

Helen Bradley
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The use of Geoinformatics for a small NGO *Friend of Londiani*



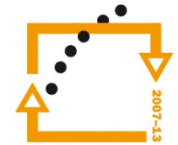
europa
european
social fund in the
czech republic



EUROPEAN UNION



MINISTRY OF EDUCATION,
YOUTH AND SPORTS

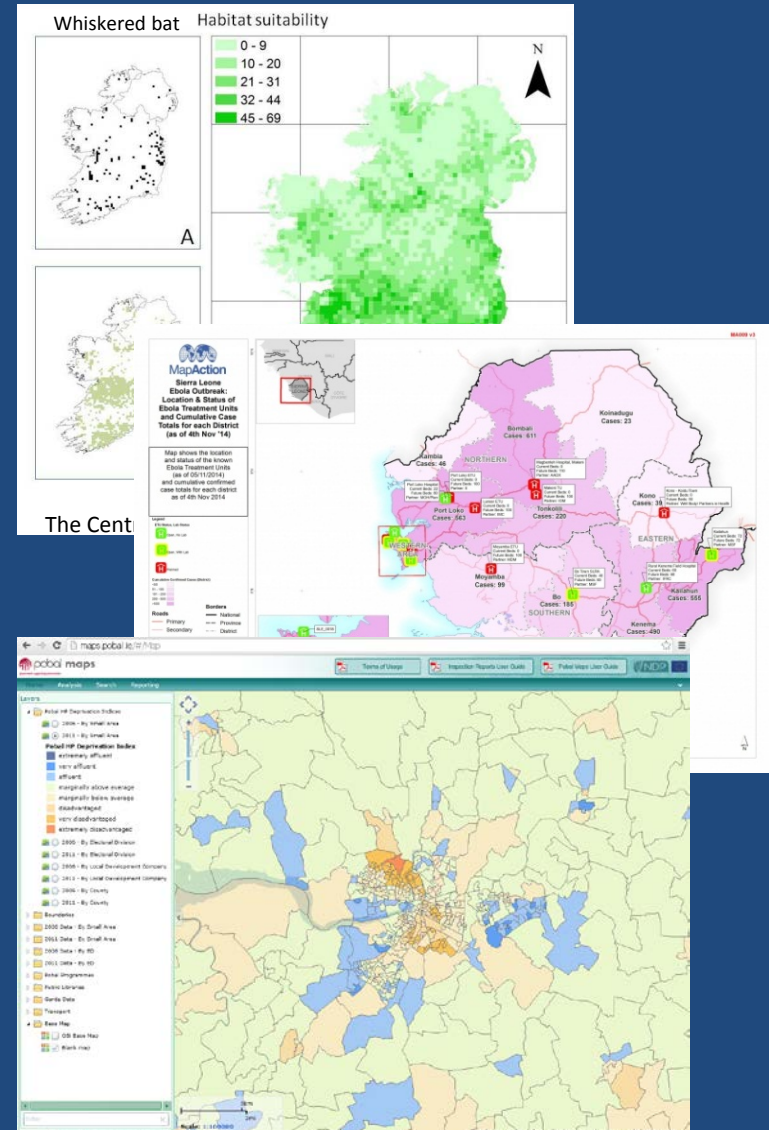


**OP Education
for Competitiveness**

INVESTMENTS
IN EDUCATION
DEVELOPMENT

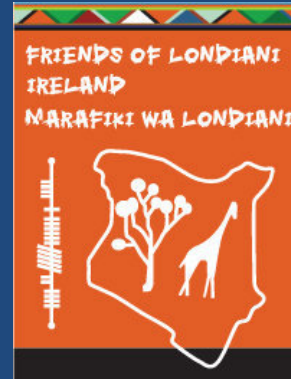
Use of Geoinformatics for NGOs

- GIS, GNSS and Remote Sensing have been used successfully by NGOs (Nongovernmental organisations) for many years.
- Used for a wide variety of applications;
 - conservation, sustainable development, disaster response and social programmes
- But can geoinformatics be beneficial to smaller NGOs with more limited resources?



A little background information

- Friends of Londiani was founded in 2002 by a group of Irish volunteers.
- The initially goal was to aid the Londiani Children's home. Subsequently expanded to work with the people of Londiani and surround villages.



Their mission:

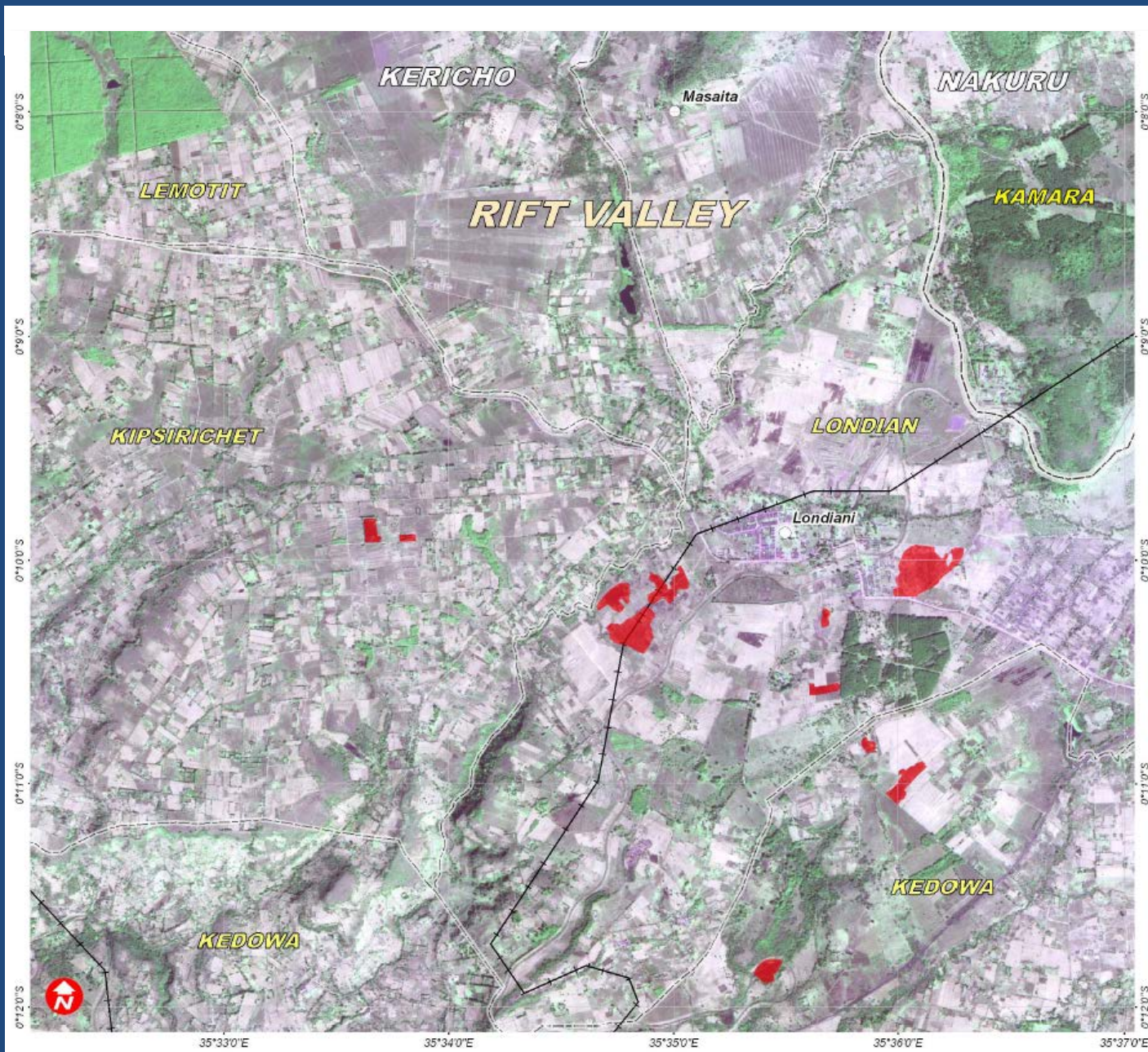
“The mission of Friends of Londiani is to work with the people of Londiani and its surrounding villages to develop and complete sustainable community projects to enable and empower the people to achieve an improved quality of life based on their values and become the authors of their own development.”

Londiani

- 220 km northwest of Nairobi, in the Rift Valley Province of Kenya.
- Londiani Division is a predominantly rural area.
- The census reports that almost 28% of the urban population and 41% of the rural population of the division live below the poverty line
- The majority of the local population relies on locally grown produce from small family owned plots.
- The area was badly affected by the ethnic violence in 2008.



Satellite image
Showing areas
burnt during the
2008 conflict.



- SATELLITE IMAGE KEY -

Burned Areas	Cultivated Land & Water
Dense Forest	Urban

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Londiani

According to the Population Survey (2004):

- Over half the population live in traditional homesteads, informal shacks or houses built from mud blocks
- Over 65% of the respondents have no electricity in their dwelling.
- Over half the homes have no running water.
- Parts of this District have poor infrastructure and the unpaved roads make transport difficult.
- During the rainy season roads are often impassable.



Friends of Londiani (FOL)

Focus Areas

(based on helping to achieve the Millennium Development Goals):

- Health
- Water
- Education



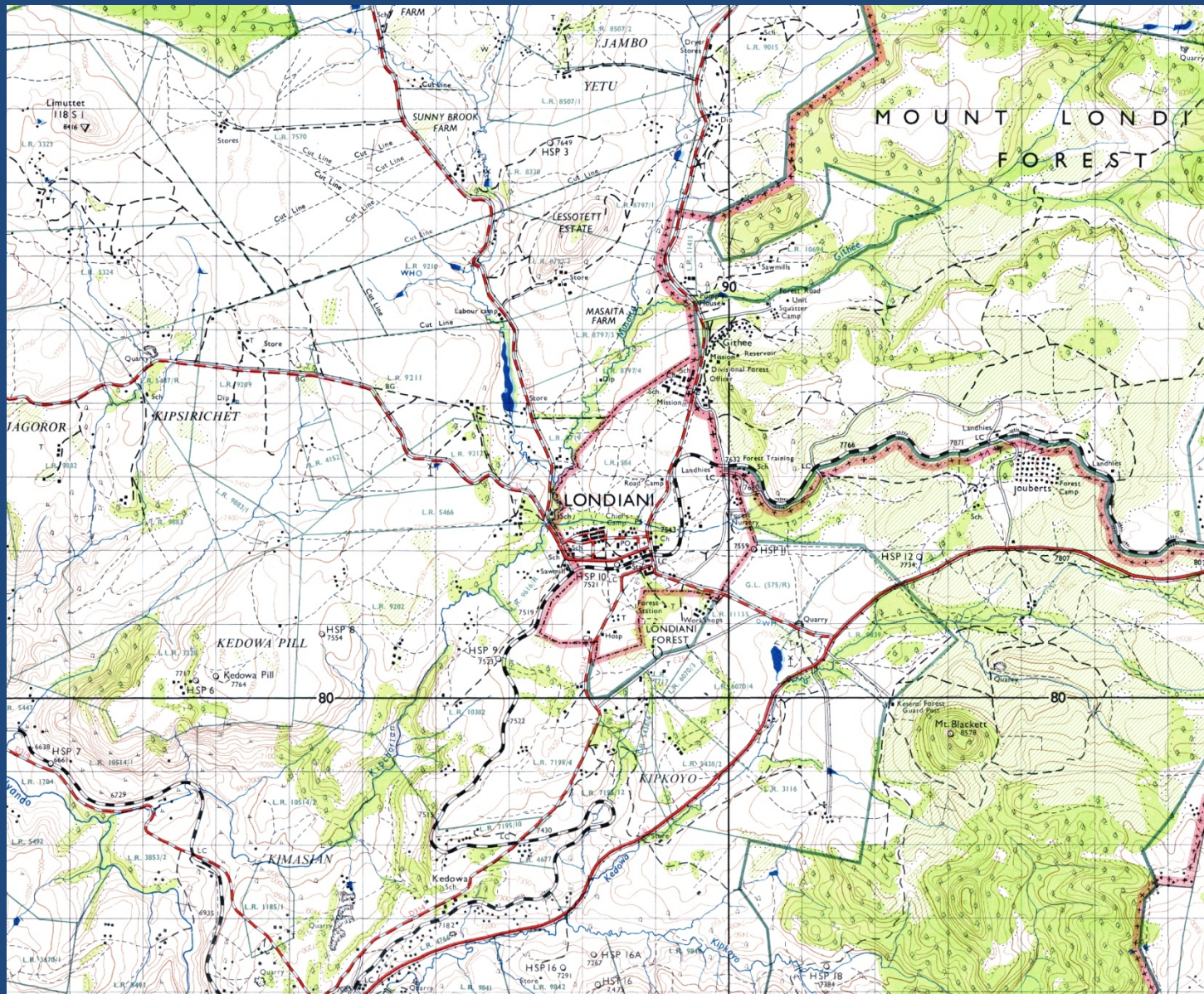
Why is mapping/GIS important to the organisation?

- Knowing where things are...
 - A very rural area of Kenya with few roads and many small tracks and pathways.
 - Little traditional mapping available. No road names and signposts.
 - Difficult to find locations and navigate through the area.
 - Necessary to record the location of facilities installed by FOL
 - This allows for monitoring and maintenance
 - Helps to communicate the distribution to the local community.

Why is mapping/GIS important to the organisation?

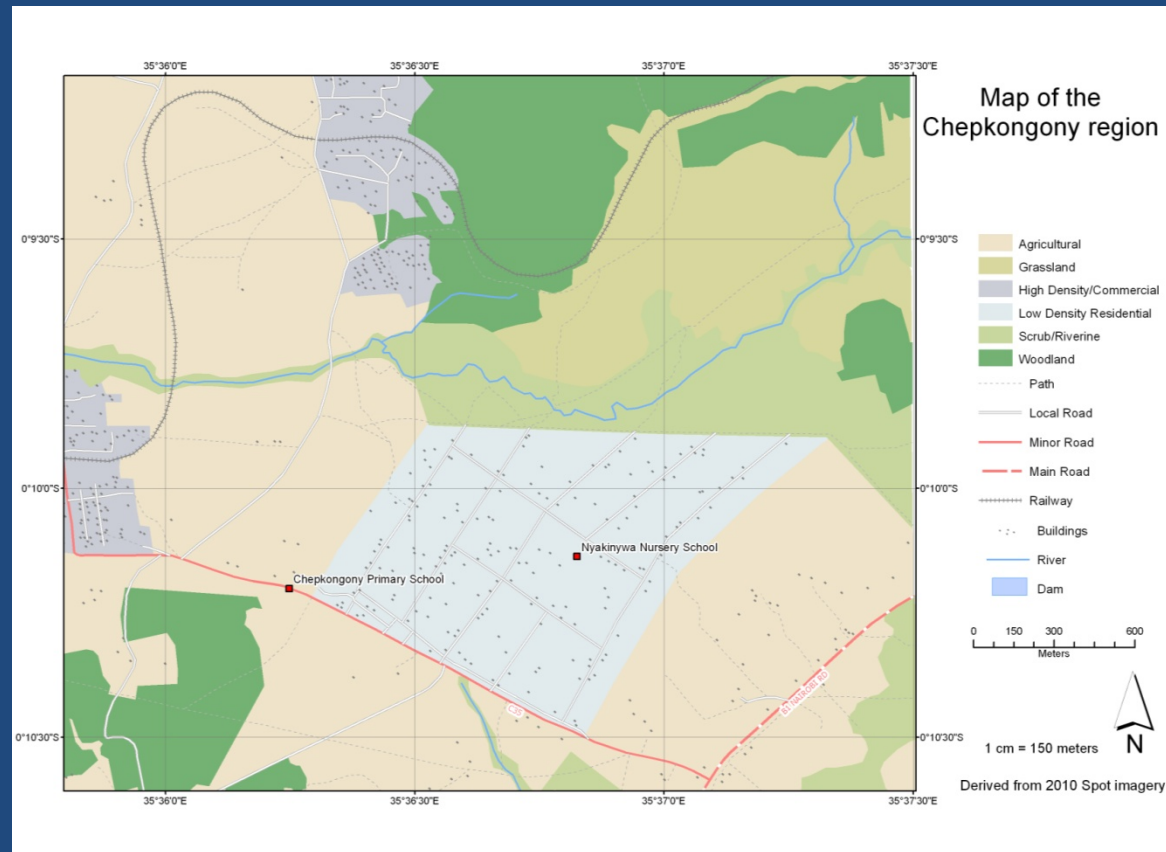
- Visualising, reporting and planning...
 - Highlighting problem areas
 - Identifying patterns and relationships
 - Identification of potential sites for projects
 - Decision support and improved community planning
 - Assessing the success of past projects
 - More effective reporting to supporters and funding agencies.
 - Giving a clear view of where and how funds are being spent
 - Improved feedback to Irish aid, one of the key sources of funding

Survey of Kenya Map - 1973



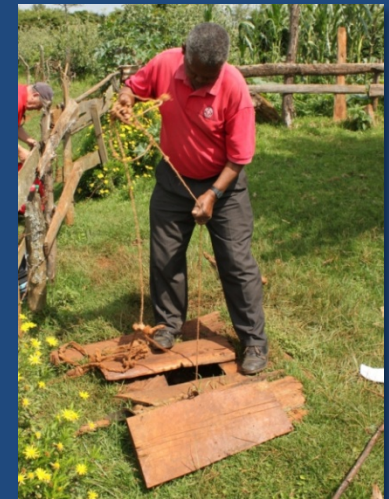
Using GIS for Mapping

- Using GIS FOL can now produce their own maps of the area.
- This allows them to
 - Gain a better understanding of the geography of the area
 - Navigate more effectively
 - Highlight key features
 - Report on activities and developments

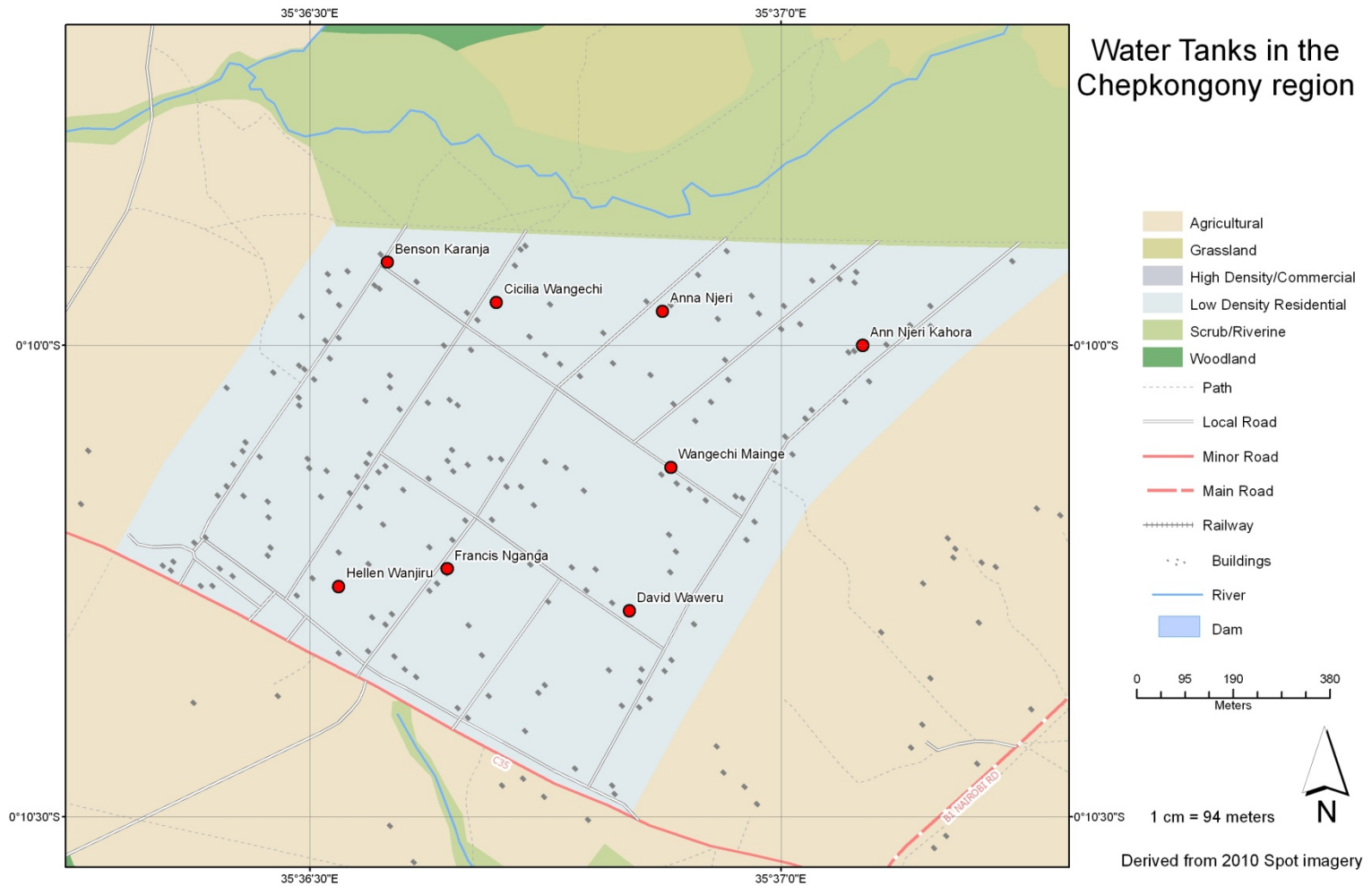


Community Water Tanks/Pumps

- FOL installs community water tanks/pumps in the villages in which it works.
- These are community water tanks/pumps and will allow the community to have clean easily accessible water.
- Each tank/pump is shared by a number of families.



Using GIS for Reporting

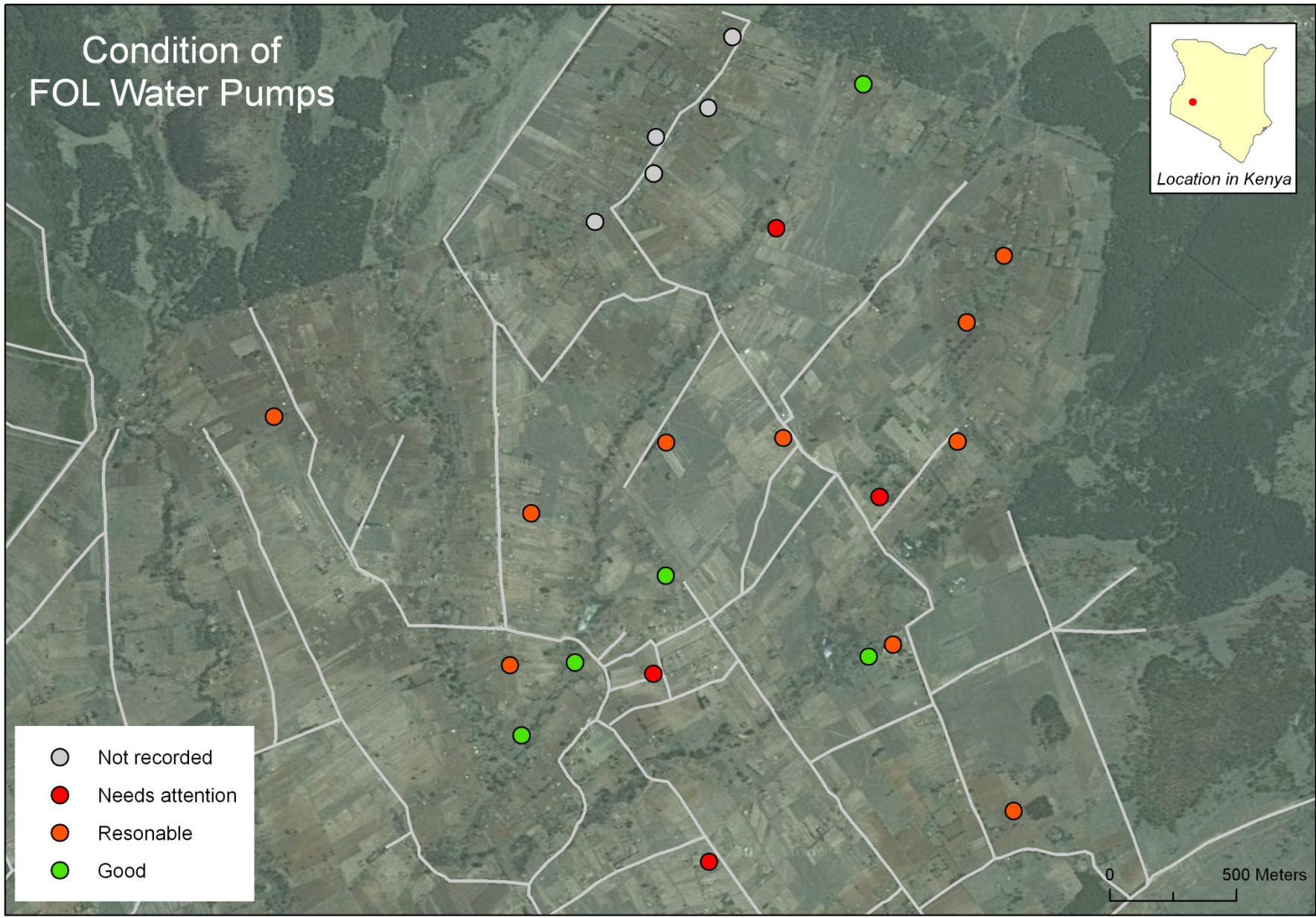


Condition of FOL Water Pumps



- Not recorded
- Needs attention
- Resonable
- Good

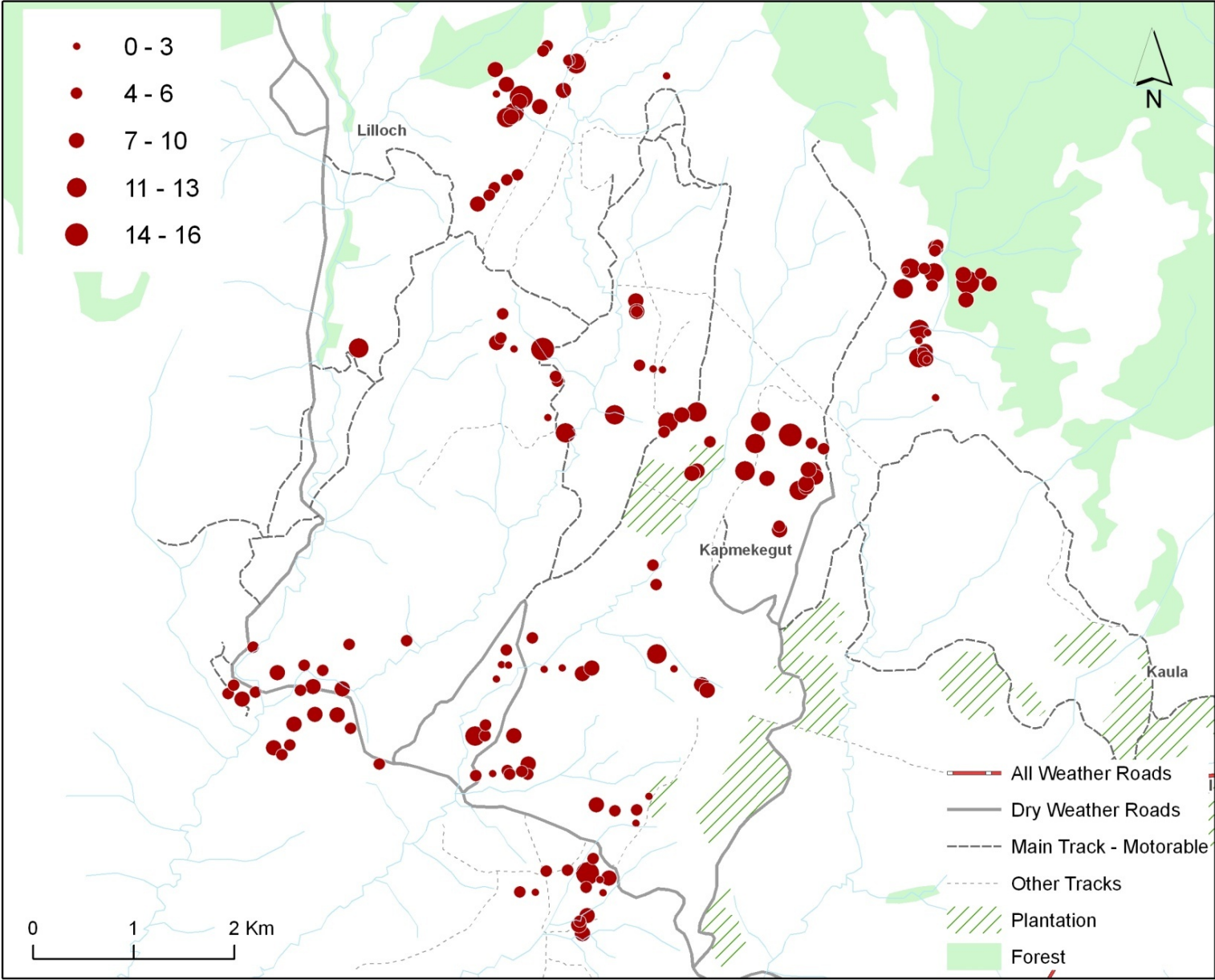
0 500 Meters



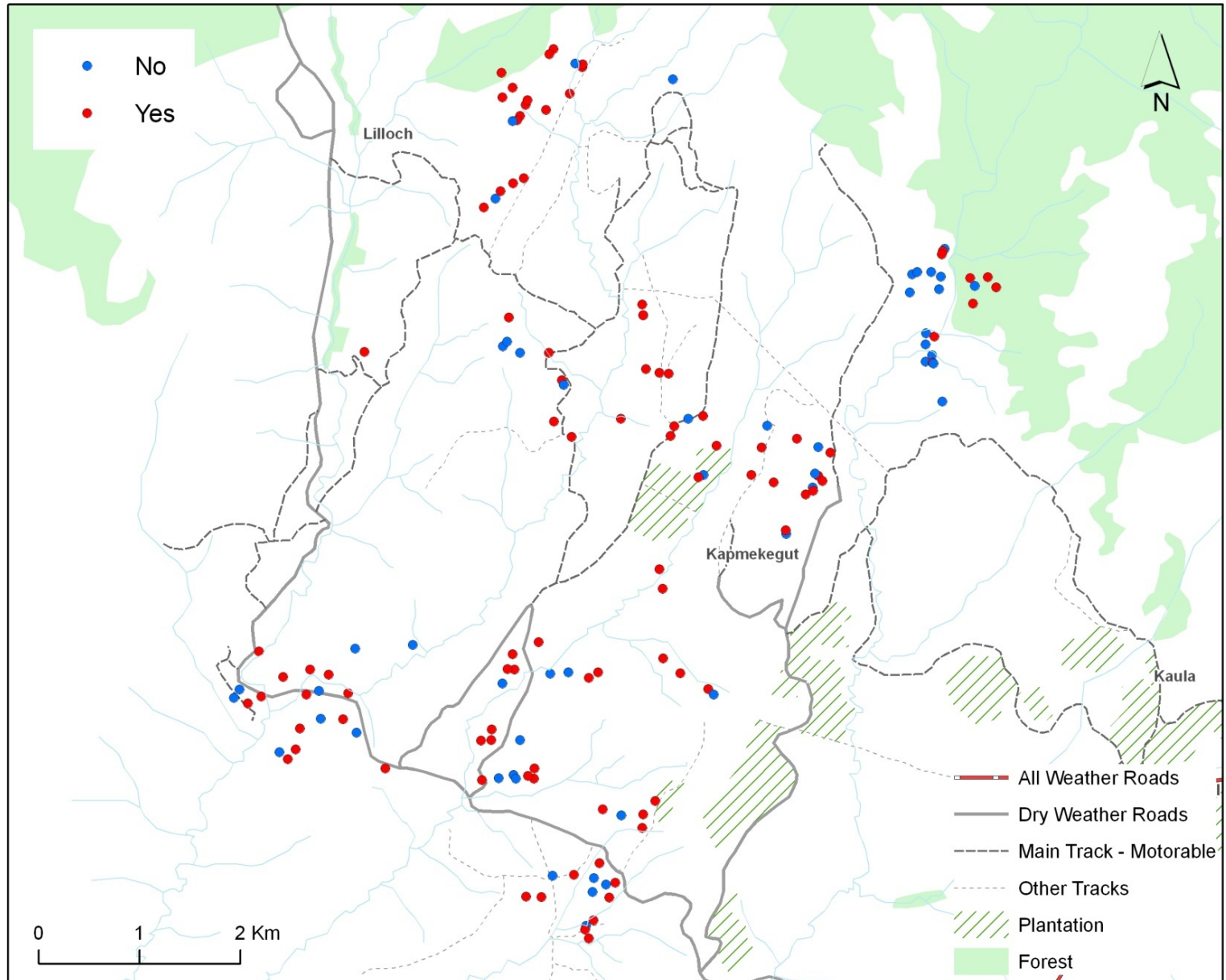
Healthy Village

- FOL carry out health surveys in the area on a regular basis.
- Mapping the data collected allows them to visualise the information, identify problem areas and plan for future schemes.
- Mapping can identify disease hotspots and help investigate potential causes.

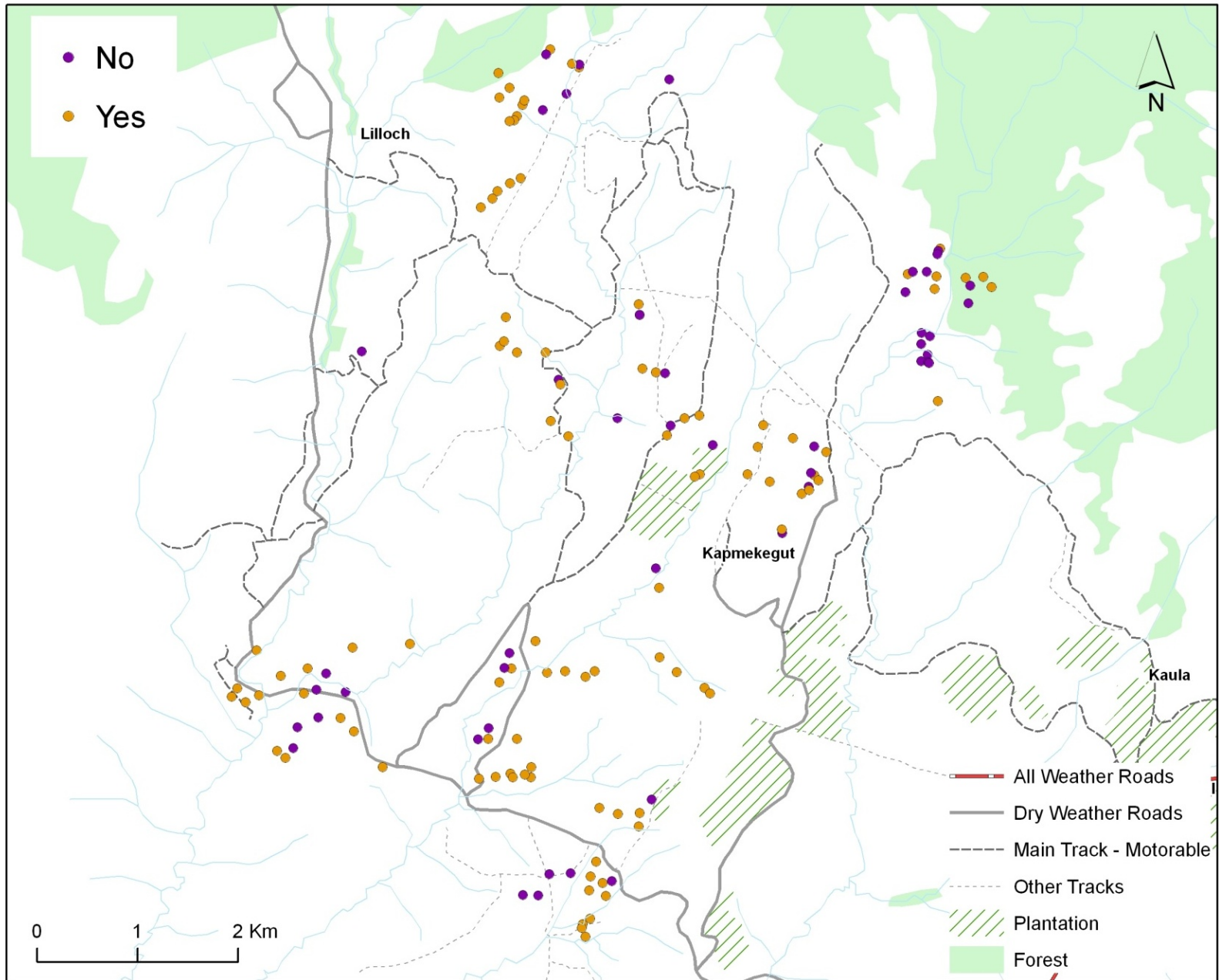
Total Household



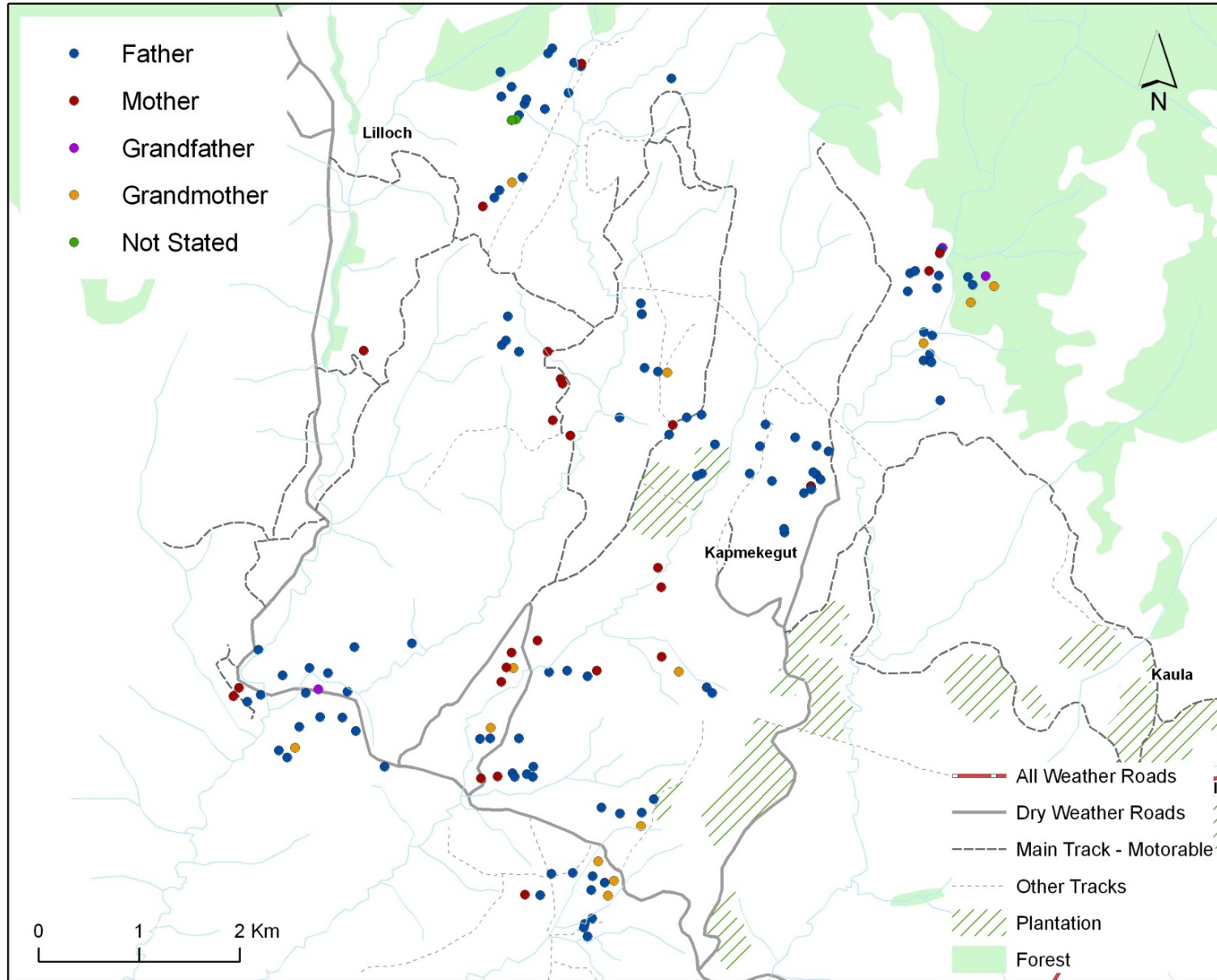
Illness



Malaria Nets Used



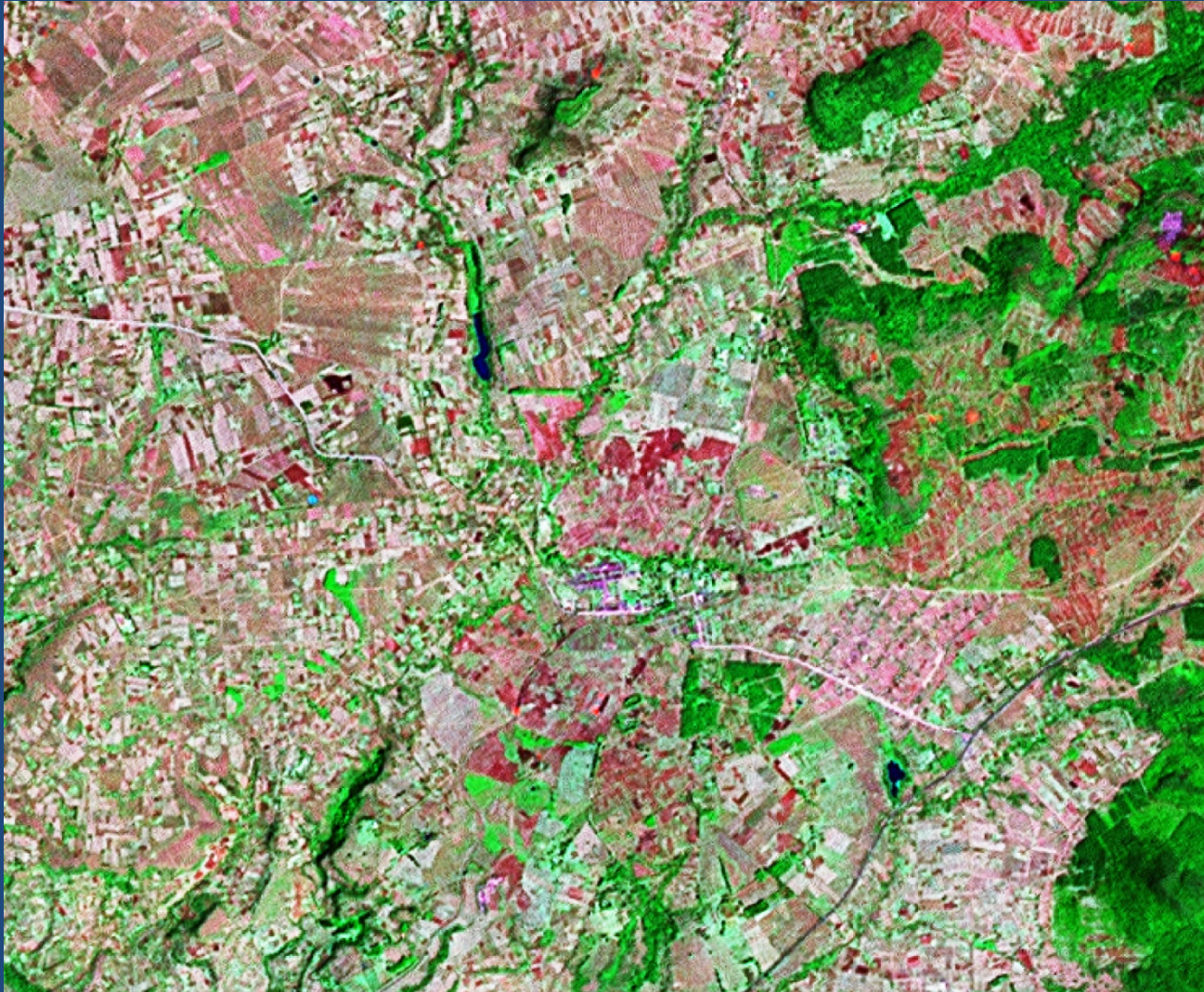
Head of Household



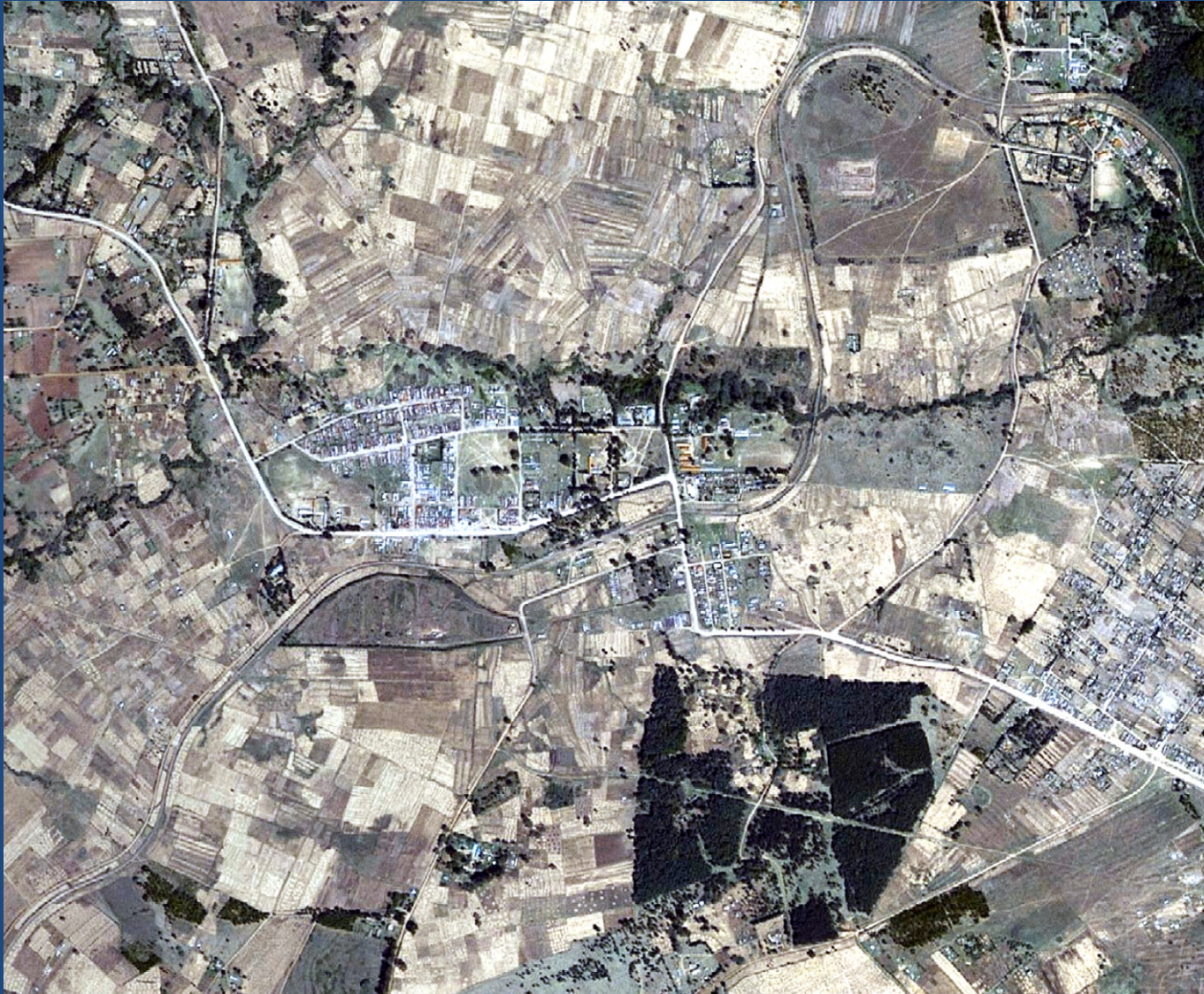
How is the data collected?

- As no suitable spatial data existed for the area, the data was captured using a combination of satellite imagery and GPS.
- 2011 SPOT imagery used to capture topography data.
- GPS used to capture features and verify track and road data.
- Basic handheld GPS used by FOL in the field
 - Due to:
 - Cost
 - Limited expertise of the volunteers collecting the data
 - High levels of accuracy not required

Until 2011 only Landsat imagery available for the area.



In 2011 SPOT imagery become available



GPS Data Collection - Challenges

- Volunteers with limited training.
- Rural area, often difficult to navigate and traverse.
- Proximity to the equator
- Recording attributes – data dictionaries.
- Transfer of GPS data to GIS
- Error checking















Surveyor:		Date:		Area:		GPS Unit Number:
ID	Feature Type	Photo ID	Name	Comments		
	<input type="checkbox"/> Clinic [CL] <input type="checkbox"/> Church[CH] <input type="checkbox"/> School –FOL [SF] <input type="checkbox"/> School–other [SO] <input type="checkbox"/> CommunityCentre [CC] <input type="checkbox"/> Stove [ST]	<input type="checkbox"/> Police/Army [PA] <input type="checkbox"/> Town Centre [TC] <input type="checkbox"/> Factory [FY] <input type="checkbox"/> Shop [SH] <input type="checkbox"/> Other Building/feature [OB] Specify:	<input type="checkbox"/> Bridge [BR] <input type="checkbox"/> Water tank FOL [WF] <input type="checkbox"/> Water tank Other [WO] <input type="checkbox"/> Water Pump [WP] <input type="checkbox"/> Other Water source [OW] Specify:		(i.e. name of building or family name)	
	<input type="checkbox"/> Clinic [CL] <input type="checkbox"/> Church[CH] <input type="checkbox"/> School –FOL [SF] <input type="checkbox"/> School–other [SO] <input type="checkbox"/> CommunityCentre [CC] <input type="checkbox"/> Stove [ST]	<input type="checkbox"/> Police/Army [PA] <input type="checkbox"/> Town Centre [TC] <input type="checkbox"/> Factory [FY] <input type="checkbox"/> Shop <input type="checkbox"/> Other Building/feature [OB] Specify:	<input type="checkbox"/> Bridge [BR] <input type="checkbox"/> Water tank FOL [WF] <input type="checkbox"/> Water tank Other [WO] <input type="checkbox"/> Water Pump [WP] <input type="checkbox"/> Other Water source [OW] Specify:			
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 - Day3_140711_points_Attributes
 - Day3_Water_Pumps_Attributes
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 - Roads
 - SPOTMaps2011
 - piece1.jpg



- Catalog
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 - Toolboxes
 - Database Servers
 - Database Connections
 - GIS Servers

Table

Day1_120711_points_Attributes

SYMBOL	CREATED	COMMENTS	GEOTRAINS	ID	Feature_Co	Feature_Ila	Photo_ID	IName	Comments_1	Photo_link
	8284 12 Jul 2011 10:13 AM	12-JUL-11 10:13:05	Not Required	OB04HB	OB	Nursery	IMG_0440	Kamau Nursery	hosts 67 children	Photos\IMG_0440.jpg
	8284 12 Jul 2011 12:33 PM	12-JUL-11 12:33:01	Not Required	OW03HB	OW	Well	IMG_0455	Wesley Bett		Photos\IMG_0455.jpg
	8284 12 Jul 2011 12:55 PM	12-JUL-11 12:55:15	Not Required	OW04HB	OW	Well	IMG_0458	Mutai		Photos\IMG_0458.jpg
	8284 12 Jul 2011 12:58 PM	12-JUL-11 12:58:37	Not Required	OW05ND	OW	Well	IMG_0459	Simon Langat		Photos\IMG_0459.jpg
	8284 12 Jul 2011 01:05 PM	12-JUL-11 13:05:26	Not Required	OW06HB	OW	Well	IMG_0460			Photos\IMG_0460.jpg
	8284 12 Jul 2011 01:07 PM	12-JUL-11 13:07:43	Not Required	OW07HB	OW	Well	IMG_0461	Joshua Keror		Photos\IMG_0461.jpg
	8284 12 Jul 2011 10:30 AM	12-JUL-11 10:30:52AM	Not Required	WF01LO	WF	Water tank FOL	IMG_0445	Tesot		Photos\IMG_0445.jpg
	8284 12 Jul 2011 10:20 AM	12-JUL-11 10:20:23AM	Not Required	WP02LO	WP	Water Pump	IMG_0441	Bwogo		Photos\IMG_0441.jpg
	8284 12 Jul 2011 10:44 AM	12-JUL-11 10:44:33AM	Not Required	WP03LO	WP	Water Pump	IMG_0446	Daniel Langat		Photos\IMG_0446.jpg
	8284 12 Jul 2011 10:57 AM	12-JUL-11 10:57:32	Not Required	WF02CC	WF	Water tank FOL	IMG_0447	Johnston		Photos\IMG_0447.jpg
	8284 12 Jul 2011 11:11 AM	12-JUL-11 11:11:45	Not Required	WF03CC	WF	Water tank FOL	IMG_0448	Barthomew		Photos\IMG_0448.jpg
	8284 12 Jul 2011 11:50 AM	12-JUL-11 11:50:37	Not Required	WF04CC	WF	Water tank FOL	IMG_0453	Josphat To		Photos\IMG_0453.jpg
	8284 12 Jul 2011 12:32 PM	12-JUL-11 12:32:02	Not Required	WF05CC	WF	Water tank FOL	IMG_0454			Photos\IMG_0454.jpg
	8284 12 Jul 2011 09:51 AM	12-JUL-11 9:51:43	Not Required	WP01CC	WP	Water Pump	IMG_0439	William		Photos\IMG_0439.jpg
	8284 12 Jul 2011 11:45 AM	12-JUL-11 11:45:14	Not Required	WP04CC	WP	Water Pump	IMG_0451	Wycliff		Photos\IMG_0451.jpg
	8284 12 Jul 2011 12:02 PM	12-JUL-11 12:02:35	Not Required	WP05CC	WP	Water Pump	IMG_0452	Joel Roditch		Photos\IMG_0452.jpg
	8284 12 Jul 2011 12:51 PM	12-JUL-11 12:51:17	Not Required	WP06CC	WP	Water Pump	IMG_0456	Zachary Mutai		Photos\IMG_0456.jpg
	8284 12 Jul 2011 01:15 PM	12-JUL-11 13:15:29	Not Required	WP07CC	WP	Water Pump	IMG_0463	Moses Rono		Photos\IMG_0463.jpg
	8284 12 Jul 2011 09:40 AM	12-JUL-11 9:40:46	Not Required	BR01MC	BR	Bridge	IMG_0437	Cheringa Bridge	Concrete, in good condition	Photos\IMG_0437.jpg
	8284 12 Jul 2011 11:13 AM	12-JUL-11 11:13:33	Not Required	OW02MC	OW	Well	IMG_0449	Barthomew		Photos\IMG_0449.jpg
	8284 12 Jul 2011 09:47 AM	12-JUL-11 9:47:38	Not Required	OW01MC	OW	Fish Pond	IMG_0438		Private fish pond	Photos\IMG_0438.jpg

(0 out of 21 Selected)

Day1_120711_points_Attributes

Using GIS - Challenges

- Very limited GIS expertise in the organisation
- Reliance on volunteers to collect and process data
- Effective use and development of GIS hampered by lack of skilled personal
- Poor levels of error checking and verification.
- Software, data and equipment costs.
- Currently investigating the use of newer technologies to overcome some of these deficiencies

Online\Cloud GIS

ucc.maps.arcgis.com/home/webmap/viewer.html?webmap=b995e14b85ca47b2a556a608fb36a049

HOME ▾ FOL_Conference_Example NEW MAP CREATE PRESENTATION Helen ▾

Details Add Edit Basemap Save Share Print Directions Measure Bookmarks Find address or place


Contents

- FOL - Feature
- Railway Lines - Railway Line
- Towns - Towns Villages
- FOL Stoves 2011 to 2014
- Tracks
- Topographic

Feature: Jones

Type	Stove
Name	Jones
Comment	Installed 2014
Photo	More info

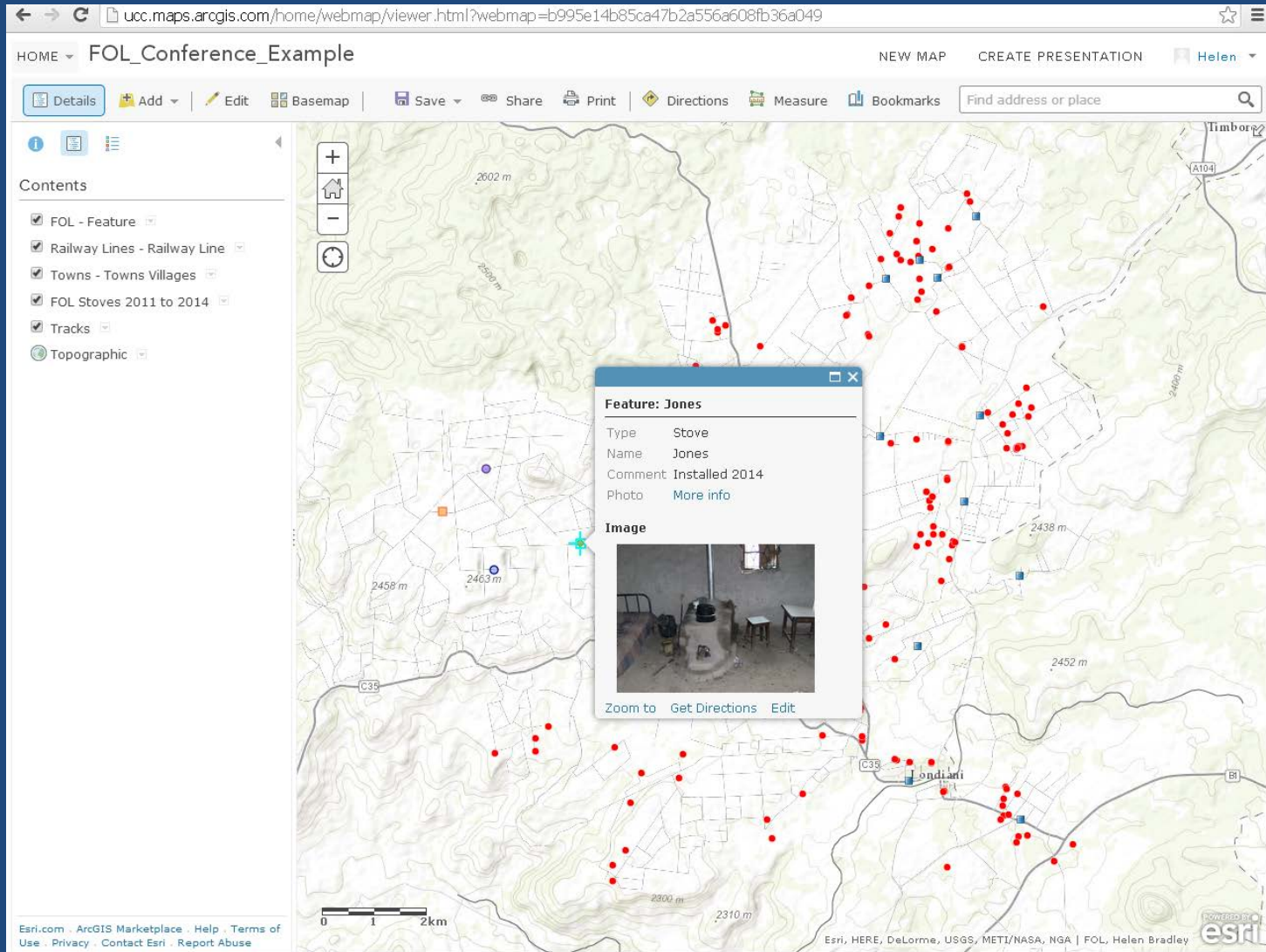
Image



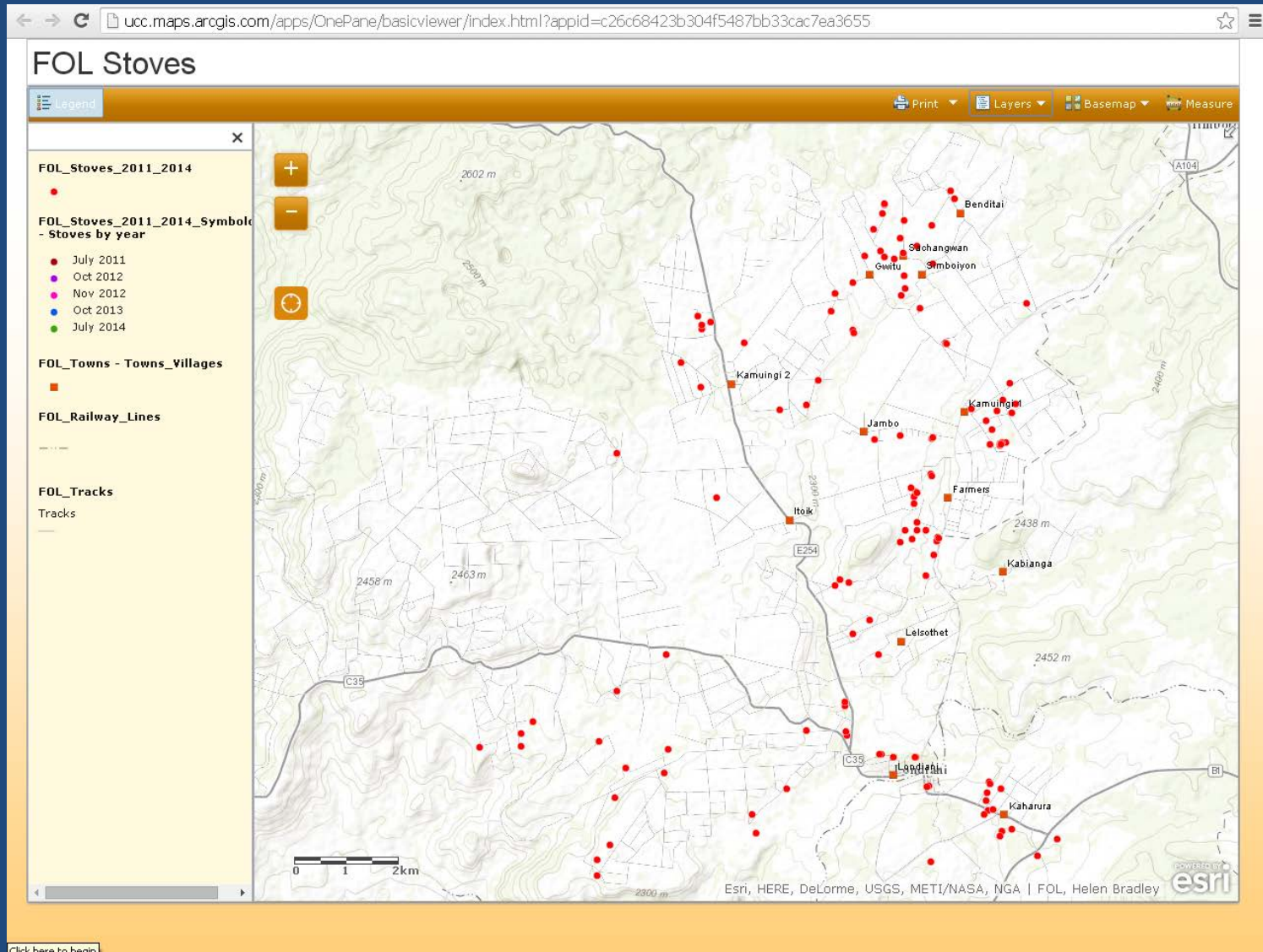
Zoom to Get Directions Edit

Esri.com · ArcGIS Marketplace · Help · Terms of Use · Privacy · Contact Esri · Report Abuse

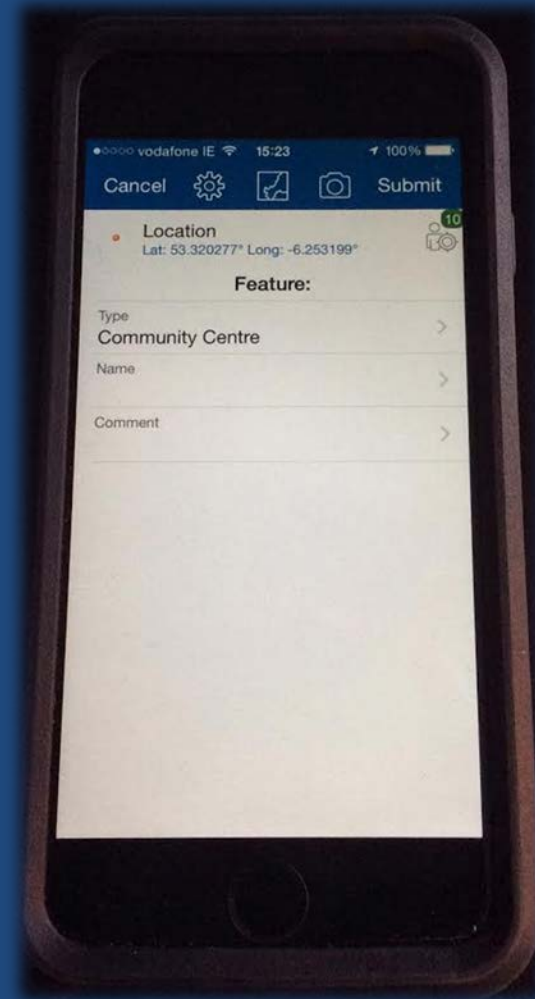
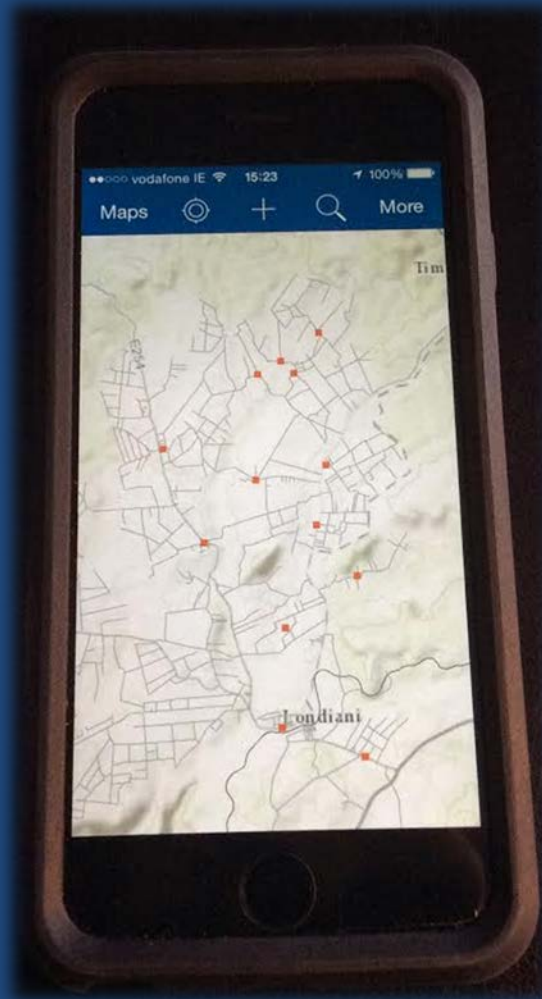
Esri, HERE, DeLorme, USGS, METI/NASA, NGA | FOL, Helen Bradley

The screenshot displays the ArcGIS Online web map viewer interface. At the top, the browser address bar shows the URL 'ucc.maps.arcgis.com/home/webmap/viewer.html?webmap=b995e14b85ca47b2a556a608fb36a049'. Below the address bar, the map title is 'FOL_Conference_Example'. The interface includes a navigation toolbar with icons for home, zoom in, zoom out, and refresh. A 'Contents' panel on the left lists several layers: 'FOL - Feature', 'Railway Lines - Railway Line', 'Towns - Towns Villages', 'FOL Stoves 2011 to 2014', 'Tracks', and 'Topographic'. The main map area shows a topographic map with contour lines and various colored markers (red dots, blue squares, orange squares). A popup window is open over a red dot, displaying details for a feature named 'Jones'. The popup includes a table with the following information: Type: Stove, Name: Jones, Comment: Installed 2014, and Photo: More info. Below the table is a section titled 'Image' which contains a photograph of a wood-burning stove. At the bottom of the popup are links for 'Zoom to', 'Get Directions', and 'Edit'. The map also features a scale bar (0 to 2 km) and a 'Powered by Esri' logo in the bottom right corner.

Web mapping applications



Smart Phone Apps



Future Plans

- To complete comprehensive spatial database of the area.
- To train local community volunteers to collect and process additional data.
- To increase use of web and mobile applications
- Develop ecotourism in the area.
 - Using GIS and GPS to develop suitable routes.

