EXPLORING COMMUNITY MAPPING AS A TOOL OF TO BUILD COMMUNITY DATA THAT CAN BE EASILY FOR UPGRADING PURPOSES

"iQhaza Lethu"

An informal settlement upgrading partnership initiative co-funded by the European Union

ABSTRACT

Community led mapping, is a key tool informal upgrading, in order for one to understand their community better and get to know the structure and what resources are available in their own community. Community mapping is also a tool for youth empowerment in the community and a key tool to change how young people are viewed in their own communities.

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1. What is Community Mapping?

1.1. Introduction

One of iQhaza Lethu objectives is to capacitate community members in engaging meaningful and effectively with Government departments and other key stakeholders with interest in creating change or upgrading their informal settlements. After mobilizing the 10 pilot projects and engaging with leadership on daily basis, site visits and hosting a number of workshops via PCAP or Community Leadership Development workshop it was clear that community members are sure of their immediate needs as a community and they know the things that they would like the municipality to help them with. Major challenge though is that when you start asking community leaders basic questions about their community such as:-

- How many shacks/structures are in their community?
- How many households make up their community?
- How many people are in their community?
- How many toilets are in their community, municipal provided and self-made?
- Are there shops, community halls, church and/or crèches in the community?
- They also high solid waste dumping areas in their community.
- Display common play or gathering spaces in the community.

It is always hard to get a straight answer from community leaders or community members when asked these question because there is no community database that community keeps to track changes and development in the community. While the knowledge exists in the community it is usually not in an organized manner.

In Informal Settlement Upgrading building up community data is imperative for community and for government because data forms a solid ground for the community, municipality and other stakeholders for informed collective planning process. At this stage of the iQhaza lethu project, we introduced a community mapping tool in the community as a way of creating a basic standard database of what makes up that community.

2.2. Community Mapping

Community mapping, in this case, means a process where trained and capable community members use recent aerial photograph image of their community to identify:-

- Shacks in the community, by drawing each and every shack and write down its shack number.
- Identify the use of each structure, from residential, shop, crèche, community hall, church or mix use.
- Drawing each shack door position on the map, this helps to distinguish the number of households in each shack.
- They also draw and label public services spaces such as municipal toilets (CABS), informal pit latrines, taps, dumping spaces and any other space used by the community.
- Mapping team also highlights spaces of interest and development in the community.

The aerial image is accompanied by a notebook, which is used to write down each and everything in that is captured on the map. In the book, the team writes down:-

The shack number	The household head full name.	The number of people staying in the shack.	The use of the shack.

In the book, the team also writes down the total numbers of all facilities and the state of each facility.

2.3. iQhaza lethu approach to community mapping

The approach for doing community mapping iQhaza lethu, is recruiting a community-based mapping team of 8 community members including the CDC as the 9th member and team leader. The 9 pupils that makeup community mapping team are divided into 3 teams of 3 that will each be mapping a particular section of the community. Each section team has:-

- A0 section plan, printed at a larger scale to show greater detail of the community, with A0 tracing paper. (Images derived from Drone image).
- A4 counter book, for notes and information, write up.
- Stationery (Pens, Pencils, erasers, rulers and sharpeners).

The process starts with 3 days of a training workshop with the team and 14 days of ground capturing of the information and 3-4 days for information consolidation and presenting the information to the community leaders and other stakeholders.

2.4. Training

Training is a critical part of the process because community members at first struggle to read maps, so the training enables that everyone can read and understand the maps. Some of the exercises that are done during training are to make sure that the community can identify their homes on the overall map and can also navigate their settlement movement patterns by drawing main movement patterns on the plans.

Training day 1: The community mapping team is challenged to recognize CABS, parks and play areas in their area on the map. The main goal for day one is to introduce the mapping team, the reason why we would like them to do mapping and how it connects to their community development interests.

Training day 2: The teams are dived they start drawing the shape of each shack in their section. This is done with a pencil. Depending on how long the drawing takes, the teams can start to capture data on the ground.

Training day 3: The team is learning how to capture data as required in the process, this is done with Com-base planner and the AC.

Figure 1: Finding your home.

Figure 2: Drawing all shack borders.

2.5. Ground work

During the groundwork process, the mapping teams go around the community to map each structure and engaging with community members around the importance of building data. It is very important to note that during this period it is imperative team members do not talk politics and make promises to the community but all they do is to explain the process.

Figure 3: Collecting data in Uganda

Figure 4: Community mapping in Palmiet

2.6. Information Consolidation

Once the teams are done with mapping all the shacks/ structures on the ground, they then get back to their working space as one group to collectively count the total number of data sets collected. This is also the point where the community-based planner gets to check all the information and the structure numbers to ensure that everything is correct. At this stage, the mapping team's findings are then presented to the leadership.

Figure 5: Mapping teams

Figure 6: Mapping team present information community leaders.

2.7. GIS Capturing of community Maps

When the community mapping data is collected from the community team it is captured at the office by the GIS technician into Arc-GIS. This process involves a lot of back and forth process between Community based-planner, GIS technician and the Community Development Coordinator until the data is clean and can be easily shared with other iQhaza lethu team members, municipality departments and other stakeholders with such as HSRC.

2.8. Process story

The story of house 176/3 is a unit in Parkington used by multiple families. The municipal number written in red represents the shack number (176) and the 3 highlights that there are 3 families sharing the shack. When the community mapping team visited the house they recognised the number, but they discovered that there are about 5 families sharing the structure, with 3 of the families renting to the main household that stays at the shack at room number 1.

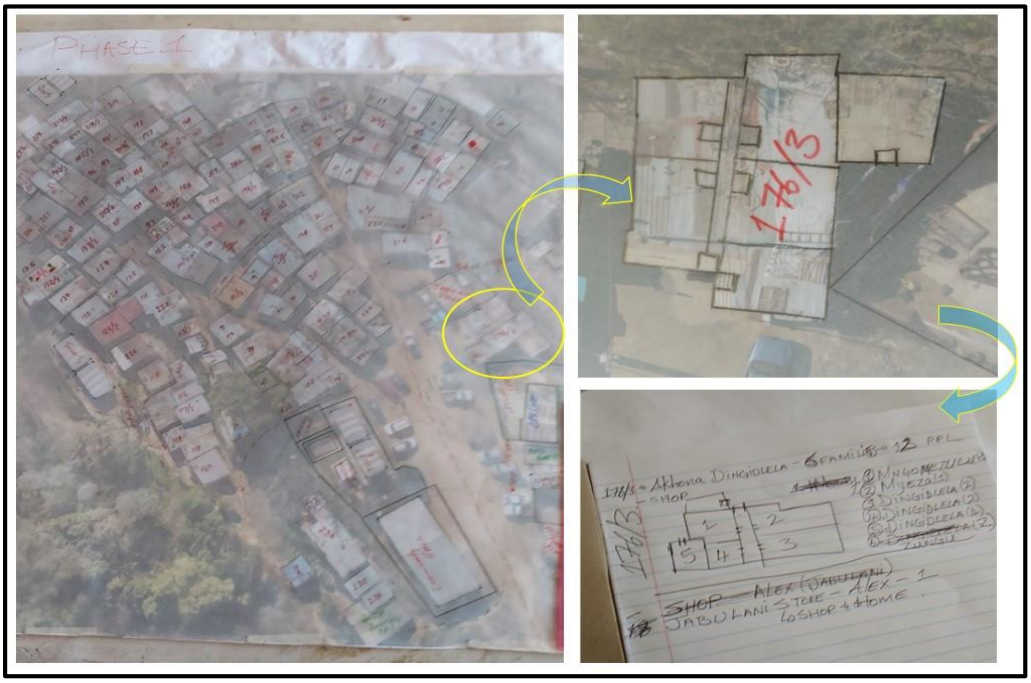


Figure 7: Unit 176/3 in Parkington

The results so far are only for Parkington, Quarry Road and Palmiet, these informal settlements were the first we explored community mapping with. The communities in all 3 settlements selected team members that cut across all genders and age groups, with most of the team members being young females in each community.

2. iQhaza lethu: Drone Mapping

2.1. Purpose

- Drone Mapping is a key element in Community Structure Mapping, it gives clear and latest aerial image of the community that is captured, that it then used for Community Structure mapping.
- The aerial image is used to monitor growth and development of the community.
- The aerial image is used to assist and track changes after a community disaster, like structures affected by fire or flooding.
- Latest drone image can also be used to confirm and adjust the community boundary.
- Drone images is a key component in creating community data with spatial reference that can be shared with other professionals via tools such GIS, AutoCAD and other software's used for drawing.
- Concept drawing of plans and community led planning exercises.

2.2. Progress

- As iQhaza lethu we worked with Viloshin Govender, an architect from UKZN, who operates a drone to produce aerial images of communities. We worked with him to capture and produce latest aerial images for all 10 iQhaza lethu pilot communities.
- In practice, the AC made contact with the CDCs in the community to communicate with leaders a possible date where iQhaza lethu team members and Viloshin visited the community to fly the drone. It was an amazing experience in the community with kids and youth circling around Vilo to see what he was doing and pointing out the drone in the sky.
- When Vilo has captured the images, he then stiches the different images together to produce one areal image that is then used to engage with community members for community structure mapping and community planning with communities.
- The image is also Geo-referenced in Arch GIS by Petri from eThekwini Municipality Geometry department, and gives back to iQhaza lethu team as GIS data that is then used by GIS support personnel to capture community data from structure mapping exercise and create mini-household data collected.

2.3. Learning

Key learnings from the Drone Mapping has been:-

1. Latest aerial image of community is a great tool to interact with community around :-

- How the community members see and perceive their community.
- Community members learning about their community in spatial context.
- Community members teaching outside stakeholders about their community, positioning of their existing municipal services and communal services like spaza shops, community hall/gathering space and other social spaces.
- Planning with community leaders and community members being able to express and spatially reference their development interests.
- Assist sharing community knowledge, from challenges to development interest with other stakeholders.

2. Geo-referencing is a key component to ensure that data is captured correctly and can be shared easily on GIS so that others can access the information easily.
3. Drone flights are key component to monitoring community growth.
4. Assist after disaster strike in the community like shacks-fire, easy to monitor disaster impact.

2.4. Way forward

Drone mapping is important for informal settlement upgrading and for monitoring growth of informal settlements. For future of informal settlement upgrading drone mapping is key in order to for municipality and community stakeholders to have a meaningful engagement, latest data such as community Arial image. These images become a key tool for community members to engage with outside stake-holders and also to be able to communicate their development goals with linked to real time spatial reference.

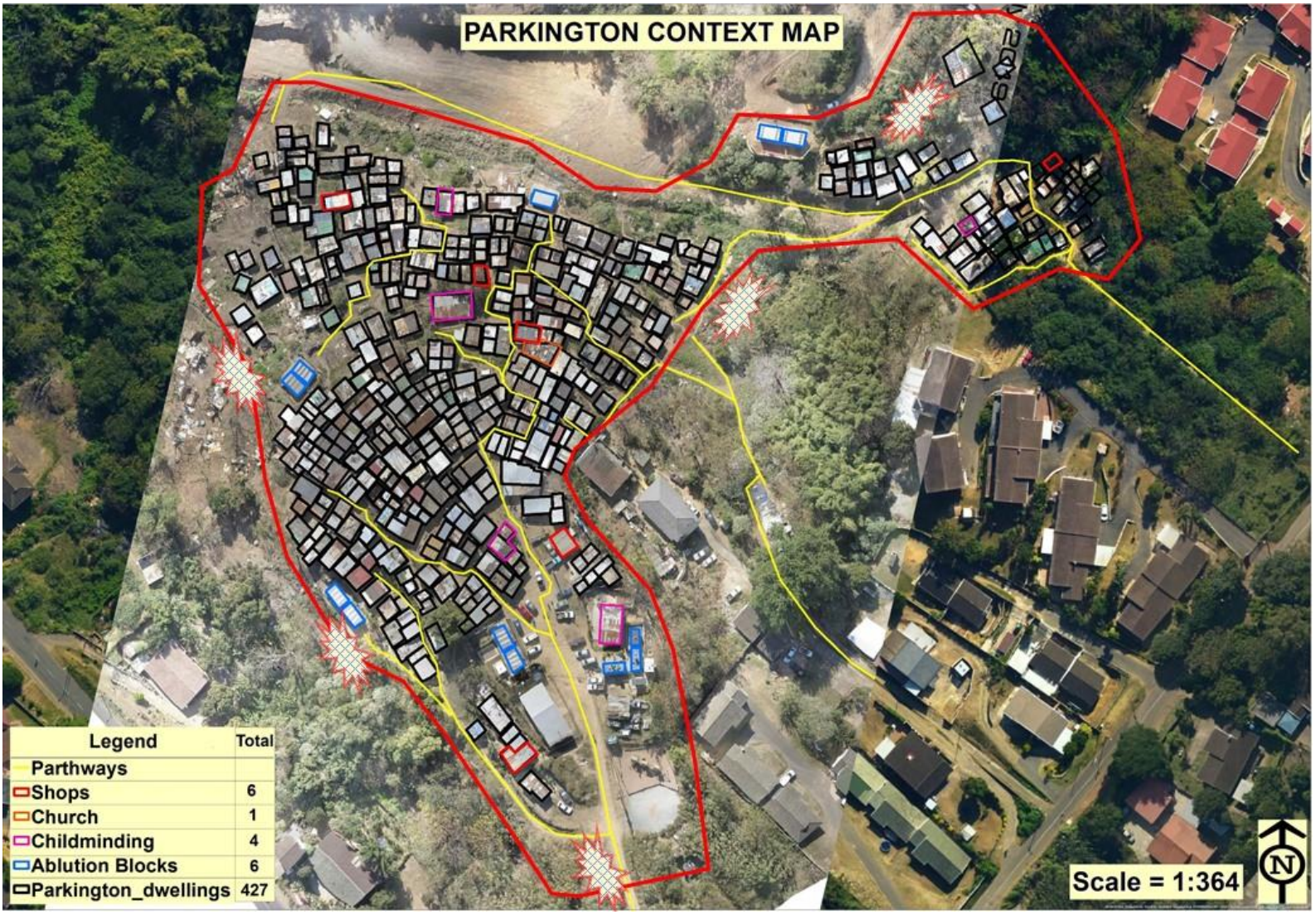
3. Community led structure-Mapping outcomes:

3.1. Overview of results to date

Results of the mapping process clearly indicate the need for such a process to help community leaders and members in general to get know their community better. During the community mapping session people were surprised with findings on the ground, most mapping team members were surprised by the number of empty structures not being used at all in their community. The other surprising factor for mapping team was the total number of structures vs the total number of households in their community, in Parkington when this information was shared with the leadership, they started to understand why in the settlement there is always a challenge with people wanting to invade land within the settlement.

Settlement	**Total number of Households**	**Number of Structures**
Parkington	427	324
Havelock	306	296
Palmiet	1200	1135
Quarry	1169	1119
Uganda	1695	1130
Dakota Beach	1386	924
eZimbileni	782	664
Total Mapped: **7**	Total: **6965**	Total: **5592**

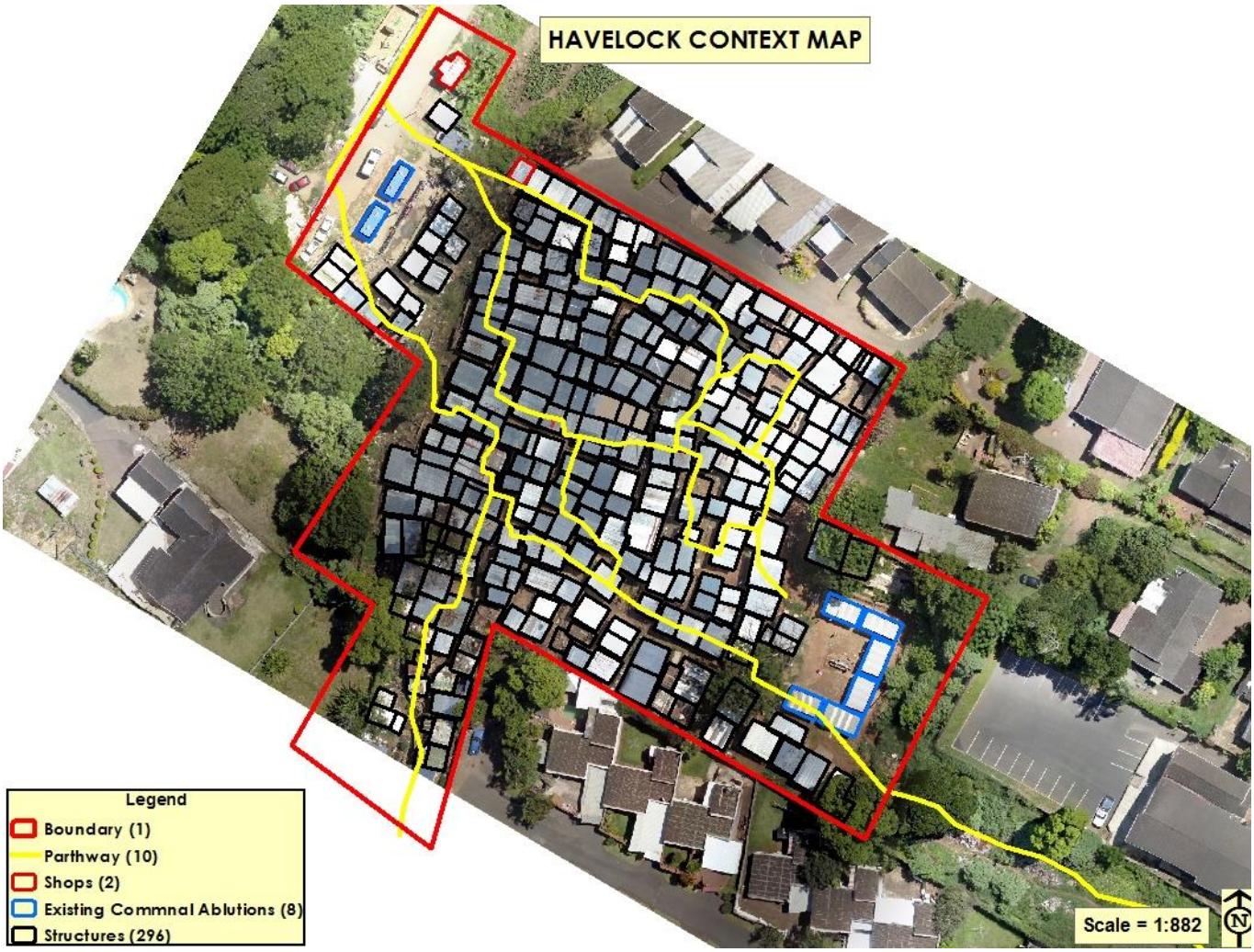
3.2. Parkington



Community mapping outcome of Parkington			
Total number of:-		Units	Comments
1.	Households	427	There are about 103 households sharing within the settlement
2.	Dwelling structures	324	Community settled area is about 1.97 hectares. This means the is 167 du/ha.
3.	Ablution blocks	6	5 out of 6 MABS are full MABS with separate males are Females building and there is one Micro MAB at the back of the settlement.
4.	Child-care facilities	4	1 Dedicated ECD facility in a bad state, building needs to be repaired. The other 3 facilities are all child minding, working from people's homes.
5.	Shops	6	No major shops or hardware's in the settlements.
6.	Church/s	1	There is currently one operating church within the settlement.
7.	Parks/ Play area/s	1	The play has a jungle gym, and there is a need for another play area at the back of the settlement.

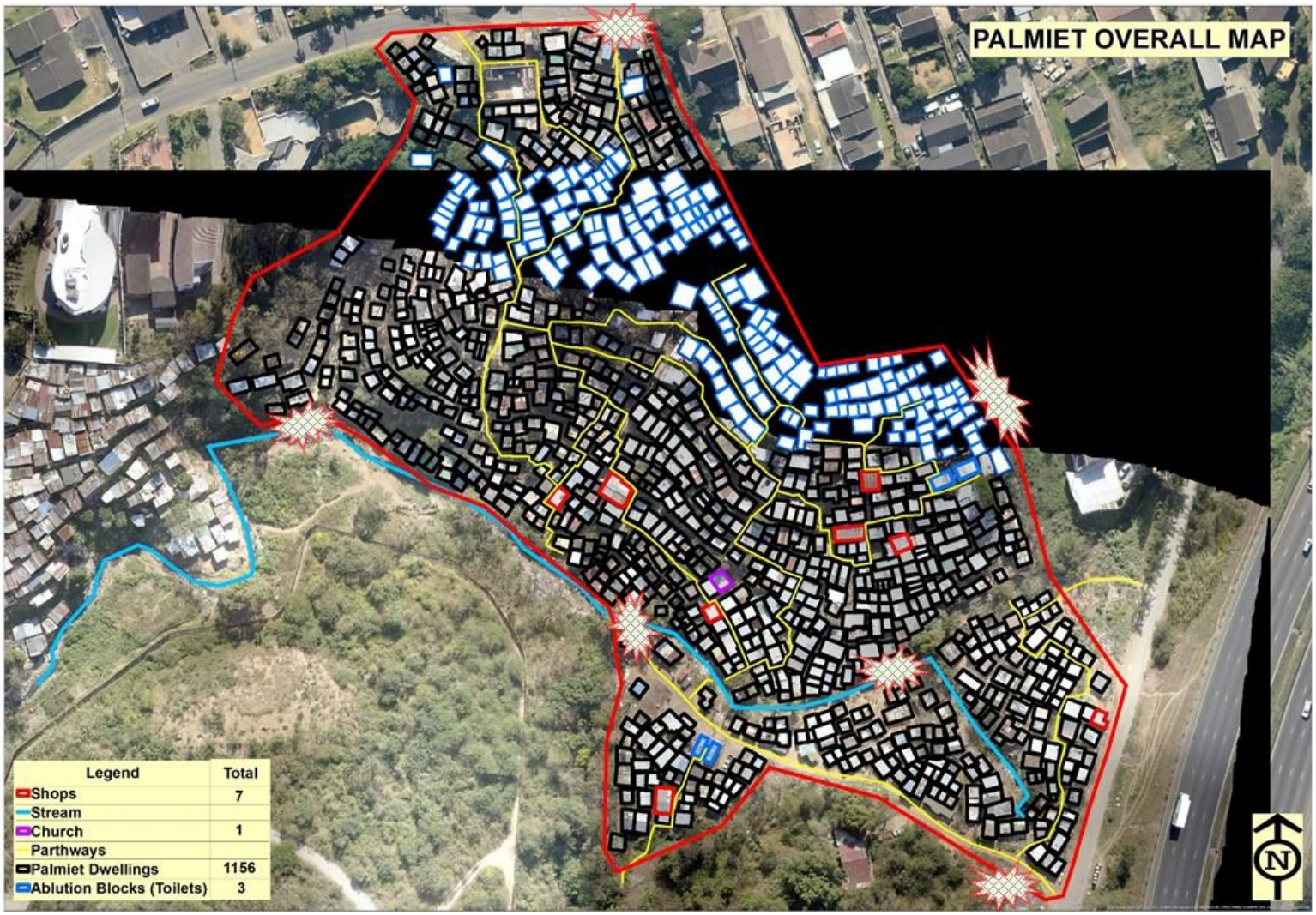
8.	Community Hall	1	Community built facility, needs upgrading to create library space.
9.	Waste Dump sites	4	Community expressed to upgrade these spaces so they are not rat infested. In the map shown as Zing-zag

3.3. Havelock



Community mapping outcome of Havelock			
Total number of:-		Units	Comments
1.	Households	306	There are currently 306 households within the settlement
2.	Dwelling structures	296	There are roughly 10 structures that are shared in the community.
3.	Household Density	395	Net settled density of the area is 395 Units per hectare
4.	Child-care facilities	4	There are 4 unregistered Early Childhood Development centres in the settlement which are not funded by the Department of Social Development.
5.	Spaza shops	2	There are two shops located at the top of the settlement; one operates as a spaza shop while the other as a fast food shop.
7.	Parks/ Play area/s	0	There is no dedicated play areas in the settlements, however there is access to 6 parks within a 1 kilometre radius of the settlement

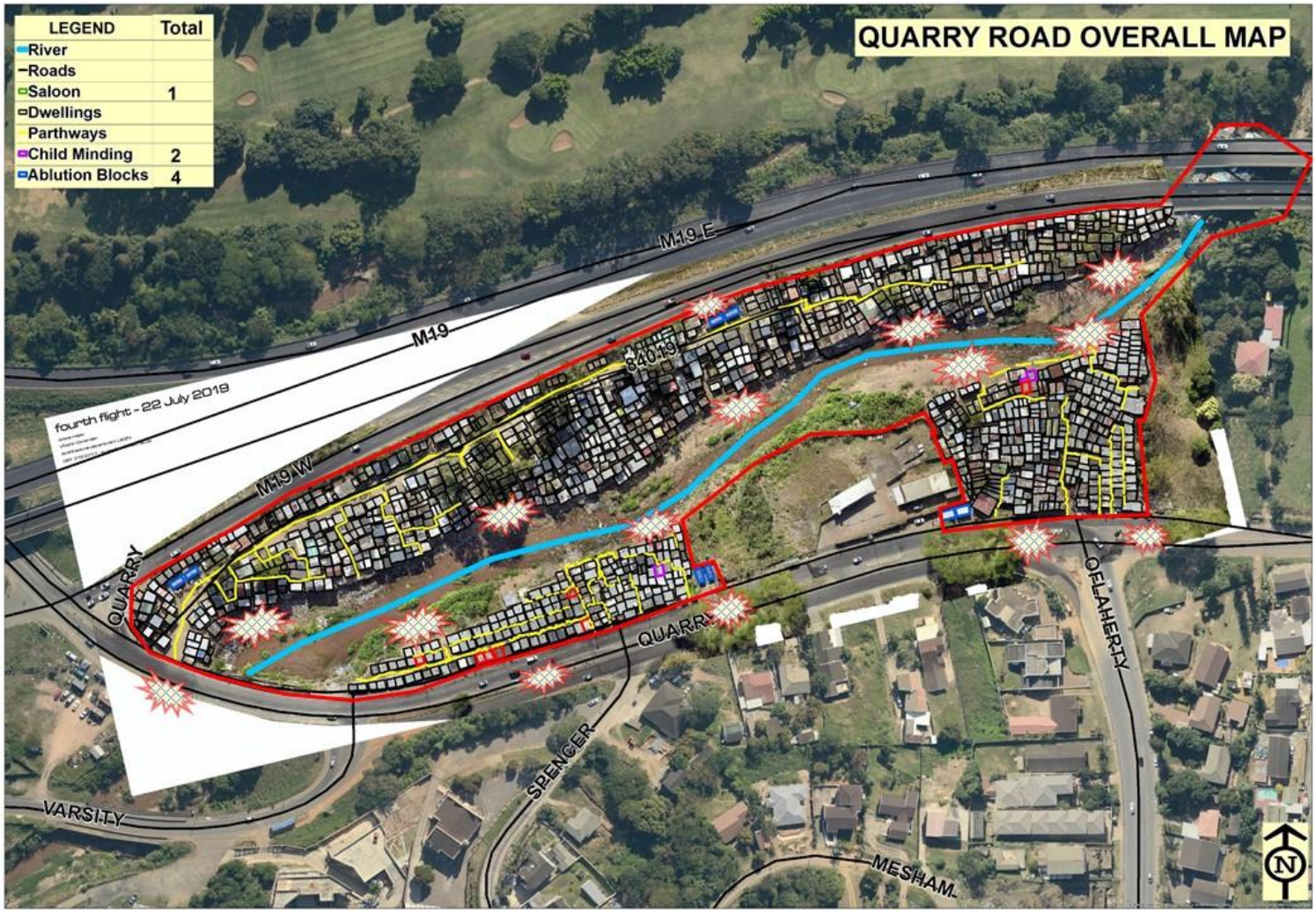
3.4. Palmiet



Community mapping outcome of Palmiet			
Total number of:-		Units	Comments
1.	Households	1200	There is about 65 households that share structures in the community.
2.	Dwelling structures	1135	There are 1135 structures within the settlement.
3.	Ablution blocks	3	Major challenge lack of services, most of the times only the MABS at the top work.
4.	Child-care facilities	2	There is ECD facilities at the bottom and upper part of the settlement, built by containers. The ECD on top is also used as meeting space, since there is no community hall.
5.	Spaza shops	7	All daily use spaza shops, no hardware and material shops in the settlement.
6.	Church/s	1	There is currently one church in operation within the settlement.
7.	Parks/ Play area/s	0	There is no dedicated play areas in the settlements, kids play along the river and open foot paths.

9.	Waste Dump sites	5	Due to the steepness of the settlement the community struggles with waste management and they waste is dump in spots that the municipality can't reach. The municipality only
10.	Community Bridges	3	This bridges are built to gross the stream and join the two sides of Palmiet zone 1 community. The bridges are dangerous since there is no safety measures taken into consideration when the community was creating them.

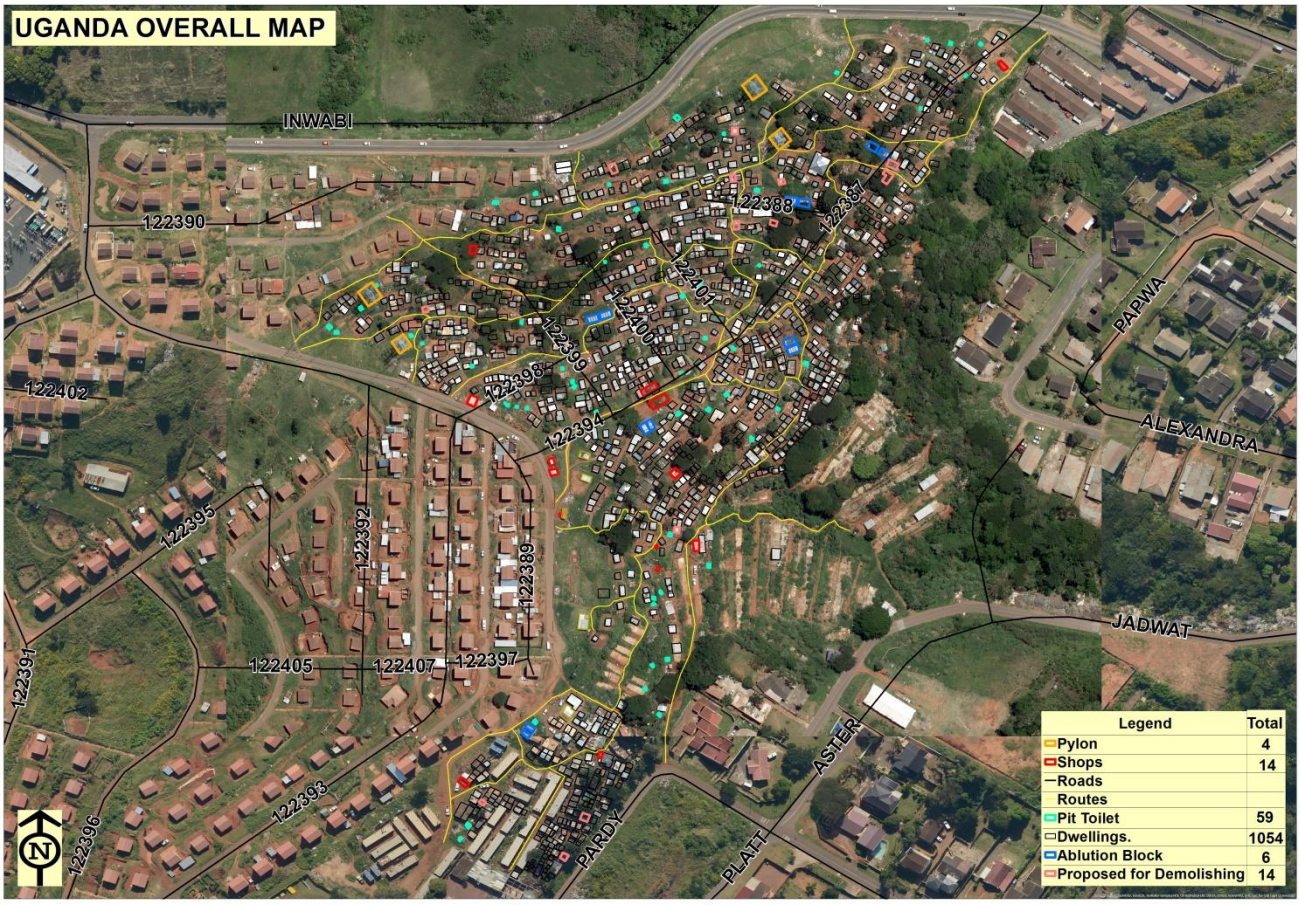
3.5. Quarry Road



Community mapping outcome of Quarry Road			
Total number of:-		Units	Comments
1.	House -holds	1169	There are about 50 structures that are shared amongst families in the community.
2.	Dwelling structures	1119	Community settled area is about 3.5 hectares. This means the is 320 du/ha
3.	Ablution blocks	4	All CABS, still containers, with a number of grey water challenges.

4.	Child-care facilities	2	All Child minding facilities, there is no land in the settlement for dedicated ECD facility.
5.	Spaza shops	8	There is one 1 saloon and 3 barbershops, this shows there is a lot of business interest and energy in the community, people creating their livelihood strategies.
6.	Church/s	2	One of the churchs was washed away during the big floods and hasn't rebuilt yet, due to loss of land near the river.
7.	Parks/ Play area/s	1	There is no dedicated play parks inside the settlement. Kids play inside the open movement pathways in the community. There is 1 play park outside the settlement, but this play space is only used by kids from Mamsuthu area. There is a need to invest in a community space in the community so that the children have a dedicated space that they can use instead of hanging out at the sheeben especially during school holidays.
9.	Waste Dump sites	16	Big challenge waste management. The community only gets 300 black bags for waste collection at house hold level a week. These are not enough in numbers, there is also not dedicated organized dump sites.

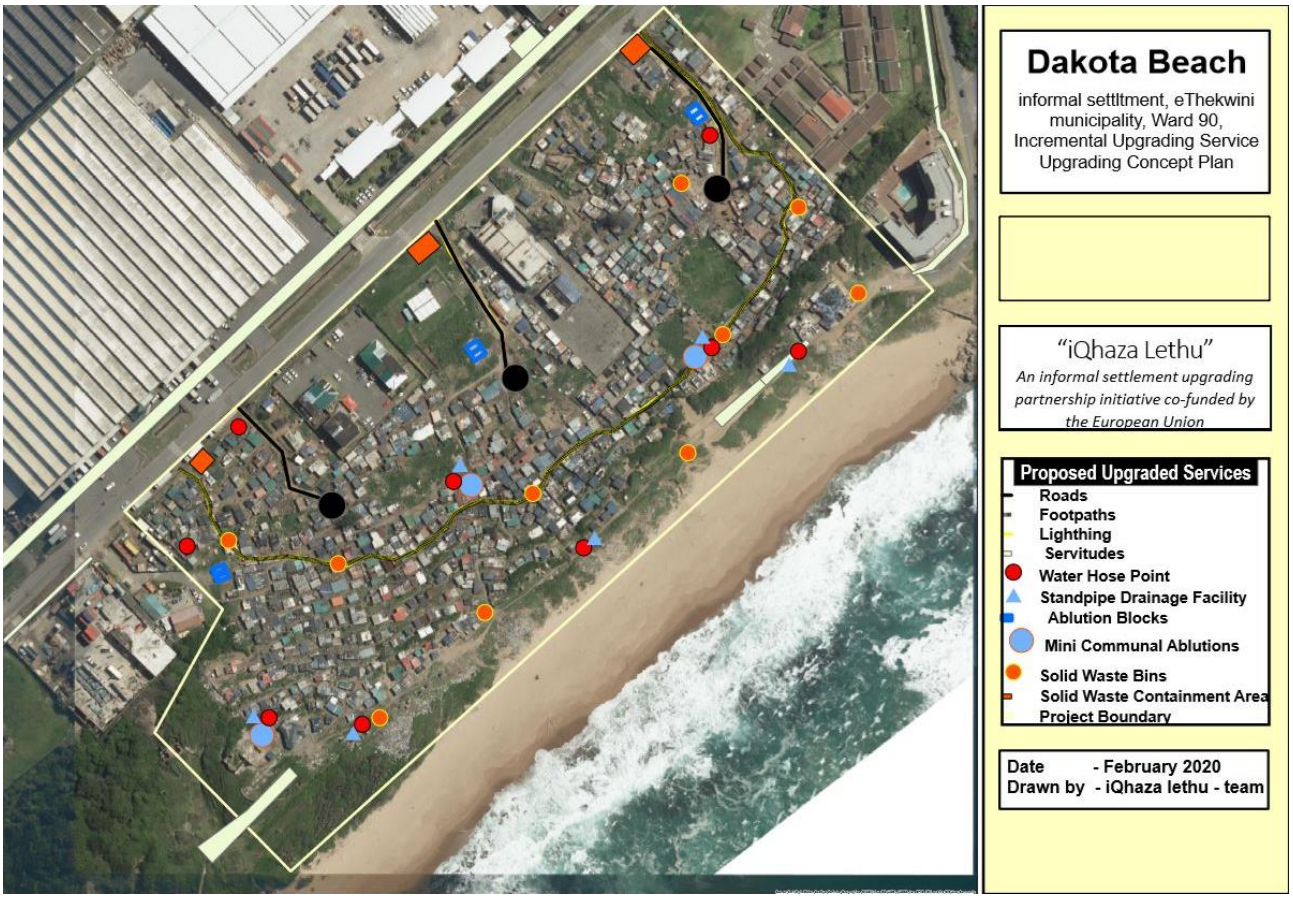
3.6. Uganda



Community mapping outcome of Uganda

Total number of:-		Units	Comments
1.	Households	1695	There are about 565 structures that are shared amongst families in the community.
2.	Dwelling structures	1130	There are roughly 1130 structures in the community.
3.	Household Density	168/Ha	Net settled area density 168 Units/Ha.
4.	Ablution blocks	6	There are 6 existing ablution blocks in the settlement.
5.	Shops	14	There are 14 operating shops within the settlement.
6.	Parks/ Play area/s	0	There are various open pieces of land within the settlement that are prone to flooding according to the residents that could be used as communal open spaces and play areas for the children.

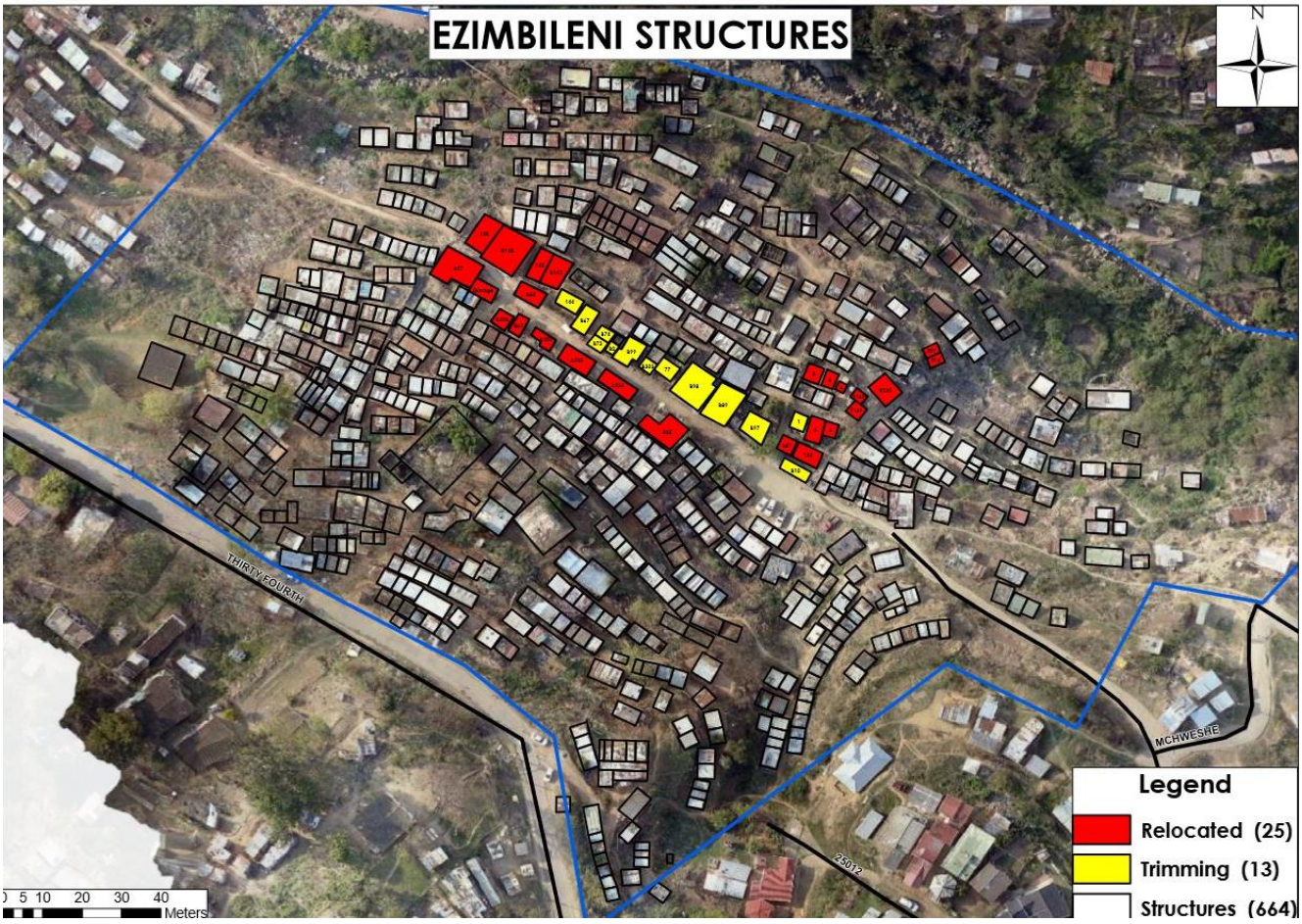
3.7. Dakota Beach



Community mapping outcome of Dakota Beach			
Total number of:-		Units	Comments
1.	Households	1386	There are about 462 structures that are shared amongst families in the community.

2.	Dwelling structures	924	There are roughly 924 structures in the community.
3.	Household Density	247/Ha	Net settled density of the area is 247 Units per hectare.
4.	Ablution blocks	3	There are three existing ablution blocks in the settlement.
5.	Child-care facilities	4	According to the conducted ECD survey, there are four ECD facilities within the settlement.
6.	Parks/ Play area/s	0	There are various open pieces of land within the settlement that are prone to flooding according to the residents that could be used as communal open spaces and play areas for the children.

3.8. eZimbileni



Community mapping outcome of eZimbileni			
Total number of:-		Units	Comments
1.	Households	782	There are about 118 structures that are shared amongst families in the community.

2.	Dwelling structures	664	There are roughly 664 structures in the community.
3.	Household Density	144/Ha	Net settled density of the area is 144 Units per hectare.
4.	Ablution blocks	1	One Communal Ablution Block (consisting of a male and female unit, serve as the settlements only water supply.
5.	Child-care facilities	0	There are no known ECD centres operating within the settlement. Any vacant parcel of land within the settlements should be considered for ECD centre.
6.	Parks/ Play area/s	0	There are very few pockets of unoccupied land, which are suitable for settlement. Some open spaces serve as parking areas, while others are in more remote locations.
7.	Waste Dump sites	5	Due to the steepness of the settlement the community struggles with waste management and they waste is dump in spots that the municipality can't reach. The municipality only
8.	Community Bridges	3	This bridges are built to gross the stream and join the two sides of Palmiet zone 1 community. The bridges are dangerous since there is no safety measures taken into consideration when the community was creating them.