

# CAMP MAPPING AT UNHCR



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# The case of Lugufu I and II, Tanzania

- Use Satellite imagery, GPS points, and information from our partners to map Lugufu
- Develop a set of best practices for using satellite imagery
- Link existing ProGres/registration data to GIS
- Develop a capacity and system for continually updating the maps and databases

# Lugufu I and II

- Population 60 000 in Lugufu I;  
35 000 in Lugufu II.
- Refugees of Congolese nationality (DRC).
- Implementing partners
  - Tanzanian Red Cross
  - World Vision
  - Care International



# Facts - Camp structure

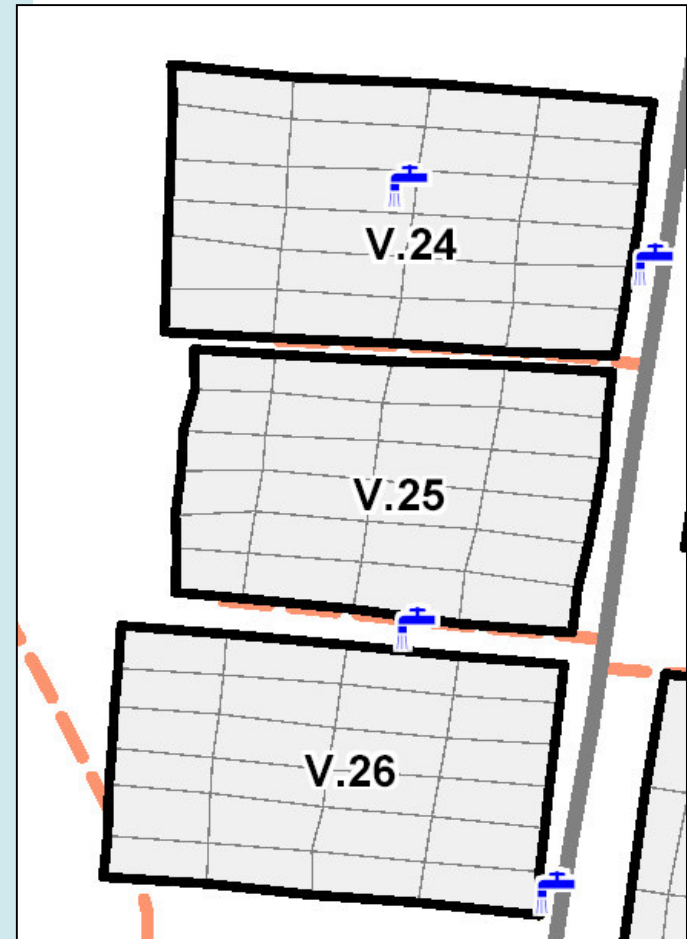
The structure in Lugufu I is

- Village (32) – admin 1
- Block (768) – admin 2
- Plot (approximately 18 250) – admin 3

The structure in Lugufu II is

- Zone (7) – admin 1
- Cluster (60) – admin 1\*
- Block (approximately 360) – admin 2
- Plot (approximately 6 500) – admin 3

In total approximately 25 000 plots!



# Available data

1. QuickBird satellite image from July 2003 (0.6 m resolution).



# Available data

- World Vision sketches of camp layout.
- Well organized address system.



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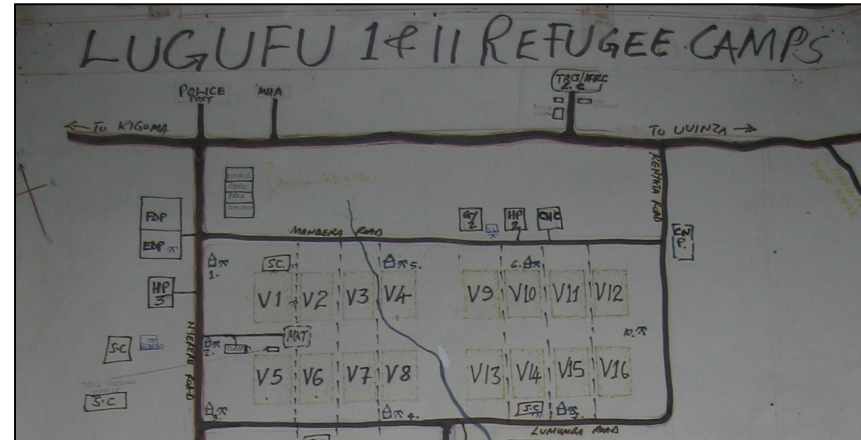
  

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# Available data

## 4. Sectoral Data:

- Water
  - Tanzanian Red Cross hand-drawn water map.
  - GPS measurements of many water points, not in standard system WGS 84.



- Education
  - Data about schools in Excel.

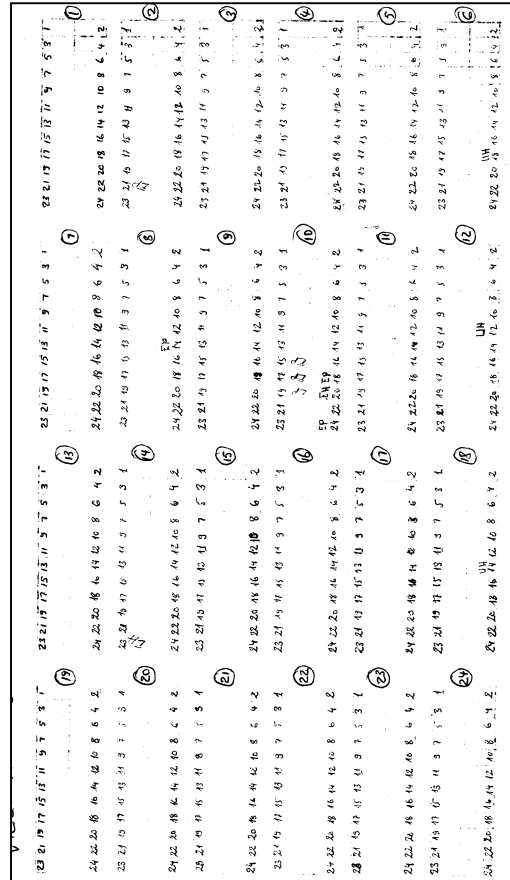
	A	B	C	D	E
1	The Lugufu Water Initiative		II. Compound Water		12.08.04
2	Under contract of Spanish Red Cross for Tanzania Red Cross				Santiago Arnalich
3					
4	<b>Annex 3.4 GPS Points for Cloud Comparison</b>				
5					
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7	<b>Grid</b>	UTM			
8	<b>Datum</b>	ARC 1950			
9					
10	<b>Name</b>	<b>Description</b>	<b>Position</b>	<b>Altitude</b>	<b>Symbol</b>
11		145	36 M 193781 9432833	1080 m	Flag
12		146	36 M 193781 9432833	1080 m	Flag
13	2W/P1 !!	Pressure Problem	36 M 193929 9431906	1056 m	Drinking Water
14	2W/P10		36 M 194439 9431387	1072 m	Drinking Water
15	2W/P11 !!	Pressure problem	36 M 194749 9431441	1070 m	Drinking Water
16	2W/P12		36 M 194611 9431086	1068 m	Drinking Water
17	2W/P13		36 M 194651 9430811	1073 m	Drinking Water
18	2W/P14		36 M 193437 9432754	1067 m	Drinking Water
19	2W/P15		36 M 194269 9432293	1071 m	Drinking Water
20	2W/P16		36 M 194244 9432556	1070 m	Drinking Water
21	2W/P17		36 M 193915 9430831	1068 m	Drinking Water
22	2W/P18 !!	Pressure problem	36 M 194298 9430472	1084 m	Drinking Water
23	2W/P19		36 M 195153 9431523	1064 m	Drinking Water
24	2W/P20		36 M 195378 9431028	1069 m	Drinking Water

# Mapping of Basic Structures

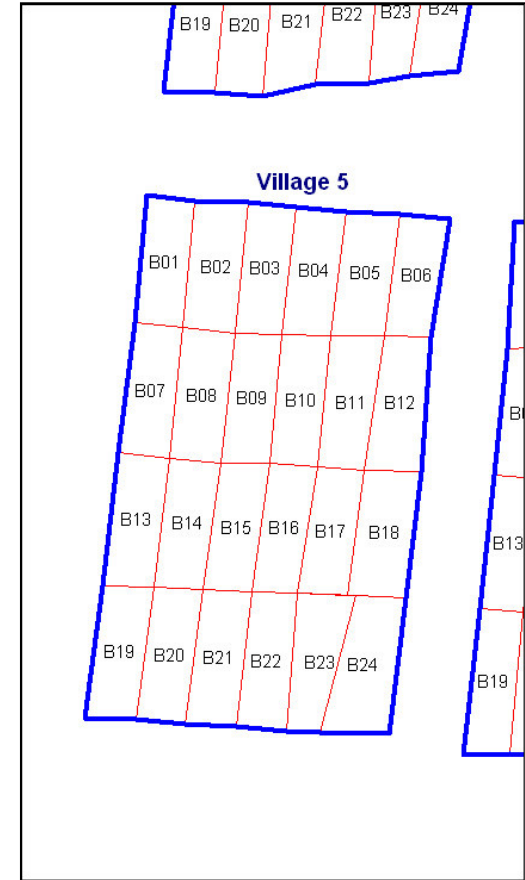
- Digitize the administrative structure of the camp.



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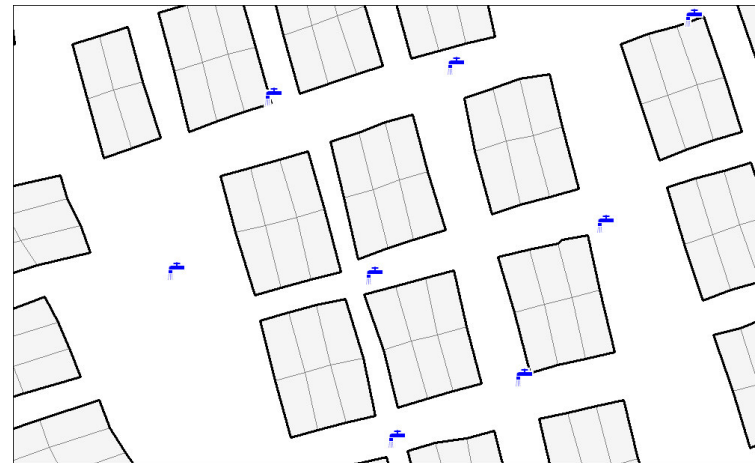
# Mapping of Basic Structures

- Digitize the road network of the camp.



# Water Sector

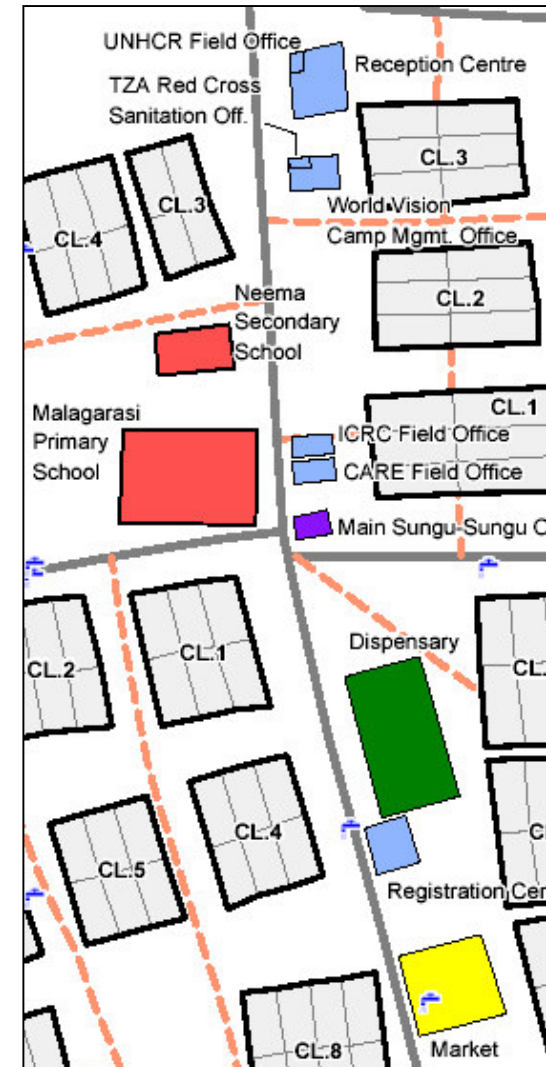
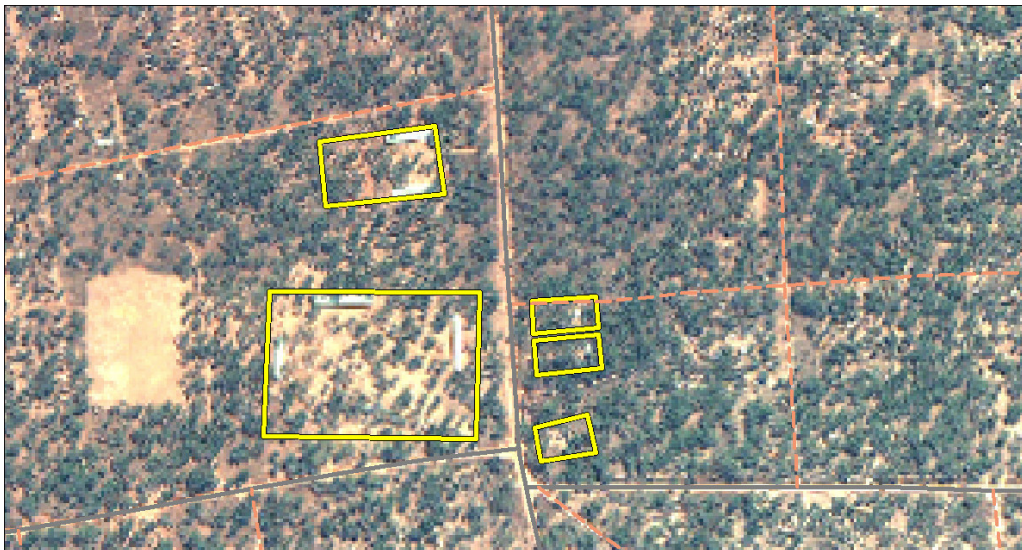
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NAME	SECTOR	TYPE	POTABLE	OPERATING	AGENCY
6C	Water	Public Water Tap	T	F	TZA Red Cross
6B	Water	Public Water Tap	T	F	TZA Red Cross
5C	Water	Public Water Tap	T	F	TZA Red Cross
5B	Water	Public Water Tap	T	F	TZA Red Cross
1B	Water	Public Water Tap	T	F	TZA Red Cross
1C	Water	Public Water Tap	T	F	TZA Red Cross
2B	Water	Public Water Tap	T	F	TZA Red Cross
4F	Water	Public Water Tap	T	F	TZA Red Cross
4C	Water	Public Water Tap	T	F	TZA Red Cross
4D	Water	Public Water Tap	T	F	TZA Red Cross
4B	Water	Public Water Tap	T	F	TZA Red Cross
12B	Water	Public Water Tap	T	F	TZA Red Cross
12A	Water	Public Water Tap	T	F	TZA Red Cross
13C	Water	Public Water Tap	T	F	TZA Red Cross
13B	Water	Public Water Tap	T	F	TZA Red Cross
Chlorination	Water	Treatment	T	T	TZA Red Cross
Lugufu Intake	Water	Pumps	T	T	TZA Red Cross
BH 1A	Water	Borehole	T	T	TZA Red Cross
BH 5	Water	Borehole	T	T	TZA Red Cross
1	Water	Public Water Tap	T	T	TZA Red Cross
10	Water	Public Water Tap	T	T	TZA Red Cross
11	Water	Public Water Tap	T	T	TZA Red Cross
12	Water	Public Water Tap	T	T	TZA Red Cross

# Education, Health, Security, Environment, etc.

- Traveled in camp with the Implementing partner for each sector to identify each facility in their sector as well as collect attribute information.
- Facilities were digitized using the satellite image or with GPS points collected in the field.



# Recording events

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Refugee Status Determination



Assistance



Protection



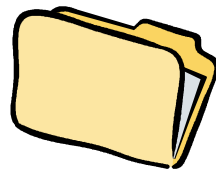
Registration



Documentation



Resettlement



Physical file



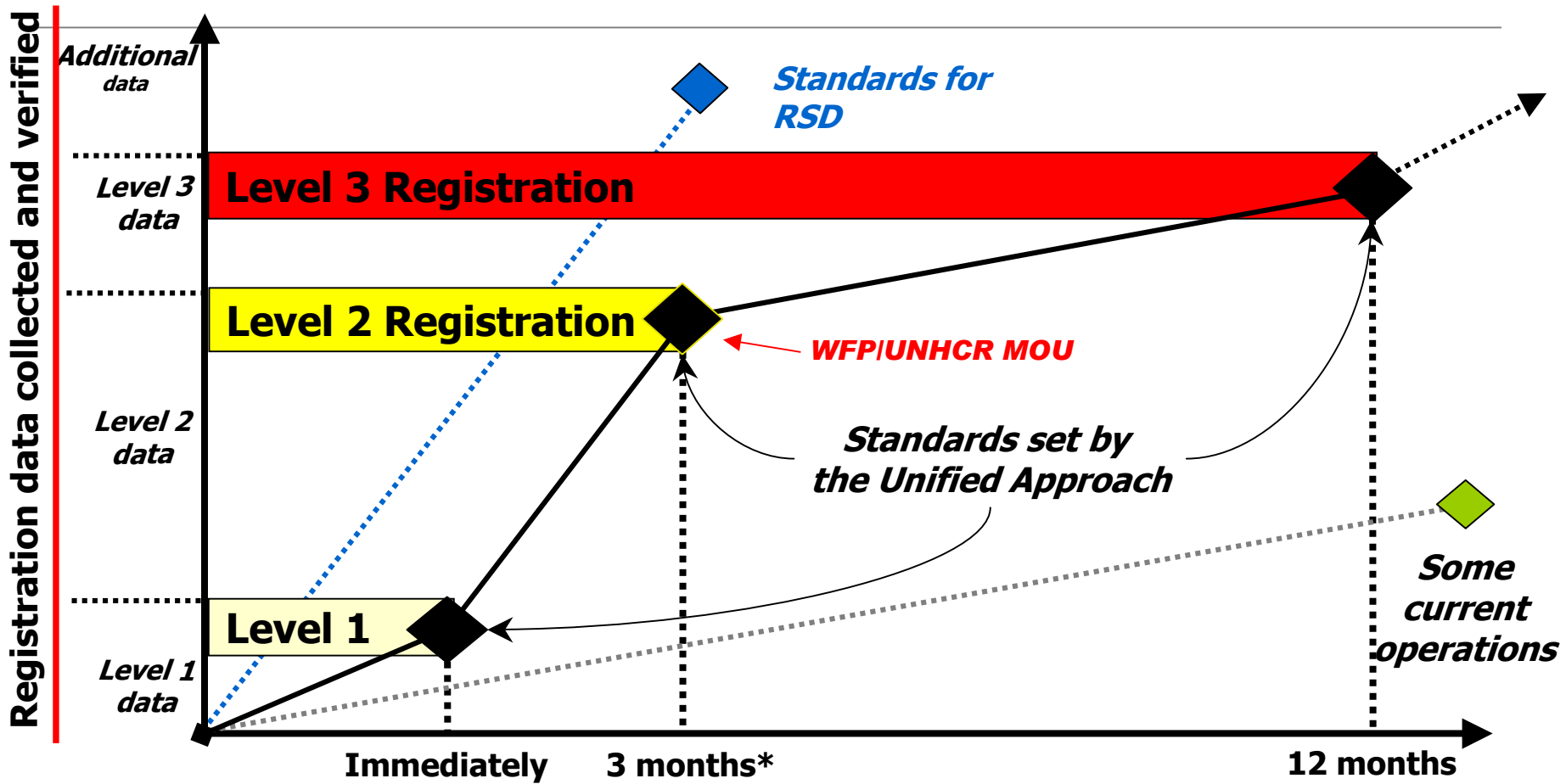
Local integration



Voluntary repatriation



# Registration Levels Standard data sets

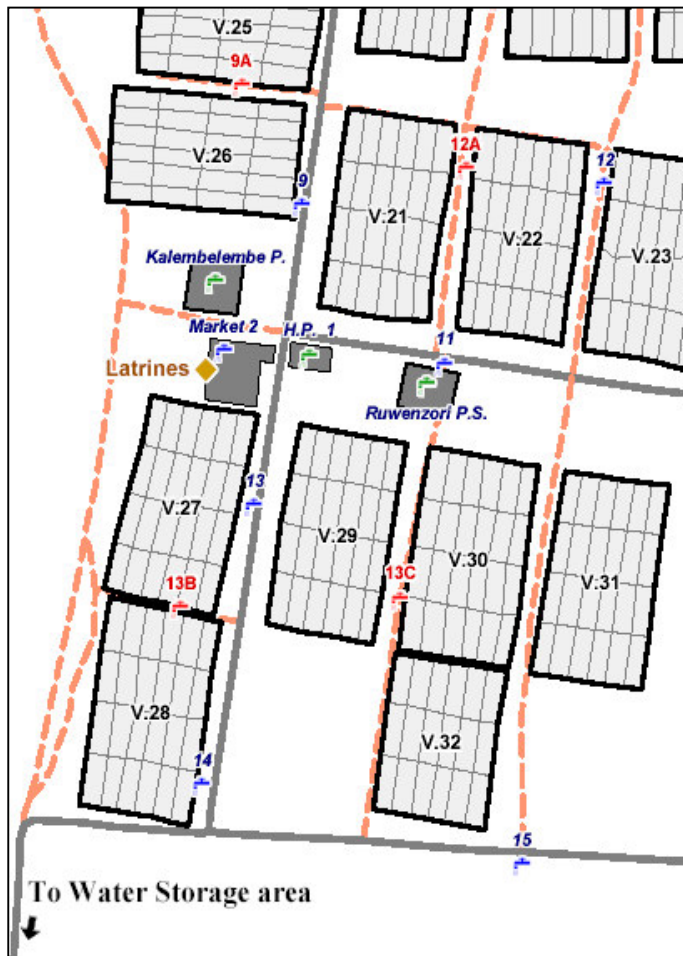


Time after arrival on territory of asylum

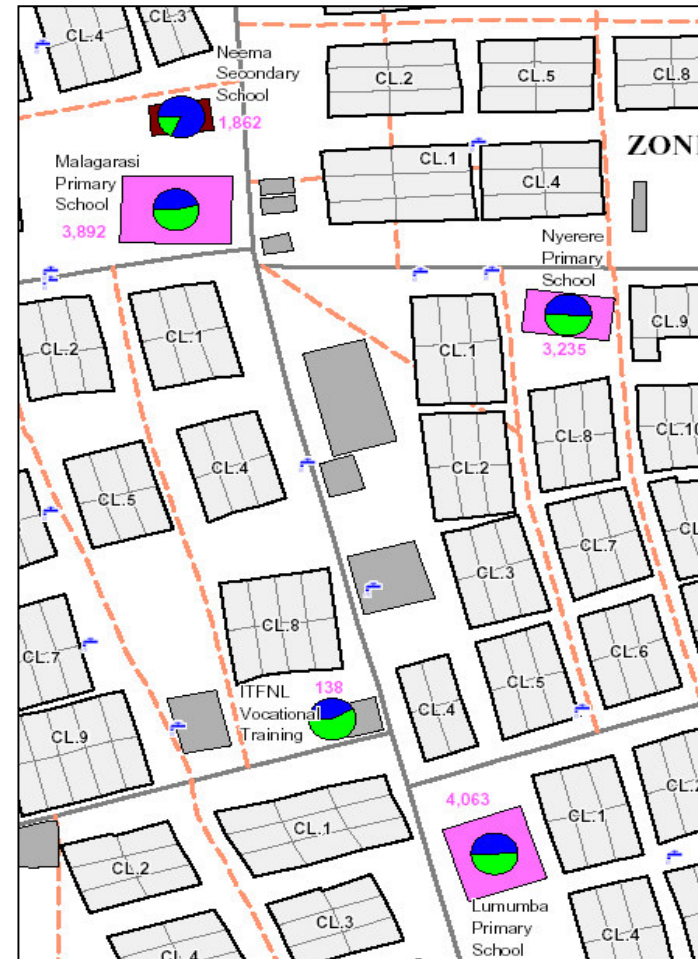


# Mapping and Analysis

## Wat/San



## Education

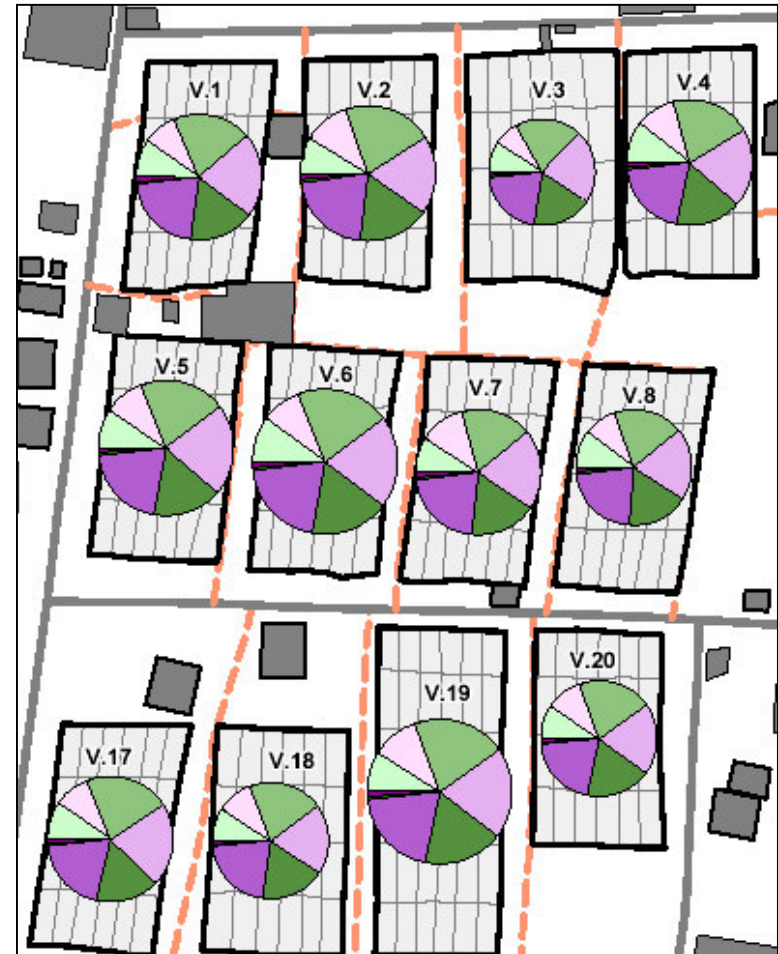


# Mapping and Analysis

People per Block

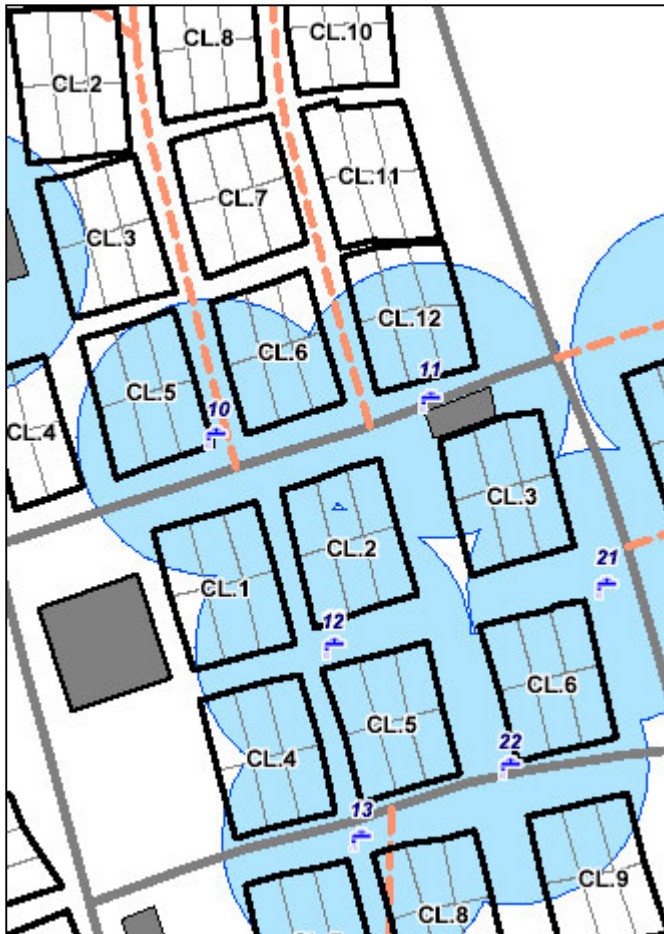


Age/Sex breakdown per Village

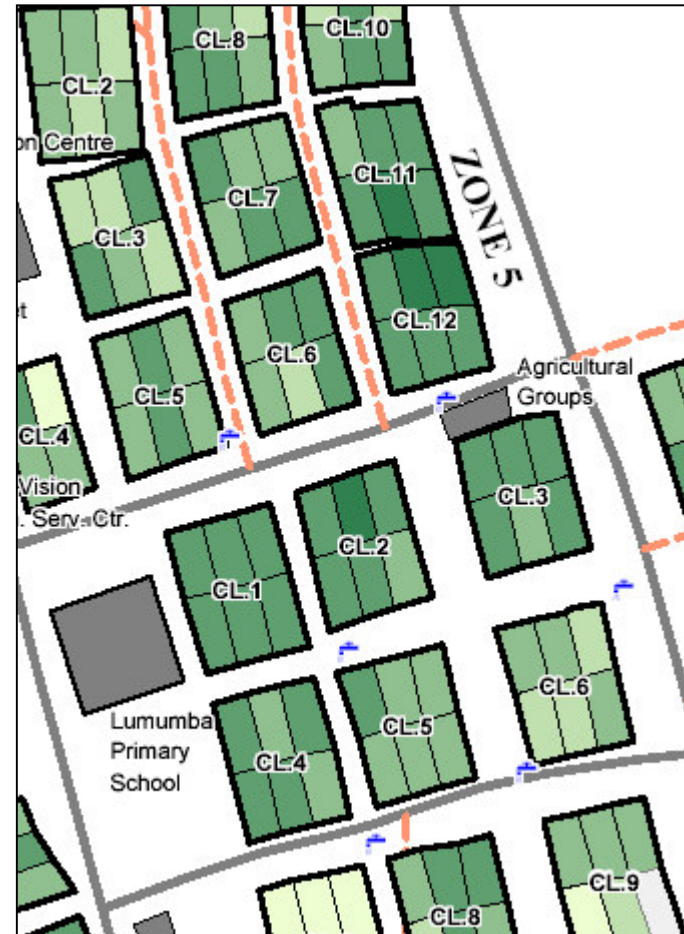


# Mapping and Analysis

Areas and populations >200m from a water point



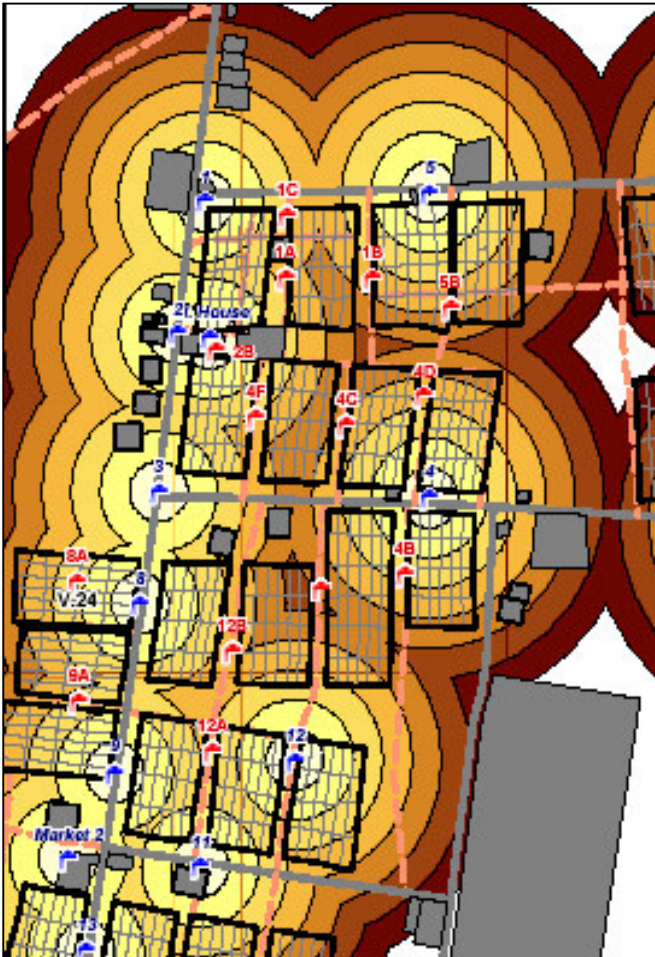
Square meters per person



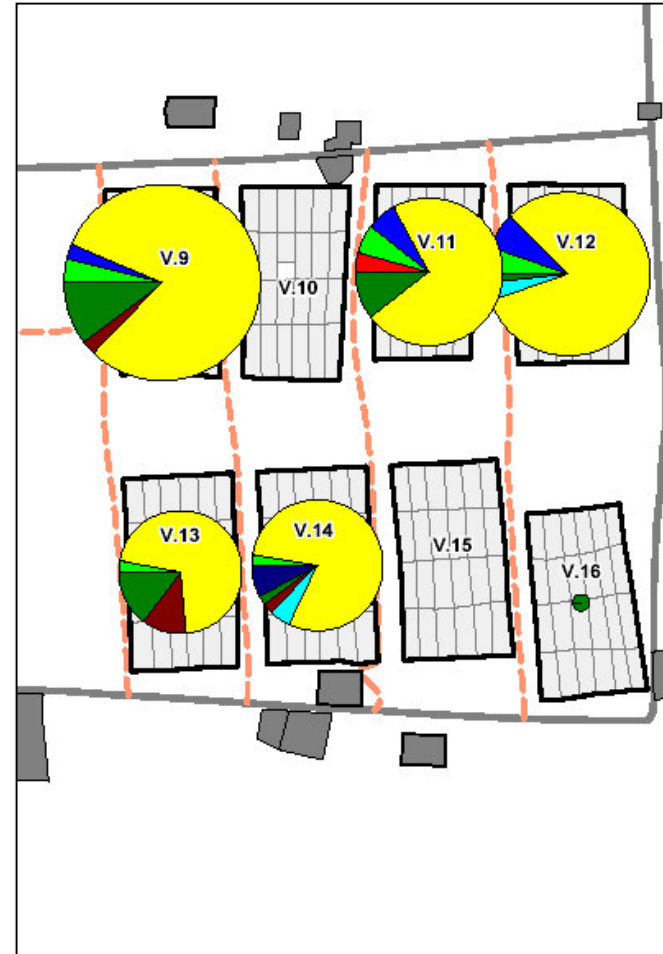


# Mapping and Analysis

Calculating the average distance traveled to the nearest water tap



Number of "vulnerables", by type



# WHAT WE DO NOT DO YET

- **IDP**
  - **Where? How many? From and to?**
- **Emergencies**
  - **Rapid population estimates**
  - **Large scale (camp level) disaster management**
  - **Contingency planning**
  - **Efficient data exchange**
- **Environmental and socio-demographic impacts of displaced populations (incl. on host populations)**
- **Spatial analysis for return and integration opportunities**