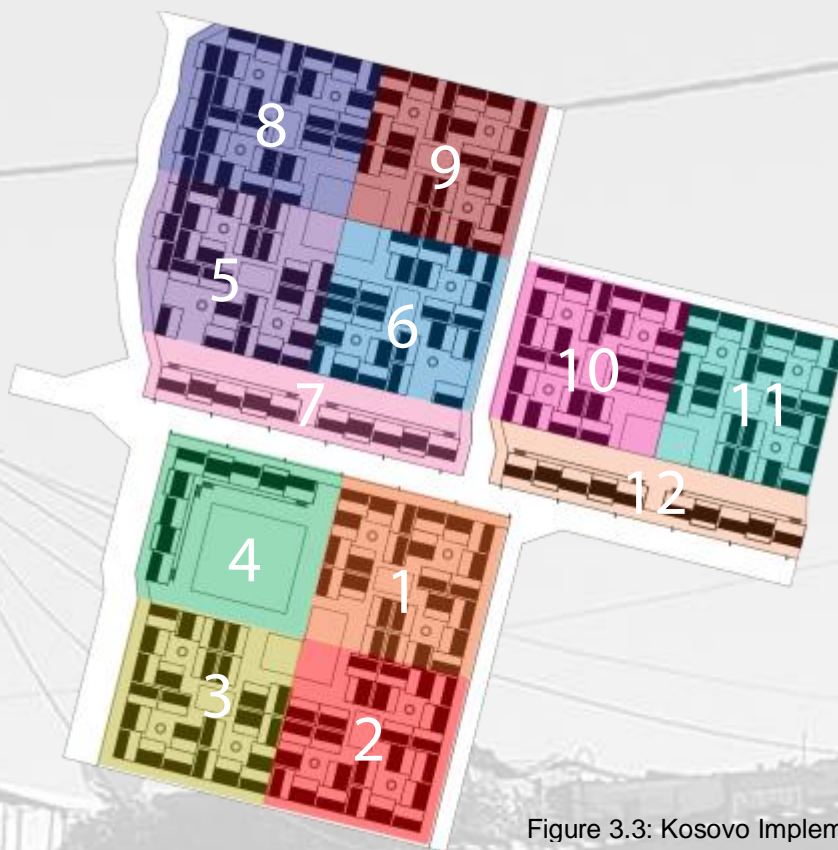


Figure 3.3: Kosovo Implementation Plan

4. Findings

Based on community assessments and resident interviews, it was discovered that there is a vast list of needs and wants for a sustainable settlement redevelopment. Residents do not currently have adequate access to water and sanitation services, as there are only a few communal standpipe potable water stations throughout the 28 hectares of Kosovo. Most growing families are confined to unstable housing structures of less than 20 M² -- they need spaces that can be adapted and built upon for changing needs and growth.

Overcrowding is a major concern in Kosovo as well. Shacks are placed to fill spaces without any planning concern or special assessment. This leads to safety risks with fire spread and flooding. In order to improve the livelihoods of all residents housing structures need to be established and built according to the national building codes to guarantee suitable and safe structures, with access to proper electrical services in each unit.

As all settlement issues build upon each other, the extreme density and lack of proper sanitation services leads to the build up waste and the lack of adequate waste disposal and removal because government services cannot properly access the settlement areas.

Residents want better opportunities for economic development and employment close to their households. More efficient and cost effective transportation would help them to create a better opportunities and lifestyle for their families.

Even with all of these needs, residents believe one element to be of most importance: zero community displacement. They see the necessity for redevelopment but they have formed a strong community and culture within their settlement and do not want to be displaced in order to receive these services and upgrades.

Moving forward with redevelopment plans and community desires, sustainable building and urban planning principles need to be considered, adjusted for, and connected to match the needs and wants of the community. Some principles to be considered are:

- Think Small - use fewer resources, have less environmental impact, require less energy.
- Heat with the Sun - orientation and planning to maximize solar gain when appropriate, use of materials that absorb sun's energy during the day and dispatch it slowly at night.
- Keep your Cool - passive design, proper insulation, promote natural ventilation.
- Use Renewable Energy - solar water heaters, solar panels, geo-thermal, etc.
- Conserve Water - harvest rainwater, implement a grey water recycling system, plant indigenous plants, reduce irrigation, etc.
- Use Local Materials - reduced carbon footprint, decrease costs, local economic benefits.
- Use Natural Materials - can have more aesthetic appeal, better for local health, promotes natural circulation in homes, promote daylighting.
- Save the Forests - use wood carefully, opt for abundant earthen materials whenever possible.
- Recycle Materials - give new life to discarded or disused materials, provides opportunity to be creative and resourceful.
- Build to Last - use systems and structures that are designed to last and survive.
- Grow your Food - improves quality control and increases resilience.
- Share Facilities - co-housing and eco-villages are a good way to save space and share facilities. Incorporate common areas that promote social activity, helps build community cohesion and promote unity (Khalili, 2012).

Building construction, special planning, and community participation are important elements that help to make a settlement redevelopment efficient and effective. A city or a planner can create a plan to be implemented but without the support and personal ownership from the community, these plans and ideas will not maintain effectiveness.

Even with all ideas, goals, and elements addressed there are a number of challenges that can arise when attempting to create a sustainable human settlement.

4.1 Design Planning

Moving forward with the redevelopment of Kosovo, many stages of architectural design and urban planning needed to be addressed and accounted for. This process can be split into five key phases.

- (1) Site, land, and community understanding and analysis: before a design project begins planners need to visit, study, and understand the context surrounding the specified site.
- (2) Conceptual design: is initiated through research into the needs of a project, desires of the client, and practical programming of the design process.
- (3) Schematic design: this begins the phase of compiling all previous information gathered in order to create multiple plans and design options to be considered. These are done through sketches and simple mock ups to help visualize a direction to take.
- (4) Design development: will take the selected schematic design and suggested modifications and revise the design to meet desired needs. It is also the phase that allows a designer to design and receive feedback in order to create a finalized design plan.
- (5) Creation of final documents for submission: once a design has been finalized drawings, notes, and technical specifications are produced.

4.1a Site, Land, and Community Understanding

DesignSpace Africa planned and initiated site visits to the Kosovo Informal Settlement during the summer of 2016. Different political, religious, and communal leaders in the three regions of Kosovo led the visits. Each leader showed us their home and provided the team with their stories and connections to the land and its people. These interviews provided a different understanding of the land, its structures, and its settlement needs.

The settlement visits helped to assess, analyze and interpret site and city mapping activities, which were used to compile proper maps for future site development. A number of mapping tasks were initiated, including understanding the movement structure, suburbs and city structure, historical growth, and region, township, and settlement specifics of the existing settlement boundaries and its connection to the larger Cape Town Metropolitan area. The maps developed differ in scale ranging from the Cape Town Metropolitan Area to the Kosovo Settlement.

4.1b Conceptual Design

Group meetings and individual interviews were conducted, in person and via email, with Kosovo residents to provide an appropriate list of community redevelopment needs. This list was compiled based on multiple criteria, including the built

environment, economic desires, natural environmental wants, and community spirit.

Multiple common elements were assessed based on discussions with community members. They all understood the reason for the SCIHSP but they wanted the designers and planners to understand that they have built a community and families within the boundaries of Kosovo since its initial settlement in 1998 and they do not wish to lose that or have anyone forced out. They want decreased crowding, better site planning, 1:1 water and sanitation services, room for growth and expansion (where possible), more economic opportunities, and increased safe housing structures and community security. Their wishes and desires help to create multiple designs, with the goal of meeting each need in one way or another.

4.1c Schematic Design

With the compilation of all mapping exercises and community assessments, the initial design development process began with the creation of multiple options and opportunities for redevelopment and community upgrading. Initial designs began with multiple layouts for the planning of new housing plot sizes and a mix of single unit to multiple story units within.

The first design began with the mixed use of two to three story residential buildings pieced together to create open spaces in the surrounding areas to promote additional activities and community connections. The second design was adapted to provide single unit structures with increased mixed-use spaces along major streets and transit routes throughout the community. The third design began to combine ideas from the first two designs, such as single unit housing plots which fit together to create semi private courtyard spaces and connections to larger open spaces that surround mixed-use retail and housing developments along densely populated areas and common travel paths. All designs were created to provide different options to meet the needs of the community and to help visualize a few of the different planning approaches.

4.1d Design Development

Moving forward with the third design, which was a mix of single residential units and multiple story mixed-use units along major transit routes, we



Figure 4.1: Development Plan

were able to adjust, make modifications and revise the design based on client and community feedback.

Urban Planning:

Housing plots were created in three different sizes and orientations. Plots were then pieced together in groups of seven in order to create a semi private courtyard space among the units. These groups were then multiplied and rotated to create a group of 21 plot sites, creating a larger communal courtyard space in between all units. This pattern continued to expand, forming connected spaces throughout the specified residential land area.

Once the residential areas were devised and met up with major roadways and community transit routes units were adapted to create commercial spaces and mixed-use areas. The main road in and out of Kosovo was lined with retail shops, restaurants, and commercial spaces to create more economic and employment opportunities for residents.

Individual Housing Development:

In addition to the urban plans for a redeveloped Kosovo, four different housing unit plans were created to meet the needs for various housing and family sizes. Plans were created with the intentions of adaptation, changing spaces, and growth as needed. Each housing unit was designed with a transformative changing opportunity -- they have main ground floor plans with possible additional loft spaces that could be adapted for storage, additional bedrooms, or gathering spaces.



Figure 4.2: Housing Plan 1

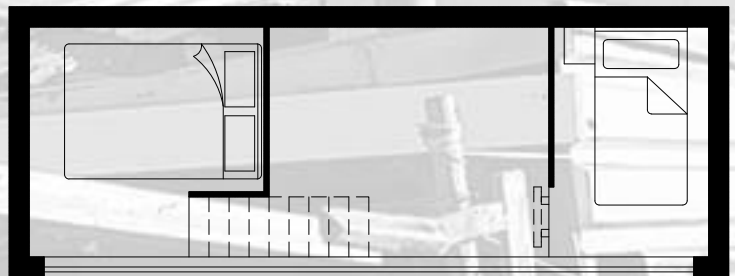
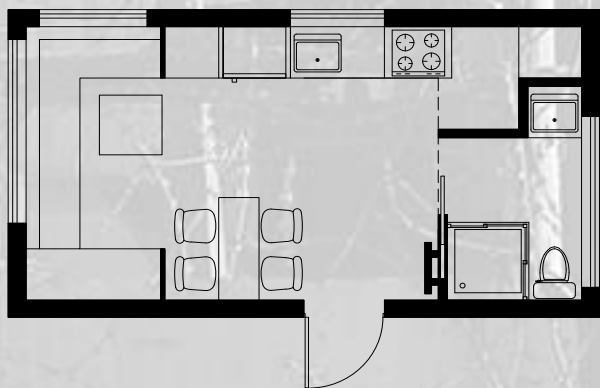


Figure 4.3: Housing Plan 2



These plans are simple and contain access to adequate facilities and basic housing necessities. Finally, the housing units were positioned on their plots to allow for additional growth as deemed necessary.

4.1e Creation of Final Documents

After client, partner, and community feedback was received, designs were adjusted based on suggestions and finalization of the urban plans and structure designs were accepted. The production of all final drawings, notes and technical documents can take place upon receiving this approval. Creating all documents within a specified scale to meet requirements as well as maintaining professional delivery of all materials allows for the project to move past the design planning process and into the construction and implementation stages.

5. Conclusions and Future Directions

5.1 Goals, Approach, Outcome

By conducting interviews with different community leaders, religious leaders, residents, families, and volunteers, we have gained a better understanding of Kosovo's desires, wants and needs for the future of their home and community. The most common developmental changes that were recorded were that (1) residents understood that redevelopment was necessary, but they wanted to make sure that no members of their community were moved or displaced from Kosovo, (2) that they would have better and more efficient opportunities for economic and educational development and employment through mixed-use planning, and (3) that each household would be better constructed with materials that provided suitable and safe structures for everyone.

The Kosovo community's needs provided the opportunity to relate and connect each need to various sustainable design and development principles that were implemented in the design progress and future planning. For example, (1) think small plan for the numbers, by using fewer resources, there would be fewer environmental impacts, fewer energy requirements and would allow for better special planning to mitigate resident displacement. (2) by using local, recycled and natural materials, you reduce the carbon footprint, decrease costs, and increase the economic and job opportunities for residents. (3) build to last, use and apply proper building standards for structures that are designed for sustainability and maintainability in order to last and survive, not quick and cheap build structures that will diminish quickly.

Research conducted, lessons learned, plans developed, and sustainability principles implemented have led to the successful design planning of the Kosovo Informal Settlement Redevelopment (See Figure 3.2). Based on existing cases and effective outcomes, the process has identified techniques that can be implemented to properly adapt community needs to meet sustainable development practices, and has shown how to properly include community residents and provide them with the resources to gain ownership in the redevelopment process.

5.2 The Challenge of Creating Sustainable Human Settlements

South Africa has a wide variety of legislation and policies that affect urban planning, housing, and water management in informal settlements. They are often complex and difficult to implement which causes issues when attempting to redevelop for a sustainable future (Felgate, 2013). There are a number of constraints that need to be addressed when moving forward with informal settlement redevelopment. We need to move past short-term thinking and plan for long-term social and environmental impacts with progressive policies and sustainable solutions:

- Learning and development are essential
 - It is important to understand and develop new approaches to urban planning and upgrading while working with communities and community-based organizations. New, innovative and sustainable approaches will require transformation in working and planning (Thompson-Smeddle, 2009).
- Principles for designing sustainable settlements
 - Need to understand that settlements are living and evolving human communities and not an area where structures can be built and forgotten. The built environment is meant to provide life, social interaction and development of the community. Sustainable settlements are meant to create a built environment that supports sustainable living, including efficient urban and housing designs, integration of built and natural environments, sustainable technologies, methods and materials, as well as community participation.
- Appropriate densification
 - Special planning and development are important to the successful redevelopment and de-densification of an area. Mixed-use development corridors with increased density can provide efficient public transport, local economic opportunities and varied services in residential areas. Proper land planning and management can help to create a more formalized development in existing informal settlements.
- Integration and mixed-use development
 - Physical and functional mixed-use developments allow for services within walking distance limiting the need for motorized transport, integrating private and public spaces and built and green spaces. Mixed-use plans for multiple activities in the same area, which helps boost the informal economy and development.
- Sustainable technologies
 - Renewable energy options, such as solar water heating, provide long-term energy and cost saving while reducing environmental impact. The design applications of north orientation, roof overhangs, insulation, energy efficient lighting, and rainwater harvesting are all elements that positively affect sustainable technology usage.
- Sustainable materials

- These are a mix of traditional and new technological materials. They include the use of local natural materials and recycled building materials, all of which lower transportation costs and environmental impacts, reduce waste and are more cost effective (Roux, 2009).
- Local economic development
 - Informal settlement redevelopments provide work, income, skill development, and opportunities for residents. Sustainable construction also allows more money to remain and circulate in the local community.
- Community participation and development
 - Building a sustainable settlement is more than just infrastructure and housing -- the residents need to become apart of the process. Planners need to engage the community and work with them to develop a space that they are proud of. Sustainable approaches value and encourage variety, individual creativity and innovation.
- Sustainable living and livelihoods
 - It is more than housing designs, technologies and materials. The community needs sustainable leadership, proper education, techniques and practices. They need to feel ownership in their community in order to continue to maintain and thrive in the newly developed settlement (Greyling, 2009).

The redevelopment of informal human settlements to meet the goals of sustainable settlement provides a multi-dimensional challenge. We must inspire community leaders, planners, designers, and officials to attack solutions with innovative and progressive approaches in order to conquer the challenges associated with sustainable human settlement development.

5.3 The Future of Kosovo

The Kosovo Sustainable Settlement Redevelopment Program will continue after the project is passed on. The deliverables, plans, and objectives will move forward with designers, planners, and architects at DSA in cooperation with the CoCT, leaders of the SCINSP, and community leaders and residents of Kosovo. A project of this scale with a site of 28 hectares and a timeline of 6.5 years from inception to completion will require the support and efforts of multiple stakeholders and workers to complete it. Future interns at DSA and current architects will work tirelessly to meet the needs of the community and redevelop the settlement sustainably.

Once implementation begins DSA and the CoCT will have the ability to monitor the success rate of varying redevelopment elements, such as structure maintenance, sustainability of community gardens, new business survivability, and decreased unemployment. These will all be monitored throughout targeted time periods: six months, 1 year, 5 years, and 10 years, with the hope for minimal government interventions.

6. Acknowledgements

The Residents of Kosovo

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Edward Cook, Associate Professor ASU

7. Appendices

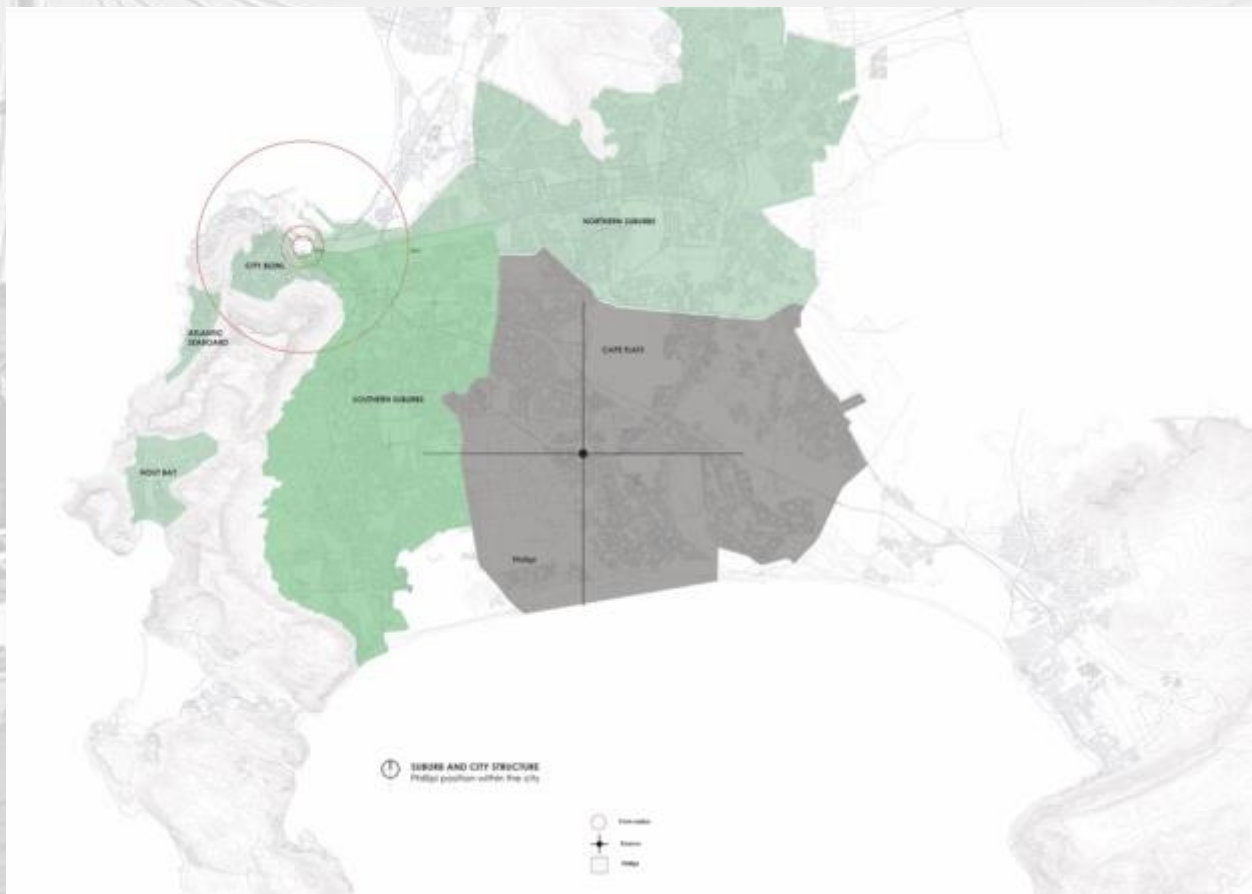


Figure 1: Cape Town Suburb and City Structure



Figure 2: Kosovo Housing Density



Figure 3: Kosovo Redevelopment Site

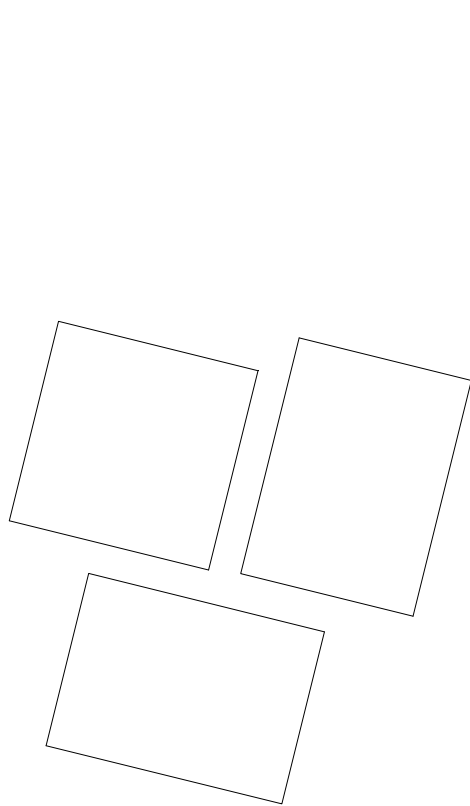


Figure 4: 3 different plot sizes

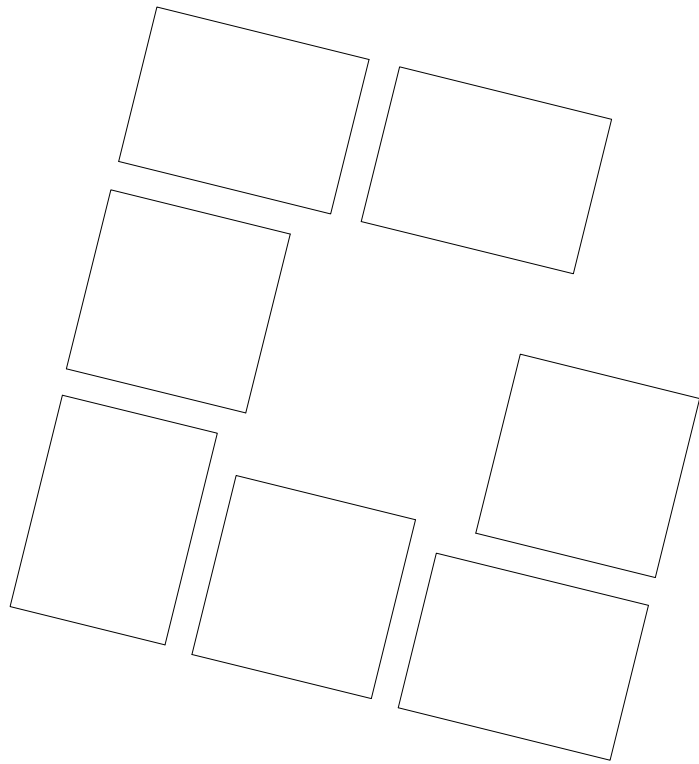


Figure 5: Plot Combo

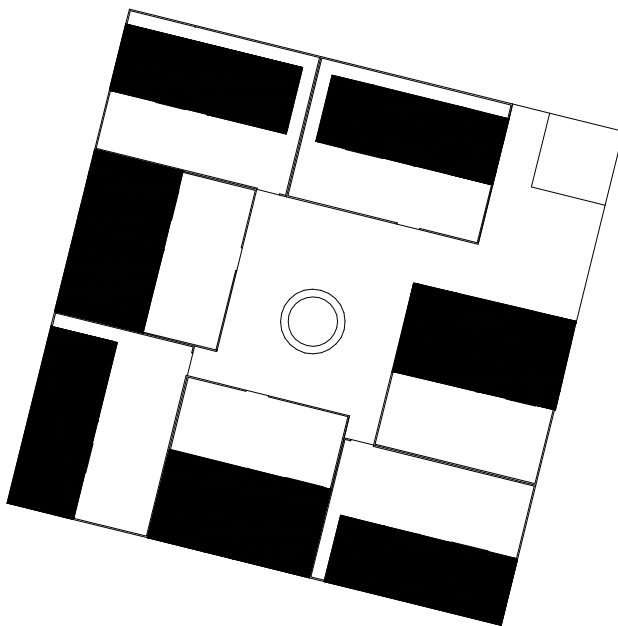


Figure 5: 7 Unit Plan

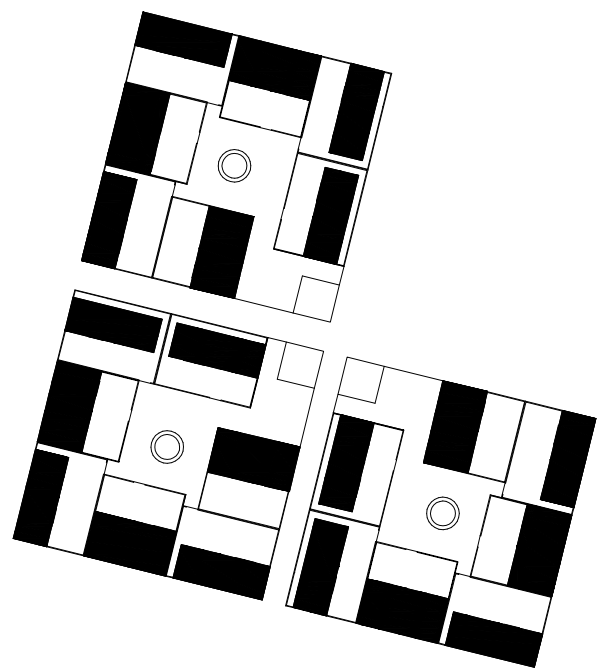


Figure 6: 7 Unit Combo

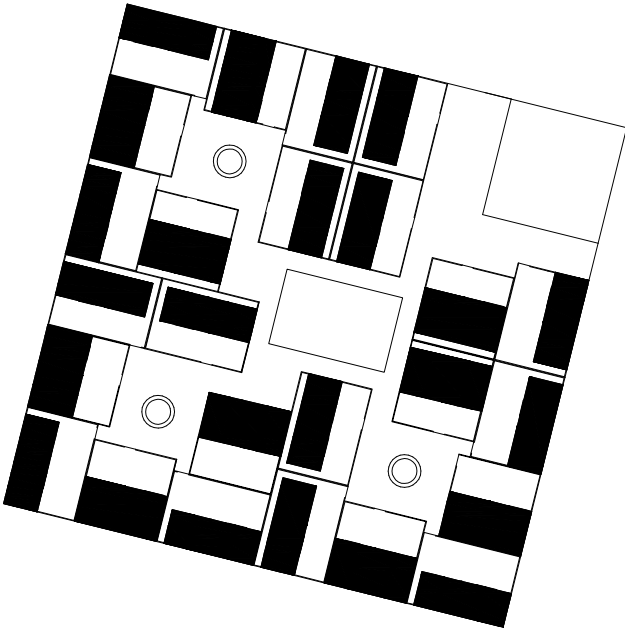


Figure 7: 25 Unit Plan

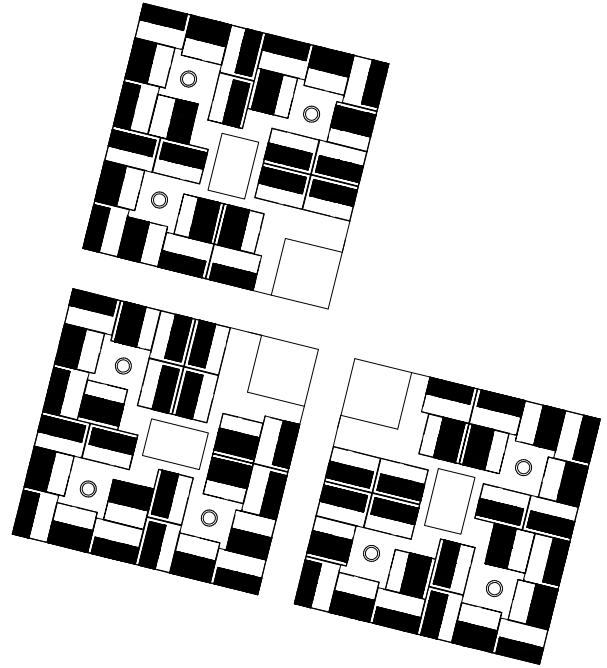


Figure 8: 25 Unit Combo

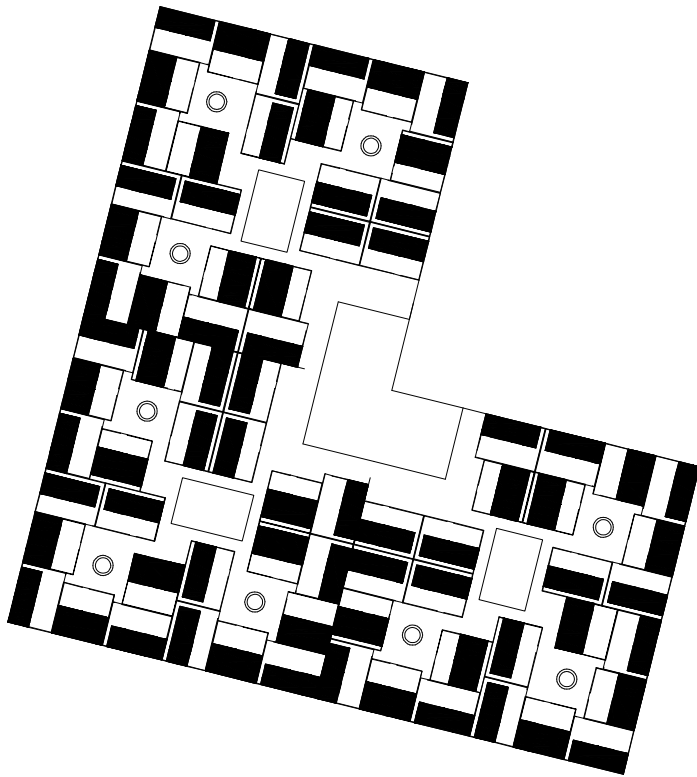


Figure 9: 75 Unit Plan

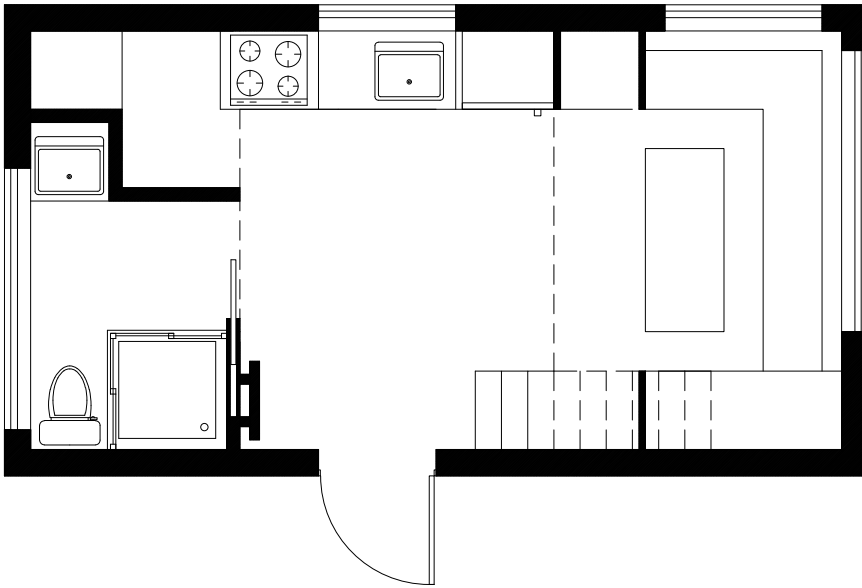
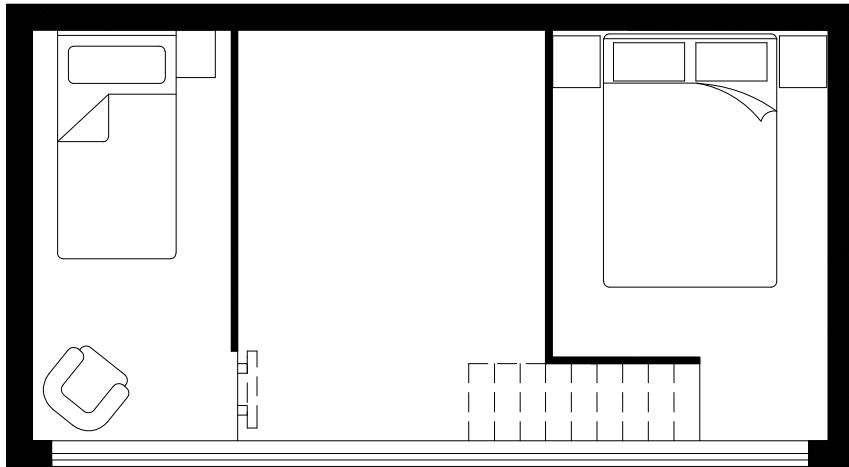


Figure 10: Housing Plan 3

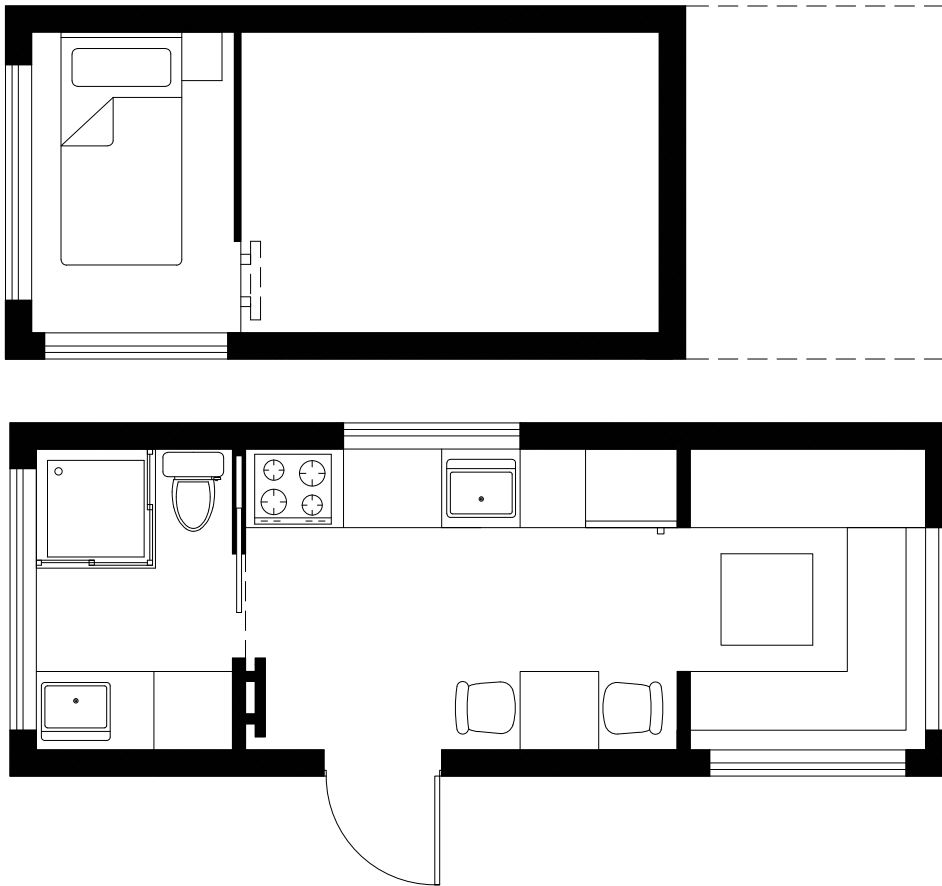


Figure 11: Housing Plan 4



Figure 12: Housing Section 1

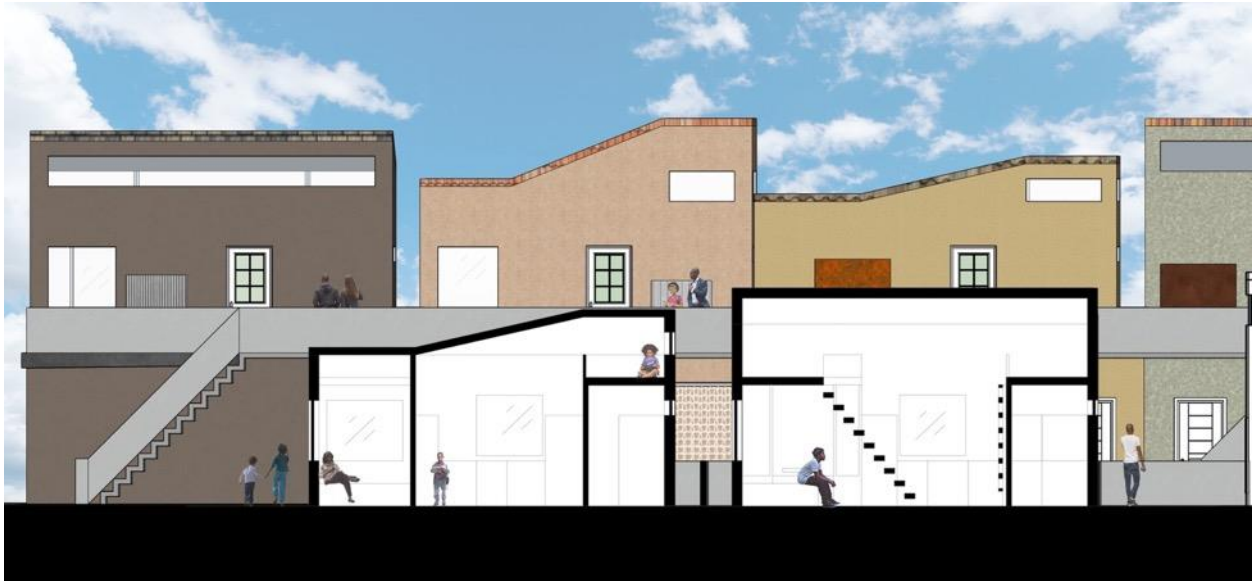


Figure 13: Housing Section 2



Figure 14: Open Activity Field



Figure 15: Residential Courtyard- Day



Figure 16: Residential Courtyard- Night



Figure 17: Social Street at Night

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