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# SUSTAINABLE FISHERIES MANAGEMENT PROJECT (SFMP)

Advanced Training In The  
Application Of GIS Using Practical  
Field Work In The Preparation Of  
The ICM Toolkit



JUNE – JULY, 2017

THE  
UNIVERSITY  
OF RHODE ISLAND  
GRADUATE SCHOOL  
OF OCEANOGRAPHY



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SOLUTIONS

Hen Mpoano

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*USAID Development Clearing House*

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**Cover photo:** A brainstorming session on the ICM tool kit and its applicability. (Credit: Spatial Solutions)

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## ACRONYMS

CSO	Civil Society Organization
GIS	Geographic Information System
GPS	Global Positioning System
ICM	Integrated Coastal Zone Management
LUPMIS	Land Use Planning and Management Information System
QGIS	Quantum Geographic Information System
SFMP	Sustainable Fisheries Management Program
TCPD	Town and Country Planning Department
TRACTOR engineering	Transforming Rural Agriculture Communities Through Organic Re-
USAID	United States Agency for International Development

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## INTRODUCTION

The USAID-Ghana Sustainable Fisheries Management Project (SFMP) continues to provide support to the Town and Country Department in different capacities. Though fisheries focused, the project recognizes the important role the department plays in the planning of coastal resources including the limited coastal land and beach fronts.

Under this USAID funded project, the SFMP has established a GIS Data Hub at the Central regional office of the TCPD to help build the capacity of Planners and Technical officers to incorporate coastal resource management in their spatial plans. The newly refurbished data hub is stocked with state-of-the-art facilities to serve two main purposes: 1. to serve as the central point for storing, retrieving, managing and sharing data across districts, 2. to provide regular trainings for Regional and District Officers.

Over 40 participants including Planners, Technical Officers from TCPD and other sister land agencies and departments as well as CSOs had already received training in Basic and intermediate GIS application prior to this advanced training.

### Objectives

The main objective of the training was to provide participants with advanced skills in GIS, Remote Sensing and GPS data collection strategies for the effective planning and decision making relative to the management of coastal resources.

### Venue and Date

The training was organized in the Central Region GIS Data Hub at the Regional Town and Country Planning Department in Cape Coast. The first workshop was from 13-15 June, 2017 and the second was organized from 25-27 July, 2017.

### Participants

The GIS training built the capacity of over 37 participants from TCPD, TRACTOR and University of Ghana in Advanced GIS applications. 20 participants benefited from the training organized in June, 2017 and 17 people participated in the July training workshop. All the participants had benefited from basic and intermediate GIS training organized earlier.

## TRAINING FACILITATION AND MODULES

The training workshop was facilitated by Mr. Justice Camillus Mensah, the GIS officer of SFMP and Hen Mpoano; Mr. Richard John-Jones, the Hub Instructor of the Western Region GIS Data Hub and an Assistant Town Planning Officer and Munzamil Mohammed of Spatial Solutions. Quantum GIS, Google Earth Pro and the LUPMIS tools (built on MapMaker) were the main GIS software used for the training. Mr. Osman Adams, from the Geography and Regional planning Department of the University of Ghana facilitated the second session of the training workshop which involved some field data collection. A training manual can be found online here: [http://www.crc.uri.edu/download/GH2014\\_SCI060\\_SpS\\_FIN508.pdf](http://www.crc.uri.edu/download/GH2014_SCI060_SpS_FIN508.pdf)

Modules taught during the training are listed as follows;

- Coordinate conversion using coordinate Converter
- Spatial analysis
- Introduction to the Google Earth Pro
- Spatial Analysis in Google Earth Pro
- Vector data Conversion
- Georeferencing scanned images and Google images
- Coordinate conversion
- Good practices in Spatial Planning





Figure 1: : A cross-section of participants at the training



Figure 2: Training in session

## **DEVELOPMENT OF COASTAL ZONE MANAGEMENT TOOL KIT FOR PLANNERS**

In order to involve Planners and Technical Officers in the development of the Integrated Coastal Zone Management (ICM) Toolkit, participants were introduced to the main themes of the document and the goal the document seeks to achieve. Planners had the opportunity to make some input and to express their expectations for the tool kit.

A field exercise was conducted to give the planners a practical outlook of the toolkit. It was also to harness their skills by applying new skills acquired in GIS during the first two days of the training workshop. The planners were grouped to undertake various tasks as shown in the table below.

**Table 1: ICM Toolkit Practical Activity Plan**

<b>Task</b>	<b>Specific Task</b>	<b>Location</b>	<b>Method</b>
<b>Mapping shoreline</b>			
	Shoreline type	Iture beach	Observation GPS mapping
	Mapping shoreline change	Iture beach	Interviews Community participatory QGIS Desktop digitizing
	Mapping elements at risk to sea erosion/storm surges	Iture beach	GPS mapping QGIS Desktop digitizing
	Discussions		
<b>Conservation and risk</b>			
	Mapping flood extent	Abakam community	GPS mapping QGIS Desktop digitizing and buffering
	Identifying vulnerable elements and encroachment	Abakam community	GPS mapping QGIS Desktop digitizing
	Discussions		





**Figure 3: : Mr. Osman Adams explaining the field objectives of the field activity to participants**

The study community for the field work was the Iture wetland and the immediate shoreline. This location was chosen, not only because of its proximity to the training center, but rather because it has all the coastal issues such as sea erosion, mangrove cutting, rapid physical development into the wetland, flooding and also with diverse shoreline geomorphology. While on the field the groups were accompanied by field assistants who gave support when necessary but with little interferences to enable the planners appreciate the problems of coastal zone management and how to deal with them independently. Each group made a PowerPoint presentation of their results and observations.

## **EVALUATION OF PARTICIPANTS**

Participants were evaluated to assess their uptake of the information and the skills they had acquired. They worked in groups to save images from Google Earth Pro and use the georeferenced image to produce a map of any area. The map products from participants are shown in the Annex

## **ANNEX**

### **Annex 1: Training Agenda**

#### **Ghana Sustainable Fisheries Management Project (SFMP)**

#### **Advanced Training in the Application of GIS Using Practical Field Work in the Preparation of the ICM Toolkit**

**13<sup>th</sup>-15<sup>th</sup> June and 25<sup>th</sup>-27<sup>st</sup> July, 2016**

**Central Regional GIS Data Hub, Cape Coast**

#### **AGENDA**

<b>Training Session 1</b>	
<b>Day 1, 2 and 3</b>	
8:30-9:00am	Registration of participants
9:00-12pm	First Session begins
12:00pm-12:30	Snack Break
12:30-1:30pm	Training continues
1:30-2:30pm	Launch break
2:30-5:30pm	Training continues
<b>Training Session 2</b>	
<b>Day 1 and 2</b>	
8:30-9:00am	Registration of participants
9:00-12pm	Session begins
12:00pm-12:30	Snack Break
12:30-1:30pm	Training continues
1:30-2:30pm	Launch break
2:30-6pm	Training continues
<b>Day 3</b>	
8:30-9:00am	Registration of participants
9:00-12pm	Introduction to activities on field
12:00pm-12:30	Snack Break and Visit to Field
12:30-2:30pm	Field Data collection and analysis
2:30pm -4pm	Launch and presentations by various field groups
4:00-5pm	Closing remarks and departure

**Annex 2: Attendance**

**GHANA SUSTAINABLE FISHERIES PROJECT-SpS  
PARTICIPANTS ROSTER INFORMATION  
Required in English  
Please Print**

**Title of Course:** ADVANCED GIS TRAINING FOR TCPD OFFICERS IN THE CENTRAL REGION

**Activity:** TRAINING

**Date:** 13TH-15TH JUNE, 2017

**Length of Course:**            Less than three days             Three days or longer

First Name	Surname	Organization/Community	Email if available	Phone number	Sex		Do you wish to receive messages on SFMP?	
					M	F	Y	N
STEPHEN	NANA YAW KAKRABU	MMA TCP			m			
SETH	ANKRAH	ABURA- DUNKWA			X			
PHILIP	ADJEI	GOMOA EAST TCPD			X		X	
CUPID	OPOKU	GOMOA EAST TCPD			X			
ALEX	ASAMOAH	EFFUTU TCPD			m			

First Name	Surname	Organization/Community	Email if available	Phone number	Sex		Do you wish to receive messages on SFMP?	
					M	F	Y	N
BENEDICTA	NANA ANSAH	KEEA-ELMINA TCPD				X	X	
EMMANUEL	APPIAH	CCMA TCPD			X		X	
EMMANUEL	ARTHUR	CCMA			X		X	
EMMANUEL	ANSAH LARBI	TCPD EFFUTU			X		X	
ANDREW	OHENE AGYEKUM	TCDP REGIONAL			X		X	
EBENEZER	FERGUSON	CCMA			X		X	
PATRICK	COBINNA	TCPD EFFUTU			X		X	
NICHOLAS	PINKRA	EKUNFI DISTRICT TCDP			X		X	
ISAAC	ADOAH	GOMOA WEST TCDP			X		X	
SAAH YAW	MENSAH	MFANTSEMAN			X		X	
ENOCH	TEYE	EKUMFI			X		X	
EBENEZER	OSRAH	CCMA			X		X	
JEFFREY	KOJO ANEMA	CCMA			X		X	
ANDREWS	OWUSU AFRIYIE	REGIONAL TCDP			X			
ISAAC	ABBAM	TCPD KEEA			X			

**GHANA SUSTAINABLE FISHERIES PROJECT-HM**  
**PARTICIPANTS ROSTER INFORMATION**  
**Required in English**  
**Please Print**

**Title of Course:** \_\_\_ADVANCED GIS TRAINING FOR TCPD OFFICERS IN THE CENTRAL REGION\_\_\_

**Activity:** \_\_\_\_\_TRAINING\_\_\_\_\_

**Date:** \_\_\_\_\_25TH-27TH JULY, 2017\_\_

**Length of Course:**           Less than three days                            Three days or longer

First Name	Surname	Organization	Email if available	Phone number	Sex		Do you wish to receive messages on SFMP?	
					M	F	Y	N
RANSFORD	ROCKSON	TCPD GOMOA WEST			X		X	
PROSPER	ANWAKO	TCPD ASSIN NORTH			X		X	
FRIMPONG REINDOLF	AMEYAW	TCPD AWUTU SENYA			X		X	
EBENEZER	ACKOM	TCPD EKUMFI			X			

First Name	Surname	Organization	Email if available	Phone number	Sex		Do you wish to receive messages on SFMP?	
					M	F	Y	N
ERIC KWESI	ODURO	TCPDAWUTU SENYA			X			
First Name	Surname	Organization	Email if available	Phone number	M	F	Y	N
HARUNA	SAALU	EFFUTU			X			
SELORM	GBORGBOR	TCPD KEEA			X			
EBENEZER	AFUTU	EFFUTU			X			
RICHARD	ANDZIE QUAINOO	MFANTSEMAN			X			
SAMUEL	OSEI-BAAFI	KEEA			X			
ALEX	ASARE ADU	EKUMFI			X		X	
ERNEST	BOATENG	CCMA			X			
MICHAEL	LARBI	ABURA ASEBU			X			

First Name	Surname	Organization	Email if available	Phone number	Sex		Do you wish to receive messages on SFMP?	
					M	F	Y	N
EDWARD	WODZOGBE	TCPD AAK			X		X	
DANIEL	OCANSEY	KEEA			X			
AKPENE	NUMEKEVOR	HM/ UNIVERSITY OF GHANA				X		
HABIB	YUSIF	TRACTOR			X		X	



### Annex 3: Map Products From Group Exercises

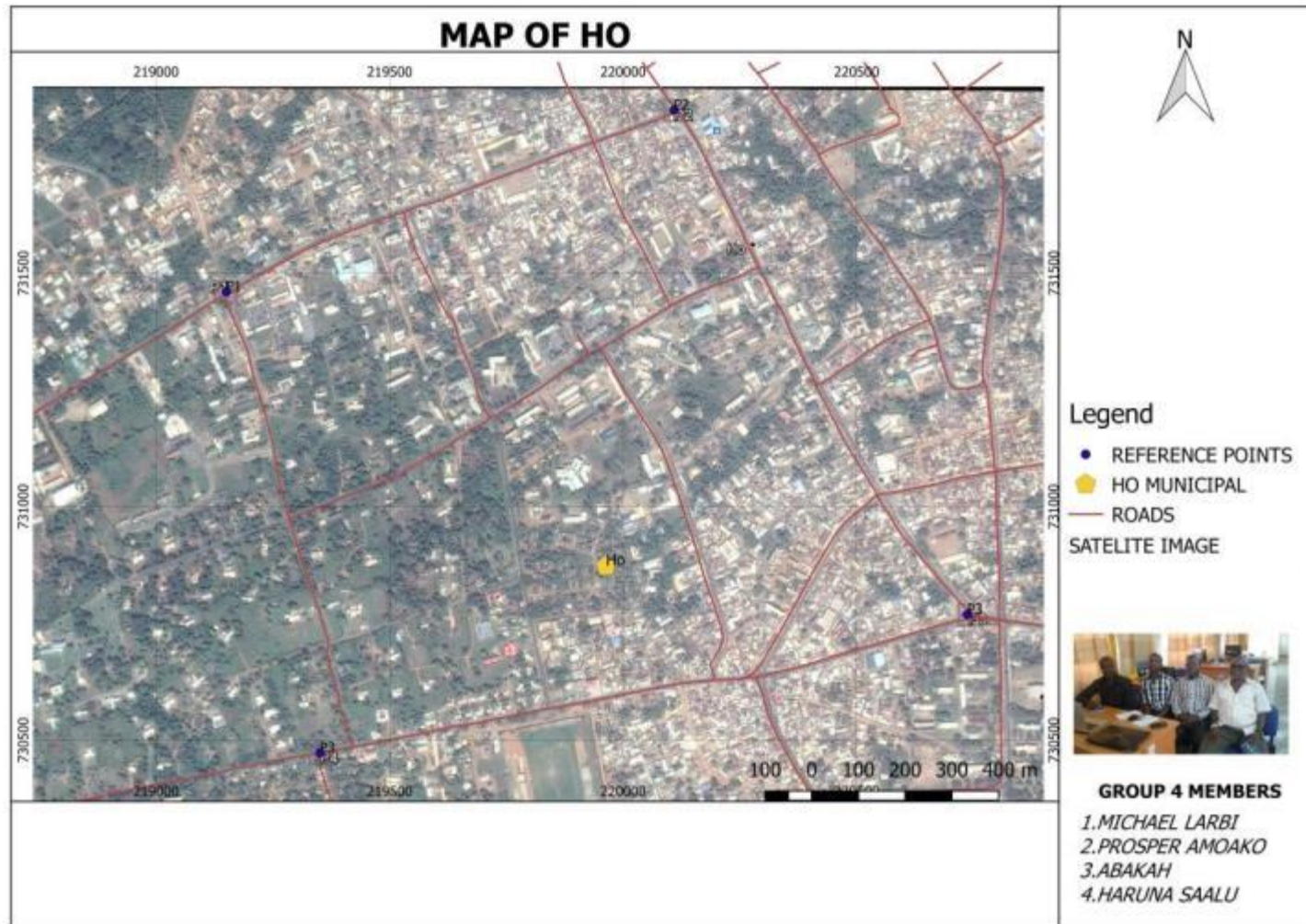


Figure 4 Map of Ho

# TARKWA TOWNSHIP

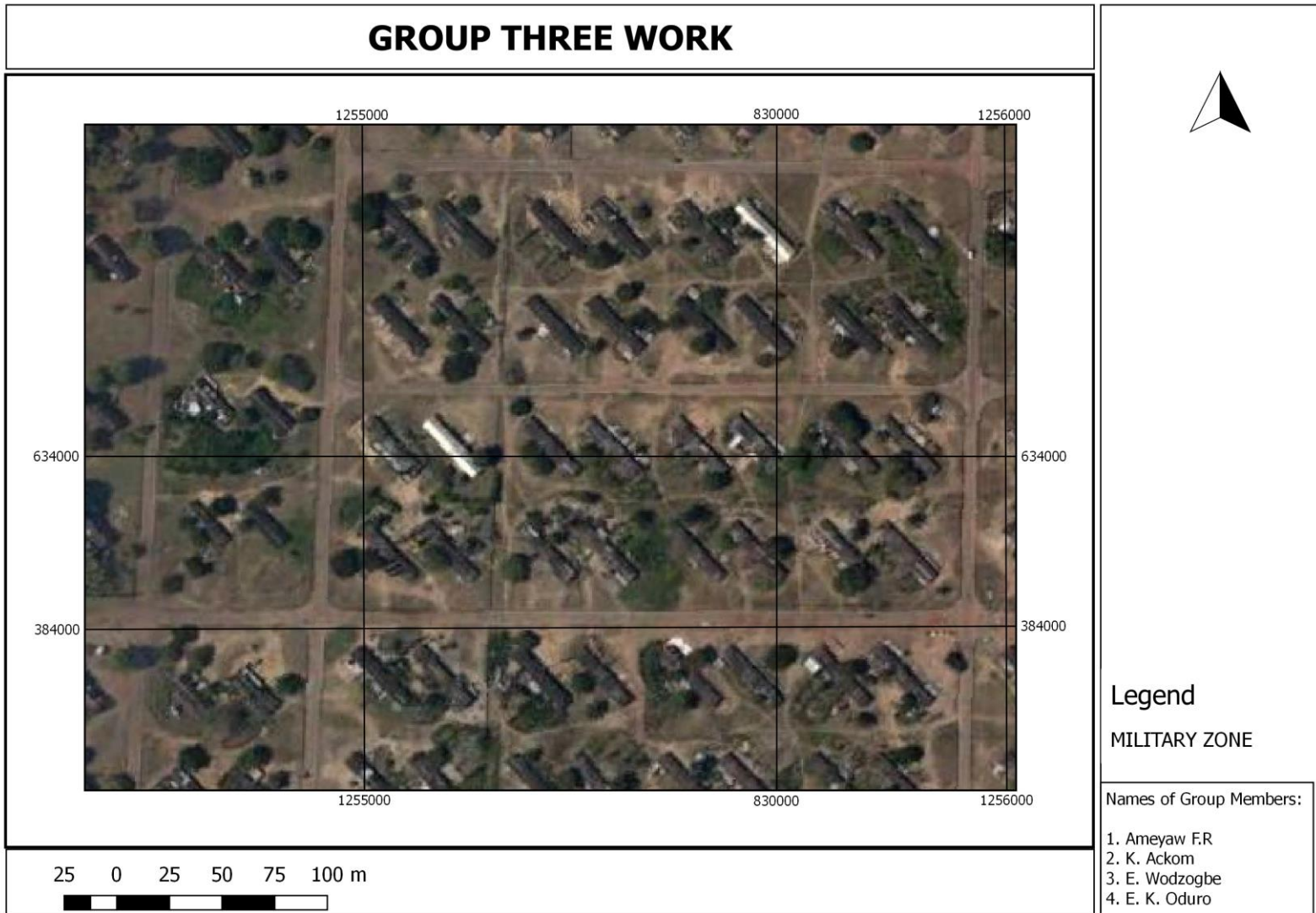


## MAP OF TARKWA TOWNSHIP

GROUP 1  
NUMEKEVOR AKPENE  
RANSFORD ROCKSON  
SELORM GBORGBOR  
ERNEST BOATENG  
EBENEZER AFUTU

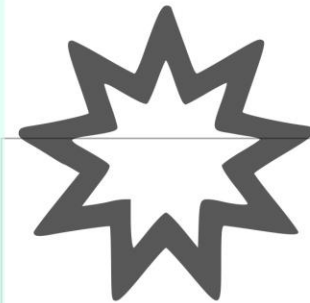
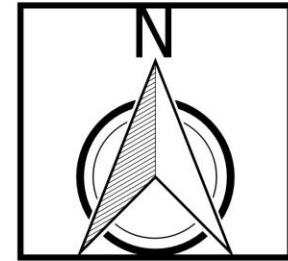
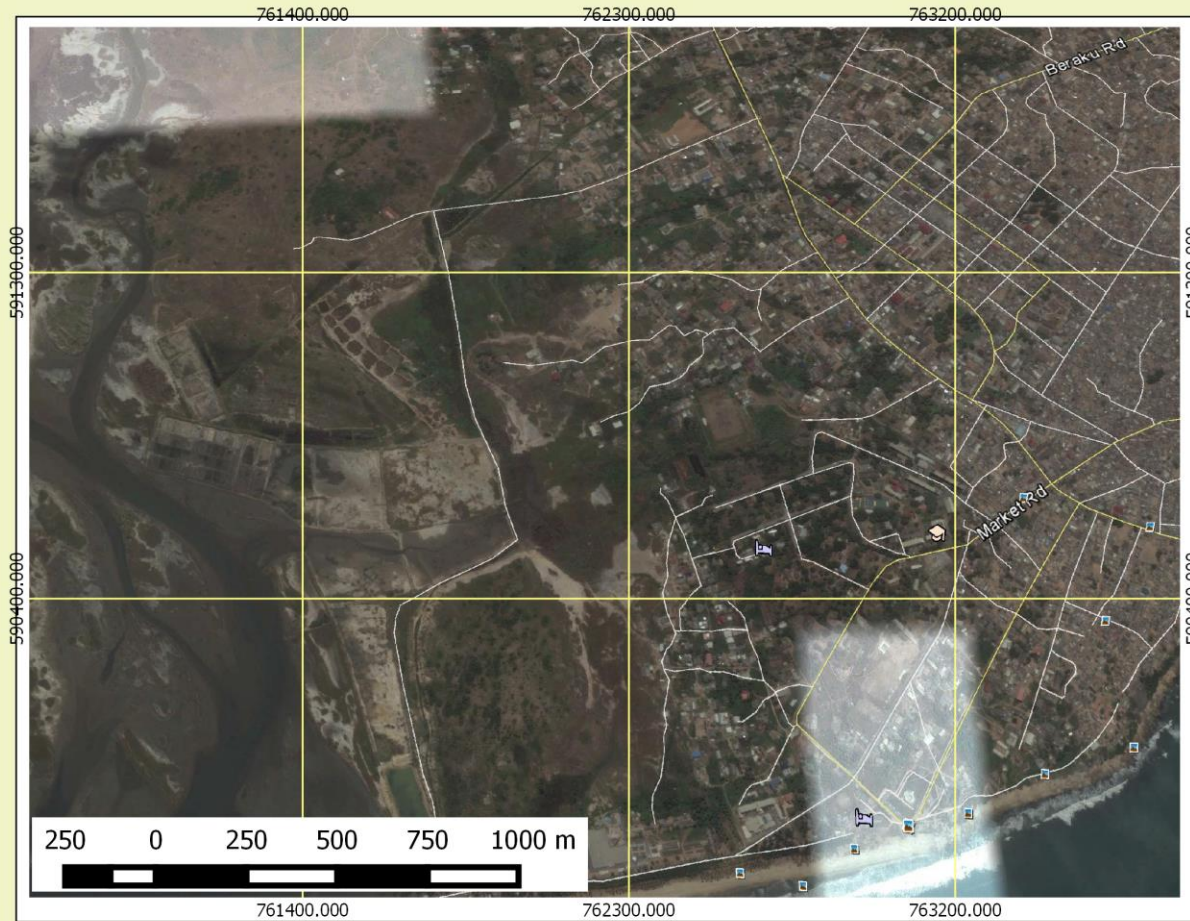
Figure 5 Map of Tarkwa Township





**Figure 6 Group Three Work**

# WINNEBA MUNI RAMSAR SITE



**LEGEND: GROUP 2**

**OCANSEY DANIEL  
OSEI-BAAFI SAMUEL  
ASARE ADU ALEX  
HABIB YUSIF**

***WINNEBA MUNI RAMSAR PLANNING SCHEME, SECTOR 2***

**Figure 7 Winneba Muni RAMSAR site**

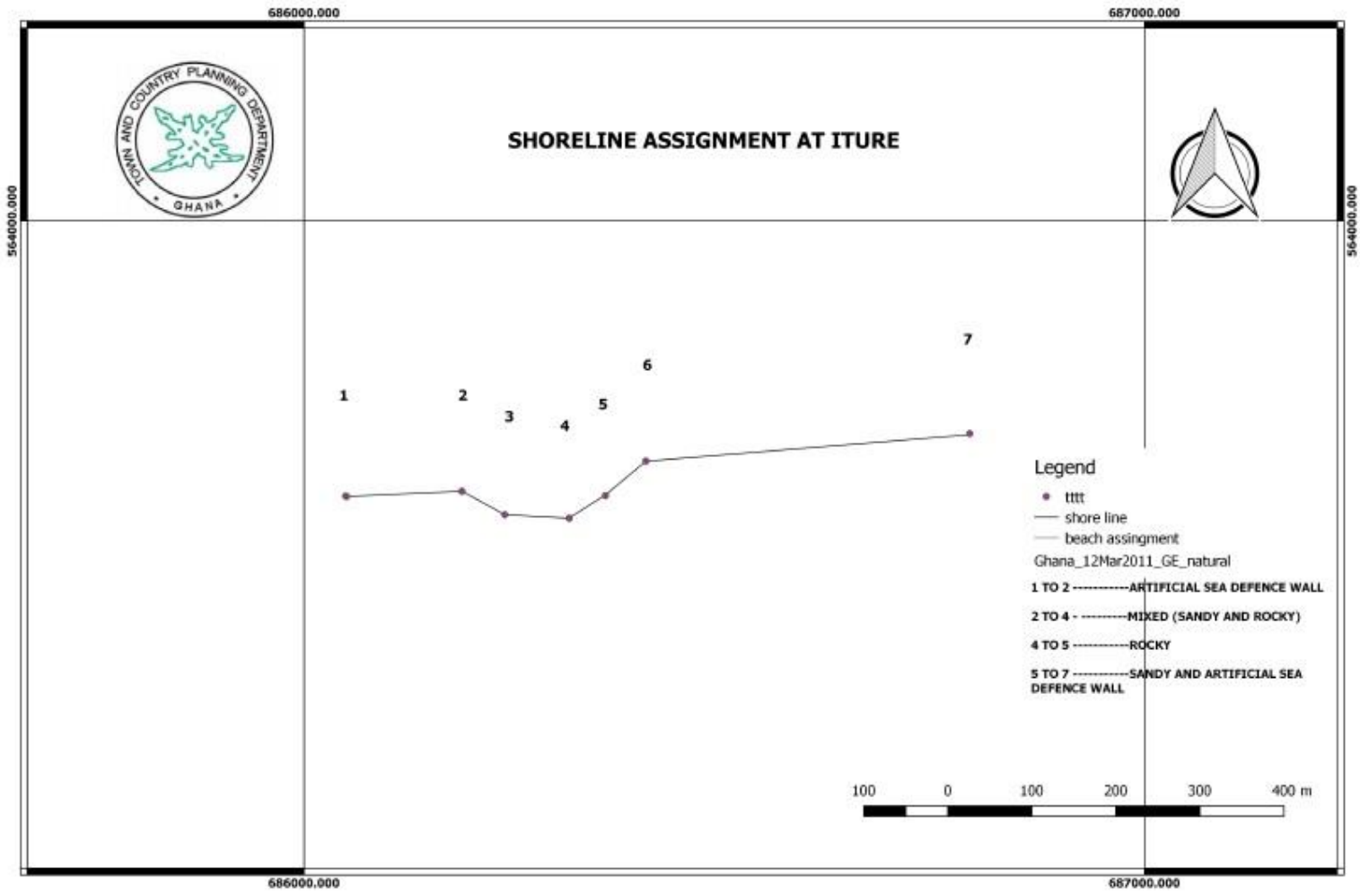


Figure 8 Shoreline Assignment at Iture





Figure 9 Shoreline change analysis





Figure 10 Shoreline analysis