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MOBILE APPLICATION TO SECURE TENURE (MAST) PILOT PROJECT

User Manual for the Web Application: Data Management
Infrastructure (Draft v.2.1)

APRIL 2016

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Mobile Application to Secure Tenure Pilot Project (MAST)

User Manual for the Web Application: Data Management
Infrastructure (Draft v.2.1)

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DISCLAIMER

The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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I. DOCUMENT OVERVIEW

This document intends to provide guidance to MAST Web application users (administrator and project manager roles).

2. ABOUT THE MAST WEB APPLICATION

The key objective of MAST is to provide a framework for capturing land rights information using a participatory approach. This framework provides a suite of applications to support collection and management of land rights information with the following key components:

Mobile Data Capture Application – The mobile data capture application is an Android-based application to capture land rights information (spatial, alphanumeric and multimedia) on mobile devices in the field.

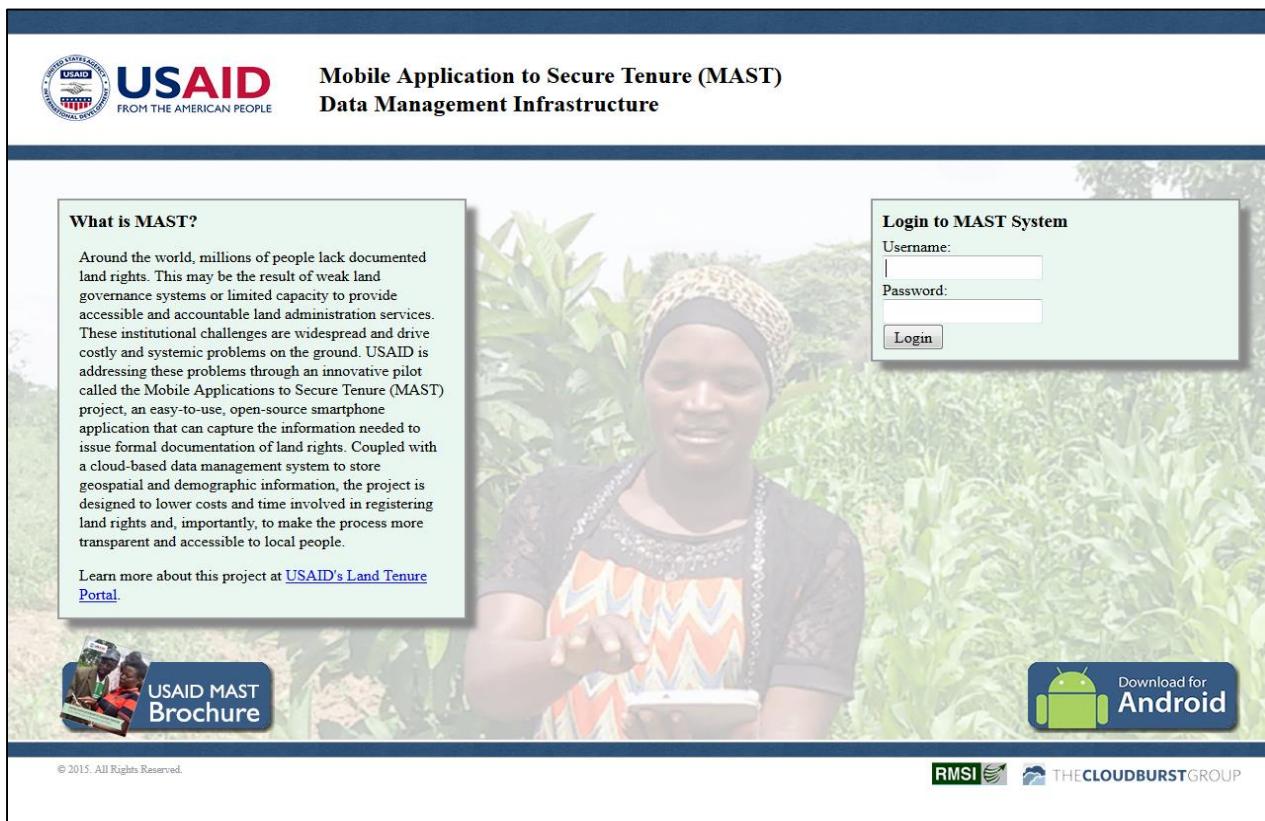
The mobile application will be provided to conduct data collection work in offline mode, without being connected to a central cloud-based server. Data will be collected and stored on the user's handheld device and once the user is within the influence region of the internet, where data can be synced, the information will be packaged and sent back to the server.

Land Rights Data Management Infrastructure Application – Data collected on mobile devices will be transferred to a cloud-based land rights data management infrastructure application, which will provide tools to ingest, manage, and store data of land rights information. The application will also provide reporting components so that required land rights reports can be generated.

This document provides detail of the mobile component of MAST.

2.1 GETTING STARTED

To initiate the MAST web application, the user opens a browser and enters the application's URL. After clicking on the Enter button, the login screen of application appears in the browser window.



The login window has two fields, 'Username' and 'Password,' and a 'Login' button. If the user is an existing user, the user can enter his/her existing 'User Name' and 'Password' and click on the 'Login' button. The user will be logged in to the application and can view the application according to his/her permissions.

Role	Rights
Administrator	Administration Tool, Mobile Configuration Tool, Data Management
Project Manager	Administration Tool, Mobile Configuration Tool, Data Management
Trusted Intermediary	No access
Adjudicator	No access
Public User	Data Management
Land Administration Officials	Data Management
User	Data Management

2.2 LOGIN

This functionality will allow authorized users to login to the application. Depending upon the role, the application will provide different levels of functionality and access to the application.

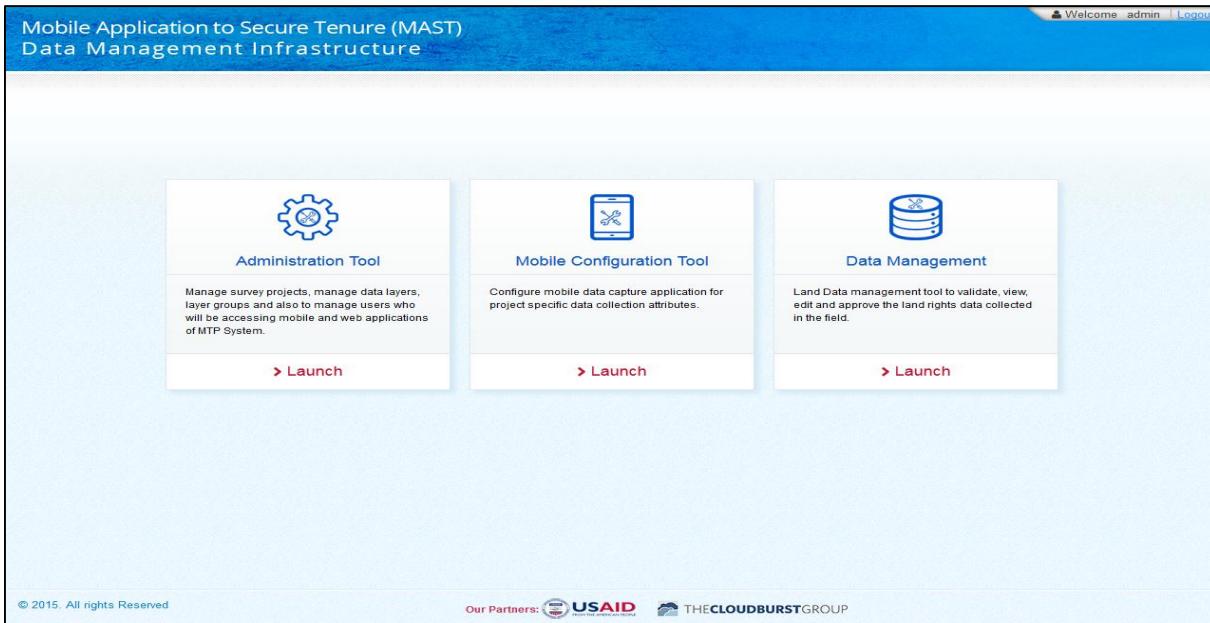
Steps:

- I. Provide valid Username and Password

The screenshot shows the homepage of the USAID MAST Data Management Infrastructure. At the top left is the USAID logo with the tagline "FROM THE AMERICAN PEOPLE". The title "Mobile Application to Secure Tenure (MAST) Data Management Infrastructure" is centered above a large background image of a woman in a field. On the left, a box titled "What is MAST?" contains text about the project's goal of addressing institutional challenges in land governance. Below this is a link to "USAID's Land Tenure Portal". On the right, a box titled "Login to MAST System" contains fields for "Username" (admin) and "Password" (*****), with a "Login" button. At the bottom left is a "USAID MAST Brochure" button, and at the bottom right is an "Android" download button. The footer includes copyright information and logos for RMSI and THE CLOUDBURST GROUP.

2. Click on 'Login' button

3. The application redirects the user to the homepage:



4. The following links are available:

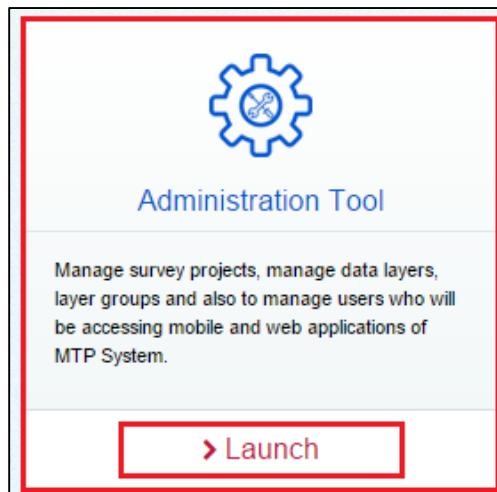
- **Administration Tool** – this functionality allows the user to manage the master land rights data in the system. The system administrator can use it to manage survey projects, data layers, layer groups, and users who will be accessing the MAST mobile and web applications.
- **Mobile Configuration Tool** – this functionality allows the user to configure project attributes that will be collected using the mobile data capture application in the field. Whenever a new project is created in the system, users with the Project Manager or Administrator roles will configure the attributes that will be utilized in the mobile data capture application to collect land rights information in the field for the new project.
- **Data Management Tool** – this functionality first allows the user to select the project for which land data management work is to be done. Thereafter, all the data accessible in the data management tool will be for the selected and authorized project.

3. ADMINISTRATION TOOL

This tool allows the administrator to create and manage users who will be accessing the system. It also provides the ability to add/configure spatial data layers that will be loaded into the GeoServer, as well as further creation of layer groups.

Steps:

1. Log into the system with the ‘Administrator’ role.
2. Click on the ‘Launch’ link available in ‘Administration Tool’ section.



3. The user will be redirected to the ‘Administration Tools’ page. The following functionalities are provided:

- User
- Data Layers
- Master Attribute
- Layer Groups
- Survey Projects

The image shows a screenshot of a web-based application titled 'Mobile Application to Secure Tenure (MAST) Data Management Infrastructure'. At the top right are links for 'Welcome admin' and 'Logout'. On the left is a sidebar with icons for 'Users' (highlighted with a red box), 'Data Layers', 'Layers Groups', 'Survey Projects', and 'Master Attribute'. The main content area shows a table with columns: Name, DefaultProject, Email, Role, and Reporting To. The table contains 10 rows of data. At the bottom of the table are navigation buttons for 'First', 'Previous', 'Next', 'Last', 'Page 1/3', and 'Rows per page 10'.

Name	DefaultProject	Email	Role	Reporting To
AD_1310	Tanzania_Test_1310	AD_1310@AD_1310.com	System Administrator	PM_1310
AD_1410	Phasell_Test	AD_1410@AD_1410.com	System Administrator	AD_1310
ADJ_1310	Tanzania_Test_1310	ADJ_1310@ADJ_1310.com	Adjudicator	PM_1310
admin	Itagutwa_Live	admin@rmsi.com	System Administrator	
Live_Adj	Itagutwa_Live	live_adj@rmsi.com	Adjudicator	admin
Live_LAo	Tanzania_Pilot_Live	live_jao@rmsi.com	Land Administration Official	
Live_Mng	Tanzania_Pilot_Live	live_mng@rmsi.com	Project Manager	uat_pm
Live_TI	Itagutwa_Live	live_ti@rmsi.com	Trusted Intermediary	
Live_TI2	Tanzania_Pilot_Live	live_t2@rmsi.com	Trusted Intermediary	Live_Mng
Live_TI3	Tanzania_Pilot_Live	live_t3@rmsi.com	Trusted Intermediary	Live_Mng

4. USER MANAGEMENT

The MAST Administration Tool provides the functionality to manage users who will be able to access the MAST web and mobile applications. It provides following set of functionalities for the creation and management of users:

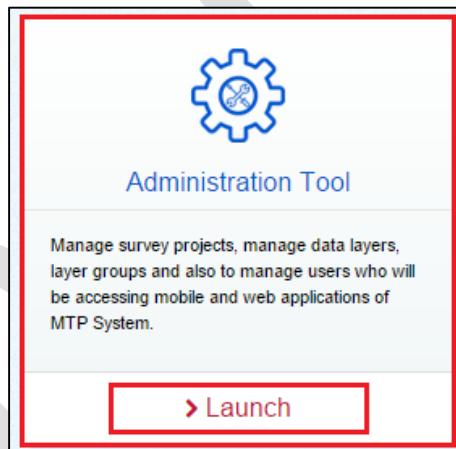
- Add User
- Edit User
- Delete User

4.1 ADD USER

This functionality allows the administrator to create a new system user.

Steps:

1. Log into the system with the ‘Administrator’ role.
2. Click on the ‘Launch’ link available in the ‘Administration Tool’ section.



3. By default, the ‘Users’ option will be selected and details of existing users will be displayed in grid along with associated ‘Edit’ and ‘Delete’ icons.
4. On the top-right, a ‘New’ button will be available.

Name	DefaultProject	Email	Role	Reporting To		
AD_1310	Tanzania_Test_1310	AD_1310@AD_1310.com	System Administrator	PM_1310		
AD_1410	Phasell_Test	AD_1410@AD_1410.com	System Administrator	AD_1310		
ADJ_1310	Tanzania_Test_1310	ADJ_1310@ADJ_1310.com	Adjudicator	PM_1310		
admin	Itagutwa_Live	admin@rmsi.com	System Administrator			
Live_Adj	Itagutwa_Live	live_adj@rmsi.com	Adjudicator	admin		
Live_LA0	Tanzania_Pilot_Live	live_lao@rmsi.com	Land Administration Official			
Live_Mng	Tanzania_Pilot_Live	live_mng@rmsi.com	Project Manager	uat_pm		
Live_TI	Itagutwa_Live	live_ti@rmsi.com	Trusted Intermediary			
Live_TI2	Tanzania_Pilot_Live	live_tii2@rmsi.com	Trusted Intermediary	Live_Mng		
Live_TI3	Tanzania_Pilot_Live	live_tii3@rmsi.com	Trusted Intermediary	Live_Mng		

5. Click on the 'New' button. A 'General' section will be displayed with following options:

- Name
- Password
- Default Project
- Password Expires
- Role
- Email
- Confirm Password
- Active
- Reporting to
-

General			
Username	Olanga	Name	Olanga
Password	*****	Confirm Password	*****
Email	olanga@mast.com	DefaultProject	14_October
PasswordExpires	2016-03-31	Reporting To	admin
Role	Project Manager	Active	Yes

6. Provide valid details and click on the 'Save' button.

7. Upon the successful creation of a new user, the application will display a confirmation message and redirect the administrator to the list of users.

Name	DefaultProject	Email	Role	Reporting To		
ad	gbgbgttg	User	User	user		
admin	alok_project		System Administrator	test1		
awe	gbgbgttg		Public User	admin		
jeff	CB_Proj		Project Manager	ad		
Olanga	Tanzania Pilot2	Olanga@matst.com	Public User			
Tanzania Pilot	CB_Proj	tanzaniapilot@rmsi.com	System Administrator	test1		
test1	CB_Proj	testone@test.com	System Administrator	Tanzania Pilot		
testuser	SNPA_PROJECT	testuser@rmsi.com	Project Manager	admin		
user	CB_Proj	user@rmsi.com	Trusted Intermediary	admin		
User_AD	30Mar_TestProject	User_AD@User_AD.com	Adjudicator	User_Admin		

8. The administrator can enter a user name in Search input box. Details for the recently created user will be available in the user grid.

User Grid						
Name	DefaultProject	Email	Role	Reporting To		
Olanga	Tanzania Pilot2	Olanga@matst.com	Public User			

Depending upon the privileges granted, the new user will be able to access the MAST web or mobile application.

4.2 EDIT USER

This functionality allows the administrator to edit an existing user's details.

Steps:

1. Log into the system with the 'Administrator' role and click on the 'Launch' link available in the 'Administration Tool' section.
2. By default, the 'Users' option will be selected and details of existing users will be displayed in a grid along with associated 'Edit' and 'Delete' icons.

User Grid						
Name	DefaultProject	Email	Role	Reporting To		
ad	gbgbgttg	12@12.com	User	user		
admin	alok_project	admin@rmsi.com	System Administrator	test1		
awe	gbgbgttg	12@1.com	Public User	admin		
jeff	CB_Proj	jedd@test.com	Project Manager	ad		
Nishant	Tanzania Pilot2	nishant.ashree@rmsi.com	System Administrator	Olanga		
Olanga	Tanzania Pilot2	Olanga@matst.com	Public User			
Tanzania Pilot	CB_Proj	tanzaniapilot@rmsi.com	System Administrator	test1		
test1	CB_Proj	testone@test.com	System Administrator	Tanzania Pilot		
testuser	SNPA_PROJECT	testuser@rmsi.com	Project Manager	admin		
user	CB_Proj	user@rmsi.com	Trusted Intermediary	admin		

- Click on the 'Edit' icon that corresponds to the record to be edited. A 'General' screen will be displayed along with details of the selected user in edit mode.
- Edit the required details of use, such as: 'Email', 'Password', 'Default Project', 'Active', 'Password Expires', 'Reporting To' and 'Role'.

General

Back Save

Username	Live_TI2	Name	Live User
Password	*****	Confirm Password	*****
Email	live_ti2@rmsi.com	DefaultProject	Tanzania_Pilot_Live
PasswordExpires	2016-02-29	Reporting To	Live_Mng
Role	Trusted Intermediary	Active	Yes

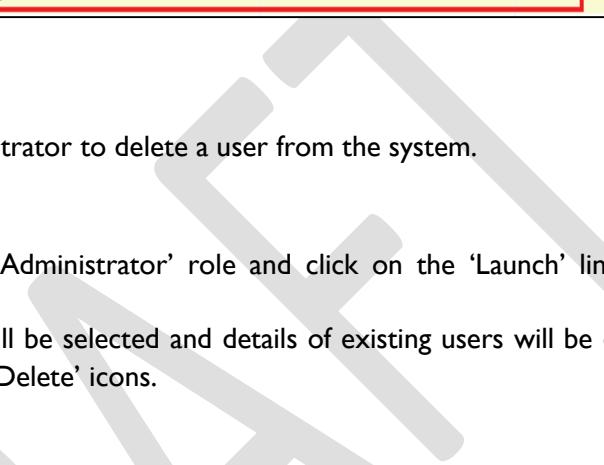
- Click on the 'Save' button. The application will save edited details and will display an acknowledgement message.

Search: Clear New

Name	DefaultProject	Email	Role	Reporting To	
ad	gbgbgttg	User	User	user	
admin	alok_project		System Administrator	test1	
awe	gbgbgttg		Public User	admin	
jeff	SNPA_PROJECT		Trusted Intermediary	Olanga	
Nishant	Tanzania Pilot2	nishant.ashree@rmsi.com	System Administrator	Olanga	
Olanga	Tanzania Pilot2	Olanga@matst.com	Public User		
Tanzania Pilot	CB_Proj	tanzaniapilot@rmsi.com	System Administrator	test1	
test1	CB_Proj	testone@test.com	System Administrator	Tanzania Pilot	
testuser	SNPA_PROJECT	testuser@rmsi.com	Project Manager	admin	
user	CB_Proj	user@rmsi.com	Trusted Intermediary	admin	

1/3 10 ▾

6. Search for the same user and updated details will be available.



Search: Clear New

Name	DefaultProject	Email	Role	Reporting To	
ad	gbgbgttg	12@12.com	User	user	
admin	alok_project	admin@rmsi.com	System Administrator	test1	
awe	gbgbgttg	12@1.com	Public User	admin	
jeff	SNPA_PROJECT	jedd@SNPA.com	Trusted Intermediary	Olanga	

4.3 DELETE USER

This functionality allows the administrator to delete a user from the system.

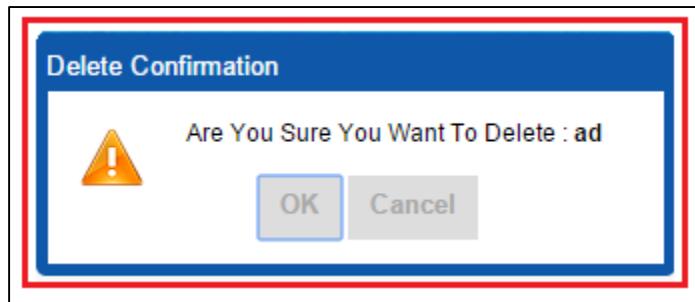
Steps:

1. Log into the system with the ‘Administrator’ role and click on the ‘Launch’ link available in the ‘Administration Tool’ section.
2. By default, the ‘Users’ option will be selected and details of existing users will be displayed in a grid along with associated ‘Edit’ and ‘Delete’ icons.

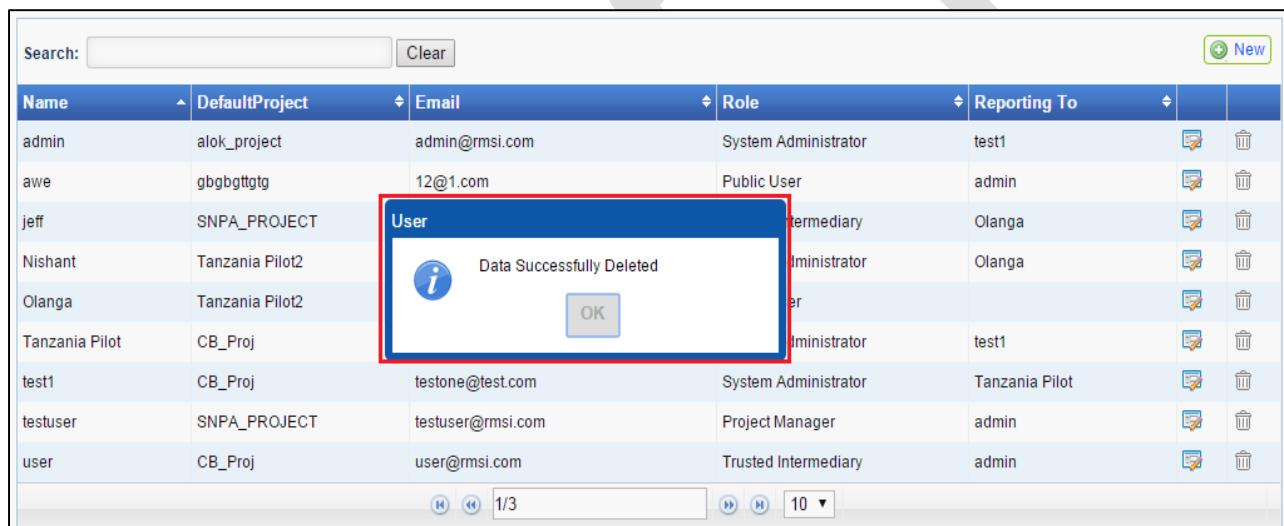
Search: Clear New

Name	DefaultProject	Email	Role	Reporting To	
ad	gbgbgttg	12@12.com	User	user	
admin	alok_project	admin@rmsi.com	System Administrator	test1	
awe	gbgbgttg	12@1.com	Public User	admin	
jeff	SNPA_PROJECT	jedd@SNPA.com	Trusted Intermediary	Olanga	
Nishant	Tanzania Pilot2	nishant.ashree@rmsi.com	System Administrator	Olanga	
Olanga	Tanzania Pilot2	Olanga@matst.com	Public User		
Tanzania Pilot	CB_Proj	tanzaniapilot@rmsi.com	System Administrator	test1	
test1	CB_Proj	testone@test.com	System Administrator	Tanzania Pilot	
testuser	SNPA_PROJECT	testuser@rmsi.com	Project Manager	admin	
user	CB_Proj	user@rmsi.com	Trusted Intermediary	admin	

3. Click on the 'Delete' icon that corresponds to the record to be deleted. Application will display a confirmation message.



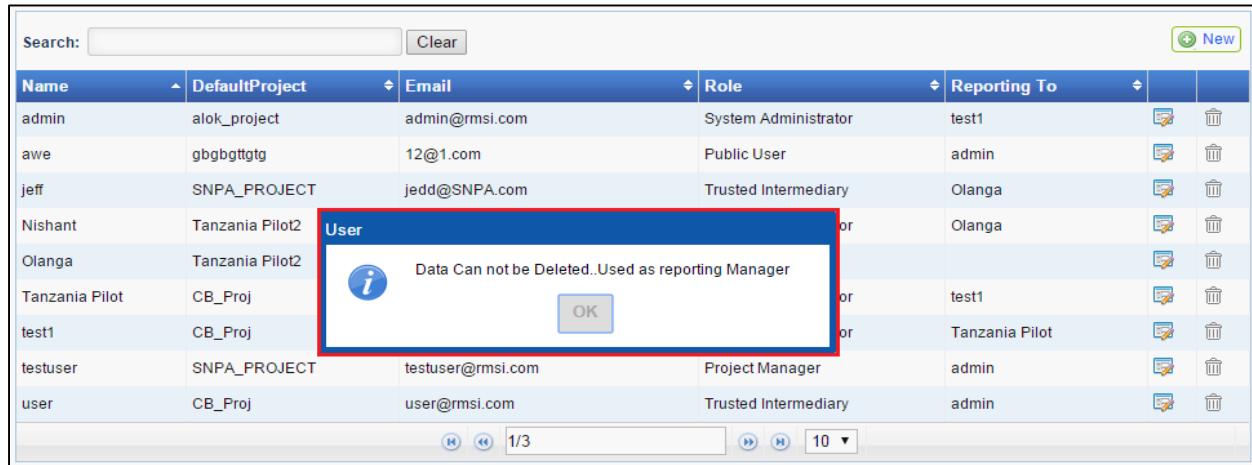
4. Click on the 'OK' button. The selected user will be deleted and the application will display an acknowledgement message.



A screenshot of a user management application interface. At the top, there is a search bar and a 'New' button. The main area is a grid table with columns: Name, DefaultProject, Email, Role, Reporting To, and several icons for edit, delete, and other actions. A modal dialog box is overlaid on the grid, centered over a row. The dialog has a blue header 'User', a message 'Data Successfully Deleted' with an info icon, and an 'OK' button at the bottom. The entire modal is highlighted with a red border.

Name	DefaultProject	Email	Role	Reporting To	
admin	alok_project	admin@rmsi.com	System Administrator	test1	
awe	gbgbgttg	12@1.com	Public User	admin	
jeff	SNPA_PROJECT		Trusted Intermediary	Olanga	
Nishant	Tanzania Pilot2		Administrator	Olanga	
Olanga	Tanzania Pilot2		User		
Tanzania Pilot	CB_Proj		Administrator	test1	
test1	CB_Proj	testone@test.com	System Administrator	Tanzania Pilot	
testuser	SNPA_PROJECT	testuser@rmsi.com	Project Manager	admin	
user	CB_Proj	user@rmsi.com	Trusted Intermediary	admin	

Note: If the user which is to be deleted is a reporting manager of another user, the application will not delete that user and an informational message will be displayed.



The screenshot shows a user management grid with columns: Name, DefaultProject, Email, Role, Reporting To, and several icons for edit and delete. A modal dialog box is overlaid on the grid, titled 'User'. It contains the message 'Data Can not be Deleted..Used as reporting Manager' with an 'OK' button. The entire modal is highlighted with a red border.

Name	DefaultProject	Email	Role	Reporting To		
admin	alok_project	admin@rmsi.com	System Administrator	test1		
awe	gbgbgttg	12@1.com	Public User	admin		
jeff	SNPA_PROJECT	jedd@SNPA.com	Trusted Intermediary	Olanga		
Nishant	Tanzania Pilot2		User	Olanga		
Olanga	Tanzania Pilot2			Olanga		
Tanzania Pilot	CB_Proj			test1		
test1	CB_Proj			Tanzania Pilot		
testuser	SNPA_PROJECT	testuser@rmsi.com	Project Manager	admin		
user	CB_Proj	user@rmsi.com	Trusted Intermediary	admin		

5. DATA LAYERS

This functionality allows an administrator to add a new data layer in the application or edit details of existing layers.

It provides the following options for the creation and management of layers:

- Add New Layer
- Edit Layer
- Delete Layer

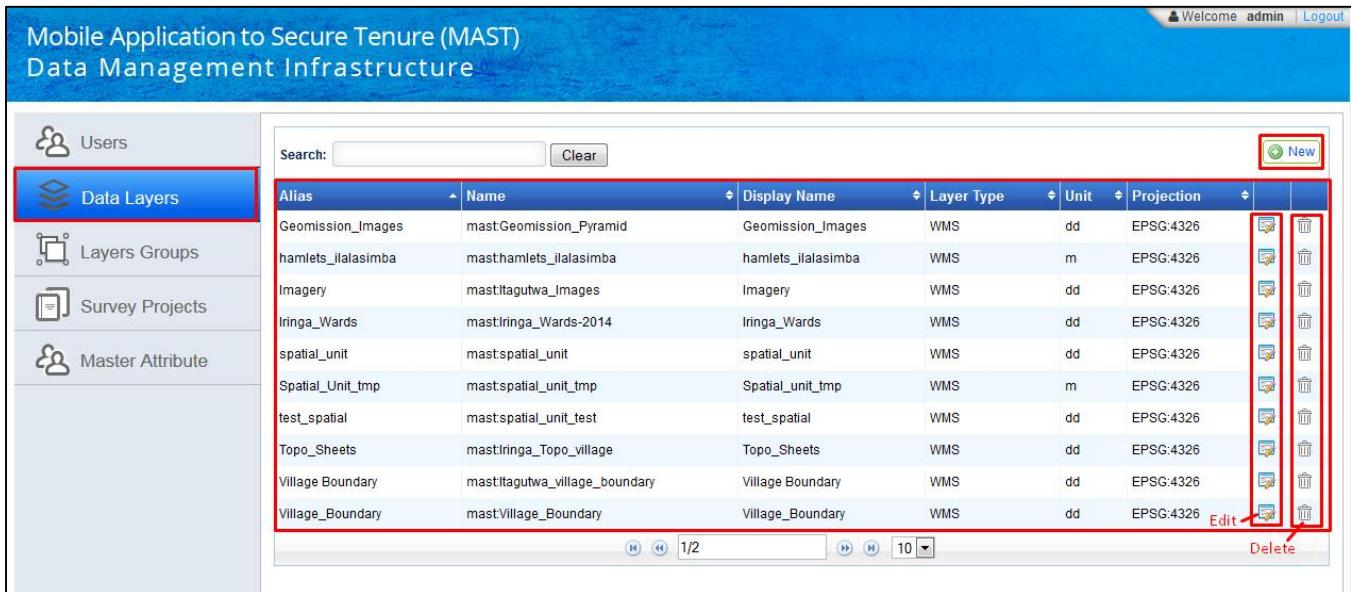
5.1 ADD NEW LAYER

This functionality allows the administrator to add a new data layer in the application.

Steps:

1. Log into the system with the 'Administrator' role and click on the 'Launch' link available in the 'Administration Tool' section.
2. Click on the 'Data Layer' section available on the left. Details of available layers will be displayed in a grid along with associated 'Edit' and 'Delete' icons.

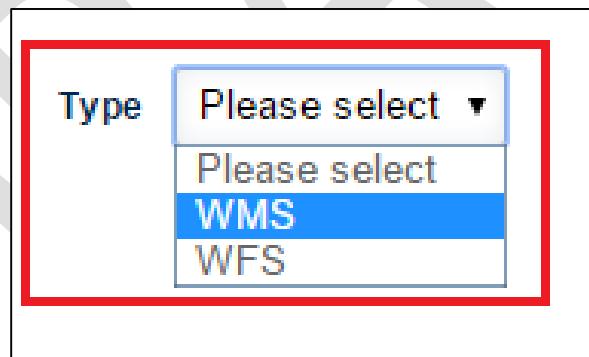
3. On top-right, a 'New' button  will be available.



Alias	Name	Display Name	Layer Type	Unit	Projection		
Geomission_Images	mast:Geomission_Pyramid	Geomission_Images	WMS	dd	EPSG:4326		
hamlets_ilalasimba	mast:hamlets_ilalasimba	hamlets_ilalasimba	WMS	m	EPSG:4326		
Imagery	mast:itagutwa_Images	Imagery	WMS	dd	EPSG:4326		
Iringa_Wards	mast:Iringa_Wards-2014	Iringa_Wards	WMS	dd	EPSG:4326		
spatial_unit	mast:spatial_unit	spatial_unit	WMS	dd	EPSG:4326		
Spatial_Unit_tmp	mast:spatial_unit_tmp	Spatial_unit_tmp	WMS	m	EPSG:4326		
test_spatial	mast:spatial_unit_test	test_spatial	WMS	dd	EPSG:4326		
Topo_Sheets	mast:Iringa_Topo_village	Topo_Sheets	WMS	dd	EPSG:4326		
Village Boundary	mast:itagutwa_village_boundary	Village Boundary	WMS	dd	EPSG:4326		
Village_Boundary	mast:Village_Boundary	Village_Boundary	WMS	dd	EPSG:4326		

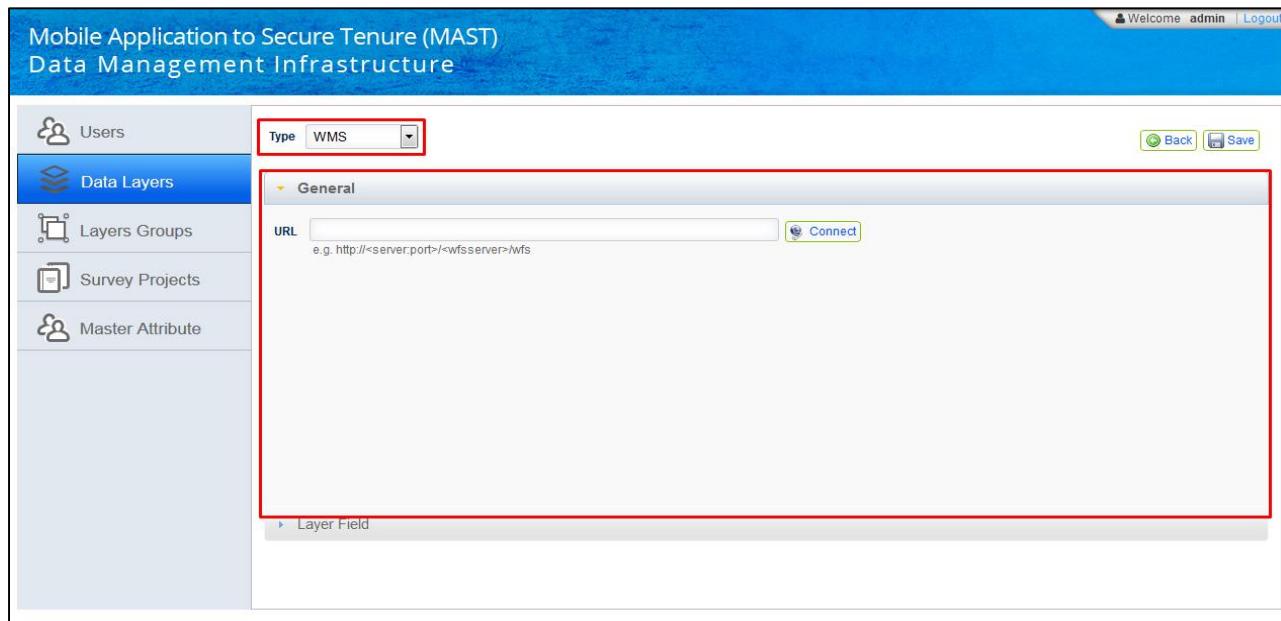
4. Click on New button. A dropdown 'Type' menu will be displayed with the following options -

- WMS
- WFS



5. Select required layer type.

6. Accordion fields for ‘General’ and ‘Layer Field’ will become available.



7. Enter a server URL in the ‘URL’ input box and click on the ‘Connect’ button.

8. Once a connection with the specified server URL is established, the following options to input details for the new data layer will be displayed in the ‘General’ accordion field.

- Layer Name
- Alias
- Format
- Queryable
- Selectable
- Unit
- Min Scale
- Num Zoom Levels
- Layer Visibility
- Is Base Layer
- Geom Type
- Display Name
- Max Extent
- Projection
- Editable
- Exportable
- Min Extent
- Max Scale
- Buffer
- Display In Layer manager
- Display Outside Max Extent
- Tiled

9. The ‘Layer Name’ dropdown will be populated with data available on the specified server.

10. Select the required layer from the dropdown ‘Layer Name’ menu.

11. Max Extent, Min Extent and Projection fields will be populated.

12. Provide all other required inputs.

Mobile Application to Secure Tenure (MAST)
Data Management Infrastructure

Type: WMS

General

Selectable	No	Exportable	No
Unit	dd	MinExtent	33.71032714800018,-10.5372924799998
MinScale	100	MaxScale	100000000
NumZoomLevels		Buffer	0
Layer Visibility	Yes	Display In Layermanager	Yes
IsBaseLayer	No	DisplayOutsideMaxExtent	No
GeomType	RASTER	Tiled	Yes

Layer Field

13. Click on the 'Save' button.

14. The application will save the new layer and will display an acknowledgement message.

15. The newly created layer will be available in the Layer list.

Mobile Application to Secure Tenure (MAST)
Data Management Infrastructure

New

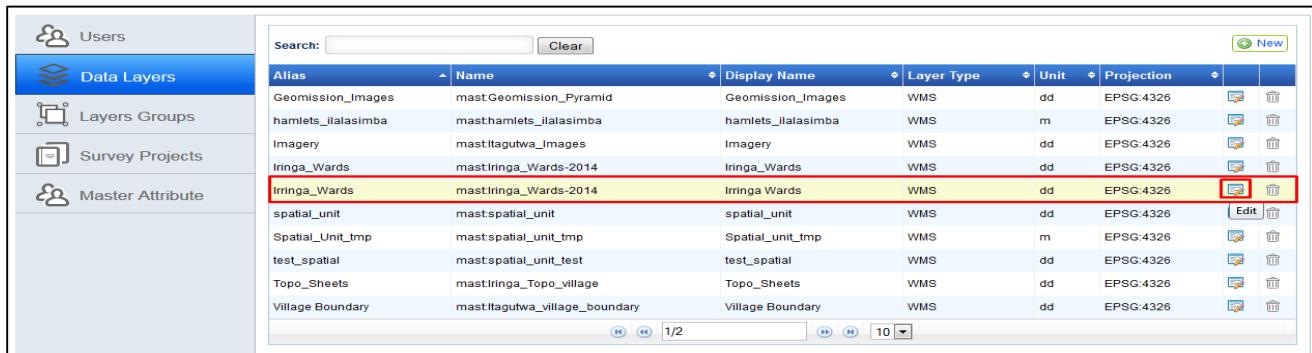
Alias	Name	Display Name	Layer Type	Unit	Projection	Action
Geomission_Images	mastGeomission_Pyramid	Geomission_Images	WMS	dd	EPSG:4326	
hamlets_ilalasimba	masthamlets_ilalasimba	hamlets_ilalasimba	WMS	m	EPSG:4326	
Imagery	mastitagutwa_Images	Imagery	WMS	dd	EPSG:4326	
Iringa_Wards	mastiringa_Wards-2014	Iringa_Wards	WMS	dd	EPSG:4326	
Irringa_Wards	mastir	Layer	WMS	dd	EPSG:4326	
spatial_unit	mastis	Data Successfully Saved	WMS	dd	EPSG:4326	
Spatial_Unit_Tmp	masts	OK	WMS	m	EPSG:4326	
test_spatial	masts		WMS	dd	EPSG:4326	
Topo_Sheets	mastiringa_Topographic_village	Topo_Sheets	WMS	dd	EPSG:4326	
Village Boundary	mastitagutwa_village_boundary	Village Boundary	WMS	dd	EPSG:4326	

5.2 EDIT LAYER

This functionality allows an administrator to edit the details of any existing layer.

Steps:

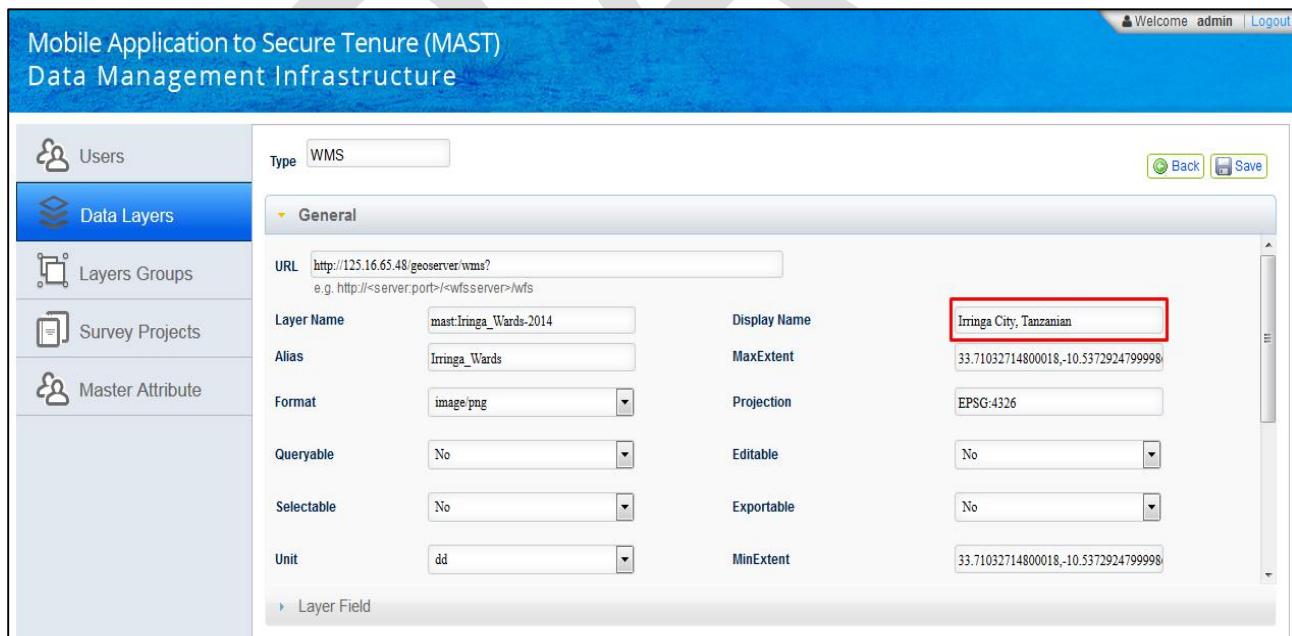
1. Log into the system with the 'Administrator' role and click on the 'Launch' link available in the 'Administration Tool' section.
2. Click on the 'Data Layer' section available on the left. Details of available layers will be displayed in a grid along with associated 'Edit' and 'Delete' icons.



A screenshot of a web-based application interface titled 'Data Layers'. On the left, there is a sidebar with icons for 'Users', 'Data Layers' (which is selected and highlighted in blue), 'Layers Groups', 'Survey Projects', and 'Master Attribute'. The main area contains a table with columns: Alias, Name, Display Name, Layer Type, Unit, Projection, and actions (Edit, Delete). One row, 'Iringa_Wards', is highlighted with a red box around its entire row. The 'Edit' button for this row is also highlighted with a red box.

Alias	Name	Display Name	Layer Type	Unit	Projection	
Geomission_Images	mastGeomission_Pyramid	Geomission_Images	WMS	dd	EPSG:4326	
hamlets_llalasimba	masthamlets_llalasimba	hamlets_llalasimba	WMS	m	EPSG:4326	
Imagery	mastiitagutwa_Images	Imagery	WMS	dd	EPSG:4326	
Iringa_Wards	mastiringa_Wards-2014	Iringa_Wards	WMS	dd	EPSG:4326	
Iringa_Wards	mastiringa_Wards-2014	Iringa Wards	WMS	dd	EPSG:4326	
spatial_unit	mastspatial_unit	spatial_unit	WMS	dd	EPSG:4326	
Spatial_Unit_Tmp	mastspatial_unit_tmp	Spatial_unit_tmp	WMS	m	EPSG:4326	
test_spatial	mastspatial_unit_test	test_spatial	WMS	dd	EPSG:4326	
Topo_Sheets	mastiringa_Topographic_village	Topo_Sheets	WMS	dd	EPSG:4326	
Village Boundary	mastiitagutwa_village_boundary	Village Boundary	WMS	dd	EPSG:4326	

3. Click on the 'Edit' icon associated with the layer record that is to be edited. A 'General' section will be displayed along with details for the corresponding layer in edit mode.
4. Edit required details. 'URL', 'Layer Name' and 'Alias' will be non-editable.



A screenshot of a web-based application interface titled 'Mobile Application to Secure Tenure (MAST) Data Management Infrastructure'. On the left, there is a sidebar with icons for 'Users', 'Data Layers' (selected), 'Layers Groups', 'Survey Projects', and 'Master Attribute'. The main area shows a 'General' configuration form for a WMS layer. The 'Type' dropdown is set to 'WMS'. The 'Layer Name' field contains 'mastIringa_Wards-2014'. The 'Alias' field contains 'Iringa_Wards'. Other fields include 'Display Name' (highlighted with a red box), 'MaxExtent' (containing coordinates '33.71032714800018,-10.5372924799998'), 'Format' (set to 'image/png'), 'Projection' (set to 'EPSG:4326'), 'Queryable' (set to 'No'), 'Selectable' (set to 'No'), 'Unit' (set to 'dd'), 'Editable' (set to 'No'), 'Exportable' (set to 'No'), and 'MinExtent' (containing coordinates '33.71032714800018,-10.5372924799998'). At the bottom, there are 'Back' and 'Save' buttons.

5. Click on the ‘Save’ button. The application will save edited details and display an acknowledgement message.

The screenshot shows the 'Data Layers' section of a web-based GIS application. A modal dialog box is centered over the table, displaying the message 'Data Successfully Saved' with an 'OK' button. The table lists various layers with their details. One row, 'Iringa_Wards', has its 'Display Name' field changed to 'Iringa City, Tanzanian'. The entire 'Display Name' column is highlighted with a red box. The 'Search' bar at the top left contains the text 'irringa'.

Alias	Name	Display Name	Layer Type	Unit	Projection
Geomission_Images	mastGeomission_Pyramid	Geomission_Images	WMS	dd	EPSG:4326
hamlets_ilalasimba	masthamlets_ilalasimba	hamlets_ilalasimba	WMS	m	EPSG:4326
Imagery	mastitagutwa_Images	Imagery	WMS	dd	EPSG:4326
Iringa_Wards	mastiringa_Wards-2014	Iringa_Wards	WMS	dd	EPSG:4326
Iringa_Wards	mastiringa_Wards-2014	Iringa City, Tanzanian	WMS	dd	EPSG:4326
spatial_unit	mastspatial_unit		WMS	dd	EPSG:4326
Spatial_Unit_tmp	mastspatial_unit_tmp		WMS	m	EPSG:4326
test_spatial	mastspatial_unit_test		WMS	dd	EPSG:4326
Topo_Sheets	mastiringa_Topo_villa		WMS	dd	EPSG:4326
Village Boundary	mastitagutwa_village_boundary	Village Boundary	WMS	dd	EPSG:4326

6. Search for the same layer and updated details will be displayed.

The screenshot shows the 'Data Layers' section again, but this time the 'Search' bar at the top left contains the text 'irringa'. The 'Display Name' column for the 'Iringa_Wards' layer is highlighted with a red box, showing the value 'Iringa City, Tanzanian'. The rest of the table and interface elements are identical to the previous screenshot.

Alias	Name	Display Name	Layer Type	Unit	Projection
Iringa_Wards	mastiringa_Wards-2014	Iringa City, Tanzanian	WMS	dd	EPSG:4326

5.3 DELETE LAYER

This functionality allows an administrator to delete existing layer from the system.

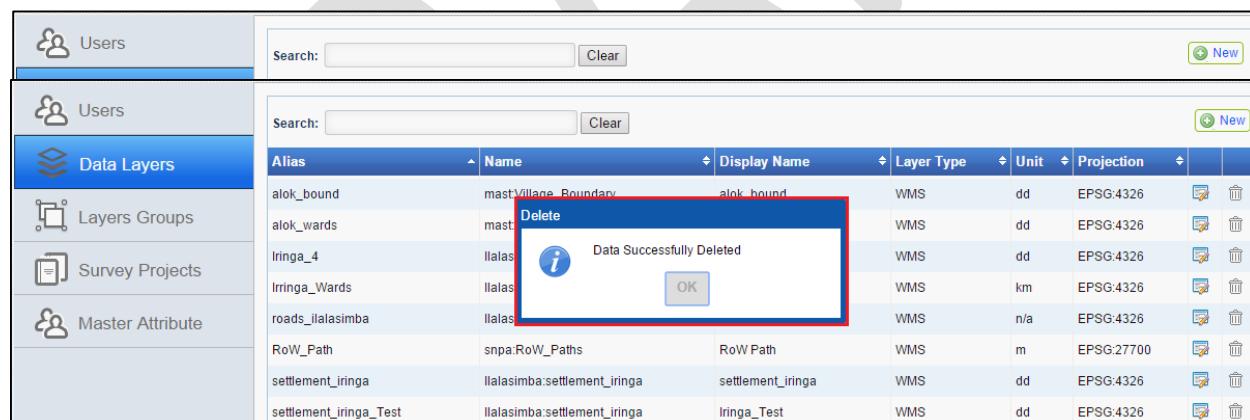
Steps:

1. Log into the system with the ‘Administrator’ role and click on the ‘Launch’ link available in the ‘Administration Tool’ section.
2. Click on the ‘Data Layer’ section available on the left. Details of available layers will be displayed in a grid along with associated ‘Edit’ and ‘Delete’ icons.



Alias	Name	Display Name	Layer Type	Unit	Projection	Actions
[object HTMLInputElement]	llalasimba:irringa_4	30May2015-2	WMS	m	EPSG:4326	 
alok_bound	masterVillage_Boundary	alok_bound	WMS	dd	EPSG:4326	 
alok_wards	masterIrringa_Wards-2014	alok_wards	WMS	dd	EPSG:4326	 
irringa_4	llalasimba:irringa_4	irringa_City_Tanzania	WMS	dd	EPSG:4326	 
Irringa_Wards	llalasimba:irringa_4	Irringa_Wards	WMS	km	EPSG:4326	 
Roads	masterVillage_Roads	Roads	WMS	m	EPSG:4326	 
roads_llalasimba	llalasimba.roads_llalasimba	roads_llalasimba	WMS	n/a	EPSG:4326	 
RoW_Path	snpa:RoW_Paths	RoW Path	WMS	m	EPSG:27700	 

3. Click on the ‘Delete’ option available with the layer record that is to be deleted.
4. The application will display a confirmation message. Click on the ‘OK’ button.



Alias	Name	Display Name	Layer Type	Unit	Projection	Actions
alok_bound	masterVillage_Boundary	alok_bound	WMS	dd	EPSG:4326	 
alok_wards	masterIrringa_Wards-2014	alok_wards	WMS	dd	EPSG:4326	 
irringa_4	llalasimba:irringa_4	irringa_City_Tanzania	WMS	dd	EPSG:4326	 
Irringa_Wards	llalasimba:irringa_4	Irringa_Wards	WMS	km	EPSG:4326	 
roads_llalasimba	llalasimba.roads_llalasimba	roads_llalasimba	WMS	n/a	EPSG:4326	 
RoW_Path	snpa:RoW_Paths	RoW Path	WMS	m	EPSG:27700	 
settlement_irringa	llalasimba:settlement_irringa	settlement_irringa	WMS	dd	EPSG:4326	 
settlement_irringa_Test	llalasimba:settlement_irringa	Irninga_Test	WMS	dd	EPSG:4326	 

5. The corresponding layer will be deleted and the application will display an acknowledgement message.

6. LAYER GROUPS

This functionality allows an administrator to manage data layers in the application (to edit or delete) or search layers by their names or display names.

It provides following set of functionalities for the creation and management of layer groups:

- Add New Layer Group
- Edit Layer Group

- Delete Layer Group

6.1 ADD NEW LAYER GROUP

This functionality allows an administrator to add a new layer group in the application.

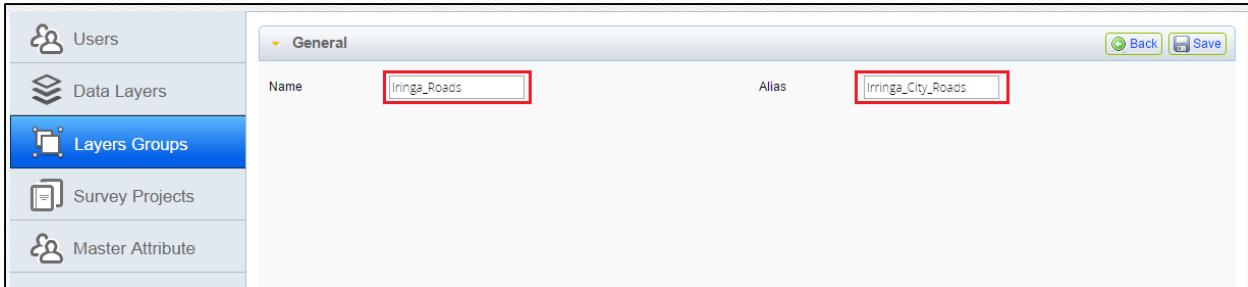
Steps:

1. Click on the ‘Layer Groups’ section available to the left. Details of available layer groups will be displayed in a grid along with associated ‘Edit’ and ‘Delete’ icons.
2. On top-right, a ‘New’ button  will be available.

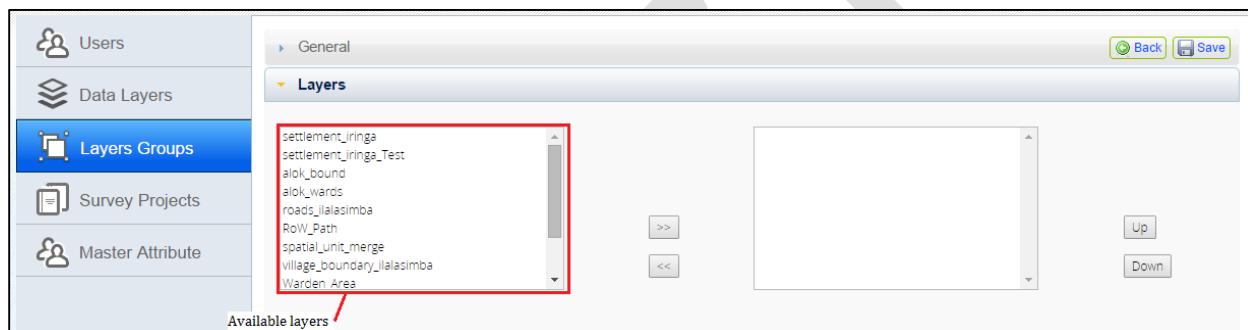


Layers Groups				
Name	Alias			
CB_IMG	CB_IMG			
CB_lyrs	CB_lyrs			
demo	demo			
llalasimba	llalasimba			
llalasimba_vectors	llalasimba_vectors			
Irringa_Test_23Mar2015	Irringa_Test_23Mar2015_Alias			
SNPA_GRP	SNPA_GRP			
Warden_Area	Warden_Area			

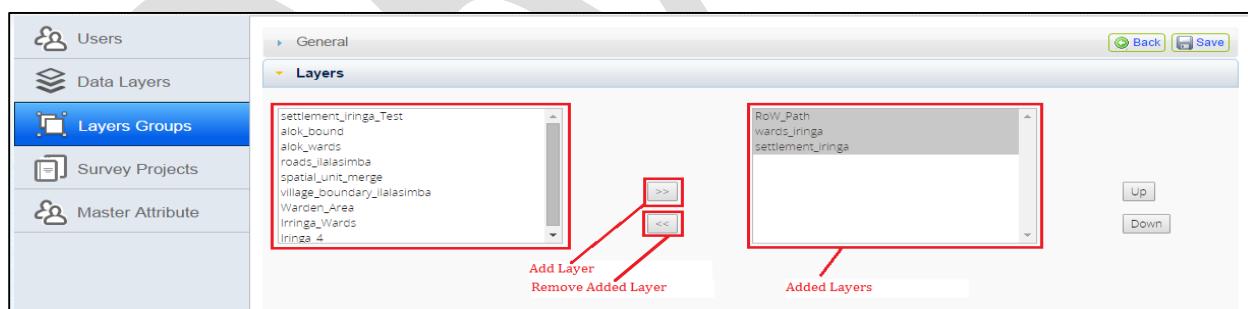
3. Click on the 'New' button. 'General' and 'Layers' accordions will be available. Provide inputs for 'Name' and 'Alias' fields available in the 'General' accordion.



4. Click on the 'Layers' accordion. All available layers will be displayed in the list box.



5. Select required layers and click on the 'Add Layers' button.
6. Selected layers will become available in the 'Selected Layers' list box.



7. Select a layer and click the Up/Down buttons to change the display order.

Name	Alias	
CB_IMG	CB_IMG	
CB_lyrs	CB_lyrs	
demo	demo	
llalasimba	llalasimba	
llalasimba_vectors	llalasimba_vectors	
Iringa_Roads	Iringa_City_Roads	
Iringa_Test_23Mar2015	Iringa_Test_23Mar2015_Alias	
SNPA_GRP	SNPA_GRP	
Warden_Area	Warden_Area	

8. Click on the 'Save' button. The application will display an acknowledgement message. The newly created layer group will be available in the 'Layer Groups' list.

6.2 EDIT LAYER GROUP

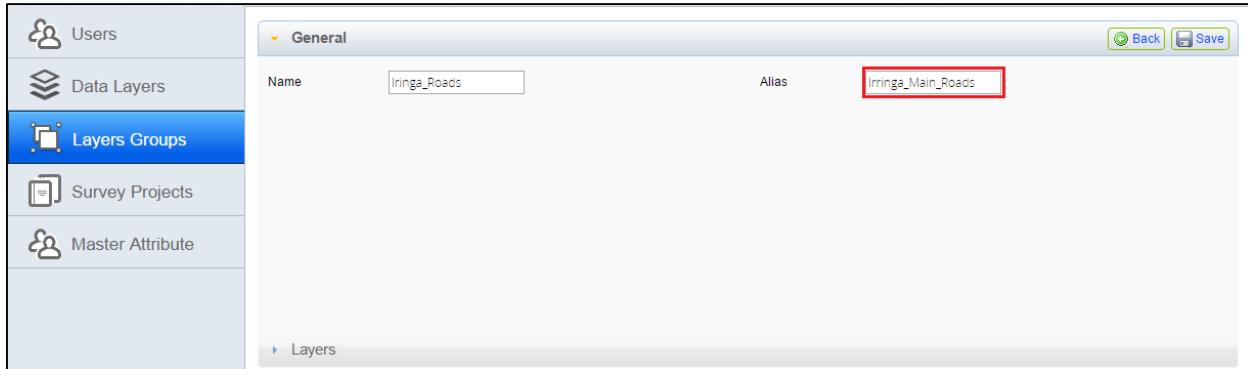
This functionality allows an administrator to edit an existing layer group in the application. A user can add or remove a layer from any layer group.

Steps:

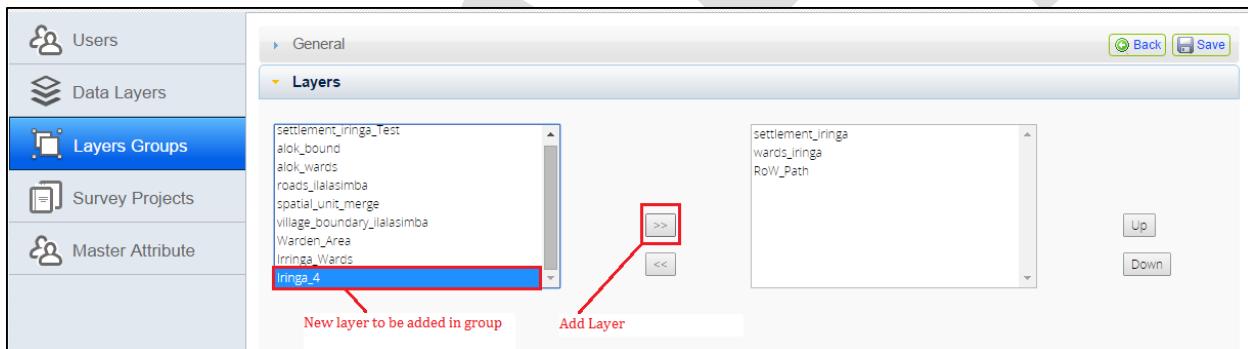
- Click on the 'Layer Groups' section available to the left. Details of available layer groups will be displayed in a grid along with associated 'Edit' and 'Delete' icons.

Name	Alias	
CB_IMG	CB_IMG	
CB_lyrs	CB_lyrs	
demo	demo	
llalasimba	llalasimba	
llalasimba_vectors	llalasimba_vectors	
Iringa_Roads	Iringa_City_Roads	
Iringa_Test_23Mar2015	Iringa_Test_23Mar2015_Alias	

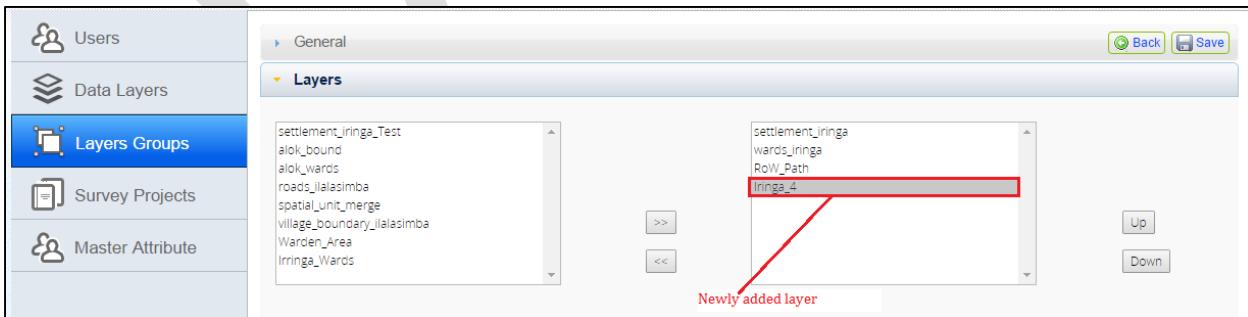
2. Click on the 'Edit' icon associated with the layer group record that is to be edited. 'General' and 'Layers' accordions will be displayed along with details of the corresponding layer group in edit mode.
3. Edit the required details available in the 'General' accordion. 'Name' will be non-editable.



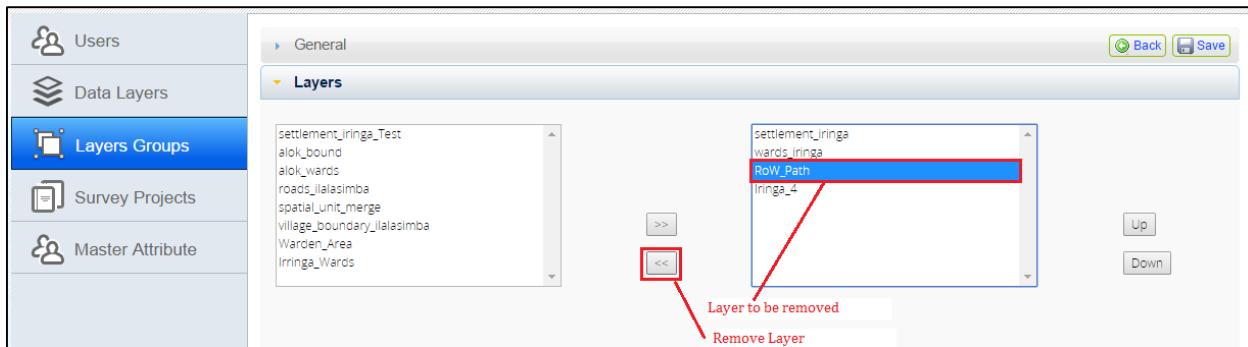
4. Click on the 'Layers' accordion. To add a required layer, start by selecting a layer from the existing layers list.



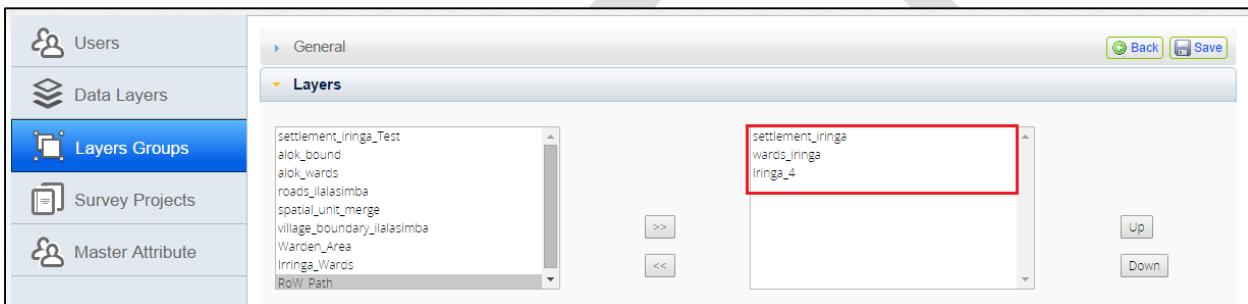
5. Click on the 'Add Layer' button. The new layer will be added to the layer group.



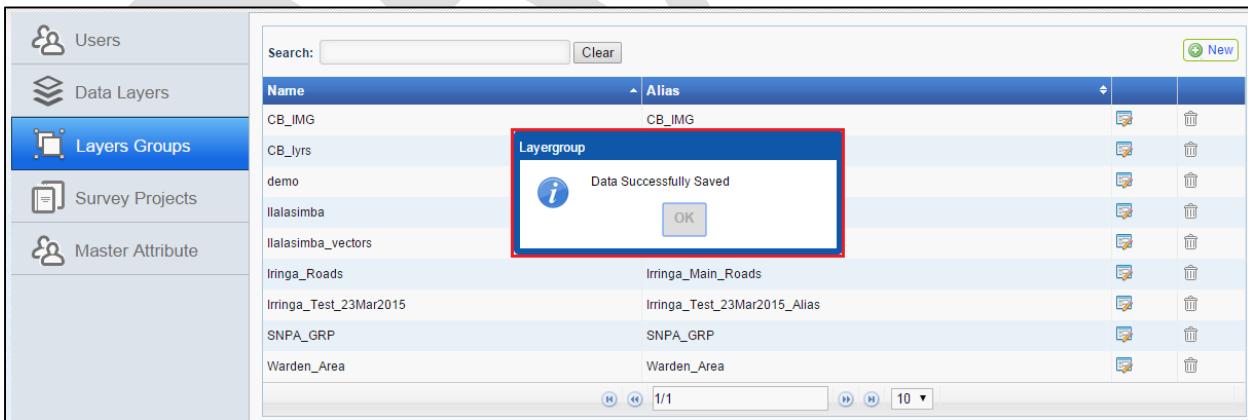
6. To remove a layer, select the layer from the list on the right side and click ‘Remove Layer’ button.



7. The selected Layer will be removed from the corresponding ‘Layer Group’.



8. Click on ‘Save’ button. The application will save edited details and will display an acknowledgement message.



6.3 DELETE LAYER GROUP

This functionality allows an administrator to delete an existing layer group from the application.

Steps:

1. Click on the 'Layer Groups' section available to the left. Details of available layer groups will be displayed in a grid along with associated 'Edit' and 'Delete' icons.
2. Click on the 'Delete' icon associated with the layer group record that is to be deleted.

Name	Alias		
Base/Images	Base/Images		
IlalaSimba_Vectors	Ilalasimba_Vectors		
ItagutwaVectors	Itagutwa/vectors		
Spatial_Unit	Spatial_Unit		
test_spatial	test_spatial		
TestLayerGroupEdit	TestLayerGroupEdit		
Warden_Area	Warden_Area		
wards	Wards+Arc1960		

3. The application will display a confirmation message. Click on the 'OK' button.

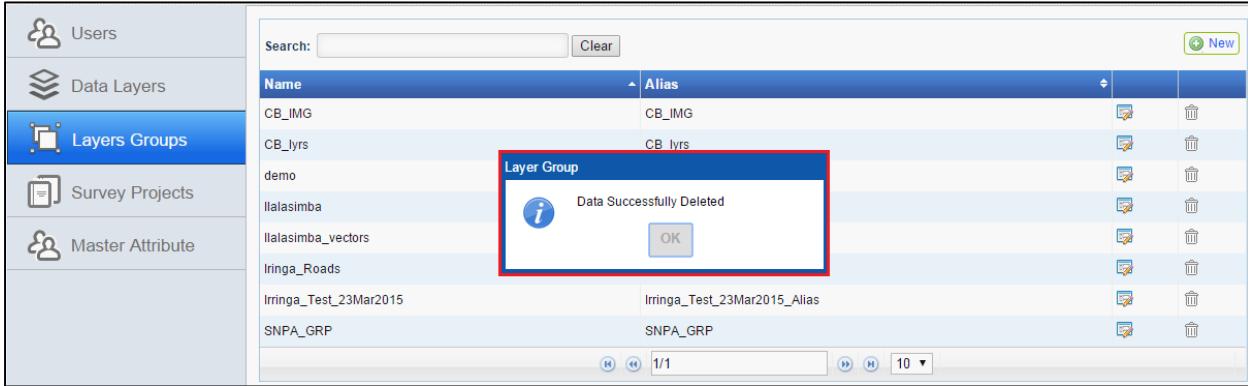
Delete Confirmation

Are You Sure You Want To Delete : Warden_Area

OK Cancel

Name			
CB_IMG			
CB_lyrs			
demo			
Ilalasimba			
Ilalasimba_vectors			
Iringa_Roads	Iringa_Main_Roads		
Iringa_Test_23Mar2015	Iringa_Test_23Mar2015_Alias		
SNPA_GRP	SNPA_GRP		
Warden_Area	Warden_Area		

4. The selected 'Layer Group' will be deleted.
5. The application will display an acknowledgement message.



7. SURVEY PROJECTS

This functionality allows an administrator to define survey projects in the system. The survey project function includes the ability to manage all the details of a particular data collection project.

The following information sets are defined in a survey project:

- General information for the survey project – including country and region details of the project
- Users who will have access to the project in the mobile application and the data management application
- Data layers and layer groups that will be accessed and viewable in the project on the mobile and web applications

The 'Survey Projects' functionality provides following options for creation and management of survey projects:

- Add Survey Project
- Edit Survey Project
- Delete Survey Project

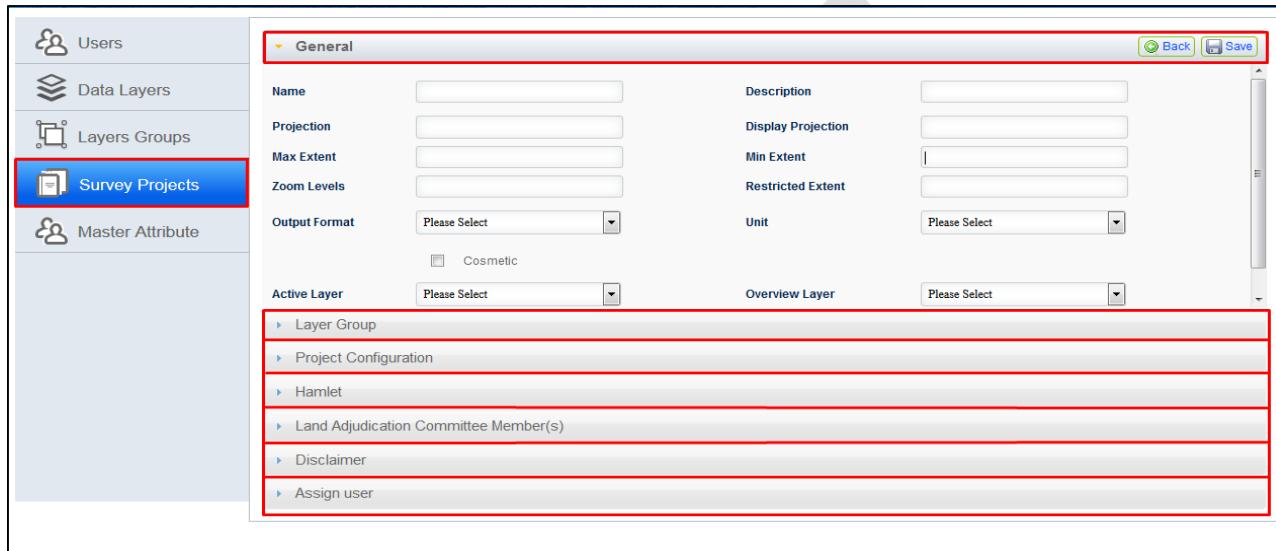
7.1 ADD SURVEY PROJECT

This functionality allows an administrator to create new survey projects in the system.

Steps:

- I. Log into the system with the 'Administrator' role and click on the 'Launch' link available in the 'Administration Tool' section.

2. Click on the 'Survey Projects' section available in left. Details of available survey projects will be displayed in a grid along with associated 'Edit' and 'Delete' icons.
3. On top-right, a 'New' button  will be available.
4. Click on 'New' button. Following accordions will be displayed
 - General
 - Layer Group
 - Project Configuration
 - Hamlet
 - Land Adjudication Committee Member(s)
 - Disclaimer
 - Assign Users



5. By default, the 'General' accordion will be expanded, showing following input options:

- Name input box
- Projection input box
- Max Extent input box
- Zoom Levels input box
- Output Format dropdown
- Cosmetic check box
- Active Layer dropdown
- Description input box
- Display Projection input box
- Min Extent input box
- Restricted Extent input box
- Unit dropdown
- Overview Layer dropdown

- Provide valid inputs for all input options. 'Active Layer' and 'Overview Layer' drop downs will be empty. Values in these drop downs will be populated depending upon the layers selected in the 'Layer Groups' accordion.

General

Name	Iringa_Project	Description	Test Project
Projection	EPSG:4326	Display Projection	EPSG:4326
Max Extent	5.539071873584994,-7.74363360226687	Min Extent	.979354736000516,-6.886846522999715
Zoom Levels	18	Restricted Extent	.979354736000516,-6.886846522999715
Output Format	image/png	Unit	m

Active Layer: Please Select Overview Layer: Please Select

Cosmetic

Layer Group

- Project Configuration
- Hamlet
- Land Adjudication Committee Member(s)
- Disclaimer
- Assign user

- Click on the 'Layer Groups' accordion.
- Select option in drop down. Depending upon the selected value, base layers will be populated in the 'Base Layers' drop down.
- All existing layer groups will be available in 'Layer Groups' list along with check and sorting option.
- Select layer groups and base layers which are to be configured for project.

Layer Group

Layergroup	Base layer
<input checked="" type="checkbox"/> ItalaSimba_Vectors <input checked="" type="checkbox"/> Spatial_Unit <input type="checkbox"/> wards <input type="checkbox"/> Base_Images <input type="checkbox"/> test_spatial <input type="checkbox"/> TestLayerGroupEdit	<input type="checkbox"/> Google_Satellite <input type="checkbox"/> Google_Streets <input type="checkbox"/> Google_Hybrid <input type="checkbox"/> Google_Physical

Project Configuration

- Hamlet
- Land Adjudication Committee Member(s)
- Disclaimer
- Assign user

11.Click on 'General' accordion, Select 'Active Layer' and 'Overview Layer' in corresponding dropdowns.

The screenshot shows the 'Survey Projects' section of a software interface. On the left, there's a sidebar with icons for 'Users', 'Data Layers', 'Layers Groups', 'Survey Projects' (which is selected and highlighted in blue), and 'Master Attribute'. The main area has a title 'General' with a dropdown arrow. Below it are various configuration fields: Name (Irringa_Project), Projection (EPSG-4326), Max Extent (5.539071873584994,-7.74363360226687), Zoom Levels (18), Output Format (image/png), Description (Test Project), Display Projection (EPSG-4326), Min Extent (.979354736000516,-6.886846522999715), Restricted Extent (.979354736000516,-6.886846522999715), Unit (m). Two dropdowns at the bottom are highlighted with red boxes: 'Active Layer' (set to 'spatial_unit') and 'Overview Layer' (also set to 'spatial_unit'). There are also other collapsed accordions like 'Layer Group', 'Project Configuration', 'Hamlet', etc.

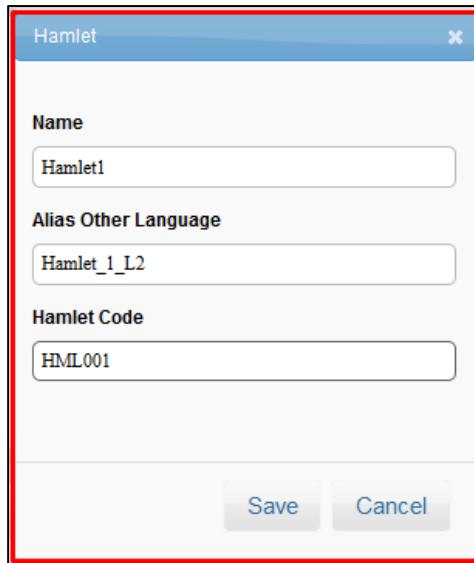
12.Click on 'Project Configuration' accordion. The following input options will be available:

- Country
- District
- Village Code
- Village Chairman
- Land District Officer
- Region
- Village
- Village Postal Code
- Executive Officer

13.Select country, values for 'District', 'Region' and 'Village' will be populated. Select required values.

The screenshot shows the 'Survey Projects' section with the 'Project Configuration' accordion expanded. A large red box highlights the entire configuration area. Inside, there are fields for 'Country' (Tanzania), 'Region' (Iringa), 'District' (Iringa (Rural)), 'Village' (Ilalasimba), 'Village Code' (001), 'Village Postal Code' (201301), 'Village Chairman' (Victor Yusif), and 'Executive Officer' (Aala Simba). Below this, there are collapsed accordions for 'Hamlet', 'Land Adjudication Committee Member(s)', 'Disclaimer', and 'Assign user'.

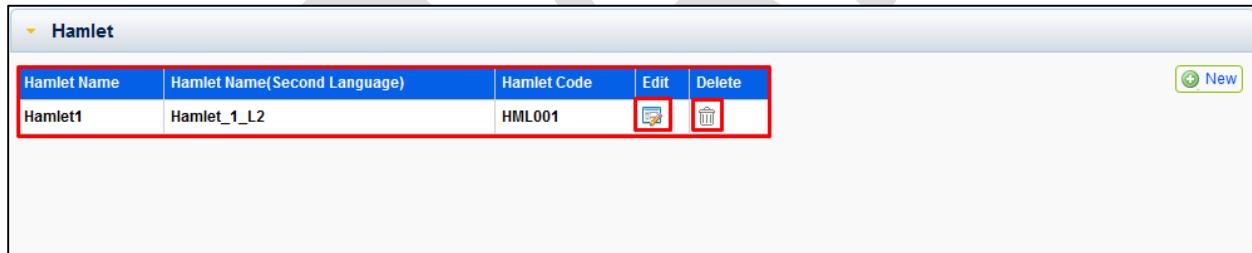
14. Click on the 'Hamlet' accordion. Click on the 'New' button . The Hamlet dialogue box will be displayed.



The image shows a modal dialog box titled "Hamlet". It contains three input fields: "Name" with value "Hamlet1", "Alias Other Language" with value "Hamlet_1_L2", and "Hamlet Code" with value "HML001". At the bottom are "Save" and "Cancel" buttons. The entire dialog box is highlighted with a red border.

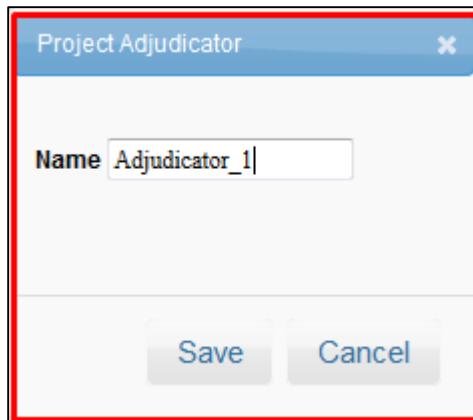
15. Provide valid details and click on 'Save' button.

16. Upon successful creation of Hamlet, Hamlet details will become available in grid along with edit and delete options.



Hamlet Name	Hamlet Name(Second Language)	Hamlet Code	Edit	Delete	New
Hamlet1	Hamlet_1_L2	HML001			

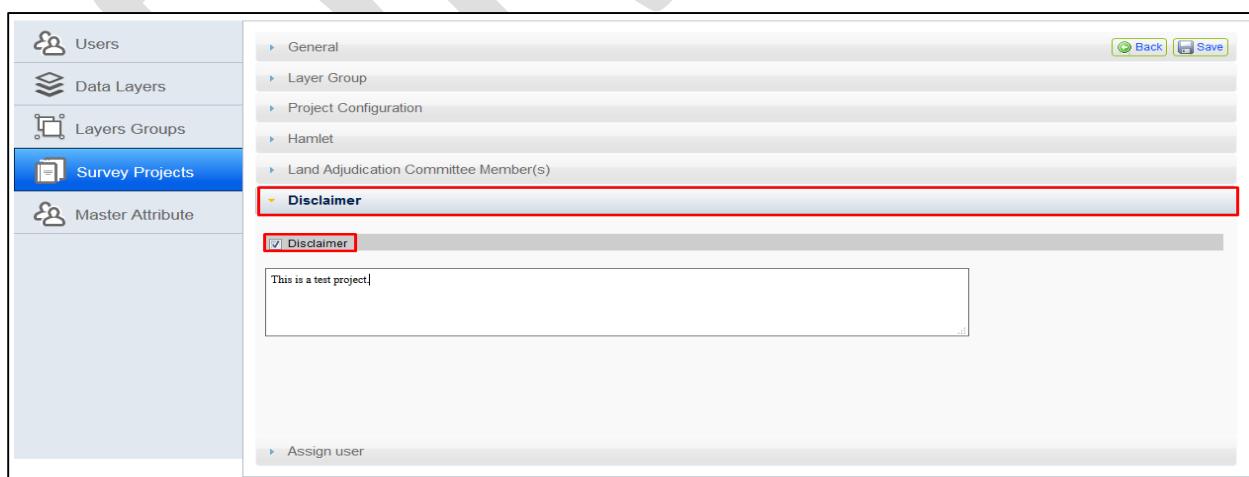
- 17.Click on 'Land Adjudication Committee Member(s)' accordion. Click on 'New' button . 'Project Adjudicator' dialogue box will be displayed.
- 18.Provide adjudicator name in corresponding input box and click on 'Save' button.



- 19.On successful creation of adjudicator, corresponding details will become available in grid along with edit and delete options.

Land Adjudication Committee Member(s)			
Adjudicator Name	Edit	Delete	
Adjudicator_1			

- 20.Click on 'Disclaimer' accordion. Check the 'Disclaimer' check box.
 21.'Disclaimer' input box will be displayed. Enter disclaimer text in 'Disclaimer' input box.



22. Click on 'Assign Users' accordion. All existing users will be displayed in user list along with a check box. Check the check box associated with users, whom projects is to be assigned.

The screenshot shows the 'Survey Projects' configuration page. On the left, there's a sidebar with options: Users, Data Layers, Layers Groups, Survey Projects (which is selected and highlighted in blue), and Master Attribute. The main area has several expandable sections: General, Layer Group, Project Configuration, Hamlet, Land Adjudication Committee Member(s), Disclaimer, and Assign user. The 'Assign user' section is expanded and highlighted with a red border. It contains a 'Select All' and 'Deselect All' button, followed by a list of users with checkboxes. Three checkboxes are checked: 'user_AD', 'Live_T12', and 'Live_T13'. Other users listed with unchecked checkboxes include 'Live_T14', 'Live_T15', 'Live_T17', 'uat_Adj', and 'user_ades'. At the top right of the main area are 'Back' and 'Save' buttons.

23. Click on 'Save' button. Application will display an acknowledgement message.

The screenshot shows the 'Survey Projects' configuration page. The sidebar and main sections are similar to the previous screenshot. A confirmation dialog box titled 'Project' is overlaid on the page, containing the message 'Data Successfully Saved' and an 'OK' button. The dialog is centered over the project list table. The table lists various projects with columns for Name, Country, Region, District, Village, and actions (Edit, Delete). Projects shown include '12_October', '14_October', 'abc', 'abhishek', 'CB_Proj', 'Ilalasimba_dummy', 'Itagutwa_Live', 'Phasell_Test', 'September_30', and 'SNPA_PROJECT'.

24. New project will be created and will be available in project list.

The screenshot shows the 'Survey Projects' configuration page. The sidebar and main sections are similar to the previous screenshots. The project list table now includes a new row for 'Iringa_Project', which is highlighted with a yellow background. The table structure remains the same with columns for Name, Country, Region, District, Village, and actions. The newly added row for 'Iringa_Project' has the same values as the other rows: Tanzania, Iringa, Iringa (Rural), Ilalasimba, and the standard edit/delete icons.

7.2 EDIT SURVEY PROJECT

This functionality allows an administrator to edit the details of any existing project.

Steps:

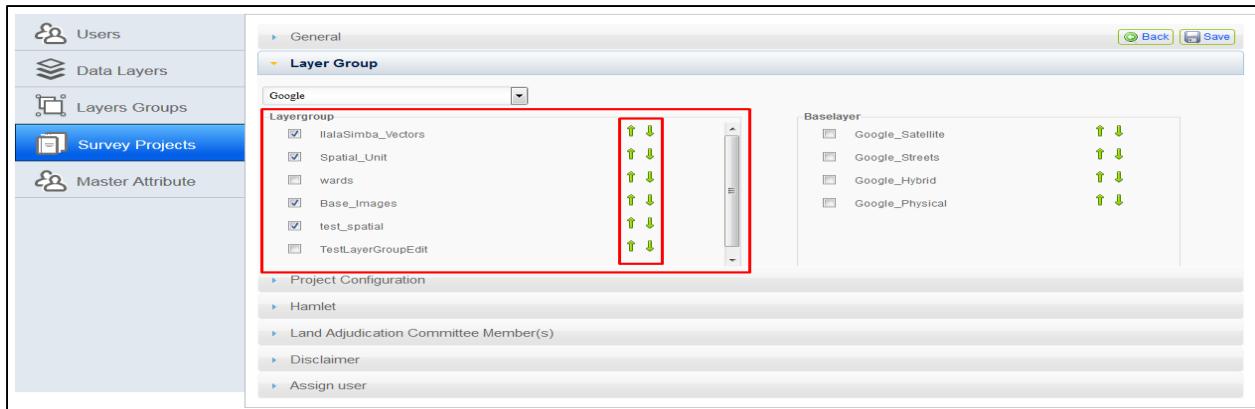
1. Log into the system with the ‘Administrator’ role and click on the ‘Launch’ link available in the ‘Administration Tool’ section.
2. Click on ‘Survey Projects’ section available in left. Details of available survey projects will be displayed in grid along with associated ‘Edit’ and ‘Delete’ options.

Name	Country	Region	District	Village	
12_October	Tanzania	Kilimanjaro	Igunga	Itagutwa	
14_October	Tanzania	Kilimanjaro	Igunga	Itagutwa	
abc	Tanzania	Kilimanjaro	Igunga	Itagutwa	
abhishek	Tanzania	Kilimanjaro	Igunga	Itagutwa	
CB_Proj	Tanzania	Iringa	Iringa (Rural)	Ilalasimba	
Ilalasimba_dummy	Tanzania	Kilimanjaro	Igunga	Ilalasimba	
Iringa_Project	Tanzania	Iringa	Iringa (Rural)	Ilalasimba	
Itagutwa_Live	Tanzania	Kilimanjaro	Igunga	Itagutwa	
Phasel_Test	Tanzania	Tanga	Igunga	Itagutwa	
September_30	Tanzania	Kilimanjaro	Igunga	Ilalasimba	

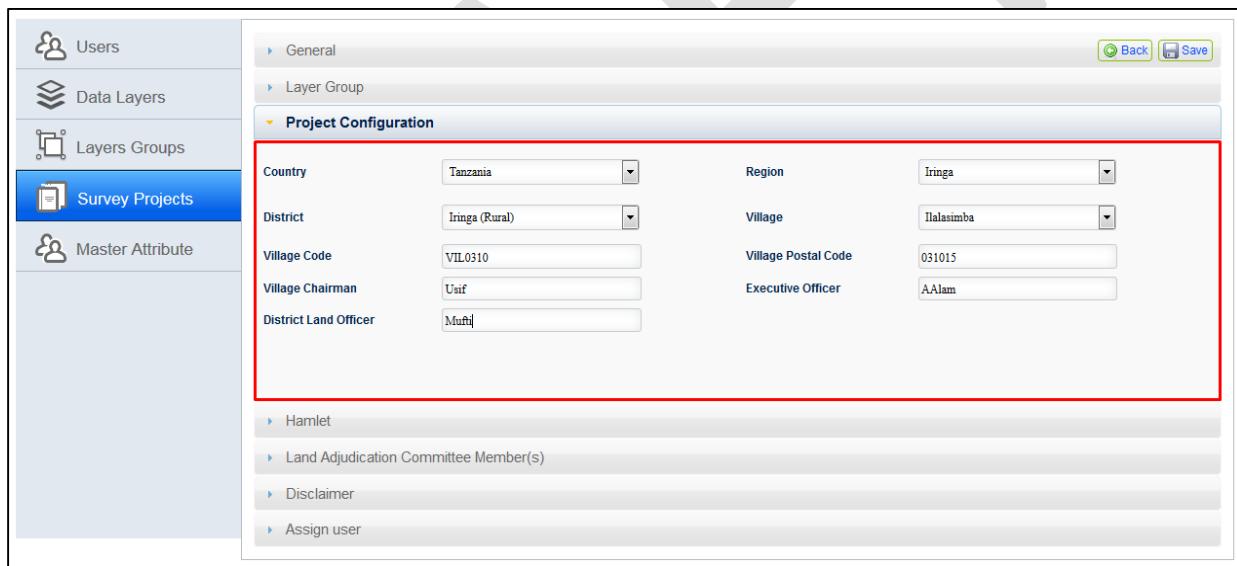
3. Click on ‘Edit’ option associated with project detail, which is to be edited. Project details will be available in edit mode, by default; ‘General’ accordion will be expended. Edit details as required. ‘Project Name’ will be non-editable.

Name	Iringa_Project	Description	Test Project
Projection	EPSG:4326	Display Projection	EPSG:4326
Max Extent	35.424049528535875,-7.83008100001101	Min Extent	33.71032714800018,-10.5372924799998
Zoom Levels	18	Restricted Extent	33.71032714800018,-10.5372924799998
Output Format	image/png	Unit	m
<input checked="" type="checkbox"/> Cosmetic			
Active Layer	spatial_unit	Overview Layer	spatial_unit

4. Click on 'Layer Groups' accordion and edit required changes like adding new layer, changing sorting or removing layer.



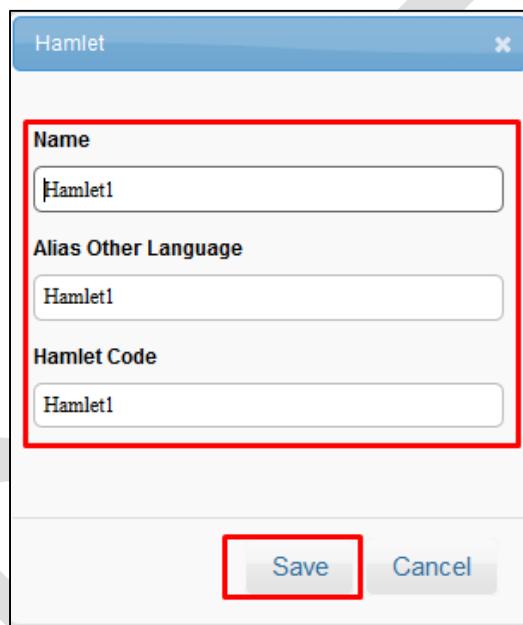
5. Click on 'Project Configuration' accordion and edit required changes.



6. Click on 'Hamlet' accordion. Click on edit option associated with hamlet detail. To delete hamlet, click on delete option.

Hamlet				
Hamlet Name	Hamlet Name(Second Language)	Hamlet Code	Edit	Delete
Hamlet1	Hamlet1	Hamlet1		
Hamlet2	Hamlet2	Hamlet2		

7. Hamlet dialogue box will be displayed, perform required editing and click on 'Save' button.



The dialog box has a title bar 'Hamlet'. It contains three input fields: 'Name' (value: Hamlet1), 'Alias Other Language' (value: Hamlet1), and 'Hamlet Code' (value: Hamlet1). A red box highlights the entire group of these three fields. At the bottom are 'Save' and 'Cancel' buttons, with 'Save' also highlighted by a red box.

8. Click on 'Land Adjudication Committee Member(s)' accordion. Click on edit option associated with adjudicator detail. To delete adjudicator, click on delete option.

Land Adjudication Committee Member(s)		
Adjudicator Name	Edit	Delete
Adj1		
Adj2		

9. 'Project Adjudicator' dialogue box will be displayed, performs required editing and click on 'Save' button.

10. Click on 'Disclaimer' accordion and edit

The screenshot shows the 'Survey Projects' section of the application. On the left is a sidebar with icons for Users, Data Layers, Layers Groups, Survey Projects (which is selected and highlighted in blue), and Master Attribute. The main area has a tree view with nodes like General, Layer Group, Project Configuration, Hamlet, Land Adjudication Committee Member(s), and Disclaimer. The Disclaimer node is expanded, revealing a text input field containing 'This is a test project'. Below the input field is a 'Save' button. A red box highlights the 'Name' input field and the 'Save' button.

'Disclaimer text' if required.

11. Click on 'Assign Users' accordion and add or remove users for the project.

The screenshot shows the 'Survey Projects' section of the application. The sidebar and tree view are identical to the previous screenshot. The 'Assign user' node under the Disclaimer section is expanded, showing a list of users with checkboxes. The list includes: user_AD (checked), Live_TI2 (unchecked), Live_TI3 (unchecked), Live_TI4 (unchecked), Live_TI5 (checked), Live_TI7 (checked), uat_adj (unchecked), and user_ades (unchecked). A red box highlights the list of users.

12. Click on ‘Save’ button. Application will save edited details and will display an acknowledgement message.

A screenshot of a web application interface. On the left is a sidebar with icons for Users, Data Layers, Layers Groups, Survey Projects (which is selected and highlighted in blue), and Master Attribute. The main area shows a grid titled 'Survey Projects' with columns: Name, Country, Region, District, Village, Hamlet, and actions. A modal dialog box is overlaid on the grid, containing the text 'Data Successfully Saved' with an 'OK' button. The entire modal is highlighted with a red border.

7.3 DELETE SURVEY PROJECT

This functionality allows an administrator to delete any existing project.

Steps:

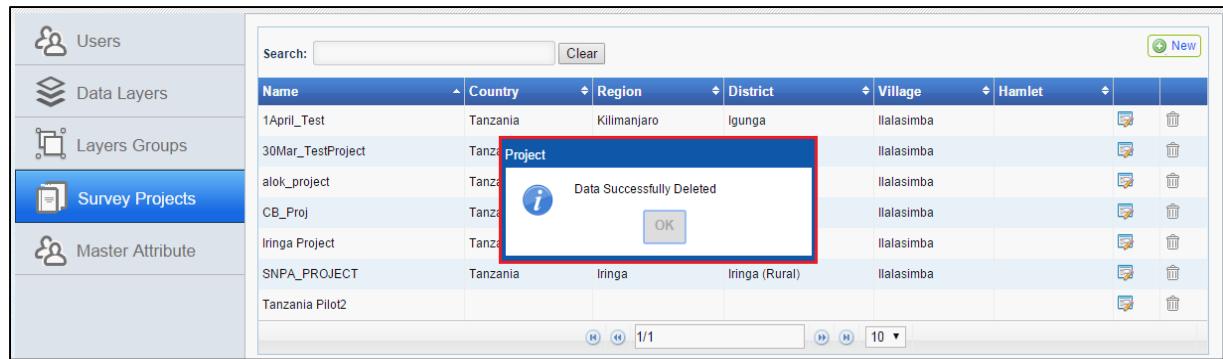
1. Click on ‘Survey Projects’ section available in left. Details of available projects will be displayed in grid along with associated ‘Edit’ and ‘Delete’ options.
2. Click on ‘Delete’ option associated with project detail, which is to be deleted.

A screenshot of the Survey Projects grid. A specific row for '17Mar_TestProject' is highlighted with yellow background and red borders around the entire row. The 'Delete' button in the actions column for this row is also highlighted with a red border.

3. Application will display a confirmation message.

A screenshot of the Survey Projects grid. A modal dialog box titled 'Delete Confirmation' is displayed, asking 'Are You Sure You Want To Delete : 17Mar_TestProject?' with 'OK' and 'Cancel' buttons. This dialog is highlighted with a red border.

4. Click on 'OK' button. Selected 'Survey Project' will be deleted. Application will display an acknowledgement message.



8. MASTER ATTRIBUTE

This functionality allows an administrator to manage attributes that are to be used for configuration of a project to be accessed by the MAST mobile application. This functionality enables an administrator to add, edit, or delete custom attribute in the following categories:

- General
- Multimedia
- Tenure
- Non Natural Person
- Natural Person
- Custom
- General (Properties)
- Administrator

Category :	All	Search:	Clear	New			
Alias	All	Alias Other Language	Field Name	Type	Size	Edit	Delete
Address	General	Mitaani	address	String	50		
Tenure	Multimedia						
Administrator	Tenure	Msimamizi	administrator	String	100		
Non Natural Person	Administrator						
Natural Person	Non Natural Person	Umri	age	Number	50		
Custom	Natural Person	Uraia	citizenship	String	100		
General(Property)	Custom	Maoni	comments	String	100		
Administrator	General(Property)	Maoni	comments	String	100		
Comments	Administrator	Ngazi ya Elimu	education	Dropdown	50		
Comments	Comments	Matumii yaliyopo	existing_use	Dropdown	10		
Education Level	Comments	Mapato ya familia	number 2	Number	20		
Existing Use	Education Level	Jina la kwanza	first_name	String	100		
Family Income	Existing Use						
First Name	Family Income						

Following are the functionalities that are available with this.

- View attributes category wise
- Add Attributes
- Edit Attributes
- Delete Attributes

Edit and Delete options will be associated with attributes other than default one.

8.1 VIEW ATTRIBUTES CATEGORY WISE

This functionality allows the administrator to view attributes of any selected category.

Steps:

1. Log into the system with the 'Administrator' role and click on the 'Launch' link available in the 'Administration Tool' section.
2. Click on 'Master Attribute' section available in left. Details of available attributes (default and custom) will be displayed in grid. Custom attributes will be available with associated 'Edit' and 'Delete' options. In Left top, 'New' button will be available.
3. 'Category' drop down and 'Search' option will be available that facilitate user to view attributes of selected categories only and search a particular attribute.
4. Select any category in 'Category' drop down. Corresponding attributes will be displayed in grid.

The screenshot shows a software interface for managing attributes. On the left, there's a vertical sidebar with icons for Users, Data Layers, Layers Groups, Survey Projects, and Master Attribute. The Master Attribute icon is highlighted with a blue background. The main area has a title bar with 'Category : General', a 'Search:' input field, and a 'Clear' button. A large red box highlights the 'New' button in the top right corner of the title bar. Below the title bar is a table with columns: Alias, Alias Other Language, Field Name, Type, Size, Edit, and Delete. The table contains several rows of attribute data, such as Address1, Address2, Comments, Existing Use, Feedback, etc. At the bottom of the table are navigation buttons for page 1/2 and a dropdown for selecting items per page (10).

Alias	Alias Other Language	Field Name	Type	Size	Edit	Delete
Address1	Address1	address1	String	100		
Address2	Address2	address 2	String	100		
Comments	Maoni	comments	String	100		
Existing Use	Matumizi zilizopo	existing_use	Dropdown	10		
Feedback	sfdf	Feedback	Boolean	2		
General1AString_M	General1AString_M other language	General1AString_M	String	50		
General30MayString_M	General30May_Alias Other Language	Field Name 30May	String	50		
mandatory	dasdas	dasdasd	Date	234		
No of persons in household	Hakuna wa watu katika kaya	total_househd_no	Number	10		
Postal Code	Postal Code	postal_code	Number	10		

8.2 ADD ATTRIBUTES

This functionality allows an administrator to add new attributes in a specified category.

Steps:

1. Click on 'Master Attribute' section available in left. Details of available attributes (default and custom) will be displayed in grid. In Left top, 'New' button will be available.

The screenshot shows the same software interface as the previous one, but with a different category selected: 'All'. The 'New' button is again highlighted with a red box. The table data is as follows:

Alias	Alias Other Language	Field Name	Type	Size	Edit	Delete
Address	Mitaani	address	String	50		
Address1	Address1	address1	String	100		
Address2	Address2	address 2	String	100		
Age	Umri	age	Number	50		
Alias	Alias	alias	String	100		
Comments	Maoni	comments	String	100		
Comments	Maoni	comments	String	100		

2. Click on 'New' button. Add Attribute dialogue will be displayed with following input options

- 'Alias' input box
- 'Size' input box
- 'Alias Other Language' input box
- 'Category' dropdown

- ‘Field Name’ input box
- ‘Data Type’ dropdown
- ‘Mandatory’ check box

3. Provide valid inputs in required input options

Add Attribute

Alias

No. of Childeren

Alias Other Language

Hakuna wa watoto

Field Name

No. of Childeren

Data Type

Number ▼

Size

10

Category

Natural Person ▼

Mandatory

Add **Cancel**

4. Click on 'Add' button. Application will display an acknowledgement message.

The screenshot shows the 'Master Attribute' section of the application. A modal dialog box is centered over the grid, displaying a blue information icon and the text 'Data Successfully Saved'. The background grid shows various attribute entries, including 'Address', 'Address1', 'Address2', 'Age', 'Alias', 'Comments', and 'Comments'. The 'Category' dropdown at the top is set to 'All'.

Category	Field Name	Type	Size	Edit	Delete
Address	address	String	50		
Address1	address1	String	100		
Address2	address 2	String	100		
Age	age	Number	50		
Alias	alias	String	100		
Comments	comments	String	100		
Comments	comments	String	100		

5. Newly added attribute will be available in grid.

The screenshot shows the 'Master Attribute' section with the 'Category' dropdown set to 'Natural Person'. A new row has been added to the grid, highlighted with a yellow background. This row contains the attribute 'No. of Children' with the value 'Hakuna wa watoto', and its corresponding field name 'No. of Childrenen' with type 'Number' and size '10'. The 'Edit' and 'Delete' icons for this row are also highlighted with a yellow background.

Category	Field Name	Type	Size	Edit	Delete
Middle Name	middle_name	String	100		
Mobile No.	mobile	Number	10		
Natural Person 1A_String_M	Natural Person 1A_String_M	String	1		
NaturalPerson_30Mar_M_Date	NaturalPerson_30Mar_M_Date	Date	20		
No. of Childrenen	No. of Childrenen	Number	10		
Occupation	occupation	String	50		
Provide feedback	Feedback	Boolean	2		
Tenure Relation	tenure_relation	String	50		
Witness	witness	String	100		

8.3 EDIT ATTRIBUTES

This functionality allows an administrator to edit the details of a custom attribute.

Steps:

1. Click on 'Master Attribute' section available in left. Details of available attributes (default and custom) will be displayed in grid. Custom attributes will be available with associated 'Edit' and 'Delete' options.

The screenshot shows the 'Master Attribute' section with the 'Category' dropdown set to 'Natural Person'. The 'No. of Childrenen' row is highlighted with a yellow background, and the 'Edit' icon for this row is also highlighted with a red box. The rest of the grid and sidebar are visible.

Category	Field Name	Type	Size	Edit	Delete
Middle Name	middle_name	String	100		
Mobile No.	mobile	Number	10		
Natural Person 1A_String_M	Natural Person 1A_String_M	String	1		
NaturalPerson_30Mar_M_Date	NaturalPerson_30Mar_M_Date	Date	20		
No. of Childrenen	No. of Childrenen	Number	10		
Occupation	occupation	String	50		

2. Click on 'Edit' option associated with attribute detail, which is to be edited. A dialogue will be displayed with attribute details in edit mode.

Add Attribute

Alias
No. of Children

Alias Other Language
Hakuna wa watoto

Field Name
Household Childrenen

Data Type
Number

Update Cancel

3. Edit the required details and click on 'Update' button. Application will display an acknowledgement message.

Category : All	Search:	Clear	New			
Alias	Alias Other Language	Field Name	Type	Size	Edit	Delete
Address		address	String	50		
Address1		address1	String	100		
Address2		address 2	String	100		
Age		age	Number	50		
Alias		alias	String	100		
Comments	Maoni	comments	String	100		

4. Updated details of attribute will be available in grid.

Category : Natural Person	Search:	Clear	New			
Alias	Alias Other Language	Field Name	Type	Size	Edit	Delete
Middle Name	Jina la Kati	middle_name	String	100		
Mobile No.	Simu No.	mobile	Number	10		
Natural Person 1A_String_M	Natural Person 1A_String_M Alias Other Language	Natural Person 1A_String_M	String	1		
NaturalPerson_30Mar_M_Date	NaturalPerson_30Mar_M_Date	NaturalPerson_30Mar_M_Date	Date	20		
No. of Childrenen	Hakuna wa watoto	Household Childrenen	Number	10		
Occupation	Kazi	occupation	String	50		
Provide feedback		Feedback	Boolean	2		

8.4 DELETE ATTRIBUTES

This functionality allows an administrator to delete any custom attribute.

Steps:

1. Click on 'Master Attribute' section available in left. Details of available attributes (default and custom) will be displayed in grid. Custom attributes will be available with associated 'Edit' and 'Delete' options.

Category :	Natural Person	Search:	Clear	New		
Alias	Alias Other Language	Field Name	Type	Size	Edit	Delete
Middle Name	Jina la Kati	middle_name	String	100		
Mobile No.	Simu No.	mobile	Number	10		
Natural Person 1A_String_M	Natural Person 1A_String_M Alias Other Language	Natural Person 1A_String_M	String	1		
NaturalPerson_30Mar_M_Date	NaturalPerson_30Mar_M_Date	NaturalPerson_30Mar_M_Date	Date	20		
No. of Childrenen	Hakuna wa watoto	Household Childrenen	Number	10		
Occupation	Kazi	occupation	String	50		
Provide feedback		Feedback	Boolean	2		
Tenure Relation	Muda Uhusiano	tenure_relation	String	50		
Witness	Shahidi	witness	String	100		

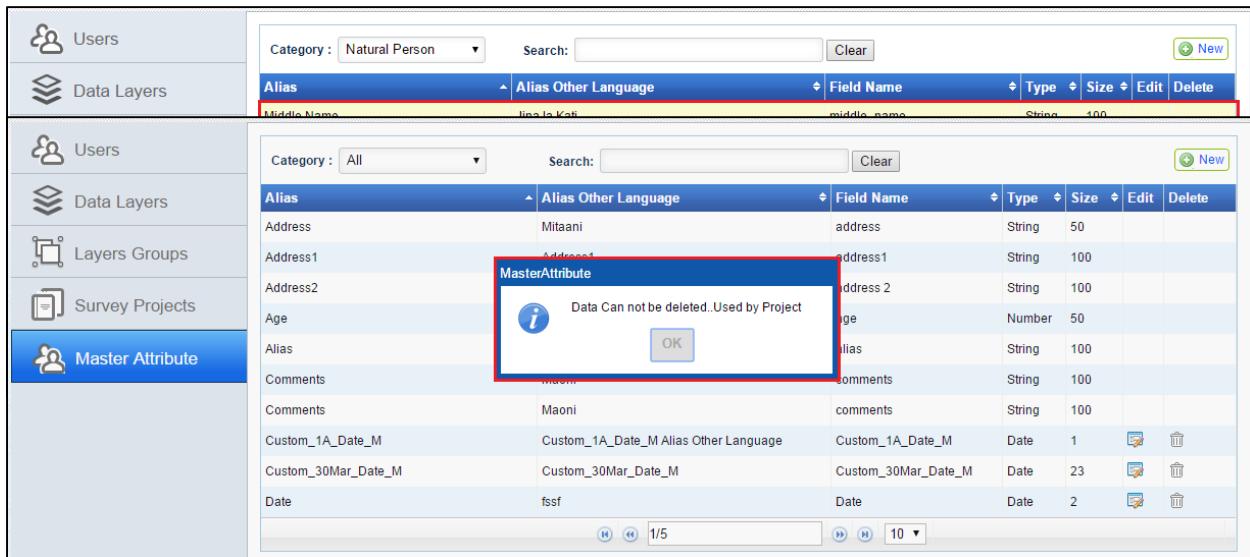
() () 2/2 () () 10 ▾

2. Click on 'Delete' option associated with attribute detail, which is to be deleted. Application will display a confirmation message.

Category :	Natural Person	Search:	Clear	New		
Alias	Alias Other Language	Field Name	Type	Size	Edit	Delete
Middle Name	Jina la Kati	middle_name	String	100		
Mobile No.			Number	10		
Natural Person 1A_String_M		Natural Person 1A_String_M	String	1		
NaturalPerson_30Mar_M_Date		NaturalPerson_30Mar_M_Date	Date	20		
No. of Childrenen		Household Childrenen	Number	10		
Occupation	Kazi	occupation	String	50		
Provide feedback		Feedback	Boolean	2		
Tenure Relation	Muda Uhusiano	tenure_relation	String	50		
Witness	Shahidi	witness	String	100		

() () 2/2 () () 10 ▾

3. Click on 'OK' button, Specified attribute will be deleted and will not be available in grid any more.



Note: If Administrator user attempts to delete an attribute which is already used in any project, Application will not delete such attribute and will display a relevant message.

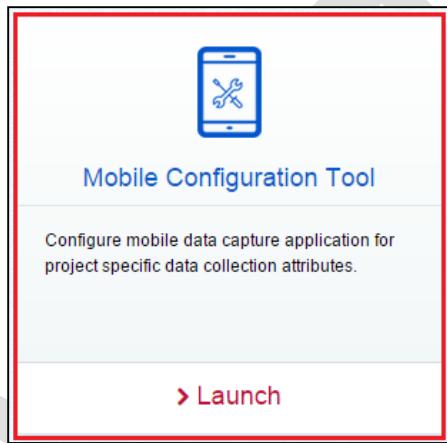
I. MOBILE CONFIGURATION TOOL

This tool allows a user to configure the mobile application according to project requirements. This module provides the functionality to configure the project attributes that will be collected using the mobile data capture application in the field.

Whenever a new survey project is created in the system, Project Manager/Administrator user will configure the attributes which will be utilized in the mobile data capture application to collect land rights information in the field for that specific project.

Steps:

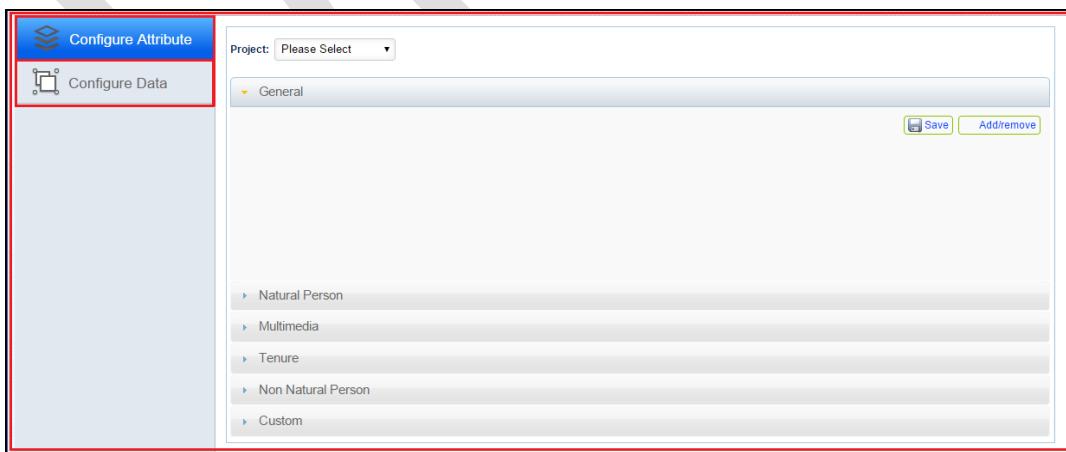
1. Login into the system with role as 'Administrator/Project Manager'.
2. Click on 'Launch' link available in 'Mobile Configuration Tool' section.



3. User will be navigated to 'Mobile Configuration Tool' page.

Following functionalities will be available with 'Mobile Configuration Tool'.

- Configure Attribute
- Configure Data



9. CONFIGURE ATTRIBUTE

This functionality allows a user to configure project attributes in the master attribute repository.

Steps:

1. Login into the system with role as 'Administrator / Project Manager'.
2. Click on 'Launch' link available in 'Mobile Configuration Tool' section.
3. By default, 'Configure Attribute' option available in left panel will be selected. Following options will be available in main window
 - 'Project' Drop down
 - 'General' Accordion
 - 'General Property' Accordion
 - 'Natural Person' Accordion
 - 'Multimedia' Accordion
 - 'Tenure' Accordion
 - 'Non Natural Person' Accordion
 - 'Custom' Accordion

In every accordion, there will be 'Save' and 'Add/Remove' button.

The screenshot shows the 'Configure Attribute' interface. The top navigation bar includes 'Welcome User_Admin | Logout'. On the left, a sidebar has 'Configure Attribute' selected. The main area has a 'Project:' dropdown set to 'Please Select'. Below it, an 'Accordion' titled 'Natural Person' is expanded, revealing its content. To the right of the accordion are two buttons: 'Save' and 'Add/remove', both highlighted with red boxes. Other collapsed accordions include 'General', 'Multimedia', 'Tenure', 'Non Natural Person', and 'Custom'.

'Configure Attribute' provides following set of functionalities for managing attributes.

- Add Attributes
- Remove Attributes

9.1 ADD/REMOVE ATTRIBUTES

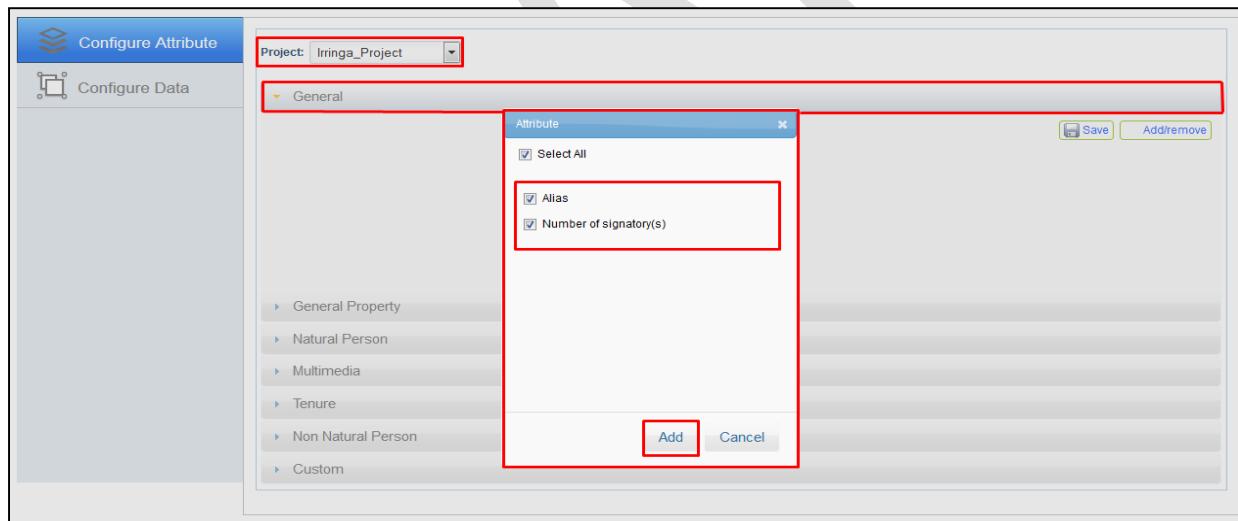
This functionality allows an administrator to add or remove attributes in a specific category of a selected project.

Steps:

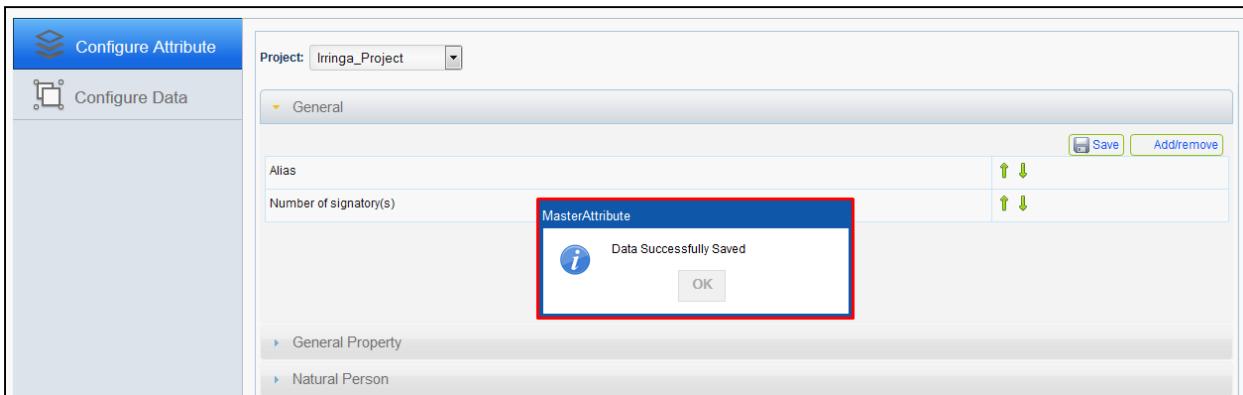
1. Click on 'Project' drop down. Application will display all available projects.



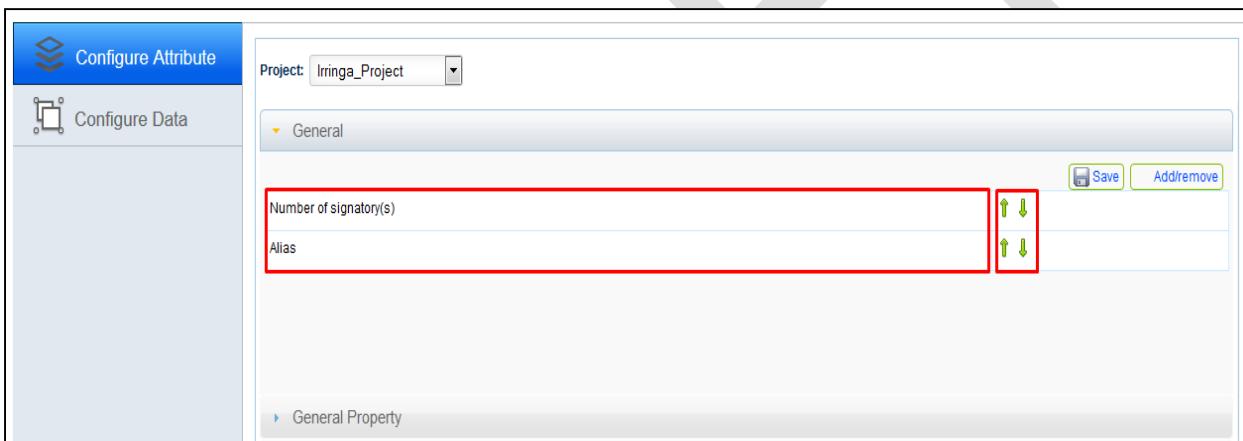
2. Select project in corresponding dropdown, for which attributes are to be configured.
3. Click on 'Add/Remove' button, "Attributes" dialogue box will be display showing all attributes of corresponding category.
4. There will a check box associated with every attribute, Check required attribute.



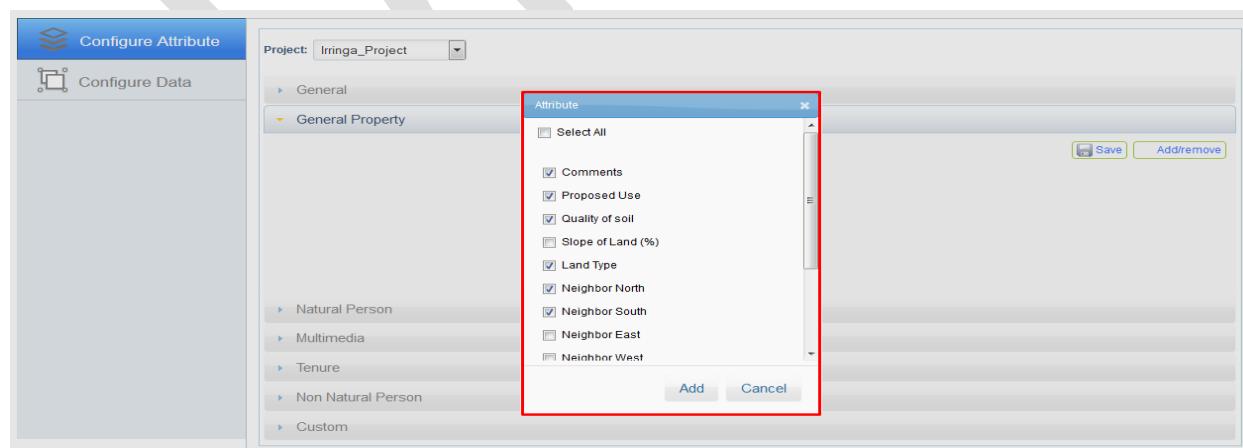
5. Click on 'Add' button. Application will display an acknowledgement message.



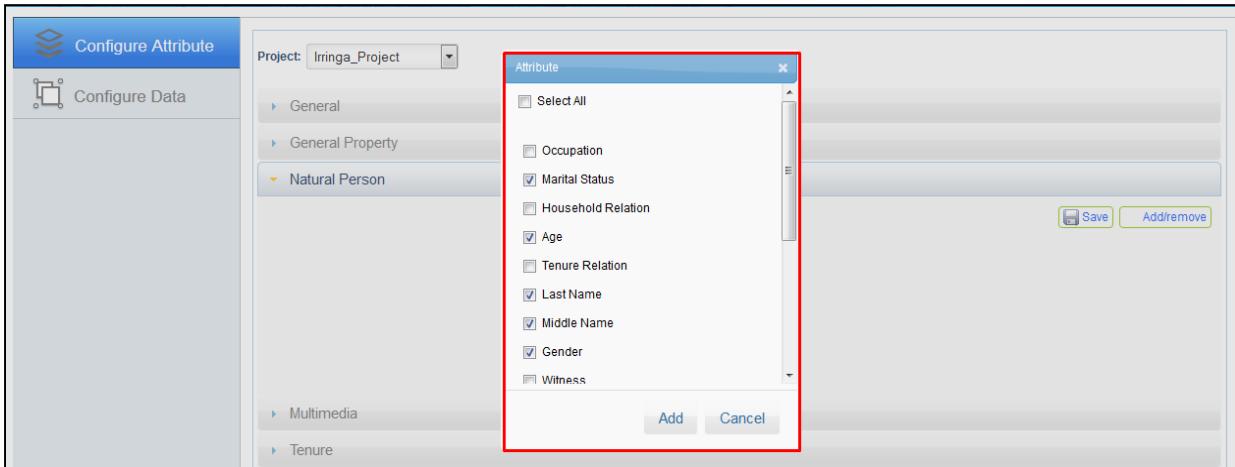
6. Once attributes are saved, user can set the ordering using 'Up' and 'Down' arrows associated with attributes.



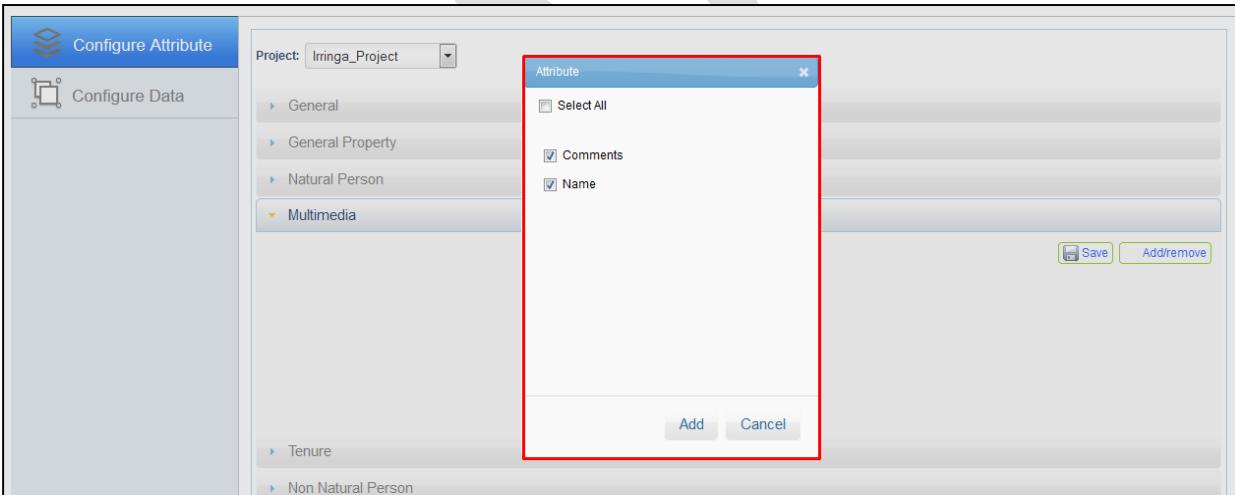
7. Click on 'General Property' accordion and add/Remove required attributes.



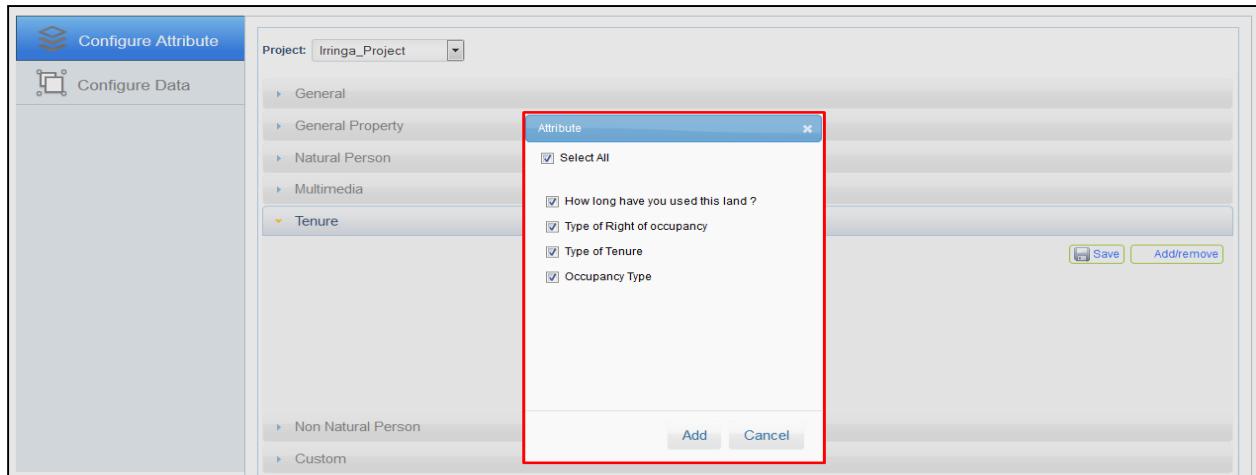
8. Click on ‘Natural Person’ accordion and add/Remove required attributes.



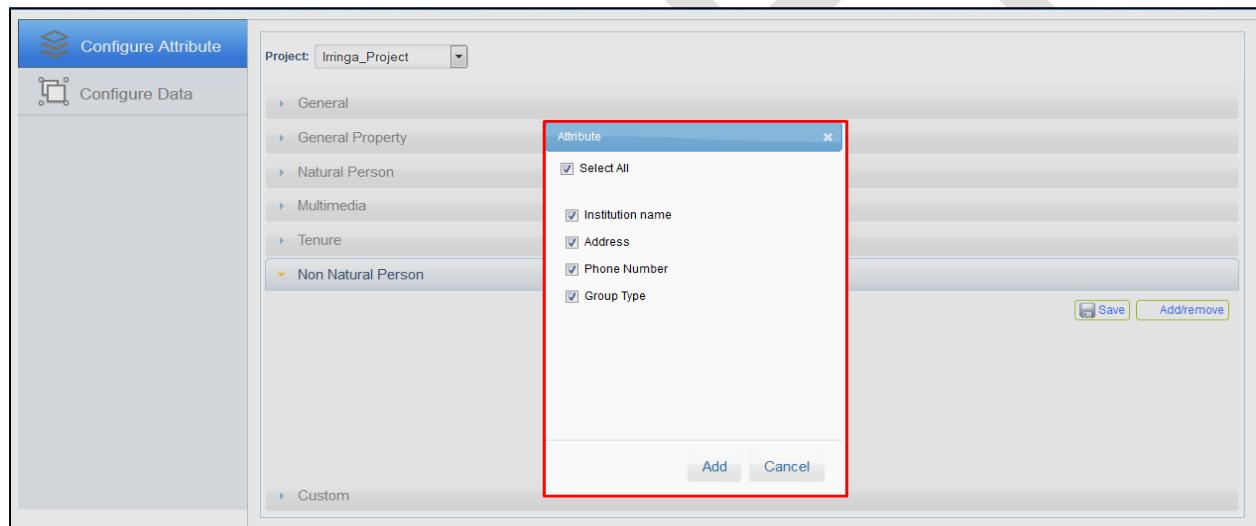
9. Click on ‘Multimedia’ accordion and add/Remove required attributes.



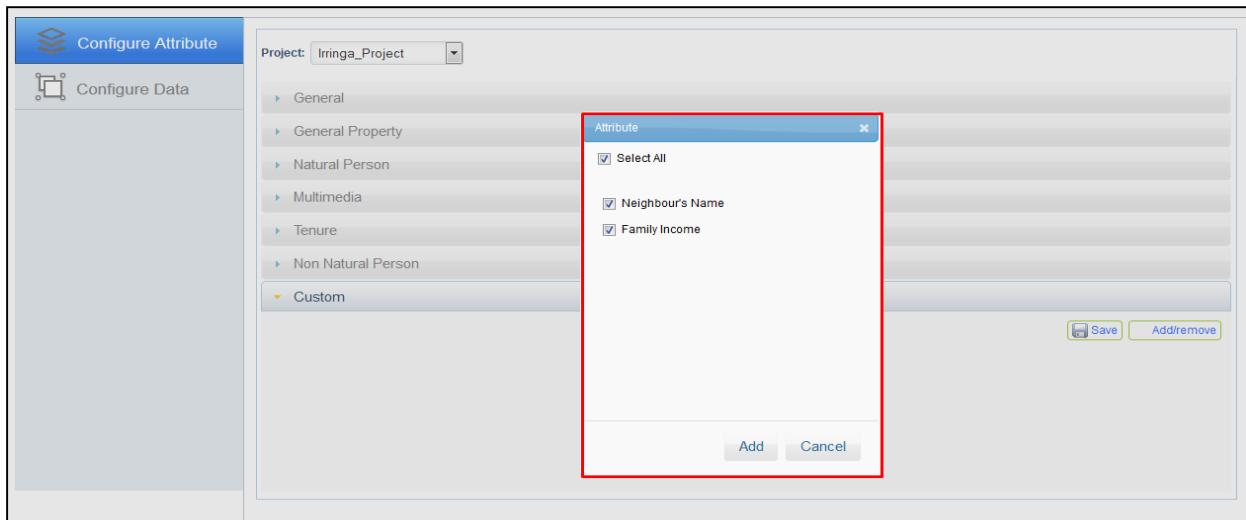
10.Click on ‘Tenure’ accordion and add/Remove required attributes.



11.Click on ‘Non Natural Person’ accordion and add/Remove required attributes.



12. Click on 'Custom' accordion and add/Remove required attributes.



10. CONFIGURE DATA

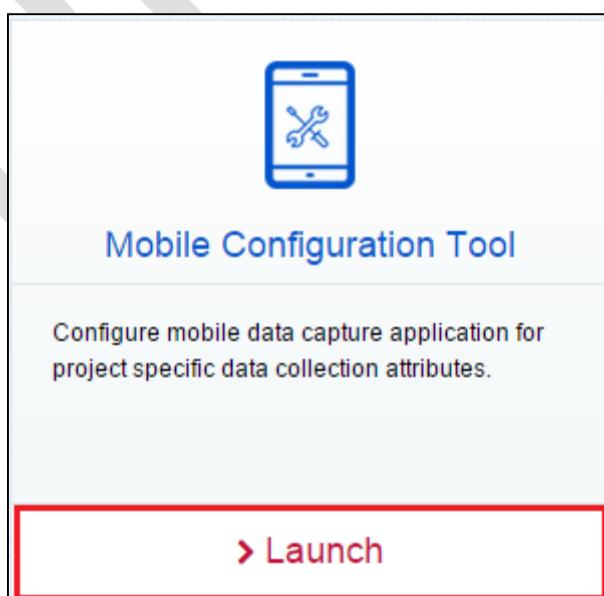
This module provides the functionality to upload and configure the spatial data that can be downloaded on mobile device for reference purposes for data collection work in offline mode.

10.1 UPLOAD MBTILES

This functionality allows the user to upload spatial data to the server and configure it for a specific survey project.

Steps:

- I. Login into the system with role as 'Administrator / Project Manager'. Click on 'Launch' link available in 'Mobile Configuration Tool' section.



2. 'Mobile Configuration Tool' page will be displayed. Click on 'Configure Data' option available in left panel.
3. Available projects along with details of uploaded data will be displayed in grid. There will be a delete option associated with data record.
4. To upload data for a specific project, following options will be available.
 - 'Select Project' drop down
 - 'Alias' Input box
 - 'Select File' browse tool

The screenshot shows the 'Configure Data' interface. At the top, there are input fields for 'Select Project' (set to 'All'), 'Alias' (empty), and 'Select File' (button labeled 'Choose File'). Below these are three uploaded MBTiles files:

Alias	File	Size(in Kb)	Project	Action
Offline Data 1	test_vector1.mbtiles	12828	CB_Proj	Delete
Offline Data 2	test_vector2.mbtiles	12828	17Mar_TestProject	Delete
Offline_Data-llasimba30Mar20	Offline_Data-llasimba30Mar2015.mbtiles	12828	30Mar_TestProject	Delete

At the bottom, there are navigation buttons (first, last, previous, next) and a page number indicator (1/1).

5. Click on 'Select Project' drop down, list of available projects will be displayed.

The screenshot shows the 'Configure Data' interface with the 'Select Project' dropdown open, displaying a list of available projects:

- All
- 1April_Test
- 30Mar_TestProject
- alok_project
- Iringa Project** (highlighted in blue)
- SNPA_PROJECT
- Tanzania Pilot2
- Offline_Data-llasimba30Mar20

Below the dropdown, the same table of uploaded MBTiles files is shown, with the 'Iringa Project' row highlighted in red.

6. Select required project, for which data is to be uploaded.
7. Enter alias name in corresponding input box.
8. Click on 'Choose File' option and locate required 'MBTiles' to be uploaded.

The screenshot shows the 'Configure Data' interface with the 'Select Project' dropdown set to 'Iringa Project'. The 'Alias' input box contains 'Iringa Survey'. The 'Select File' field shows the path 'Offline_Data-llasimba30Mar2015.mbtiles'. The table below shows the uploaded file:

Alias	File	Size(in Kb)	Project	Action
Iringa Survey	Offline_Data-llasimba30Mar2015.mbtiles	12828	Iringa Project	Delete

9. Click on ‘Upload’ button. Once data is uploaded successfully, application will display an acknowledgement message.

10. Details of uploaded data and corresponding project will be displayed in grid.

The screenshot shows a user interface for managing data. On the left, there's a sidebar with two buttons: 'Configure Attribute' and 'Configure Data'. The 'Configure Data' button is highlighted with a blue background and white text. The main area has a header with fields: 'Select Project: Iringa Project', 'Alias' (empty), 'Select File: Choose File No file chosen', and an 'Upload' button. Below this is a table with columns: Alias, File, Size(in Kb), Project, and Action. A single row is visible: 'Iringa Survey' under Alias, 'Offline_Data-Iringa.mbtiles' under File, '12828' under Size, 'Iringa Project' under Project, and a delete icon under Action. A red box highlights the entire row. In the center, a modal window titled 'upload' displays the message 'File uploaded' with an information icon (blue circle with a white 'i'). An 'OK' button is at the bottom right of the modal. A large, semi-transparent watermark reading 'DRAFT' diagonally across the page is present.

2. DATA MANAGEMENT TOOL

The MAST web application provides a 'Land Data Management' tool to manage land records collected in the field. This tool provides facility to authorized users to view, edit, review and approve data of spatial unit along with attributes and multimedia information collected in the field.

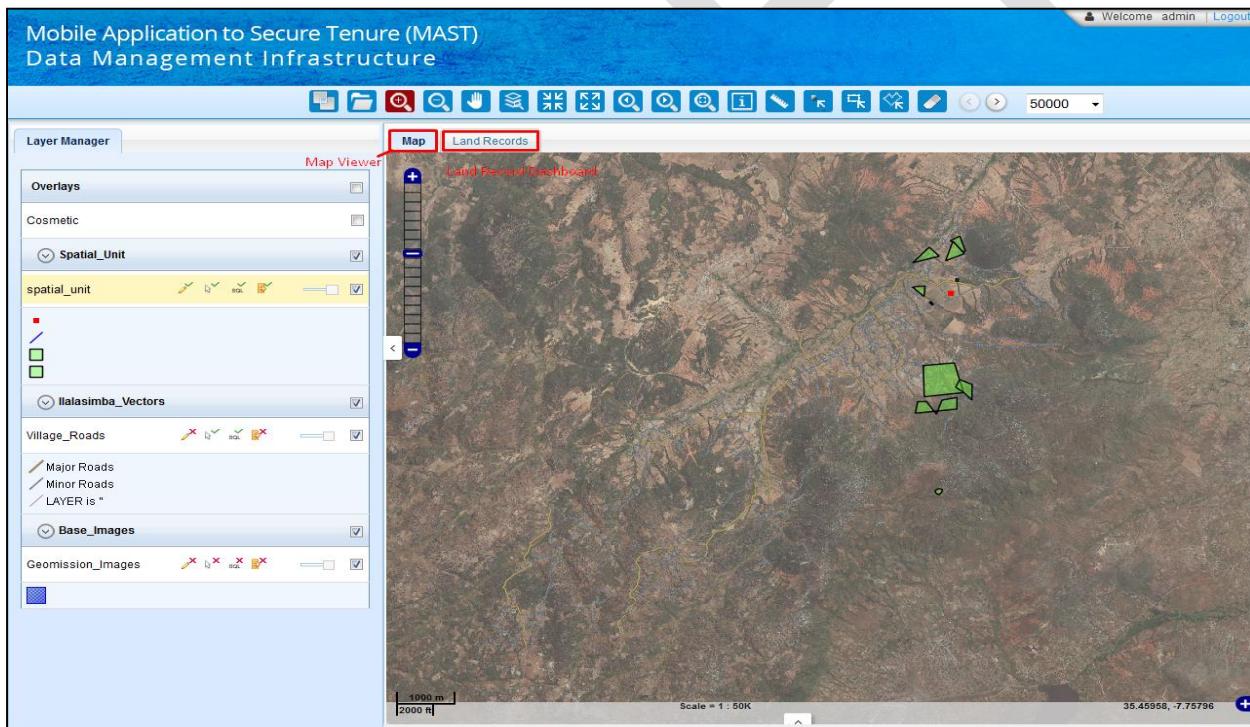
Project manager and Land Administration Officials can access the land data management tool to view data of allocated project and can further generates Reports on approved land records.

The key functionalities that are provided in the Land Data Management tool are:

- Map viewer
- Land Records Dashboard

Steps:

1. Login into the system with role as 'Administrator / Project Manager'. Click on 'Launch' link available in 'Data Management' section.
2. 'Land Management Tools' page will be displayed. By default, 'Map Viewer' will be available.



II. MAP VIEWER

'Map viewer' is the main screen part shown on the right hand panel of page with 'Map' tab, where user will be able to see the parcels of selected corresponding/assigned project on Map.

This functionality provides the functionality of map viewer in land data management tool. Map Viewer display all the base data layers configured for the project along with the display of spatial data of properties/spatial units collected in the field.

Following functionalities are provided by Administration Tool

- Layer Manager
- Mapping Tools

II.I LAYER MANAGER

This functionality provides the listing of layers configured for the selected project. User can display on/off a particular layer from the Layer Manager to view on the map.

Layer control functionality is provided to the users on map view control to control the display of selected layers on map (only project specific layers can be selected for display on/off).

Layer manager is the part of the application where user can see the layers group and associated layers of every layer group. The layer manager allows user to see the access rights on that layer and allows users to change the opacity of layers, hide or make visible the content of layers and layers groups. User can collapse and expand the layers group content on layer manager.

The layer manger's first layers group will be Overlays as default, it contains cosmetic layer (if added to the user's project by administrator).The Overlays layers group and its layers will be hidden on map canvas and boxes will be unmarked when the application initiated. As the application gets initiated, a layer highlighted with some color (in fig.5, layer 'RoW Path' highlighted with yellow color) is the active layer. This is by default active layer as it set by administrator. User can make any other layer as active by clicking on that layer in layer manager. Most of the tools work only on active layer.

To hide the layers group's content, click on the icon  in front of layers group name. It will collapse the member layers of that layers group. To expand it again, click on that icon again. Now to off the layers group's content on map canvas, unmark the check box of that layers group and to make it visible mark the check box. Access on a layer can be seen on hovering on the images behind the layer name. It will show the access of user on that layer as Editable, Selectable, Queryable and Exportable. If these accesses are not on that layer, these images will have cross mark on them and on hovering mouse on them, it shows access as Not Editable, Not Selectable, Not Queryable and Not Exportable.

For a layer, user is allowed to set the layer opacity and he can on/off the layer features on map. To change the visibility of layer on map, move the slider of opacity bar towards left. Moving it to left will decrease the visibility of layer. To hide the layer features, unmark the check box of layer. Below the layer, symbols and description used for the layer can be seen.

User is also allowed to hide/unhide left panel (Layer Manager). For this task, there is an arrow mark on the mid of the panel. To hide the left panel, click on the mark . Clicking that icon again will make the left panel visible.

11.2 MAPPING TOOLS

Application facilitates user with tools to access map and use the map details as well as creating new and edit existing parcels.

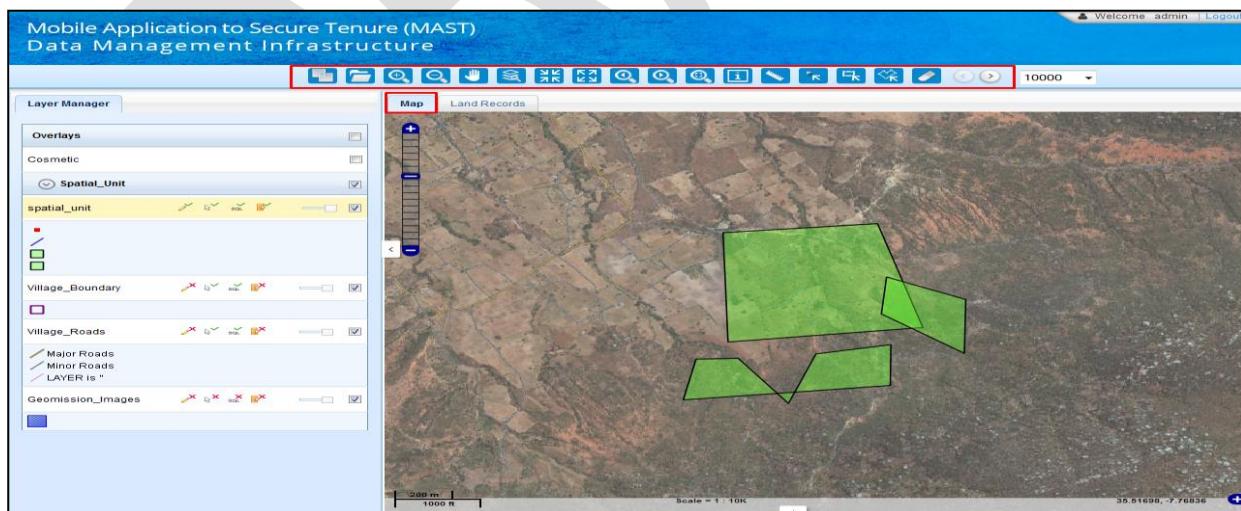
Map viewer provides has navigation tools like zoom, pan etc. It also has other functionalities like measure, thematic, search, and search by coordinate, attributes query, and editing etc. A tool, which is being used currently, gets highlighted with red color in tool bar.

Steps:

1. Login into the system with role as 'Administrator / Project Manager'. Click on 'Launch' link available in 'Data Management' section.
2. 'Land Management Tools' page will be displayed. By default, 'Map Viewer' will be available.

Following are the tools available with map viewer.

- Spatial Validation
- Open Project
- Zoom in
- Zoom out
- Pan
- Zoom to layer
- Fixed Zoom in
- Fixed Zoom out
- Zoom Previous
- Zoom Next
- Full Zoom
- Info
- Measure
- Select
- Select By Rectangle
- Select By Polygon
- Clear
- Search
- Zoom to XY
- Print
- Query Builder
- Bookmark
- Export Data
- Mark up
- Editing



11.2.1 SPATIAL VALIDATIONS

'Spatial Validations' functionality facilitates user to validate parcels on map. If any validation error i.e. Intersecting or invalid geometry, is found in any of the parcel, this tool will help to trace that feature on map. User can specify parcels to be verified by drawing rectangle or based on selected hamlet.

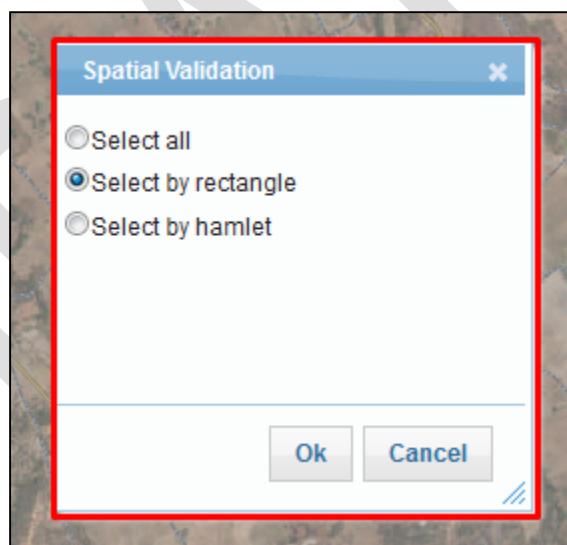
Steps:

1. Login into the system with role as 'Administrator / Project Manager'. Click on 'Launch' link available in 'Data Management' section.
2. 'Land Management Tools' page will be displayed. By default, 'Map Viewer' will be available.
3. Click on 'Spatial Validation' available in tool bar.



4. 'Spatial Validation' dialogue box will be displayed with following options.

- Select All
- Select By Rectangle
- Select By Hamlet

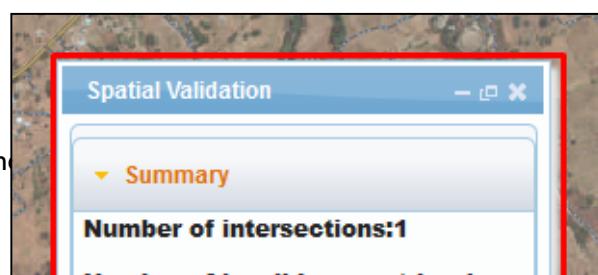


Select All:

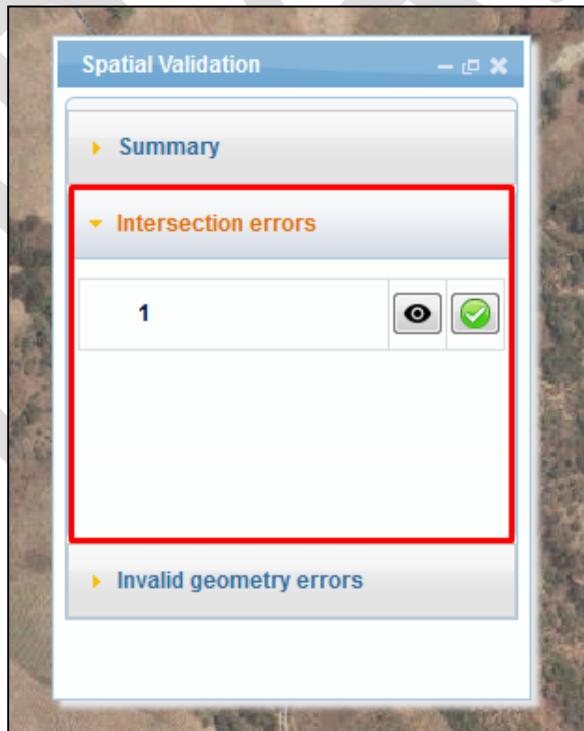
'Select all' option facilitates user to validate all parcels of current active project.

Steps:

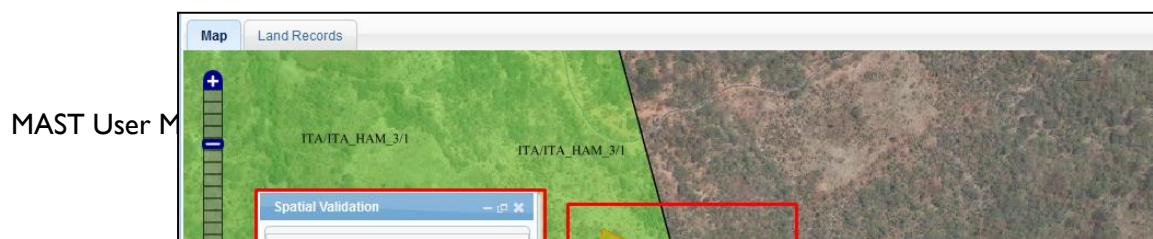
1. Select 'Select all' radio button available in 'Spatial Validation' dialogue box.
2. Click on 'Ok' button.
3. Application will perform spatial validation on all the spatial units belonging to current project.
4. Validation result will be displayed in Summary section.

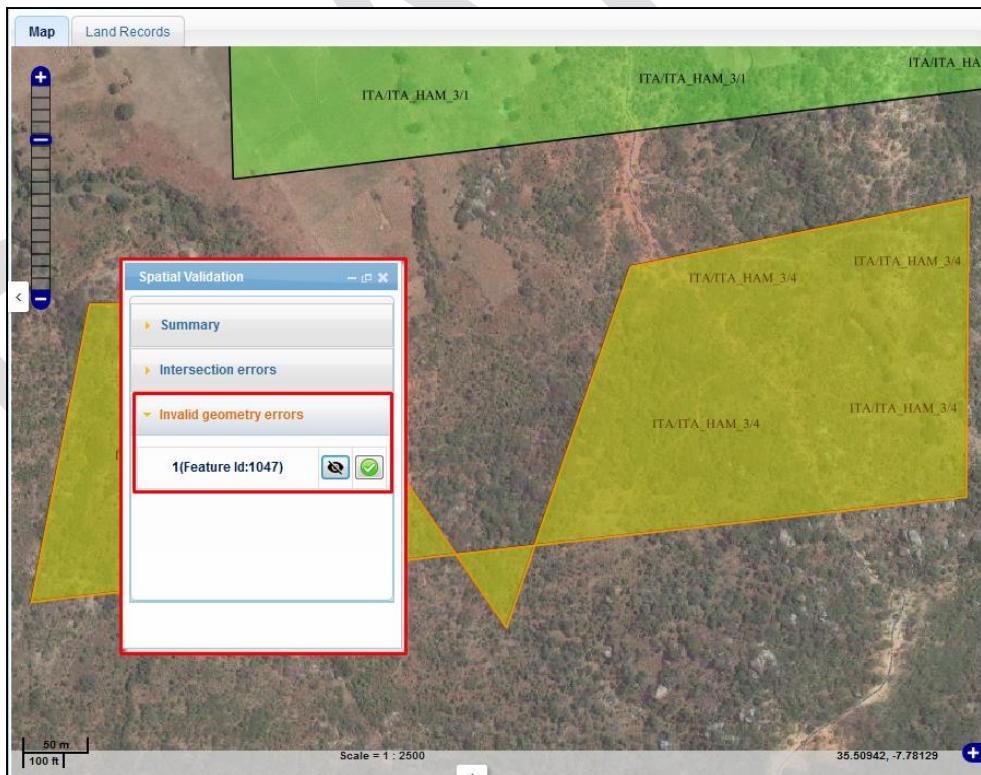


5. To see the detail of error, click on corresponding accordion. No of errors will be displayed in dropdown.



6. Click on 'Zoom' option, map will be zoomed in on specified erroneous parcel.



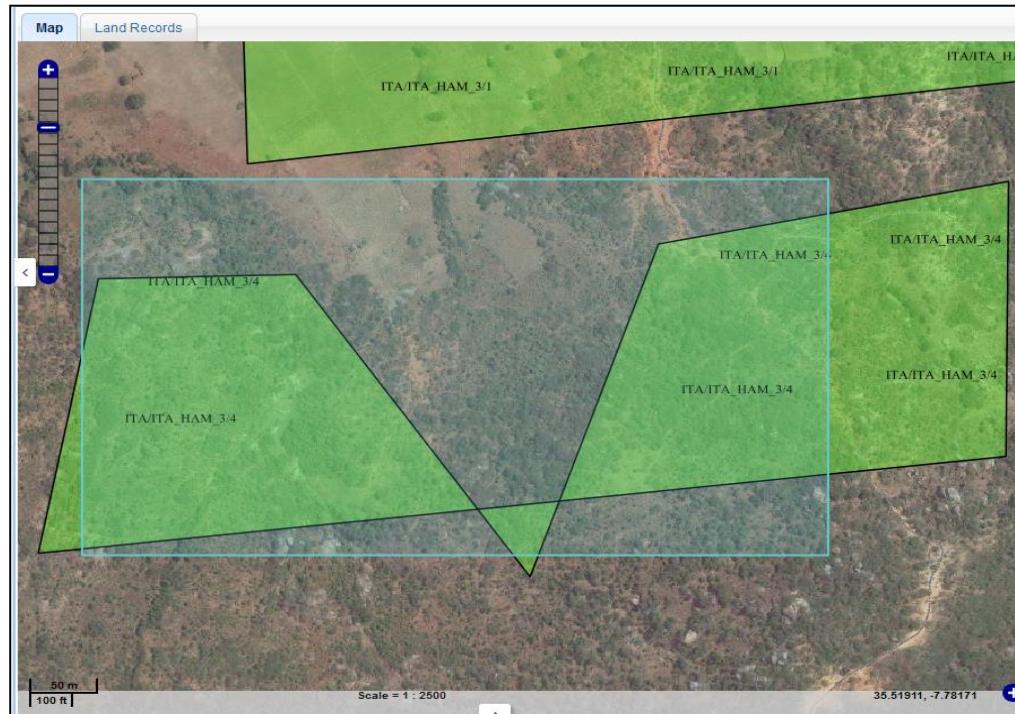


Select by rectangle:

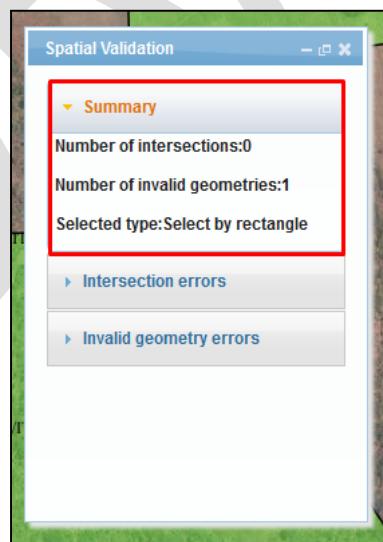
'Select by rectangle' option facilitates user to validate parcels which lies in drawn rectangle.

Steps:

1. Select 'Select by rectangle' radio button available in 'Spatial Validation' dialogue box and click on 'Ok' button.
2. Draw a rectangle on map covering parcels which are to be validated.



3. Application will validate parcels covered under rectangle and validation result will be displayed in summary section. Details of errors can be seen by clicking on corresponding accordions.

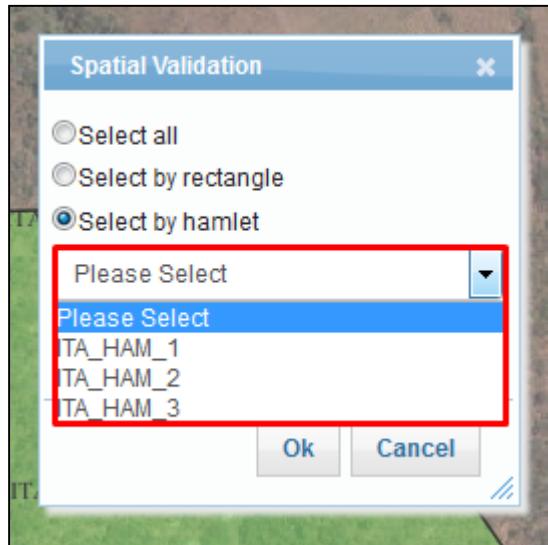


Select By Hamlet

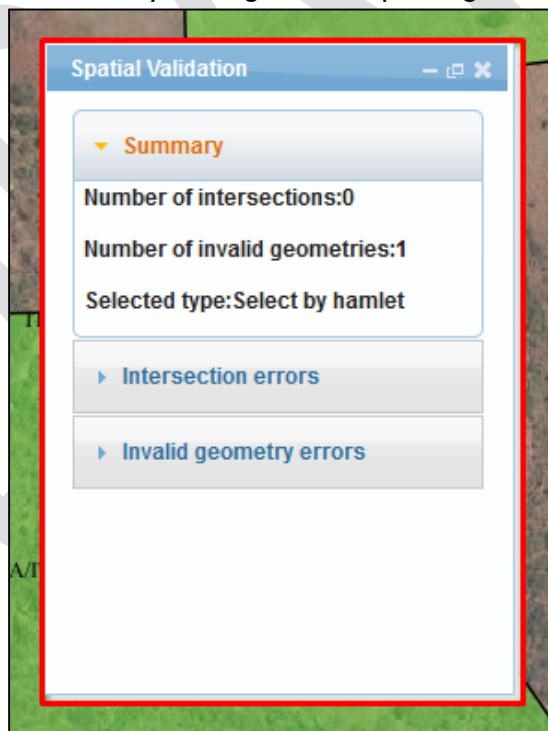
'Select by Hamlet' option facilitates user to validate parcels belonging to specified hamlet.

Steps:

- I. Select 'Select by hamlet' radio button available in 'Spatial Validation' dialogue box, hamlet dropdown will be displayed with all available hamlets.



2. Select hamlet in dropdown, click on Ok button.
3. Application will validate parcels of specified hamlet and validation result will be displayed in summary section. Details of errors can be seen by clicking on corresponding accordions



11.2.2 OPEN PROJECT

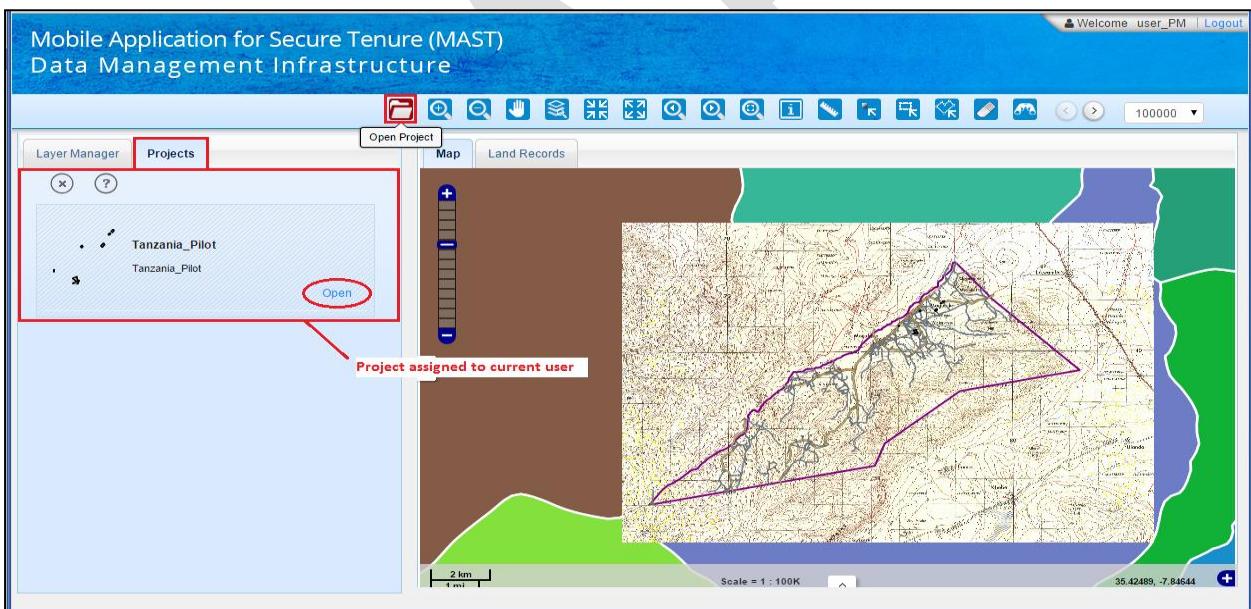
'Open Project' functionality facilitates user to select the working Project for which land data management work is to be done. This is the first step in the land records management tool and thereafter all the data accessible in the land data management tool will be for the selected and authorized project.

Steps:

1. Login into the system with role as 'Administrator / Project Manager'. Click on 'Launch' link available in 'Data Management' section.
2. 'Land Management Tools' page will be displayed. By default, 'Map Viewer' will be available.
3. Click on 'Open Project' available in tool bar.



4. 'Projects' tab will be displayed showing list of all projects assigned to login user. There will be an 'Open' link associated with every project.



5. Click on 'Open' link.
6. Data like 'layers groups', parcels on land base and 'Land Records' of selected project will be available in 'Map Viewer' and 'Land Records' dashboard.

Note: If a user switches to another project then he can switch to the default project by clicking on "Default button"

11.2.3 ZOOM IN

'Zoom In' tool facilitates users to zoom in a particular area or location.

Steps:

1. Click on the 'Zoom In' tool available in tool bar.



2. Click on the map view at that location. Application will zoom in map to that location by a predefined extent.
3. To zoom in to a specific extent, click on the tool and draw a rectangle at required location on the map canvas. Application will zoom in the area to an extent such that the area inside the rectangle will cover the entire map canvas.

11.2.4 ZOOM OUT

'Zoom Out' tool facilitates users to zoom out the map view.

Steps:

1. Click on 'Zoom Out' tool available in tool bar.



2. Click on map canvas at a required location. Application will zoom out the map vies to fixed extent. The location where user clicked will be at the center of map canvas.
3. To zoom out to a greater extent click on the 'Zoom Out' tool and draw a rectangle. Application will zoom out the map view to a map extent according to drawn rectangle (smaller rectangle will result in larger zoom out on map view).

11.2.5 PAN

'Pan tool' facilitates users to pan the map view.

Steps:

1. Click on the 'Pan Tool' available in tool bar.



2. Click on the map. Without releasing the mouse button, move the map in desired direction and release the button at desired location.
3. Application will pan the map in that direction till mouse button release.

11.2.6 ZOOM TO LAYER

'Zoom to layer' tool facilitates users to zoom to the extent of a particular layer.

Steps:

1. First make that layer active layer then click on the 'Zoom to Layer' tool available in tool bar.



2. Application will zoom in/out the map view to fit the map view to the layer's extent.

11.2.7 FIXED ZOOM IN

'Fixed Zoom In' tool facilitates users to zoom in the map to a fixed scale.

Steps:

1. Click on the 'Fixed Zoom In' tool available in tool bar.



2. Application will zoom in the map view to a predefined ratio of scale and the slider of zoom bar will move one steps towards '+' sign.

11.2.8 FIXED ZOOM OUT

'Fixed Zoom Out' tool facilitates users to zoom out the map with a fixed scale.

Steps:

1. Click on 'Fixed Zoom Out' tool available in tool bar.



2. Application will zoom out the map to a fixed ratio of scale and the zoom bar's slider will move one step towards the '-' sign.

11.2.9 ZOOM PREVIOUS

'Zoom previous' tool facilitates user to go to the previous zoom level of map. This tool can be used only if user has worked on more than a static map view for a browser session.

Steps:

1. Click on the 'Zoom Previous' tool available in tool bar.



2. Application will zoom to the previous view of the current view.

11.2.10 ZOOM NEXT

'Zoom Next' tool facilitates users to go to the next extent of map. This tool can be used only if the 'Zoom Previous' tool is already used.

Steps:

1. Click on the 'Zoom Next' tool available in tool bar.



2. Application will zoom to the next view of current view which user has visited earlier.

11.2.11 FULL ZOOM

'Full Zoom' tool facilitates users to zoom to full extent of current project.

Steps:

1. Click on 'Full Zoom' tool available in tool bar.



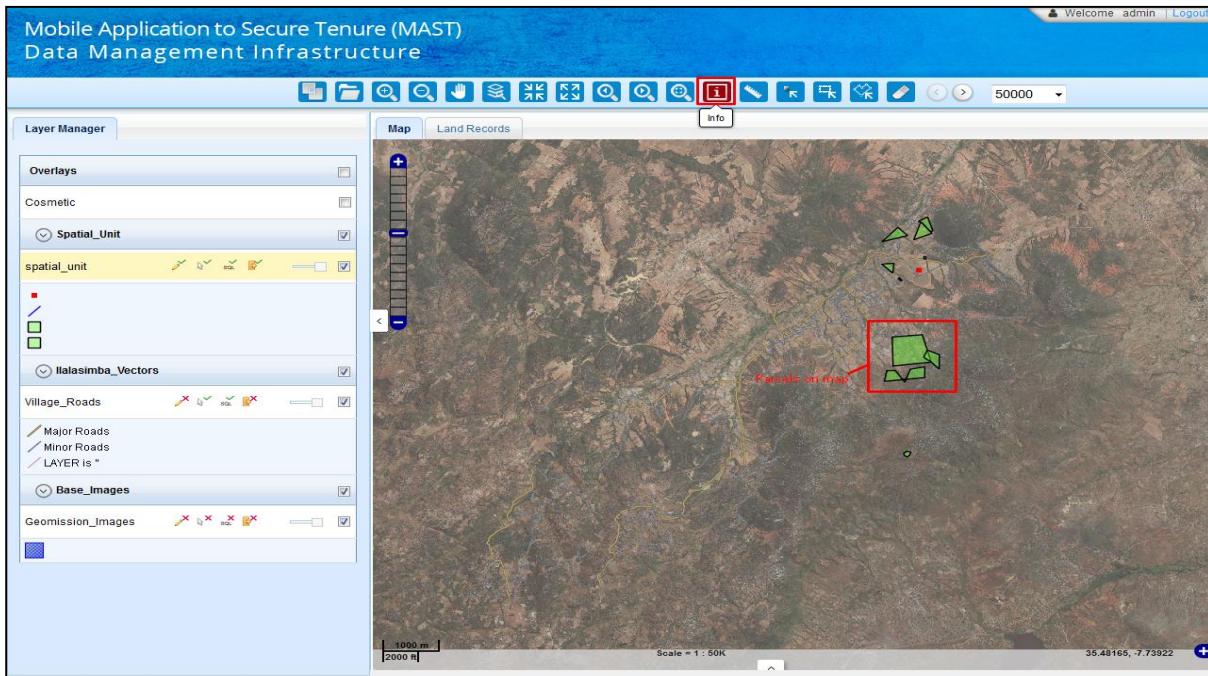
2. Application will zoom in/out the map according to current extent, to take map to project's extent.

11.2.12 MAP INFO

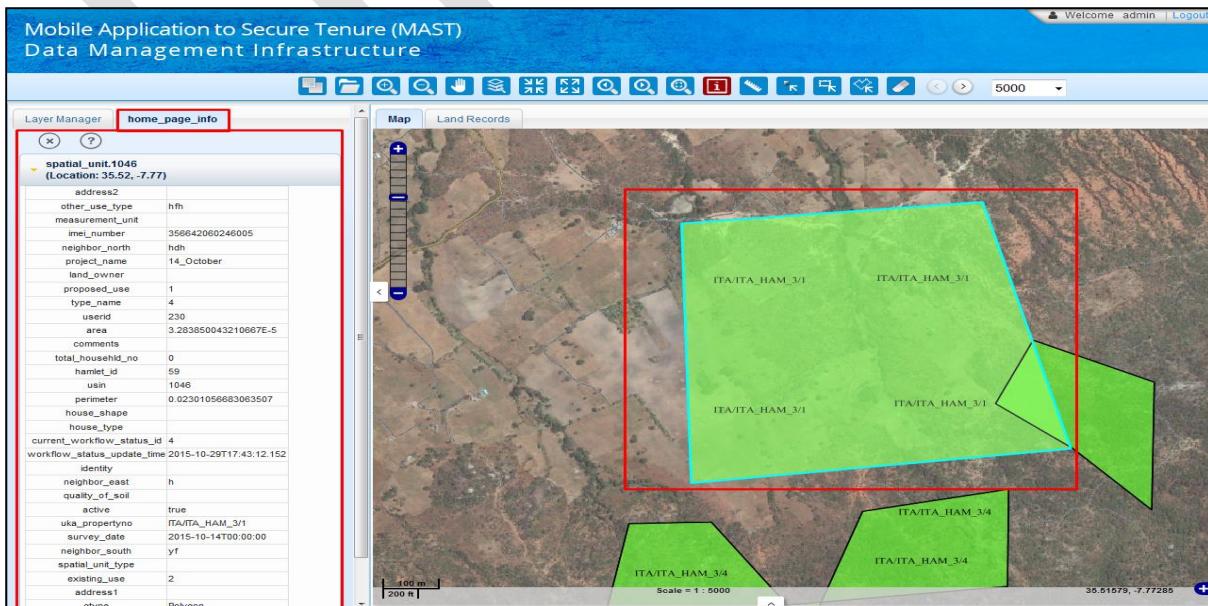
'Info' tool facilitates users to see the attributes of a parcel by clicking on it.

Steps:

1. Zoom to a parcel available on map.



2. Click on 'Info' tool available in tool bar. Info tool will be enabled.
3. Now click on a desired feature.
4. Application opens a new tab 'Info' in left panel and attribute details of specified parcel will be displayed in 'Info' tab.



11.2.13 MEASURE

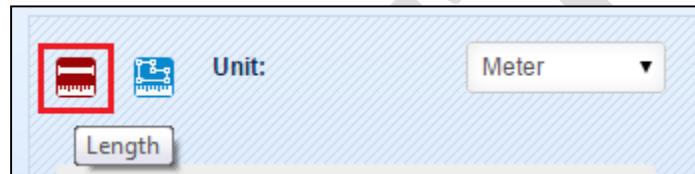
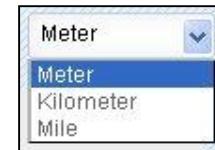
'Measure' tool facilitates user to measure a desired length or area. On click of 'Measure' tool available in tool bar. Application will show 'Measure' tab on left panel. That will provide different tools to measure length or area on map.

These tools are listed below

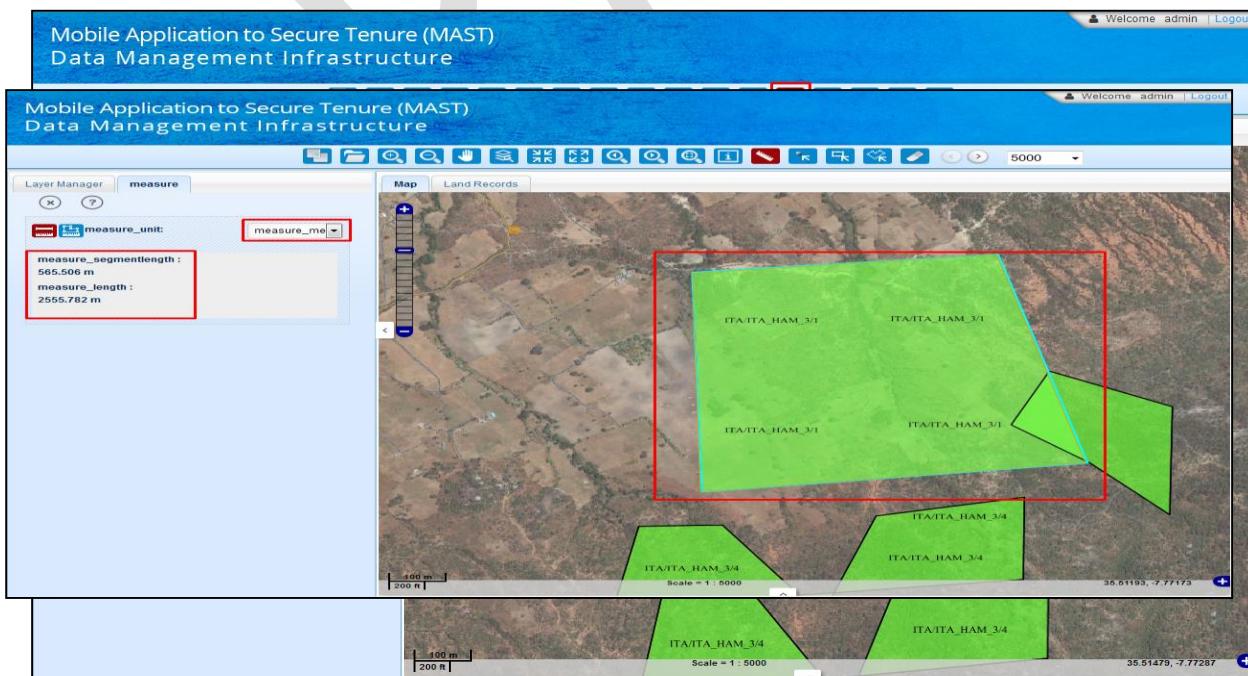
- Length
- Area

Steps:

1. Click on 'Length' tool (if area tool clicked earlier) and select required unit from drop down list available in 'Measure' tab on left panel.
2. Click on 'Length' tool. By default, 'Length' tool will be selected.



3. Draw a line as required for measuring the length (double click to complete the line).
4. User can create more than one segment in a line to measure a length of line with multiple nodes.
5. As user draws first segment the segment length and length will be same but on drawing second segment, application will show the current segment's length as 'Segment Length' and total length of the line will be shown as 'Length'.



To measure area, Click on 'Area' tool. Click on at least three locations on map. Application will display area covering all specified point on map. Area will be displayed in selected area unit.

11.2.14 SELECT

'Select' tool facilitates user to select single feature of active layer.

Steps:

Zoom map to such scale that the layer's features should be visible.

1. Click on 'Select Feature' tool available in tool bar.



2. Click on the parcel to be selected. The parcel gets highlighted on map canvas and attributes of selected parcel will be shown in the result panel.

11.2.15 SELECT BY RECTANGLE

'Select by Rectangle' tool facilitates user to select multiple parcels by drawing a rectangle on map.

Steps:

1. To select parcels of a layer, make that layer active by clicking on that layer in layer manager.
2. Draw a rectangle on required location to select the parcels.
3. To draw a rectangle, click on map and without leaving the mouse button drag and release the button to complete the rectangle.
4. On completion of rectangle, results panel pops-up and show the details of the parcels selected (intersected with the drawn rectangle).
5. Now user can use the tools available on result panel on selected parcels.
6. To clear the selection, click on clear tool.
7. If no parcel lies within the drawn rectangle, application will show a pop-up message "No Records Found". Click 'Ok' on this message.

11.2.16 SELECT BY POLYGON

'Select by Polygon' tool works similar as 'Select by Rectangle' tool but in this, instead of rectangle user has to draw a polygon on map canvas to select a parcels.

Steps:

1. Click on 'Select by Polygon' tool available in tool bar.



2. Draw a polygon on desired location in map.
3. To draw a polygon, click on map and add nodes to create polygon.
4. Double click to complete the polygon.
5. As user creates the polygon, application pops-up the result panel with the selected parcels details in tabular format.
6. To unselect the parcels, click on clear.

11.2.17 CLEAR

'Clear' tool facilitates users to clear the selection of parcels on map. It also allows user to clear color thematic and to clear results from the result panel also.

Steps:

1. Click on the 'Clear' tool available in tool bar.



2. Application will clear all the records form result panel and if features are highlighted due to selection, application will clear them too. If some color thematic is used for features it also clears the color thematic too.

11.2.18 SEARCH

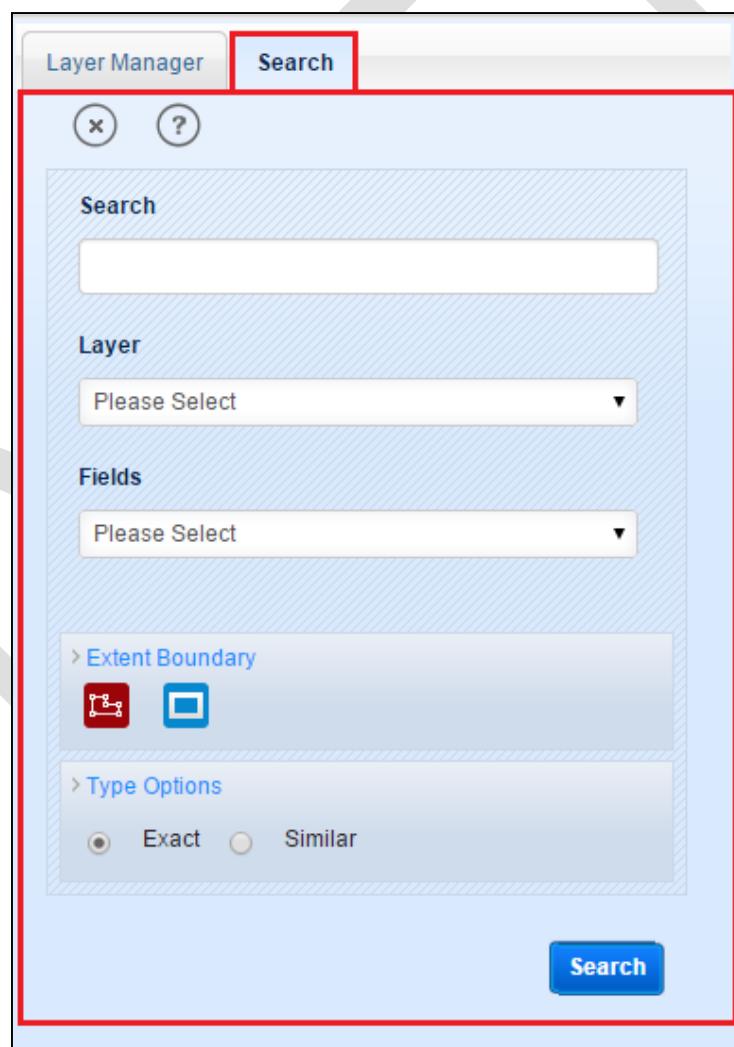
'Search' tool facilitates users to search parcels based on their attribute values within whole map or in defined extent boundary. It provides options to search parcels under a specific boundary and also this tool facilitates user to search parcels with attributes having similar value.

Steps:

1. Click on search tool available in tool bar.



2. 'Search' tab will be displayed in left panel along with input options like Search, Layer and Fields and 'Search' button. 'Extent Boundary' and 'Type Options' sections will be available.



3. Enter the value in 'Search' input box.
4. Select the layer from 'Layer' drop-down, corresponding values will be populated in 'Fields' drop down.

5. Select field value from corresponding drop-down.
6. In the drop-down list there is an option available as 'All'. If user selects 'All' for the fields then application will search for the results in all the fields of selected layer.
7. If user does not select any of the options from 'Extent Boundary' and 'Type Options' and clicks on 'Search' button. Application will search the result in entire layer with 'Exact' option as default.
8. If entered value matches with attribute values, application will pop-up the result panel with the searched parcels' attributes.
9. Now For the same search user can specify type option as 'Similar' (Note: Similar option does not work for numeric values)
10. If type option is chosen as 'Similar', application will show all the results which are similar to the entered value.

Users can also search features within a defined boundary.

1. Click on 'Search' tool and specify the attribute value in Search text box.
2. Select Layer and field in corresponding drop downs.
3. Click on 'Extent Boundary' link. Two tools Polygon and Rectangle will be shown to user.
4. Click on Polygon tool draw a polygon on the map canvas.
5. Click on the type options link and specify type as 'Exact' or 'Similar'.
6. Click on 'Search' button. If entered value matches with some of the features' attribute value of specified layer and field inside the drawn polygon, application will pop-up the result panel with the details of these features.
7. If the entered value does not match with any features attribute of the specified layer and field, application shows a pop-up message of no record found. Click 'Ok' to exit from the message.
8. Similarly user can search features inside an extent boundary by drawing a rectangle on map canvas using 'Rectangle' tool.

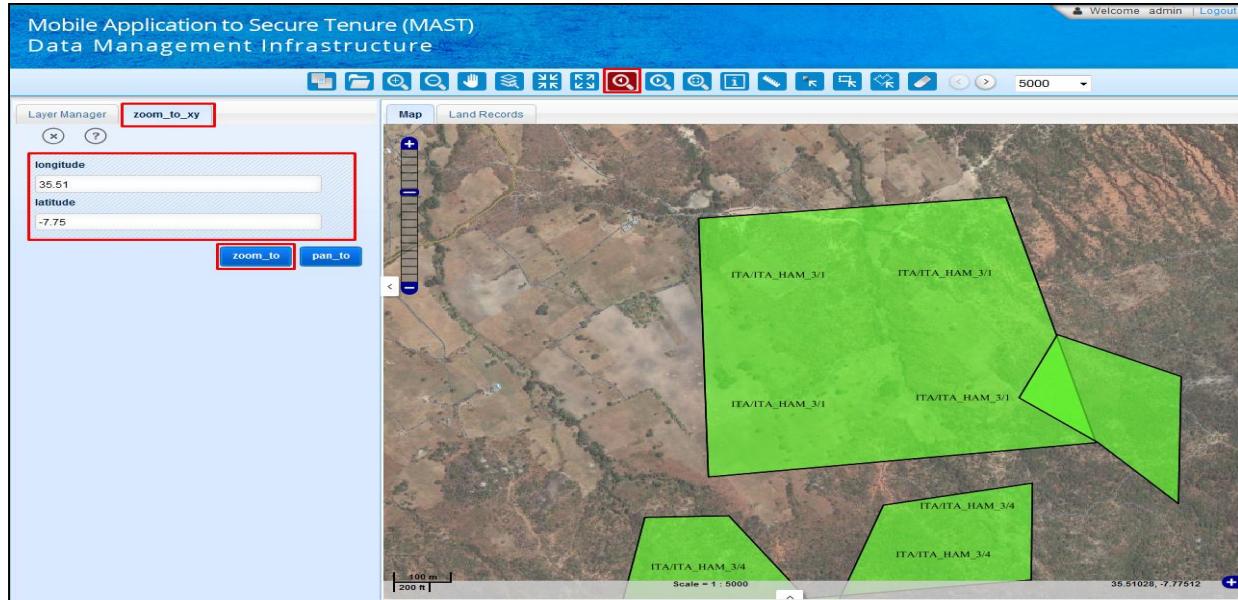
11.2.19 ZOOM TO XY

'Zoom to XY' tool facilitates users to zoom to a location of known coordinates on the map canvas. This tool also facilitate user to pan the map to specified coordinates.

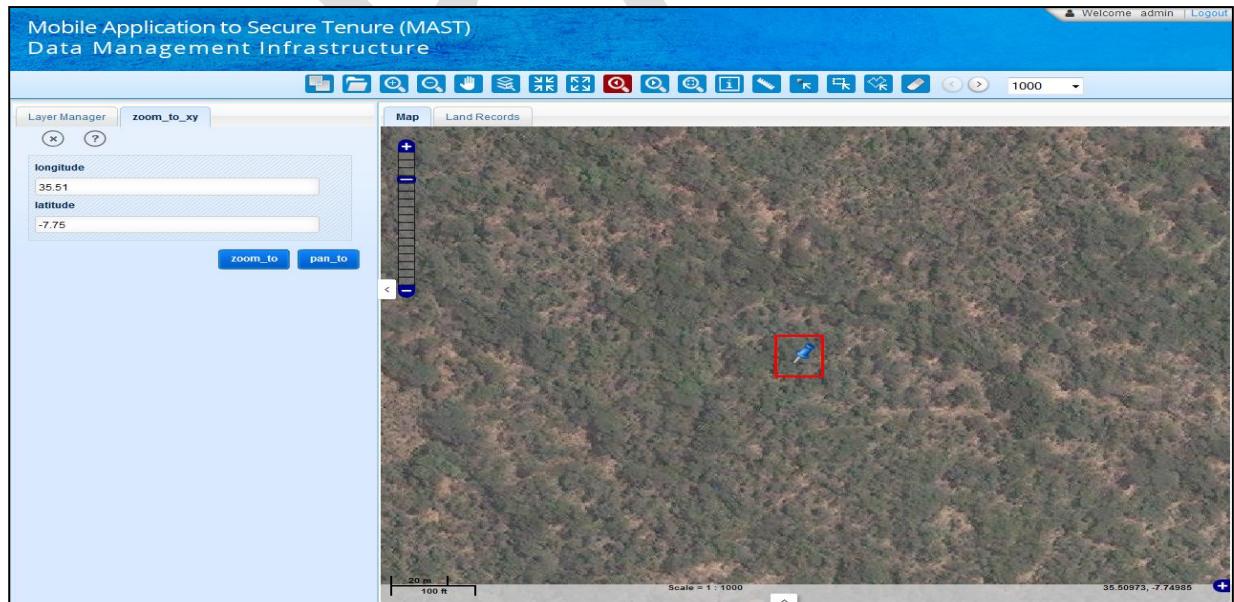
1. Click on the 'Zoom to XY' tool available in tool bar.



2. Application will open a new tab on left panel as ‘Zoom to XY’. The tab contains two input boxes: ‘Easting’ and ‘Northing’ and two buttons: ‘Zoom To’ and ‘Pan To’.
3. Enter corresponding ‘Easting’ and ‘Northing’ coordinates in input boxes.



4. Click on ‘Zoom to’ button.
5. Map extent will be changed and application will zoom in the map to the specified location pointed by entered coordinates. A marker will be placed on map showing the location of entered coordinates.



6. Instead of click on 'Zoom To' button, if user click on 'Pan to' button.
7. Map extent will remain same and application will pan the map to the specified location pointed by entered coordinates. A marker will be placed on map showing the location of entered coordinates.

11.2.20 PRINT

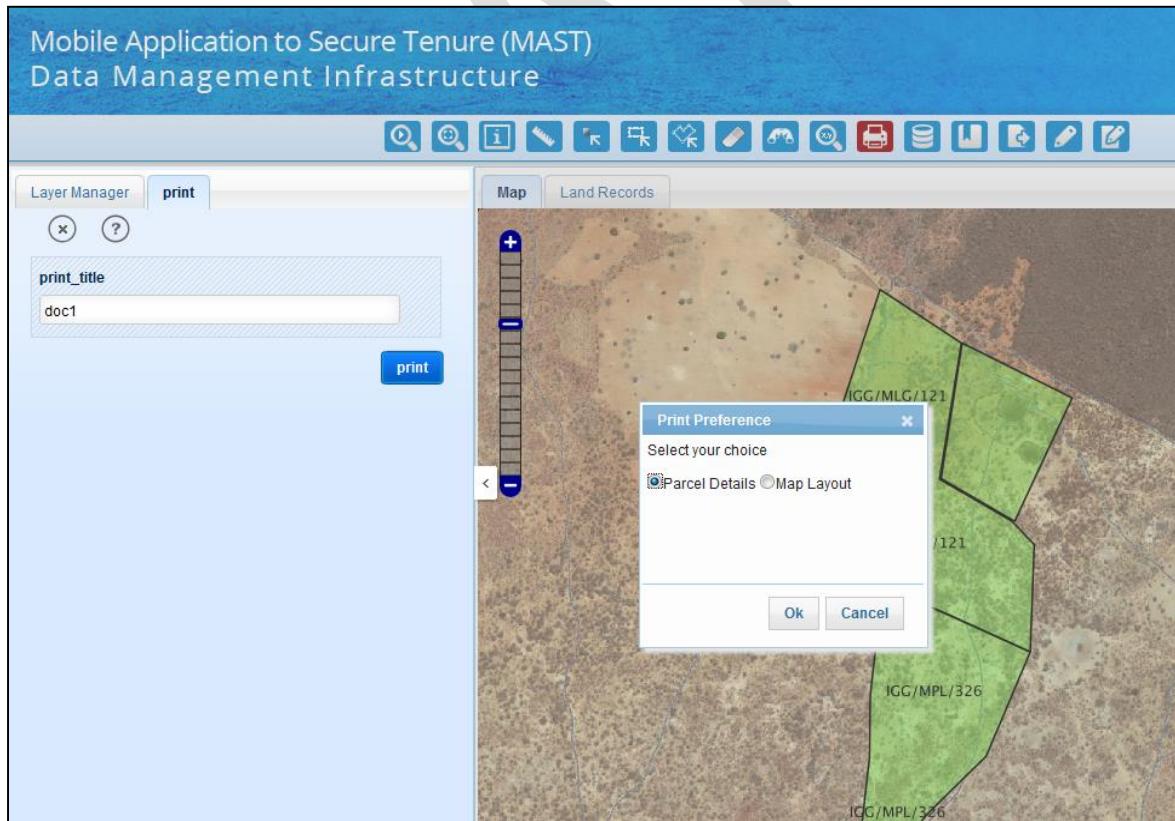
'Print' tool facilitates users to take the prints of map as available in map viewer.

Steps:

1. Pan the map to the area which is to be printed.
2. Click on the 'Print' tool available in tool bar.



3. Application will open a new tab on left panel as 'Print'. This tab contains one input boxes: 'Map Title' and one buttons: 'Print'.
4. Print Preference window will appear with following radio buttons:
 - Parcel Details
 - Map layout



User selects ‘Parcel Details’ button and click on ‘OK’ button. Application will display Parcel details with Map and other details.

The screenshot shows a web-based application interface. At the top, a header bar displays the URL '54.93.173.87/mast/viewer/?lang=en#' and the title 'doc1'. Below the header is a map view showing several green-shaded land parcels. One large green polygon is labeled 'IGG/MPL/314' and contains sub-labels 'IGG/MLG/121', 'IGG/MLG/321', 'IGG/MPL/326', and 'IGG/MPL/728'. To the right of the map is a table titled 'Parcel Details'.

Usin	Uka No.	Hamlet Name	Person Type	Person Name	Person With Interest
2398	IGG/MLG/121	Mlenga	Owner	Victori	Pasko Victor Savike, Emanuel Victor Savike, Brako Victor Savike, Martin Victor Savike, Maria Victor Savike, Losse Victor Savike, Martina Victor Savike, Benjamin Aloisy Savike, Christian Aloisy Savike, Diana Aloisy Savike, Ediged Aloisy Savike
2398	IGG/MLG/121	Mlenga	Owner	Otavina	
2403	IGG/MPL/314	Mapululu	Owner	Seketo	Asha Ngotee Iektaika, Msando Seketo Dukaa, Ngayayu Seketo Dukaa, Lopyan Seketo Dukaa
2403	IGG/MPL/314	Mapululu	Owner	Mospa	
2403	IGG/MPL/314	Mapululu	Owner	Neema	
2459	IGG/MPL/328	Mapululu	Owner	Sepke	Nandoyee Kilani Ndapsei, Lanoye Bwanapaa Madeng, Ngudu Sepke Dukaa, Kulwa Sepke Dukaa, Esta Sepke Dukaa
2459	IGG/MPL/328	Mapululu	Owner	Naimesai	
2433	IGG/MPL/326	Mapululu	Owner	Raymond	Dorice Raymond Mahega, Tadei Raymond Mahega, Justine Raymond Mahega
2433	IGG/MPL/326	Mapululu	Owner	Letisia	

5. Application will display ‘Print Preferences’ dialogue. Select the preference and click on ‘Ok’ button.
6. Application will open corresponding map view in other browser window in a printable PDF printable format.

11.2.21 QUERY BUILDER

‘Query Builder’ tool facilitates user to query parcels according to the attributes values, for this purpose application allows many operators to be used. User can make selection through the query builder and search other layer’s details around the selected features by using the relate option of query builder.

Steps:

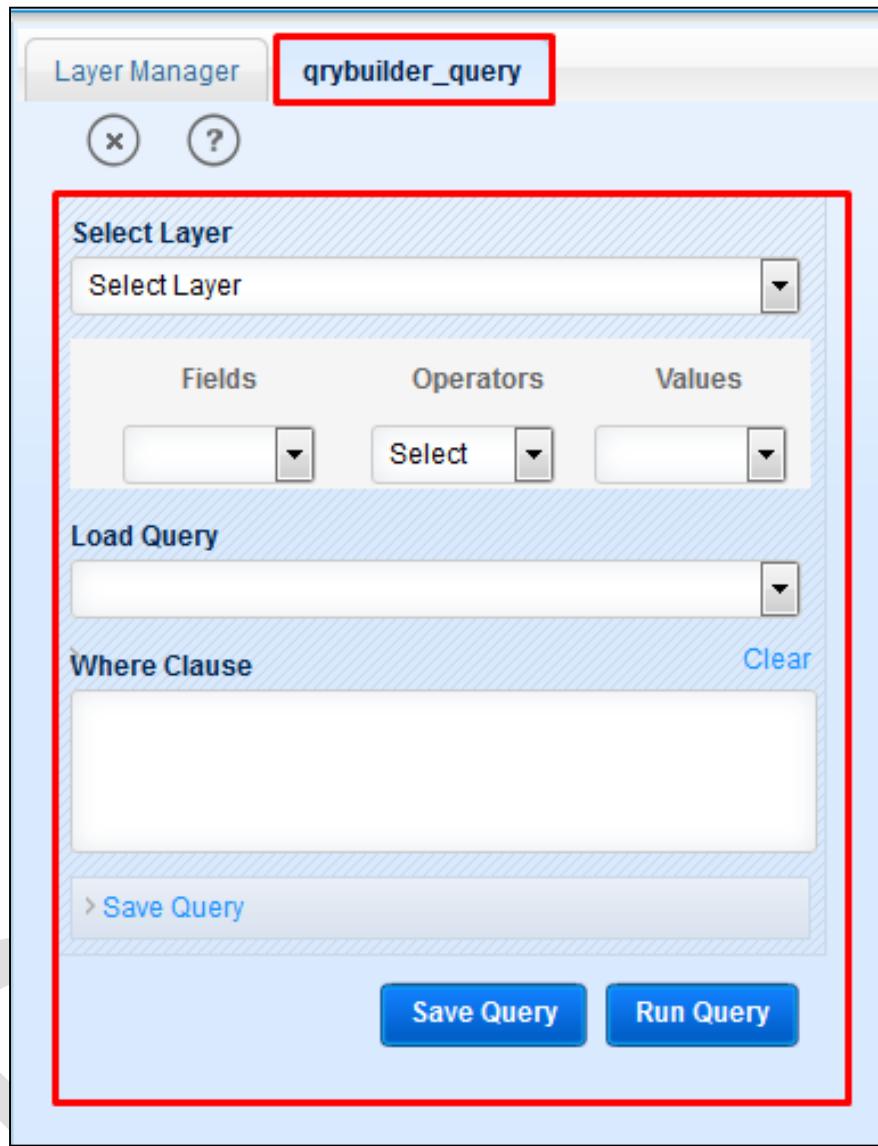
Click on the ‘Query Builder’ tool available in tool bar.



Application opens a new tab 'Query' in left panel. This tab consists of two buttons: 'Help' and 'Close' in upper right corner, below of them one drop down list box 'Select Layer' is there. Then it has three drop-down list boxes: 'Fields', 'Operators' and 'Values'. Below to Values list box 'See More' link is there. The Values list box can have a list of 100 values at a time so to add more values to it one has to click on the see more link. It adds hundred more values for the selected attributes on every click on that link until the attribute all attribute values are added. A drop down box 'Load Query' is there. This list box consists of the list queries saved by the user earlier. And user can select a query from the list. Then the query tab has a text box 'Where Clause' in which user can see the query and the selected fields, operators and field's values will be updated here automatically while selecting from respective list above. Above this text box a link 'Clear' is there to clear all the selected details from the where clause text box and from the fields, operators and values list boxes. Below to where clause text box a link 'Save Query' is there to save a query of user for future use. As user clicks on this link it expands with two text boxes: 'Query Name' and 'Query Description'. At the bottom, query tab has two buttons: 'Save Query' and 'Run Query'. 'Save Query' button is used with the 'Save Query' link to save the query details. And 'Run Query' button is used to run the query which is shown in where clause. Refer the figure below. (**Note: 'Not' operator should be used before the field name (for example: NOT objected=10, it will select the result which has not object as 10)**)

RUN QUERY

'Run Query' facilitates user to run a correctly build query.



To simply run a query:

1. Select layer from the drop- down list on which query is desired.
2. Select field from 'Fields' list box.
3. Select operator from 'Operators' list box.
4. Selected 'Fields' and 'Operator' will be populated in 'Where Clause' text area.
5. Write the field value in 'Where Clause' text area.
6. User can create a query in which more than one field and more than an operator is used.
7. User can see the whole query in the 'Where Clause' text box.
8. If the query is all correct then click on the 'Run Query' button.
9. Application will pops-up the result panel with the queried features' details on it.
10. Now user can clear the where clause text box by clicking on clear link.

The screenshot shows the MAST Data Management Infrastructure application interface. The top navigation bar includes 'Welcome admin | Logout'. The main window has a toolbar with various icons. On the left, a 'Layer Manager' panel is open, showing a query titled 'qrybuilder_query' highlighted with a red box. The query builder interface contains fields for 'Select Layer' (set to 'spatial_unit'), 'Fields' ('usin'), 'Operators' ('='), 'Values' ('1067'), and a 'Where Clause' text area ('usin = 1067'). Buttons for 'Save Query' and 'Run Query' are at the bottom. To the right, there are two tabs: 'Map' and 'Land Records'. The 'Map' tab displays a satellite view of land parcels, with two specific parcels highlighted in green. Below the map, a table shows the results of the query: 'Result Count: 1'. The table has columns: usin, spatial_unit_type, project_name, type_name, identity, house_type, total_househd, other_use_type, and per. One row is shown with values: 1067, Itagutwa_Live, 1, 0, 0.003.

usin	spatial_unit_type	project_name	type_name	identity	house_type	total_househd	other_use_type	per
1067	Itagutwa_Live	1				0		0.003

SAVE QUERY

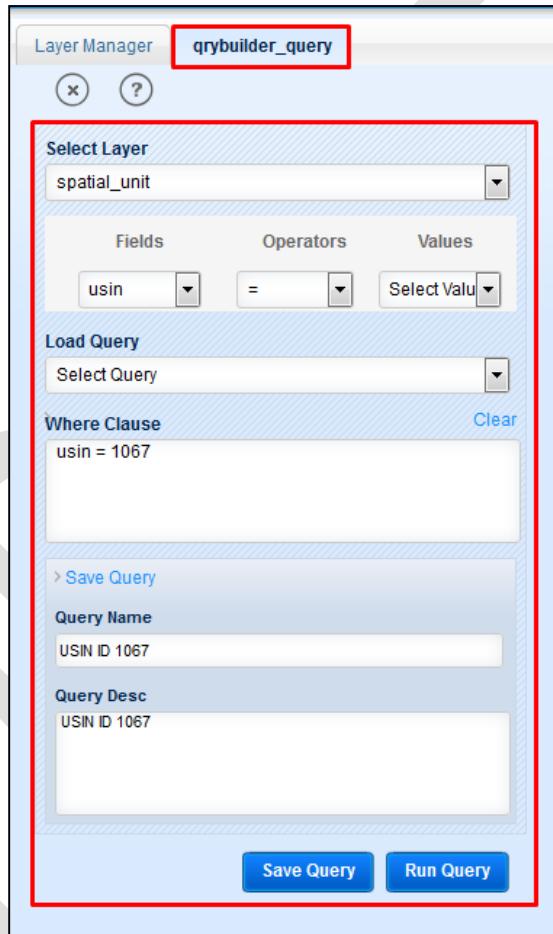
'Save Query' facilitates user to save query which is going to be used frequently or may be used in future.

Steps:

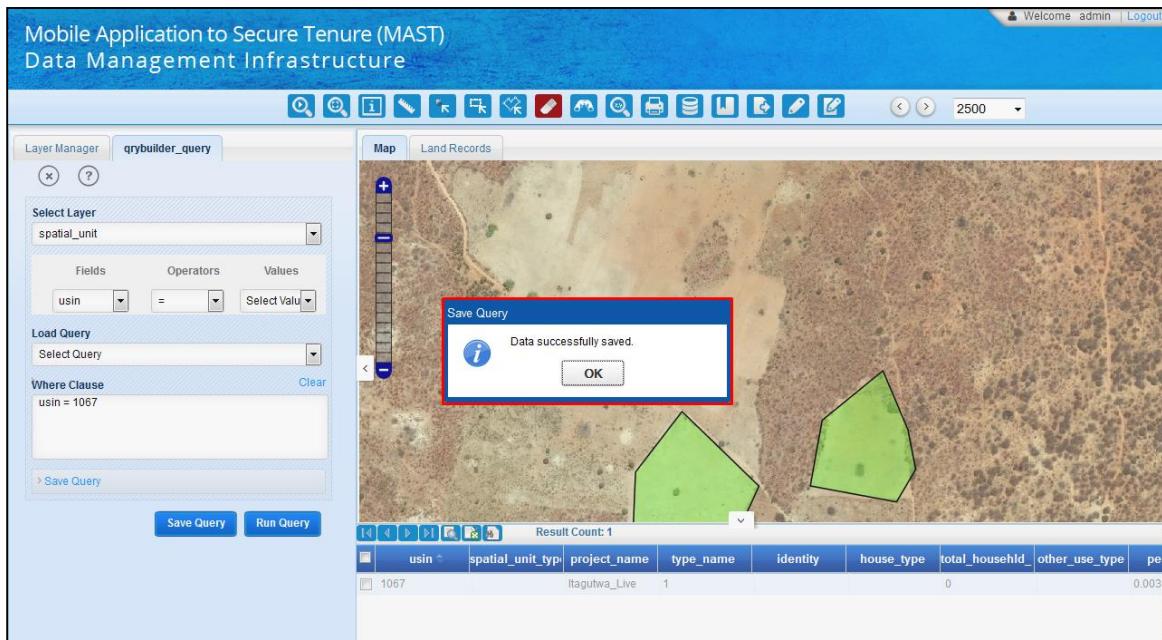
11.2.21.1.1.1.1 Select layer, fields, and operator and Write the field value in 'Where Clause' text area.

Click on 'Save Query' link.

Enter the query name in 'Query Name' text box and enter the description of query in 'Description' text box.



11. Click on ‘Save Query’ button. Application will shows a pop-up message on successfully saving the query to the server.

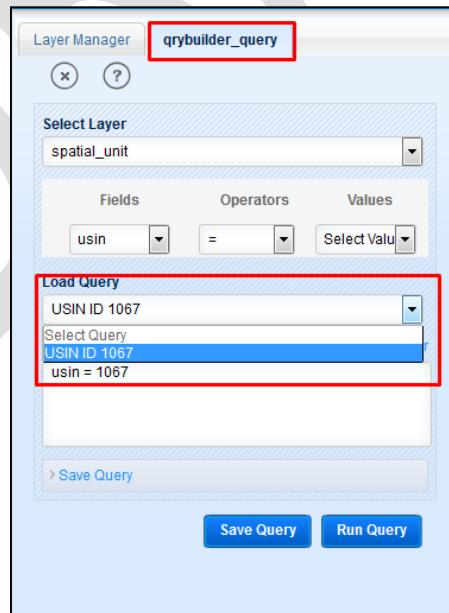


LOAD QUERY

‘Load Query’ facilitates user to run a saved query.

12. Select the layer for which query is saved.

13. Query belonging to selected layer will be populated in ‘Load Query’ drop down.



14. Select the saved query from the drop-down list from ‘Load Query’ list box, application will show the query in where clause.

15.Click on 'Run Query' button. The results will be shown in results panel.

The screenshot shows a GIS application interface with two main panels. On the left is the 'qrybuilder_query' panel, which includes a 'Select Layer' dropdown set to 'spatial_unit', a 'Where Clause' input field containing 'usin = 1067', and a 'Run Query' button highlighted with a red box. On the right is the 'Map' panel, displaying an aerial view of land parcels. Two specific parcels are highlighted in green. Below the map is a results table titled 'Result Count: 1'. The table has columns: usin, spatial_unit_typ, project_name, type_name, identity, house_type, total_houseHd, other_use_type, and per. One row is present in the table, corresponding to the highlighted parcels.

usin	spatial_unit_typ	project_name	type_name	identity	house_type	total_houseHd	other_use_type	per
1067	Itagutwa_Live	1				0		0.003

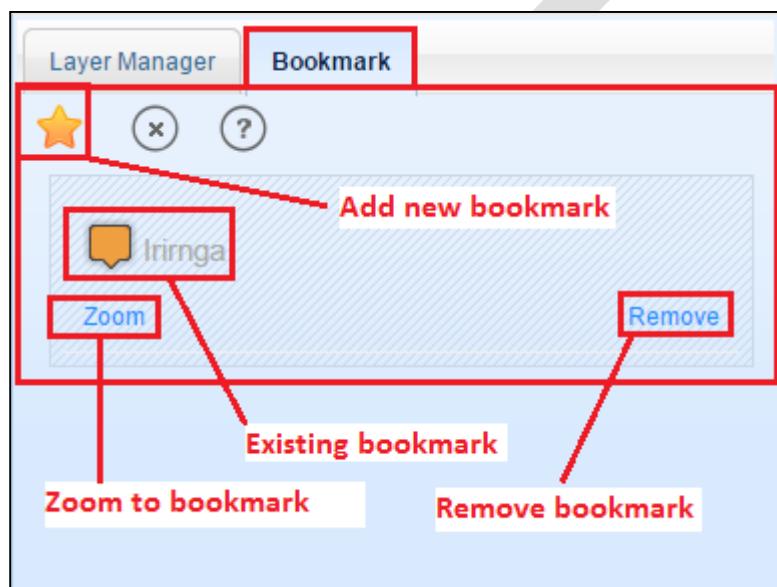
11.2.22 BOOKMARK

'Bookmarks tool' facilitates users to save a particular area of interest of map canvas for future reference. This also facilitates user to manage and use available bookmarks. .

Steps:

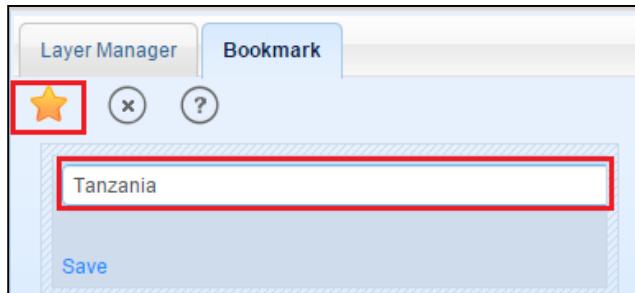
11.2.22.1.1.1 Click on 'Bookmark' tool available in too bar.

11.2.22.1.1.2 Application will open a new tab 'Bookmark' in left panel. This tab contains one button as star to add new bookmark on top-left, and two more buttons like any other tool in right-top: 'Help' and 'Close'. Below to these tools the tab contains the list of previously saved bookmarks with tool links: 'Zoom' and 'Remove'.

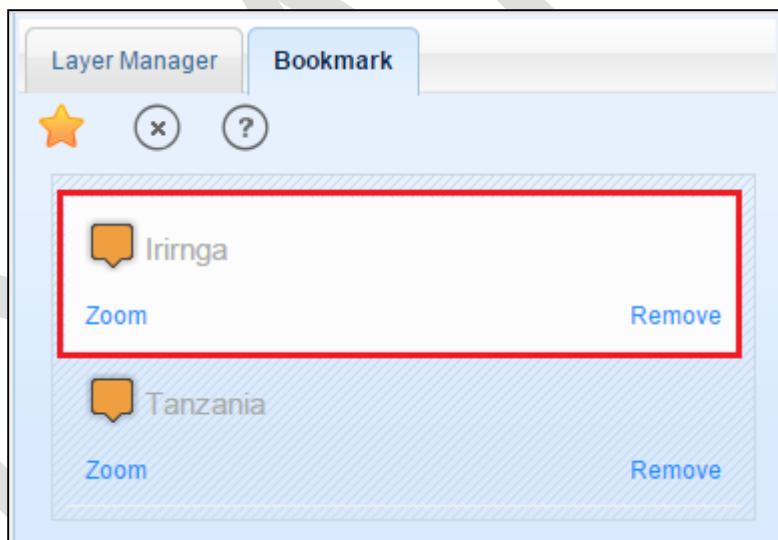


CREATE BOOKMARK

1. ‘Create Bookmark’ facilitates user to create a new bookmark.
2. User clicks on bookmark tool.
3. In bookmark tab click on the star shaped button, application shows a text box below the tool with a link ‘Save’.
4. Now set the map view to the required extent on required zoom level.
5. Enter the name of the new bookmark on the text box.



6. Click on the link ‘Save’. Application will save the bookmark to the server and the saved bookmark will be shown in the bookmark list.



7. This bookmark can be used in future to go that extent and location.

ZOOM TO BOOKMARK

To go to a previously saved bookmark, click on the link ‘Zoom’ below the saved bookmark. Application will set the map view to the bookmark’s extent.

REMOVE BOOKMARK

User can remove a saved bookmark by clicking on the link 'Remove' below of that bookmark. Application pops-up the confirmation message. Click 'Ok' to remove the bookmark or click 'Cancel' to exit from the message without removing the bookmark.

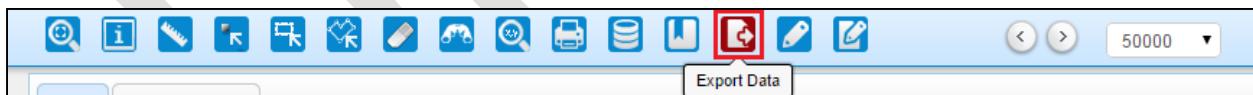


11.2.23 EXPORT DATA

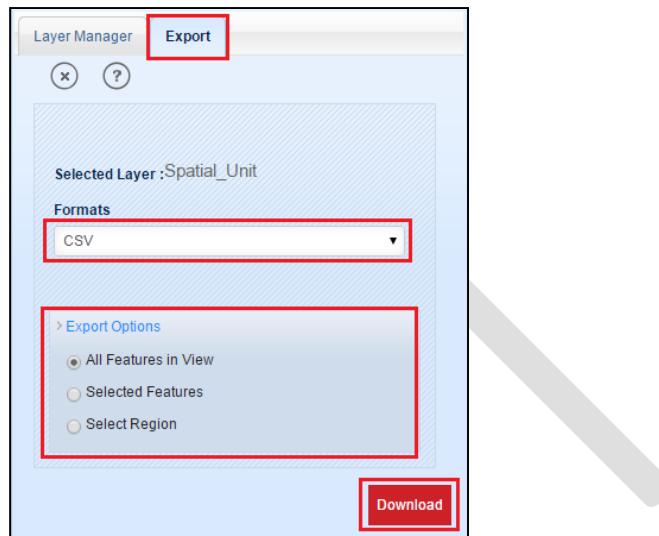
'Export Data' tool facilitates user to export data of selected land records in excel sheet. Data of all the key attributes will be exported to the excel sheet for filtered land records.

Steps:

1. User clicks on 'Export Data' tool available in tool bar.



2. Application will open a new tab on left panel as 'Export'. This tab contains one drop down: 'Formats' and accordion names 'Export Options' along with 'Download' button.
3. Select the format in which, data is to be exported.
4. Select any of the Export options such as - 'All Features in View', 'Selected Features', 'Select Region'.
5. Click on Download button.



6. Application will invoke 'Save As' dialogue. Save the data on local drive.

11.2.24 MARKUP

 Markup functionality allows users to create point, line, polygon, and circle and text label for reference and illustration purpose. User can customize features and labels and save them for future retrieval. All the mark-ups created by user are saved in cosmetic layer. Markup functionality also allows users to delete mark-ups before saving them and allows user to clear all the previously saved mark-ups. As user click on this tool a new tab 'Markup' is opened on the left panel. This tab consists of multiple tools to manage mark-ups. These markup tools are listed below:

- New—Clears (removes) all the previously saved mark-ups in a projects.
- Save—Saves all the created mark-ups and labels.
- Delete—Allows users to delete mark-up feature by clicking on that mark-up (before saving).
- Delete All—Allows users to delete all the mark-ups and labels before saving them.
- Point—Used to draw point mark-up.
- Line—Used to draw line mark-ups.
- Polygon—Used to draw polygon mark-ups.
- Circle—Used to draw circles as mark-ups.
- Rectangle—Allows users to draw rectangle mark-ups.
- Label /Text—Allows users to create text mark-ups or labels.

POINT MARKUP

Point mark-up is by default active tool in mark-up tab.

1. To create a point mark-up, click on 'Point' tool. A form will be displayed to enter the details the point lookup. The form has two parts 'Fill' and 'Stroke'. Fill part has fields to enter the fill properties of point. And stroke part has fields to enter the outline details of point.
2. In fill part select fill color in 'Fill Color' color box.
3. Specify the opacity of fill in 'Fill Opacity' spin box.
4. Specify the radius of point in 'Point Radius' spin box.
5. In stroke part, select stroke color, specify stroke opacity, stroke width (outline width).
6. Select 'Stroke Linecap' (point shape) from drop down list.
7. Now click on map at required location, a point will be drawn at the clicked location.
8. Click on 'Save' tool to save that point.

LINE MARKUP

1. To make custom lines (markups) click on Line tool. Application will show a form to fill the line details.
2. Select 'Stroke Color' (Line color) by clicking on color box.
3. Select a color with the color picker.
4. Select line opacity by using 'Stroke Opacity' Spin box (opacity limit 0 to 1).
5. Select line width by using 'Stroke Width' spin box.
6. Select line-cap style using 'Stroke Linecap' drop-down list box.
7. Select line style from the 'Stroke Dashstyle' drop-down list box.
8. Now draw the line on required location.
9. Double click to finish the line and click on 'Save' tool to save that line.

POLYGON MARKUP

1. For polygon mark-ups, click on polygon, application shows a form to customize polygon.
2. Select the color for polygon fill.
3. Click on the 'Fill Color' box, a color-picker will be shown to user.
4. Select the required color.
5. Set the opacity for polygon fill by using 'Fill Opacity' spin box.
6. Now for stroke part, select outline color with 'Stroke Color'.
7. Set outline opacity using 'Stroke Opacity' spin box.
8. Enter outline width in 'Stroke Width' spin box.
9. Select outline cap style from the 'Stroke Linecap' drop-down list box.
10. Select outline style from the 'Stroke Dashstyle' list box.
11. Click on the map at required location, create polygon and double click to finish the polygon.
12. Click on 'Save' tool to save the markups.

CIRCLE MARKUP

1. To create a circle markup click on circle tool. A form will be shown in 'Markup' tab.
2. Select 'Fill Color' by clicking on the color box. A color picker will be shown.
3. Set the opacity of circle fill in 'Fill Opacity' spin box.
4. Select outline color for circle in 'Stroke Color' box.
5. Set the outline opacity in 'Stroke Opacity' spin box.
6. Specify outline width in 'Stroke Width' spin box.
7. Select outline cap style from the 'Stroke Line cap' List box.
8. Select outline style for circle from the 'Stroke Dash style'..
9. Click on the required location and without releasing the mouse button drag it to the circumference of circle and release the mouse button.
10. Click on 'Save' tool to save the markups.

RECTANGLE MARKUP

Creation of rectangle is similar to polygon creation.

1. Click on Rectangle icon.
2. Select 'Fill Color' by clicking on the box and then selecting the required color from the color picker as shown.
3. Specify the 'Fill Opacity' using the spin box.
4. Select outline color in 'Stroke Color' box.
5. Set outline opacity in 'Stroke Opacity' spin box.
6. Set outline width in 'Stroke Width' spin box.
7. Select outline cap style from the 'Stroke Linecap' list box.
8. Select outline style from the 'Stroke Dashstyle' drop-down list box.
9. After filling all the details, click on the required location on map canvas and without releasing the mouse button, drag it to the other end of rectangle and release the mouse button.
10. Then click on 'Save' tool to save these markups.

TEXT MARKUP

To label on mark-ups or any feature or just a text mark-up:

1. Click on 'Text' tool. Application shows the text details.
2. Select a font type from the 'Font' list box.
3. Select the style from the 'Font Style' list box as 'Normal' or 'Italic'.
4. Select 'Font Width' as 'Normal' or 'Bold' from the list.
5. Select color for the text by clicking on 'Color' box. A color picker will be shown.
6. Select required color from the color picker and click on 'Close' button on the color picker.
7. Specify the size for the text in 'Size' spin box.
8. Now click on the map canvas at required location. Application shows a text box at clicked location.
9. Enter the text in it and press enter. The text will be shown in the specified details.
10. Click on 'Save' button to save text mark-up.
11. User can exit from the ongoing mark-up creation by pressing 'Escape'.

SAVE MARKUP

Mark-up is saved only if user will click on ‘Save’ tool. Users can create multiple and different type of mark-ups and save them together.

DELETE MARKUP

To delete a specific markup before saving, click on the ‘Delete’ tool and then click on that markup. Application will delete that markup.

DELETE ALL

To delete all the created markups before saving them, click on the ‘Delete All’ tool. Application will delete all the markups; those are made recently and not saved.

NEW

Click on ‘New’ tool to delete all the markups from the map canvas. This functionality allows users to delete all type of marks either saved or not.

11.2.25 EDITING

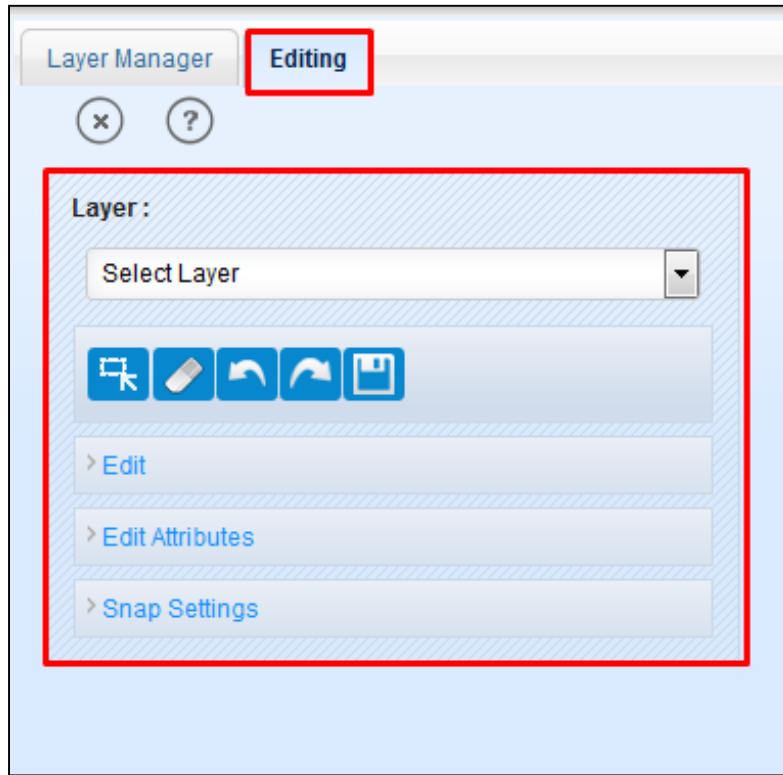
‘Edit’ functionality facilitates users to create new feature in selected layer. Using this tool, user can create new parcel only using direct editing feature. For creation/editing of other features, user needs to select features from the application.

It also allows users to edit features of a layer. User can reshape, resize, move, rotate and delete features under editing functionality. Users are also allowed to edit attributes of features of selected layer.

Steps:

1. User Clicks on ‘Edit’ tool available in tool bar.
2. Application shows a new tab ‘Editing’ in the left panel. This tab displays active layer’s name on the top, on which all the editing will be done. Below of this five tools: ‘Select’, ‘Clear’, ‘Undo’, ‘Redo’ and ‘Save’ are there. Below of these tools tab has four links:

- Create: to create new parcel.
- Edit: to edit existing Parcel.
- Edit Attributes: shows attributes fields and allows to edit attributes of parcel.
- Snap Settings: allows users to set snapping options to avoid gaps and overlaps.



11.2.26 GENERAL TOOLS

Select : This tool is used to select features for editing or snapping (selection of features changes them from WMS to WFS, since WMS features are not editable). To select feature/features, click on 'Select' tool and draw a rectangle on map at required location. The features of selected layer, covered by that rectangle will get selected.

Clear : This tool used remove features from the selection.

Undo : The undo tool allows user to undo the last activity in editing (except attribute editing).

Redo : Redo tool can be used after the use of undo tool. It redo the activity that was last undone by user.

Save : Save tool allows users to save all the editing made by user. After editing features users must have to click on save button to remain the changes done.

11.2.27 EDIT

Edit functionality contains a list of tools to edit an existing feature. When user clicks on the 'Edit' link these tool be shown to user, refer figure below.



To use the editing tools, user has to select the layer first whose features will be edited.

Import Feature: Import tool allows user to import feature from the Cosmetic layer to selected layer. A markup can be imported to selected layer if the selected markup is layer compatible feature i.e. the selected markup geometry must be as the selected layer's geometry. To import a feature, click on import tool and click on that markup feature. Then click on 'Save' tool. Now that markup can be seen in the selected layer.

Move: Move tool facilitates users to move a selected feature to a desired location on map.

1. To move a feature, make its layer as active layer.
2. Click on 'Edit' link.
3. Click on select tool and select a feature by drawing a rectangle on map. The selected features will be highlighted.
4. Click on 'Move' tool.
5. Click on the required feature among the selected features. Application shows a node.
6. Click on that node and without releasing the mouse button, move that node to required location. Then click in save button. Here user can use 'Undo' tool before saving the changes.

Resize: Resize tool allows users to change the size of a feature (except points). For resizing a feature:

1. Click on 'Edit' link. Select parcel by 'Select' tool.
2. Click on 'Resize' tool in edit and click on the feature. Application shows a node for resizing.
3. Click on that node and without releasing mouse button move the node towards to feature to make the feature smaller or move away from the feature to make its size larger and release mouse button on desired size.
4. Click on 'Save' button to save the changes.

Reshape: Reshape tool allows users to change the shape of the features (except point features). In reshape tool user can move an existing vertex of the feature or insert a new vertex or delete an existing vertex.

1. Click on 'Select' tool and select that feature. Now click on 'Reshape' tool.
2. Click on that features. All the vertices will highlighted with that feature.
3. Now user can click any of the vertices and move it to a required location.
4. To insert a new vertex, user has to click on the mid-point of two vertices and move it required location. Midpoint of every segment is also highlighted but with lower visibility.
5. To delete a vertex from the feature, keep the cursor on that vertex and press 'Ctrl+Delete'.
6. After doing all the changes, click on 'Save' button to save editing.

Rotate: Rotate tool  allows users to rotate a feature (except point features) clockwise or anti-clockwise.

1. Click on 'Select' tool and select that feature.
2. Click on 'Rotate' tool and click on selected feature. A node will be shown in the map near to feature.
3. Click on that node and without releasing mouse button move it clockwise or anti-clockwise as required. Release the mouse button after rotating feature to required angle.
4. Now click on 'Save' button to save the changes.

Remove Feature: Remove  feature functionality allows users to delete a feature permanently from layer. User can remove any type of features (point/polygon/line).

1. Click on 'Select' tool and select that feature.
2. Click on 'Edit' link (if not expanded) and select 'Remove Feature' tool.
3. Now click on that feature. Application will show a pop-up message to confirm the deletion of that feature.



4. Click 'Ok' to confirm or 'Cancel' to go back without deleting feature.
5. As user clicks 'Ok' on that pop-up message, that feature will be highlighted.
6. Now click on 'Save' tool to remove the feature from layer and server.

Edit Attribute: Edit attribute  tool allows users to edit attributes of a selected feature. The fields of a selected feature will be shown in the link 'Edit Attributes' in the left panel. User can expand this link by clicking on it. Or it will be expended by application while using edit attribute tool.

To edit attributes of a feature, click on 'Select' tool and select feature on map.

1. Click on 'Edit Attribute' tool and click on the selected feature.
2. Application will expand the link 'Edit Attributes' (if it is not opened already). All the editable attributes will be shown in that list.
3. Edit required fields by clicking on the text boxes of those attributes.
4. After editing the attributes, click on 'Apply' button on the 'Edit Attributes' link.
5. And to save these changes, click on 'Save' button.

11.2.28 EDIT ATTRIBUTES

This link is related to 'Edit' and 'Create' links. And this functionality can be used only if user want to edit attributes of a feature through 'Edit Attributes' tool in 'Edit' link or when user want to create a new feature. The two uses of this functionality are described below:

When user creates a new feature under any layer, if user clicks on ‘Edit Attributes’ link after successfully creating said feature, all the fields of the feature will be shown to user according to attribute fields of that layer. User can fill the attribute details of new feature here.

After completing the attribute filling, click on ‘Apply’ button and then click on ‘Save’ tool.

If mandatory fields are not filled, on clicking ‘Apply’ button these fields will be marked with pink color. The new feature will be saved with the attribute details.

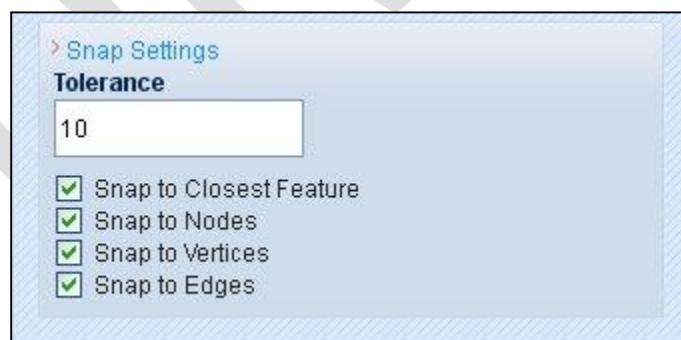
The other use of this functionality is to edit attributes of existing features:

1. To edit attributes, select the feature first by ‘Select’ tool.
2. Click on ‘Edit Attributes’ tool.
3. Click on that feature. Attributes of that feature will be shown in left panel in ‘Edit Attributes’ link.
4. Edit desired fields then click on ‘Apply’ button.
5. Click on ‘Save’ tool to save all these changes.

11.2.29 SNAP SETTINGS

Snap Settings functionality allows user to avoid gaps and overlaps while creating features or reshaping a feature. To activate the snap functionality the features should be in selected mode to those a new feature or an editing feature going to be snapped. Click on the ‘Snap Settings’ and applications shows a ‘Tolerance’ spin box where user can set (decrease/increase) the tolerance for snapping. Below this, four options are available with checkbox as shown in figure 85. The list of options is:

- Snap to Closest Feature
- Snap to Nodes
- Snap to Vertices
- Snap to Edges



By default all these four options are marked.

User can set the options according to his preferences. If user wants to snap on larger tolerance, increase the tolerance value for snapping in the spin box.

1. First of the four options is to deactivate all other snap settings. If user un-marks the check box of 'Snap to Closest Feature' check box, all the check boxes will be unmarked.
2. 'Snap to Nodes' is used to snap to nodes of nearest line feature under specified tolerance.
3. 'Snap to Vertices' can be used to snap to the vertices of a feature under given tolerance.
4. 'Snap to Edges' allows user to snap to edges of nearest feature under the specified tolerance.
5. To remove snapping, either set the tolerance at 0 or unmark the check box of 'Snap to Closest Feature'.

12. LAND RECORDS DASHBOARD

This functionality facilitates user to view all the data of Land Rights information for the selected project. Dashboard provides a consolidated view of the land rights data collected in the field and also enable the user to take further review and approval actions on it.

'Land Records' tab provides a search facility that enables user to search a spatial record based on its 'USIN ID', 'UKA ID', 'Status', 'From' and 'To' dates.

User can take following actions on a particular land data record by clicking on respective icon for that particular action in front of the record.

- Generate UKA
- Update Hamlet
- Edit Attributes
- Approve Status
- Reject Status
- Adjudicate Spatial Attribute
- Show on map
- Finalize Data
- Upload Document
- Generate Adjudication Form
- Generate CCRO Certification

Steps:

1. Login into the system with role as 'Administrator / Project Manager'. Click on 'Launch' link available in 'Data Management' section.
2. 'Land Management Tools' page will be displayed. Click on 'Land Records' tab.

I2.I SEARCH LAND RECORD

'Land Records' tab provides a search facility that facilitates user to search a spatial record based on its 'USIN ID', 'UKA ID', 'Status', and Date (From' and 'To').

Welcome admin | Logout

Mobile Application to Secure Tenure (MAST) Data Management Infrastructure

The screenshot shows a web-based application for managing land records. At the top, there's a toolbar with various icons for search, edit, and data management. Below the toolbar, a navigation bar has tabs for 'Map' and 'Land Records', with 'Land Records' being the active tab. A red box highlights the 'Land Records' tab. To the right of the tabs, a 'Project Details' section is shown, also enclosed in a red box. This section contains fields for 'Project Name' (Itagutwa_Live), 'Country' (Tanzania), 'Region' (Kilimanjaro), 'District' (Igunga), and 'Village' (Itagutwa). Below this, another red box highlights a search bar with fields for 'USIN ID', 'UKA ID', 'Status' (set to 'Please Select'), 'From', 'To', and 'Search' buttons. The main content area features a table with columns for USIN, UKA, Hamlet Name, Status, Collector, Date, and Actions. Two rows of data are listed: one for USIN 000001068 (Hamlet Name Itagutwa, Status New, Collector Live_TI, Date 2015-11-06) and one for USIN 000001067 (Hamlet Name Itagutwa, Status New, Collector Live_TI, Date 2015-11-06). The 'Actions' column for both rows contains several icons: a red-bordered box highlights the first four icons (UH, EA, a checkmark, and a crossed-out circle). To the right of the table, a tooltip says 'Possible actions on Land Record'. At the bottom, there's a navigation footer with page numbers 1, 2, and 2.

Steps:

- I. Enter valid input in any of the corresponding input option like 'USIN ID', 'UKA ID', 'Status', and Date (From' and 'To').

Map	Land Records			
Project Name Itagutwa_Live	Country Tanzania	Region Kilimanjaro	District Igunga	Village Itagutwa
USIN ID 1068	UKA ID <input type="text"/>	Status <input type="button" value="Please Select"/> <input type="button" value="▼"/>	From <input type="text"/>	To <input type="text"/>
			<input type="button" value="Search"/>	<input type="button" value="Clear"/>

2. Click on Search button.

The screenshot shows a search interface for land records. At the top, there are dropdowns for Project Name (Itagutwa_Live), Country (Tanzania), Region (Kilimanjaro), District (Igunga), and Village (Itagutwa). Below these are input fields for USIN ID (1068) and UKA ID, and dropdowns for Status (Please Select), From, and To. A red box highlights the 'Search' button. Below the search bar is a grid table with columns: USIN, UKA, Hamlet Name, Status, Collector, Date, and Actions. The grid shows one record: USIN 000001068, Hamlet Name Itagutwa, Status New, Collector Live_TI, Date 2015-11-06, and Actions with icons for UH, EA, checkmark, X, edit, delete, upload, and CCRO. A red box highlights the USIN field. At the bottom right of the grid is a 'Generate UKA' button. Navigation buttons at the bottom include back, forward, page number (1), total pages (To 1), and a 'Of 1' indicator.

3. Search result will be populated in grid.

4. Click on 'Clear' button, Search result will be clear from the grid and all available records will be populated.

12.2 ACTIONS ON LAND RECORDS

This functionality facilitates user to view all the data of Land Rights information for the selected project. Dashboard provides a consolidated view of the land rights data collected in the field and also enable the user to take further review and approval actions on it.

User can take following actions on a particular land data record by clicking on respective icon for that particular action in front of the record.

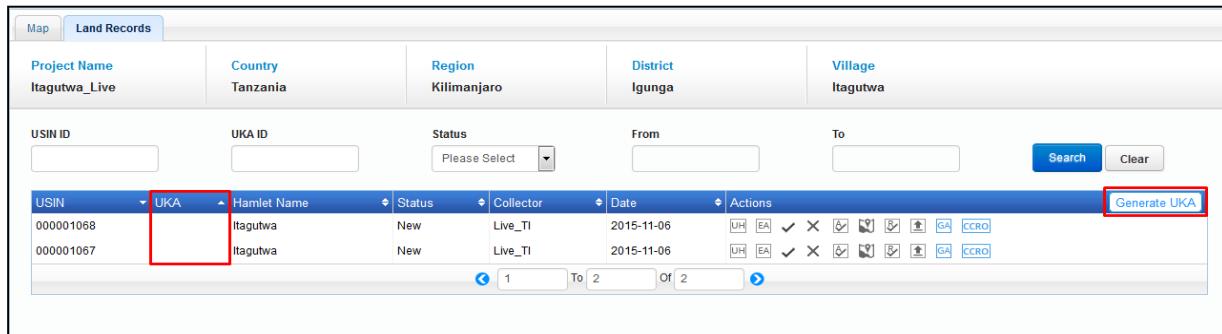
- Generate UKA
- Update Hamlet
- Edit Attributes
- Approve Status
- Reject Status
- Adjudicate Spatial Attribute
- Show on map
- Finalize Data
- Upload Document
- Generate Adjudication Form
- Generate CCRO Certification

12.2.1 GENERATE UKA

'Generate UKA' tool facilitates user to generate 'UKA' number of parcel which don't have assigned UKA.

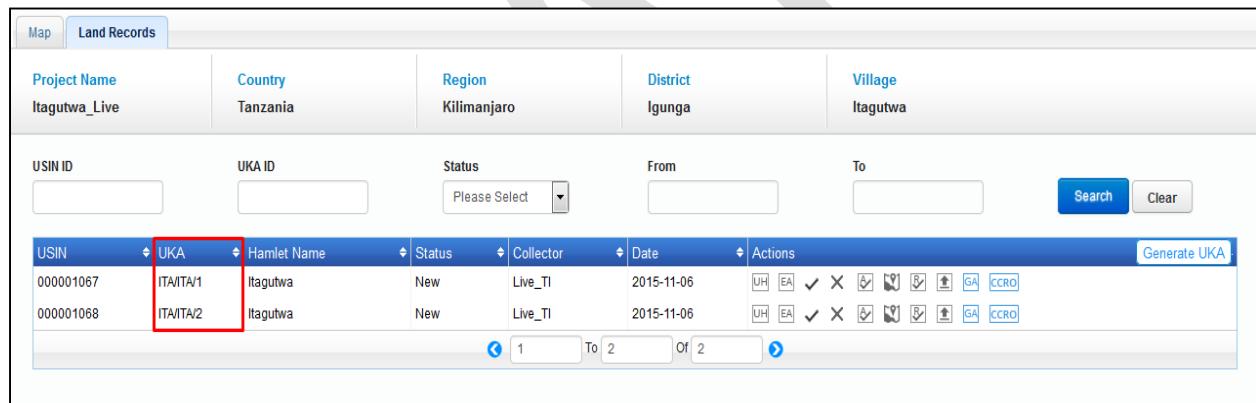
Steps:

- Click on 'Generate UKA' button available on left top of grid.



This screenshot shows the 'Land Records' section of the application. At the top, there are dropdown menus for Project Name (Itagutwa_Live), Country (Tanzania), Region (Kilimanjaro), District (Igunga), and Village (Itagutwa). Below these are search fields for USIN ID and UKA ID, and dropdowns for Status (Please Select) and Collector. There are also 'From' and 'To' search fields. A 'Search' button and a 'Clear' button are located on the right. The main area is a grid table with columns: USIN, UKA, Hamlet Name, Status, Collector, Date, and Actions. Two rows are visible: one for USIN 000001068 with Hamlet Name Itagutwa, Status New, Collector Live_TI, Date 2015-11-06, and one for USIN 000001067 with Hamlet Name Itagutwa, Status New, Collector Live_TI, Date 2015-11-06. The 'Actions' column contains icons for various operations. A red box highlights the 'Generate UKA' button at the top right of the grid. The grid shows two rows of data.

- Application will update 'UKA Number' for parcels which don't have UKA no. and same will be displayed in parcel details available in grid.



This screenshot shows the same 'Land Records' section after the 'Generate UKA' process has been completed. The grid now displays updated UKA numbers for the parcels. The first row for USIN 000001067 now has Hamlet Name ITA/ITA/1 and UKA ITA/ITA/1. The second row for USIN 000001068 now has Hamlet Name Itagutwa and UKA ITA/ITA/2. All other fields remain the same as in the previous screenshot. A red box highlights the 'Generate UKA' button again, indicating it has been used. The grid now shows two rows of updated data.

12.2.2 UPDATE HAMLET

'Update Hamlet' tool facilitates user to update hamlet of spatial unit.

Steps:

12.2.2.1.1.1.1 Click on 'Update Hamlet' option associated to corresponding parcel.

Project Name	Country	Region	District	Village
14_October	Tanzania	Kilimanjaro	Igunga	Itagutwa

USIN ID	UKA ID	Status	From	To	Action Buttons	
		Please Select			<input type="button" value="Search"/> <input type="button" value="Clear"/>	
USIN	UKA	Hamlet Name	Status	Collector	Date	Actions
000001057	ITA/ITA_HAM_3/3	ITA_HAM_3	New	Live_Tl	2015-10-24	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/> <input type="button" value="Update Hamlet"/>
000001056	ITA/ITA_HAM_2/6	ITA_HAM_2	New	Live_Tl	2015-10-23	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>
000001055	ITA/ITA_HAM_2/9	ITA_HAM_2	Approved	Live_Tl	2015-10-22	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>
000001054	ITA/ITA_HAM_2/8	ITA_HAM_2	New	Live_Tl	2015-10-23	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>
000001053	ITA/ITA_HAM_2/7	ITA_HAM_2	New	Live_Tl	2015-10-15	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>
000001051	ITA/ITA_HAM_1/5	ITA_HAM_1	New	Live_Tl	2015-10-14	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>
000001050	ITA/ITA_HAM_3/2	ITA_HAM_3	New	Live_Tl	2015-10-14	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>
000001049	ITA/ITA_HAM_2/2	ITA_HAM_2	New	Tl_1310	2015-10-13	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>
000001048	ITA/ITA_HAM_1/1	ITA_HAM_1	New	Tl_1310	2015-10-11	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>
000001047	ITA/ITA_HAM_3/4	ITA_HAM_3	New	Live_Tl	2015-10-12	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>

'Update Hamlet Name' dialogue will be displayed with 'Hamlet Name' dropdown that consist of list of available Hamlets, current hamlet will be available in dropdown.

Project Name	Country	Region	District	Village
14_October	Tanzania	Kilimanjaro	Igunga	Itagutwa

USIN ID	UKA ID	Status	From	To	Action Buttons
USIN	UKA	Hamlet Name	Status	Actions	<input type="button" value="Generate UKA"/>
000001057	ITA/ITA_HAM_3/3	ITA_HAM_3	New	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>	
000001056	ITA/ITA_HAM_2/6	ITA_HAM_2	New	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>	
000001055	ITA/ITA_HAM_2/9	ITA_HAM_2	Approved	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>	
000001054	ITA/ITA_HAM_2/8	ITA_HAM_2	New	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>	
000001053	ITA/ITA_HAM_2/7	ITA_HAM_2	New	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>	
000001051	ITA/ITA_HAM_1/5	ITA_HAM_1	New	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>	
000001050	ITA/ITA_HAM_3/2	ITA_HAM_3	New	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>	
000001049	ITA/ITA_HAM_2/2	ITA_HAM_2	New	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>	
000001048	ITA/ITA_HAM_1/1	ITA_HAM_1	New	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>	
000001047	ITA/ITA_HAM_3/4	ITA_HAM_3	New	<input type="button" value="UH"/> <input type="button" value="EA"/> <input checked="" type="checkbox"/> <input type="button" value="X"/> <input type="button" value="S"/> <input type="button" value="D"/> <input type="button" value="L"/> <input type="button" value="G"/> <input type="button" value="CCRO"/>	

I2.2.2.1.1.1.2 Select the required hamlet name in dropdown, click on ‘Update’ button. Application will update hamlet for corresponding spatial unit and an acknowledgement message will be displayed.

The screenshot shows the 'Land Records' tab of a software application. At the top, there are project details: Project Name (14_October), Country (Tanzania), Region (Kilimanjaro), District (Igunga), and Village (Itagutwa). Below this is a search bar with fields for USIN ID, UKA ID, Status (Please Select), From, To, and buttons for Search and Clear. A table lists spatial units (USIN) with columns for UKA, Hamlet Name, Status, Collector, Date, and Actions. One row is selected, showing USIN 000001057 with Hamlet Name ITA_ITA_HAM_1/7. A modal dialog box titled 'Hamlet' displays the message 'Data Successfully saved' with an 'OK' button. The 'Actions' column for this row contains icons for edit, delete, and other operations, with the edit icon highlighted by a red box. The entire 'Actions' column for the selected row is also highlighted with a red box.

USIN	UKA	Hamlet Name	Status	Collector	Date	Actions
000001057	ITA/ITA_HAM_1/7	ITA_HAM_1	New	Live_Tl	2015-10-23	
000001056	ITA/ITA_HAM_2/6	ITA_HAM_2	New	Live_Tl	2015-10-15	
000001055	ITA/ITA_HAM_2/9	ITA_HAM_2	New	Live_Tl	2015-10-14	
000001054	ITA/ITA_HAM_2/8	ITA_HAM_2	New	Live_Tl	2015-10-14	
000001053	ITA/ITA_HAM_2/7	ITA_HAM_2	New	Live_Tl	2015-10-11	
000001051	ITA/ITA_HAM_1/5	ITA_HAM_1	New	Live_Tl	2015-10-14	
000001050	ITA/ITA_HAM_3/2	ITA_HAM_3	New	Live_Tl	2015-10-14	
000001049	ITA/ITA_HAM_2/2	ITA_HAM_2	New	Tl_1310	2015-10-13	
000001048	ITA/ITA_HAM_1/1	ITA_HAM_1	New	Tl_1310	2015-10-11	
000001047	ITA/ITA_HAM_3/4	ITA_HAM_3	New	Live_Tl	2015-10-12	

I2.2.3 EDIT ATTRIBUTES

‘Edit Attribute’ Tool facilitates user to edit land rights attributes of spatial units. User can select a ‘Edit Attribute’ tool associated with record and can directly view/edit attribute information of existing spatial units.

Steps:

1. Click on ‘Edit Attribute’ option associated to corresponding parcel details.

The screenshot shows the 'Land Records' tab of a software application. At the top, there are project details: Project Name (Itagutwa_Live), Country (Tanzania), Region (Kilimanjaro), District (Igunga), and Village (Itagutwa). Below this is a search bar with fields for USIN ID, UKA ID, Status (Please Select), From, To, and buttons for Search and Clear. A table lists spatial units (USIN) with columns for UKA, Hamlet Name, Status, Collector, Date, and Actions. The first row is selected, showing USIN 000001067 with Hamlet Name Itagutwa. The 'Actions' column for this row contains icons, with the 'Edit Attributes' icon highlighted by a red box. The entire 'Actions' column for the selected row is also highlighted with a red box.

USIN	UKA	Hamlet Name	Status	Collector	Date	Actions
000001067	ITA/ITA/1	Itagutwa	New	Live_Tl	2015-11-06	
000001068	ITA/ITA/2	Itagutwa	New	Live_Tl	2015-11-06	

2. ‘Edit Attributes’ dialogue will be displayed with tabs- ‘General Info’, ‘Natural Person’, ‘Non Natural Person’, ‘Person of Interest’, ‘Deceased Person’, ‘Tenure Info’ and Multimedia. By default, ‘General Tab’ will be selected.

Edit Attribute

General Info	Natural Person	Person of Interest	Deceased Person	Tenure Info	Multimedia
Spatial Unit Id 000001067	Project Name Itagutwa_Live				
Number of Household <input type="text" value="0"/>	Geometry type <input type="text" value="Polygon"/>				
Existing Use <input type="text" value="Agriculture"/>	Proposed Use <input type="text" value="Settlement"/>				
Quality of Soil <input type="text" value="Please Select"/>	Slope <input type="text" value="Please Select"/>				
Land Type <input type="text" value="Flat/Plain"/>	Captured Date <input type="text" value="2015-11-06"/>				
Address 1 <input type="text"/>	Address 2 <input type="text"/>				
<input type="button" value="Update Attributes"/> <input type="button" value="Cancel"/>					

UPDATE GENERAL INFO

This tab facilitates user to update General info of a specified parcel.

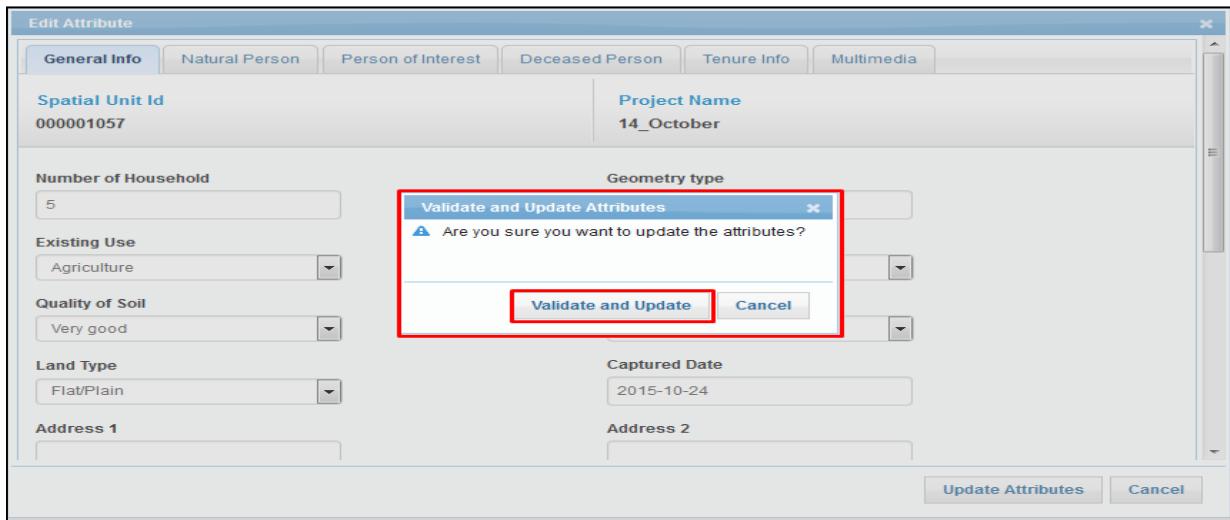
Steps:

1. Click on 'Edit Attribute' option associated to corresponding parcel details.
2. 'Edit Attributes' dialogue will be displayed. By default, 'General Tab' will be selected.

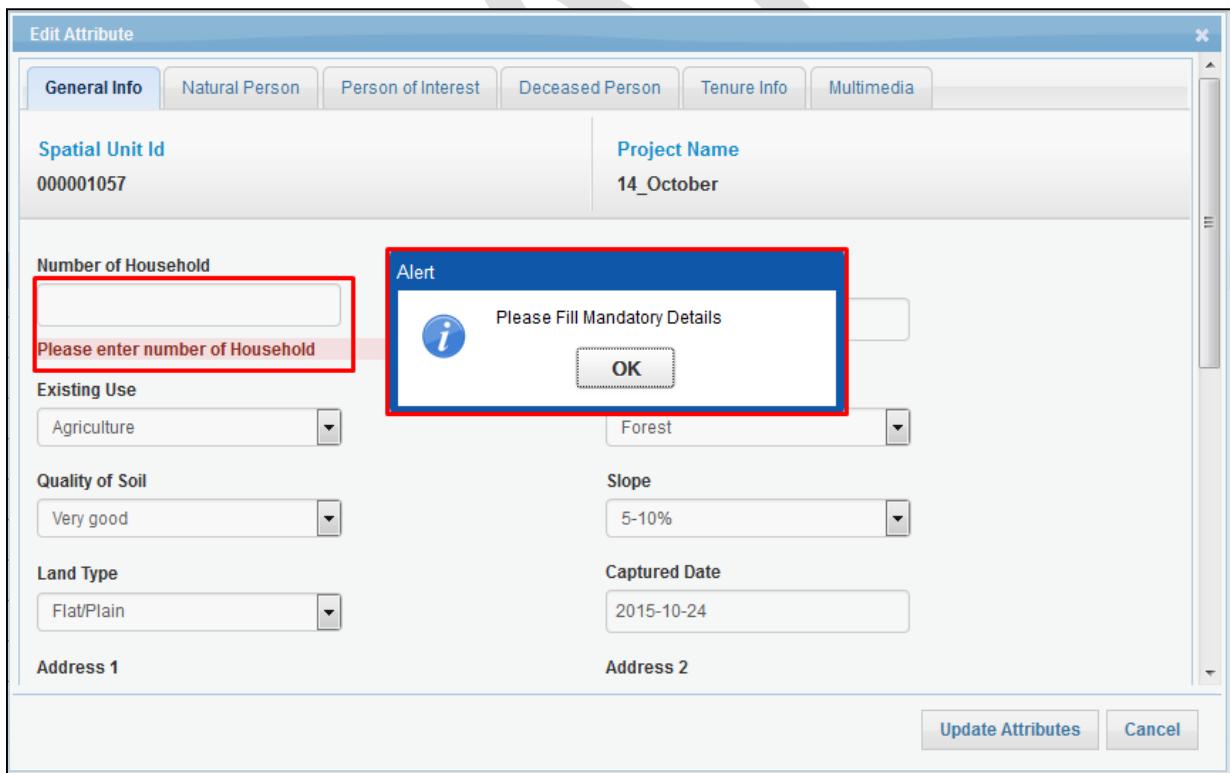
Edit Attribute

General Info	Natural Person	Person of Interest	Deceased Person	Tenure Info	Multimedia
Spatial Unit Id 000001057	Project Name 14_October				
Number of Household <input type="text" value="0"/>	Geometry type <input type="text" value="Point"/>				
Existing Use <input type="text" value="Forest"/>	Proposed Use <input type="text" value="Agriculture"/>				
Quality of Soil <input type="text" value="Please Select"/>	Slope <input type="text" value="Please Select"/>				
Land Type <input type="text" value="Flat/Plain"/>	Captured Date <input type="text" value="2015-10-24"/>				
Address 1 <input type="text"/>	Address 2 <input type="text"/>				
<input type="button" value="Update Attributes"/> <input type="button" value="Cancel"/>					

3. Corresponding attribute details of specified parcel will be available in edit mode. Edit the required details and click on 'Update Attribute' button. Application will display a confirmation message.



4. Click on 'Validate and Update' button, Application will validate the data, if any validation error is encountered, appropriate message will be displayed.



5. If no validation error occurs, application will save the edited details and will display an acknowledgement message.

The screenshot shows the 'Land Records' tab of a software interface. At the top, there are dropdown menus for 'Project Name' (14_October), 'Country' (Tanzania), 'Region' (Kilimanjaro), 'District' (Igunga), and 'Village' (Itagutwa). Below these are search fields for 'USIN ID' and 'UKA ID', and dropdowns for 'Status' (Please Select) and 'From' and 'To' dates. A 'Search' button and a 'Clear' button are also present. The main area contains a table titled 'Validation Info' with a message 'Data successfully validated' and an 'OK' button. The table lists 11 rows of data with columns: USIN, UKA, Hamlet Name, Status, Type, Date, and Actions (with icons for EA, X, V, S, D, GA, CCRO). A 'Generate UKA' button is located at the top right of the table area.

UPDATE NATURAL PERSON DETAIL

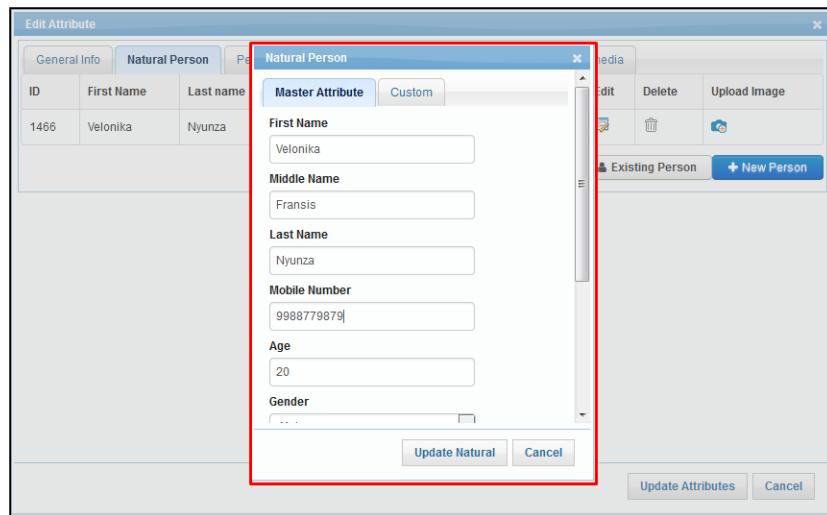
This tab facilitates user to update natural person's details of a specified parcel.

Steps:

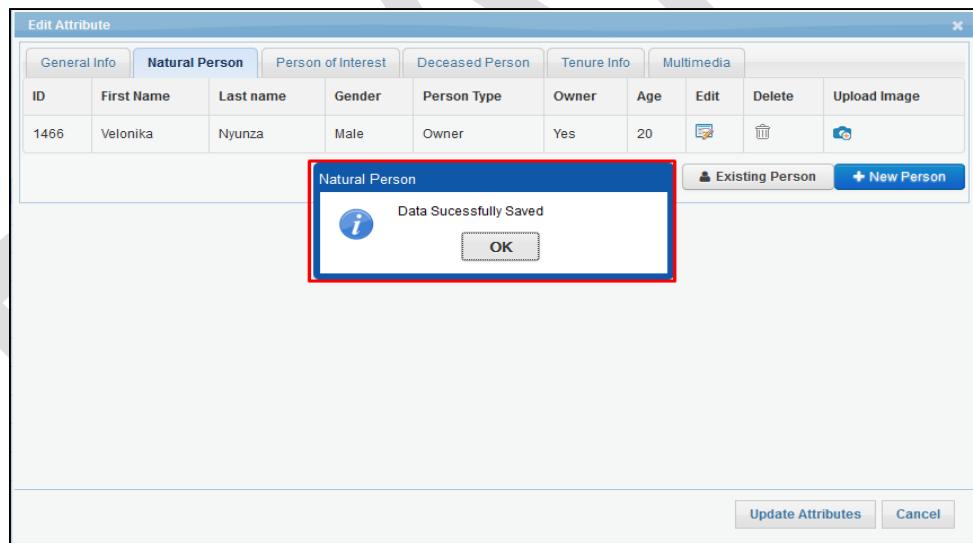
1. Click on 'Edit Attribute' option associated to corresponding parcel details.
2. 'Edit Attributes' dialogue will be displayed with tabs- 'General Info', 'Natural Person', 'Non Natural Person', 'Tenure Info' and Multimedia. By default, 'General Tab' will be selected.
3. Click on 'Natural Person' tab, corresponding attribute details of specified parcel will be displayed in grid along with 'Edit' and 'Delete' and 'Upload Image' options. There will be options to add existing person or add a new person.

The screenshot shows the 'Edit Attribute' dialog box. At the top, there are tabs: General Info, Natural Person (which is selected and highlighted in red), Person of Interest, Deceased Person, Tenure Info, and Multimedia. Below the tabs is a table with columns: ID, First Name, Last name, Gender, Person Type, Owner, Age, Edit, Delete, and Upload Image. A row in the table shows ID 1466, First Name Velonika, Last name Nyunza, Gender Male, Person Type Owner, Owner Yes, Age 20, and buttons for Edit (highlighted in red), Delete (highlighted in red), and Upload Image. At the bottom of the dialog are buttons for Existing Person, New Person, Update Attributes, and Cancel.

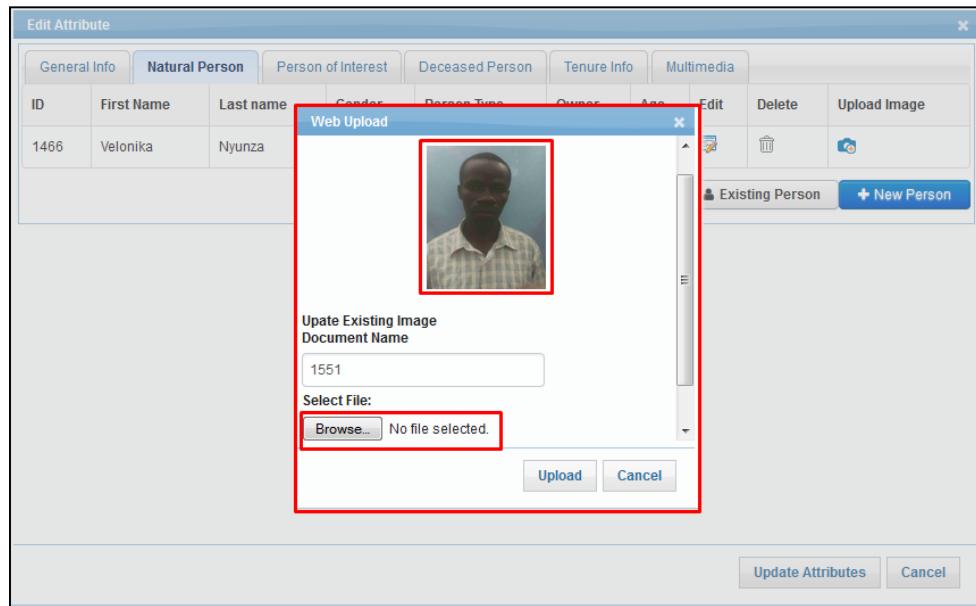
4. Click on 'Edit' option, 'Natural Person' dialogue will be displayed with 'Master Attributes' and 'Custom' tabs and 'Update Natural' button. Corresponding details will be available in edit mode.



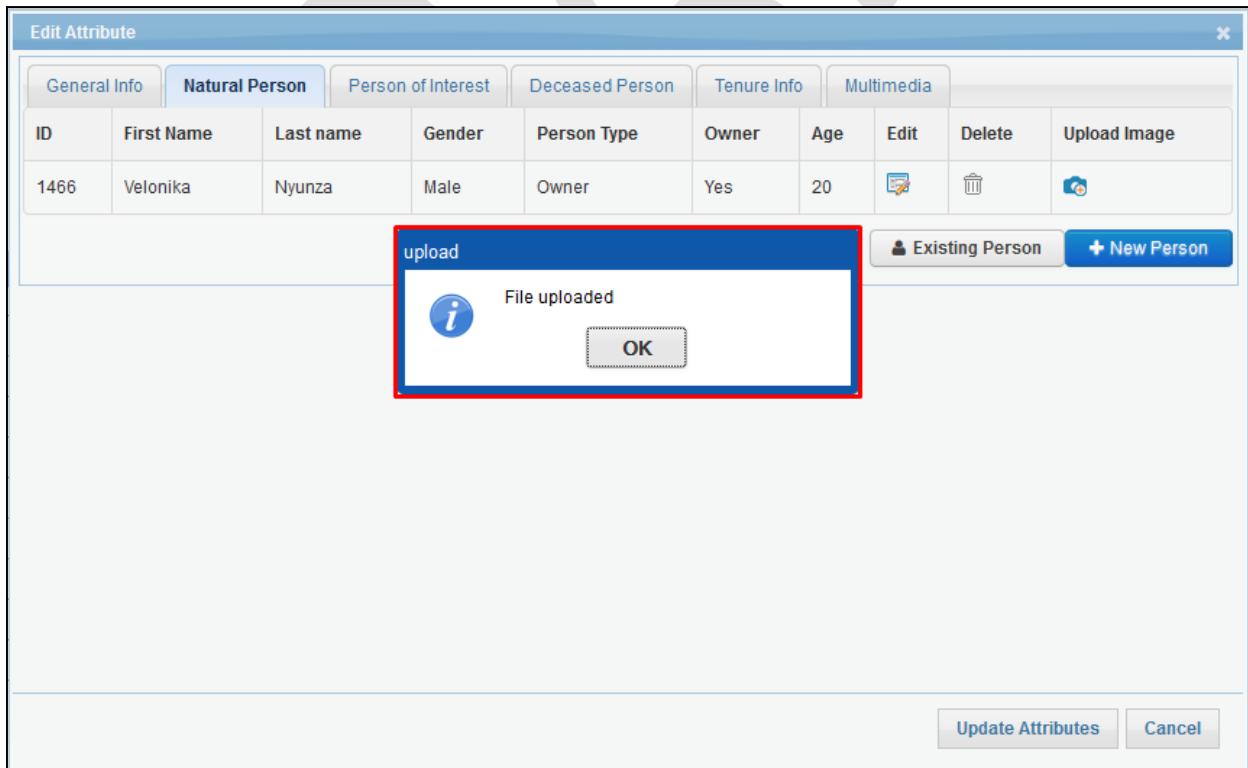
5. Edit the required details and click on 'Update Natural' button. Application will save the edited details and will display an acknowledge message.



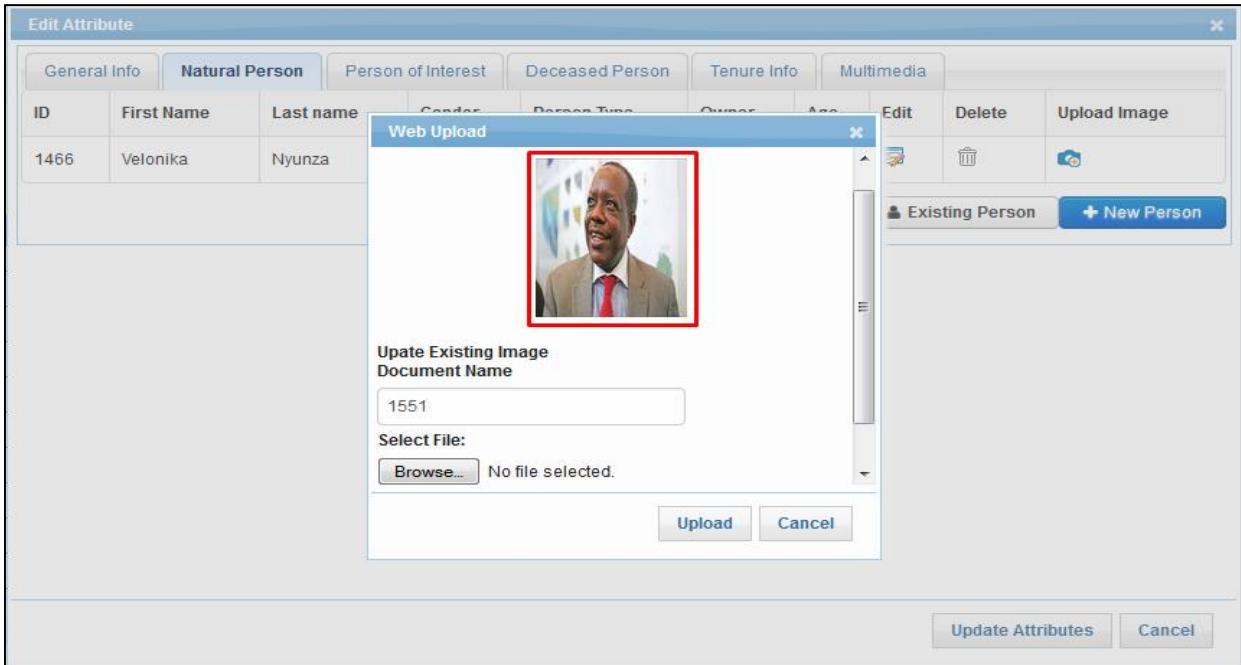
6. To upload image of corresponding person, click on ‘Upload Image’ option. Application will display current available image with browse option.



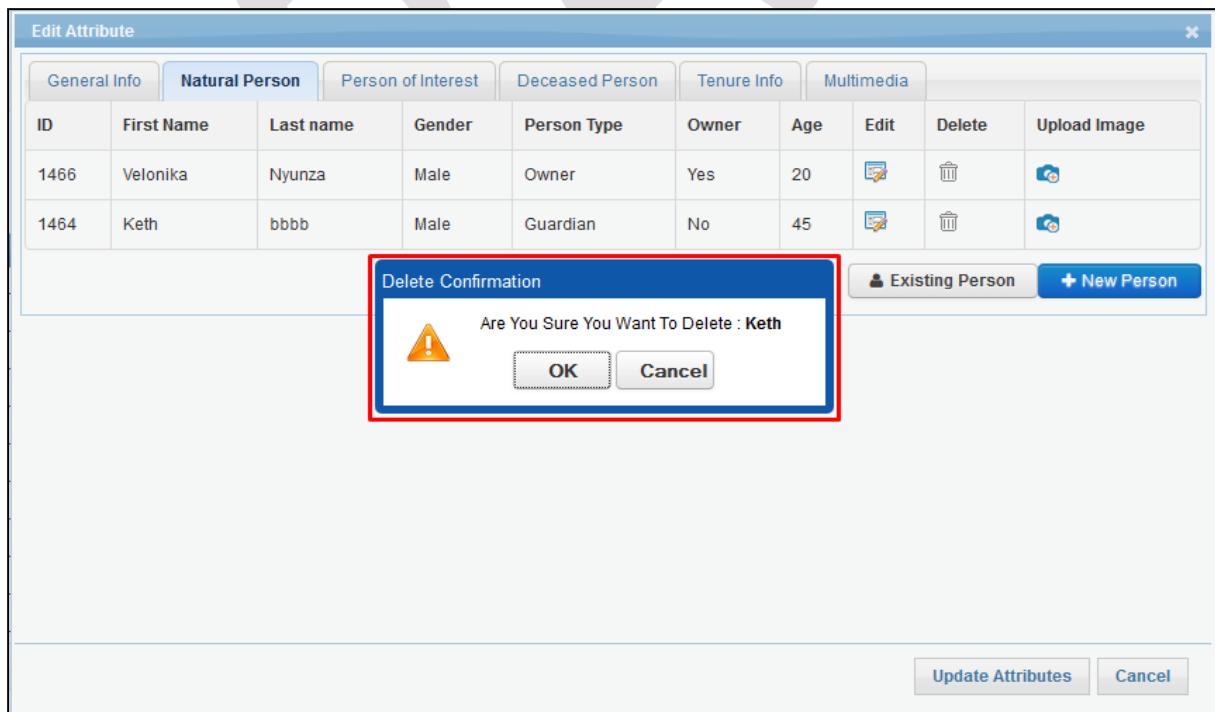
7. Locate required image and click on ‘Upload’ button. Application will upload new image and an acknowledgement message will be displayed.



8. Click on 'Upload Image' option. Application will display newly uploaded image.



9. If more than one person exist, User can delete the record of any person, click on 'Delete' option, Application will display a confirmation message.



10.Click on ‘OK’ button, Application will delete specified natural person. Corresponding details will be removed from the grid and an acknowledgement message will be displayed.

Existing Person:

ID	First Name	Last name	Gender	Person Type	Owner	Age	Edit	Delete	Upload Image
1466	Velonika	Nyunza	Male	Owner	Yes	20			

✖ Existing Person + New Person

Update Attributes Cancel

‘Existing Person’ facilitates user to associate person with spatial unit who has been deleted previously.

Steps:

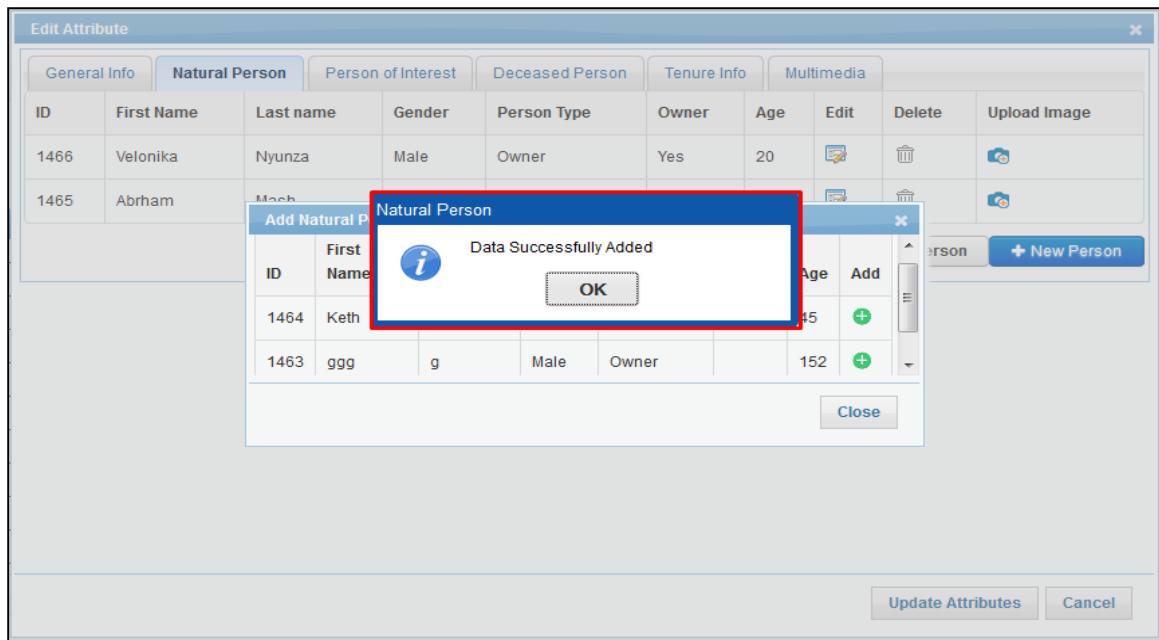
12.2.3.1.1.1.1 Click on ‘Existing Person’ button, ‘Add Natural Person’ dialogue will be displayed with details of available persons along with ‘Add Person’ option.

ID	First Name	Last name	Gender	Person Type	Owner	Age	Add
1464	Keith	bbbb	Male	Guardian	No	45	
1465	Abrahm	Mash	Male	Administrator	No	55	

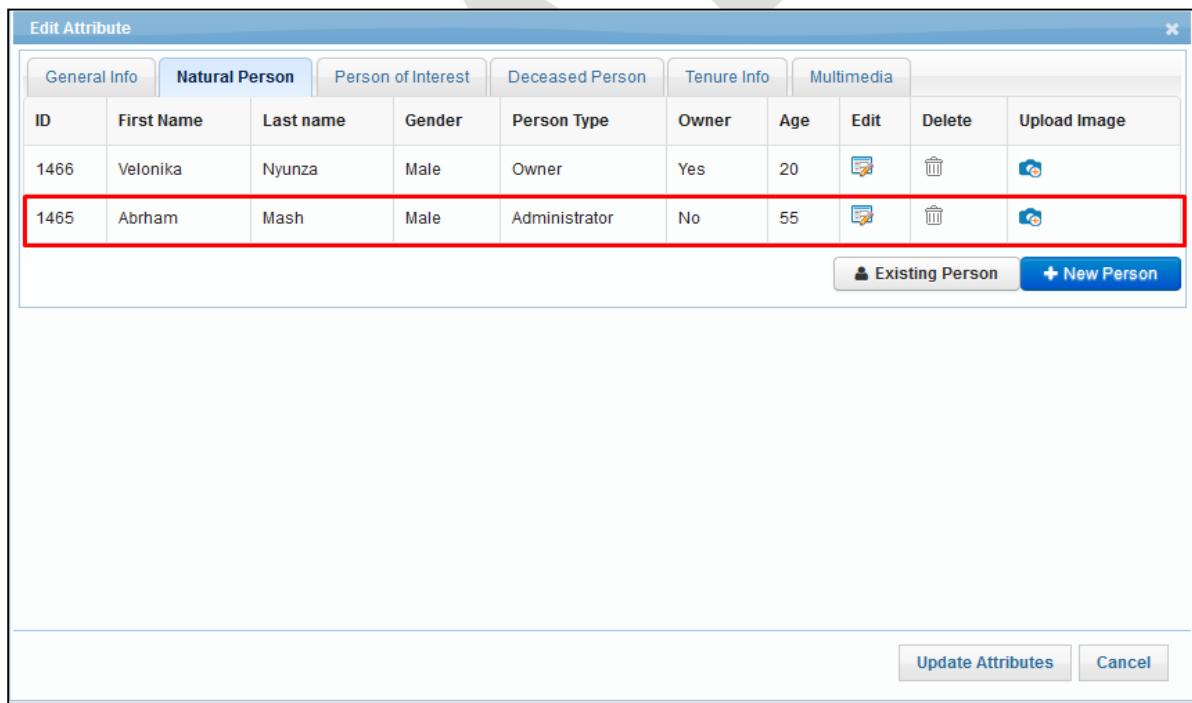
✖ PERSON + New Person

Close Update Attributes Cancel

12.2.3.1.1.1.2 Click on ‘Add Person’ option associated with person details. Application will associate that person with spatial unit and an acknowledgement message will be displayed.



I2.2.3.1.1.1.3 Selected person will become available in ‘Natural Person’ tab.



+New Person:

'Add New Person' facilitates user to add new person and associate person with spatial unit.

Steps:

1. Click on '+New Person' button, 'Natural Person' dialogue will be displayed.
2. Enter valid values in mandatory fields and click on 'Save' button.

The screenshot shows the 'Edit Attribute' dialog with the 'Natural Person' tab selected. The 'Master Attribute' tab is active. The form contains fields for First Name, Middle Name, Last Name, Mobile Number, Age, and Gender. The 'First Name' field is populated with 'Musthpha'. The 'Last Name' field is populated with 'Hulk'. The 'Mobile Number' field contains '9988776354'. The 'Age' field contains '40'. The 'Gender' field has a dropdown menu open. At the bottom right of the form are 'Save' and 'Cancel' buttons. To the right of the form is a sidebar with 'Edit', 'Delete', and 'Upload Image' buttons, and a section for existing and new person management.

3. Details of person will be saved and will become available in 'Natural Person' tab.

The screenshot shows the 'Edit Attribute' dialog with the 'Natural Person' tab selected. The 'Tenure Info' section is highlighted with a red box and displays a success message: 'Data Sucessfully Saved' with an 'OK' button. Below this, the main table lists three person records. The first record (ID 1466) has values: First Name 'Velonika', Last name 'Nyunza', Gender 'Male', Person Type 'Owner', Owner 'Yes', and Age '20'. The second record (ID 1478) has values: First Name 'Musthpha', Last name 'Hulk', Gender 'Female', Person Type 'Tenant', Owner 'No', and Age '20'. The third record (ID 1465) has values: First Name 'Abraham', Last name 'Mash', Gender 'Male', Person Type 'Owner', Owner 'Yes', and Age '20'. The table includes columns for ID, First Name, Last name, Gender, Person Type, Owner, Age, Edit, Delete, and Upload Image. At the bottom right are 'Update Attributes' and 'Cancel' buttons.

- Once editing in all tabs are done, Click on ‘Update Attributes’ button. Application will display a confirmation message. Click on ‘Validate and Update’ button, Application will validate the data, if any validation error is encountered, an appropriate message will be displayed. If no validation error occurs, application will save the edited details and will display an acknowledge message.

UPDATE NON-NATURAL PERSON

This tab facilitates user to update non natural person's details of a specified parcel.

Steps:

- Click on ‘Non Natural Person’ tab, corresponding attribute details of specified parcel will be displayed in grid along with ‘Edit’ and ‘Delete’ options.

ID	Institution Name	Address	Phone Number	Edit	Delete
1458	ghj	fghj	45		

Existing Person

- Click on ‘Edit’ option, ‘Non Natural Person’ dialogue will be displayed with ‘Master Attributes’ and ‘Custom’ tabs and ‘Update Non Natural’ button. Corresponding details will be available in edit mode.

ID	Institution Name
1458	ghj

Non Natural Person

Master Attribute **Custom**

Institution Name
Irringa School

Mobile No.
45

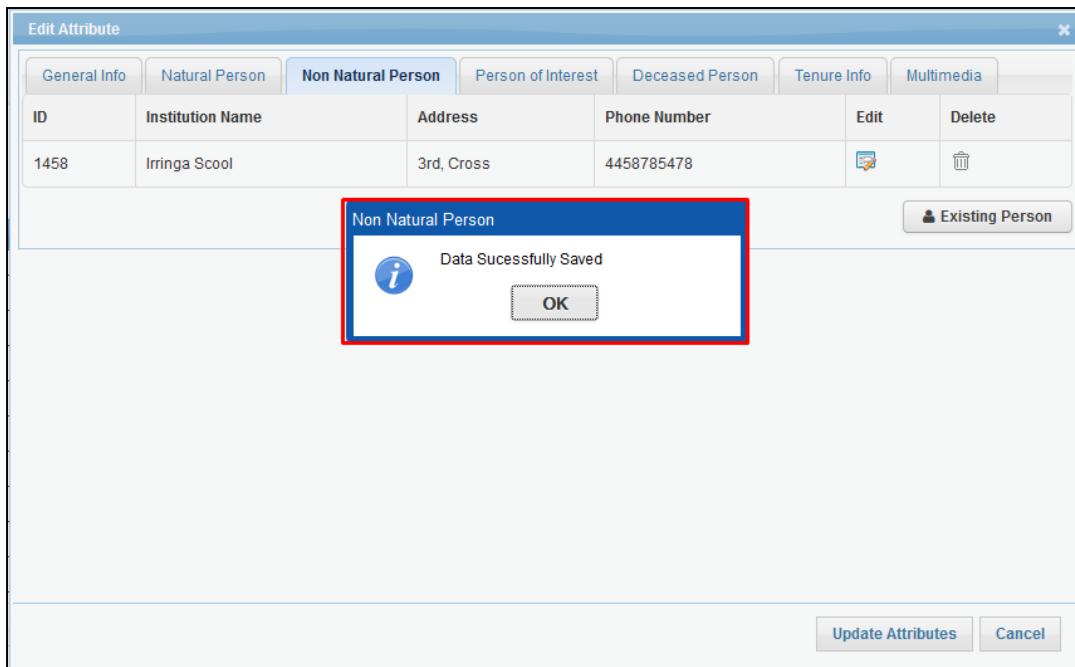
Address
3rd, Cross

Group Type
Civic

Update Non-Natural **Cancel**

Update Attributes **Cancel**

3. Edit the required details and click on 'Update Non Natural' button. Application will save the edited details and will display an acknowledge message.



4. To delete the record, click on 'Delete' option, Application will display a confirmation message.
5. Click on 'OK' button, Application will delete specified non natural person details and will display an acknowledgement message.

UPDATE PERSON OF INTEREST

This tab facilitates user to add/update person of interest for a specified parcel.

Steps:

- Click on ‘Person of Interest’ tab, Details of available persons will be displayed in grid along with ‘Edit’ and ‘Delete’ options. There will be an option to add new person of interest.

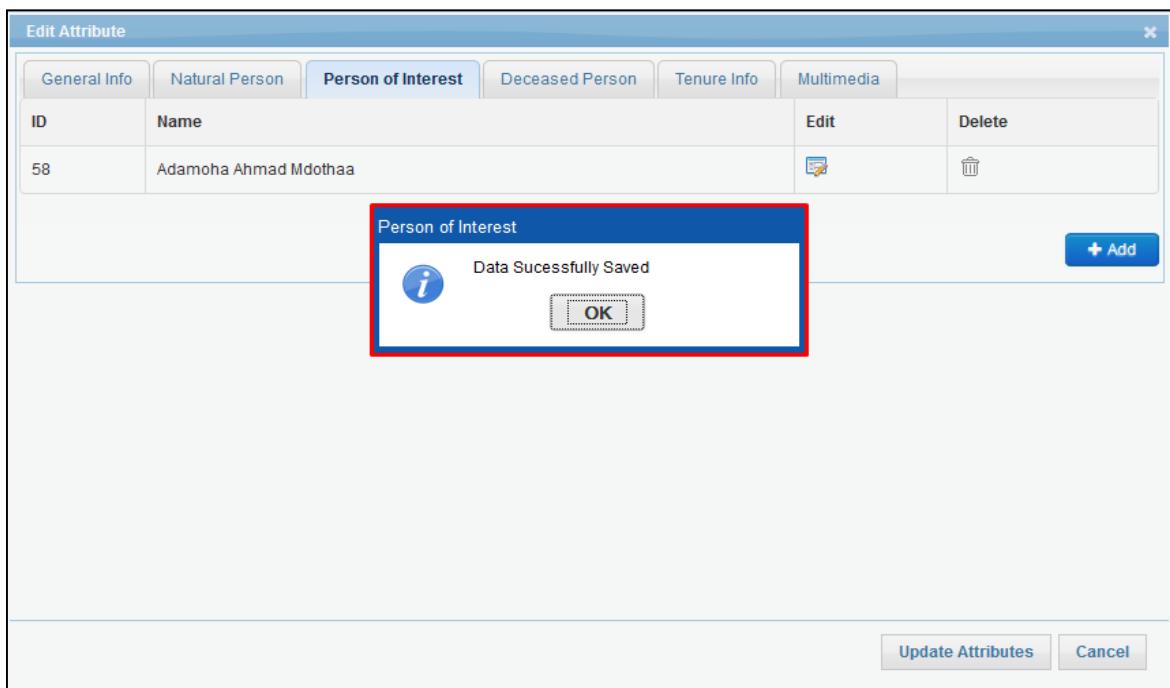
ID	Name	Edit	Delete
58	Adam Ahmad Mdotha		

- Click on ‘Edit’ option, ‘Person of Interest’ dialogue will be displayed. Details of corresponding person will be available in edit mode.

ID	Name	Edit	Delete
58	Adam Ahmad Mdotha		

- Edit the required details and click on ‘Update’ button. Application will save the edited details and will display an acknowledge message.

4. To delete the record, click on 'Delete' option, Application will display a confirmation message.
5. Click on 'OK' button, Application will delete specified person details and will display an acknowledgement message.

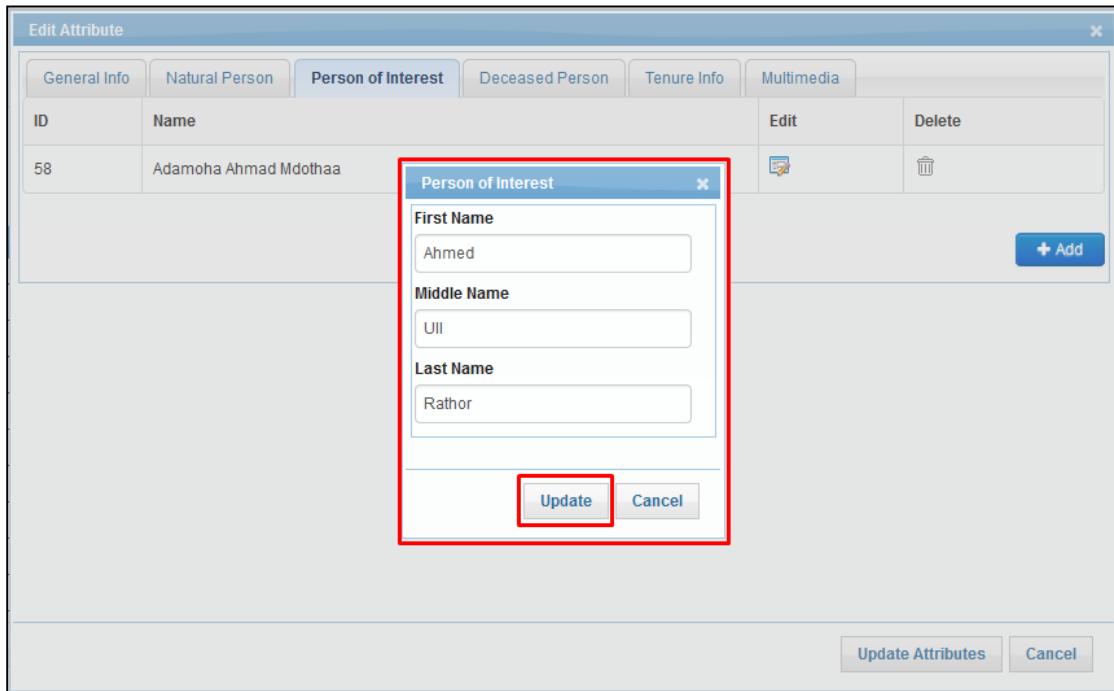


Add New Person of Interest:

This functionality allows a user to add a new person of interest for a specified parcel.

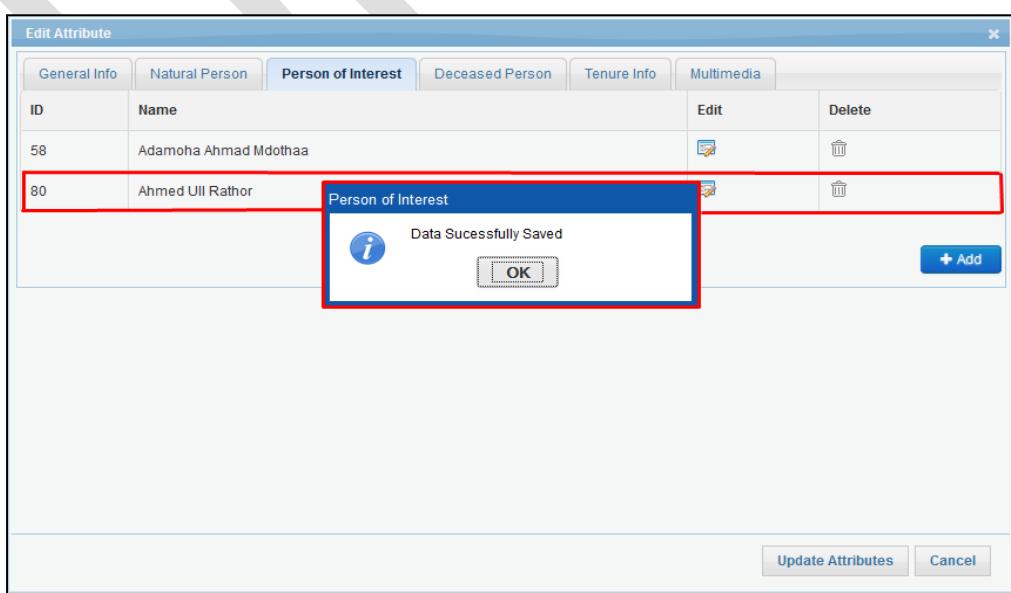
Steps:

- I2.2.3.I.I.1.4 Click on '+Add' button.
- I2.2.3.I.I.1.5 Application will display 'Person of Interest' dialogue.



- I2.2.3.I.I.1.6 Enter required values and click on 'Update' button.

- I2.2.3.I.I.1.7 New 'Person of Interest' will be added and will become available in grid.



UPDATE DECEASED PERSON

'Update Deceased Person' tab facilitates user to add/update details of deceased person.

Steps:

- I. Click on 'Deceased Per' tab, Details of available persons will be displayed in grid along with 'Edit' and 'Delete' options. There will be an option to add new deceased person.

ID	First Name	Middle Name	Last Name	Edit	Delete
14	Ulzhar	Omba	Ummar		

[+ Add](#)

2. Click on 'Edit' option, 'Deceased Person' dialogue will be displayed. Details of Corresponding person will be available in edit mode.

ID	First Name	Middle Name	Last Name	Edit	Delete
14	Ulzhar	Omba	Ummar		

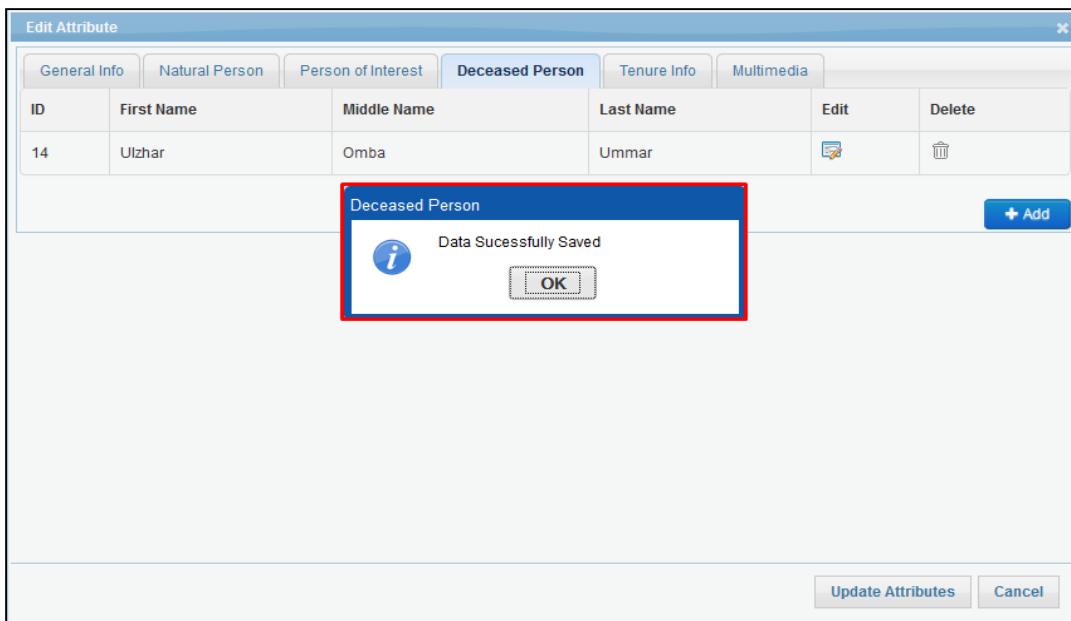
Deceased Person

First Name	<input type="text" value="Ulzhar"/>
Middle Name	<input type="text" value="Omba"/>
Last Name	<input type="text" value="Ummar"/>

[Update](#) [Cancel](#)

[Update Attributes](#) [Cancel](#)

3. Edit the required details and click on ‘Update’ button. Application will save the edited details and will display an acknowledge message.



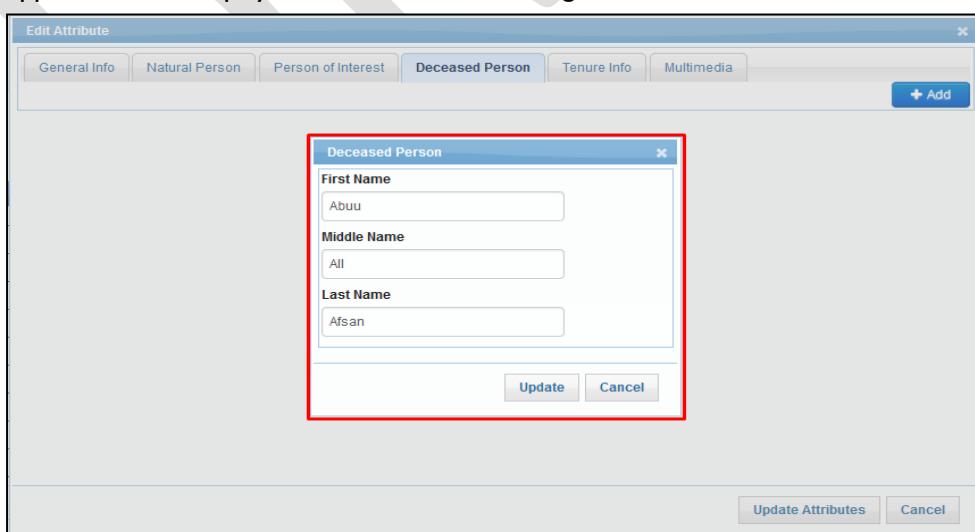
4. To delete the record, click on ‘Delete’ option, Application will display a confirmation message.
5. Click on ‘OK’ button, Application will delete specified person details and will display an acknowledgement message.

Add New Deceased Person:

‘+Add’ functionality facilitates user to add new deceased person if deceased person doesn’t exists.

Steps:

1. Click on ‘+Add’ button.
2. Application will display ‘Deceased Person’ dialogue.



3. Enter required values and click on ‘Update’ button.
4. ‘Deceased Person’ will be added and will become available in grid.

Edit Attribute

Edit Attribute						
General Info		Natural Person		Person of Interest		Deceased Person
ID	First Name	Middle Name	Last Name			Tenure Info
16	Abuu	All	Afsan			

Deceased Person

Data Sucessfully Saved

OK

+ Add

Update Attributes **Cancel**

UPDATE TENURE INFO

This tab facilitates user to update Tenure Info of a specified parcel.

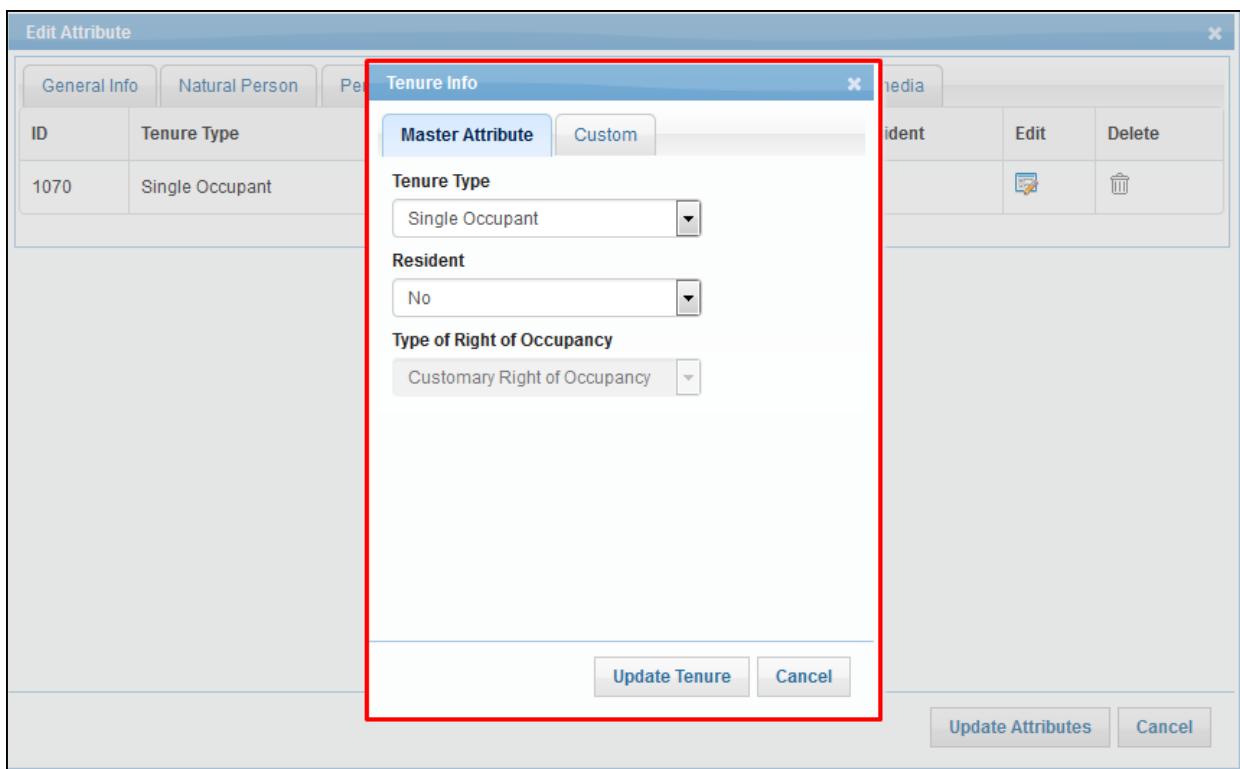
Steps:

1. Click on 'Tenure Info' tab, corresponding attribute details of specified parcel will be displayed in grid along with 'Edit' and 'Delete' options.

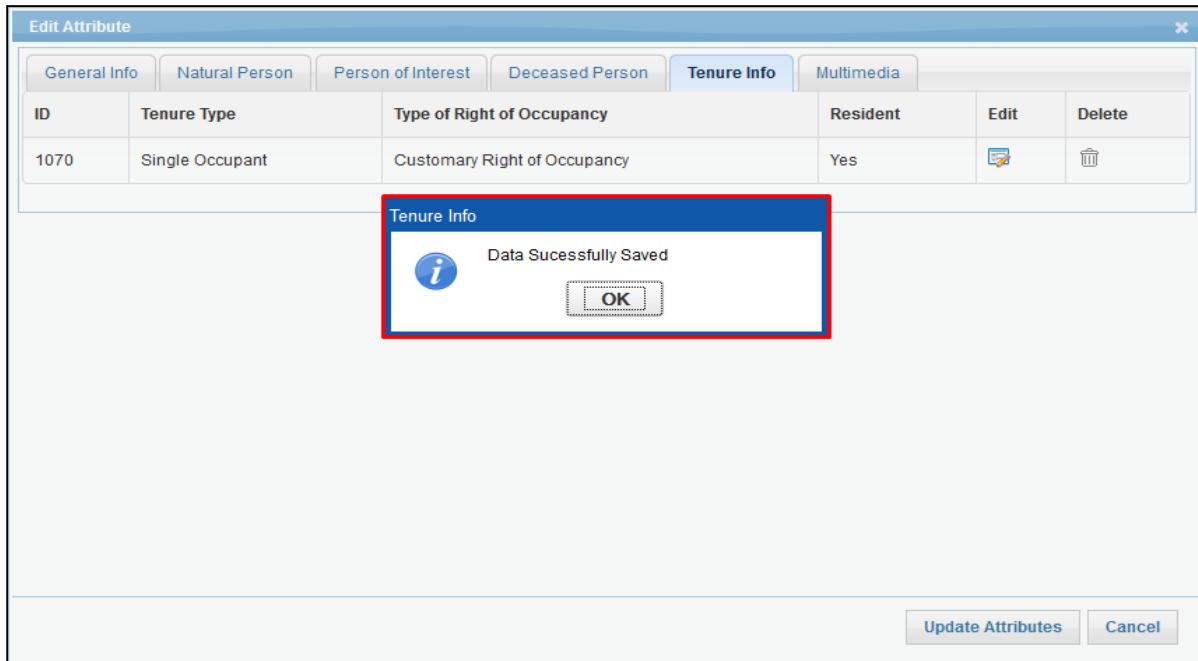
Edit Attribute

Edit Attribute						
General Info		Natural Person		Person of Interest		Deceased Person
Tenure Info				Multimedia		
ID	Tenure Type	Type of Right of Occupancy			Resident	Edit Delete
1070	Single Occupant	Customary Right of Occupancy			No	

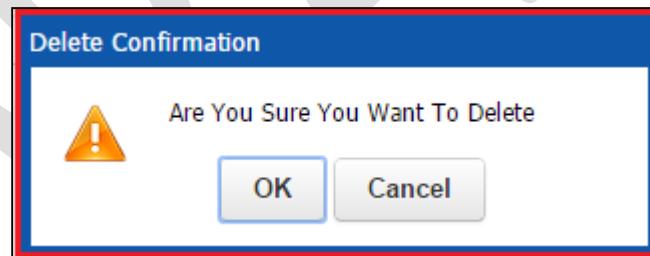
2. Click on 'Edit' option, 'Tenure Info' dialogue will be displayed with 'Master Attributes' and 'Custom' tabs and 'Update Tenure Info' button. Corresponding details will be available in edit mode.



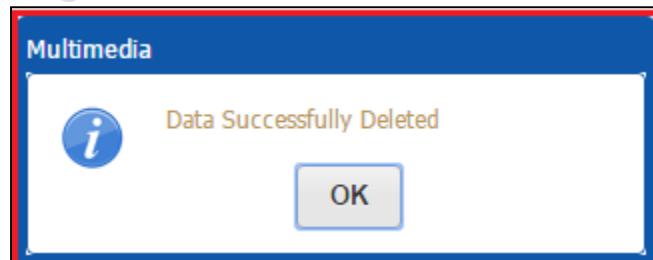
3. Edit the required details and click on ‘Update Tenure Info’ button. Application will save the edited details and will display an acknowledge message.



4. To delete the record, click on ‘Delete’ option, Application will display a confirmation message.



5. Click on ‘OK’ button, Application will delete specified tenure details and will display an acknowledgement message.



UPDATE MULTIMEDIA

This tab facilitates user to update multimedia associated with a specified parcel.

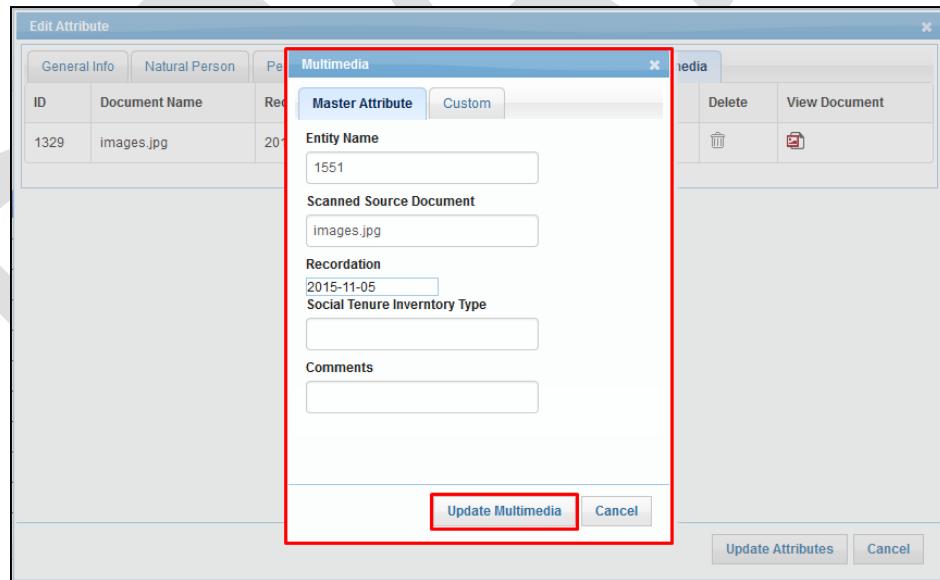
Steps:

1. Click on 'Multimedia' tab, corresponding attribute details of specified parcel will be displayed in grid along with 'Edit', 'Delete' and 'View Document' options.



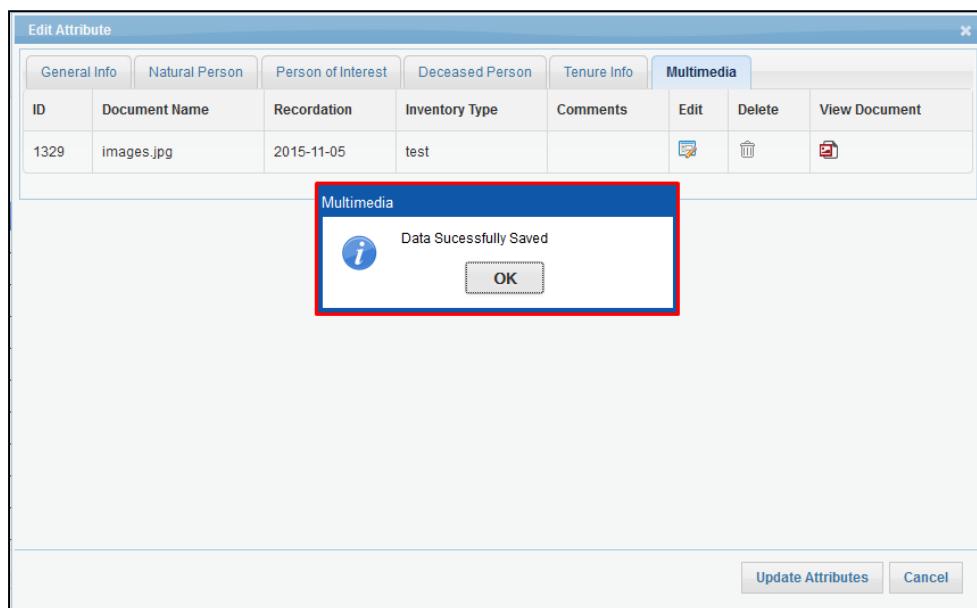
ID	Document Name	Recordation	Inventory Type	Comments	Edit	Delete	View Document
1329	images.jpg	2015-11-05					

2. Click on 'Edit' option, 'Multimedia' dialogue will be displayed with 'Master Attributes' and 'Custom' tabs along with 'Update Multimedia' button. Corresponding details will be available in edit mode.

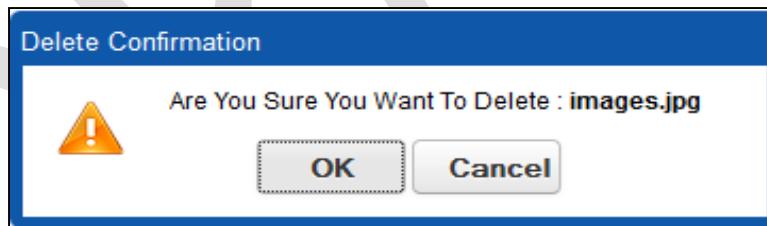


The screenshot shows the 'Edit Attribute' window with the 'Multimedia' tab selected. A red box highlights the 'Multimedia' dialog box. Inside the dialog box, the 'Master Attribute' tab is selected. The 'Entity Name' field contains '1551'. The 'Scanned Source Document' field contains 'images.jpg'. The 'Recordation' field contains '2015-11-05'. The 'Social Tenure Inventory Type' field is empty. The 'Comments' field is empty. At the bottom of the dialog box, the 'Update Multimedia' button is highlighted with a red box.

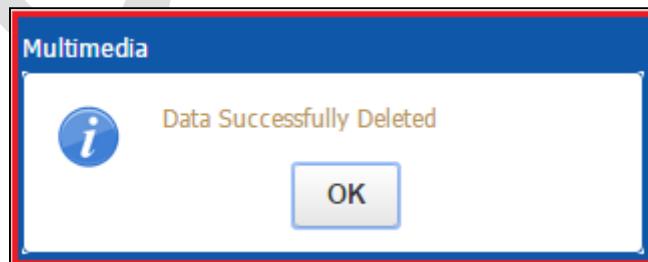
3. Edit the required details and click on ‘Update Multimedia’ button. Application will save the edited details and will display an acknowledgement message.



4. To view associated document, click on ‘View Document’ option, Application will display document in new tab of opened browser.
5. To delete the record, click on ‘Delete’ option, Application will display a confirmation message.



6. Click on ‘OK’ button, Application will delete multimedia details and will display an acknowledgement message.

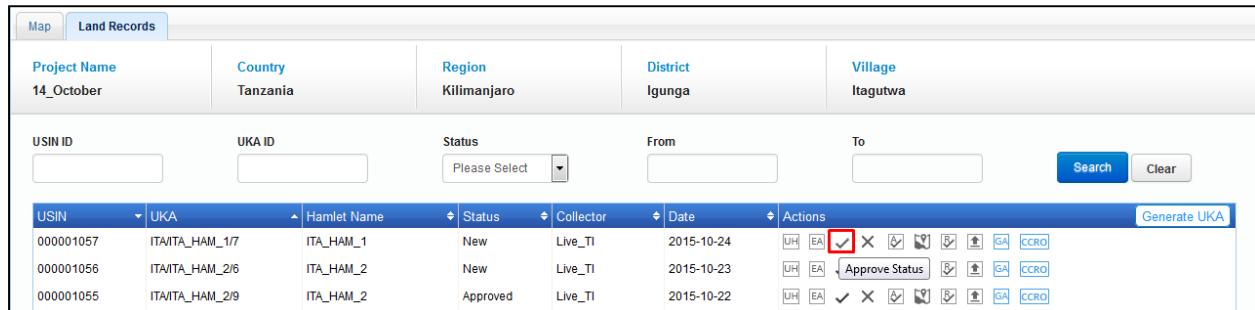


12.2.4 APPROVE STATUS

'Approve Status' facilitate user to approve a spatial unit which is in 'New' state.

Steps:

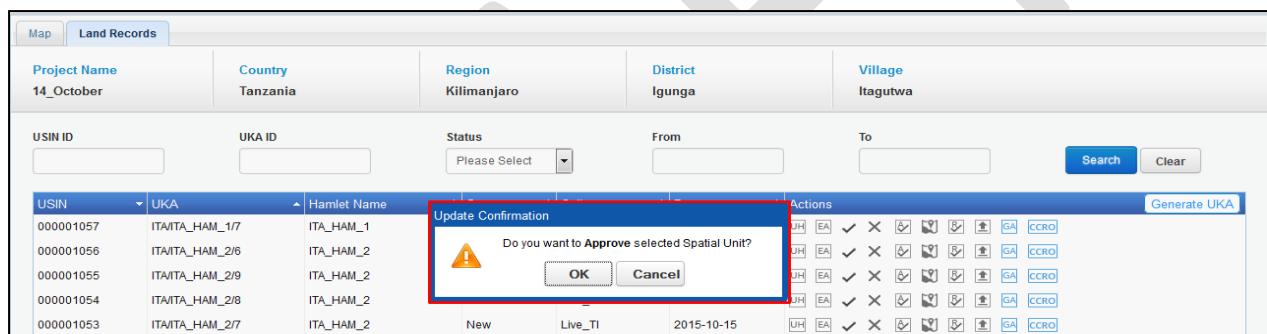
- User clicks on 'Approve Status' option associated with parcel details in grid.



This screenshot shows the 'Land Records' section of the application. At the top, there are dropdown menus for 'Project Name' (14_October), 'Country' (Tanzania), 'Region' (Kilimanjaro), 'District' (Igunga), and 'Village' (Itagutwa). Below these are search fields for 'USIN ID' and 'UKA ID', and a dropdown for 'Status' set to 'Please Select'. There are also 'From' and 'To' date fields. On the right are 'Search' and 'Clear' buttons. A large grid below contains columns for USIN, UKA, Hamlet Name, Status, Collector, Date, and Actions. The 'Actions' column includes icons for UH, EA, and other spatial operations. One row in the grid has the 'EA' icon checked. A blue button labeled 'Generate UKA' is visible at the top right of the grid area.

USIN	UKA	Hamlet Name	Status	Collector	Date	Actions
000001057	ITA/ITA_HAM_1/7	ITA_HAM_1	New	Live_TI	2015-10-24	
000001056	ITA/ITA_HAM_2/6	ITA_HAM_2	New	Live_TI	2015-10-23	
000001055	ITA/ITA_HAM_2/9	ITA_HAM_2	Approved	Live_TI	2015-10-22	

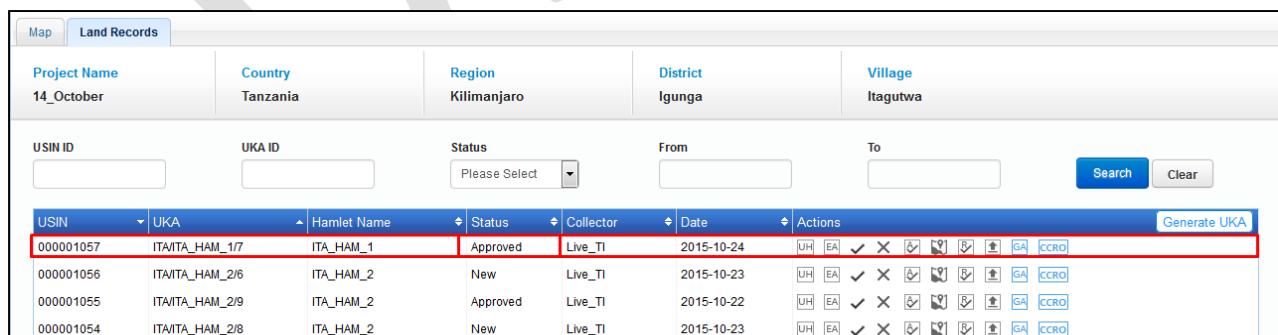
- Application will display a confirmation message.



This screenshot shows the same 'Land Records' interface as the previous one. The 'Actions' column in the grid now includes an 'Approve Status' button. A red box highlights this button for the first row. A modal dialog box titled 'Update Confirmation' is displayed in the center, containing a warning icon and the text 'Do you want to Approve selected Spatial Unit?'. It has 'OK' and 'Cancel' buttons. The rest of the grid and interface elements remain the same.

USIN	UKA	Hamlet Name	Status	Collector	Date	Actions
000001057	ITA/ITA_HAM_1/7	ITA_HAM_1	New	Live_TI	2015-10-15	
000001056	ITA/ITA_HAM_2/6	ITA_HAM_2	New	Live_TI	2015-10-23	
000001055	ITA/ITA_HAM_2/9	ITA_HAM_2	New	Live_TI	2015-10-22	
000001054	ITA/ITA_HAM_2/8	ITA_HAM_2	New	Live_TI	2015-10-23	
000001053	ITA/ITA_HAM_2/7	ITA_HAM_2	New	Live_TI	2015-10-15	

- Click on 'OK' button. Application will update parcels status as 'Approved'; same will be available in grid.



This screenshot shows the final state of the application. The grid now displays the first row with the 'Status' column showing 'Approved' instead of 'New'. A red box highlights this change. The rest of the grid and interface elements remain the same.

USIN	UKA	Hamlet Name	Status	Collector	Date	Actions
000001057	ITA/ITA_HAM_1/7	ITA_HAM_1	Approved	Live_TI	2015-10-24	
000001056	ITA/ITA_HAM_2/6	ITA_HAM_2	New	Live_TI	2015-10-23	
000001055	ITA/ITA_HAM_2/9	ITA_HAM_2	Approved	Live_TI	2015-10-22	
000001054	ITA/ITA_HAM_2/8	ITA_HAM_2	New	Live_TI	2015-10-23	

12.2.5 REJECT STATUS

'Reject Status' facilitate user to reject a spatial unit which is in 'New' state.

Steps:

- I. User clicks on 'Reject Status' option associated with parcel details in grid.

2. Application will display a confirmation message.

3. Click on 'OK' button. Application will update parcels status as 'Rejected'; same will be available in grid.

Map	Land Records						
Project Name 14_October	Country Tanzania	Region Kilimanjaro	District Igunga	Village Itagutwa			
USIN ID <input type="text"/>	UKA ID <input type="text"/>	Status <input type="button" value="Please Select"/>	From <input type="text"/>	To <input type="text"/>			
<input type="button" value="Search"/> <input type="button" value="Clear"/>							
USIN	UKA	Hamlet Name	Status	Collector	Date	Actions	Generate UKA
000001057	ITA/ITA_HAM_1/7	ITA_HAM_1	Approved	Live_Tl	2015-10-24	<input type="checkbox"/> <input type="checkbox"/> ✓ <input type="checkbox"/> CCRO	<input type="button" value="Generate UKA"/>
000001056	ITA/ITA_HAM_2/6	ITA_HAM_2	Rejected	Live_Tl	2015-10-23	<input type="checkbox"/> <input type="checkbox"/> ✓ <input type="checkbox"/> CCRO	<input type="button" value="Generate UKA"/>
000001055	ITA/ITA_HAM_2/9	ITA_HAM_2	Approved	Live_Tl	2015-10-22	<input type="checkbox"/> <input type="checkbox"/> ✓ <input type="checkbox"/> CCRO	<input type="button" value="Generate UKA"/>

12.2.6 ADJUDICATE SPATIAL ATTRIBUTE

'Adjudicate Spatial Attribute' facilitates user to adjudicate a spatial unit which is either in 'New' state or in 'Approved' state.

Steps:

- I. User clicks on ‘Adjudicate Spatial Unit’ option associated with parcel details in grid.

2. Application will display a confirmation message.

3. Click on 'OK' button. Application will update parcels status as 'Adjudicated'; same will be available in grid.

12.2.7 SHOW ON MAP

'Show on Map' facilitates user to navigate to map and zoom to the corresponding spatial unit.

Steps:

- I. User clicks on 'Show on Map' option associated with parcel details in grid.

Map	Land Records	Project Name 14_October	Country Tanzania	Region Kilimanjaro	District Igunga	Village Itagutwa		
USIN ID	UKA ID	Status	From	To			Search	Clear
USIN	UKA	Hamlet Name	Status	Collector	Date	Actions	Generate UKA	
000001057	ITA/ITA_HAM_1/7	ITA_HAM_1	Adjudicated	Live_Tl	2015-10-24	✓	✓	
000001056	ITA/ITA_HAM_2/6	ITA_HAM_2	Rejected	Live_Tl	2015-10-23	✓	✓	
000001055	ITA/ITA_HAM_2/9	ITA_HAM_2	Approved	Live_Tl	2015-10-22	✓	✓	

2. Map viewer will be displayed with zoomed in on corresponding parcel.

12.2.8 FINALIZE DATA

‘Finalize Data’ facilitates user to finalize a spatial unit which is in any state.

Steps:

- I. User clicks on 'Finalize Data' option associated with parcel details in grid.

Map	Land Records						
Project Name 14_October	Country Tanzania	Region Kilimanjaro	District Igunga	Village Itagutwa			
USIN ID <input type="text"/>	UKA ID <input type="text"/>	Status <input type="button" value="Please Select"/>	From <input type="text"/>	To <input type="text"/>			
<input type="button" value="Search"/> <input type="button" value="Clear"/>							
USIN	UKA	Hamlet Name	Status	Collector	Date	Actions	Generate UKA
000001057	ITA/ITA_HAM_1/7	ITA_HAM_1	Adjudicated	Live_TI	2015-10-24		
000001056	ITA/ITA_HAM_2/6	ITA_HAM_2	Rejected	Live_TI	2015-10-23		
000001055	ITA/ITA_HAM_2/9	ITA_HAM_2	Approved	Live_TI	2015-10-22		

2. Application will display a confirmation message.

Project Name		Country	Region	District	Village
14_October		Tanzania	Kilimanjaro	Igunga	Itagutwa

USIN ID	UKA ID	Status	From	To	Actions
<input type="text"/>	<input type="text"/>	<input type="button" value="Please Select"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="Search"/> <input type="button" value="Clear"/>
USIN	UKA	Hamlet Name			
000001057	ITA/ITA_HAM_1/7	ITA_HAM_1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
000001056	ITA/ITA_HAM_2/6	ITA_HAM_2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
000001055	ITA/ITA_HAM_2/9	ITA_HAM_2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
000001054	ITA/ITA_HAM_2/8	ITA_HAM_2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
000001053	ITA/ITA_HAM_2/7	ITA_HAM_2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

 Do you want to set selected Spatial Unit as Final ?

3. Click on 'OK' button. Application will update parcels status as 'Final'; same will be available in grid.

12.2.9 UPLOAD DOCUMENT

'Upload Document' facilitate user to associate required documents to the spatial unit. This will enable user to attached documents in any of the following extensions – '.jpeg', '.png', '.pdf', '.xls', '.doc'

Steps:

- I. User clicks on 'Upload Document' option associated with parcel details in grid.
 2. 'Web Upload' dialogue box will be displayed with 'Document Name', 'Comments' input box, 'Choose File' browser option along with 'Upload' button.

3. Enter 'Document Name', 'Comments', browse required doc and click on 'Upload' button.

Web Upload

Document Name

Owner Img

Comments

Image of owner

Select File:

Browse... images.jpg
Eg:-jpeg ,png ,pdf ,xls ,doc

Upload **Cancel**

4. Application will upload specified document and an acknowledgement message will be displayed.

12.2.10 GENERATE ADJUDICATION FORM

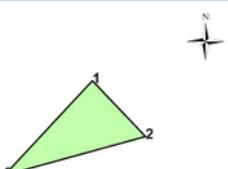
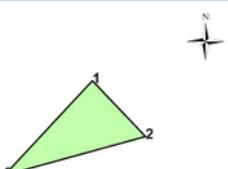
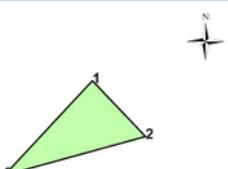
Generate Adjudication form facilitates user to generate adjudication certificate for a parcel.

Steps:

- I. Click on 'Generate Adjudication Form' option associated with parcel details in grid.

2. Application will display ‘Language Preference’ dialogue to select required language either ‘English’ or ‘Swahili’.

3. Application will generate adjudication certificate for corresponding parcel and same will be displayed in new tab or browser.

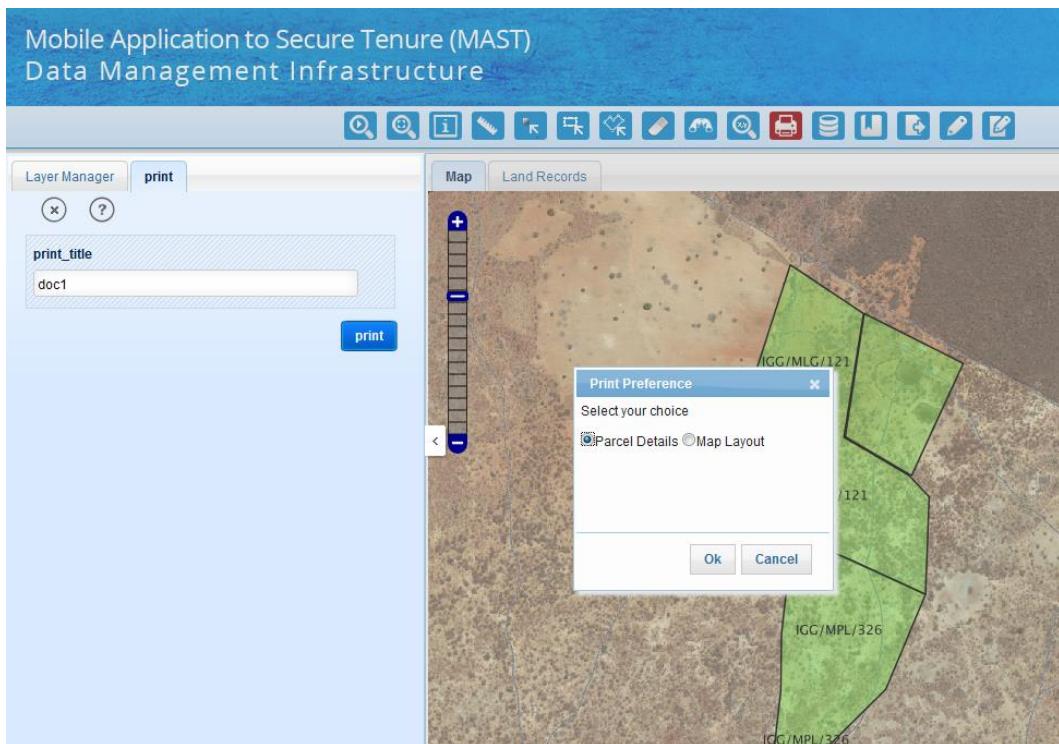
Village Land Act No 5 of 1999 SYSTEMATIC ADJUDICATION FORM												Form No 18 & 19																																																																													
APPLICATION												Witness Name/Witness Names																																																																													
Village Name: Itagutwa Hamlet Name: ITA_HAM_3 Plot IDs: ITA/ITA_HAM_3/2 Type of ownership: Multiple				1. _____ 2. _____ 3. _____				4. _____ 5. _____				Ownership Duration: Application Date: 2015-10-14 Village Assembly Date:																																																																													
				Land Type : Valley Area of the plot:13.857 Acres				Land use: Current: _____ Proposed: _____																																																																																	
ADJUDICATION																																																																																									
<table border="1"> <thead> <tr> <th>First Name</th><th>Second Name</th><th>Surname</th><th>Owner</th><th>Administrator</th><th>Guardian</th><th>Gender</th><th>Age</th><th>Marital Status</th><th>Citizenship</th><th>Address</th><th>Resident</th><th>Phone Number</th><th></th><th></th><th></th> </tr> </thead> <tbody> <tr> <td>yfyf</td><td></td><td>vhv</td><td>Yes</td><td>No</td><td>No</td><td>Male</td><td>22</td><td>un-married</td><td></td><td>000000</td><td>Yes</td><td>257</td><td></td><td></td><td></td> </tr> <tr> <td>ch</td><td></td><td>hvjv</td><td>Yes</td><td>No</td><td>No</td><td>Male</td><td>45</td><td>married</td><td></td><td>000000</td><td>Yes</td><td>475</td><td></td><td></td><td></td> </tr> <tr> <td>f5yfu</td><td></td><td>chvjg</td><td>Yes</td><td>No</td><td>No</td><td>Male</td><td>25</td><td>married</td><td></td><td>000000</td><td>Yes</td><td>4688</td><td></td><td></td><td></td> </tr> </tbody> </table>															First Name	Second Name	Surname	Owner	Administrator	Guardian	Gender	Age	Marital Status	Citizenship	Address	Resident	Phone Number				yfyf		vhv	Yes	No	No	Male	22	un-married		000000	Yes	257				ch		hvjv	Yes	No	No	Male	45	married		000000	Yes	475				f5yfu		chvjg	Yes	No	No	Male	25	married		000000	Yes	4688														
First Name	Second Name	Surname	Owner	Administrator	Guardian	Gender	Age	Marital Status	Citizenship	Address	Resident	Phone Number																																																																													
yfyf		vhv	Yes	No	No	Male	22	un-married		000000	Yes	257																																																																													
ch		hvjv	Yes	No	No	Male	45	married		000000	Yes	475																																																																													
f5yfu		chvjg	Yes	No	No	Male	25	married		000000	Yes	4688																																																																													
<table border="1"> <thead> <tr> <th>Neighbor</th><th>Name</th><th>Signature</th><th colspan="4">Witness(Village Land Committee)</th><th>Signature</th><th colspan="6">Drawing:</th> </tr> </thead> <tbody> <tr> <td>North</td><td>gdyf</td><td></td><td colspan="4">1. ITA_ADJ_1 2. ITA_ADJ_4</td><td></td><td colspan="6">  </td> </tr> <tr> <td>South</td><td>fhfh</td><td></td><td colspan="4"></td><td></td><td colspan="6"></td> </tr> <tr> <td>East</td><td>dghf</td><td></td><td colspan="4"></td><td></td><td colspan="6"></td> </tr> <tr> <td>West</td><td>hchf</td><td></td><td colspan="4"></td><td></td><td colspan="6"></td> </tr> </tbody> </table>															Neighbor	Name	Signature	Witness(Village Land Committee)				Signature	Drawing:						North	gdyf		1. ITA_ADJ_1 2. ITA_ADJ_4											South	fhfh													East	dghf													West	hchf																	
Neighbor	Name	Signature	Witness(Village Land Committee)				Signature	Drawing:																																																																																	
North	gdyf		1. ITA_ADJ_1 2. ITA_ADJ_4																																																																																						
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<table border="1"> <thead> <tr> <th colspan="3">Person of Interest</th><th colspan="12">Name</th> </tr> </thead> <tbody> <tr> <td colspan="3">Person of interest1</td><td colspan="12">dhn fgh</td> </tr> <tr> <td colspan="3">Person of interest2</td><td colspan="12">fhh vhj</td> </tr> <tr> <th colspan="3">Deceased Person</th><th colspan="12">Name</th> </tr> <tr> <td colspan="3"></td><td colspan="12"></td> </tr> </tbody> </table>															Person of Interest			Name												Person of interest1			dhn fgh												Person of interest2			fhh vhj												Deceased Person			Name																										
Person of Interest			Name																																																																																						
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Person of interest2			fhh vhj																																																																																						
Deceased Person			Name																																																																																						
For Official use only: Village Council Comments _____ Village Assembly Decision _____ Name of Chairperson: Jeffrey Euwema Signature _____ Date _____ Name of Secretary: Girish Kumar Signature _____ Date _____ Name of Adjudicator:Live_TI Signature _____ Date _____ Vertex List																																																																																									
S.No. X Coordinates Y Coordinates 1 777502.391576099 9142412.226253932 2 777679.4192270869 9142223.688099585 3 777204.804186732 9142095.627319206																																																																																									
<input type="button" value="Print"/>																																																																																									

12.2.11 GENERATE CCRO CERTIFICATION

'Generate CCRO Certification' facilitates user to generate CCRO certificate for a parcel.

Steps:

- I. Click on 'Generate CCRO Certification' option associated with parcel details in grid.



2. Application will generate CCRO certificate for corresponding parcel and same will be displayed in new tab.

<p style="text-align: center;">JAMHURI YA MUUNGANO WA TANZANIA</p> <p style="text-align: center;">Sheria ya Ardhi ya VJJI No. 21</p> <p style="text-align: center;">Namba ya Hadi ya Hakimili: _____</p> <p style="text-align: center;">Namba ya UKA-IGG/MPL/332</p>													
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="padding: 5px; vertical-align: top;"> <p>SHERIA YA ARDHI YA VJJI, 1999 (No. 5 ya 1999)</p> <p>HATI YA HAKIMILIKI YA KIMILA (CHINI YA FUNGU LA 25)</p> <p>Leo tarehe mwezi mwaka Hii ni kuthibisha kwamba Halmashauri ya Kijiji cha Itagutwa, S.L.P. 108 (Jina na anwan) imetobea kwa misamizi wa mirasi ya Marehemu Zakaria Bank Mbilly (numu ndani akirejewa kama "Mazi") hakimili ya kimila (tulwa "hakimili") Juu ya ardi iliyofanuliwa katika JEDWALI (humu ndani haliwa "ardhi") kwa Kipindi kisichu na Kikomo tangu tarehe mwezi mwaka kwa maandui na tafari halisi ya Sheria ya Ardhi ya VJJI na kwa kusingatia kipengele yake na karuni zozote zinazohungwa chini ya sheria hiyo zu sheria mbadala au mirekibisho yake na kwa mujibu we mesharti yetatazayo:</p> <ul style="list-style-type: none"> I. Mazi atawipa kodi ya mwaka ya Shs..... kabilo ya tarehe..... ya mwezi..... kia mwaka (kama Inzuhika). II. Ardi itatumika kwa ejili ya Makazi. III. Mazi atawajibiki kuhifashi mazingira (ardi na maji) IV. Mazi atahakikisha kwamba mijele ya ardi inailinda na kutunza na Idumu kuwa bayana kwa kipindi chote cha hakimili. V. Mazi ataheshimu na kuhifashi haki za nje zilizopo. VI. Uhatikishi wa hakimili kwa mitu yeote au kundi chochote cha watu ambeo kwa kawaida si walezi wa kijiji lezima uchiniwshiwa na Halmashauri ya Kijiji. </td> </tr> <tr> <td style="width: 50%; padding: 5px;"> <p>JEDWALI (Maelezo kamili ya eneo la mijele yake)</p> <p>Ardhi hi venye eneo lenye ukubwa we ekari 0.571 Ilyoko katika Kitongoji cha Mapululu.</p> <p>Mijele: Kasikizini Imepakana na Shell Sanga. Kusini Imepakana na Berta Sanga. Masheriki Imepakana na Etelia Chengula. Megharibi Imepakana Maria Mbilly. Kama inavyoonyeshwa katika mchoro/ramani hapa kulla.</p> </td> <td style="width: 50%; padding: 5px; text-align: center;">  IGG/MPL/332 </td> </tr> <tr> <td style="padding: 5px;"> 1.Jina kamili : Issa Simaiwa Lubava Salini: Anuanu S.L.P: 108,Iringa Wachifis: Mwenyekiti wa Kijiji </td> <td style="padding: 5px;"> LAKIZI/MHURI WA HALMASHAURI YA KIJJI  </td> </tr> <tr> <td style="padding: 5px;"> Jina kamili:Sophi Ernest Mfilinge Salini: Anuanu S.L.P: 108,Iringa Wachifis: Afisa MtendaJI wa Kijiji </td> <td style="padding: 5px;">  </td> </tr> <tr> <td style="padding: 5px;"> 2.Msimamizi(Mazi) 3.Imegongwa Lakizi ya Halmashauri ya Wilaya ya Iringa na kuzaliniwa leo Tarehe..... Mwezi Mwaka 2015. Jina: Geofrey Reuben Kaluwa Salini: Wachifis: Afisa Ardhi Mteule wa Wilaya </td> <td style="padding: 5px;"> LAKIZI  </td> </tr> <tr> <td colspan="2" style="text-align: right; padding: 5px;"> <input type="button" value="Print"/> </td> </tr> </table>		<p>SHERIA YA ARDHI YA VJJI, 1999 (No. 5 ya 1999)</p> <p>HATI YA HAKIMILIKI YA KIMILA (CHINI YA FUNGU LA 25)</p> <p>Leo tarehe mwezi mwaka Hii ni kuthibisha kwamba Halmashauri ya Kijiji cha Itagutwa, S.L.P. 108 (Jina na anwan) imetobea kwa misamizi wa mirasi ya Marehemu Zakaria Bank Mbilly (numu ndani akirejewa kama "Mazi") hakimili ya kimila (tulwa "hakimili") Juu ya ardi iliyofanuliwa katika JEDWALI (humu ndani haliwa "ardhi") kwa Kipindi kisichu na Kikomo tangu tarehe mwezi mwaka kwa maandui na tafari halisi ya Sheria ya Ardhi ya VJJI na kwa kusingatia kipengele yake na karuni zozote zinazohungwa chini ya sheria hiyo zu sheria mbadala au mirekibisho yake na kwa mujibu we mesharti yetatazayo:</p> <ul style="list-style-type: none"> I. Mazi atawipa kodi ya mwaka ya Shs..... kabilo ya tarehe..... ya mwezi..... kia mwaka (kama Inzuhika). II. Ardi itatumika kwa ejili ya Makazi. III. Mazi atawajibiki kuhifashi mazingira (ardi na maji) IV. Mazi atahakikisha kwamba mijele ya ardi inailinda na kutunza na Idumu kuwa bayana kwa kipindi chote cha hakimili. V. Mazi ataheshimu na kuhifashi haki za nje zilizopo. VI. Uhatikishi wa hakimili kwa mitu yeote au kundi chochote cha watu ambeo kwa kawaida si walezi wa kijiji lezima uchiniwshiwa na Halmashauri ya Kijiji. 		<p>JEDWALI (Maelezo kamili ya eneo la mijele yake)</p> <p>Ardhi hi venye eneo lenye ukubwa we ekari 0.571 Ilyoko katika Kitongoji cha Mapululu.</p> <p>Mijele: Kasikizini Imepakana na Shell Sanga. Kusini Imepakana na Berta Sanga. Masheriki Imepakana na Etelia Chengula. Megharibi Imepakana Maria Mbilly. Kama inavyoonyeshwa katika mchoro/ramani hapa kulla.</p>	 IGG/MPL/332	1.Jina kamili : Issa Simaiwa Lubava Salini: Anuanu S.L.P: 108,Iringa Wachifis: Mwenyekiti wa Kijiji	LAKIZI/MHURI WA HALMASHAURI YA KIJJI 	Jina kamili:Sophi Ernest Mfilinge Salini: Anuanu S.L.P: 108,Iringa Wachifis: Afisa MtendaJI wa Kijiji		2.Msimamizi(Mazi) 3.Imegongwa Lakizi ya Halmashauri ya Wilaya ya Iringa na kuzaliniwa leo Tarehe..... Mwezi Mwaka 2015. Jina: Geofrey Reuben Kaluwa Salini: Wachifis: Afisa Ardhi Mteule wa Wilaya	LAKIZI 	<input type="button" value="Print"/>	
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<input type="button" value="Print"/>													

13. PHASE -II IMPLEMENTATIONS

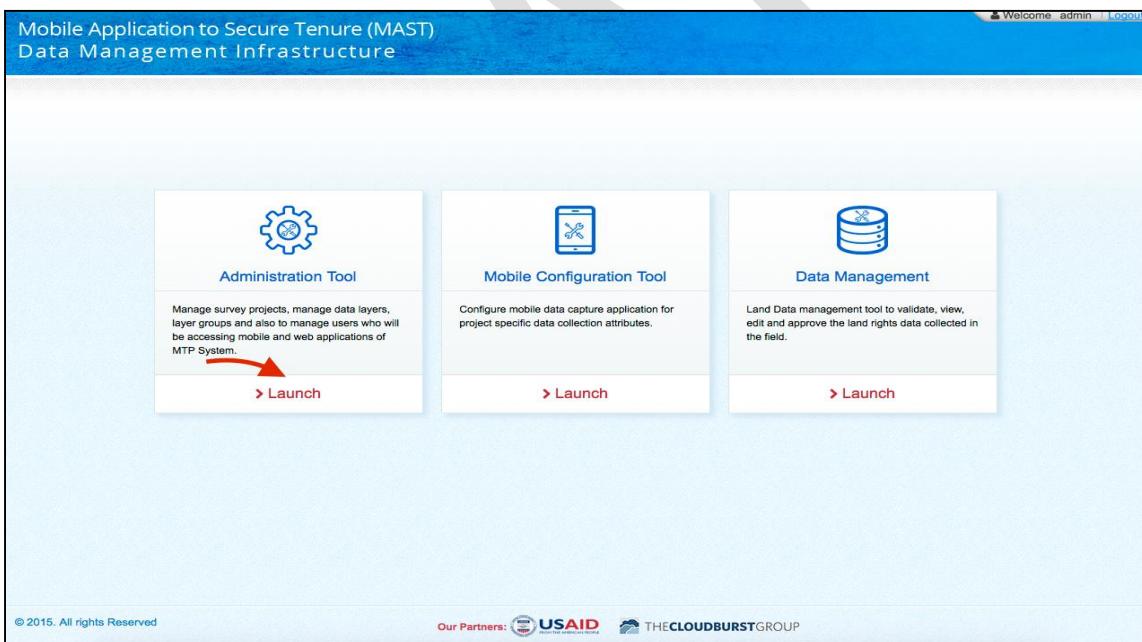
14. INCORPORATION OF HAMLET DETAILS AND LAND ADJUDICATION COMMITTEE MEMBERS

Hamlet details are required in generation of UKA no. & details of committee members are required in mobile application to select the witnesses from a drop down list. Adding functionality to capture hamlet data while filling information of the parcels will ensure that parcels are mapped to hamlets correctly. It takes out the need for additional mapping of hamlet boundaries by the DLO and ensures that there is no conflict in data during signing of adjudication forms. Adding of committee members while creating the project will ensure the correct witness detail are saved while capturing the land data, and available in the adjudication form.

14.1 SYSTEM FUNCTION

14.1.1 INCORPORATION OF HAMLET DETAILS

User logs in the web application & clicks on “Administration Tool” as shown below:



User then selects “Survey Projects” from left side menu, following screen will be shown:

Name	Country	Region	District	Village	
ashishk	Tanzania	Kilimanjaro	Igunga	Ilagwa	
CB_Proj	Tanzania	Iringa	Iringa (Rural)	Ilalasimba	
Ilalasimba_dummy	Tanzania	Kilimanjaro	Igunga	Ilalasimba	
SNPA_PROJECT	Tanzania	Iringa	Iringa (Rural)	Ilalasimba	
Tanzania_Pilot	Tanzania	Iringa	Igunga	Ilalasimba	
Tanzania_Pilot_Live	Tanzania	Iringa	Igunga	Ilalasimba	
Tanzania_test_Pilot	Tanzania	Iringa	Igunga	Ilalasimba	
ust_project	Tanzania	Iringa	Iringa (Rural)	Ilalasimba	

User can add new project by clicking on “New button” or can edit the existing project by clicking on edit icon as shown above. When user clicks on edit icon following screen will be shown:

General

Name: Tanzania_Pilot_Live Description: Tanzania_Pilot_Live

Projection: EPSG:4326 Display Projection: EPSG:4326

Max Extent: 33.71032714800018,-10.5372924799998 Min Extent: 35.424049528535875,-7.83008100001108

Zoom Levels: 24 Restricted Extent: 33.71032714800018,-10.5372924799998

Output Format: image/png Unit: dd

Cosmetic

Active Layer: spatial_unit Overview Layer: spatial_unit

- > Layer Group
- > Project Configuration
- > Hamlet
- > Project Adjudicator
- > Disclaimer
- > Assign user

User then clicks on Hamlet accordion to see the hamlet details (if exists) or can add the new hamlet detail. Following screen will be shown on clicking **Hamlet accordion**:



Now user can click on “New” button to add hamlet details as shown above. A form will be shown on clicking “New” button as shown below:

Hamlet Name	Hamlet Name(Second Language)	Hamlet Code	Delete
Hamlet 1	Hamlet 1	HAM1	

User then will fill the details of hamlet & clicks on “Save” button as shown above, hamlet data will be shown & updated as shown below:

Hamlet Name	Hamlet Name(Second Language)	Hamlet Code	Delete
Hamlet 1	Hamlet 1	HAM1	
Hamlet 2	Hamlet 2	HAM2	

14.1.2 ADDING OF COMMITTEE MEMBERS (PROJECT ADJUDICATORS)

Committee members can be added using web application through “Administration Tools”. User will select the “Survey Projects” from menu & then selects “Project Adjudicator” accordion as shown below:

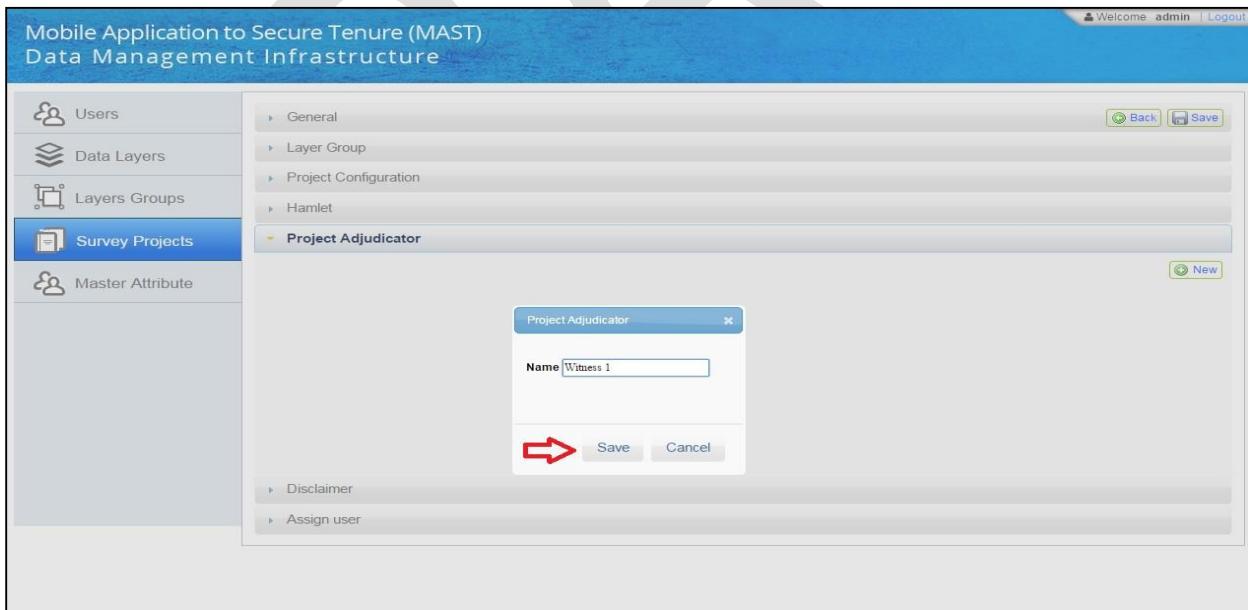
The screenshot shows the 'General' configuration for a survey project named 'Tanzania_Pilot_Live'. The 'Project Adjudicator' accordion is expanded, indicated by a red arrow pointing to it.

Name	Tanzania_Pilot_Live	Description	Tanzania_Pilot_Live
Projection	EPSG:4326	Display Projection	EPSG:4326
Max Extent	33.71032714800018,-10.5372924799998	Min Extent	35.424049528535875,-7.8300810000110
Zoom Levels	24	Restricted Extent	33.71032714800018,-10.5372924799998
Output Format	image/png	Unit	dd
<input checked="" type="checkbox"/> Cosmetic			
Active Layer	spatial_unit	Overview Layer	spatial_unit

Following screen will be shown to user:



User then clicks on “New” button to fill the details of committee member as shown above. A new form will open to fill details as shown below:



Now user will fill the details & the clicks on “Save” button as shown above. Committee members detail will be saved & updated as shown below:

The screenshot shows a web-based application titled "Mobile Application to Secure Tenure (MAST) Data Management Infrastructure". The left sidebar contains navigation links: Users, Data Layers, Layers Groups, Survey Projects (which is selected and highlighted in blue), and Master Attribute. The main content area has a tree view on the left with nodes: General, Layer Group, Project Configuration, Hamlet, and Project Adjudicator. The "Project Adjudicator" node is expanded, showing a table with one row: "Witness 1". The table has columns for "Adjudicator Name" and "Delete". There are "New" and "Delete" buttons at the top right of the table. At the bottom of the main content area, there are links for "Disclaimer" and "Assign user". The top right corner of the screen shows "Welcome admin | Logout".

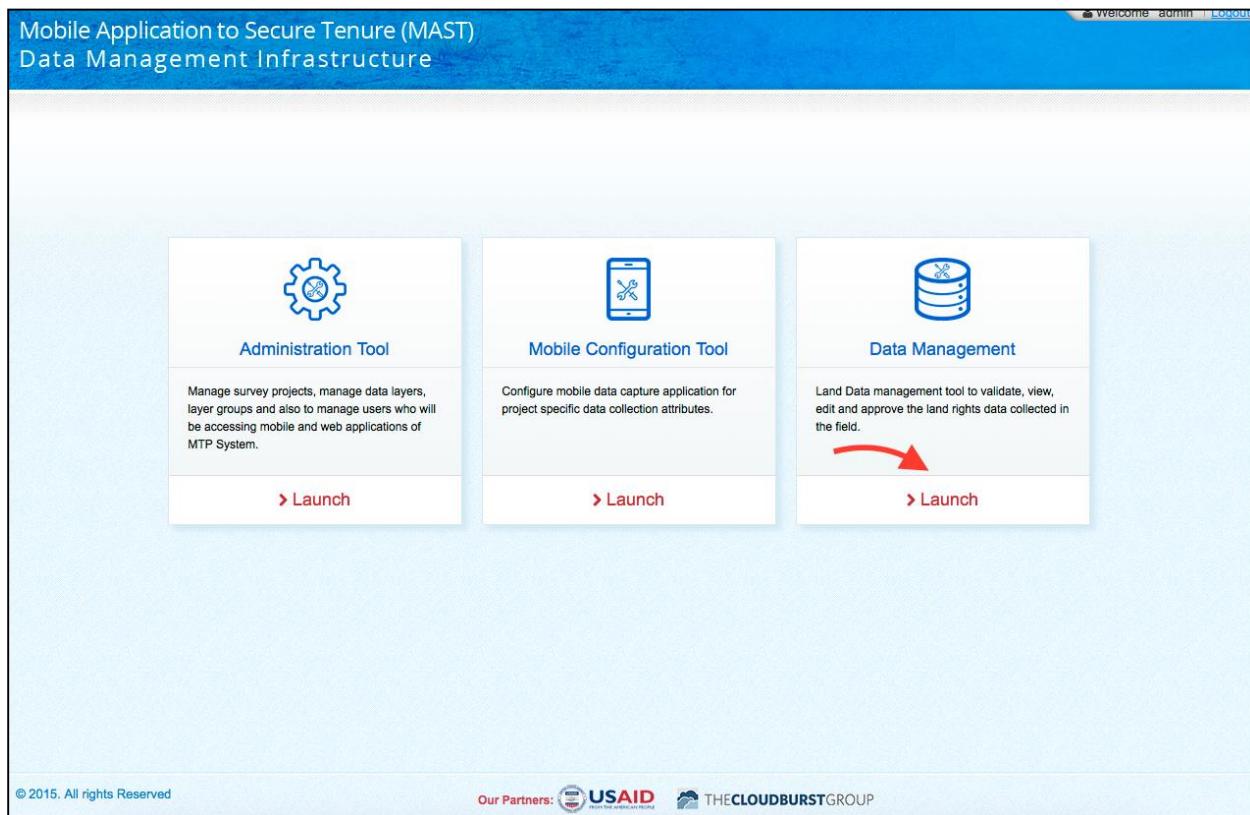
DATA MODEL CHANGES

The hamlets details added using the above method will be added into a new table with the name project_hamlets and the adjudicator data fill be saved in a new table spatialunit_personadministrator.

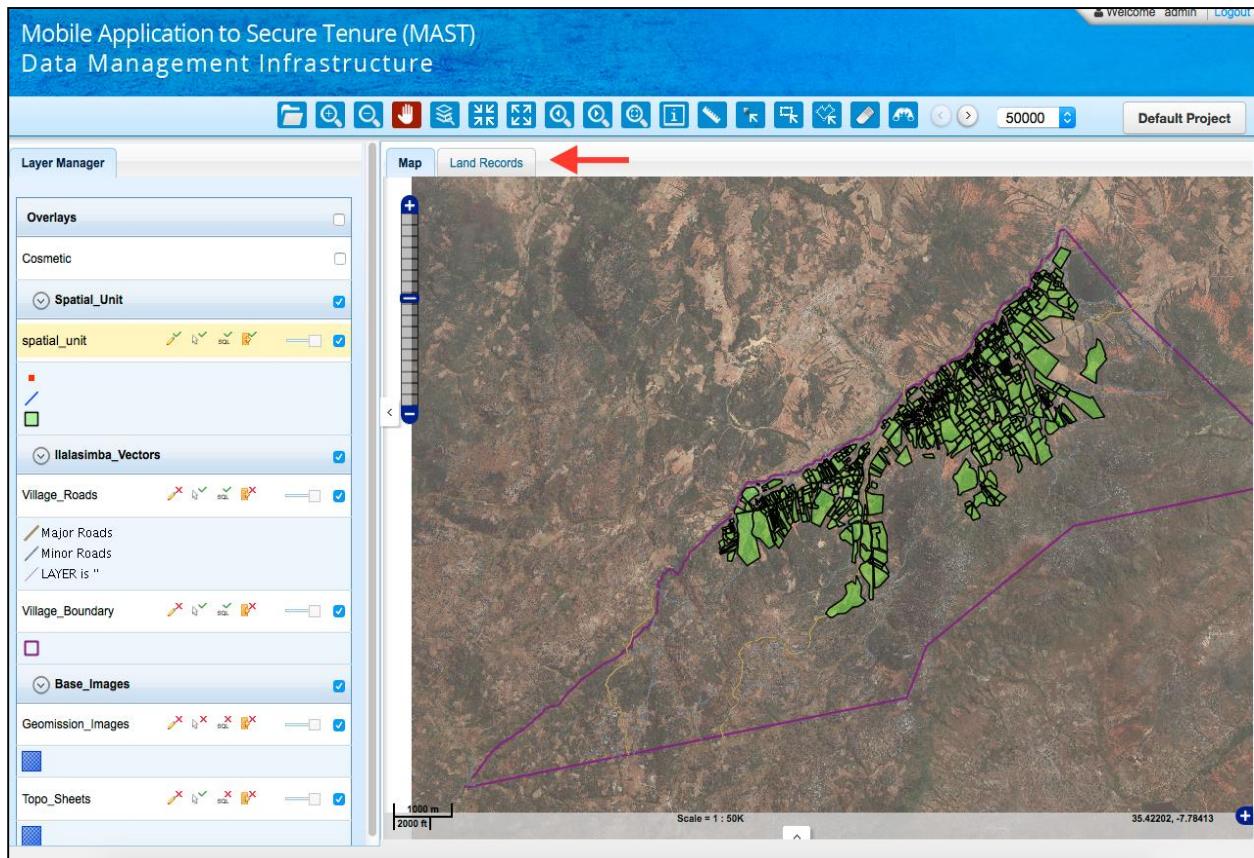
15. MAST AND GENERATE UKA NUMBER

15.1 GENERATION OF UKA ON WEB APPLICATION

User clicks on Data Management option as shown in below picture:



User then clicks on Land Records tab as shown below:



System provides following options to generate UKA number:

UKA number generation for a specific parcel: Generation of UKA number for individual parcels is managed in web application, UKA number needs to be regenerated only in case Hamlet is updated for a Parcel. Application will automatically generate UKA number for the parcel by adding the maximum + 1 unique sequence number to the newly added Parcel in the hamlet.

UKA number generation for all the parcels:

User then clicks on Generate UKA button as shown below:

The screenshot shows the MAST Data Management Infrastructure interface. At the top, there's a header bar with the title 'Mobile Application to Secure Tenure (MAST) Data Management Infrastructure'. Below the header is a toolbar with various icons. The main area has tabs for 'Map' and 'Land Records', with 'Land Records' selected. There are filters for 'Project Name' (Tanzania_Pilot_Live), 'Country' (Tanzania), 'Region' (Iringa), 'District' (Igunga), 'Village' (Ilalasimba), and 'Hamlet' (empty). Below the filters is a search bar with fields for 'USIN ID', 'UKA ID', 'Status' (set to 'Please Select'), 'From', and 'To', followed by 'Search' and 'Clear' buttons. A large grid table below contains columns for USIN, UKA, Status, Collector, Date, and Actions. The 'Actions' column includes a 'Generate UKA' button. A red arrow points to this button. The grid lists several rows of data, each with a unique USIN and UKA value. At the bottom of the grid, there are navigation buttons for '1', 'To 10', 'Of 719', and arrows.

On clicking the Generate UKA button, the system will find all the parcels with empty UKA number and generate the UKA for them. System will keep track of the maximum sequence against all the Hamlets. In case UKA numbers are generated for the first time, system will group all the parcels against Hamlet and start the sequence from 1, in case UKA numbers are generated where UKA numbers are missing or newly created parcels then sequence would be generated from the last sequence count assigned to a parcel.

For the parcels for which UKA number already exists, system will not make any changes.
Format to generate UKA number:

UKA number will be generated by the system utilizing following three parameters:

- Village code
- Hamlet Code
- Sequence number

UKA number will be generated based on 'Village code/Hamlet code/<sequence number>'.

16. MAST ATTRIBUTES AND REPORTS UPDATE

16.I FINAL LISTING OF MAST ATTRIBUTES (HIGH LEVEL)

	<i>General</i>	<i>Comments</i>
1	<i>Project name</i>	
2	<i>Spatial Unit ID</i>	
3	<i>Person type</i>	
4	<i>Village</i>	
5	<i>Hamlet</i>	
6	<i>Witness 1 (adjudication Committee member)</i>	
7	<i>Witness 2 (adjudication Committee member)</i>	
8	<i>Trusted Intermediary</i>	
	<i>Property Information</i>	
9	<i>Existing Use</i>	
10	<i>Right Of Way/Other Use</i>	
11	<i>Land Type</i>	
12	<i>Neighbor North</i>	
13	<i>Neighbor South</i>	
14	<i>Neighbor East</i>	
15	<i>Neighbor West</i>	
	<i>Tenure Type</i>	
16	<i>Tenure Type</i>	
17	<i>Type of Right of occupancy</i>	
	<i>Natural Person (includes Administrator and Guardian)</i>	<i>Can be multiple</i>
18	<i>First Name</i>	
19	<i>Middle Name</i>	
20	<i>Last Name</i>	
21	<i>Gender</i>	
22	<i>Mobile No.</i>	
23	<i>Occupation</i>	
24	<i>Education Level</i>	
25	<i>Age</i>	
26	<i>Marital Status</i>	
27	<i>Citizenship</i>	
28	<i>Resident</i>	
	<i>Non- Natural Person</i>	
29	<i>Institution name</i>	
30	<i>Address</i>	
31	<i>Phone Number</i>	
	<i>Multi-media</i>	
32	<i>Name</i>	
33	<i>Comments</i>	
35	<i>Village Chairperson</i>	
36	<i>Village Secretary</i>	

16.2 ADJUDICATION FORMS

The current adjudication form in English is shown below with attributes number from the final listing ([section 3](#)) marked in red in the image below:

Village Land Act No 5 of 1999 SYSTEMATIC ADJUDICATION FORM												Form No 18 & 15																									
APPLICATION												Witness Name/Witness Names																									
Village Name: Ilalasimba 4 Hamlet Name: Kalangali 5 Plot ID: 611RA/KLG/146 Type of ownership: Single				1. 4. 2. 5. 3.				Ownership Duration: Application Date: 2015-05-25 Village Assembly Date:																													
				Land Type: Flat/Plain 11 Area of the plot: 9.291 Acres				Land use: Current: Agriculture 9 Proposed: Agriculture																													
ADJUDICATION																																					
<table border="1"> <thead> <tr> <th>First Name</th> <th>Second Name</th> <th>Surname</th> <th>Owner</th> <th>Administrator</th> <th>Gender</th> <th>Age</th> <th>Marital Status</th> <th>Citizenship</th> <th>Address</th> <th>Resident</th> <th>Phone Number</th> </tr> </thead> <tbody> <tr> <td>Catalina 18</td> <td>Msfara 19</td> <td>Mbogo 20</td> <td></td> <td></td> <td>Female</td> <td>21 25</td> <td>married</td> <td>26</td> <td>Mtanazia 27</td> <td>No 28</td> <td>0756258688 22</td> </tr> </tbody> </table>													First Name	Second Name	Surname	Owner	Administrator	Gender	Age	Marital Status	Citizenship	Address	Resident	Phone Number	Catalina 18	Msfara 19	Mbogo 20			Female	21 25	married	26	Mtanazia 27	No 28	0756258688 22	
First Name	Second Name	Surname	Owner	Administrator	Gender	Age	Marital Status	Citizenship	Address	Resident	Phone Number																										
Catalina 18	Msfara 19	Mbogo 20			Female	21 25	married	26	Mtanazia 27	No 28	0756258688 22																										
Neighbor		Name	Signature	Witness(Village Land Committee)				Signature	Drawing:																												
North 12		Benitho Samile		1. Veronica Francis Nyunza 6																																	
South 13		Nja		2. Yuda Vicent Samile 7																																	
East 14		Tomas Sungwa																																			
West 15		Nja Ya Ng'ombe																																			
Right of way and other uses: 10																																					
Signatory Name _____				Signature _____				Date _____																													
Signatory Name _____				Signature _____				Date _____																													
For Official use only:																																					
Village Council Comments _____																																					
Village Assembly Decision _____																																					
Name of Chairperson 35		Signature _____	Date _____																																		
Name of Secretary 36		Signature _____	Date _____																																		
Name of Intermediary 8		Signature _____	Date _____																																		
Coordinates: East : 776722.522 North: 9140093.345																																					

Different adjudication forms based on type of types of natural person and Tenure types are shown below:

- Type of tenure (single occupancy, multiple occupancy,
- Tenancy in common,
- Tenancy in common (with an administrator)
- And tenancy in common (with a Guardian)

16.2.1 ADJUDICATION DATA AND REPORT FOR SINGLE OCCUPANT

DATA FOR TENURE TYPE: SINGLE OCCUPANT DATA

	General	Data	Data	Comments
1	Project name			Entered in system
2	Spatial Unit ID			Captured by system
3	Person type			Identified by TI
4	Village	Ilalasimba		
5	Hamlet			entered during field data capture

6	Witness 1 (adjudication Committee member)	John Stevens		Selected from drop down list in Mobile Application
7	Witness 2 (adjudication Committee member)	Henry Stevens		Selected from drop down list in Mobile Application
8	Trusted Intermediary	Modesty Kachubo		Selected from phone ID, assigned to TI
	Property Information			
9	Existing Use			
10	Right Of Way/Other Use			
11	Land Type			
12	Neighbor North	John sassy Ronald		
13	Neighbor South	Jorge Simopnet Malave		
14	Neighbor East	Tito Luis Rentas		
15	Neighbor West	David sin Backahnd		
	Tenure Type			
16	Tenure Type			
17	Type of Right of occupancy			
	Natural Person (includes Administrator and Guardian)			Can be multiple
18	First Name	Jeff		
19	Middle Name	Alan		
20	Last Name	James		
21	Gender	Male		
22	Mobile No.	0000000000		
23	Owner	Yes		
24	Administrator	No		
25	Guardian	No		
26	Age	46		
27	Marital Status	Married		
28	Citizenship	Tanzanian		
29	Resident	Yes		
	Non- Natural Person			
30	Institution name			
31	Address			
32	Phone Number			
	Multi-media			
33	Name			
34	Comments			
	Person of Interest (Next of Kin)			
35	Name (first, middle, last)	Mary Shelly James	Alana James Susan James	Can be multiple
36	Village Chairperson			Captured in MAST web during set-up
36	Village Secretary			Captured in MAST web during set-up

REPORT FOR TENURE TYPE: SINGLE OCCUPANT

Type of Ownership: Type of Ownership is Single and Multiple. These values are auto filled on the basis on number of Persons associated with spatial unit.

Application		Witness Names									
Village Name	Ilalasimba	1.		4.							
Hamlet Name	Ilalasimba	2.		5.							
Plot ID	61IRA/ILL/136	3.									
Type of Ownership	Single	Land Type: Flat Plain		Land Use:						Proposed: Agriculture	
Adjudication		Area of Plot: 2.3 acres				Current: Agriculture					

First Name	Middle Name	Last Name	Owner	Administrator	Guardian	Gender	Age	Marital Status	Citizenship	Address	Resident	Mobile Number
Jeff	Alan	James	Yes	No	No	M	46	Married	Tanzanian	Postal Code for Village	Yes	00000000

Neighbor	Name	Signature	Witness (LAC)	Signature	Drawing
North	John sassy Ronald		John Stevens		
South	Jorge Simon Malave		Henry Stevens		
East	Tito Luis Rentas				
West	David sin Backahnd				
Right of Way and other uses:					
Person with Interest					
Signatory Name	Mary Shelly James	Signature	_____	Date	Coordinates
Signatory Name	Alana Susan James	Signature	_____	Date	East:
			_____		North:
Official Use Only					
Village Council Comments	<<<Notes – hand written>>				
Village Assembly Decision	<<approval date for adjudication>>				
Name of Chairperson	xxxxxxxxxx	Signature	_____	Date	
Name of Secretary	xxxxxxxxxx	Signature	_____	Date	
Name of Adjudicator (TI)	Modesty Kachubo	Signature	_____	Date	

16.2.2 ADJUDICATION DATA AND REPORT FOR MULTIPLE OCCUPANCY (JOINT TENANCY) & MULTIPLE OCCUPANCY (TENANCY IN COMMON)

DATA FOR TENURE TYPE: MULTIPLE OCCUPANCY (JOINT TENANCY) & MULTIPLE OCCUPANCY (TENANCY IN COMMON)

	General	Data	Data	Comments
1	Project name			Entered in system
2	Spatial Unit ID			Captured by system
3	Person type			Identified by TI
4	Village	Ilalasimba		

5	<i>Hamlet</i>			<i>entered during field data capture</i>
6	<i>Witness 1 (adjudication Committee member)</i>	<i>John Stevens</i>		<i>Selected from drop down list in Mobile Application</i>
7	<i>Witness 2 (adjudication Committee member)</i>	<i>Henry Stevens</i>		<i>Selected from drop down list in Mobile Application</i>
8	<i>Trusted Intermediary</i>	<i>Modesty Kachubo</i>		<i>Selected from phone ID, assigned to TI</i>
	<i>Property Information</i>			
9	<i>Existing Use</i>			
10	<i>Right Of Way/Other Use</i>			
11	<i>Land Type</i>			
12	<i>Neighbor North</i>	<i>John sassy Ronald</i>		
13	<i>Neighbor South</i>	<i>Jorge Simopnet Malave</i>		
14	<i>Neighbor East</i>	<i>Tito Luis Rentas</i>		
15	<i>Neighbor West</i>	<i>David sin Backahnd</i>		
	<i>Tenure Type</i>			
16	<i>Tenure Type</i>			
17	<i>Type of Right of occupancy</i>			
	<i>Natural Person (includes Administrator and Guardian)</i>			<i>Can be multiple</i>
18	<i>First Name</i>	<i>Jeff</i>	<i>Mariya</i>	
19	<i>Middle Name</i>	<i>Alan</i>		
20	<i>Last Name</i>	<i>James</i>	<i>Farnandis</i>	
21	<i>Gender</i>	<i>Male</i>	<i>Female</i>	
22	<i>Mobile No.</i>	<i>0000000000</i>		
23	<i>Owner</i>	<i>Yes</i>	<i>Yes</i>	
24	<i>Administrator</i>	<i>No</i>	<i>No</i>	
25	<i>Guardian</i>	<i>No</i>	<i>No</i>	
26	<i>Age</i>	<i>46</i>	<i>35</i>	
27	<i>Marital Status</i>	<i>Married</i>	<i>Married</i>	
28	<i>Citizenship</i>	<i>Tanzanian</i>	<i>Tanzanian</i>	
29	<i>Resident</i>	<i>Yes</i>	<i>Yes</i>	
	<i>Non- Natural Person</i>			
30	<i>Institution name</i>			
31	<i>Address</i>			
32	<i>Phone Number</i>			
	<i>Multi-media</i>			
33	<i>Name</i>			
34	<i>Comments</i>			
	<i>Person of Interest (Next of Kin)</i>	<i>Next of Kin 1</i>	<i>Next of Kin 2</i>	
35	<i>Name (first, middle, last)</i>	<i>Mary Shelly James</i>	<i>Alana Susan James</i>	<i>Can be multiple</i>
36	<i>Village Chairperson</i>			<i>Captured in MAST web during set-up</i>
36	<i>Village Secretary</i>			<i>Captured in MAST web during set-up</i>

REPORT FOR TENURE TYPE: MULTIPLE OCCUPANCY (JOINT TENANCY) & MULTIPLE OCCUPANCY (TENANCY IN COMMON)

Application			Witness Names								
Village Name	Ilalasimba		I.		4.						
Hamlet Name	Ilalasimba		2.		5.						
Plot ID	61IRA/ILL/136		3.								
Type of Ownership	Multiple		Land Type: Flat Plain			Land Use:					
			Area of Plot: 2.3 acres				Current: Agriculture			Proposed:	
Adjudication											

First Name	Middle Name	Last Name	Owner	Administrator	Guardian	Gender	Age	Marital Status	Citizenship	Address	Resident	Mobile Number
Jeff	Alan	James	Yes	No	No	M	46	Married	Tanzanian	Postal Code for Village	Yes	00000000
Mariy a		Farnandis	Yes	No	No	F	35	Married	Tanzanian	000	Yes	11111111

Neighbor	Name	Signature	Witness (LAC)	Signature	Drawing	
North	John sassy Ronald		John Stevens			
South	Jorge Simon Malave		Henry Stevens			
East	Tito Luis Rentas					
West	David sin Backahnd					
Right of Way and other uses:						
Person with Interest						
Signatory Name	Mary Shelly James	Signature		Date	Coordinates	
Signatory Name	Alana Susan James	Signature		Date	East:	
					North:	
Official Use Only						
Village Council Comments	<<<Notes – hand written>>					
Village Assembly Decision	<<approval date for adjudication>>					
Name of Chairperson	xxxxxxxxxx	Signature		Date		
Name of Secretary	xxxxxxxxxx	Signature		Date		
Name of Adjudicator (TI)	Modesty Kachubo	Signature		Date		

16.2.3 ADJUDICATION DATA AND REPORT FOR TENANCY IN PROBATE (ADMINISTRATOR)

DATA FOR TENANCY IN PROBATE (ADMINISTRATOR)

	General	Data	Data	Comments
1	Project name			Entered in system
2	Spatial Unit ID			Captured by system
3	Person type			Identified by TI
4	Village	Ilalasimba		

5	Hamlet			entered during field data capture
6	Witness 1 (adjudication Committee member)	John Stevens		Selected from drop down list in Mobile Application
7	Witness 2 (adjudication Committee member)	Henry Stevens		Selected from drop down list in Mobile Application
8	Trusted Intermediary	Modesty Kachubo		Selected from phone ID, assigned to TI
	Property Information			
9	Existing Use			
10	Right Of Way/Other Use			
11	Land Type			
12	Neighbor North	John sassy Ronald		
13	Neighbor South	Jorge Simopnet Malave		
14	Neighbor East	Tito Luis Rentas		
15	Neighbor West	David sin Backahnd		
	Tenure Type			
16	Tenure Type			
17	Type of Right of occupancy			
	Natural Person (includes Administrator and Guardian)			Can be multiple
18	First Name	Jeff	Mariya	
19	Middle Name	Alan		
20	Last Name	James	Farnandi s	
21	Gender	Male	Female	
22	Mobile No.	000000000		
23	Owner	No	Yes	
24	Administrator	Yes	No	
25	Guardian	No	No	
26	Age	46	35	
27	Marital Status	Married	Married	
28	Citizenship	Tanzanian	Tanzania n	
29	Resident	Yes	Yes	
	Non- Natural Person			
30	Institution name			
31	Address			
32	Phone Number			
	Multi-media			
33	Name			
34	Comments			
	Person of Interest (Next of Kin)	Next of Kin 1	Next of Kin 2	
35	Name (first, middle, last)	Mary Shelly James	Alana Susan James	Can be multiple
36	Village Chairperson			Captured in MAST web during set-up
36	Village Secretary			Captured in MAST web during set-up

REPORT FOR TENANCY IN PROBATE (ADMINISTRATOR)

Application		Witness Names								
Village Name	Ilalasimba	1.			4.					
Hamlet Name	Ilalasimba	2.			5.					
Plot ID	61IRA/ILL/136	3.								
Type of Ownership	Multiple Occupancy	Land Type: Flat Plain			Land Use:					
		Area of Plot: 2.3 acres			Current: Agriculture			Proposed: Agriculture		
Adjudication										

First Name	Middle Name	Last Name	Owner	Administrator	Guardian	Gender	Age	Marital Status	Citizenship	Address	Resident	Mobile Number
Jeff	Alan	James	Yes	Yes	No	M	46	Married	Tanzanian	Postal Code for Village	Yes	00000000
Mariy a		Farnand is	Yes	No	No	F	35	Married	Tanzanian	000	Yes	1111111

Neighbor	Name	Signature	Witness (LAC)	Signature	Drawing						
North	John sassy Ronald		John Stevens								
South	Jorge Simon Malave		Henry Stevens								
East	Tito Luis Rentas										
West	David sin Backahnd										
Right of Way and other uses:											
Person with Interest											
Signatory Name	Mary Shelly James	Signature		Date	Coordinates						
Signatory Name	Alana Susan James	Signature		Date	East:						
					North:						
Official Use Only											
Village Council Comments	<<Notes – hand written>>										
Village Assembly Decision	<<approval date for adjudication>>										
Name of Chairperson	xxxxxxxxxx	Signature		Date							
Name of Secretary	xxxxxxxxxx	Signature		Date							
Name of Adjudicator (TI)	Modesty Kachubo	Signature		Date							

16.2.4 ADJUDICATION DATA AND REPORT FOR TENANCY IN COMMON (GUARDIAN)/DATA FOR TENANCY IN COMMON (GUARDIAN) – MINOR

	General	Data	Data	Comments
1	Project name			Entered in system
2	Spatial Unit ID			Captured by system
3	Person type			Identified by TI
4	Village	Ilalasimba		
5	Hamlet			entered during field data capture
6	Witness 1 (adjudication Committee member)	John Stevens		Selected from drop down list in Mobile Application
7	Witness 2 (adjudication Committee member)	Henry Stevens		Selected from drop down list in Mobile Application
8	Trusted Intermediary	Modesty Kachubo		Selected from phone ID, assigned to TI
	Property Information			
9	Existing Use			
10	Right Of Way/Other Use			
11	Land Type			
12	Neighbor North	John sassy Ronald		
13	Neighbor South	Jorge Simopnet Malave		
14	Neighbor East	Tito Luis Rentas		
15	Neighbor West	David sin Backahnd		
	Tenure Type			
16	Tenure Type			
17	Type of Right of occupancy			
	Natural Person (includes Administrator and Guardian)			Can be multiple
18	First Name	Jeff	Mariya	
19	Middle Name	Alan		
20	Last Name	James	Farnandis	
21	Gender	Male	Female	
22	Mobile No.	0000000000		
23	Owner	Yes	No	
24	Administrator	No	No	
25	Guardian	No	yes	
26	Age	15	35	
27	Marital Status	Unmarried	Married	
28	Citizenship	Tanzanian	Tanzanian	
29	Resident	Yes	Yes	
	Non- Natural Person			
30	Institution name			
31	Address			
32	Phone Number			
	Multi-media			
33	Name			
34	Comments			
	Person of Interest	Next of Kin 1	Next of Kin 2	
35	Name (first, middle, last)	Mary Shelly James	Alana Susan James	Can be multiple
36	Village Chairperson			Captured in MAST web during set-up
36	Village Secretary			Captured in MAST web during set-up

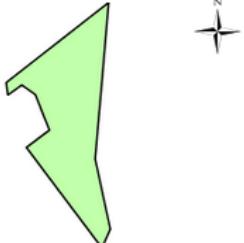
16.2.5 REPORT FOR TENANCY IN COMMON (GUARDIAN) – MINOR

Application			Witness Names								
Village Name	Ilalasimba		1.	4.							
Hamlet Name	Ilalasimba		2.	5.							
Plot ID	61IRA/ILL/136		3.								
Type of Ownership	Multiple Occupancy		Land Type: Flat Plain			Land Use:					
			Area of Plot: 2.3 acres			Current: Agriculture			Proposed: Agriculture		
Adjudication											

First Name	Middle Name	Last Name	Owner	Administrator	Guardian	Gender	Age	Marital Status	Citizenship	Address	Resident	Mobile Number
Jeff	Alan	James	Yes	No	No	M	15	Married	Tanzanian	Postal Code for Village	Yes	00000000
Mariy a		Farna ndis	No	No	Yes	F	35	Married	Tanzanian	000	Yes	11111111

Neighbor	Name	Signature	Witness (LAC)	Signature	Drawing
North	John sassy Ronald		John Stevens		
South	Jorge Simon Malave		Henry Stevens		
East	Tito Luis Rentas				
West	David sin Backahnd				
Right of Way and other uses:					
Person with Interest					
Signatory Name	Mary Shelly James	Signature	_____	Date	Coordinates
Signatory Name	Alana Susan James	Signature	_____	Date	East:
					North:
Official Use Only					
Village Council Comments	<<Notes – hand written>>				
Village Assembly Decision	<<approval date for adjudication>>				
Name of Chairperson	xxxxxxxxxx	Signature	_____	Date	
Name of Secretary	xxxxxxxxxx	Signature	_____	Date	
Name of Adjudicator (TI)	Modesty Maallaa	Signature	_____	Date	

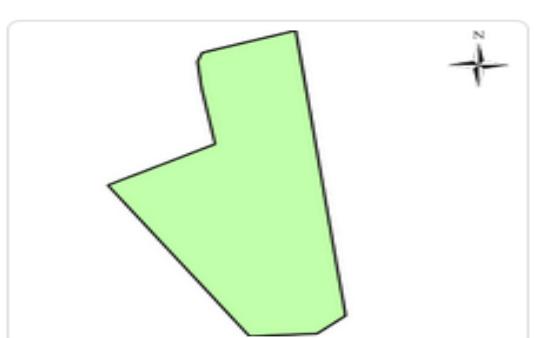
Form for Non-Natural Person:

SYSTEMATIC ADJUDICATION FORM						Form No 18 & 19
APPLICATION			Witness Name/Witness Names			Village Land Act No 5 of 1999
Village Name: Ilalasimba		1.	4.			Ownership Duration:
Hamlet Name: Ipangani		2.	5.			Application Date: 2015-05-01
Plot ID: 61IRA/IPG/77		3.			Village Assembly Date:	
Type of ownership: Institution		Land Type : Flat/Plain Area of the plots: 0.799 Acres			Land use: Current: Agriculture	Proposed: Agriculture
ADJUDICATION						
Name of Institution K.K.K.T Usharika Wa Magubike			Address Ipangani	Contact Number 0652401489		
Neighbor	Name	Signature	Witness(Village Land Committee)	Signature	Drawing:	
North	Batista Gaitani Kasike		1. Veronica Francis Nyunza			
South	Expedita Likongola Nyembeke		2. Anjela Juma Mtono			
East	Zahanati Ipangani					
West	Chesko Mhame/Furaha Exavery Nyembeke					
Right of way and other uses:						
Name of Adjudicator _____						
Signatory Name _____	Signature _____	Date _____				
Signatory Name _____	Signature _____	Date _____				
For Official use only:						
Village Council Comments _____						
Village Assembly Decision _____						
Name of Chairperson _____	Signature _____	Date _____				
Name of Secretary _____	Signature _____	Date _____				
Name of Adjudicator _____	Signature _____	Date _____				
Coordinates: East : 775243.980 North: 9139809.210						

16.3 CCRO

16.3.1 CCRO FOR SINGLE OWNER

CCRO page 1:

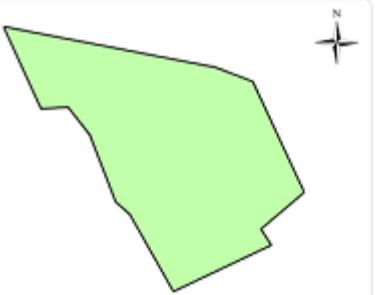
<p style="text-align: center;">JAMHURI YA MUUNGANO WA TANZANIA Fomu ya Ardhi ya Viji Na. 21 Namba ya Hati ya Hakimiliki: Namba ya UKA:-61IRA/KLG/146</p>	
<p style="text-align: center;">SHERIA YA ARDHI YA VIJJI, 1999 (Na. 5 ya 1999) HATI YA HAKIMILIKI YA KIMILA (CHINI YA FUNGU LA 25)</p>	
<p>Leo..... tarehe..... mwezi..... mwaka..... Hii ni kuthibitisha kwamba Halmashauri ya Kijiji cha Ilalasimba, S.L.P. 1243, Iringa imetoe kwa Catalina Msifara Mbogo (humu ndani akirejewa kama "Mkazi") hakimiliki ya kimila (itaitwa "hakimiliki") juu ya ardhi iliyofanuliwa katika Jedwali (humu ndani itaitwa "ardhi") kwa kipindi kisicho na kikomo tangu tarehe..... mwezi..... mwaka..... kwa maudhui na tafsiri halisi ya Sheria ya Ardhi ya Viji na kwa kuzingatia vipengele vyake na kanuni zozote zinazotungwa chini ya sheria hiyo au sheria mbadala au marekebisho yake na kwa mujibu wa masharti yafuatayo:</p> <ul style="list-style-type: none">i. Mkazi atalipa kodi ya mwaka ya Shs..... kabla ya tarehe..... ya mwezi..... kila mwaka (kama inahusika).ii. Ardhi itatumika kwa ajili ya Kilimoiii. Mkazi atawajibika kuhifadhi mazingira (ardhi na maji)iv. Mkazi atahakikisha kwamba mipaka ya ardhi inalindwa na kutunzwa na idumu kuwa bayana kwa kipindi chote cha hakimiliki.v. Mkazi ataheshimu na kuhifadhi haki za njia zilizopo.vi. Uhakilishi wa hakimiliki kwa mtu yeyote au kikundi chochote cha watu ambao kwa kawaide si wakazi wa kijiji lazima uidhinishwe na Halmashauri ya Kijiji	
<p style="text-align: center;">JEDWALI (Maelezo kamili ya eneo na mipaka yake) Ardhi hii yenye eneo lenye ukubwa wa 9,291 Ekari Iliyoko katika Kitongoji cha Kalangali.</p> <p>Mipaka:</p> <p>Kaskazini imepakana na Benitho Samile. Kusini imepakana na Njia. Mashariki imepakana na Tomas Sungwa. Magharibi imepakana Njia Ya Ng'ombe. Kama inavyoonyeshwa katika mchoro/ramani hapa kulilia.</p>	

CCRO Page 2 :

1.Jina kamili :.....	LAKIRI/MHURI WA HALMASHAURI YA KODDI
Saini:.....	
Anuani S.L.P: 108,Iringa	
Wadhifa: Mwenyekiti wa Kijiji	
Jina kamili:.....	
Saini:.....	
Anuani S.L.P: 108,Iringa	
Wadhifa: Afisa Mtendaji wa Kijiji	
2.Mmiliki(Mkazi)	
Jina	Saini/dole gumba
Msifara Mbogo
	PICHA
3.Imegongwa Lakiri ya Halmashauri ya Wilaya ya Iringa na kusainiwa leo Tarehe..... Mwezi.....Mwaka 2015.	LAKIRI
Jina: GEOFREY REUBEN KALUWA	
Saini:.....	
Wadhifa: Afisa Ardhhi Mteule wa Wilaya	

16.3.2 CCRO FOR MULTIPLE OWNER

CCRO page 1:

<p style="text-align: center;">JAMHURI YA MUUNGANO WA TANZANIA</p> <p>Namba ya Hati ya Hakimiliki:</p> <p>Namba ya UKA:-61IRA/IGG/243</p>	
<p style="text-align: center;">SHERIA YA ARDHI YA VIDDI, 1999 (Na. 5 ya 1999)</p> <p style="text-align: center;">HATI YA HAKIMILIKI YA KIMILA (CHINI YA FUNGU LA 25)</p>	
<p>Leo tarehe.....mwezi.....mwaka.....</p> <p>Hi ni kuthibitisha kwamba Halmashauri ya Kijji cha Balasimba, S.L.P. 1243, Iringa imetoa kwa Sandina Wilson Mbago, Evelina Francis Mduda(humu ndani wokirejewa kama "Wakazi") hakimiliki ya kimila (itaitwa "hakimiliki") juu ya ardhi iliyofanuliwa katika Jedwali (humu ndani itaitwa "ardhi") kwa kipindi lisichio na kikomo tangu tarehe.....mwezi.....mwaka..... kwa maudhui na tafsiri halisi ya Sheria ya Ardhi ya Vijiji na kwa kuzingatia vifungele vyake na kanuni zozote zinazotungwa chini ya sheria hiyo au sheria mbadala au marekebisho yake na kwa mujibu wa masharti yofuatayo:</p> <ul style="list-style-type: none">i. Wakazi watalipa kodi ya mwaka ya Shs..... kabla ya tarehe.....ya mwezi.....kila mwaka (kama inahusika).ii. Ardhi itatumika kwa ajili ya Kilimoiii. Wakazi watawajibika kuhibodhi mazingira (ardhi na maji)iv. Wakazi watahakikisha kwamba mipaka ya ardhi inalindwa na kutunzwa na idumu kuwa bayana kwa kipindi chote cha hakimiliki.v. Wakazi wataheshimu na kuhibadhi haki za njia zilizopo.vi. Uhakilishi wa hakimiliki kwa mtu yeyote au kikundi chochote cha watu ambao kwa kawaida si wakazi wa kijji lazima uidhinishwe na Halmashauri ya Kijji	
<p style="text-align: center;">JEDWALI (Maelezo kamili ya eneo na mipaka yake)</p> <p>Ardhi hii yenyeh yene lenye ukubwa wa 1.803 Ekari Iliyoko katika Kitongoji cha Igungandembwe.</p> <p>Mipaka:</p> <p>Kaskazini imepakana na Njia. Kusini imepakana na Familia. Masheriki imepakana na Njia. Magharibi imepakana Sandina Mbago. Kama inavyoonyeshwa katika mchoro/ramani hapa kulia.</p>	

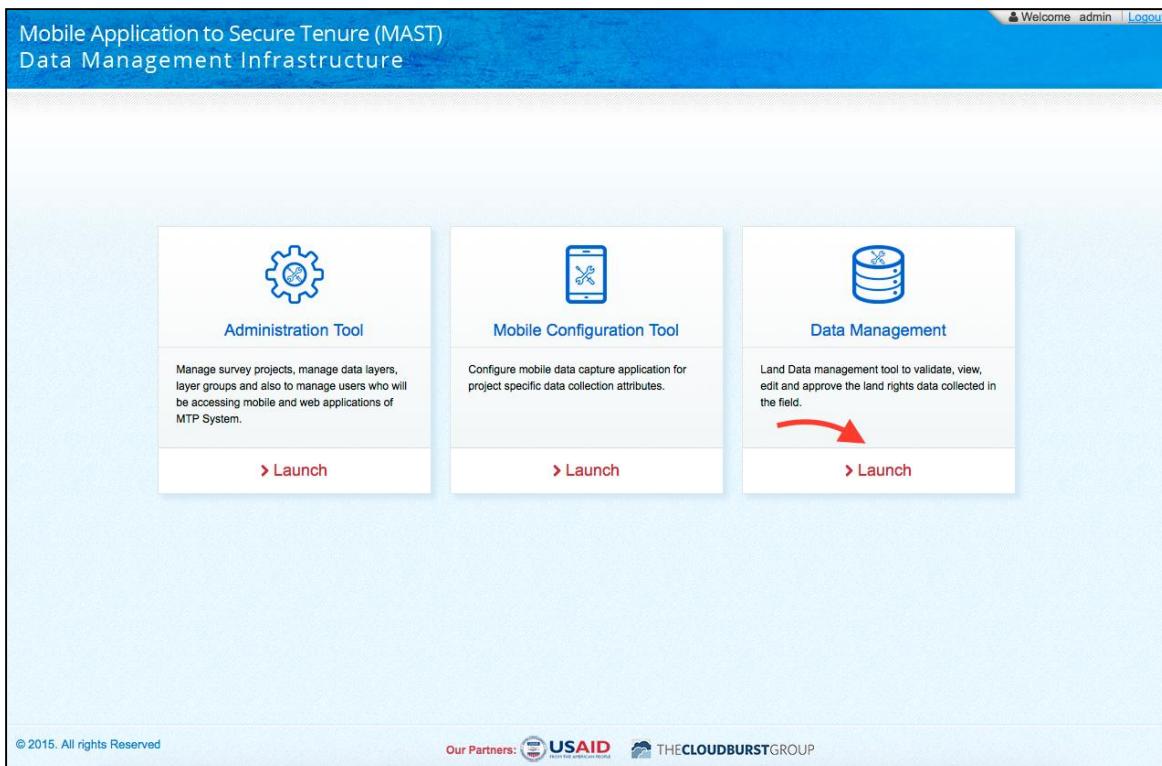
CCRO Page 2 :

1. Jina Kamili:	LAKIRO/MHUSI WA HAI MASHARIKI YA KUBI	
Sofia.....		
Anumui S.L.Pt 108, Iringa		
Wedhafe: Ntweriyekiti wa Kijiji		
Jina Kamili:		
Sofia.....		
Anumui S.L.Pt 108, Iringa		
Wedhafe: Afisa Mtendaji wa Kijiji		
2. Wamikiz (Wakazi)		
Amie	Sem/cole gumba	PICHAS
Sandina Wilson Wangi	
Amie	Sem/cole gumba	PICHAS
Eveline Francis Ndudo	
3. Umegongwa Lakiro ya Halmashauri ya Wilaya ya Iringa na Luminwa Ido Tambo..... Mwaka: Mwaka 2015.		LAKIRO
Jina: GEOFFREY REUBEN KALUWA		
Sofia.....		
Wedhafe: Afisa Andhi Mteule wa Wilaya		[Print]

17. ADDING/EDITING PERSONS OF INTEREST (NEXT OF KIN) & NATURAL PERSONS

17.1 WEB APPLICATION FLOW

User clicks on Data Management option as shown below:



User clicks on “Edit Attribute” (EA) button as shown below:

Mobile Application to Secure Tenure (MAST)
Data Management Infrastructure

Welcome admin Logon

Map Land Records

Project Name	Country	Region	District	Village	Hamlet
Tanzania_Pilot_Live	Tanzania	Iringa	Igunga	Ilalasimba	--

USIN ID UKA ID Status From To

Search Clear

USIN	UKA	Status	Collector	Date	Actions
000000468	III/fgh/7	New	Trusted Inter.	2015-05-01	
000000494	III/fgh/10	New		2015-05-05	
000000497	III/fgh/11	New		2015-05-05	
000000506	III/fgh/14	New		2015-05-05	
000000524	III/fgh/21	New		2015-05-05	
000000614	III/fgh/34	New		2015-05-06	
000000646	III/fgh/35	New		2015-05-06	
000000849	IGG/asda/3	New		2015-05-09	
000000851	IGG/fgh/1	New		2015-05-09	
000000860	IGG/fgh/10	New		2015-05-09	

Generate UKA

1 To 10 Of 674

User can click on “+ New Person” to add new person as shown below:

Data Management

Map Land Records

ID	Name	Gender	Education	Person Type	Edit	Delete	Upload Image
1262	Bonifas	Male		Administrator			
1326	sdf	Female	Primary	Guardian			
1328	cx	Male	None				
1262	Bonifas	Male		Administrator			

+ New Person Existing Person

USIN	UKA
000000948	IGG/fgh/5
000000949	61IRA/IGG/103
000000950	61IRA/IGG/104
000000951	61IRA/IGG/105
000000952	61IRA/IGG/106
000000953	61IRA/IGG/112
000000954	IGG/asda/8
000000955	IGG/asda/17
000000956	IGG/asda/15
000000957	IGG/asda/16

Approved Trusted Inter. 2015-05-25

Final 2015-05-25

Final 2015-05-25

Update Cancel

1 To 10 Of 719

- User can delete a person by clicking on the trash icon in Natural person tab on edit attribute form.

Mobile Application to Secure Tenure (MAST)
Data Management Infrastructure

Welcome admin | Log Out

Map Land Records

Project Name: Tanzania_Pilot_Live

USIN ID	UKA ID
000000895	61IRA/IGG/56
000000894	61IRA/IGG/55
000000893	61IRA/IGG/54
000000892	61IRA/IGG/53
000000891	61IRA/IGG/52
000000890	61IRA/IGG/51
000000889	61IRA/IGG/50
000000887	61IRA/IGG/49
000000886	61IRA/IGG/48
000000885	61IRA/IGG/47

Edit Attribute

Natural Person

ID	Name	Gender	Education	Person Type	Edit	Delete	Upload Image
1193	Remijis	Male					
1194	Ruth	Female					

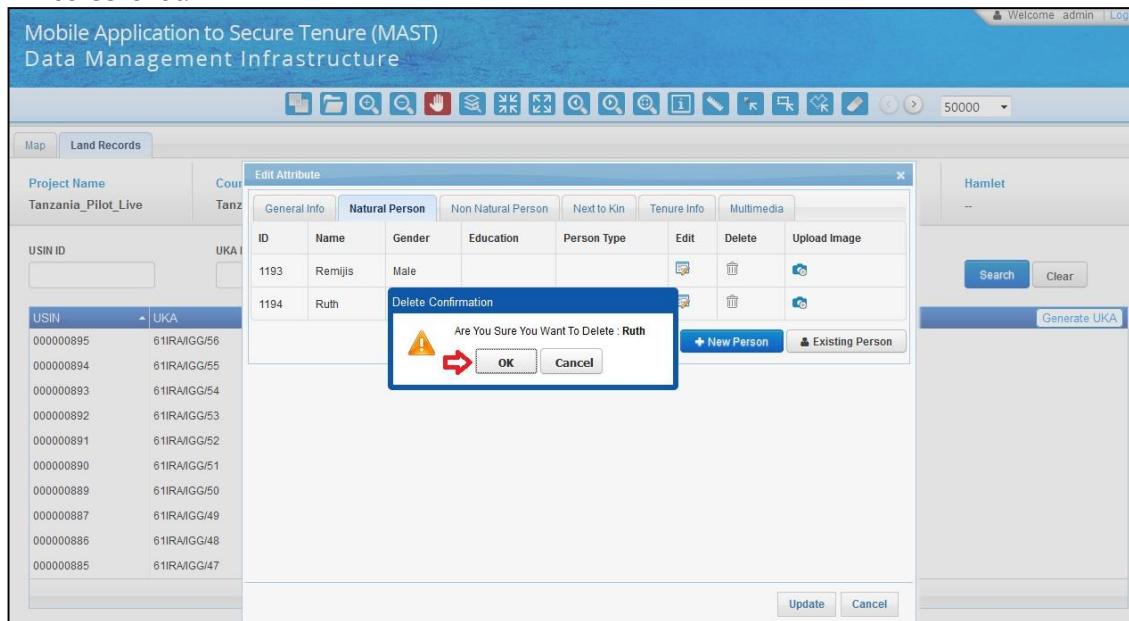
New Person Existing Person

Update Cancel

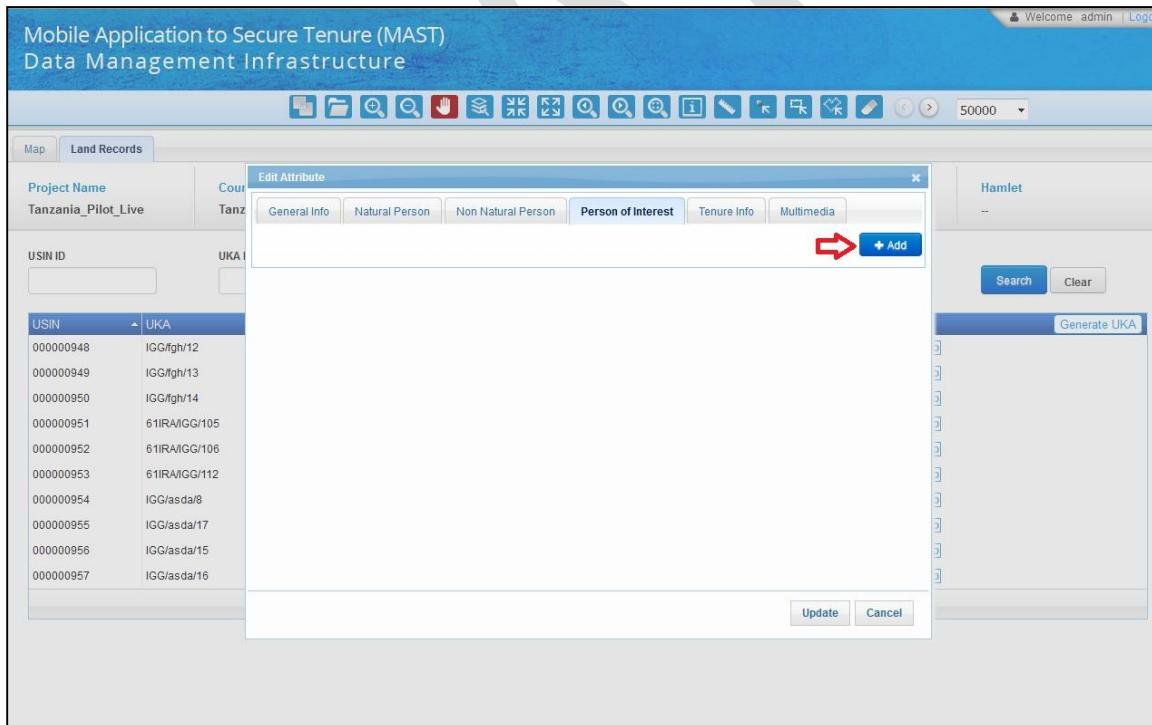
Hamlet --

Search Clear Generate UKA

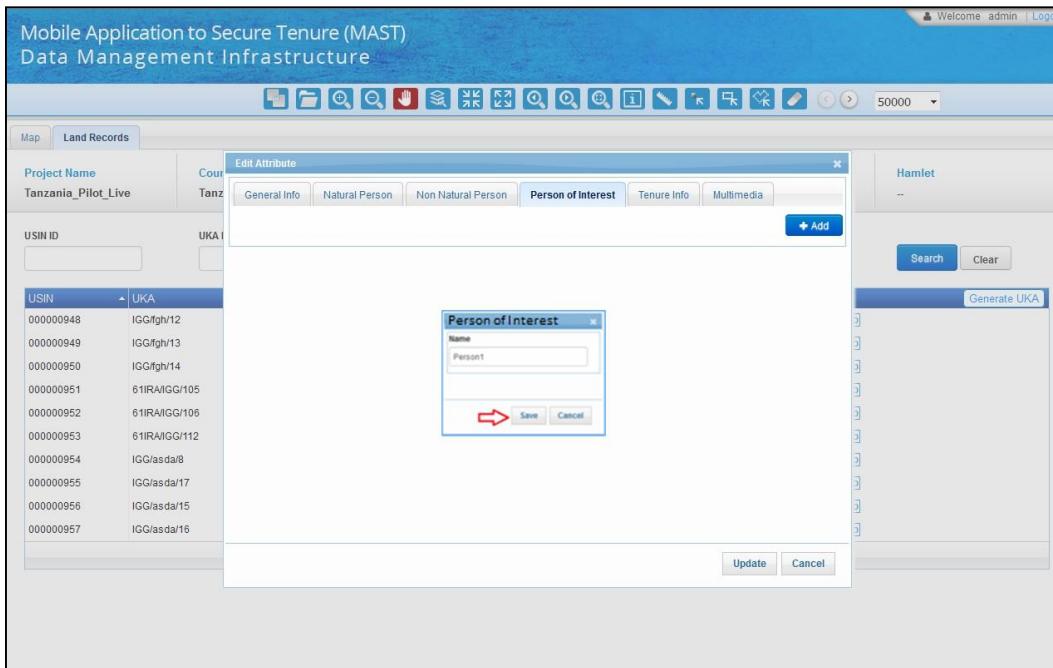
- On clicking the trash icon, system will ask for delete confirmation from user as shown in below screenshot.



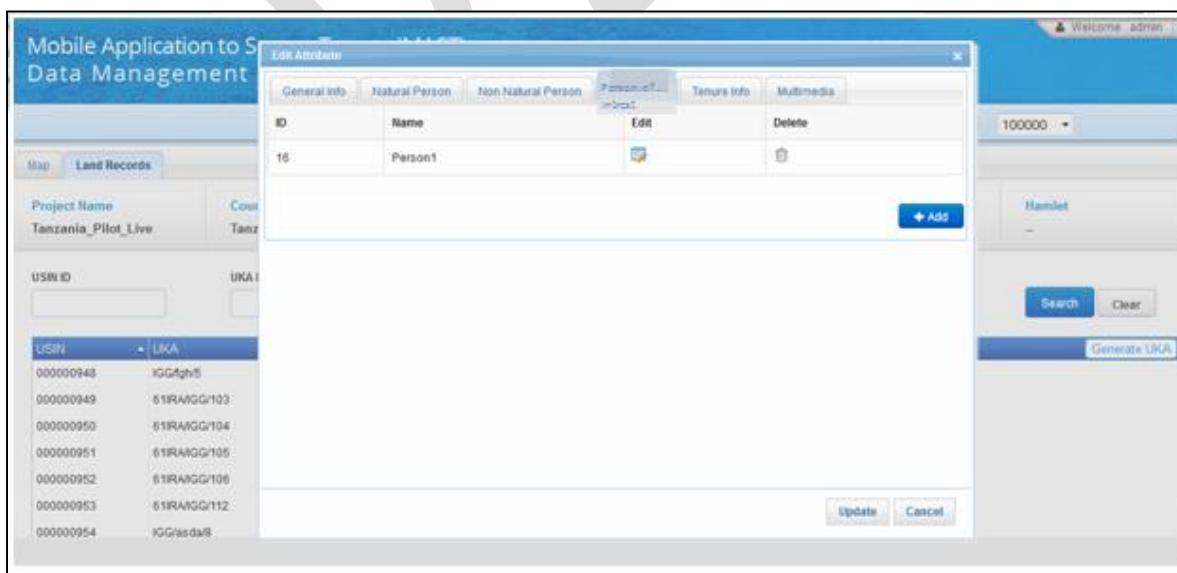
- User can also add new person/persons of interest by clicking on 'Person of Interest' tab & then by clicking on “+ add” button as shown below:



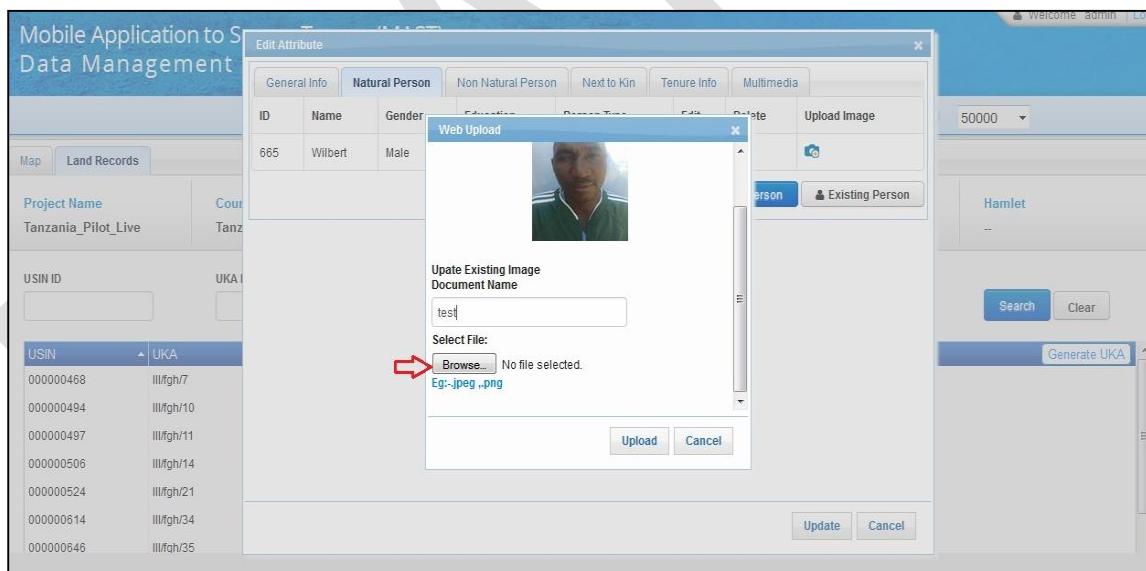
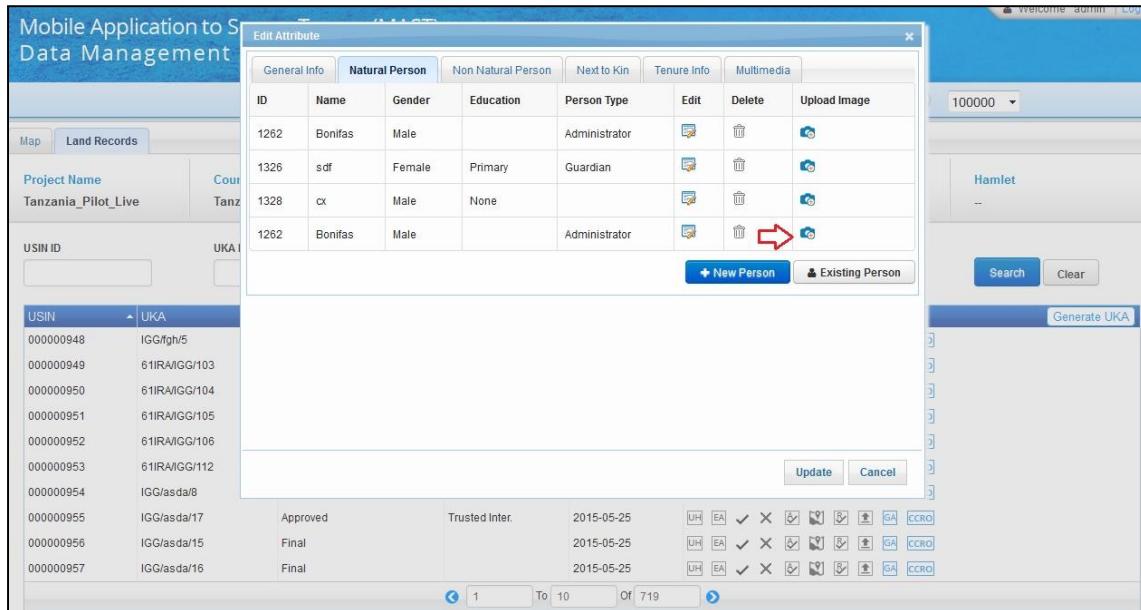
A FORM WILL OPEN WHERE USER CAN ADD THE DETAILS RELATED TO PERSON OF INTEREST AND CLICK ON “SAVE” BUTTON TO UPDATE THE RECORDS AS SHOWN BELOW:



The updated records will be displayed in a tabular format as shown below:



- User can also click on Upload image icon to upload new image or to replace the existing image if any as shown below:



- After clicking on upload image icon, user will be shown the following image & user can upload or replace the image by browsing the picture as shown below:

18. MOBILE DATA CAPTURE APPLICATION MAP LAYOUT

Map layout is required to help with the process of verifying and correcting data, especially correcting parcel boundary information.

18.1 SYSTEM FUNCTION

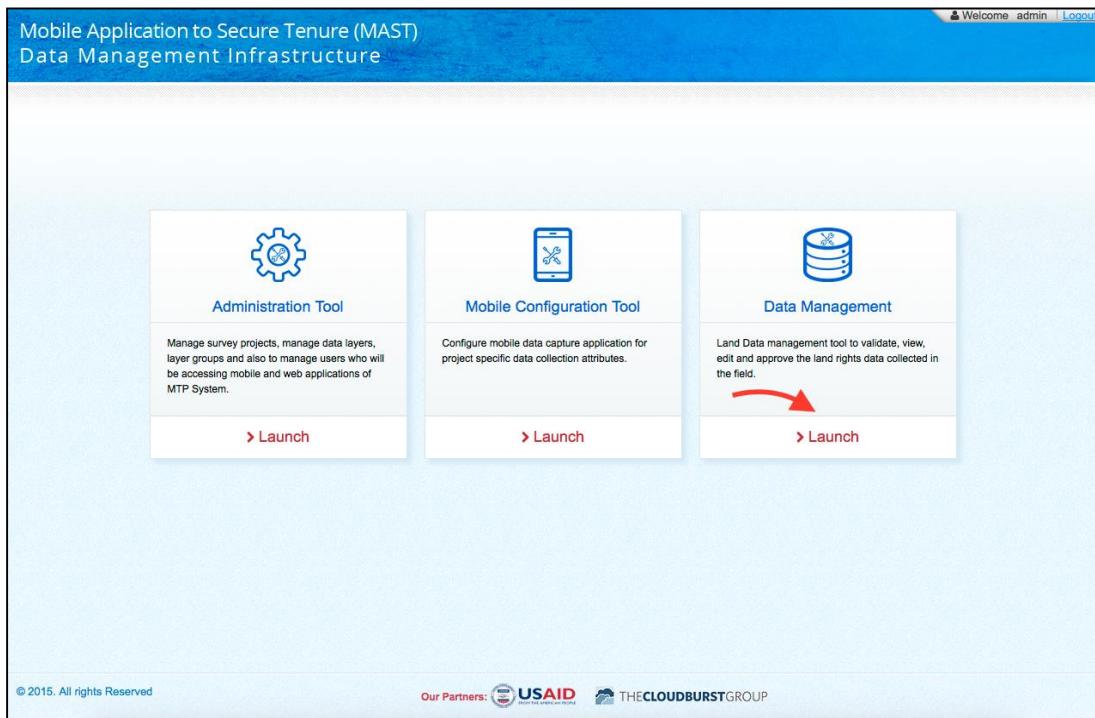
After the data has been captured by the trusted intermediaries and synced to the MAST web application, it is anticipated that there will be scenarios like overlapping parcels, in some cases, there may be instances of where incorrect data has been captured. The map layout will therefore be used for a quick verification of data. A print functionality will be developed to facilitate this process which will enable users to easily get all the information of the parcels in a single layout.

This functionality will be provided in the tools section of the map viewer in the Data Management module of the MAST web application.



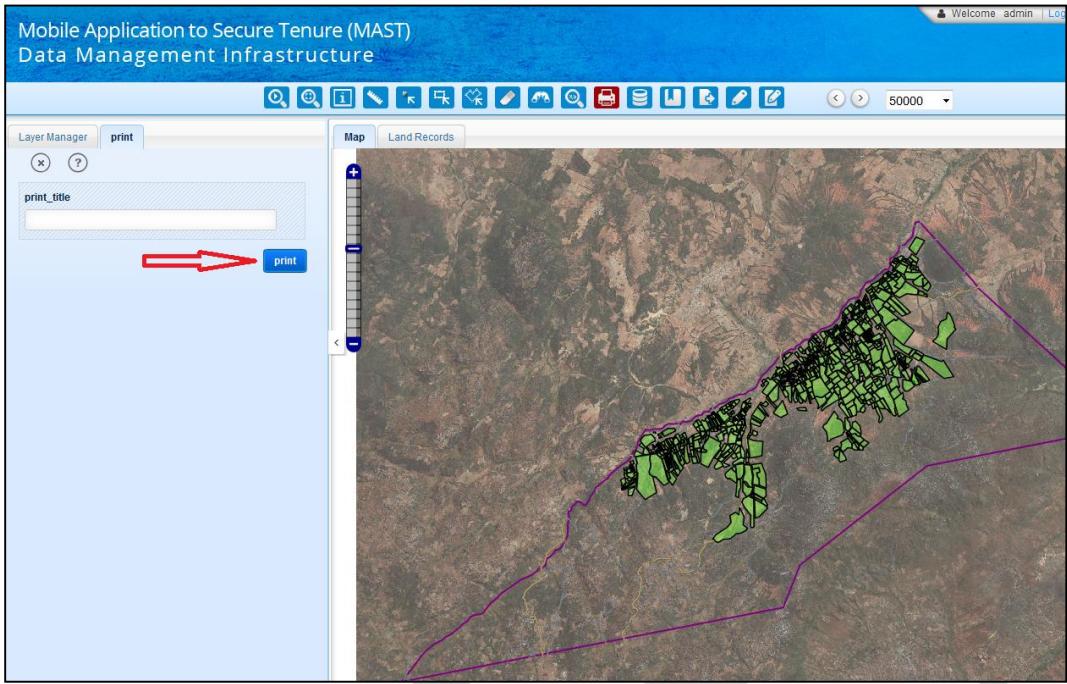
User need to adjust the map on the parcels for which field verification needs to be done. On clicking the map layout tool (Print tool as shown below) from the toolbar, the web app will capture screen from the map viewer and list the attributes of all the parcels in the map view.

Steps



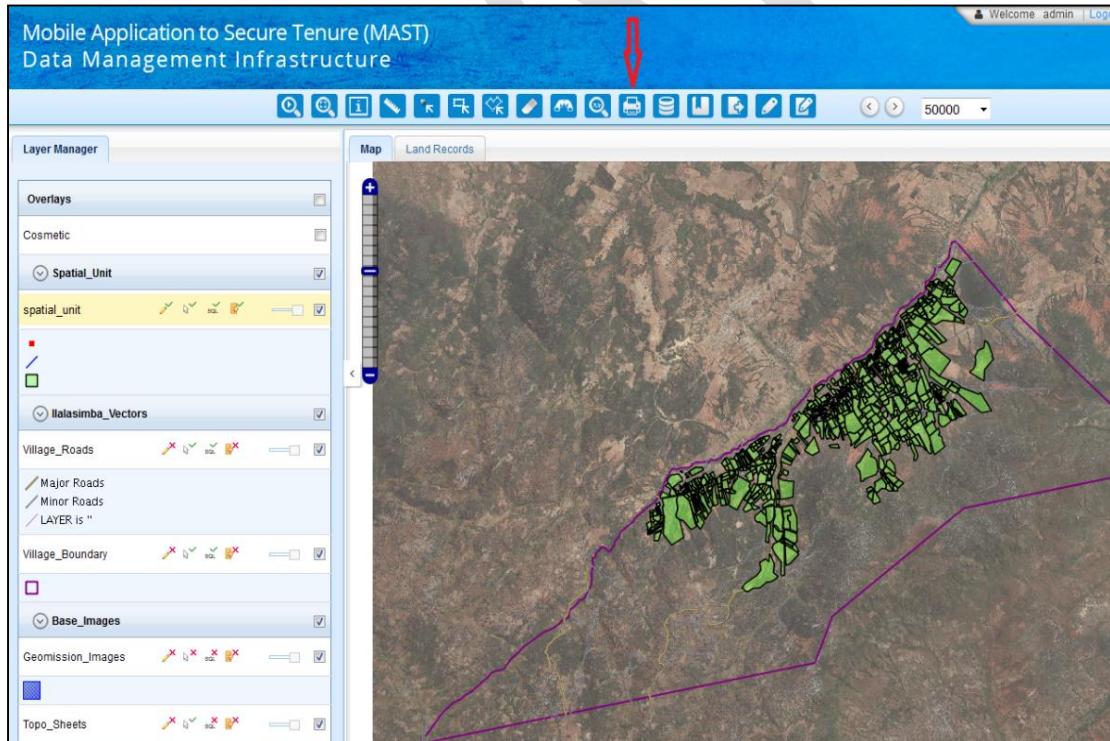
- User selects the **Data Management** option as shown below:

User will be shown the following screen & then user can select the **Print** button icon as shown below:



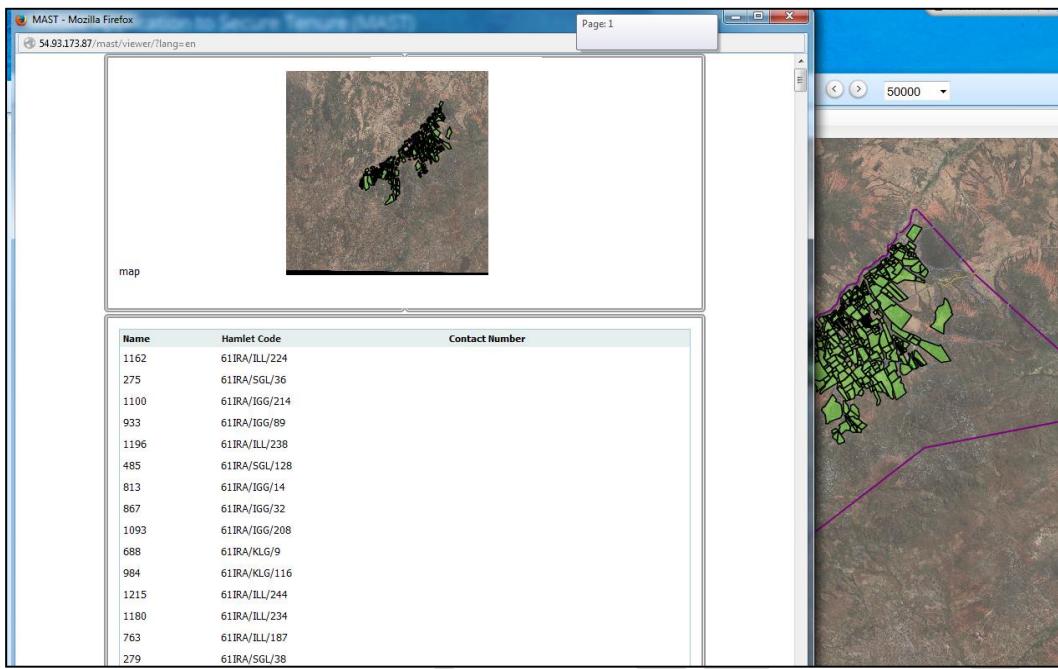
After

clicking on **Print** button icon, user will be shown following screen, user can click on **Print** button present in left menu as shown below:



After

clicking on **Print** button, a pop up will be shown with map area as well as with parcel attributes as shown below:



User can take the

print out of the same.

The sample of the Map Layout is shown in the section below.

18.1.1 SAMPLE MAP LAYOUT

MAST - Mozilla Firefox

54.93.173.87/mast/viewer/?lang=en

Page: 1

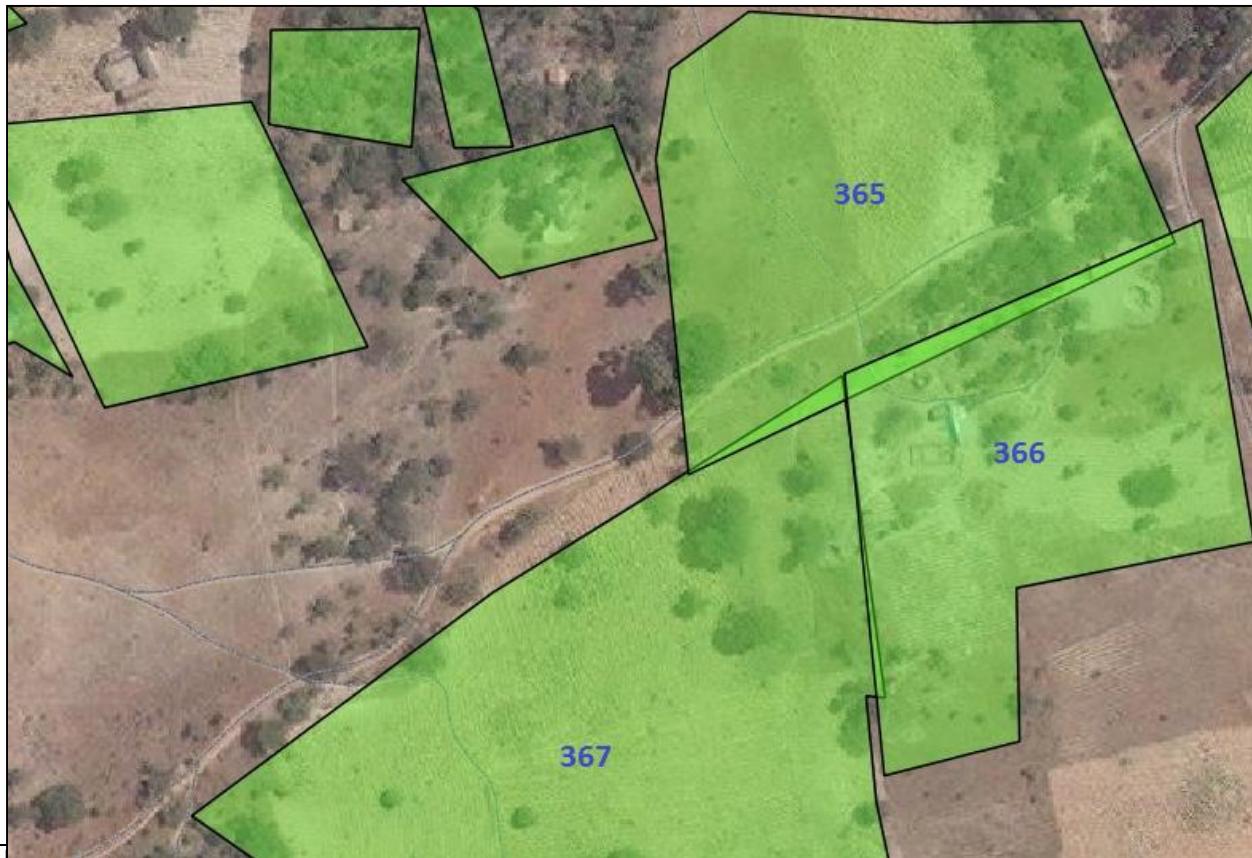
map



Name	Hamlet Code	Contact Number
1162	61IRA/ILL/224	
275	61IRA/SGL/36	
1100	61IRA/IGG/214	
933	61IRA/IGG/89	
1196	61IRA/ILL/238	
485	61IRA/SGL/128	
813	61IRA/IGG/14	
867	61IRA/IGG/32	
1093	61IRA/IGG/208	
688	61IRA/KLG/9	
984	61IRA/KLG/116	
1215	61IRA/ILL/244	
1180	61IRA/ILL/234	
763	61IRA/ILL/187	
279	61IRA/SGL/38	

18.1.2 MAP LAYOUT SAMPLE

Mobile Application to Secure Tenure



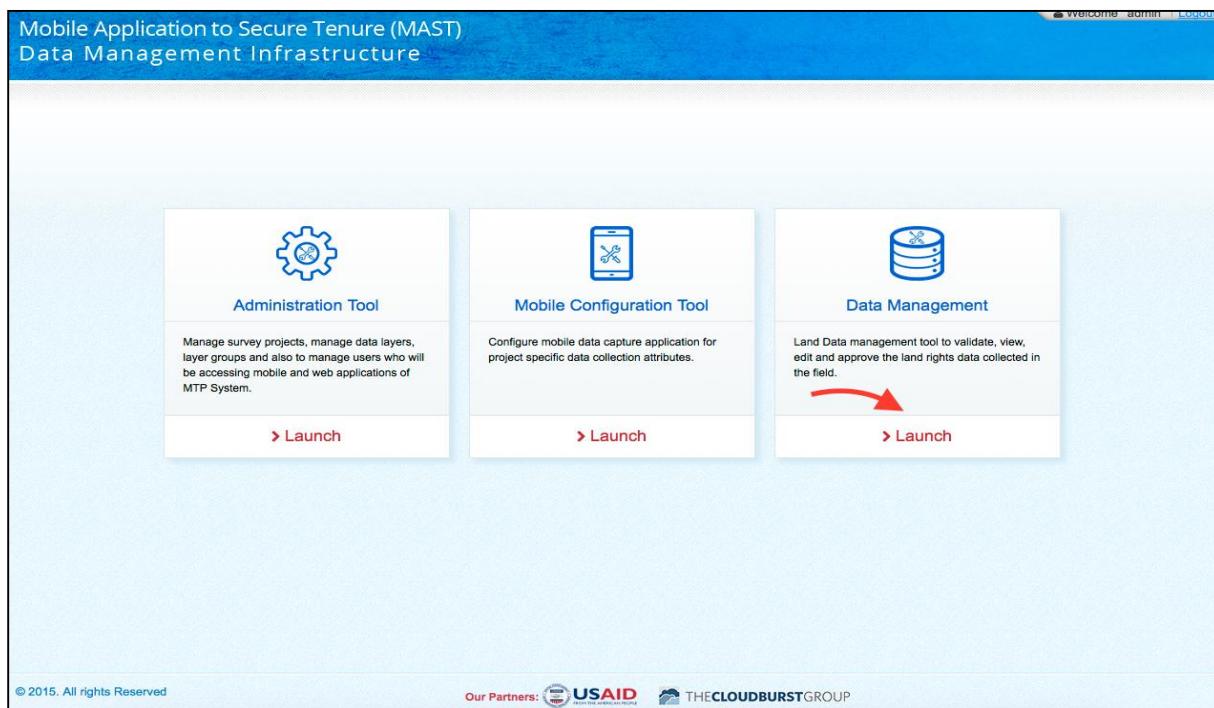
User	Hamlet Name	Person Type	Owner Name	Person with interest	Contact No.
365	Hamlet A	Owner	John Stevens	Susan Stevens, Henry Stevens	7845664512
366	Hamlet A	Guardian	James	Jeffrey Euwema, Kilman Henry	7842145542
367	Hamlet A	Administrator	Thomas	Alton Vidal, Jennifer Vidal	9857269213

19. MAST SPATIAL DATA VALIDATION

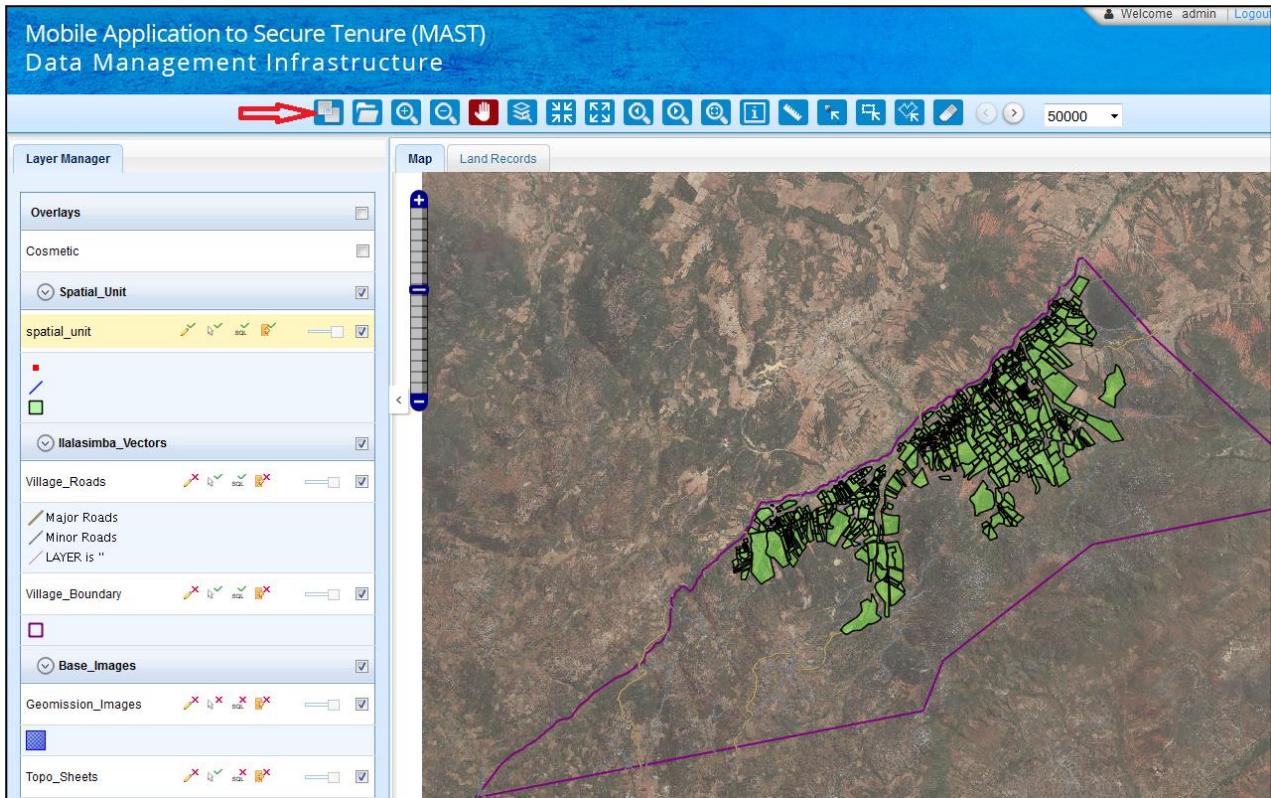
Spatial data validation is required to find any discrepancies in data and to remove/resolve the discrepancies in features. Any intersection/overlapping of the features or invalid geometry will be identified and the will be able to resolve the errors using existing editing tools provided in the MAST data management module.

19.1 SYSTEM FUNCTION

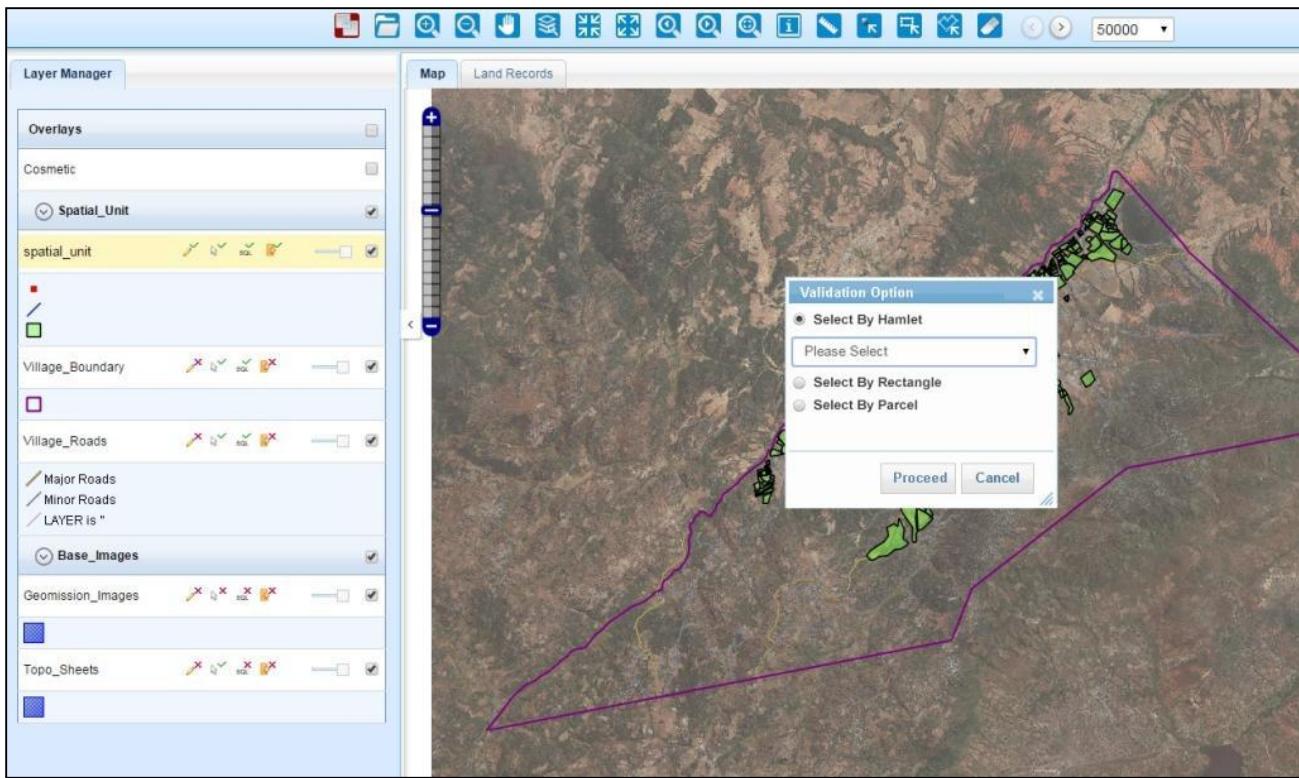
User clicks on Data Management tool as shown below:



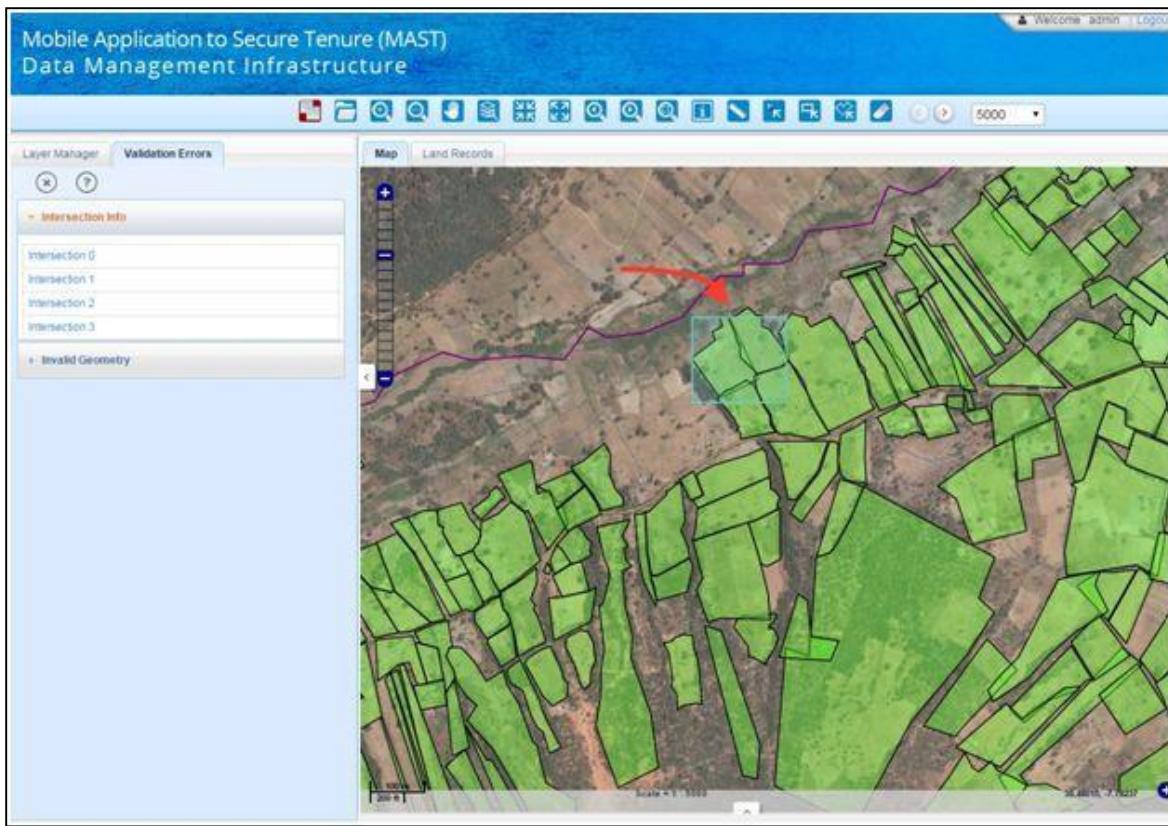
- Users will select a spatial validation tool in map viewer as shown below:



- On selecting the spatial validation tool, a popup will appear providing the user with the following options to check topology. Users will be allowed to check topology by geographic area, either for an entire hamlet, or will be able to utilize the select tool for a specific rectangle. The user will also be provided the option to select all spatial units in a project.
 - a) Select by Hamlet
 - b) Select by Rectangle
 - c) Select All parcels



- Select by hamlet:** On selecting this option a dropdown with all the hamlets mapped to the project will appear. User can select the desired hamlet for spatial validation and click on Proceed button.
- Select by Rectangle:** On selecting this option, user can select the spatial unit geometries within the map view using the rectangle selection. Spatial validation tool will run on all the features selected using the rectangle selection.
- Select all parcels:** On selection of this option spatial validation tool will run for all the parcels captured in the project.



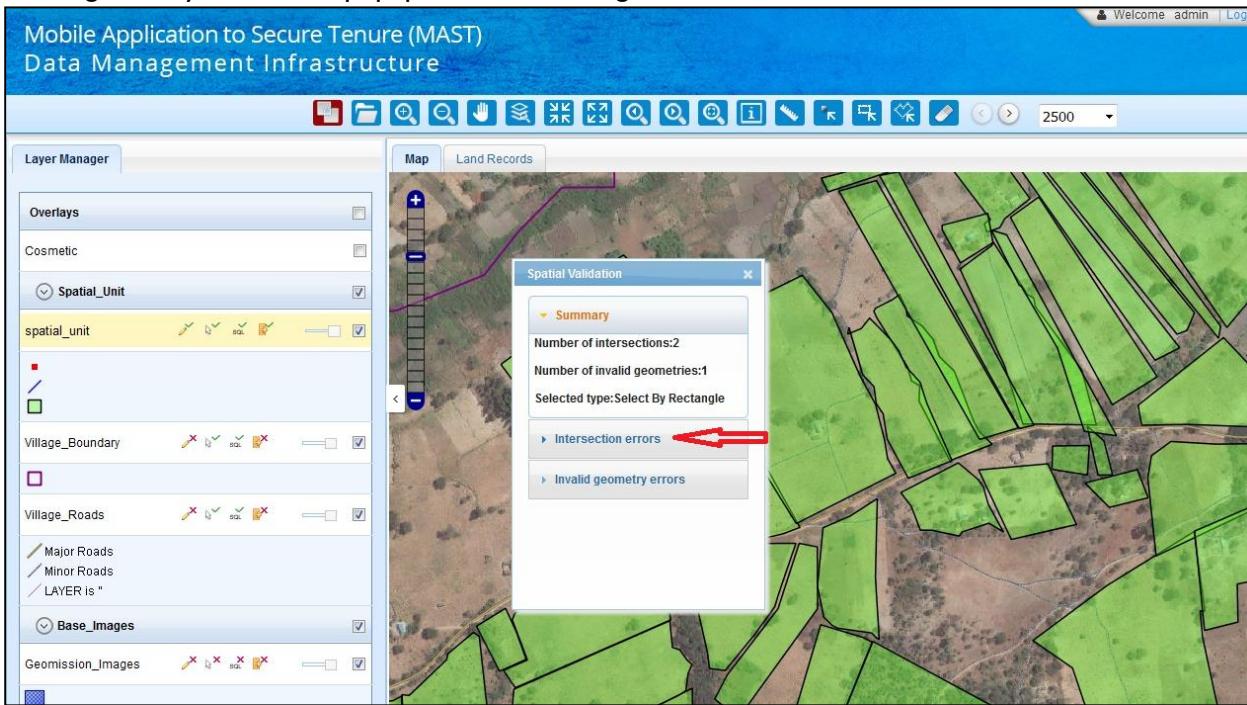
19.1.1 SPATIAL VALIDATION METHODOLOGY

MAST web application utilizes JSTS processes/methods for geometry validation pertaining to a single Layer. Java Script Topological Suite or JSTS is a JavaScript library of spatial predicates and functions for processing geometry conforming to the Simple Features Specification for SQL published by the Open Geospatial Consortium. JSTS Topology has a built in parser for Open Layers geometries which eases the spatial validations parsing. Following are the geometric validations that will be executed by the system along with the corresponding operation/feature of JSTS that will be utilized for the validation:

Function	JSTS geometric operation
Geometry validation Ref: Must Not Self-Overlap. Must Not Self-Intersect. Must Be Single Part	Validation isValid()
Intersect operations Ref: Computes a Geometry representing the points shared by this Geometry and other.	Spatial Predicates intersects() intersection(other)

19.1.2 SPATIAL VALIDATION RESULTS

Now system will generate **validation error** result in three sections viz. Summary, Intersection errors & Invalid geometry errors as a popup as shown in image below:



Summary section will show the type of selection & counts of Intersection errors & Invalid geometry errors.

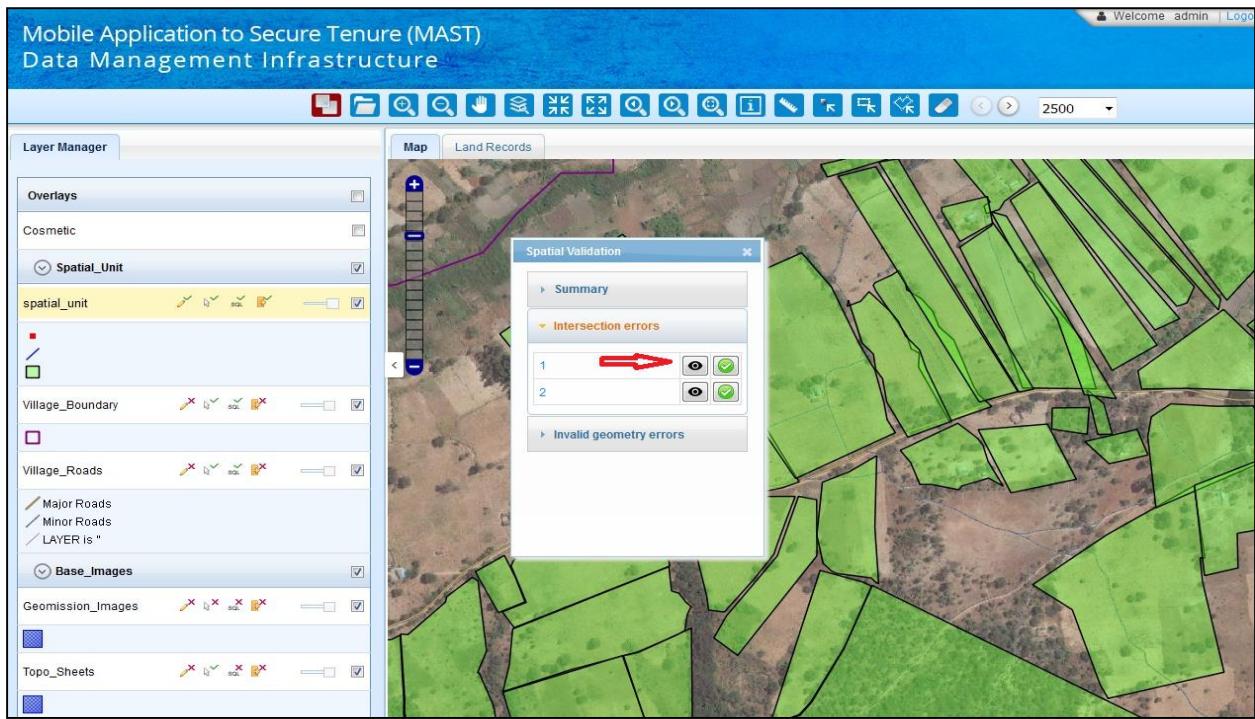
Error Listing: - when user selects one of the sections from validation errors option i.e. either **Intersection errors** or **Invalid geometry errors**, system will show listing of all the topological errors in geometries found by the validation tool under the relevant selected section.

Then user selects one of the geometry error listed in a section by clicking on the list item, the clicked geometry error will get highlighted on map.

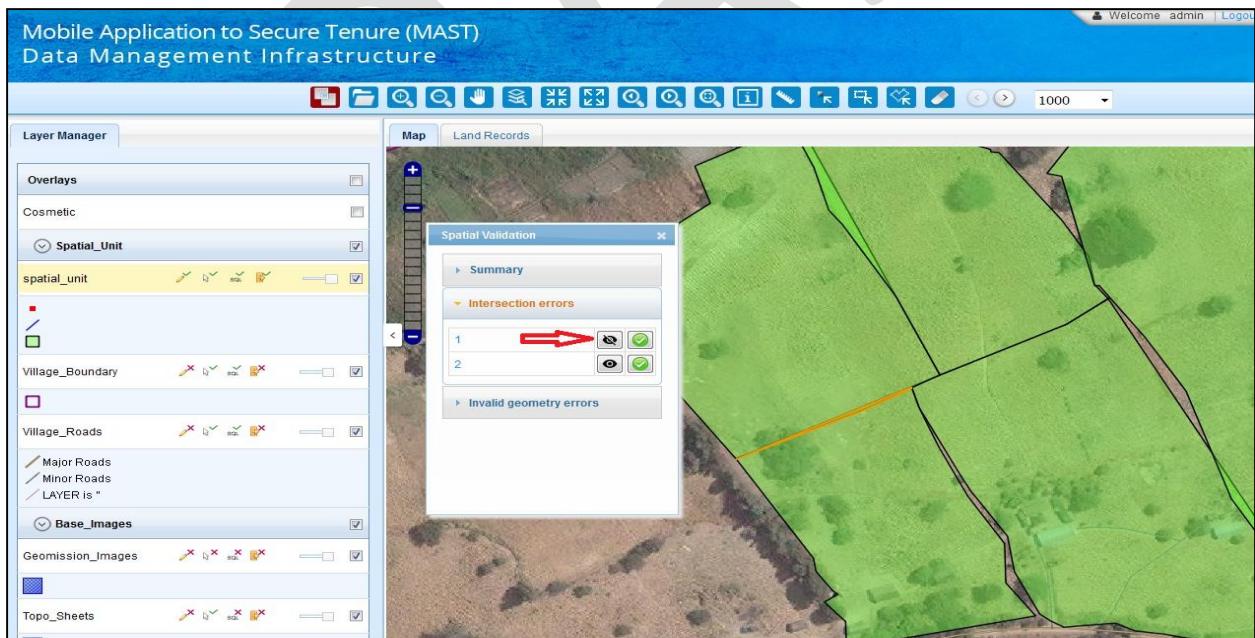
The result of the spatial validation tool is categorized under two headings:

19.1.2.1.1.1.1 Intersection/Overlapping Geometry Errors

When user selects the **Intersection geometry** errors option following screen will be shown as shown in the image below:



Now, user clicks on view icon as shown in image above, the selected intersection error will get highlighted on map as shown in image below:

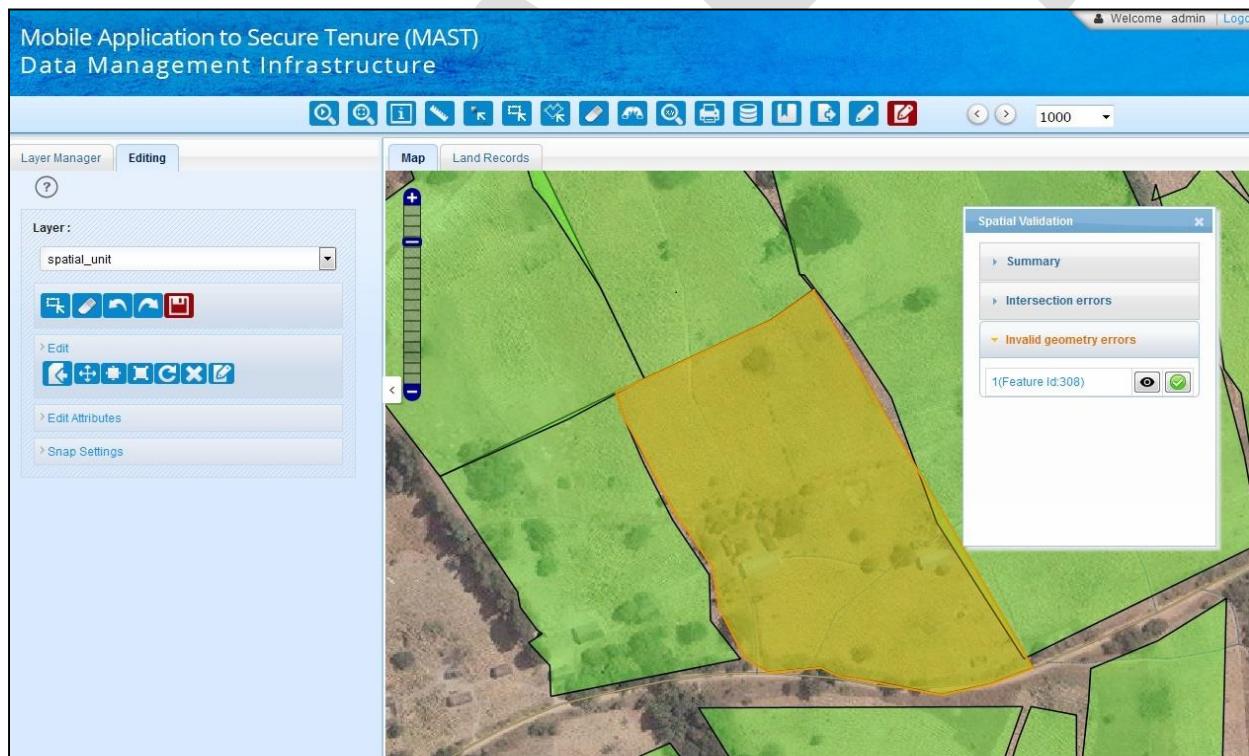


If user again clicks on view icon as shown in image above, then highlighted geometry will get in normal state as shown in image below



19.1.2.1.1.1.2 Invalid geometry Errors

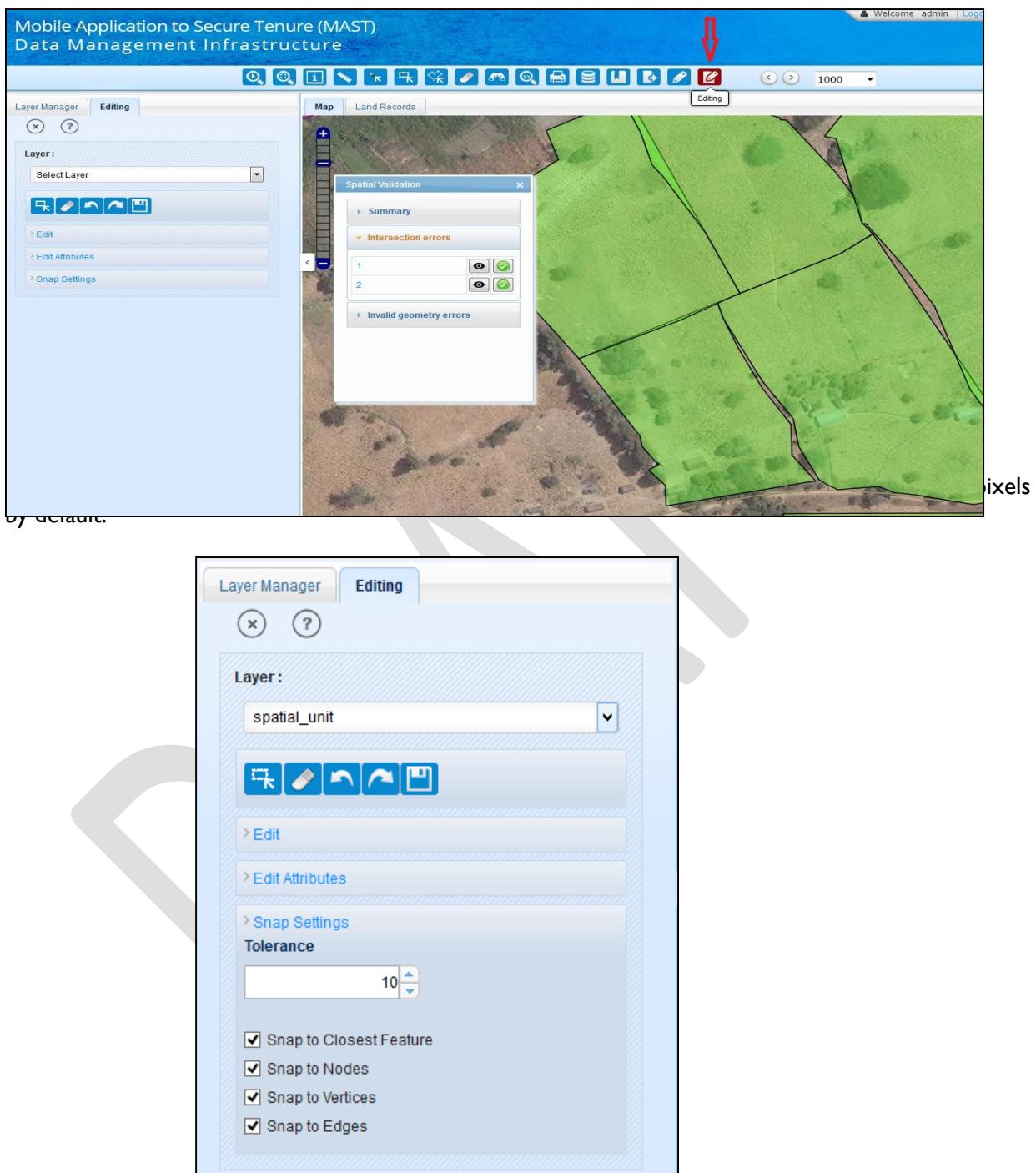
If user selects any invalid geometry errors, following screen will be shown as shown below:



Geometry error markup toggle in invalid geometry works similar to intersection error.

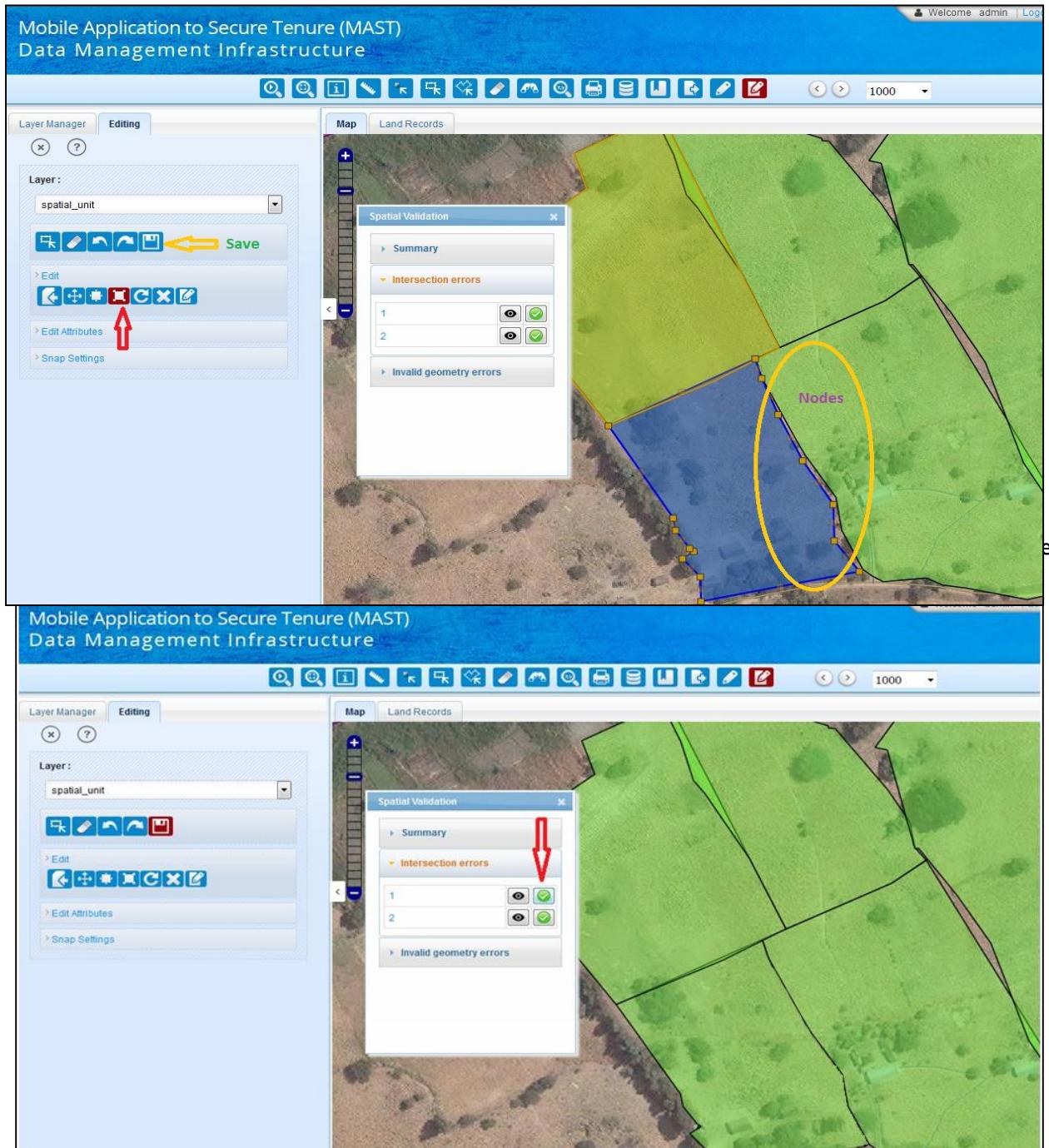
19.1.3 SPATIAL VALIDATION ERROR CORRECTION

User can fix the geometry errors by selecting Editing tool as shown below:

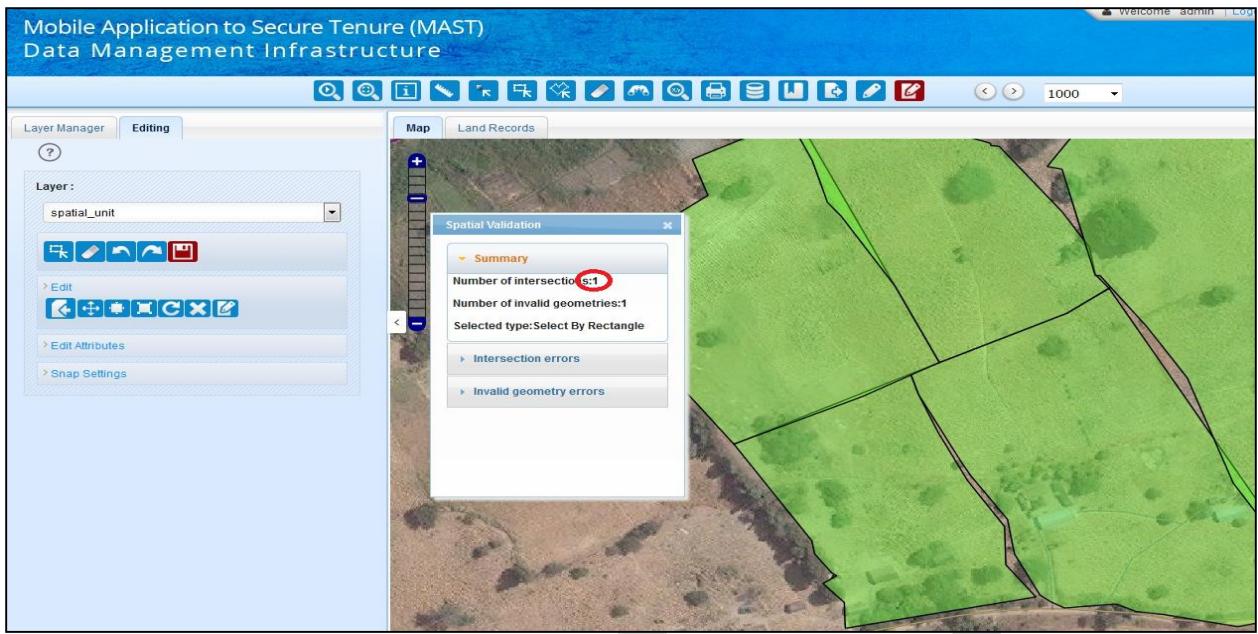


Snap setting are available in the last accordion of the editing tab. User can select the snap parameters according to requirement. Available options are:

After selecting the **Editing** tool user will be shown the editing menu on left side, user will select the **Layer (spatial_unit)** & then clicks on **edit** tab, user will be shown more options to edit the geometry as shown below:



User can mark the error as fixed by clicking on fixed icon as shown in image above. When user clicks on fixed icon, error item that have been fixed will be removed from the list as shown in image.



Once the user clicks on fixed icon, error list get refreshed & error count would be decreased by one as shown in above image.

Once all the errors are fixed, user can run the validation tool again to check if any other error is introduced in data while editing. Validation tools should be rerun till all the topological errors are removed from the data.

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