



Coastal Profile for Tanzania 2014 - Map and Table Volume III

Investment Prioritization for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania



Investment Prioritization for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania



For more information contact:

WORLD BANK – AFRICA REGION, Tanzania
Contact: Ann Jeannette Glauber
E-mail: aglauber@worldbank.org

DHI, Denmark
Contact: Gorm Jeppesen
E-mail: goj@dhigroup.com

SAMAKI Consultants, Tanzania
Contact: Matthew Richmond

E-mail: matt@samaki.net

Introduction

The Government of Tanzania with World Bank assistance has through the project “Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania” identified and prioritised threats and developed fundable adaptation measures to address the most pertinent of these threats.

The study has been financed by the World Bank (WB) with trust funds provided by Nordic Development Fund (NDF).

The client for the project is Fisheries Department at the Ministry for Livestock and Fisheries Development (MLFD) in Dar es Salaam and the Department of Fisheries and Marine Resources at the Ministry of Agriculture, Livestock and Environment (MALE) in Zanzibar.

The objective of the study has been to prioritise geographically and thematically the actions to promote sustainable coastal livelihoods and ecosystems in Tanzania (both Mainland and Zanzibar). The results comprise proposals for measures for coastal management and climate change adaptation in Tanzania, which the Government of Tanzania, NGOs, and donors can use to guide their support and investments over a five year period and beyond.

This document is Volume III of a rapidly compiled Coastal Profile presenting a baseline on current information in the coastal areas of mainland Tanzania and Zanzibar. It presents the Geographical Information System developed and applied in the study, as well as a series of maps and tables.

Further details on the project are provided in the thematic part of the Coastal Profiles for Tanzania and Zanzibar (Volume I).

List of Contents

Introduction.....	2
List of Contents.....	2
List of Maps.....	3
List of Tables.....	3
The Coastal Profile.....	4
Coastal Profile Maps.....	4
Meta description.....	4
<i>Meta description standard.....</i>	4
<i>Presentation of structure and its origin.....</i>	5
Metadata base.....	6
<i>Detailed description.....</i>	6
<i>More Detailed Assessment of GIS based on meta database content.....</i>	7
Maps.....	7
<i>Map Overview.....</i>	7
GIS issues of importance for mitigating threats to local communities and ecosystems.....	7
Meta Data Section.....	8
Map Section.....	17
Table Section.....	54

List of Maps

Map 1: Administrative and Infrastructure features in the Coastal Zone of Tanzania	18
Map 2: Land Cover and Uses of Nearshore Waters in the Coastal Zone of Tanzania	19
Map 3: Habitats and Resources in the Coastal Zone of Tanzania	20
Map 4: Administrative and Infrastructure features in Zanzibar (Pemba and Unguja)	21
Map 5: Land Cover and Uses of Nearshore Waters in Zanzibar (Pemba and Unguja)	22
Map 6: Coastal Habitats and Resources in Zanzibar (Pemba and Unguja)	23
Map 7: Pangani District. Administrative and Infrastructure features.....	24
Map 8: Pangani District. Coastal Habitats and Resources.	25
Map 9: Mkinga, Tanga and Muheza Districts. Administrative and Infrastructure features.....	26
Map 10: Mkinga, Tanga and Muheza Districts. Coastal Habitats and Resources.	27
Map 11: Kinondoni, Ilala and Temeke Districts. Administrative and Infrastructure features.	28
Map 12: Kinondoni, Ilala and Temeke Districts. Coastal Habitats and Resources.....	29
Map 13: Rufiji District. Administrative and Infrastructure features.	30
Map 14: Rufiji District.. Coastal Habitats and Resources.	31
Map 15: Mafia District. Administrative and Infrastructure features.....	32
Map 16: Mafia District.. Coastal Habitats and Resources.	33
Map 17: Mkuranga District. Administrative and Infrastructure features.....	34
Map 18: Mkuranga District.. Coastal Habitats and Resources.	35
Map 19: Bagamoyo District. Administrative and Infrastructure features.	36
Map 20: Bagamoyo District.. Coastal Habitats and Resources.	37
Map 21: Lindi Urban and Lindi Rural Districts. Administrative and Infrastructure features.....	38
Map 22: Lindi Urban and Lindi Rural Districts. Coastal Habitats and Resources.	39
Map 23: Kilwa District Northern Part. Administrative and Infrastructure features.....	40
Map 24: Kilwa District Northern Part. Coastal Habitats and Resources.	41
Map 25: Kilwa District Southern Part. Administrative and Infrastructure features.	42
Map 26: Kilwa District Southern Part. Coastal Habitats and Resources.....	43
Map 27: Mtwara Urban and Mtwara Rural Districts. Administrative and Infrastructure features.....	44
Map 28: Mtwara Urban and Mtwara Rural District. Coastal Habitats and Resources.	45
Map 29: Pemba Island, Northern Part. Administrative and Infrastructure features.	46
Map 30: Pemba Island, Northern Part. Coastal Habitats and Resources.....	47
Map 31: Pemba Island, Southern Part. Administrative and Infrastructure features.....	48
Map 32: Pemba Island, Southern Part. Coastal Habitats and Resources.	49
Map 33: Unguja Island, Northern Part. Administrative and Infrastructure features.	50
Map 34: Unguja Island, Northern Part. Coastal Habitats and Resources.	51
Map 35: Unguja Island, Southern Part. Administrative and Infrastructure features.....	52
Map 36: Unguja Island, Southern Part. Coastal Habitats and Resources.	53

List of Tables

Table 1: Metadata describing the coastal geographic information compiled and used as part of the prioritisation study.	9
Table 2: Population data for coastal regions and districts of mainland Tanzania and Zanzibar. Data include number of households, male, female and total population, population density and average household size. Change in population and household size in past inter-census period (2002 - 2012).....	55
Table 3: Population data for coastal regions and districts of mainland Tanzania and Zanzibar. Data include number urban and rural population, urbanisation, working age population, non-working age population and dependency ratios. Change in urbanisation and dependency ratio in past inter-census period (2002 - 2012). Considerable amount of data is missing in the table, which however should be available with the National Bureau of Statistics once the 2012 population data has been cleaned.	56
Table 4: Inundation scenarios for coastal regions and districts of mainland Tanzania and Zanzibar in one meter steps of sea level rise up to five meter and at ten meter. Data include land lost in hectares and as percentage of administrative area. The higher sea level rise have been included to illustrate area impacted in situations with high surge and wave action during period of extreme weather, pending the development of a surge impact assessment model.....	57
Table 5: Inundation scenarios on agriculture land use for coastal regions and districts of mainland Tanzania and Zanzibar in one meter steps of sea level rise up to five meter and at ten meter. Data include agriculture land lost in hectares and as percentage of current agriculture land use. The higher sea level rise have been included to illustrate area impacted in situations with high surge and wave action during period of extreme weather, pending the development of a surge impact assessment model.	58
Table 6: Inundation scenarios on built up land use for coastal regions and districts of mainland Tanzania and Zanzibar in one meter steps of sea level rise up to five meter and at ten meter. Data include built up land lost in hectares and as percentage of current built up land use. The higher sea level rise have been included to illustrate area impacted in situations with high surge and wave action during period of extreme weather, pending the development of a surge impact assessment model.....	59
Table 7: Inundation scenarios on bush land use for coastal regions and districts of mainland Tanzania and Zanzibar in one meter steps of sea level rise up to five meter and at ten meter. Data include bush land lost in hectares and as percentage of current bush land. The higher sea level rise have been included to illustrate area impacted in situations with high surge and wave action during period of extreme weather, pending the development of a surge impact assessment model.	60
Table 8: Inundation scenarios on grassland use for coastal regions and districts of mainland Tanzania and Zanzibar in one meter steps of sea level rise up to five meter and at ten meter. Data include grassland lost in hectares and as percentage of current grassland. The higher sea level rise have been included to illustrate area impacted in situations with high surge and wave action during period of extreme weather, pending the development of a surge impact assessment model.	61
Table 9: Inundation scenarios on natural forests for coastal regions and districts of mainland Tanzania and Zanzibar in one meter steps of sea level rise up to five meter and at ten meter. Data include natural forest lost in hectares and as percentage of current natural forest. The higher sea level rise have been included to illustrate area impacted in situations with high surge and wave action during period of extreme weather, pending the development of a surge impact assessment model.	62
Table 10: Inundation scenarios on woodlands for coastal regions and districts of mainland Tanzania and Zanzibar in one meter steps of sea level rise up to five meter and at ten meter. Data include woodland lost in hectares and as percentage of current woodland. The higher sea level rise have been included to illustrate area impacted in situations with high surge and wave action during period of extreme weather, pending the development of a surge impact assessment model.	63

Table 11: Inundation scenarios on salt pans for coastal regions and districts of mainland Tanzania and Zanzibar in one meter steps of sea level rise up to five meter and at ten meter. Data include loss of salt pans in hectares and as percentage of current area of salt pans. The higher sea level rise have been included to illustrate area impacted in situations with high surge and wave action during period of extreme weather, pending the development of a surge impact assessment model.64

The Coastal Profile

The coastal profile is based primarily on secondary data, acquired from key stakeholders during the study period. A database has been established listing all relevant documents identified and links to soft copies have been included in the database as available.

A Geographical Information Systems (GIS) has been established to contain acquired themes. The GIS has furthermore been used to examine inundation and flooding consequences of various Sea Level Rise scenarios. These analyses have been based on a Digital Elevation Model (DEM) developed for the coastal areas of the country. The GIS has also been used to produce district level statistical information.

The coastal profile is presented in five volumes:

Volume I: Coastal Themes, presenting the situation in the coastal zone thematically, i.e. from the perspective of various sectors and other country wide themes.

Volume II: Coastal Districts, offering an overview of the situation in the coastal zone of each district, localising and adding detail to the information in Volume I.

Volume III: Maps and Tables, presenting thematic and district maps in A3 format and offering tabulated information, collected from documents consulted or generated from the GIS. This is a combined volume for Mainland Tanzania and Zanzibar.

Volume IV: Overall Threat Mitigation, presenting action areas for the identified threats emerging from discussions in the two working groups established after the Inception stakeholder meetings. The working groups, one in Zanzibar and one in Dar es Salaam, assisted in validating and prioritising threats and in proposing overall adaption measures to address such threats. This is a combined volume for Mainland Tanzania and Zanzibar.

Volume V: A portfolio of prioritised actions to address threats to local communities and ecosystems in the coastal areas of Mainland Tanzania and Zanzibar. There are separate volumes for Mainland Tanzania and Zanzibar.

This is Volume III of the Coastal Profile. Although outside the resources of the study a comprehensive coastal profile will benefit from additional socio-economic and sector statistical information. The data from the 2012 population census would be very useful together with a more comprehensive 2002 data set to investigate in more detail development trends.

Coastal Profile Maps

Meta description

Spatial data from various sources have been compiled and used to build the Geographical Information System (GIS) supporting the prioritisation study. In this process it has become apparent that although many GIS providers and consumers exist in Tanzania and Zanzibar, a shared and structured directory for accessing geographical information is lacking both in Zanzibar and Tanzania. The lack of such a system leads to inefficient use of data and resources, causes ambiguous use of information sources in management and clouds for a thorough understanding of the current information baseline.

Meta description standard

It is imperative for coastal management stakeholders in general and in decision making in particular to have easy access to spatial data sets and services and to establish whether such datasets may be used and for what purpose.

Institutions and organisations that use and produce GIS should provide descriptions in the form of metadata for spatial data sets. In order to make such metadata compatible and usable among all

stakeholders, it is required to lay down rules concerning the metadata used to describe the spatial data sets.

The selection and definition of metadata elements is important to allow identification and assessment of the information resource for which metadata is created, its classification and identification of its geographic location and temporal reference, quality and validity, constraints related to access and use, and organisation responsible for the resource. Metadata elements related to the metadata record itself are also necessary to monitor to ensure that the metadata are kept up to date, and for identifying the organisation responsible for the creation and maintenance of the metadata.

We have in our approach to setting up the GIS in support of the prioritisation study used a structured system to describe the datasets that have been incorporated. The resultant meta database is included in this Volume III of the Coastal Profile in the Meta Data Section (Table 1, page 9). With the resources available and given the wanting situation concerning systematic meta descriptions of data sets among GIS producers in Tanzania it has not been possible to provide a complete and coherent database but the effort does provide easier direction for interested parties to GIS resources that are important to support management of the coastal areas. Importantly the presentation of the meta data should be seen as a contribution to addressing the need for the much required development of a structured national system for overviewing production and storage of spatial data and for facilitation interchange of such data.

Presentation of structure and its origin

The fields used in the meta description of GIS data sets for the coastal profile have been based on the efforts in the European Community to create a spatial data infrastructure directed by the INSPIRE directive which came into force on 15 May 2007 (with full implementation targeted by 2019) with the view to enable the sharing of environmental spatial information among public sector organizations and better facilitate public access to spatial information across Europe¹.

The following fields are included in the meta description of data sets:

- Dataset Title, which is the filename of the spatial dataset in the GIS.
- Dataset Abstract, which is a short description of the spatial dataset.
- Dataset Category, which is a high-level classification scheme to assist in the grouping and topic-based search of available spatial data resources. The following classes have been pursued in the coastal GIS:
 - Farming
 - Imagery / Base Maps / Earth Cover
 - Intelligence / Military
 - Inland Waters
 - Location
 - Oceans
 - Planning / Cadastre
 - Society
 - Structure

- Transportation
- Utilities / Communication
- Biota
- Boundaries
- Climatology / Meteorology / Atmosphere
- Economy
- Elevation
- Environment
- Geo-scientific Information
- Health
- Other

- Dataset Type. The typology used to describe the datasets in the coastal GIS are:

- Raster
- Vector (point)
- Vector (line)
- Vector (polygon)
- Tabular
- Document
- Other

- Dataset Format. Examples of formats include:

- ESRI shapefile (*.shp)
- GeoTiff (*.tif)
- Google Earth (kml/kmz)
- Other raster
- Other vector
- Tabular data (*.txt,*.dbf)

- Geographic Extent, which is the extent of the resource in the geographic space in nominal terms (i.e. national or by specifying coverage in term of regions or districts)
- Temporal extent, which should define the time period covered by the layer either as an individual date or as interval of dates (i.e. start and end date)
- Spatial reference, which is the coordinate system of the input spatial dataset.
- Spatial resolution or equivalent scale, which refers to the level of detail of the data set. It is expressed as a resolution distance with a unit of length (raster) or as equivalent scales i.e. integer value expressing the scale denominator (vectors).

¹ INSPIRE is based on the following principles: i) Data should be collected only once and kept where it can be maintained most effectively; ii) It should be possible to combine seamless spatial information from different sources across Europe and share it with many users and applications; iii) It should be possible for information collected at one level/scale to be shared with all levels/scales; detailed for thorough investigations, general for strategic purposes; iv) Geographic information needed for good governance at all levels should be readily and transparently available; and v) Easy to find

what geographic information is available, how it can be used to meet a particular need, and under which conditions it can be acquired and used.

- Conditions for access and use, clarifying constraints related to access and use.
- Lineage, which is a statement on process history and/or overall quality of the spatial dataset.
- Date of latest revision
- Responsible party, identifying the organisation responsible for the establishment, management, maintenance and distribution of the resource.
- Role of responsible party
- Metadata point of contact identifying the party who has prepared the metadata and can be contacted for acquiring knowledge about or acquisition of the resource.

Metadata base

Detailed description

The meta database in this volume provides an overview or directory of the actual spatial data compilation. Thematically, the collection include base maps (e.g., administrative boundaries), biological features (e.g., mangroves, coral reefs, charismatic fish species), physical environment (e.g., bathymetry/elevations), socio-economic features (fish landing sites, aquaculture, infrastructure), and coastal management (e.g., marine managed areas or MPAs).

Most of the spatial data was obtained from the Institute of Marine Sciences (IMS), which is part of the University of Dar es Salaam. IMS hosts the Tanzania National Oceanographic Data Centre (TzNODC) and is also the custodian of the Tanzania Sensitivity Atlas project spatial data. The GIS database at IMS contains mainly marine and coastal data. IMS scientists have over time worked together with different specialised institutions in the process of data gathering. For example data on fish landing sites and aquaculture was a result of team work involving Fisheries Department staff (mainland and Zanzibar). The boundaries of Marine Protected areas were based on information contributed by Marine Parks and Reserves Unit (Dar es Salaam) and the Marine Conservation Unit (Zanzibar). Community mapping approaches were deployed in gathering data on the distribution of marine charismatic species and other features. Some of the data was sourced from previous reports, e.g., Wells et al. (2004), Muhando and Rumisha (2008), TanSea (2013).

Physical environment data such as bathymetry, land elevations (including DEMs), were downloaded or sourced from World Data Centres (e.g., World Atlas - GEBCO) or through partners, e.g., IODE and ODINAFRICA who have access to various oceanographic data. The administrative boundaries data (regions, districts, and wards) was sourced from Global Administrative (GADM) areas database and modified to include recent changes. This data was comparable to that obtained from National Bureau of Statistics, especially in the coastal areas. The Survey and Mapping Division of Tanzania, which is responsible for national mapping activities are still working on the new district and wards boundaries and may therefore have the most accurate administrative data. The meta data provides information on the source of each layer. Some additional information about the source is contained in some of the layers under a field named source (or src).

At the moment there are no clear responsibilities on marine and coastal data collection. Each institution collects and uses spatial data that is useful for a particular activity, after which the data is summarised in thematic reports and the raw data is kept by the principal investigator or lost when he/she is moved to another department. A systematic archive of spatial data is required to make available historical and recent data on one side and to minimise duplication of efforts in the collection of new information. GIS

for the marine environment is now expanding and there are national plans to harmonise institutions in the collection and sharing of data.

The spatial database rapidly compiled for this study is not complete. Although additional information may be available, it is assessed that existing GIS information is not adequate for efficiently supporting decision making processes.

Only datasets with national coverage have been used in this study. There is more data available in areas located near urban centres which can be accessed through university departments dealing with marine sciences, e.g., in Dar es Salaam and Zanzibar. There is also more data and information available for marine managed areas (parks, reserves and conservation areas). Academic interests (Researcher/ Postgraduate students) as well as financial factors or development partner's support have been the main factors for where to collect spatial data. In the future, data collection sites should be guided by managers and decision maker's needs.

Most of the spatial data used in this study is project-based and can be considered in need of updating. For example, mangrove maps are based on 1990 aerial photos (Semese et al. 1991) and Wang et al. 2001). Coral reef maps are based on 1997 coral reef mapping project with partial update in 2009 for the area north of Tanga. The distribution of threatened fish species (dugongs, turtle nesting sites, etc) is based on 2004 and 2008 projects (Wells MACEMP WWF, Sea Sense project, Samaki Consultants, etc.). There are no systematic data collection or update activities by responsible institutions (e.g. Department of Fisheries, Division of Environment, University Department, etc.). This weakness has been recognised and strategies are underway to rectify the situation.

The Tanzania coastline features were digitised from Tanzania topographic maps produced by the Survey and Mapping Department, Ministry of Lands, at a scale of 1:50,000. The target was for all other features to fit into this scale. This has proved difficult in the field, especially with community mapping procedures using questionnaires. Accuracy of some datasets especially those with predetermined geographic references, e.g., boundaries of marine parks can be considered high. Maps produced in this study are a mix of layers with different spatial scale. Unfortunately, there is still no easy solution to this problem.

Coastal GIS was initiated by UNEP in 1993 mainly through its EAF 14 project which was executed by the Institute of Marine Sciences in Tanzania. Weak political interest has since diluted the momentum built. It has however now been recognised that GIS has a substantial role to play in coastal management and many institutions are paying more attention to coastal GIS. IMS through TzNODC has established a small GIS working group with the purpose of developing a coastal and marine atlas. This activity is however, experiencing technical and financial difficulties at the moment.

The TCMP and NEMC have established an environmental GIS units which covers some aspects of coastal features. Similarly, the SMOLE project which is executed by Surveys and Mapping Unit and Department of Environment in Zanzibar is now collecting data on coastal fishing, aquaculture and tourism. The State University of Zanzibar has established a ZanSEA project, which intends to cover both terrestrial and coastal GIS. The department of Fisheries in Dar es Salaam have shown interest in working together with IMS in establishing a database of fish landing sites. IMS has developed a GIS based Masters Course (MSc.) in Marine Sciences to alleviate the lack of trained manpower. While the interest on coastal GIS is very high, there is still a coordination problem.

The first stage of the coordination process could be the initiation of exchange of data and experience between institutions. IMS and the SMOLE project in Zanzibar has started to exchange information about their data holdings and the project has greatly assisted IMS to complete its meta database. The National Environmental Management Council (NEMC) in Dar es Salaam has established an environmental data information unit which among others is tasked with collection, analysis and dissemination of environmental data.

Institutions engaged with social, economic and politics of coastal communities are increasingly collecting and using coastal data and information. Universities and other training institutions placed along the coastal area have over the years collected data through academic projects (MSc., PhD, etc.) or research projects. So in theory there are several sources of sectorial datasets, the main concerns are: data format, quality, quantity, consistency, and availability.

More Detailed Assessment of GIS based on meta database content

Descriptions given in the meta database are complete for layers that have been developed at the Institute of Marine Sciences. Layers that have been developed as collaborative work between IMS and other institutes are also well described. Layers downloaded from global data centres have meta data details as provided from the source. Data sets digitized from Google Earth or downloaded from the internet are not complete in the meta description.

Potentially all collected spatial data sets belonging to or under the custodian of the Institute of Marine Sciences (IMS) are freely available upon request. This project and IMS doesn't distribute data sets sourced from elsewhere unless officially allowed. Free exchange of data is very much encouraging. Some institutions however may require compensation for costs incurred in the gathering, analysis and packaging processes, for capable clients.

The spatial scales or resolution of themes used in this study varies. Most of the layers have been digitised from topographic maps with a scale of 1:50,000. Other features like fish landing sites were digitized from Google Earth zoomed to a scale of about 1:5,000. Layers digitised from community based mapping had the lowest accuracy (sometimes estimated at 1:1,000,000).

Maps

In this volume maps display various features of interest to coastal zone managers, researcher and communities, covering coastal zones of Mainland Tanzania and Zanzibar.

There are five Regions and 15 Districts along the mainland Tanzania coastline. Tanga region have four coastal districts (Mkinga, Tanga City, Muheza and Pangani); Pwani Region has three (Bagamoyo, Mkuranga and Rufiji); Dar es Salaam region has three coastal districts (Kinondoni, Ilala and Temeke); Lindi has three coastal districts (Lindi Urban, Lindi Rural and Kilwa; and Mtwara region has two coastal districts (Mtwara Urban and Mtwara Rural).

Zanzibar is subdivided into five regions and ten districts: Unguja North (North A and North B districts), Unguja South (Central and South districts), Unguja West (Urban and West districts), Pemba North (Micheweni and Wete) and Pemba South (Mkoani and Chakechake districts). All districts in Zanzibar have access to the sea.

Important coastal infrastructures such as road and railway network, airports, harbours, gas pipes and shipping lanes are displayed in Maps 1 and 4. Maps 2 and 5 displays land cover and some of the uses or activities taking place in the near shore water. Key features include agricultural land, built areas, bushes, grassland, mangroves, forests and coral reefs. The location of Marine Protected Areas (Parks, reserves, conservation areas and community no-take zones) as well as seaweed farming, fish culture areas are displayed. The distribution of coastal habitats (mangroves, sandy beaches, tidal reef, as well as important bird areas are displayed in Maps 3 and 6. Turtle nesting sites, sea horse, dugong sightings, coelacanth catch, dolphin, shark and humpback sightings (or preference areas) as well as fish landing sites, local ports are also shown in Maps 3 and 6.

Map Overview

Map Type	Map
• Administrative and Infrastructure features in the Coastal Zone of Tanzania:	Map 1
• Land Cover and Uses of Nearshore Waters in the Coastal Zone of Tanzania	Map 2
• Habitats and Resources in the Coastal Zone of Tanzania	Map 3
• Administrative and Infrastructure features in Zanzibar (Pemba and Unguja)	Map 4
• Land Cover and Uses of Nearshore Waters in Zanzibar (Pemba and Unguja)	Map 5
• Coastal Habitats and Resources in Zanzibar (Pemba and Unguja)	Map 6
• District Administrative and Infrastructure Features	Maps 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35
• District Coastal Habitats and Resources	Maps, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36

GIS issues of importance for mitigating threats to local communities and ecosystems.

GIS is an important and powerful decision support tool critical for planning and management, particularly in complex and dynamic environments under development pressure as is often the case in coastal areas. Both mainland Tanzania and Zanzibar experience threats associated with such development as amply identified in Volumes I and II of the coastal profiles.

As discussed above and as illustrated in the Metadata and Map Sections there are many users and producers of GIS in Tanzania and Zanzibar, but the efficiency and usefulness of these resources are limited due to a number of factors. These include:

- Responsibilities for producing and maintaining various themes are not well defined at times leading to duplicating efforts.
- There is no system in place which clearly defines modalities for sharing spatial data.
- There is no system in place defining baseline requirements in terms of geographical datasets for management (planning, monitoring, and development control).
- Many important themes are not available in sufficiently updated form
- Many important themes are not available in sufficient resolution for spatial analysis
- Spatial information is not readily accessible for the stakeholders
- A system with national mapping standards is wanting

Meta Data Section

Table 1: Metadata describing the coastal geographic information compiled and used as part of the prioritisation study.

Dataset Title	Dataset Abstract	Dataset Category	Dataset Type	Dataset Format	Geographic Extent	Temporal extent	Spatial reference	Spatial resolution or Equivalent scale	Conditions for access and use	Lineage (i.e. process history)	Date of latest revision	Responsible party	Role of responsible party	Metadata point of contact
Coastal_Landuse_wgs84 (C:\TANSEA_2\Gorm)	Source:- Gorm & World Bank (only the coastal area) - In decimal degrees West: 37.729565 East: 40.449648 North: -3.546324 South: -11.557810	Land cover	Vector (polygon)	ESRI shapefile (*.shp)	Coastal Tanzania	Ca. 1995	GCS_WGS_1984	unknown	No conditions apply	unknown	? FAO ?	FAO ?	?	Christopher Muhando; cmuhando@gmail.com
faolc_geo.shp (C:\GIS_DATABASE_2010\Land_use_cover\FAO_LC)	FAO Land use	Land cover	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania	?	GCS_Arc_1960	unknown	No conditions apply	unknown	? FAO ?	FAO ?	?	Christopher Muhando; cmuhando@gmail.com
Lake_Afr_DD.shp (C:\GIS_WCMC_09\3_TZ\LAY_WCMC\)	Lakes found in East Africa. Sourced from UNEP-WCMC	Inland Waters	Vector (polygon)	ESRI shapefile (*.shp)	East Africa	?	GCS_WGS_1984	unknown	No conditions apply	unknown	? UNEP-WCMC	UNEP-WCMC	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
River_Afr_UTM375 (C:\GIS_WCMC_09\3_TZ\LAY_WCMC\)	Major Rivers in East Africa. Sourced from UNEP-WCMC	Inland Waters	Vector (line)	ESRI shapefile (*.shp)	East Africa	?	GCS_WGS_1984	unknown	No conditions apply	unknown	? UNEP-WCMC	UNEP-WCMC	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
srtm_tz.tif	SRTM 90m Digital Elevation Database v4.1	Elevation	Raster	GeoTiff (*.tif)	National	ca. 2000	GCS_WGS_1984	0.000833 Degree ~ 90 m	No conditions apply	SRTM version 4.1	2008	CGIAR-CSI (http://srtm.csi.cgiar.org)	Processor (Party who has processed the data in a manner such that the resource has been modified)	DHI-GRAS; cto@dhi-gras.com
srtm_tz_central_coast.tif	SRTM 90m Digital Elevation Database v4.3	Elevation	Raster	GeoTiff (*.tif)	Pwani, Dar-Es-Salam, Zanzibar	ca. 2000	GCS_WGS_1984	0.000833 Degree ~ 90 m	No conditions apply	SRTM version 4.1	2008	CGIAR-CSI (http://srtm.csi.cgiar.org)	Processor (Party who has processed the data in a manner such that the resource has been modified)	DHI-GRAS; cto@dhi-gras.com
srtm_tz_north_coast.tif	SRTM 90m Digital Elevation Database v4.2	Elevation	Raster	GeoTiff (*.tif)	Tanga, Pemba	ca. 2000	GCS_WGS_1984	0.000833 Degree ~ 90 m	No conditions apply	SRTM version 4.1	2008	CGIAR-CSI (http://srtm.csi.cgiar.org)	Processor (Party who has processed the data in a manner such that the resource has been modified)	DHI-GRAS; cto@dhi-gras.com
srtm_tz_south_coast.tif	SRTM 90m Digital Elevation Database v4.4	Elevation	Raster	GeoTiff (*.tif)	Lindi, Mtwara	ca. 2000	GCS_WGS_1984	0.000833 Degree ~ 90 m	No conditions apply	SRTM version 4.1	2008	CGIAR-CSI (http://srtm.csi.cgiar.org)	Processor (Party who has processed the data in a manner such that the resource has been modified)	DHI-GRAS; cto@dhi-gras.com
Tanzania_landuseR.shp (Not in IMS Database)	Tanzania Land use ²	Farming)	Vector (polygon)	ESRI shapefile (*.shp)	National	?	GCS_WGS_1984	?	No conditions apply		? ?	?		DHI-GRAS; cto@dhi-gras.com
Tanzania_rivers.shp (C:\GIS_DATABASE_2010\Tz_data_from_YB\TanSEA Master OBSCOM Nov13\TANSEA\VECTOR\tan sea)	Rivers in mainland Tanzania	Inland Waters	Vector (line)	ESRI shapefile (*.shp)	Tanzania mainland	unknown	GCS_WGS_1984	approx. 1:250.000	No conditions apply	unknown	? ILRI (International Livestock Research Institute) (http://www.ilri.org/)	ILRI (International Livestock Research Institute)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tz_lcu.shp (C:\GIS_DATABASE_2010\Land_use_cover\LC_1995)	Tanzania Land cover - sourced from Ardhi University in 2004 ³ .	Land cover	Vector (polygon)	ESRI shapefile (*.shp)	National	Ca. 1995	<Undefined>	unknown	No conditions apply	unknown	? Sourced from Ardhi University	Sourced from Ardhi University	Unknown	Christopher Muhando; cmuhando@gmail.com
tz_lcu_DD_WGS84 (C:\GIS_DATABASE_2010\Land_use_cover\LC_1995)	Land cover (1995)?	Land cover	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania mainland	Ca. 1995	GCS_WGS_1984	unknown	Unknown	Unknown	? Sourced from Ardhi University	Sourced from Ardhi University	'Unknown	Christopher Muhando; cmuhando@gmail.com
TZA_adm0.shp	Tanzania National boundary from geographic database of global administrative areas (GADM) ⁴ .	Boundaries	Vector (polygon)	ESRI shapefile (*.shp)	National	unknown	GCS_WGS_1984	approx. 1:250.000	No conditions apply	GADM version 1.0	March 2009	http://www.gadm.org	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com

² Airport, bare soil, bush land, cultivated land, grassland, ice, mangrove forest, natural forest, permanent swamp, plantation forest, rock outcrops, urban area, water, woodland

³ A better and updated land cover may exist at Institute of Resource Assessment (IRA), Surveys and Mapping Division Dar es Salaam, and SMOLE for Zanzibar.

⁴ This layer was downloaded from DIVA GIS (<http://www.diva-gis.org/gdata> or <http://www.gadm.org/>)

Dataset Title	Dataset Abstract	Dataset Category	Dataset Type	Dataset Format	Geographic Extent	Temporal extent	Spatial reference	Spatial resolution or Equivalent scale	Conditions for access and use	Lineage (i.e. process history)	Date of latest revision	Responsible party	Role of responsible party	Metadata point of contact
TZA_adm1.shp	Tanzania Region boundaries from geographic database of global administrative areas (GADM) ⁵ .	Boundaries	Vector (polygon)	ESRI shapefile (*.shp)	National	unknown	GCS_WGS_1984	approx. 1:250.000	No conditions apply	GADM version 1.0	March 2009	http://www.gadm.org	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
TZA_adm2.shp	Tanzania District boundaries from geographic database of global administrative areas (GADM) ⁶ .	Boundaries	Vector (polygon)	ESRI shapefile (*.shp)	National	unknown	GCS_WGS_1984	approx. 1:250.000	No conditions apply	GADM version 1.0	March 2009	http://www.gadm.org	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
TZA_adm3.shp	Tanzania Wards boundaries from geographic database of global administrative areas (GADM) ⁷ .	Boundaries	Vector (polygon)	ESRI shapefile (*.shp)	National	unknown	GCS_WGS_1984	approx. 1:250.000	No conditions apply	GADM version 1.0	March 2009	http://www.gadm.org	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_africover_spatial_agg_50k.shp	The land cover classes have been developed using the FAO/UNEP international standard LCCS classification system.	Land cover	Vector (polygon)	ESRI shapefile (*.shp)	National	mainly 1997	GCS_WGS_1984	1:50.000	No conditions apply	LANDSAT TM images (Bands 4,3,2) acquired mainly in the year 1997 ⁸ .	1997	AFRICOVER (http://www.fao.org/geonetwork/srv/en/main.home)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_airport_infrastructures_5k.shp	Airport Buildings and landing strips	Transportation	Vector (polygon)	ESRI shapefile (*.shp)	National	Ca. 2012	GCS_WGS_1984	1:5.000	No conditions apply	Digitized from Google Earth	2012	TANSEA Team	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_airport_points_5k.shp	Airport locations represented as points	Transportation	Vector (point)	ESRI shapefile (*.shp)	National	Ca. 2012	GCS_WGS_1984	1:5.000	No conditions apply	Digitized from Google Earth	2012	TANSEA Team	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_airport_poly_5k.shp	The whole Airport area circumferences	Transportation	Vector (polygon)	ESRI shapefile (*.shp)	National	Ca. 2012	GCS_WGS_1984	1:5.000	No conditions apply	Digitized from Google Earth	2012	TANSEA Team	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_atlas_A1_50k.shp	Window delimitations for plotting	Other	Vector (polygon)	ESRI shapefile (*.shp)	Coastal Tanzania	Ca. 2012	GCS_WGS_1984	1:50.000	No conditions apply	Prepared by OBSCOM	2011	OBSCOM (http://www.obscom.eu/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_atlas_A4_50k.shp	Window delimitations for plotting	Other	Vector (polygon)	ESRI shapefile (*.shp)	Coastal Tanzania	Ca. 2012	GCS_WGS_1984	1:50.000	No conditions apply	Prepared by OBSCOM	2011	OBSCOM (http://www.obscom.eu/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_bathy_1000k.shp	Bathymetry of Tanzania waters based on marine charts (20m) and Gebco 2003 database ⁹ .	Elevation	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania Seas	Gebco 2003	GCS_WGS_1984	1:1.000.000	No conditions apply	Digitized from Bathymetric Charts	2009	GEBCO (http://www.gebco.net/data_and_products/gridded_bathymetry_data/documents/gridhelp.pdf)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_coastal_features_250k.shp	Layer showing locations of named coastal features ¹⁰	Other	Vector (point)	ESRI shapefile (*.shp)	Coastal Tanzania	Ca. 2012	GCS_WGS_1984	1:250.000	No conditions apply	Digitized from many sources ¹¹	2012	SAMAKI	Resource Provider (Party that supplies the resource)	Christopher many sources Muhando; cmuhando@gmail.com
tza_coastal_forests_.shp	Tanzania coastal regions forest reserves boundaries in mainland Tanzania. Pemba and Unguja (Zanzibar) forests are not included??	Environment	Vector (polygon).	ESRI shapefile (*.shp)	Coastal Regions of Mainland Tanzania	Ca. 2005	GCS_WGS_1984	approx. 1:250.000	No conditions apply	Sourced from WCMC (2009)	2009	UNEP-WCMC	UNEP-WCMC	Christopher Muhando; cmuhando@gmail.com

⁵ This layer is downloaded from DIVA GIS (<http://www.diva-gis.org/gdata> or <http://www.gadm.org/>)

⁶ This layer is downloaded from DIVA GIS (<http://www.diva-gis.org/gdata> or <http://www.gadm.org/>)

⁷ This layer is downloaded from DIVA GIS (<http://www.diva-gis.org/gdata> or <http://www.gadm.org/>)

⁸ The full resolution land cover has been produced from visual interpretation of digitally enhanced high-resolution images

⁹ Depth ranges: 0-20m, 20-100m, 100-200m, 200-500m, 500-1000m, 1000-2000m, 2000-3000m, above 3000m

¹⁰ Bay, river, ras, island, depot, bank, beach, bridge, cabo, channel, chem, creek, gap, harbour, haven, hill, lagoon, light house, mouth, mto, mwamba, paman, pass, patch, peninsula, ponta, ponto, port, puna, reef, rocks, terminal, misc.)

¹¹ OMEGA USA Map DSM to Mchinga Bay 61190, 1983, Admiralty Chart Cabo Delgado to Fanjove 3308, 1966 [1972]Admiralty Chart Pangani to Ras Kimbiji 640, 1875 [1964]Admiralty Chart Approaches to Zanzibar 665, 1956 [1990]Admiralty Chart SW Coast of Pemba Island 1310, 1958 [1969]Admiralty Chart Ponta Uifundo to Cabo Delgado 2938, 1960 [1991]Admiralty Chart Approaches to DSM 764, 1983 [1994]PEMBA UK Ordnance Survey URT 1987 1:100,000, 1987MBREMP Map, 2005MIMP Map, 2000OMEGA USA Map DSM to Mchinga Bay 61190, 1983Admiralty Chart N Mafia Channel to Kilwa Point 1032, 1986 [1992]Admiralty Chart DSM to Wasin Island 3310, 1966 [1994]Admiralty Chart Cabo Delgado to Fanjove 3308, 1966 [1972]Admiralty Chart Pangani to Ras Kimbiji 640, 1875 [1964]Admiralty Chart Approaches to Zanzibar 665, 1956 [1990]Admiralty Chart SW Coast of Pemba Island 1310, 1958 [1969]Admiralty Chart Ponta Uifundo to Cabo Delgado 2938, 1960 [1991]Admiralty Chart Approaches to DSM 764, 1983 [1994]PEMBA UK Ordnance Survey URT 1987 1:100,000, 1987MBREMP Map, 2005MIMP Map, 2000.

Dataset Title	Dataset Abstract	Dataset Category	Dataset Type	Dataset Format	Geographic Extent	Temporal extent	Spatial reference	Spatial resolution or Equivalent scale	Conditions for access and use	Lineage (i.e. process history)	Date of latest revision	Responsible party	Role of responsible party	Metadata point of contact
tza_coastal_land_cover_50k.shp	Tanzania coastal land cover classes ¹² .	Land cover	Vector (polygon)	ESRI shapefile (*.shp)	Coastal Tanzania	Ca. 2010	GCS_WGS_1984	1:50.000	No conditions apply	Digitized from topographical maps	2005	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_coastal_villages_nbs.shp	Tanzania village boundaries layer sourced from National Bureau of Statistics.	Boundaries	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania	Ca. 2010	UTM_Arc_1960	1:1.000.000	Unknown	Prepared by National Bureau of Statistics - Dar es Salaam Tanzania	2009	National Bureau of Statistics - Dar es Salaam	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_coastline_ge_20k.shp	The coastline of Tanzania based on Google Earth ¹³ .	Elevation	Vector (line)	ESRI shapefile (*.shp)	Tanzania	2013 (digitized from Google Earth)	GCS_WGS_1984	1:20.000	No conditions apply	Digitized from Google Earth	2013	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_coelacanth_200k.shp	Locations where Coelacanths (<i>Latimeria chalumnae</i>) were sighted ¹⁴ .	Biota	Vector (point)	ESRI shapefile (*.shp)	Coastal Tanzania	Ca. 2004-2008	GCS_WGS_1984	1:200.000	No conditions apply	Digitized from field observations	2012	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_coral_reefs_50k.shp	The distribution of coral reefs in Tanzania ¹⁵ .	Biota	Vector (line)	ESRI shapefile (*.shp)	Coastal Tanzania	Ca. 2010	GCS_WGS_1984	1:50.000	No conditions apply	Digitized from topographical maps, Navigational charts and visual observations (manta tows).	2010	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_district_nbs	This layer shows the Tanzania district boundaries ¹⁶ .	Boundaries	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania	Ca. 2010	UTM_Arc_1960	1:50.000	No conditions apply	A map of Tanzania Constituencies ¹⁷	2009	National Bureau of Statistics - Dar es Salaam	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_districts_Clip.shp	Tanzania Coastal District boundaries from geographic database of global administrative areas (GADM) ¹⁸ .	Boundaries	Vector (polygon)	ESRI shapefile (*.shp)	Coastal Tanzania	Ca. 2010	GCS_WGS_1984	1:50.000	No conditions apply	Prepared at Institute of Marine Sciences.	Ca. 2007	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_districts_Clip_l.shp	Tanzania Coastal District boundaries in line format. This layer is similar to tza_districts_Clip.shp	Boundaries	Vector (line)	ESRI shapefile (*.shp)	Coastal Tanzania	Ca. 2010	GCS_WGS_1984	1:50.000	No conditions apply	Prepared by Institute of Marine Sciences.	Ca. 2007	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_dive_sites_200k.shp	The location of diving sites in Tanzania ¹⁹ .	Location	Vector (point)	ESRI shapefile (*.shp)	Coastal Tanzania	Ca. 2010	GCS_WGS_1984	1:200.000	No conditions apply	Digitized from field observations	2013	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_dolphin_sites_200k.shp	Locations where Dolphins (Marine mammals) are commonly seen to aggregate seasonally or full time ²⁰ .	Biota	Vector (point)	ESRI shapefile (*.shp)	Coastal Tanzania	Ca. 2010	GCS_WGS_1984	1:200.000	No conditions apply	Digitized from field observations	2013	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com

¹² Digitized by IMS in Zanzibar (1997) from 1:50,000 topographic maps produced by Surveys and Mapping Divisions Dar es Salaam and Zanzibar. Features shown include: Coral (Tanga and Zanzibar), Estate, Forest Reserve, Island, Lake, Land, Mangrove, Ocean, Ponds,, Reservoir, Saline bare area, Salt marsh, Salt pan, Sand, Sand banks, Seagrass, Shallow water, Swamp, Tidal reef.

¹³ The coastline is defined as the boundary of the sea landwards, i.e. the coastline is located in front of mangroves. The coastline was assumed to extend inwards on creeks up to where mangroves stand ends. Digitization was done at a about 1: 10000) or higher.

¹⁴ First compilation of the sightings was in 2004 (Wells et al. 2005) and was updated in 2008 by WWF Tanzania (Muhando and Rumisha) and last update was by TanSea Project in 2012.

¹⁵ First mapping was done at the Institute of Marine Sciences with financial support from SIDA in 1997. The second update was in 2009 through Cora Reef Targeted Research Project. Otherwise, updating of the coral reef distribution map an ongoing activity by the Institute of Marine Sciences. At the moment this activity is supervised by Dr Christopher Muhando

¹⁶ It does not include the recent changes. It looks very similar to those in layer 9 - TZA_adm2.shp.

¹⁷ Sourced from National Bureau of Statistics (NBS) in 2012

¹⁸ This layer is clipped and modified to separate Mkinga District from Muheza District polygon. Source layer (tza_adm2, shp) was downloaded from DIVA GIS (<http://www.diva-gis.org/gdata>).

¹⁹ Data is based in field observations as well as internet and Google Earth search. There is no independent verification for most sites, thus the accuracy is not yet verified - likely to be low.

²⁰ The commonest species are probably the Indo-Pacific bottlenose dolphin *Tursiops aduncus*, the Indo-Pacific humpback dolphin *Sousa chinensis* and the spinner *Stenella longirostris*. First compilation of the sightings was in 2004 (Wells et al. 2005) and in 2008 by WWF Tanzania (Muhando and Rumisha) and last update was by TanSea Project in 2012.

Dataset Title	Dataset Abstract	Dataset Category	Dataset Type	Dataset Format	Geographic Extent	Temporal extent	Spatial reference	Spatial resolution or Equivalent scale	Conditions for access and use	Lineage (i.e. process history)	Date of latest revision	Responsible party	Role of responsible party	Metadata point of contact
tza_dugong_sightings_200k.shp	Locations where Dugongs (marine mammals also known as Sea cows) were sighted or caught by fishers ²¹ .	Biota	Vector (point)	ESRI shapefile (*.shp)	Coastal Tanzania	Ca. 2010	GCS_Arc_1960	1:200.000	No conditions apply	For sightings and landings post 1990 ²² .	2013	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_elevation_200k.shp	Land vertical contours based on SRTM 90m Digital Elevation Data	Elevation	Vector (point)	ESRI shapefile (*.shp)	Tanzania	Ca. 2003	GCS_WGS_1984	1:200.000	No conditions apply	NASA Shuttle Radar Topographic Mission	2013	http://srtm.csi.cgiar.org/	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_esi_line_v4_50k.shp	Ecological Sensitivity Indexing. Prepared by TanSea - version 2.	Environment	Vector (line)	ESRI shapefile (*.shp)	Tanzania coast	2013	GCS_WGS_1984	1:50.000	No conditions apply	TANNSEA indexing	2013	OBSCOM (http://www.obscom.eu/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_fish_prawn_culture_10k.shp	The locations where ponds for fish and/or prawn farming is practiced ²³ .	Farming	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania coast	2012	GCS_WGS_1984	1:10.000	No conditions apply	Digitized from Google Earth	2013	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_gas_pipeline_1000k.shp	Possible and existing gas lines	Utilities / Communication	Vector (line)	ESRI shapefile (*.shp)	Tanzania	Ca. 2012	GCS_WGS_1984	1:100.000	No conditions apply	Prepared by OBSCOM	2012	TanSea Team?	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_harbours_and_ports.shp	Locations of harbours and ports (harbour, port, ferry, local port)	Transportation	Vector (point)	ESRI shapefile (*.shp)	Tanzania coast	Ca. 2012	GCS_WGS_1984	1:50.000	No conditions apply	Digitized from Google Earth	2012	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_historical_sites_50k.shp	Field observations of Location of historical sites (coastal Islamic site, cultural site, historical site, stone age site)	Society	Vector (point)	ESRI shapefile (*.shp)	Tanzania coast	2013	GCS_WGS_1984	1:50.000	No conditions apply	Digitized from field observations	2013	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_hotels_points_10k.shp	Map showing key Hotels located along the sea fronts or coastline of Tanzania ²⁴ .	Location	Vector (point)	ESRI shapefile (*.shp)	Tanzania coast	2013	GCS_WGS_1984	1:10.000	No conditions apply	Digitized from field observations and Google Earth	2012	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_house_counting_10K.shp	Digitised during TanSea project. Work on this layer is still ongoing.	Location	Vector (polygon)	ESRI shapefile (*.shp)	Mtwara and Lindi	2013	GCS_WGS_1984	1:10.000	No conditions apply	Prepared by OBSCOM	2009-2012	OBSCOM (http://www.obscom.eu/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_humpbackwhales_sightings_250k.shp	This layer shows locations where humpback whale are often sighted nursing their young (in August-September) ²⁵ .	Biota	Vector (point)	ESRI shapefile (*.shp)	Tanzania coast	2011	GCS_WGS_1984	1:250.000	No conditions apply	Based on Humpback sighting (group) that is led by Dr Matthew Richmond - SAMAKI	2012	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/) and SAMAKI Consultants.	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_iba_1000k.shp	Location of Important Bird Areas (IBAs) as designated by Birdlife International through a widely accepted scientific process ²⁶ .	Biota	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania coast	2009	GCS_WGS_1984	1:1.000.000	No conditions apply	Birdlife International. Digitization of these zones was based on Baker and Baker (2002).	2002	Birdlife International	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_important_bird_areas.shp	Location of Important Bird Areas (IBAs) as designated by Birdlife International through a widely accepted scientific process ²⁷ .	Biota	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania coast	2009	GCS_WGS_1984	1:1.000.000	No conditions apply	Digitization of these zones was based on Baker and Baker (2002).	2002	Birdlife International	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com

²¹ First compilation of the sightings was in 2004 (Wells et al. 2005) and in 2008 by WWF Tanzania (Muhando and Rumisha, 2008) and the last update was by TanSea Project in 2012.

²² Muir C. E., Sallema, A., Adbdallah, I., De Luca, D., & Davenport, T.R.B. 2004. Tanzania. Chapter 8.2 p. 21-28. In: Towards a Western Indian Ocean Dugong Conservation Strategy. WWF Eastern African Marine Ecoregion. WWF. 68 pp. 2004.

²³ Information was sourced from Drs Mmochi and Muhando (at IMS). Additional data was extracted from Bartazary MSc theses draft by Mr M. Semba. These locations were also verified or cross-checked in Google Earth. Most of the aquaculture ponds are found in or adjacent to salt pans.

²⁴ Spatial data was sourced from previously digitized hotels (Muhando et al., 2004), Google Earth (digitized) and from TanSea field observations in May-September 2012.

²⁵ This spatial information was contributed by Samaki Consultants

²⁶ Ten IBAs have been designated along the coast of Tanzania and digitization of these zones was based on Baker and Baker (2002).

²⁷ Ten IBAs have been designated along the coast of Tanzania and digitization of these zones was based on Baker and Baker (2002).

Dataset Title	Dataset Abstract	Dataset Category	Dataset Type	Dataset Format	Geographic Extent	Temporal extent	Spatial reference	Spatial resolution or Equivalent scale	Conditions for access and use	Lineage (i.e. process history)	Date of latest revision	Responsible party	Role of responsible party	Metadata point of contact
tza_inland_water_1000k.shp	Inland waters East Africa - Lakes, ponds and small water bodies.	Inland Waters	Vector (polygon)	ESRI shapefile (*.shp)	East Africa	2009	GCS_WGS_1984	1:1.000.000	No conditions apply	unknown	?	VMAPO	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_international_bnd_50k.shp	International boundary Tanzania	Boundaries	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania	Ca. 2010	GCS_WGS_1984	1:50.000	No conditions apply	Digitized from topographical maps	Ca. 2007	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	National Bureau of Statistics - Dar es Salaam
tza_land_islands_50k.shp	This layer shows coastal land and Islands. It was digitized from National Topographic maps (1:50.000) at IMS in 1997.	Geo-scientific Information	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania	2012	GCS_WGS_1984	1:50.000	No conditions apply	Clipped from coastal habitats layer (tzcsis)	2005	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_languages_5000k.shp	Layer showing the location of languages spoken along the coastal zone of Tanzania ²⁸ .	Society	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania	2013	GCS_WGS_1984	1:5.000.000	No conditions apply	Digitized from field observations	2012	Digitized by TanSea Team	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_lighthouse_point.shp	A layer showing the location of lighthouses along the Tanzania Coast. Data was sourced and digitized by Samaki team.	Transportation	Vector (point)	ESRI shapefile (*.shp)	Tanzania	Ca. 2012	GCS_WGS_1984	1:100.000	No conditions apply	Digitized	2012	Samaki	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_mangroves_50k.shp	The distribution of mangroves in Tanzania ²⁹ .	Environment	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania	1990	GCS_WGS_1984	1:50.000	No conditions apply	Digitized from topographical maps	2012	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_marine_protected_areas_xx.shp	The distribution of Marine Managed Areas (Marine Parks, Reserves, Conservation Areas and Sanctuaries) in Tanzania.	Environment	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania coast	2012	GCS_WGS_1984	1:50.000	No conditions apply	Various sources ³⁰ .	2013	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_marine Ramsar_rumaki.shp	The location of RUMAKI Marine Ramsar Site.	Environment	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania	2013	GCS_WGS_1984	1:50.000	No conditions apply	Boundaries Approximated by Dr Muhando based of RUMAKI project boundaries	2013	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_railways_1000k.shp	Tanzania Railways.	Transportation	Vector (line)	ESRI shapefile (*.shp)	Tanzania	Ca. 2012	GCS_WGS_1984	1:1.000.000	No conditions apply	GE DIGIT, Field, Open Street Map, Mapping and Survey Division of Zanzibar	2012	VMAPO	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_regions_clip_50k.shp	Tanzania Coastal District boundaries from geographic database of global administrative areas (GADM) ³¹ .	Boundaries	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania Coastal Regions	Ca. 2010	GCS_WGS_1984	1:50.000	No conditions apply	Data was clipped from TZA_adm1.shp which was downloaded from http://www.gadm.org/country/Tanzania	Ca. 2007	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	National Bureau of Statistics - Dar es Salaam

²⁸ Field data collection was in Feb 2012 by SAMAKI/IMS team

²⁹ This layer was compiled at IMS in 2009 based on a combination of previously produced mangrove distribution maps: IMS mangrove map digitized from Topographic maps based on aerial images of mid 1980s, Semesi et al (1991) mangrove maps and Wang et al (2001) maps sourced from NEMC.

³⁰ Based on MPAs Declaration documents, Institute of Marine Sciences, discussions with Marine Parks and Reserves Unit (Dar es Salaam) and Zanzibar Marine Conservation Unit.

³¹ This layer is clipped and modified to separate Mkinga District from Muheza District polygon. Source layer (tza_adm2.shp) was downloaded from DIVA GIS (<http://www.diva-gis.org/gdata>).

Dataset Title	Dataset Abstract	Dataset Category	Dataset Type	Dataset Format	Geographic Extent	Temporal extent	Spatial reference	Spatial resolution or Equivalent scale	Conditions for access and use	Lineage (i.e. process history)	Date of latest revision	Responsible party	Role of responsible party	Metadata point of contact
tza_regions_Clip_I_50k.shp	Tanzania Coastal District boundaries in line format. Source layer 52 (tza_regions_clip_50k.shp)	Boundaries	Vector (line)	ESRI shapefile (*.shp)	Tanzania Coastal Regions	Ca. 2010	GCS_WGS_1984	1:50.000	No conditions apply	Data was clipped from TZA_adm1.shp which was downloaded from http://www.gadm.org/country/Tanzania	Ca. 2007	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	National Bureau of Statistics - Dar es Salaam
tza_regions_nbs	This layer shows the Tanzania regional boundaries ³² .	Boundaries	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania	2010	UTM_Arc_1960	1:50.000	No conditions apply	National Bureau of Statistics - Dar es Salaam	2009	National Bureau of Statistics - Dar es Salaam	National Bureau of Statistics - Dar es Salaam	National Bureau of Statistics - Dar es Salaam
tza_river_mouth.shp	River entry points (River mouths)	Inland Waters	Vector (point)	ESRI shapefile (*.shp)	Tanzania coast	2012	GCS_WGS_1984	1:10.000	No conditions apply	Digitized based on field observation and Google Earth	Ca. 2003	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_road_50k.shp	The Tanzania Road Network ³³ .	Transportation	Vector (line)	ESRI shapefile (*.shp)	Tanzania	Ca. 2012	GCS_WGS_1984	1:50.000	No conditions apply	GE DIGIT, Field, Open Street Map, Mapping and Survey Division of Zanzibar	2012	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_saltpans_points_10k.shp	The locations where salt pans (point) are found. A better layer (in polygons) tza_saltpans_poly_5k.shp (58) exists. So delete this layer	Farming	Vector (point)	ESRI shapefile (*.shp)	Tanzania	2012	GCS_WGS_1984	1:10.000	No conditions apply	Digitized from Google Earth	2012	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_saltpans_poly_5k.shp	Saltpan areas	Farming	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania	2012	GCS_WGS_1984	1:5.000	No conditions apply	Digitized from field observations and Google Earth	2012	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_seahorses_points_200k.shp	Locations where Sea horse (Hippocampus) are found in appreciable aggregations ³⁴ .	Biota	Vector (point)	ESRI shapefile (*.shp)	Tanzania	2008 - 2012	GCS_WGS_1984	1:200.000	No conditions apply	Various sources ³⁵ .	?	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_seaweed_farming_10k.shp	Locations with sea weed farming as points	Farming	Vector (point)	ESRI shapefile (*.shp)	Coastal Tanzania	2012	GCS_WGS_1984	1:10.000	No conditions apply	Digitised at the Institute of Marine Sciences ³⁶ .	2012	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_settlements_50k.shp	Named settlements (District HQ, Regional HQ, settlements) as points ³⁷ .	Location	Vector (point)	ESRI shapefile (*.shp)	Coastal Tanzania	2013	GCS_WGS_1984	1:50.000	No conditions apply	Digitized from topographical maps	Ca. 2003	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_shark_sites_50k.shp	This layer shows the areas known to have relatively higher concentrations of sharks and/or shark fishery ³⁸ .	Biota	Vector (point)	ESRI shapefile (*.shp)	Coastal Tanzania	2008 - 2012	GCS_WGS_1984	1:50.000	No conditions apply	Digitized from topographical maps	?	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com

³² Obtained from National Bureau of Statistics. However it doesn't include the recent changes and it looks very similar to layer number 8 - TZA_adm1.shp.

³³ Roads are classified as footpath, footway, living street, main road, primary link, residential, road, secondary, secondary road, service, tertiary, track, trail, trunk, two lanes main road, unclassified, unknown, unsurfaced)

³⁴ This spatial dataset was contributed by Samaki Consultants under the leadership of Dr M.D. Richmond. Seahorses are sometimes regarded as the jewels and some species have been listed as endangered marine fish. Species composition of Tanzania seahorses is not yet known.

³⁵ McPherson & Vincent 2004 Assessing East African trade in seahorse species as a basis for conservation under international controls Aquatic Conservation: Marine and Freshwater Ecosystems, 14 (5), p. 521-538, 2004) + (ZNZ Dive Centre Newsletter Vol. 1 (2) 2nd Qtr, 2009) + (Pers. Obs. (MR) Mafia Chole Bay, 2009) + (Pers. Comm. (MR) with Isobel Pring, ECO2 Manager, Mikindani Mtwara, 2009)

³⁶ Data contributed by Zanzibar Fisheries Department (Mr Hamad), Dr. Flower Msuya.

³⁷ Source of information is National Topographic maps prepared by Surveys and Mapping Division in Dar es Salaam and Zanzibar.

³⁸ First digitisation of shark areas was in 2004 (Wells et al. 2005) and information was later updated in 2008 by WWF Tanzania (Muhando and Rumisha, 2008). Last update was by TanSea Project in 2012

Dataset Title	Dataset Abstract	Dataset Category	Dataset Type	Dataset Format	Geographic Extent	Temporal extent	Spatial reference	Spatial resolution or Equivalent scale	Conditions for access and use	Lineage (i.e. process history)	Date of latest revision	Responsible party	Role of responsible party	Metadata point of contact
tza_sport_fishing_sites_200k.shp	Sport fishing sites in Tanzania. Data was based on interviewed tourist operators and Field observations	Society	Vector (point)	ESRI shapefile (*.shp)	Coastal Tanzania	Ca. 2012	GCS_WGS_1984	1:200.000	No conditions apply	Digitized from field observations	2012	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_srtm_contours_10m_250k.shp	Land elevation contours (lines) at an interval of 10 m ³⁹ .	Elevation	Vector (line)	ESRI shapefile (*.shp)	Southern coastal Tanzania	Ca. 2003	GCS_WGS_1984	1:250.000	No conditions apply	Derived from SRTM data (v4.1)	Ca. 2003	OBSCOM (http://www.obscom.eu/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_srtm_hs.tif	SRTM DEM Image covering the southern part of Tanzania only.	Elevation	Raster	GeoTiff (*.tif)	Southern coastal Tanzania	Ca. 2003	GCS_WGS_1984	1:250.000	No conditions apply	SRTM data (v4.1)	Ca. 2003	OBSCOM (http://www.obscom.eu/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_srtm_streams_250k.shp	Streams derived from DEM	Inland Waters	Vector (line)	ESRI shapefile (*.shp)	Southern coastal Tanzania	Ca. 2003	GCS_WGS_1984	1:250.000	No conditions apply	Derived from SRTM data (v4.1)	Ca. 2003	OBSCOM (http://www.obscom.eu/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_turtle_nesting_points_10k.shp	This layer shows locations of turtle nesting sites ⁴⁰ .	Biota	Vector (point)	ESRI shapefile (*.shp)	Coastal Tanzania	2008 - 2012	GCS_WGS_1984	1:10.000	No conditions apply	Spatial information from Sea Sense (NGO), Samaki Consultants, Wells et al. (2004) and Muhando and Rumisha (2008).	2012	Sea Sense (NGO), Samaki Consultants, Wells et al. (2004) and Muhando and Rumisha (2008).	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_VIL_Point_10k.shp	Layer of settlements or villages in Lindi and Mtwara Regions	Location	Vector (point)	ESRI shapefile (*.shp)	Southern coastal Tanzania	1999	UTM_Arc_1960	1:50.000	No conditions apply	Digitised by Naliendele College of Agriculture	Ca. 2002	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_Wards.shp	Tanzania Wards boundaries from geographic database of global administrative areas (GADM) ⁴¹ .	Boundaries	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania	Ca. 2010	GCS_WGS_1984	1:50.000	No conditions apply	Data was clipped from TZA_adm3.shp which was downloaded from http://www.gadm.org/country/Tanzania	Ca. 2007	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	National Bureau of Statistics - Dar es Salaam
tza_Wards_Clip_l.shp	Tanzania coastal Wards boundaries clipped from tza_wards.shp (69).	Boundaries	Vector (line)	ESRI shapefile (*.shp)	Coastal Tanzania	Ca. 2010	GCS_WGS_1984	1:50.000	No conditions apply	Data was clipped from TZA_adm3.shp which was downloaded from http://www.gadm.org/country/Tanzania	Ca. 2007	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	National Bureau of Statistics - Dar es Salaam
tza_wards_nbs	Tanzania Wards boundaries layer sourced from National Bureau of Statistics.	Boundaries	Vector (polygon)	ESRI shapefile (*.shp)	Tanzania	2012	UTM_Arc_1960	1:50.000	No conditions apply	National Bureau of Statistics - Dar es Salaam	2010	National Bureau of Statistics - Dar es Salaam	Resource Provider (Party that supplies the resource)	National Bureau of Statistics - Dar es Salaam
tza_watercourse_1000k.shp	Rivers in mainland Tanzania.	Inland Waters	Vector (line)	ESRI shapefile (*.shp)	Tanzania	2010	GCS_WGS_1984	1:1.000.000	No conditions apply	Prepared by OBSCOM	Ca. 2003	OBSCOM (http://www.obscom.eu/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_whale_sharks_areas_20k.shp	This layer shows locations where whale sharks are often sighted seasonally or otherwise use as a nursery area ⁴² .	Biota	Vector (point)	ESRI shapefile (*.shp)	Coastal Tanzania	2008 - 2012	GCS_WGS_1984	1:200.000	No conditions apply	Originally based on interviewed fishers ⁴³ .	2012	Wells et al. (2004) Muhando and Rumisha (2008) and TanSea Team	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com

³⁹ The contour lines are extracted or constructed from srtm_tz.tif Digital Elevation Model (DEM) that was provided by Christian

⁴⁰ This spatial information was contributed by Sea Sense (NGO) and Samaki Consultants. Some data was also sourced from Wells et al. (2004) and Muhando and Rumisha (2008).

⁴¹ This layer is downloaded from DIVA GIS (<http://www.diva-gis.org/gdata> or <http://www.gadm.org/>)

⁴² This spatial information was contributed by Samaki Consultants under the leadership of Dr. M.D. Richmond. The whale shark (*Rhincodon typus*) is a slow-moving filter feeding shark and the largest known extant fish species.

⁴³ Wells et al. (2004; Muhando and Rumisha, 2008) and recently updated by Samaki Consultants (2012).

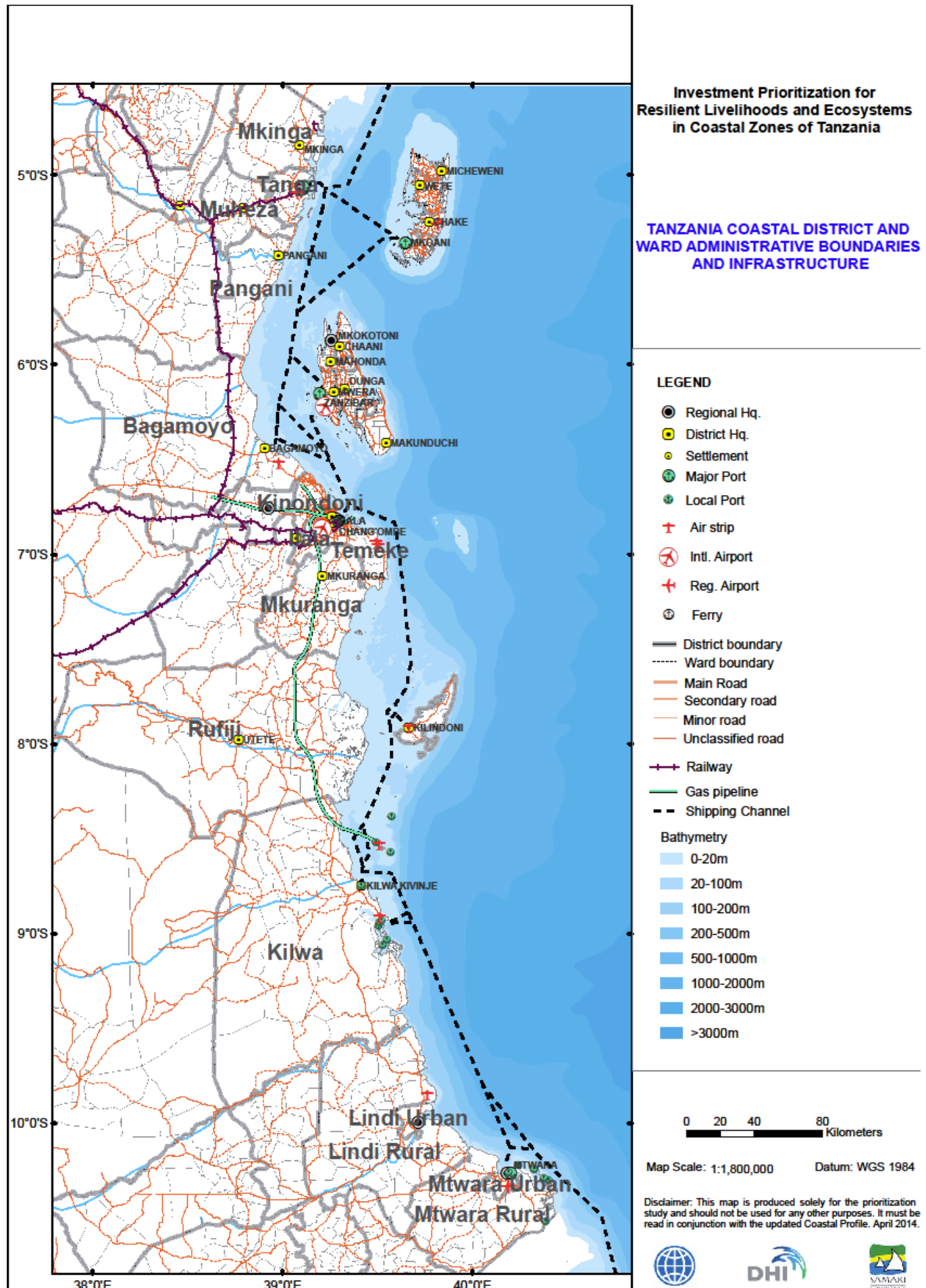
Dataset Title	Dataset Abstract	Dataset Category	Dataset Type	Dataset Format	Geographic Extent	Temporal extent	Spatial reference	Spatial resolution or Equivalent scale	Conditions for access and use	Lineage (i.e. process history)	Date of latest revision	Responsible party	Role of responsible party	Metadata point of contact
tza_zan_fish_landing_sites_10k.shp	This layer shows the location of the Fish Landing Sites in Tanzania mainland and Zanzibar ⁴⁴ .	Location	Vector (point)	ESRI shapefile (*.shp)	Coastal Tanzania	2013	GCS_WGS_1984	1:10.000	No conditions apply	Digitized from field observation and Google Earth	2012	Institute of Marine Sciences (IMS) (http://www.ims.udsm.ac.tz/)	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_zanzibar_hospitals_etc_50k	The location of hospitals and other health centres or facilities in Unguja and Pemba, Zanzibar ⁴⁵ .	Location	Vector (point)	ESRI shapefile (*.shp)	Zanzibar (Pemba and Unguja) Island	2008 plus	Arc_1960_UTM_Zone_37S	1:50.000	Unknown	Zanzibar Survey and Mapping Department though Mr Omar Issa Khamis	Ca. 2008	Zanzibar Department of Survey and Mapping	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com
tza_zanzibar_schools_50k	The location of schools in Unguja and Pemba, Zanzibar ⁴⁶ .	Location	Vector (point)	ESRI shapefile (*.shp)	Zanzibar (Pemba and Unguja) Island	2008 plus	Arc_1960_UTM_Zone_37S	1:50.000	Unknown	Zanzibar Survey and Mapping Department though Mr Omar Issa Khamis	Ca. 2008	Zanzibar Department of Survey and Mapping	Resource Provider (Party that supplies the resource)	Christopher Muhando; cmuhando@gmail.com

⁴⁴ All fish landing sites for Unguja Island are shown. Some updates are required for Pemba districts. Fish landing sites for Mtwara, Lindi, Kilwa, Temeke, Ilala, Kinondoni and Bagamoyo are complete. Updating is required for Tanga districts (Pangani, Muheza, Tanga urban, and Mkinga). Fishing capacity data is included for some Districts only - efforts are underway to get and link fishing gear, vessels and fishermen data to the corresponding fish landing sites

⁴⁵ This layer is still under development. Information is gathered and coordinated by Zanzibar Department of Survey and Mapping.

⁴⁶ This layer is still under development. Information is gathered and coordinated by Zanzibar Department of Survey and Mapping.

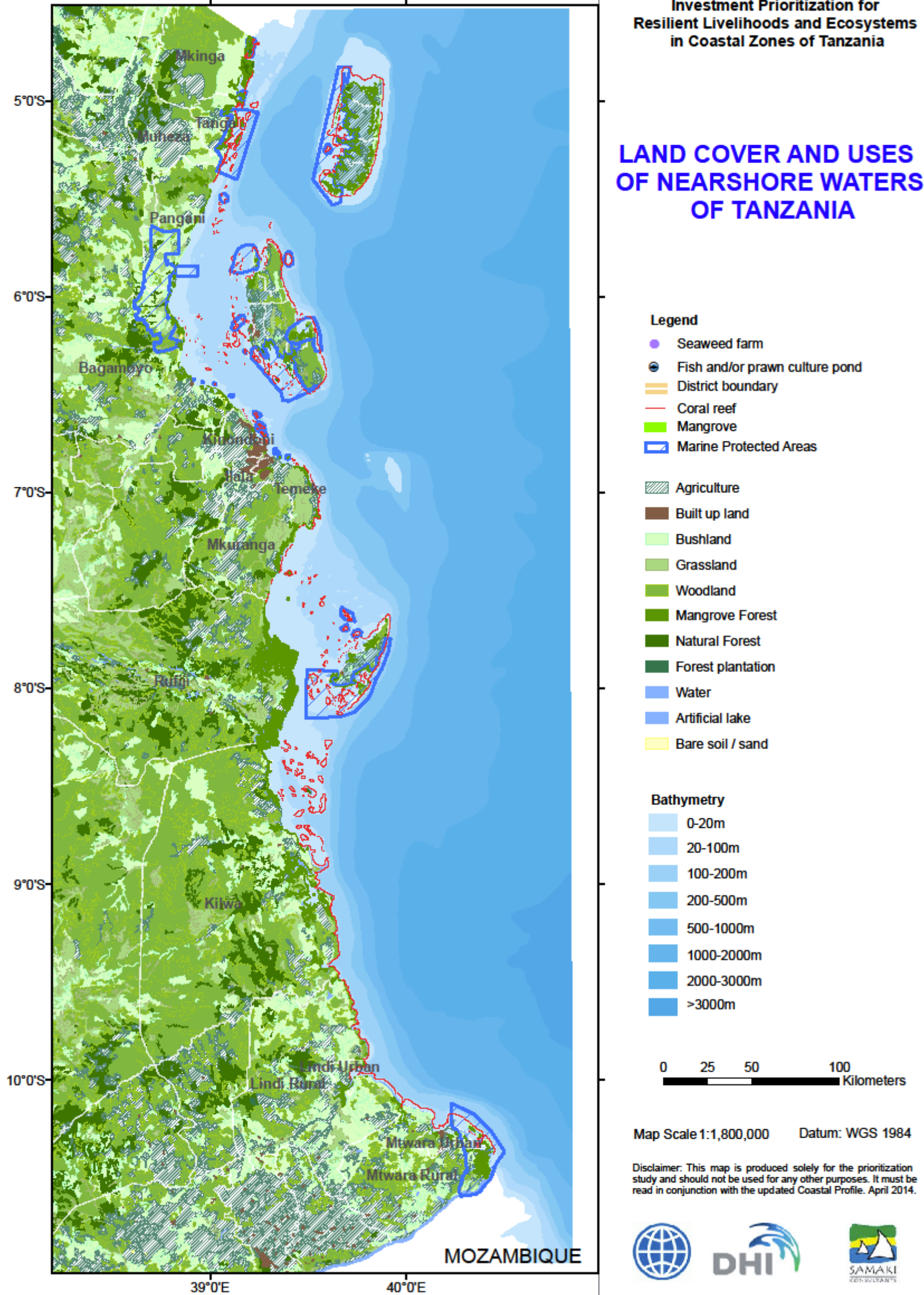
Map Section



Map 1: Administrative and Infrastructure features in the Coastal Zone of Tanzania

Investment Prioritization for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania

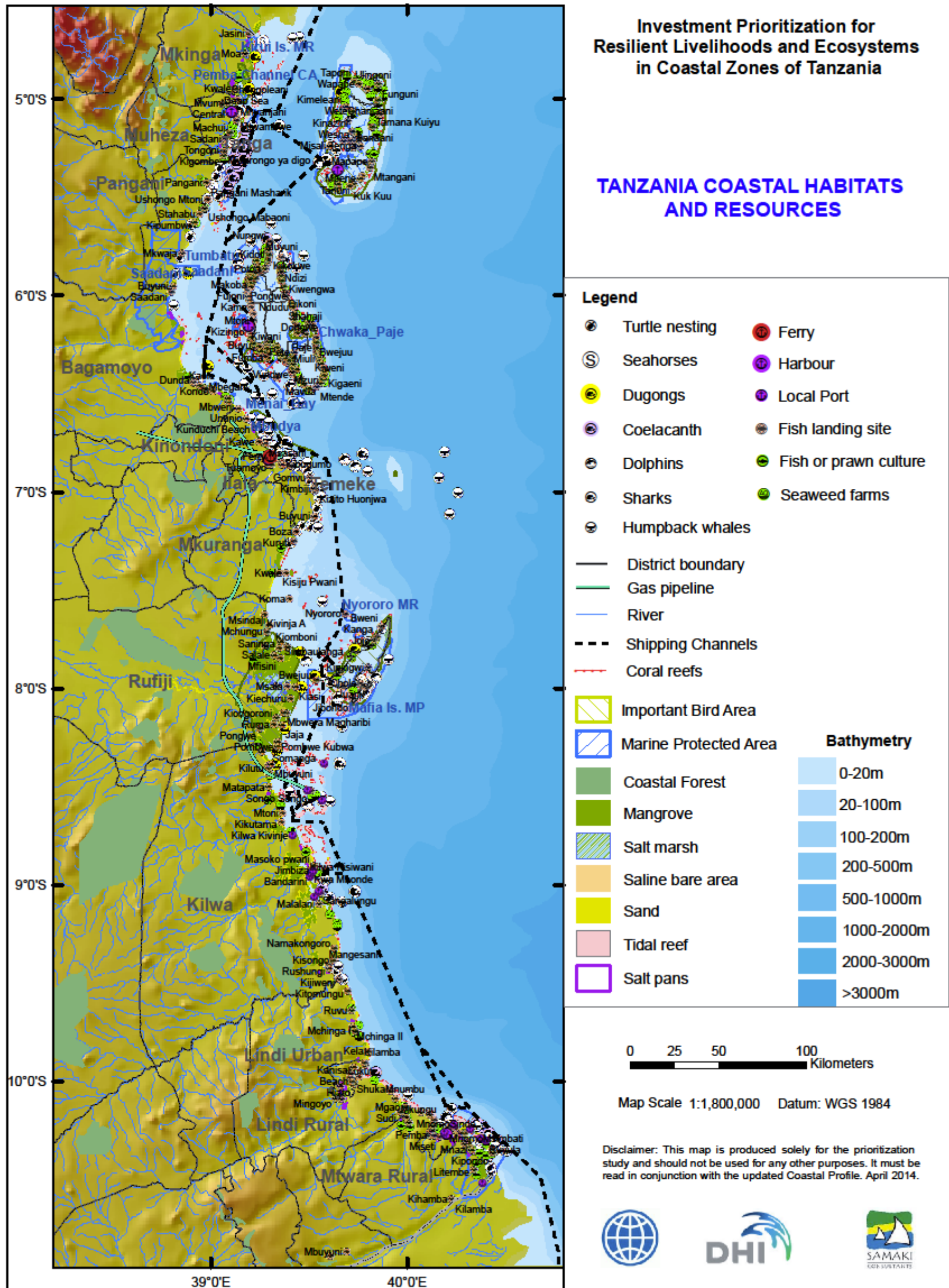
LAND COVER AND USES OF NEARSHORE WATERS OF TANZANIA



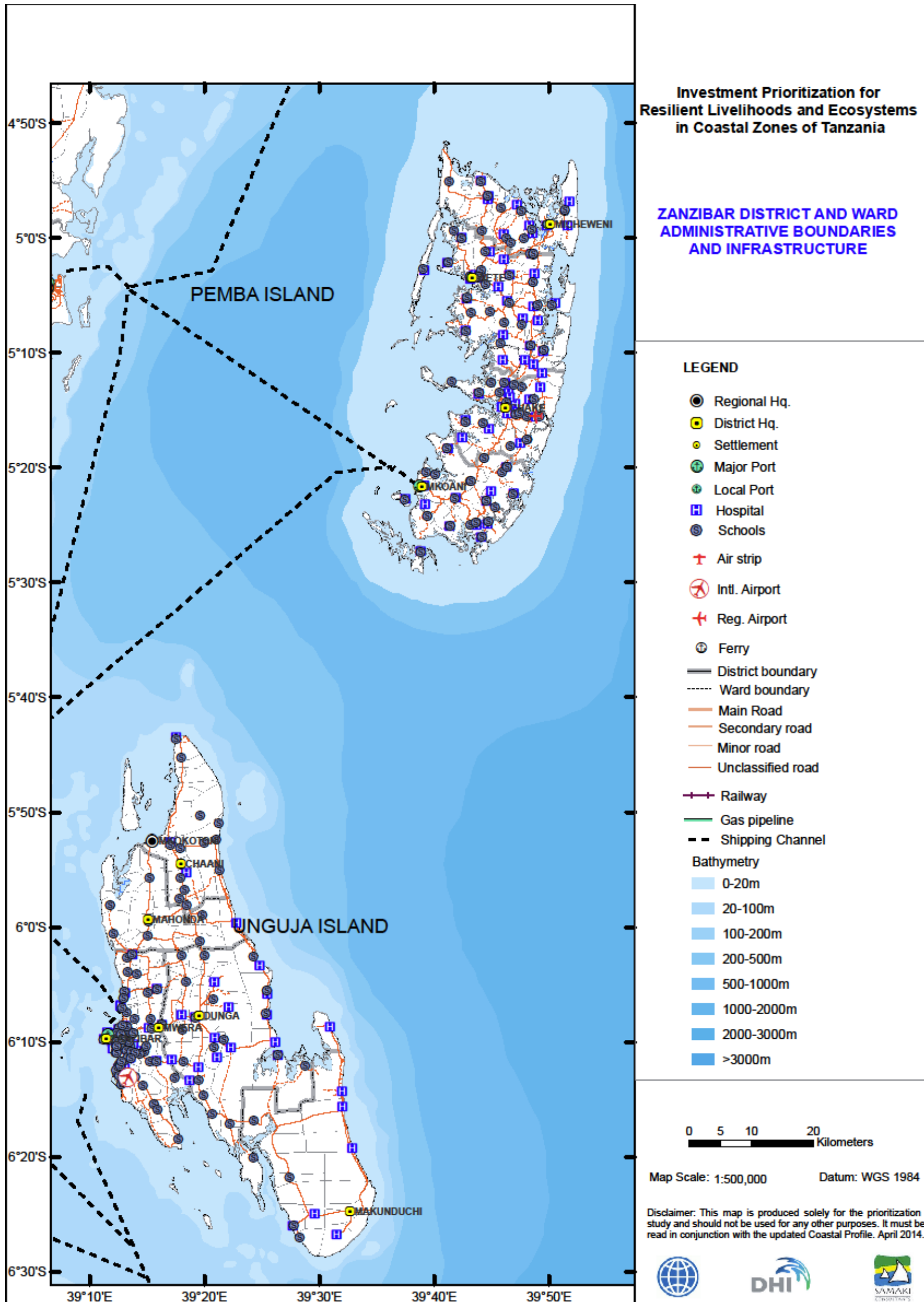
Map 2: Land Cover and Uses of Nearshore Waters in the Coastal Zone of Tanzania

Investment Prioritization for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania

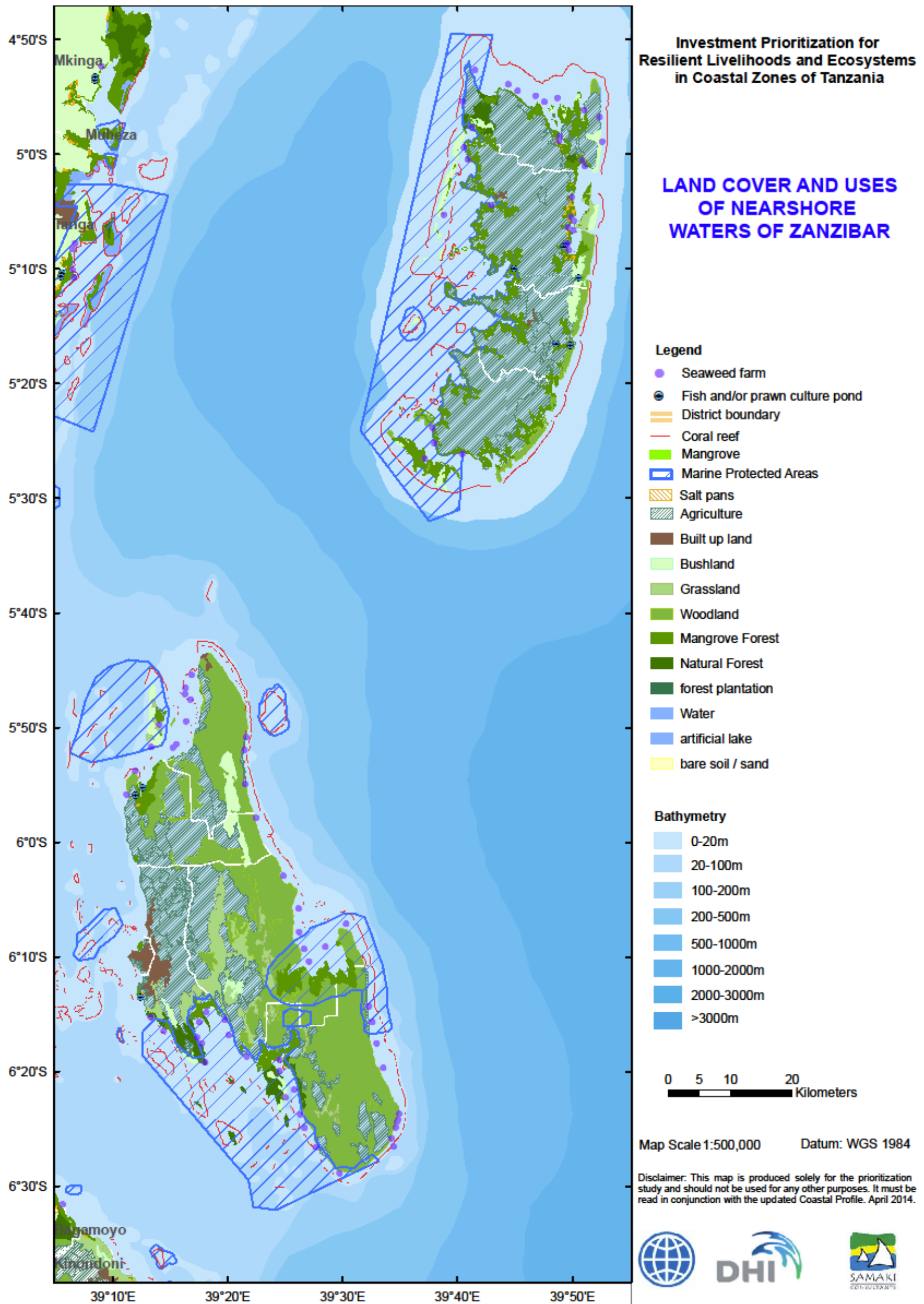
TANZANIA COASTAL HABITATS AND RESOURCES



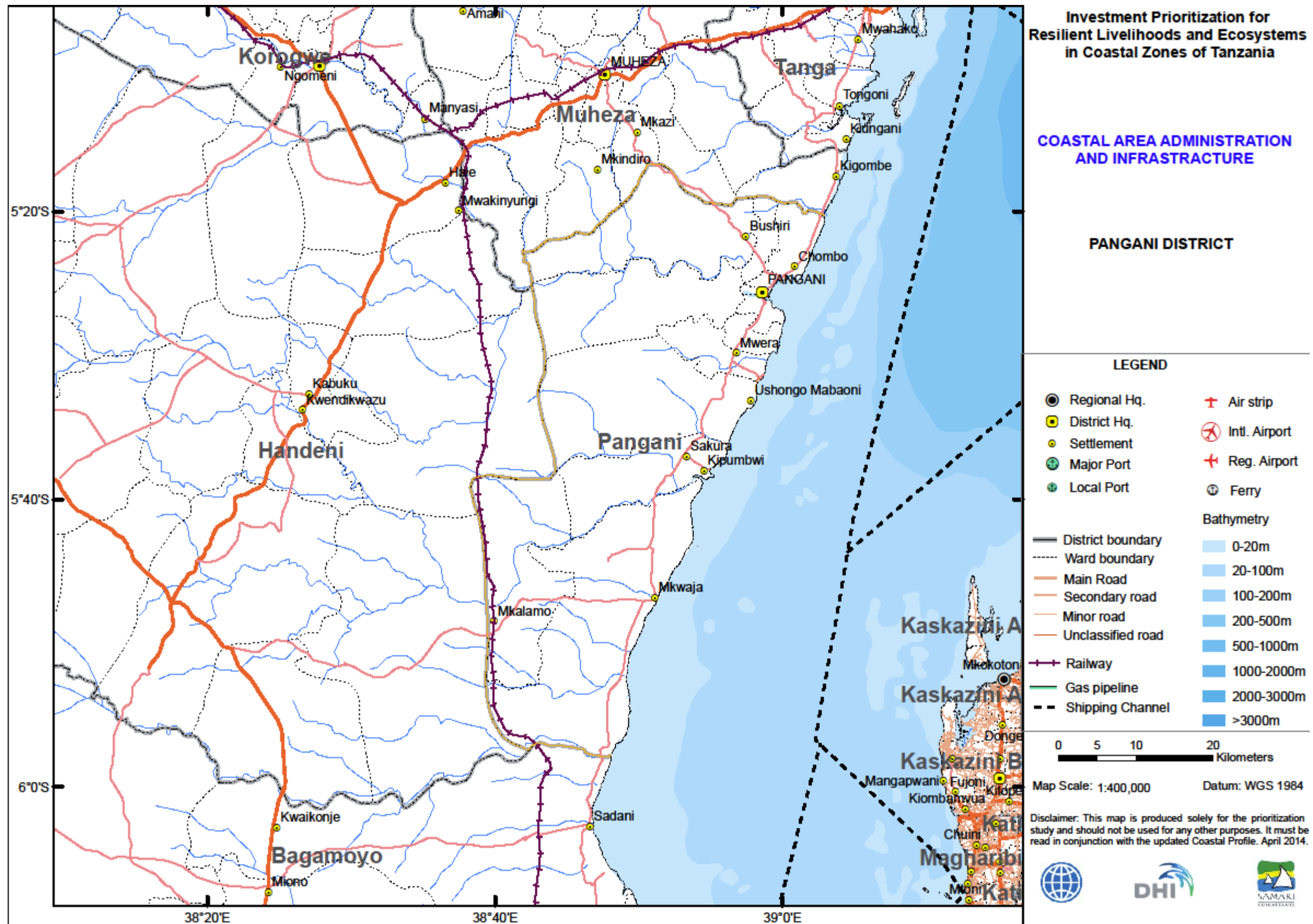
Map 3: Habitats and Resources in the Coastal Zone of Tanzania



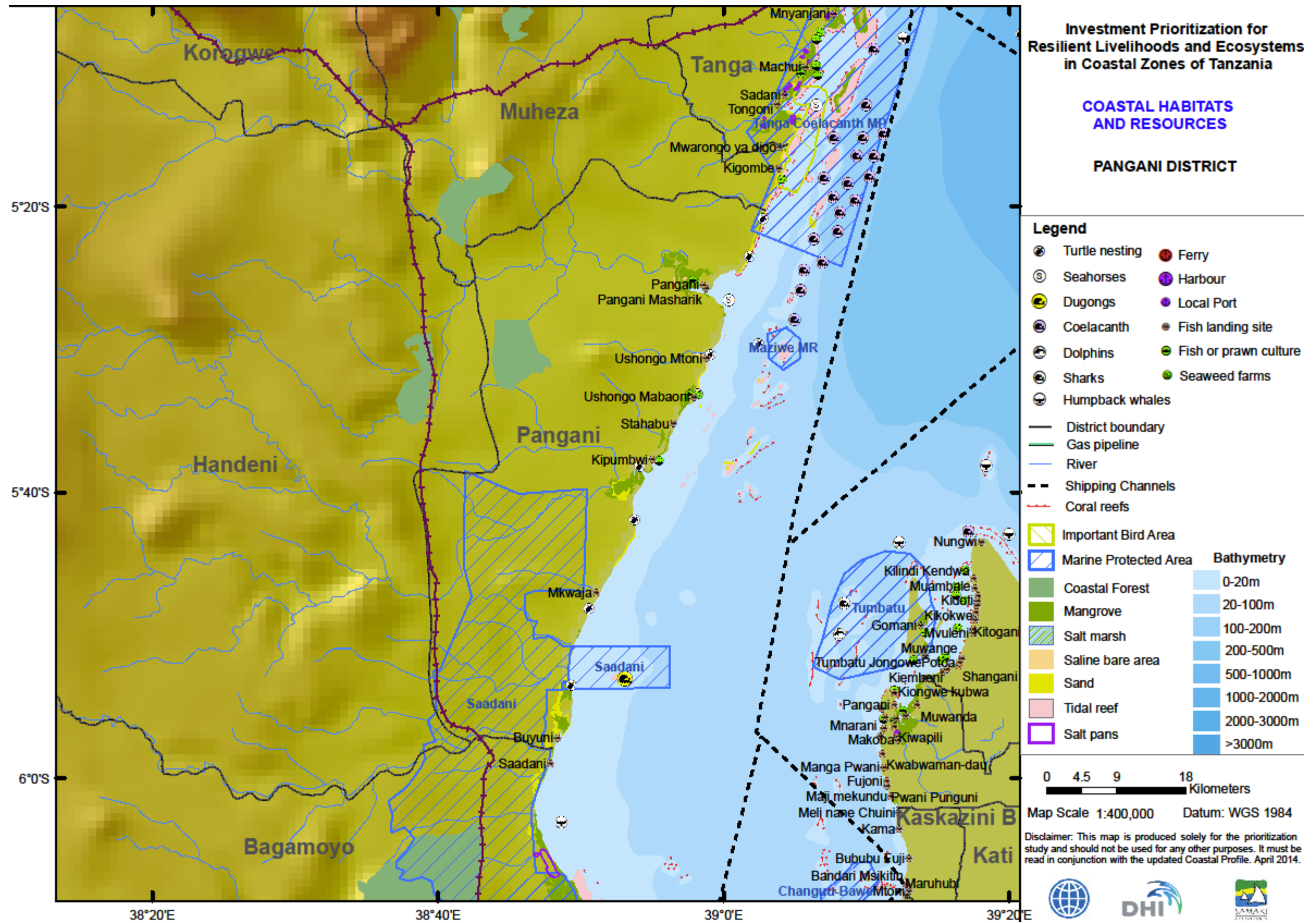
Map 4: Administrative and Infrastructure features in Zanzibar (Pemba and Unguja)



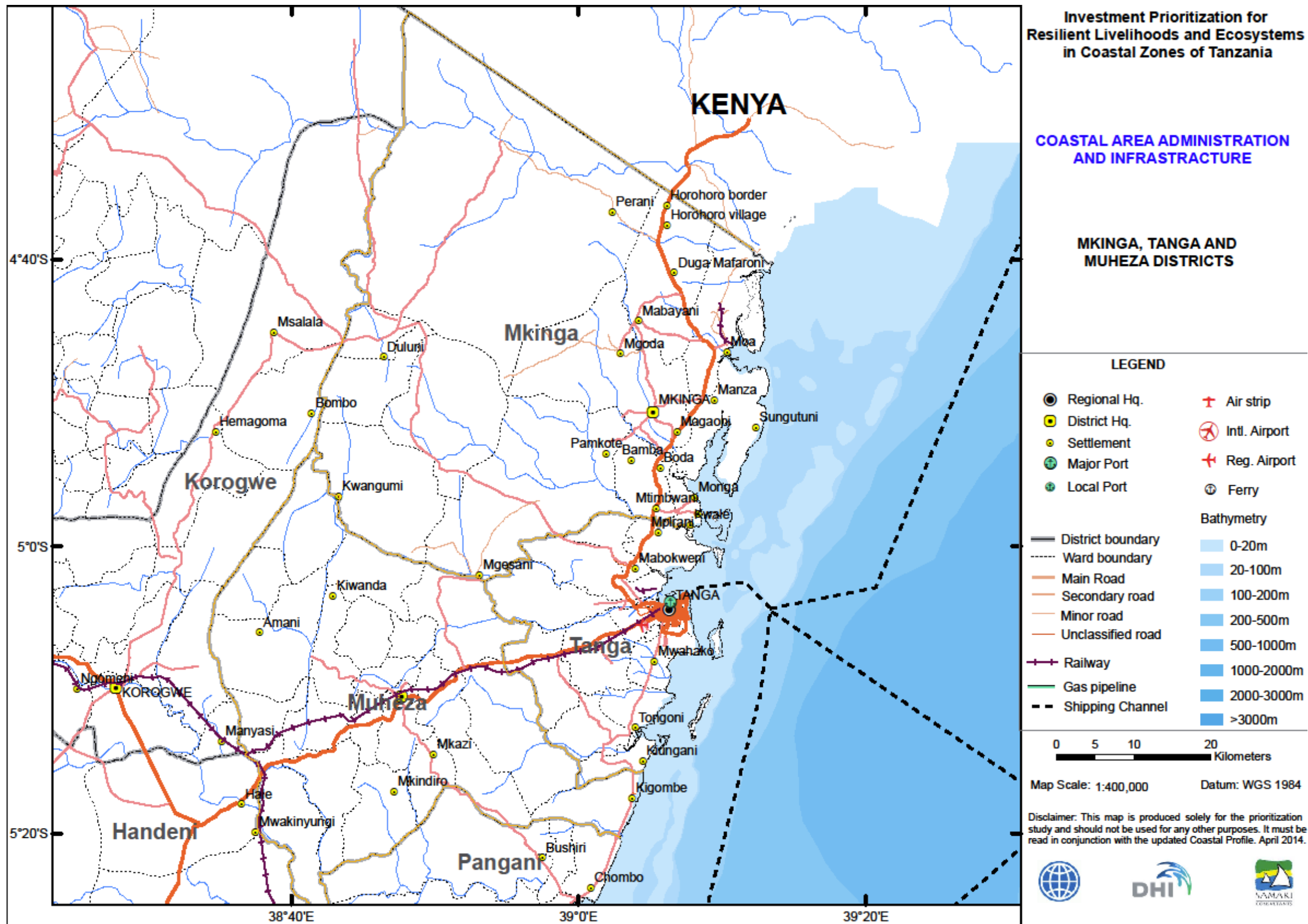
Map 5: Land Cover and Uses of Nearshore Waters in Zanzibar (Pemba and Unguja)



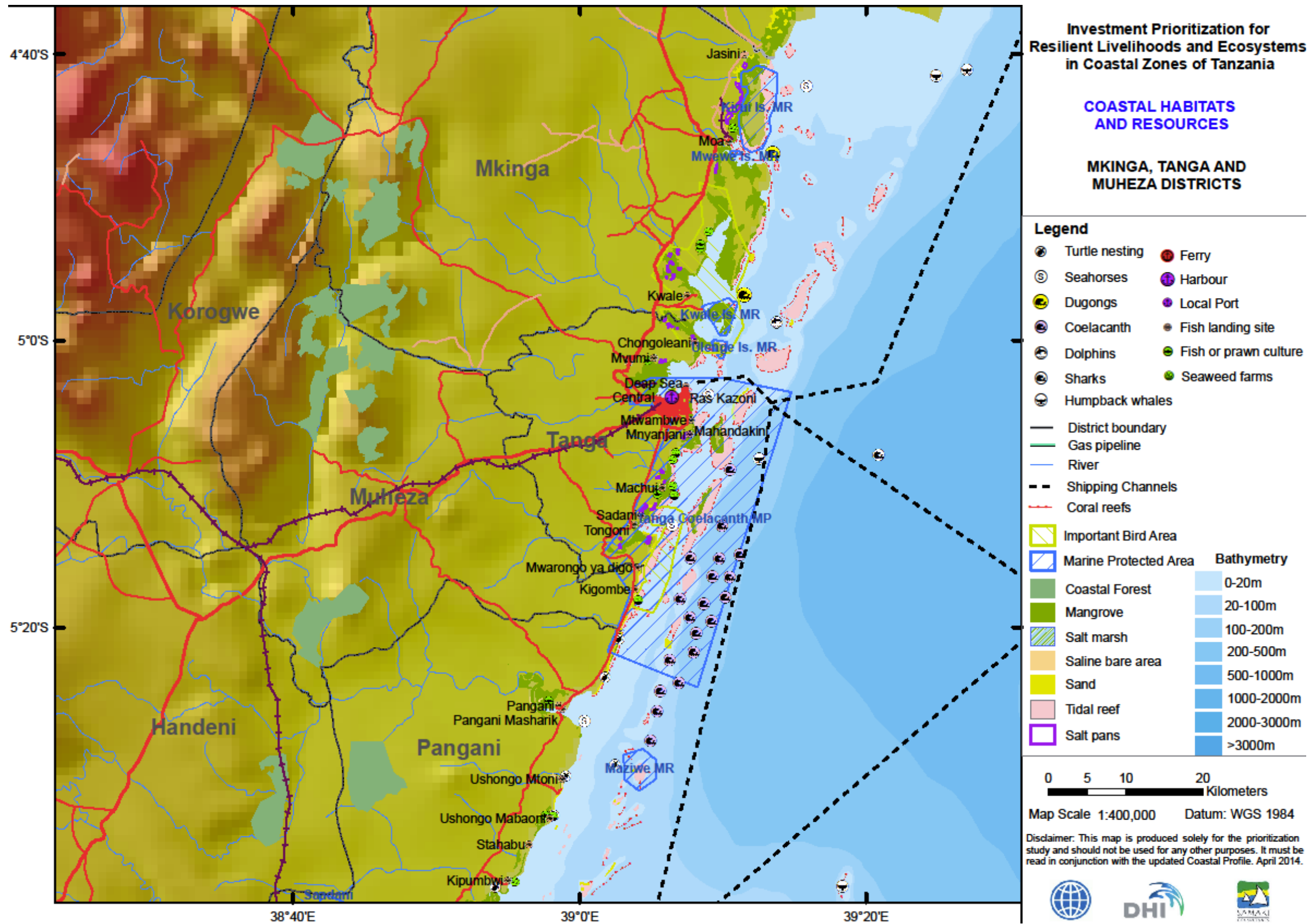
Map 7: Pangani District. Administrative and Infrastructure features.



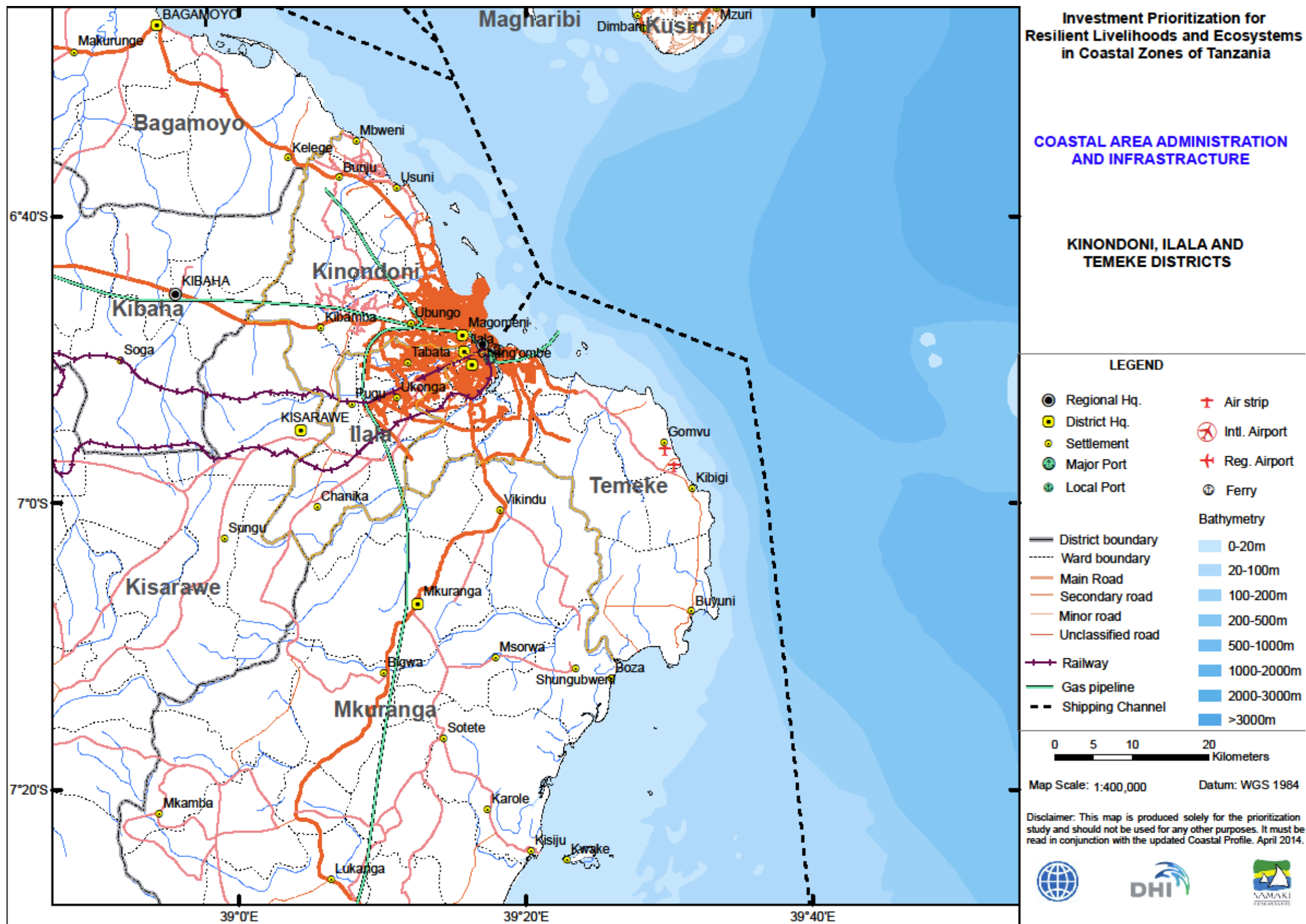
Map 8: Pangani District. Coastal Habitats and Resources.



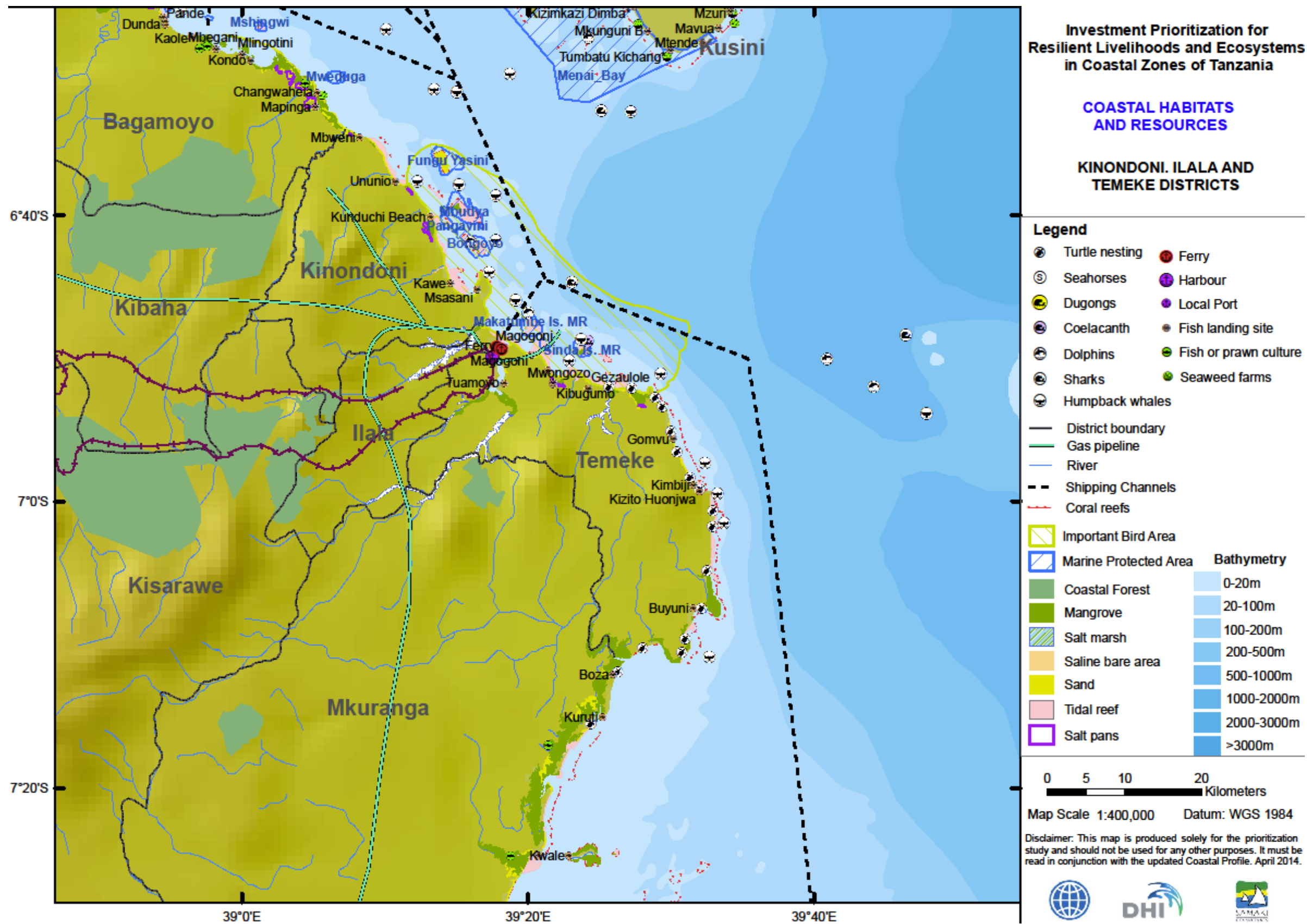
Map 9: Mkinga, Tanga and Muheza Districts. Administrative and Infrastructure features.



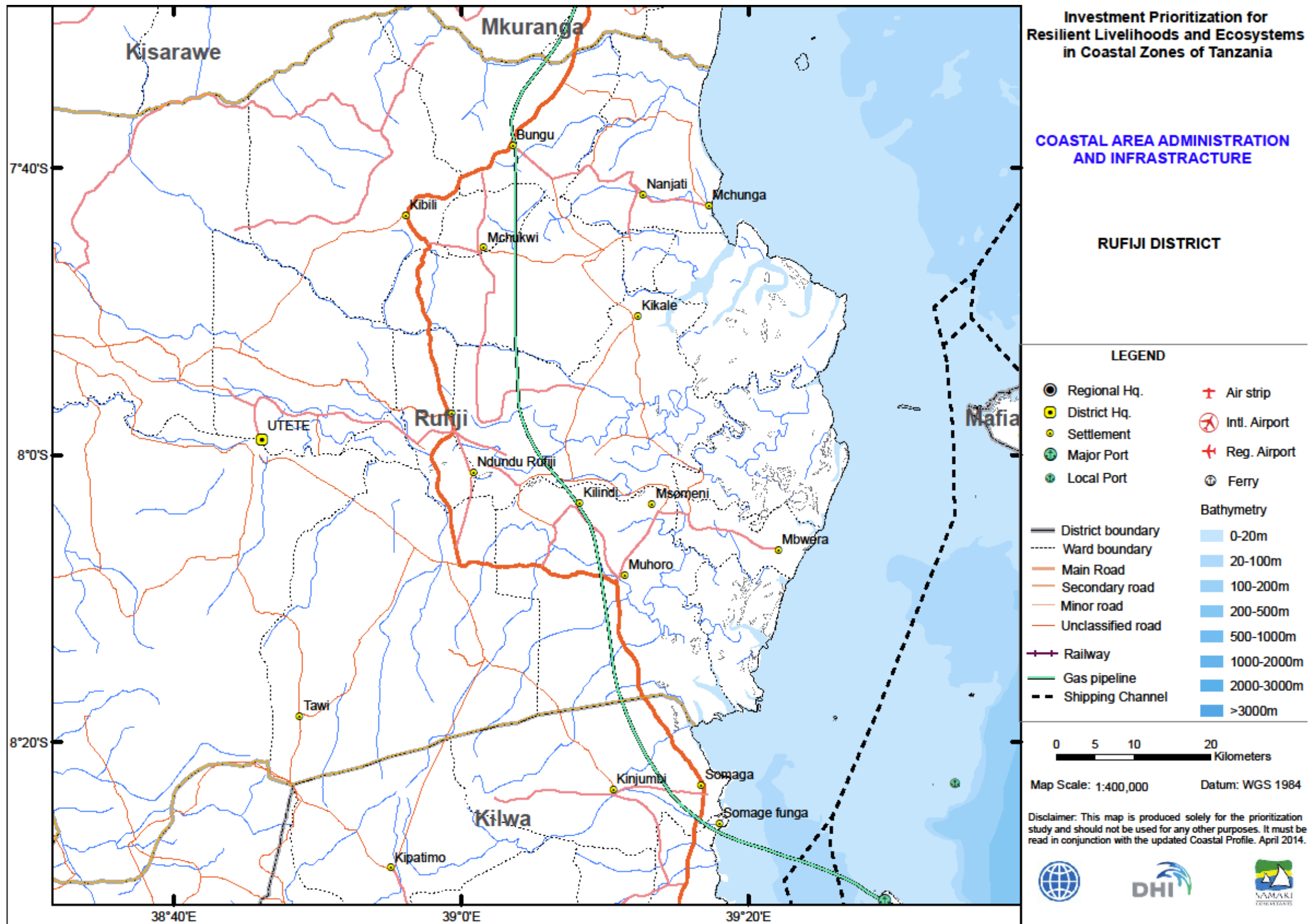
Map 10: Mkinga, Tanga and Muheza Districts. Coastal Habitats and Resources.



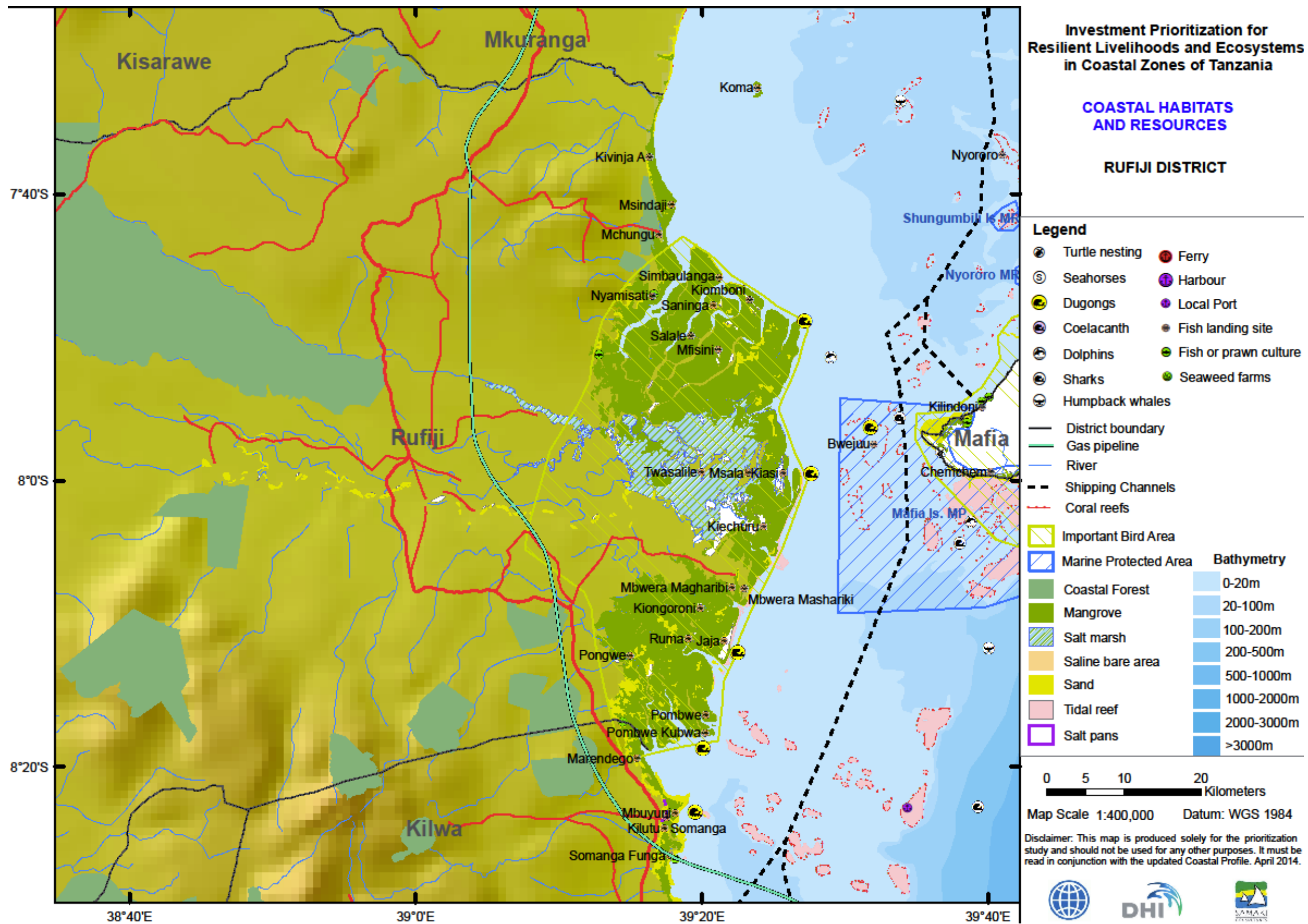
Map 11: Kinondoni, Ilala and Temeke Districts. Administrative and Infrastructure features.



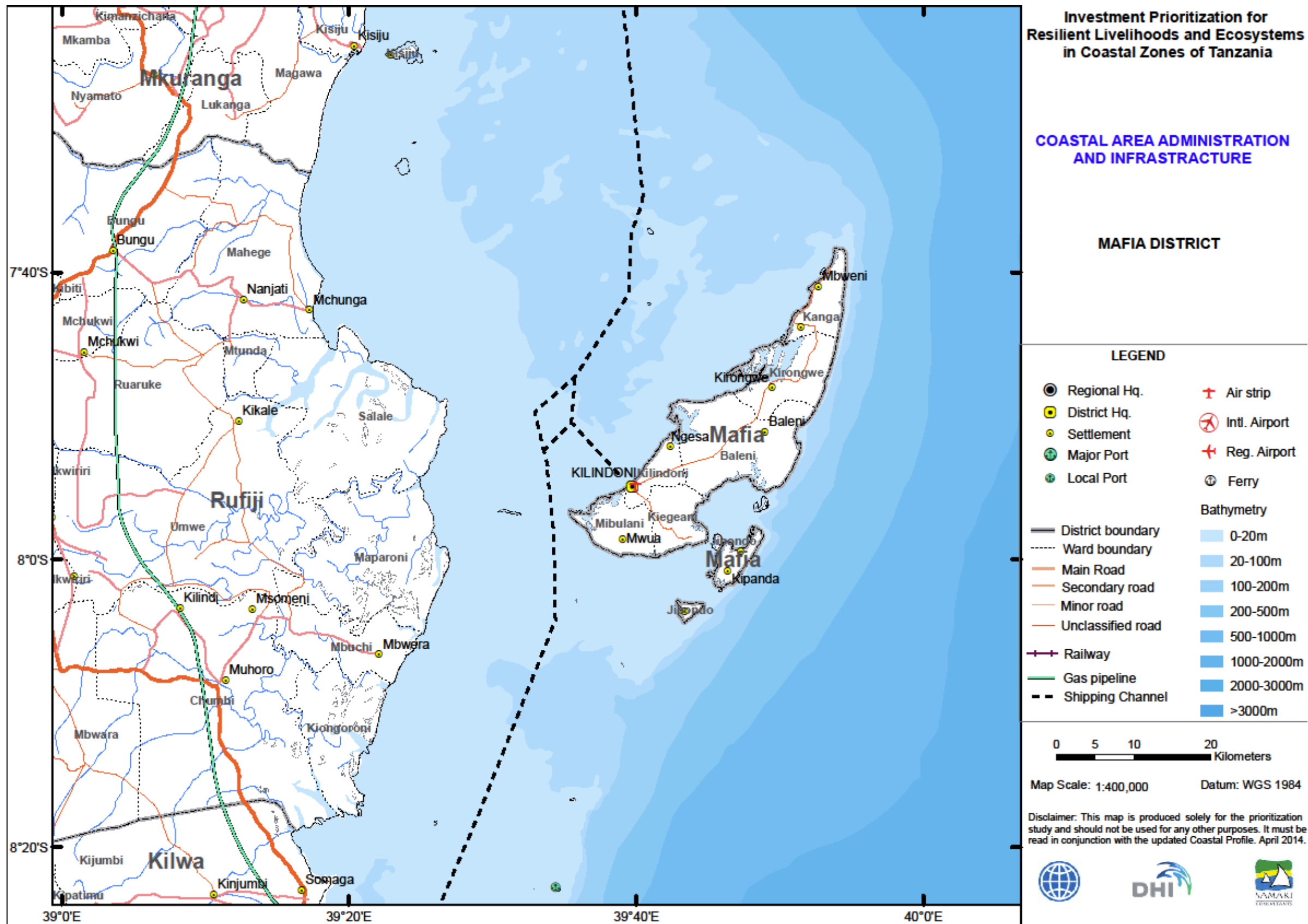
Map 12: Kinondoni, Ilala and Temeke Districts. Coastal Habitats and Resources.



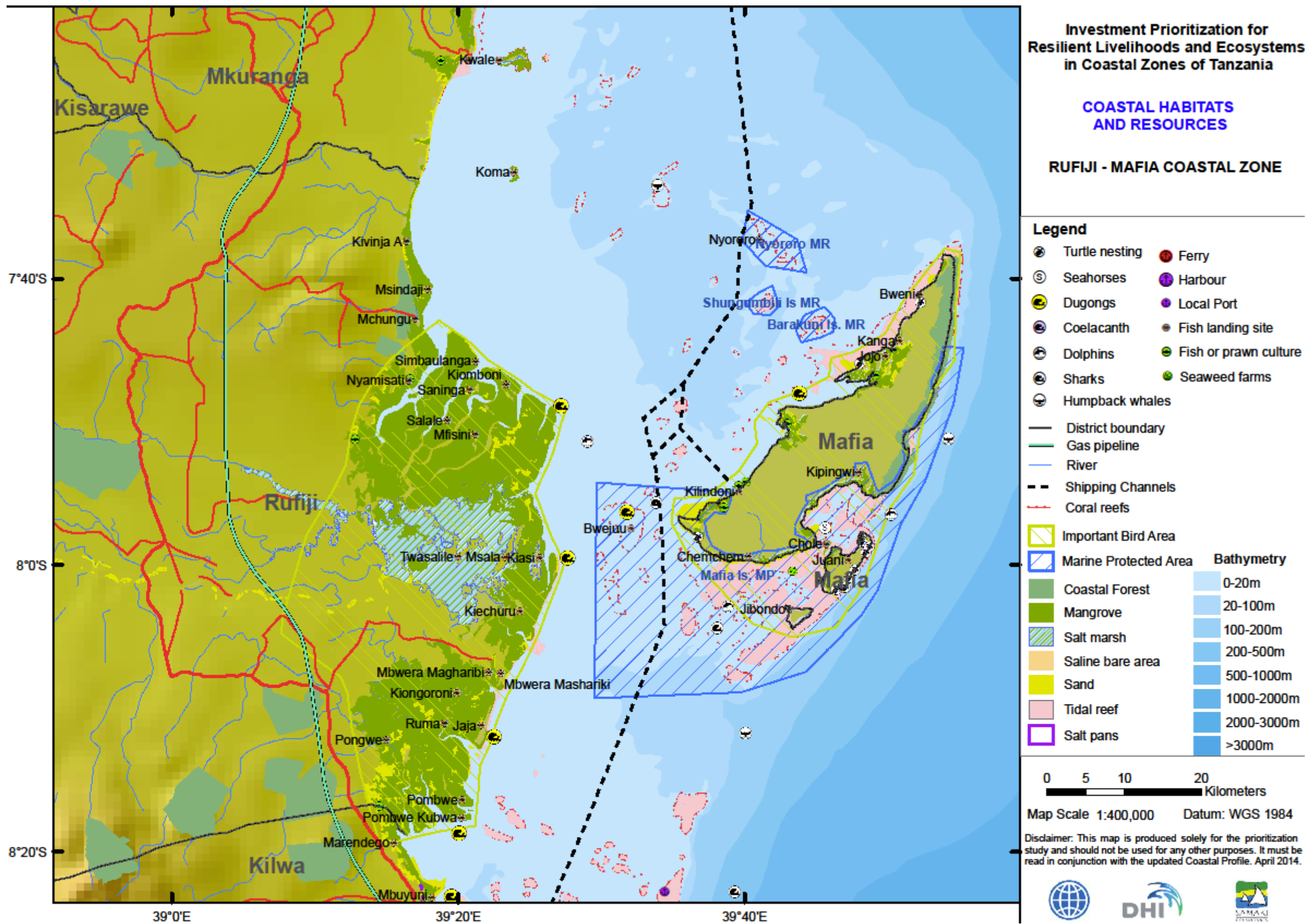
Map 13: Rufiji District. Administrative and Infrastructure features.



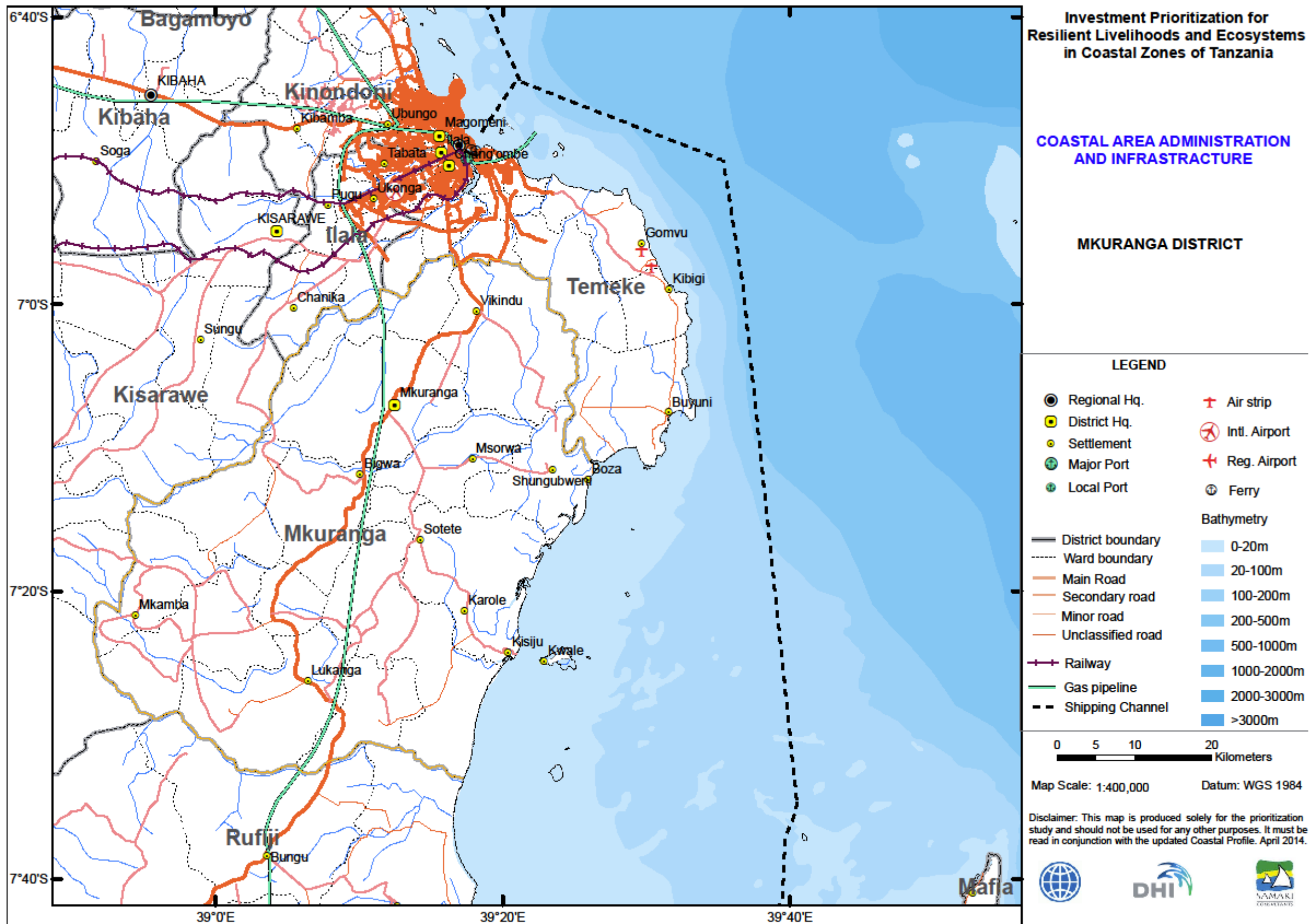
Map 14: Rufiji District.. Coastal Habitats and Resources.



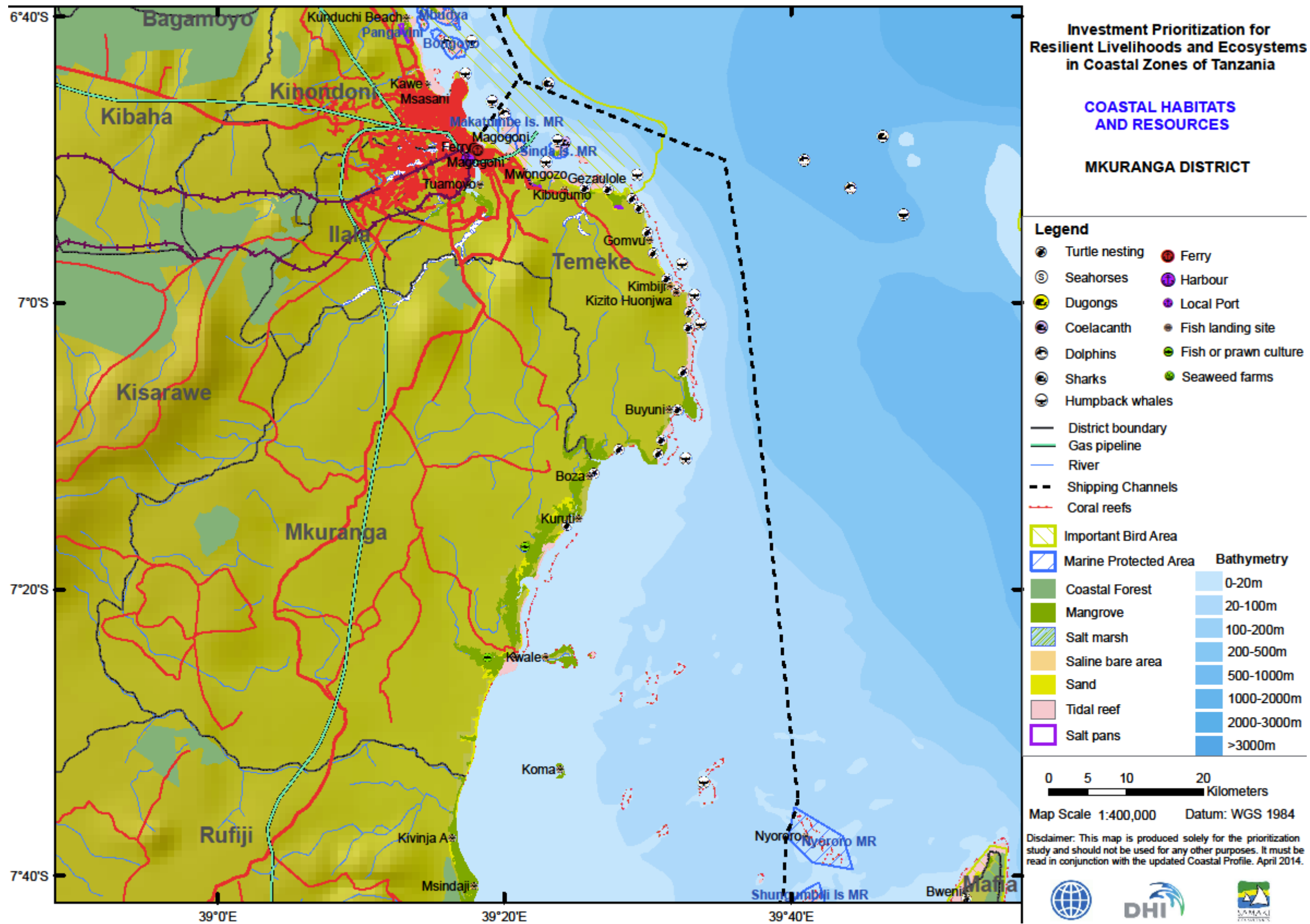
Map 15: Mafia District. Administrative and Infrastructure features.



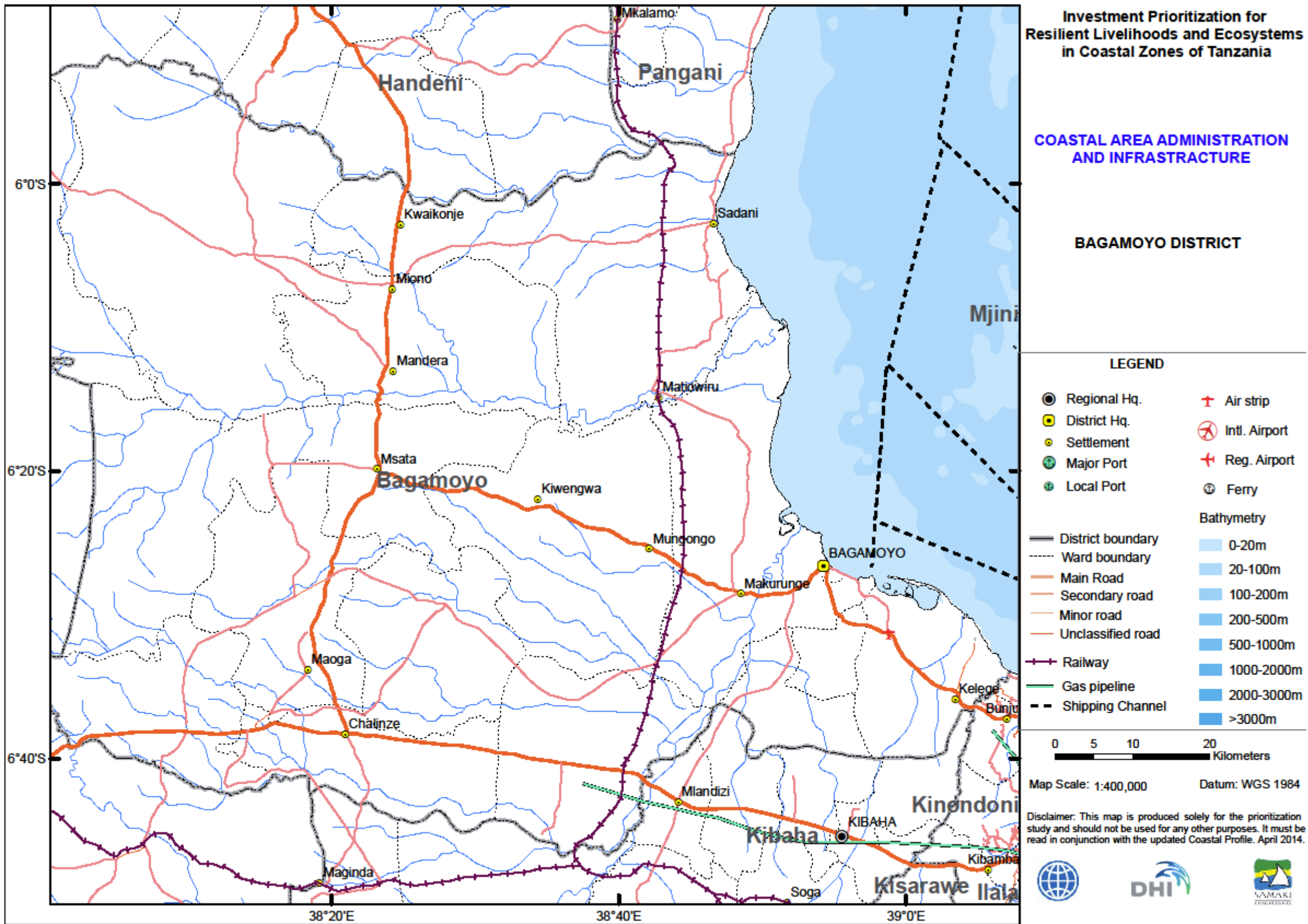
Map 16: Mafia District.. Coastal Habitats and Resources.



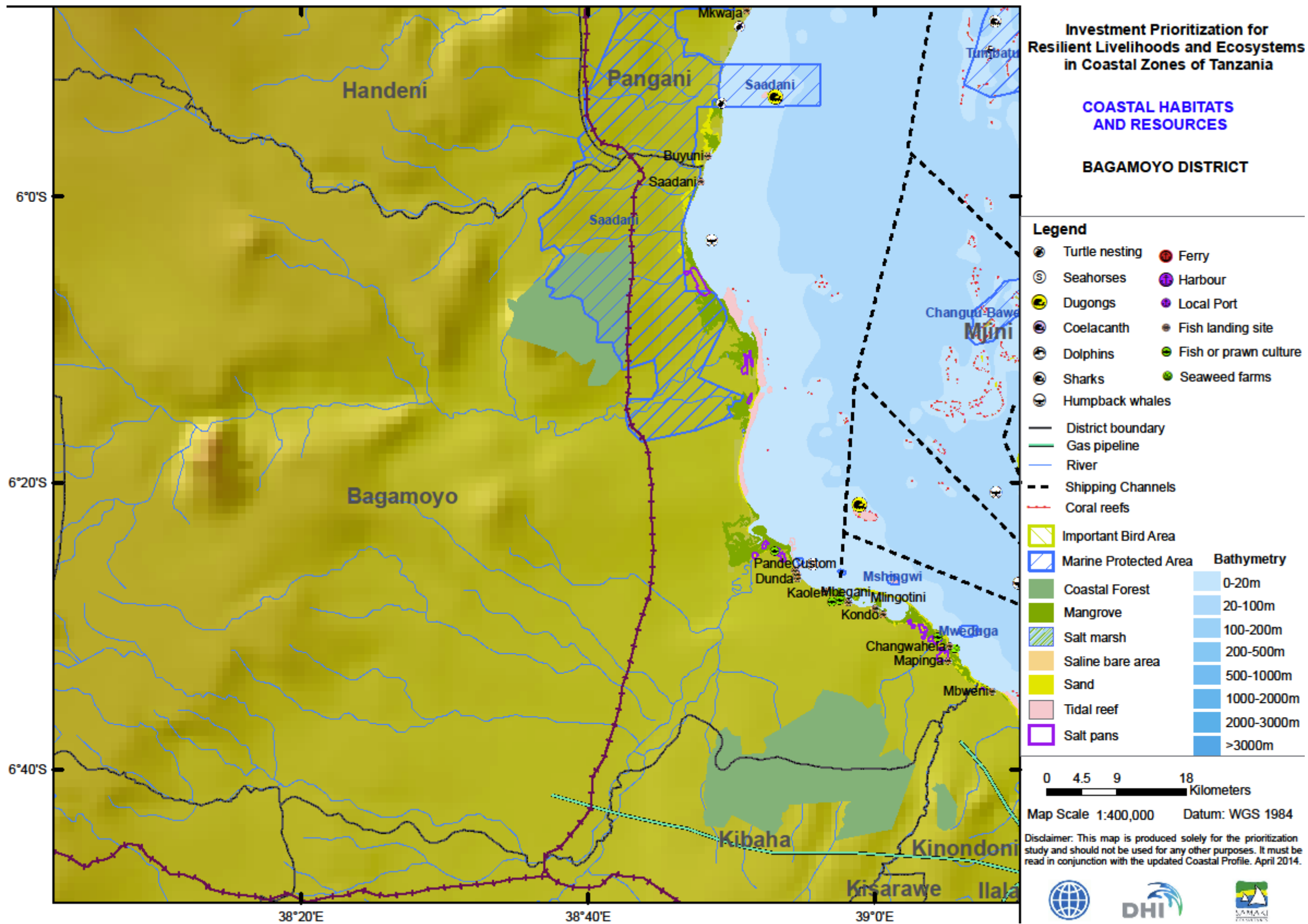
Map 17: Mkuranga District. Administrative and Infrastructure features.



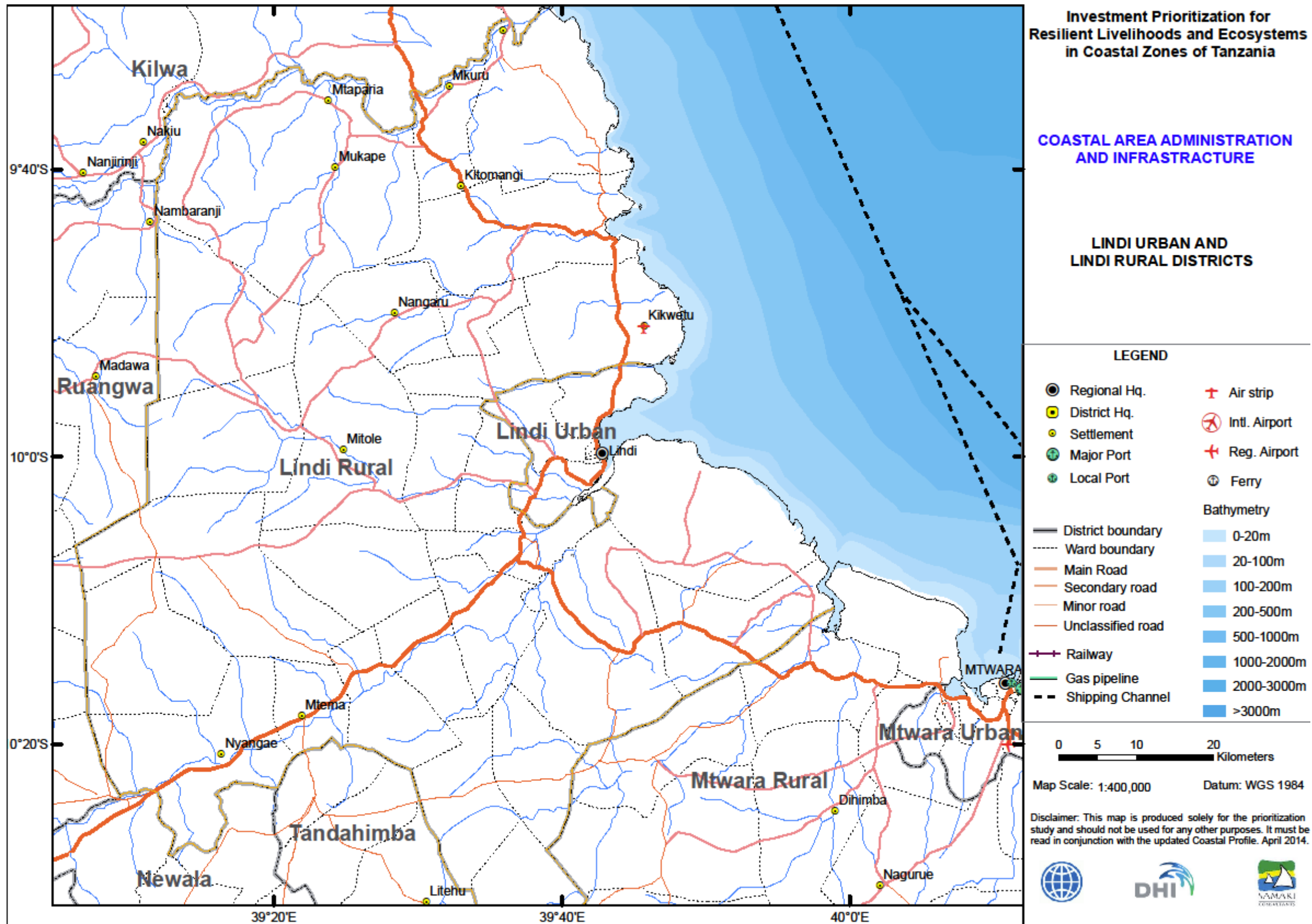
Map 18: Mkuranga District.. Coastal Habitats and Resources.



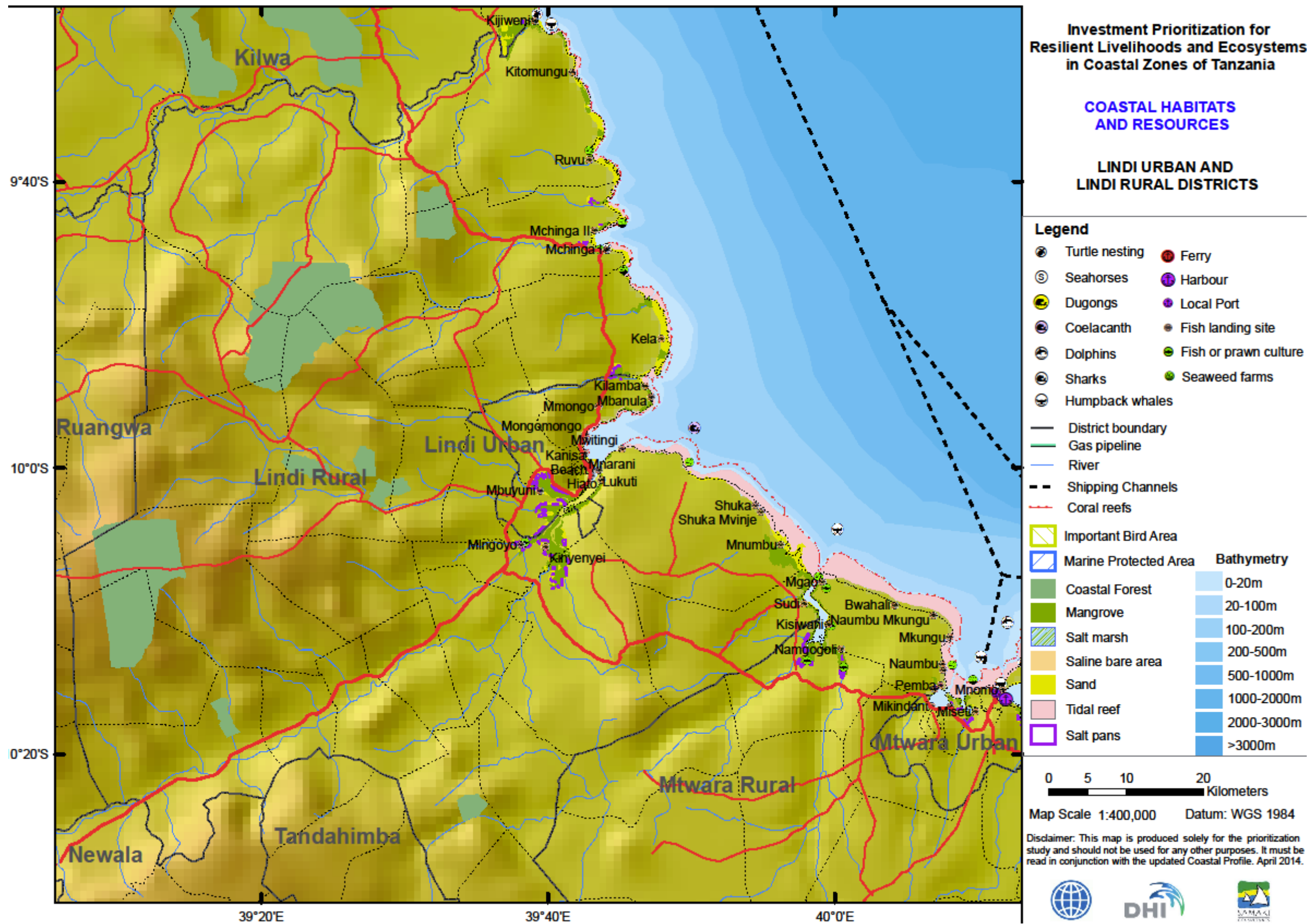
Map 19: Bagamoyo District. Administrative and Infrastructure features.



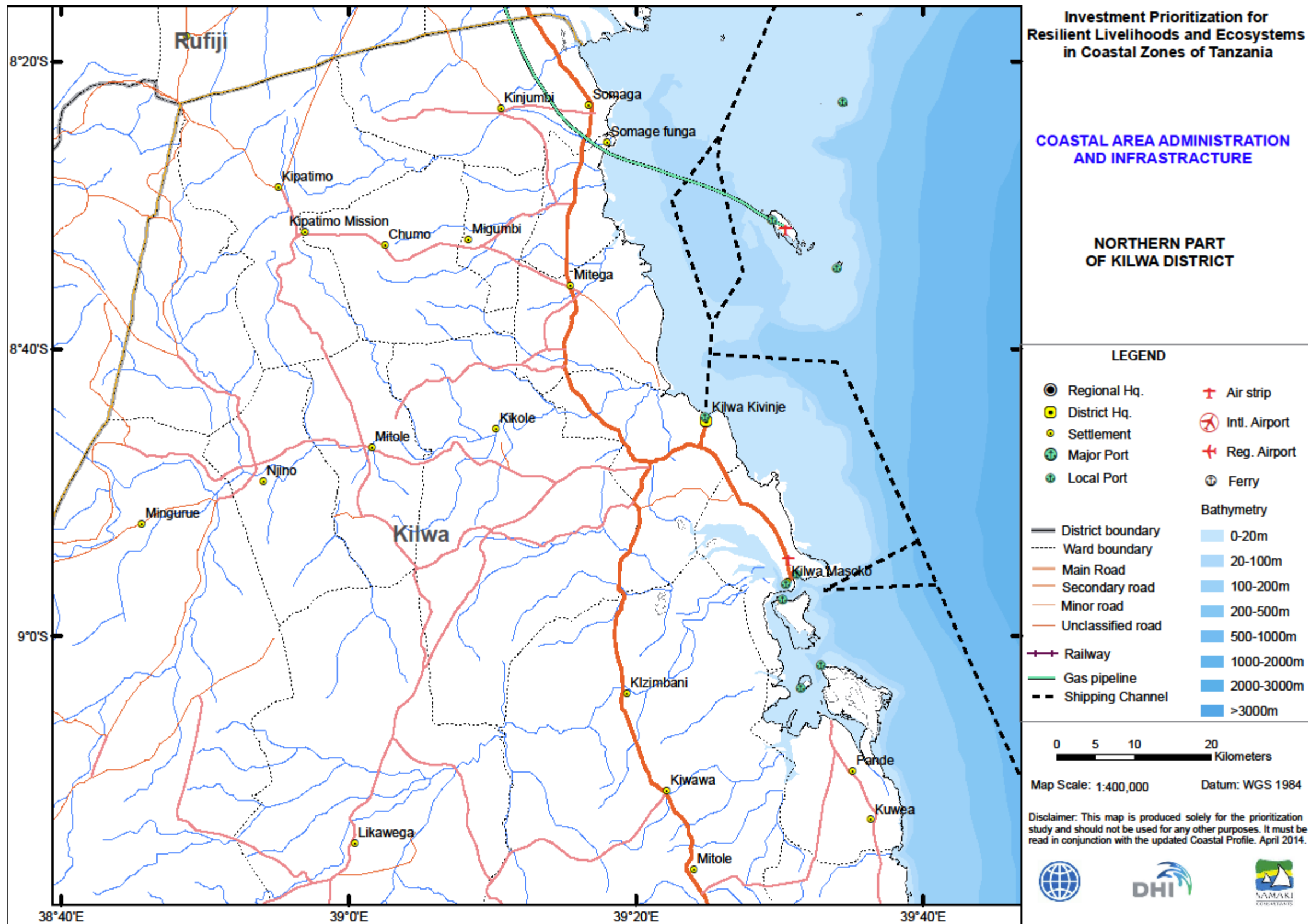
Map 20: Bagamoyo District.. Coastal Habitats and Resources.



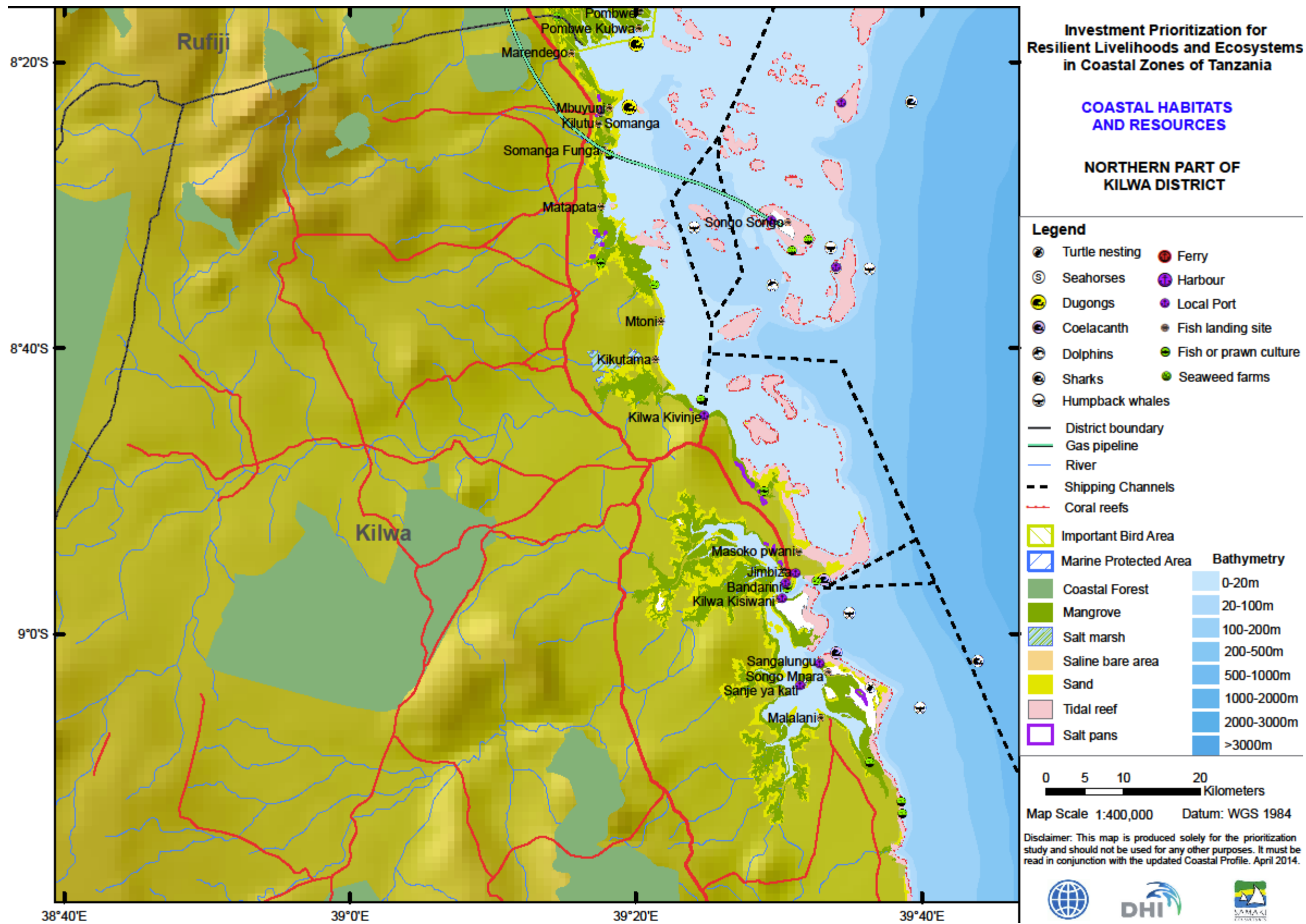
Map 21: Lindi Urban and Lindi Rural Districts. Administrative and Infrastructure features.



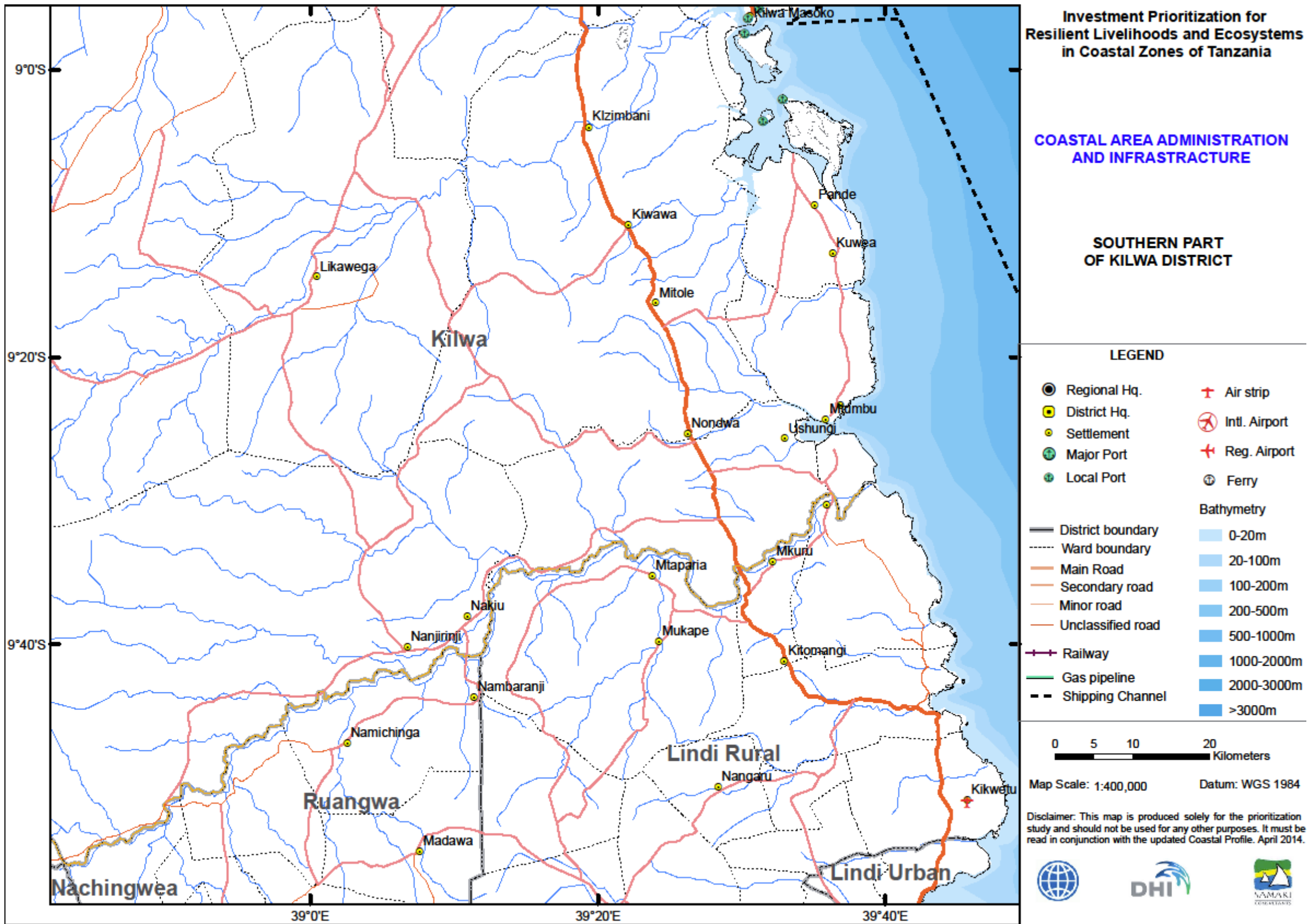
Map 22: Lindi Urban and Lindi Rural Districts. Coastal Habitats and Resources.



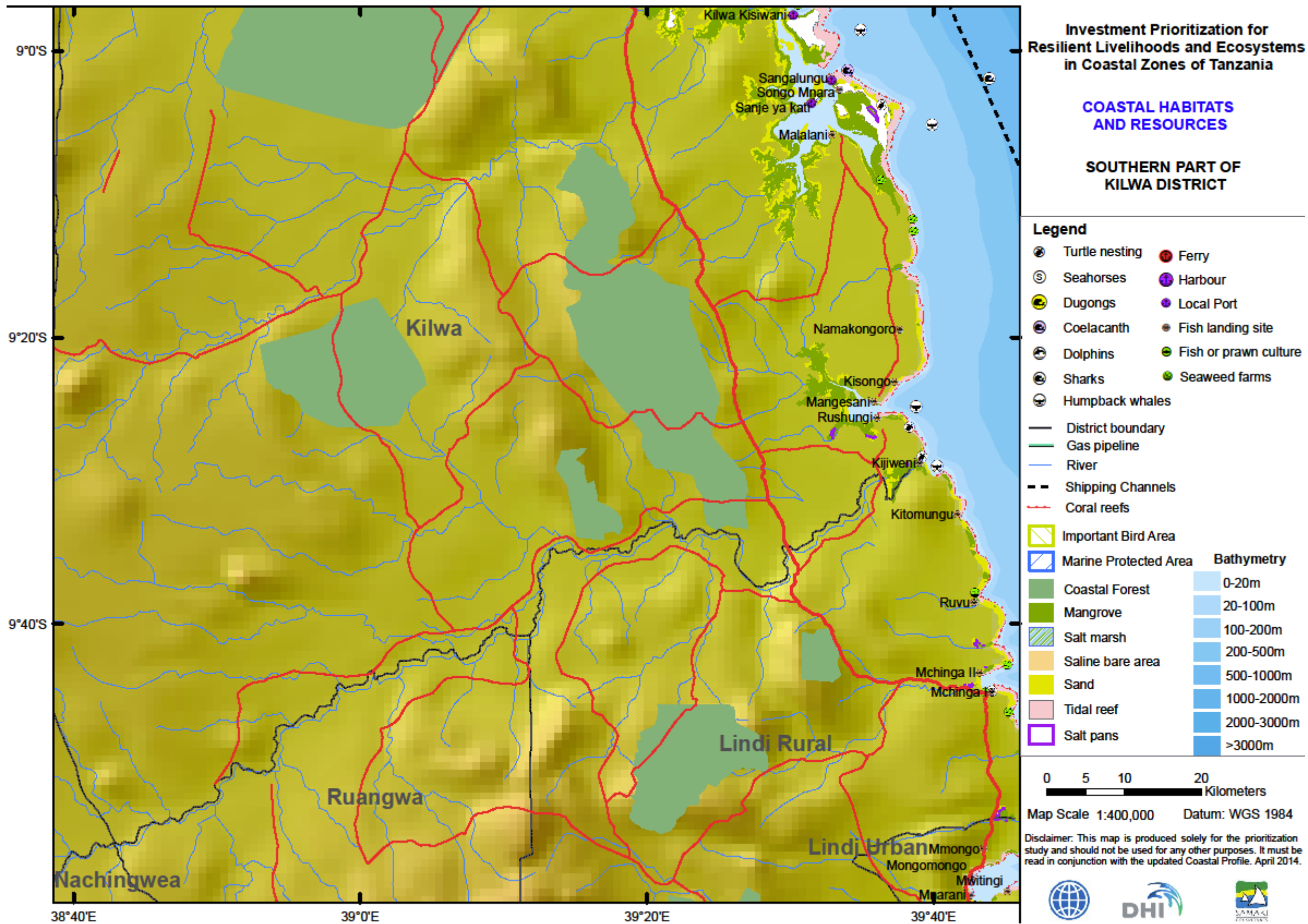
Map 23: Kilwa District Northern Part. Administrative and Infrastructure features.



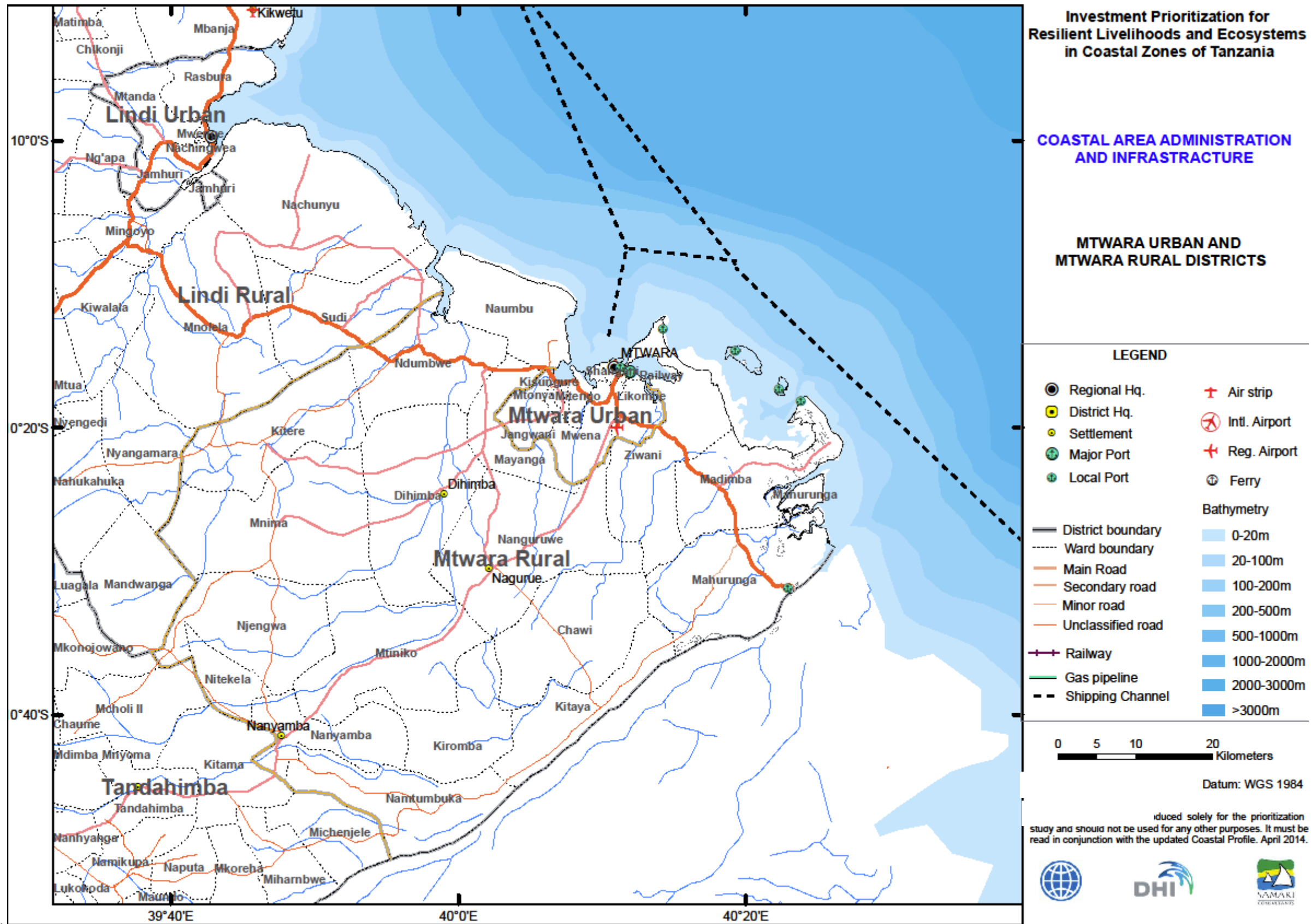
Map 24: Kilwa District Northern Part. Coastal Habitats and Resources.



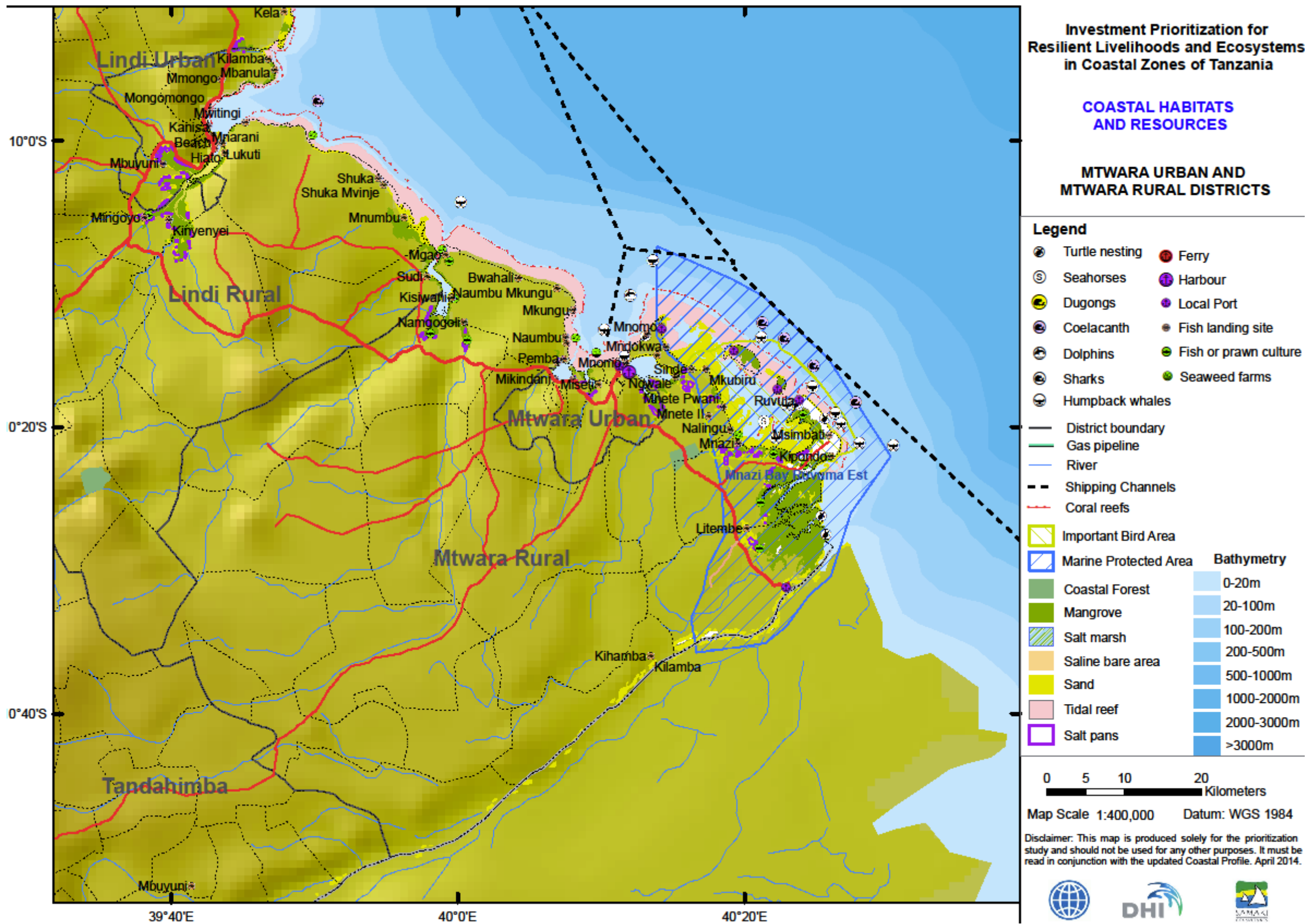
Map 25: Kilwa District Southern Part. Administrative and Infrastructure features.



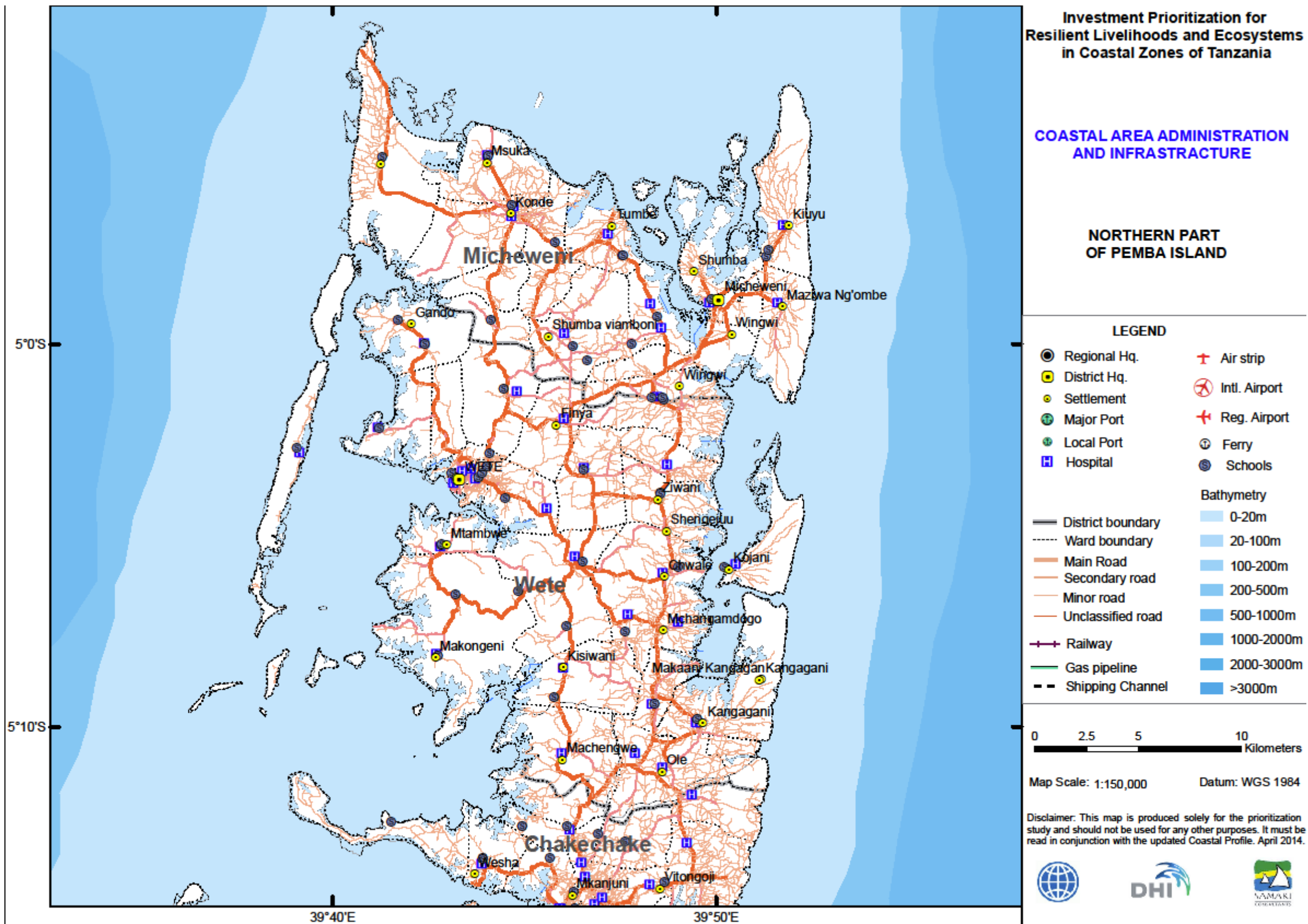
Map 26: Kilwa District Southern Part. Coastal Habitats and Resources.



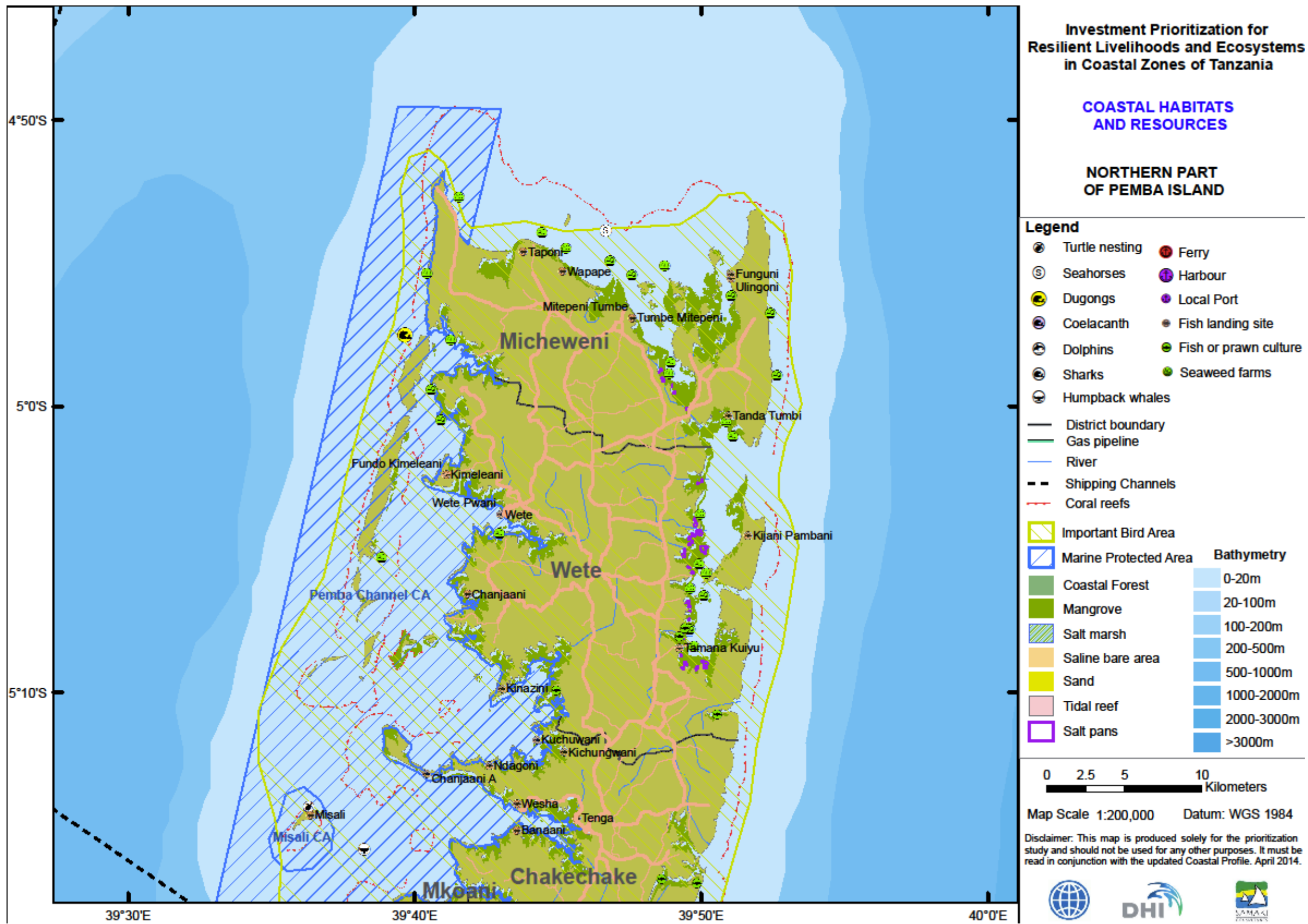
Map 27: Mtwara Urban and Mtwara Rural Districts. Administrative and Infrastructure features.



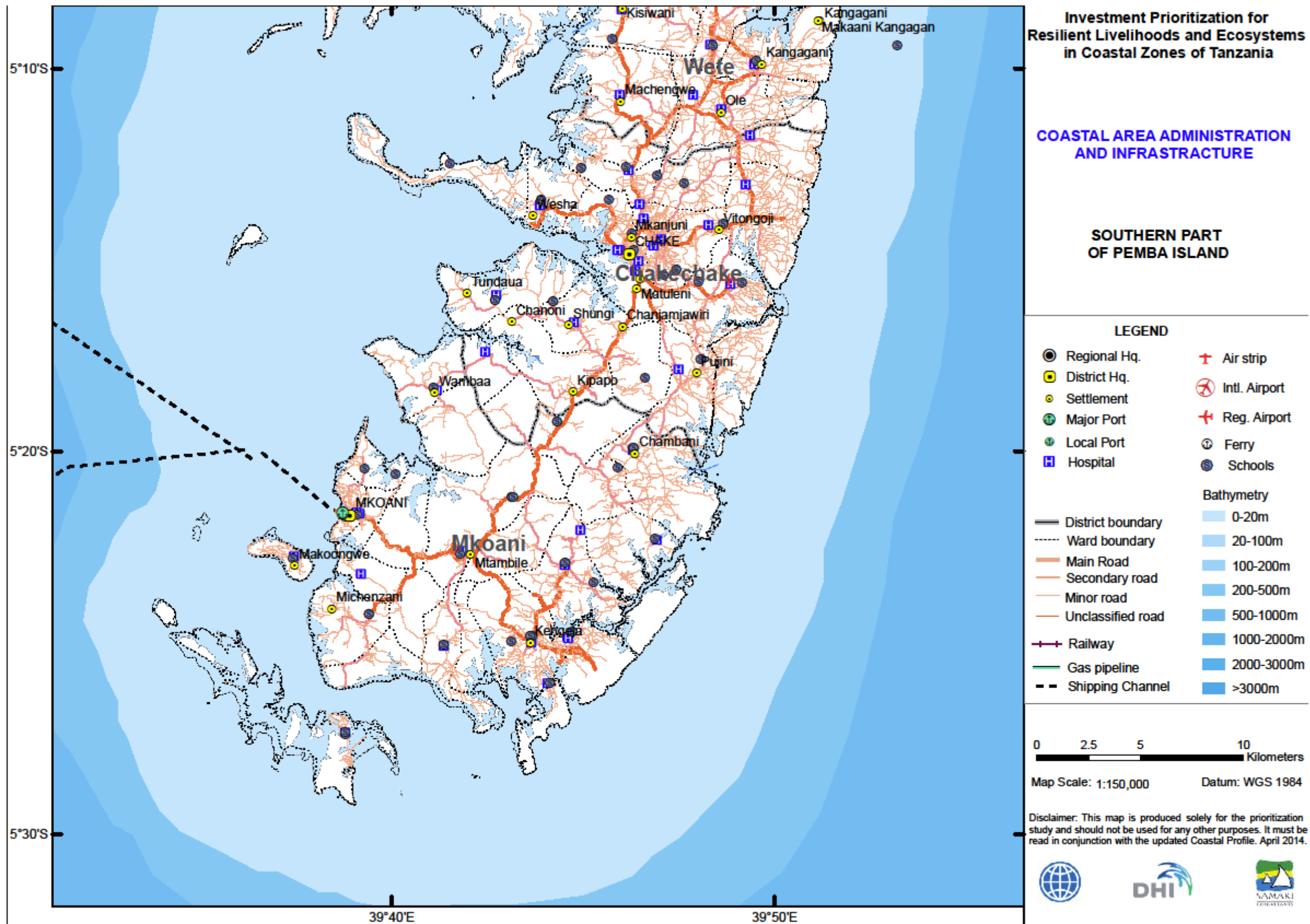
Map 28: Mtwara Urban and Mtwara Rural District. Coastal Habitats and Resources.



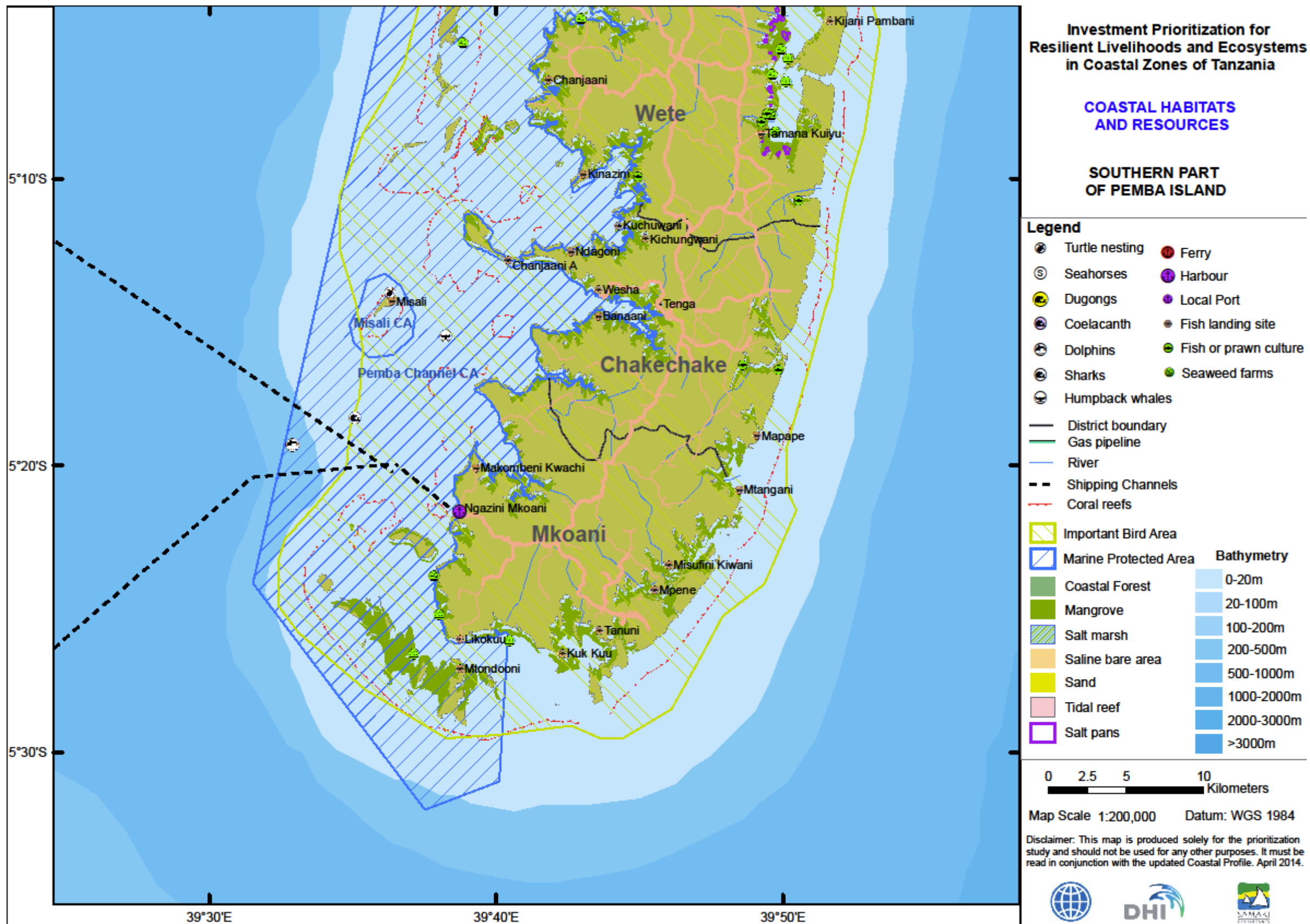
Map 29: Pemba Island, Northern Part. Administrative and Infrastructure features.



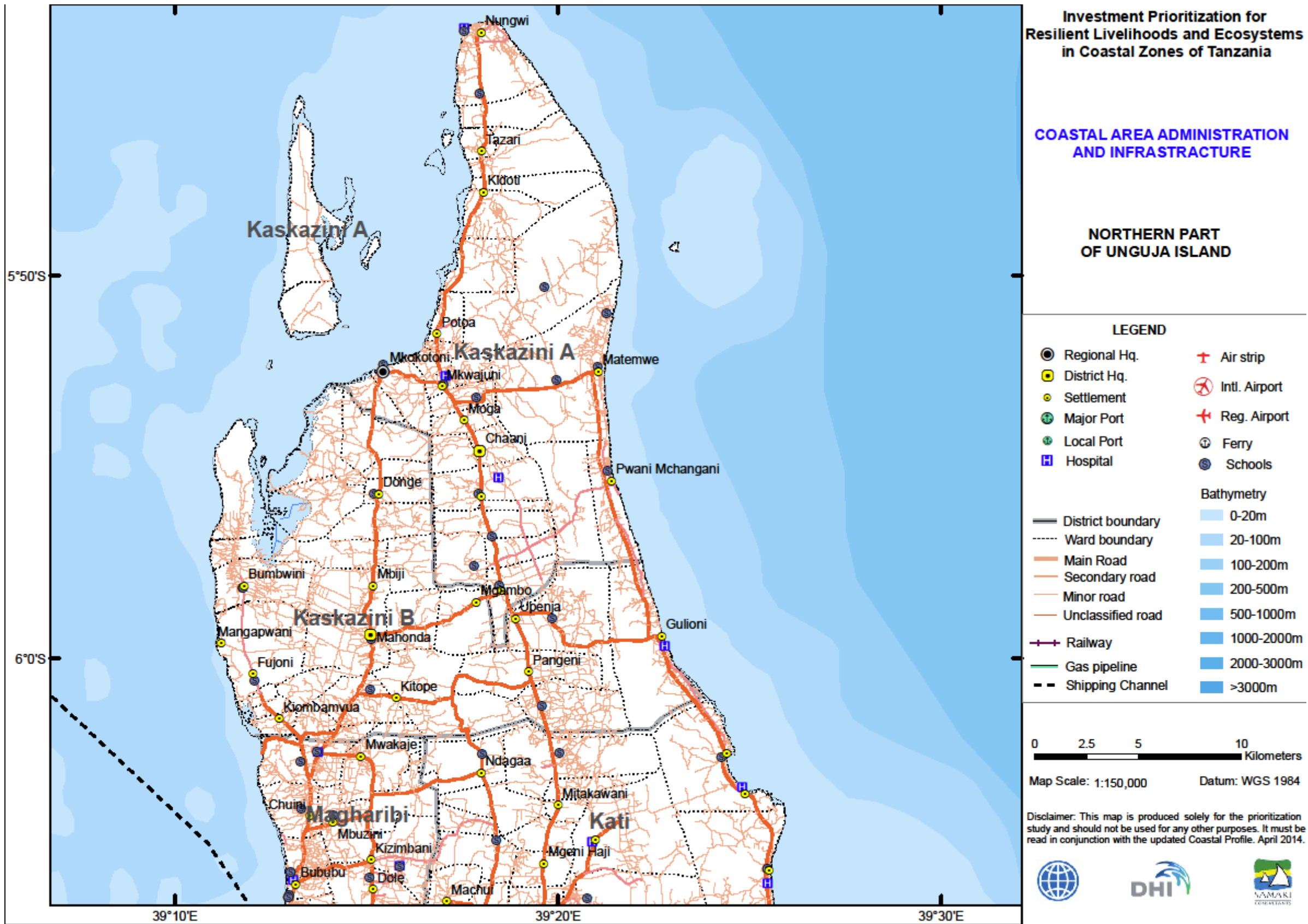
Map 30: Pemba Island, Northern Part. Coastal Habitats and Resources.



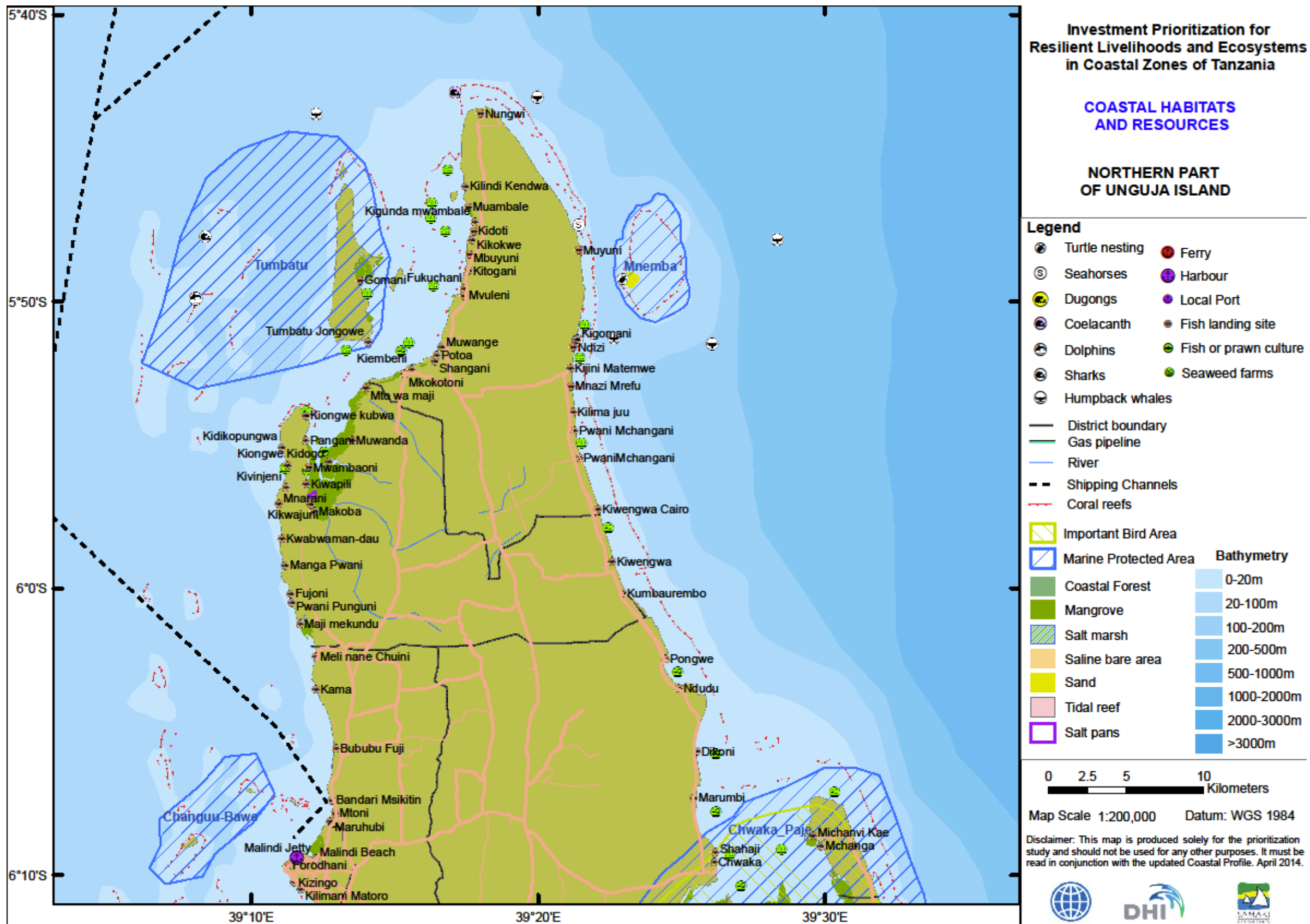
Map 31: Pemba Island, Southern Part. Administrative and Infrastructure features.



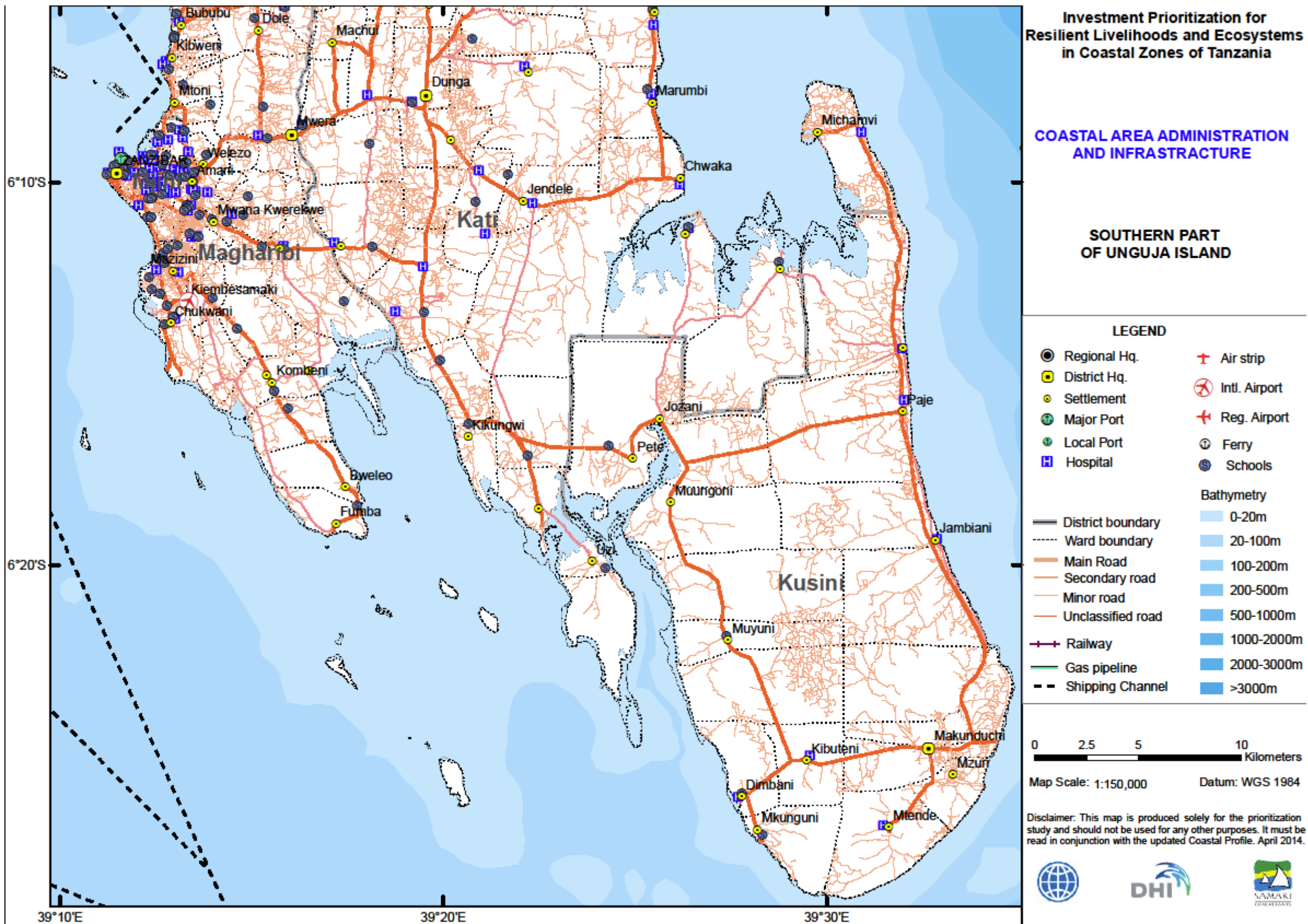
Map 32: Pemba Island, Southern Part. Coastal Habitats and Resources.



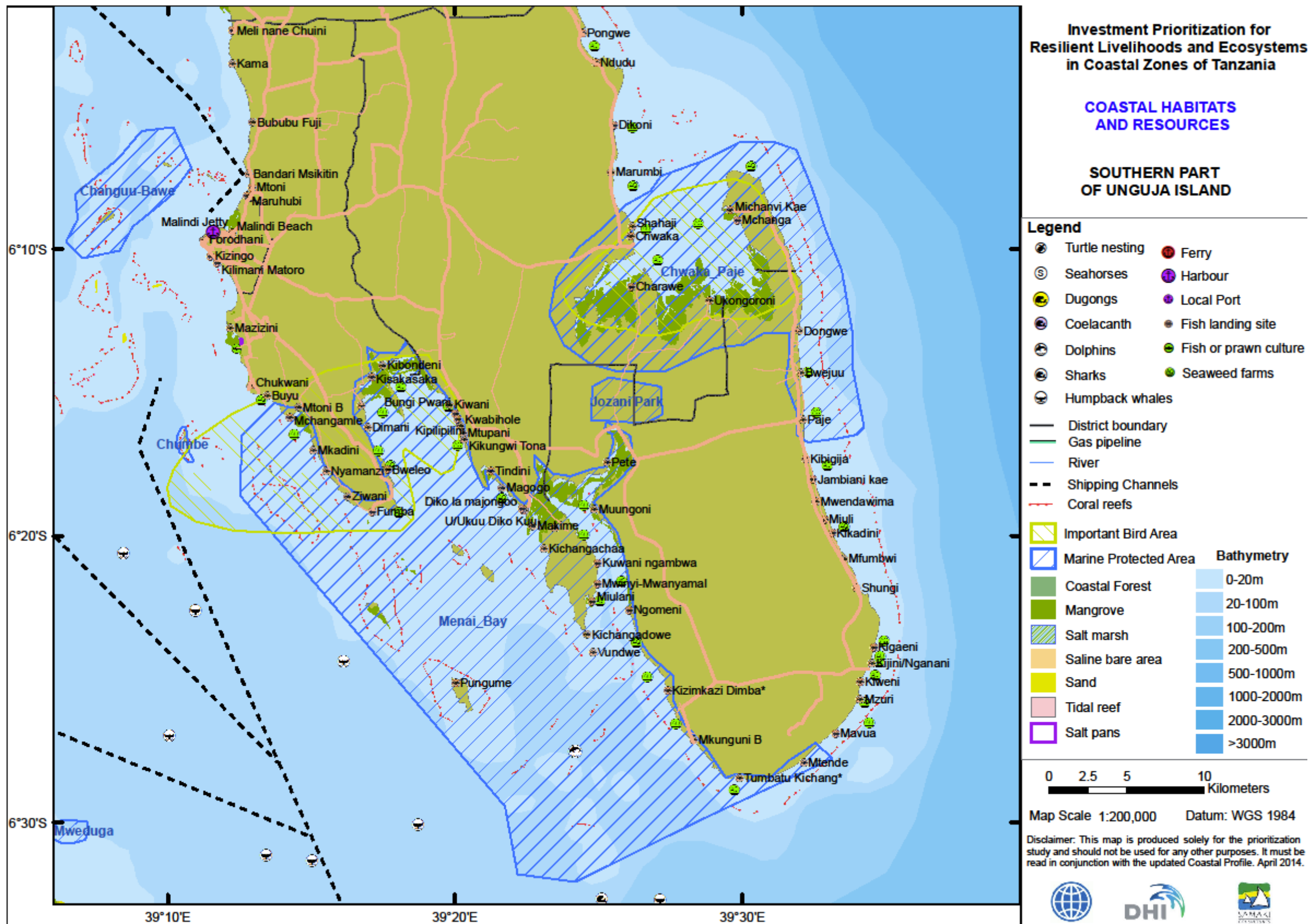
Map 33: Unguja Island, Northern Part. Administrative and Infrastructure features.



Map 34: Unguja Island, Northern Part. Coastal Habitats and Resources.



Map 35: Unguja Island, Southern Part. Administrative and Infrastructure features.



Map 36: Unguja Island, Southern Part. Coastal Habitats and Resources.

Table Section

Table 2: Population data for coastal regions and districts of mainland Tanzania and Zanzibar. Data include number of households, male, female and total population, population density and average household size. Change in population and household size in past inter-census period (2002 - 2012).

	Area ² km ²	2002 Census						2012 Census						Average Annual Change	
		Households ¹	Male Population ²	Female Population ²	Total Population ²	Population Density	Household Size	Households ¹	Male Population ¹	Female Population ¹	Total Population ¹	Population Density	Household Size	Population	Household Size
		households	males	females	persons	persons/km ²	persons/household	households	males	females	persons	persons/km ²	persons/household	%	%
TANZANIA	895,753	no data	16,759,333	17,553,938	34,313,271	38	NA	9,362,758	21,869,990	23,058,933	44,928,923	50	4.8	2.70%	NA
MAINLAND TANZANIA	893,246	no data	16,291,371	17,065,831	33,357,202	37	NA	9,109,150	21,239,313	22,386,041	43,625,354	49	4.8	2.68%	NA
Mainland Tanzania Coastal Regions	146,353	1,638,845	3,370,822	3,504,703	6,875,525	47	4.2	2,361,689	4,670,114	4,973,806	9,643,920	66	4.1	3.38%	-0.27%
Mainland Tanzania Coastal Districts	57,534	no data	2,181,716	2,211,065	4,392,781	76	NA	no data	3,212,023	3,400,804	6,612,827	115	NA	4.09%	NA
Tanga Region	28,211	356,993	792,646	843,018	1,635,664	58	4.6	438,277	992,347	1,052,858	2,045,205	72	4.7	2.23%	0.18%
Tanga Coastal Districts	6,543	no data	280,602	284,203	564,805	86	NA	no data	316,393	333,490	649,883	99	NA	1.40%	NA
Pangani	1,767	no data	22,094	21,825	43,919	25	NA	no data	26,870	27,155	54,025	31	NA	2.07%	NA
Muheza (split in 2007?)	4,204	no data	138,965	139,368	278,333	66	NA	no data	100,843	103,618	204,461	49	NA	-3.08%	NA
Tanga	572	no data	119,543	123,010	242,553	424	NA	no data	130,920	142,412	273,332	477	NA	1.19%	NA
Mkinga (2007)	no data	no data	no data	no data	NA	NA	NA	no data	57,760	60,305	118,065	NA	NA	0.00%	NA
Dar es Salaam Region	1,591	596,264	1,238,964	1,221,383	2,460,347	1,547	4.1	1,095,095	2,125,786	2,238,755	4,364,541	2,744	4.0	5.73%	-0.35%
Dar es Salaam Coastal Districts	1,591	no data	1,238,964	1,221,383	2,460,347	1,547	NA	no data	2,125,786	2,238,755	4,364,541	2,744	NA	5.73%	NA
Temeke	704	no data	383,783	379,030	762,813	1,084	NA	no data	669,056	699,825	1,368,881	1,945	NA	5.85%	NA
Ilala	341	no data	317,700	313,358	631,058	1,853	NA	no data	595,928	624,683	1,220,611	3,583	NA	6.60%	NA
Kinondoni	546	no data	537,481	528,995	1,066,476	1,952	NA	no data	860,802	914,247	1,775,049	3,249	NA	5.09%	NA
Pwani Region	31,995	200,919	430,015	440,261	870,276	27	4.3	257,511	537,826	560,842	1,098,668	34	4.3	2.33%	-0.15%
Pwani Coastal Districts	25,011	no data	317,017	328,083	645,100	26	NA	no data	390,027	408,346	798,373	32	NA	2.13%	NA
Rufiji	13,008	no data	95,402	101,720	197,122	15	NA	no data	104,851	112,423	217,274	17	NA	0.97%	NA
Mafia	668	no data	20,428	19,971	40,399	61	NA	no data	22,954	23,484	46,438	70	NA	1.39%	NA
Mkuranga	2,818	no data	91,385	95,513	186,898	66	NA	no data	108,024	114,897	222,921	79	NA	1.76%	NA
Bagamoyo	8,517	no data	109,802	110,879	220,681	26	NA	no data	154,198	157,542	311,740	37	NA	3.45%	NA
Lindi Region	66,660	190,761	378,675	408,418	787,093	12	4.1	225,972	414,507	450,145	864,652	13	3.8	0.94%	-0.75%
Lindi Coastal Districts	20,240	no data	204,039	222,539	426,578	21	NA	no data	220,833	242,895	463,728	23	NA	0.84%	NA
Lindi Rural	6,333	no data	101,960	112,922	214,882	34	NA	no data	91,647	102,496	194,143	31	NA	-1.01%	NA
Lindi Urban	251	no data	19,874	21,014	40,888	163	NA	no data	37,525	41,316	78,841	314	NA	6.57%	NA
Kilwa	13,656	no data	82,205	88,603	170,808	13	NA	no data	91,661	99,083	190,744	14	NA	1.10%	NA
Mtwara Region	17,896	293,908	530,522	591,623	1,122,145	63	3.8	344,834	599,648	671,206	1,270,854	71	3.7	1.24%	-0.35%
Mtwara Coastal Districts	4,150	no data	141,094	154,857	295,951	71	NA	no data	158,984	177,318	336,302	81	NA	1.28%	NA
Mtwara Rural	3,972	no data	96,459	107,684	204,143	51	NA	no data	107,922	120,081	228,003	57	NA	1.11%	NA
Mtwara Urban	178	no data	44,635	47,173	91,808	517	NA	no data	51,062	57,237	108,299	610	NA	1.65%	NA
ZANZIBAR	2,507	184,949	467,962	488,107	956,069	381	5.2	253,608	630,677	672,892	1,303,569	520	5.1	3.10%	-0.06%
Kaskazini Unguja Region	472	27,854	66,835	69,756	136,591	289	4.9	38,651	92,114	95,341	187,455	397	4.8	3.17%	-0.11%
Kaskazini A	238	no data	40,533	43,566	84,099	354	NA	no data	51,566	54,214	105,780	445	NA	2.29%	NA
Kaskazini B	235	no data	26,302	26,190	52,492	224	NA	no data	40,548	41,127	81,675	348	NA	4.42%	NA
Mjini Magharibi Region	275	74,363	178,990	188,212	367,202	1,335	4.9	113,420	283,590	310,088	593,678	2,158	5.2	4.80%	0.58%
Magharibi	260	no data	80,103	81,596	161,699	622	NA	no data	176,979	193,666	370,645	1,426	NA	8.30%	NA
Mjini	15	no data	98,887	106,616	205,503	13,478	NA	no data	106,611	116,422	223,033	14,628	NA	0.82%	NA
Kusini Unguja Region	883	19,937	46,278	45,273	91,551	104	4.6	25,947	57,880	57,708	115,588	131	4.5	2.33%	-0.30%
Kati	510	no data	32,190	30,195	62,385	122	NA	no data	38,538	37,808	76,346	150	NA	2.02%	NA
Kusini	372	no data	14,088	15,078	29,166	78	NA	no data	19,342	19,900	39,242	105	NA	2.97%	NA
Kaskazini Pemba Region	473	33,019	90,461	94,809	185,270	392	5.6	39,706	103,222	108,510	211,732	448	5.3	1.34%	-0.51%
Micheweni	219	no data	40,733	42,533	83,266	380	NA	no data	50,874	52,942	103,816	474	NA	2.21%	NA
Wete	254	no data	49,728	52,276	102,004	402	NA	no data	52,348	55,568	107,916	425	NA	0.56%	NA
Kusini Pemba Region	405	29,776	85,398	90,057	175,455	434	5.9	35,884	93,871	101,245	195,116	482	5.4	1.06%	-0.80%
Mkoani	203	no data	45,175	47,282	92,457	457	NA	no data	47,460	50,407	97,867	483	NA	0.57%	NA
Chakechake	202	no data	40,223	42,775	82,998	411	NA	no data	46,411	50,838	97,249	481	NA	1.58%	NA

Sources: 1: 2013 KBS, 2012 Population and Housing Census: Population distribution by administrative areas
2: Tanzania_Village_EA_2002_region.shp

Table 3: Population data for coastal regions and districts of mainland Tanzania and Zanzibar. Data include number urban and rural population, urbanisation, working age population, non-working age population and dependency ratios. Change in urbanisation and dependency ratio in past inter-census period (2002 - 2012). Considerable amount of data is missing in the table, which however should be available with the National Bureau of Statistics once the 2012 population data has been cleaned.

	Area ² km ²	2002 Census						2012 Census						Average Annual Change	
		Urban Population	Rural Population	Population 15-64	Population <15 & >64	Urbanisation	Dependency Ratio	Urban Population	Rural Population	Population 15-64	Population <15 & >64	Urbanisation	Dependency Ratio	Urbanisation	Dependency Ratio
		persons	persons	females	persons	%		persons	persons	females	persons	%	%	%	%
TANZANIA	895,753	no data	no data	17,779,969	16,533,302	NA	0.93	no data	no data	no data	no data	NA	NA	NA	NA
MAINLAND TANZANIA	893,246	no data	no data	17,276,284	16,080,918	NA	0.93	no data	no data	no data	no data	NA	NA	NA	NA
Mainland Tanzania Coastal Regions	146,353	no data	no data	3,979,691	2,895,834	NA	0.73	no data	no data	no data	no data	NA	NA	NA	NA
Mainland Tanzania Coastal Districts	57,534	no data	no data	2,655,948	1,736,833	NA	0.65	12	no data	no data	no data	NA	NA	NA	NA
Tanga Region	28,211	no data	no data	838,813	796,851	NA	0.95	no data	no data	no data	no data	NA	NA	NA	NA
Tanga Coastal Districts	6,543	no data	no data	313,767	251,038	NA	0.80	no data	no data	no data	no data	NA	NA	NA	NA
Pangani	1,767	no data	no data	24,521	19,398	NA	0.79	no data	no data	no data	no data	NA	NA	NA	NA
Muheza (split in 2007?)	4,204	no data	no data	146,691	131,642	NA	0.90	no data	no data	no data	no data	NA	NA	NA	NA
Tanga	572	no data	no data	142,555	99,998	NA	0.70	no data	no data	no data	no data	NA	NA	NA	NA
Mkinga (2007)	no data	no data	no data	no data	no data	NA	NA	no data	no data	no data	no data	NA	NA	NA	NA
Dar es Salaam Region	1,591	no data	no data	1,599,490	860,857	NA	0.54	no data	no data	no data	no data	NA	NA	NA	NA
Dar es Salaam Coastal Districts	1,591	no data	no data	1,599,490	860,857	NA	0.54	12	no data	no data	no data	NA	NA	NA	NA
Temeke	704	no data	no data	480,556	282,257	NA	0.59	4	no data	no data	no data	NA	NA	NA	NA
Ilala	341	no data	no data	407,259	223,799	NA	0.55	3	no data	no data	no data	NA	NA	NA	NA
Kinondoni	546	no data	no data	711,675	354,801	NA	0.50	5	no data	no data	no data	NA	NA	NA	NA
Pwani Region	31,995	no data	no data	464,716	405,560	NA	0.87	no data	no data	no data	no data	NA	NA	NA	NA
Pwani Coastal Districts	25,011	no data	no data	337,224	307,876	NA	0.91	no data	no data	no data	no data	NA	NA	NA	NA
Rufiji	13,008	no data	no data	97,906	99,216	NA	1.01	no data	no data	no data	no data	NA	NA	NA	NA
Mafia	668	no data	no data	22,833	17,566	NA	0.77	no data	no data	no data	no data	NA	NA	NA	NA
Mkuranga	2,818	no data	no data	94,946	91,952	NA	0.97	no data	no data	no data	no data	NA	NA	NA	NA
Bagamoyo	8,517	no data	no data	121,539	99,142	NA	0.82	no data	no data	no data	no data	NA	NA	NA	NA
Lindi Region	66,660	no data	no data	435,725	351,368	NA	0.81	no data	no data	no data	no data	NA	NA	NA	NA
Lindi Coastal Districts	20,240	no data	no data	233,789	192,789	NA	0.82	no data	no data	no data	no data	NA	NA	NA	NA
Lindi Rural	6,333	no data	no data	122,696	92,186	NA	0.75	no data	no data	no data	no data	NA	NA	NA	NA
Lindi Urban	251	no data	no data	25,064	15,824	NA	0.63	no data	no data	no data	no data	NA	NA	NA	NA
Kilwa	13,656	no data	no data	86,029	84,779	NA	0.99	no data	no data	no data	no data	NA	NA	NA	NA
Mtwara Region	17,896	no data	no data	640,947	481,198	NA	0.75	no data	no data	no data	no data	NA	NA	NA	NA
Mtwara Coastal Districts	4,150	no data	no data	171,678	124,273	NA	0.72	no data	no data	no data	no data	NA	NA	NA	NA
Mtwara Rural	3,972	no data	no data	114,306	89,837	NA	0.79	no data	no data	no data	no data	NA	NA	NA	NA
Mtwara Urban	178	no data	no data	57,372	34,436	NA	0.60	no data	no data	no data	no data	NA	NA	NA	NA
ZANZIBAR	2,507	no data	no data	503,685	452,384	NA	0.90	no data	no data	no data	no data	NA	NA	NA	NA
Kaskazini Unguja Region	472	no data	no data	69,423	67,168	NA	0.97	no data	no data	no data	no data	NA	NA	NA	NA
Kaskazini A	238	no data	no data	41,687	42,412	NA	1.02	no data	no data	no data	no data	NA	NA	NA	NA
Kaskazini B	235	no data	no data	27,736	24,756	NA	0.89	no data	no data	no data	no data	NA	NA	NA	NA
Mjini Magharibi Region	275	no data	no data	211,253	155,949	NA	0.74	no data	no data	no data	no data	NA	NA	NA	NA
Magharibi	260	no data	no data	88,789	72,910	NA	0.82	no data	no data	no data	no data	NA	NA	NA	NA
Mjini	15	no data	no data	122,464	83,039	NA	0.68	no data	no data	no data	no data	NA	NA	NA	NA
Kusini Unguja Region	883	no data	no data	48,784	42,767	NA	0.88	no data	no data	no data	no data	NA	NA	NA	NA
Kati	510	no data	no data	33,100	29,285	NA	0.88	no data	no data	no data	no data	NA	NA	NA	NA
Kusini	372	no data	no data	15,684	13,482	NA	0.86	no data	no data	no data	no data	NA	NA	NA	NA
Kaskazini Pemba Region	473	no data	no data	88,974	96,296	NA	1.08	no data	no data	no data	no data	NA	NA	NA	NA
Micheweni	219	no data	no data	39,089	44,177	NA	1.13	no data	no data	no data	no data	NA	NA	NA	NA
Wete	254	no data	no data	49,885	52,119	NA	1.04	no data	no data	no data	no data	NA	NA	NA	NA
Kusini Pemba Region	405	no data	no data	85,251	90,204	NA	1.06	no data	no data	no data	no data	NA	NA	NA	NA
Mkoani	203	no data	no data	44,683	47,774	NA	1.07	no data	no data	no data	no data	NA	NA	NA	NA
Chakechake	202	no data	no data	40,568	42,430	NA	1.05	no data	no data	no data	no data	NA	NA	NA	NA

Sources: 1: 2013 KBS, 2012 Population and Housing Census: Population distribution by administrative areas
2: Tanzania_Village_EA_2002_region.shp

Table 4: Inundation scenarios for coastal regions and districts of mainland Tanzania and Zanzibar in one meter steps of sea level rise up to five meter and at ten meter. Data include land lost in hectares and as percentage of administrative area. The higher sea level rise have been included to illustrate area impacted in situations with high surge and wave action during period of extreme weather, pending the development of a surge impact assessment model.

	Area ²	Coastline	1 m SLR		2 m SLR		3 m SLR		4 m SLR		5 m SLR		10 m SLR	
	km ²	km	hectares	%	hectares	%	hectares	%	hectares	%	hectares	%	hectares	%
TANZANIA	895,753	3,939	7,855	0.01	14,050	0.02	21,124	0.02	33,839	0.04	56,305	0.06	380,507	0.42
MAINLAND TANZANIA	893,208	2,887	3,396	0.00	7,481	0.01	12,035	0.01	20,931	0.02	39,174	0.04	329,052	0.37
Mainland Tanzania Coastal Regions	145,802	2,887	3,396	0.02	7,481	0.05	12,035	0.08	20,931	0.14	39,174	0.27	329,052	2.26
Mainland Tanzania Coastal Districts	57,615	2,887	3,396	0.06	7,481	0.13	12,035	0.21	20,931	0.36	39,174	0.68	329,052	5.71
Tanga Region	28,240	447	409	0.01	1,232	0.04	3,032	0.11	6,616	0.23	11,123	0.39	80,434	2.85
Tanga Coastal Districts	6,679	447	409	0.06	1,232	0.18	3,032	0.45	6,616	0.99	11,123	1.67	80,434	12.04
Pangani	1,800	182	67	0.04	264	0.15	697	0.39	1,269	0.71	2,250	1.25	48,593	27.00
Muheza (split in 2007?)	1,537	46	26	0.02	75	0.05	159	0.10	268	0.17	422	0.27	704	0.46
Tanga	624	67	151	0.24	491	0.79	1,306	2.09	2,786	4.46	4,218	6.76	8,625	13.82
Mkinga (2007)	2,718	151	165	0.06	402	0.15	870	0.32	2,293	0.84	4,233	1.56	22,512	
Dar es Salaam Region	1,617	181	81	0.05	226	0.14	496	0.31	1,299	0.80	2,304	1.42	21,998	13.60
Dar es Salaam Coastal Districts	1,617	181	81	0.05	226	0.14	496	0.31	1,299	0.80	2,304	1.42	21,998	13.60
Temeke	739	122	61	0.08	157	0.21	332	0.45	821	1.11	1,436	1.94	14,920	20.18
Ilala	335	11	1	0.00	2	0.01	2	0.01	8	0.03	17	0.05	564	1.68
Kinondoni	542	49	20	0.04	68	0.13	162	0.30	470	0.87	851	1.57	6,514	12.01
Pwani Region	31,666	907	991	0.03	3,426	0.11	5,283	0.17	8,387	0.26	18,928	0.60	127,826	4.04
Pwani Coastal Districts	24,979	907	991	0.04	3,426	0.14	5,283	0.21	8,387	0.34	18,928	0.76	127,826	5.12
Rufiji	13,229	320	733	0.06	2,299	0.17	3,073	0.23	3,946	0.30	5,209	0.39	62,953	4.76
Mafia	477	238	64	0.13	286	0.60	656	1.38	1,091	2.29	1,843	3.87	10,972	23.02
Mkuranga	2,739	144	51	0.02	167	0.06	282	0.10	573	0.21	1,650	0.60	12,019	4.39
Bagamoyo	8,534	205	143	0.02	674	0.08	1,271	0.15	2,778	0.33	10,225	1.20	41,881	4.91
Lindi Region	66,610	1,027	1,070	0.02	1,441	0.02	1,856	0.03	2,806	0.04	4,260	0.06	62,663	0.94
Lindi Coastal Districts	20,401	1,027	1,070	0.05	1,441	0.07	1,856	0.09	2,806	0.14	4,260	0.21	62,663	3.07
Lindi Rural	6,483	246	111	0.02	268	0.04	425	0.07	659	0.10	1,148	0.18	11,880	1.83
Lindi Urban	239	68	incl above	incl above	incl above	incl above	incl above	incl above	incl above	incl above	incl above	incl above	incl above	incl above
Kilwa	13,679	713	959	0.07	1,173	0.09	1,431	0.10	2,147	0.16	3,112	0.23	50,783	3.71
Mtwara Region	17,669	325	844	0.05	1,155	0.07	1,368	0.08	1,822	0.10	2,560	0.14	36,130	2.04
Mtwara Coastal Districts	3,938	325	844	0.21	1,155	0.29	1,368	0.35	1,822	0.46	2,560	0.65	36,130	9.17
Mtwara Rural	3,745	282	844	0.23	1,155	0.31	1,368	0.37	1,822	0.49	2,560	0.68	36,130	9.65
Mtwara Urban	193	43	incl above	incl above	incl above	incl above	incl above	incl above	incl above	incl above	incl above	incl above	incl above	incl above
ZANZIBAR	2,546	1,052	4,459	1.75	6,569	2.58	9,089	3.57	12,908	5.07	17,131	6.73	51,455	20.21
Unguja	1,534	366	594	0.39	1,456	0.95	2,432	1.59	3,836	2.50	5,207	3.39	21,780	14.20
Kaskazini Unguja Region	450	103												
Kaskazini A	240	53												
Kaskazini B	210	50												
Mjini Magharibi Region	232	64												
Magharibi	216	54												
Mjini	15	10												
Kusini Unguja Region	852	199												
Kati	483	117												
Kusini	370	82												
Pemba	1,012	687	3,866	3.82	5,113	5.05	6,657	6.58	9,072	8.97	11,924	11.78	29,675	29.33
Kaskazini Pemba Region	552	346												
Micheweni	205	132												
Wete	347	214												
Kusini Pemba Region	460	341												
Mkoani	255	163												
Chakechake	205	178												

Table 5: Inundation scenarios on agriculture land use for coastal regions and districts of mainland Tanzania and Zanzibar in one meter steps of sea level rise up to five meter and at ten meter. Data include agriculture land lost in hectares and as percentage of current agriculture land use. The higher sea level rise have been included to illustrate area impacted in situations with high surge and wave action during period of extreme weather, pending the development of a surge impact assessment model.

	Area	Agriculture	Agriculture	1 m SLR		2 m SLR		3 m SLR		4 m SLR		5 m SLR		10 m SLR	
	km ²	km ²	% of area	hectares	% of agriculture	hectares	% of agriculture	hectares	% of agriculture	hectares	% of agriculture	hectares	% of agriculture	hectares	% of agriculture
TANZANIA	895,753	-		1,206.68		1,540.39		2,014.76		3,049.14		6,626.67		34,016.88	
MAINLAND TANZANIA	893,208	-		57.49		115.29		175.66		342.13		2,862.66		20,885.09	
Mainland Tanzania Coastal Regions	145,802	-		57.49		115.29		175.66		342.13		2,862.66		20,885.09	
Mainland Tanzania Coastal Districts	57,615	7,721	13	57.49	0.01	115.29	0.01	175.66	0.02	342.13	0.04	2,862.66	0.37	20,885.09	2.70
Tanga Region	28,240	-		3.38		9.66		34.57		132.51		234.50		2,433.13	
Tanga Coastal Districts	6,679	1,194	18	3.38	0.00	9.66	0.01	34.57	0.03	132.51	0.11	234.50	0.20	2,433.13	2.04
Pangani	1,800	157	9	0.00	0.00	0.73	0.00	2.59	0.02	33.06	0.21	70.31	0.45	1,765.97	11.23
Muheza (split in 2007?)	1,537	643	42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tanga	624	110	18	3.38	0.03	8.93	0.08	31.98	0.29	99.44	0.91	164.19	1.49	667.16	6.07
Mkinga (2007)	2,718	284	10	0.00		0.00		0.00		0.00		0.00		0.00	
Dar es Salaam Region	1,617	-		2.82		8.22		21.17		57.84		297.26		2,066.00	
Dar es Salaam Coastal Districts	1,617	683	42	2.82	0.00	8.22	0.01	21.17	0.03	57.84	0.08	297.26	0.44	2,066.00	3.03
Temeke	739	200	27	2.82	0.01	8.22	0.04	20.32	0.10	46.75	0.23	264.78	1.33	1,846.17	9.25
Ilala	335	168	50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kinondoni	542	315	58	0.00	0.00	0.00	0.00	0.85	0.00	11.10	0.04	32.49	0.10	219.83	0.70
Pwani Region	31,666	-		1.73		3.81		10.39		19.32		2,163.35		11,524.63	
Pwani Coastal Districts	24,979	2,267	9	1.73	0.00	3.81	0.00	10.39	0.00	19.32	0.01	2,163.35	0.95	11,524.63	5.08
Rufiji	13,229	686	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.12	0.00	5,403.48	7.88
Mafia	477	1	0	0.04	0.04	0.32	0.33	3.11	3.21	4.26	4.40	6.24	6.44	9.83	10.15
Mkuranga	2,739	646	24	0.85	0.00	1.90	0.00	3.80	0.01	7.69	0.01	13.73	0.02	252.32	0.39
Bagamoyo	8,534	934	11	0.85	0.00	1.60	0.00	3.48	0.00	7.37	0.01	2,142.26	2.29	5,859.00	6.27
Lindi Region	66,610	-		8.55		8.80		16.79		34.27		47.21		1,275.20	
Lindi Coastal Districts	20,401	2,388	12	8.55	0.00	8.80	0.00	16.79	0.01	34.27	0.01	47.21	0.02	1,275.20	0.53
Lindi Rural	6,483	1,460	23	1.68	0.00	1.94	0.00	9.39	0.01	26.87	0.02	38.95	0.03	296.08	0.20
Lindi Urban	239	incl above		incl above		incl above		incl above		incl above		incl above		incl above	
Kilwa	13,679	928	7	6.86	0.01	6.86	0.01	7.40	0.01	7.40	0.01	8.27	0.01	979.12	1.05
Mtwara Region	17,669	-		41.01		84.80		92.74		98.18		120.33		3,586.13	
Mtwara Coastal Districts	3,938	1,189	30	41.01	0.03	84.80	0.07	92.74	0.08	98.18	0.08	120.33	0.10	3,586.13	3.02
Mtwara Rural	3,745	1,189	32	41.01	0.03	84.80	0.07	92.74	0.08	98.18	0.08	120.33	0.10	3,586.13	3.02
Mtwara Urban	193	incl above		incl above		incl above		incl above		incl above		incl above		incl above	
ZANZIBAR	2,546	1,304		1,149.18	0.88	1,425.09	1.09	1,839.10	1.41	2,707.01	2.08	3,764.00	2.89	13,131.79	10.07
Unguja	1,534	528	34	24.11	0.05	65.04	0.12	128.63	0.24	254.48	0.48	417.26	0.79	2,523.14	4.78
Kaskazini Unguja Region	450	-													
Kaskazini A	240	-													
Kaskazini B	210	-													
Mjini Magharibi Region	232	-													
Magharibi	216	-													
Mjini	15	-													
Kusini Unguja Region	852	-													
Kati	483	-													
Kusini	370	-													
Pemba	1,012	777	77	1,125	1.45	1,360	1.75	1,710	2.20	2,453	3.16	3,347	4.31	10,609	13.65
Kaskazini Pemba Region	552	-													
Micheweni	205	-													
Wete	347	-													
Kusini Pemba Region	460	-													
Mkoani	255	-													
Chakechake	205	-													

Table 6: Inundation scenarios on built up land use for coastal regions and districts of mainland Tanzania and Zanzibar in one meter steps of sea level rise up to five meter and at ten meter. Data include built up land lost in hectares and as percentage of current built up land use. The higher sea level rise have been included to illustrate area impacted in situations with high surge and wave action during period of extreme weather, pending the development of a surge impact assessment model.

	Area ²	Built up	Built up	1 m SLR		2 m SLR		3 m SLR		4 m SLR		5 m SLR		10 m SLR	
	km ²	km ²	% of area	hectares	% of Built up	hectares	% of Built up	hectares	% of Built up	hectares	% of Built up	hectares	% of Built up	hectares	% of Built up
TANZANIA	895,753	-		11.46		36.85		102.36		281.51		392.98		2,272.73	
MAINLAND TANZANIA	893,208	-		10.61		33.11		97.76		270.60		380.88		2,006.36	
Mainland Tanzania Coastal Regions	145,802	-		10.61		33.11		97.76		270.60		380.88		2,006.36	
Mainland Tanzania Coastal Districts	57,615	325	0.56	10.61	0.03	33.11	0.10	97.76	0.30	270.60	0.83	380.88	1.17	2,006.36	6.17
Tanga Region	28,240	-		7.17		11.38		12.21		13.84		14.98		58.98	
Tanga Coastal Districts	6,679	15	0.23	7.17	0.47	11.38	0.74	12.21	0.80	13.84	0.90	14.98	0.98	58.98	3.85
Pangani	1,800	1	0.07	7.17	6.04	9.71	8.19	9.71	8.19	10.57	8.91	11.70	9.86	47.22	39.81
Muheza (split in 2007?)	1,537	2	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tanga	624	12	1.99	0.00	0.00	1.67	0.13	2.50	0.20	3.28	0.26	3.28	0.26	11.76	0.95
Mkinga (2007)	2,718	-		0.00		0.00		0.00		0.00		0.00		0.00	
Dar es Salaam Region	1,617	-		2.59		19.20		81.46		251.17		353.18		1,684.84	
Dar es Salaam Coastal Districts	1,617	234	14.47	2.59	0.01	19.20	0.08	81.46	0.35	251.17	1.07	353.18	1.51	1,684.84	7.20
Temeke	739	79	10.63	0.85	0.01	2.07	0.03	5.91	0.08	15.68	0.20	28.04	0.36	310.42	3.95
Ilala	335	62	18.37	0.74	0.01	1.43	0.02	1.43	0.02	3.77	0.06	9.18	0.15	180.56	2.93
Kinondoni	542	94	17.30	1.01	0.01	15.70	0.17	74.12	0.79	231.71	2.47	315.97	3.37	1,193.85	12.72
Pwani Region	31,666	-		0.00		0.00		0.00		0.66		2.96		20.83	
Pwani Coastal Districts	24,979	22	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.66	0.03	2.96	0.13	20.83	0.94
Rufiji	13,229	10	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mafia	477	-		0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
Mkuranga	2,739	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bagamoyo	8,534	12	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.66	0.06	2.96	0.25	20.83	1.74
Lindi Region	66,610	-		0.84		0.84		0.84		0.84		1.68		144.14	
Lindi Coastal Districts	20,401	14	0.07	0.84	0.06	0.84	0.06	0.84	0.06	0.84	0.06	1.68	0.12	144.14	9.97
Lindi Rural	6,483	14	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84	0.06	69.92	4.84
Lindi Urban	239	incl above		incl above		incl above		incl above		incl above		incl above		incl above	
Kilwa	13,679	-		0.84	-	0.84	-	0.84	-	0.84	-	0.84	-	74.22	-
Mtwara Region	17,669	-		0.00		1.68		3.24		4.08		8.08		97.58	
Mtwara Coastal Districts	3,938	40	1.00	0.00	0.00	1.68	0.04	3.24	0.08	4.08	0.10	8.08	0.20	97.58	2.47
Mtwara Rural	3,745	40	1.06	0.00	0.00	1.68	0.04	3.24	0.08	4.08	0.10	8.08	0.20	97.58	2.47
Mtwara Urban	193	incl above		incl above		incl above		incl above		incl above		incl above		incl above	
ZANZIBAR	2,546	37	1.44	0.85	0.02	3.75	0.10	4.60	0.13	10.91	0.30	12.10	0.33	266.37	7.26
Unguja	1,534	34	2.19	0.00	0.00	0.00	0.00	0.00	0.00	3.81	0.11	4.68	0.14	250.84	7.47
Kaskazini Unguja Region	450	-													
Kaskazini A	240	-													
Kaskazini B	210	-													
Mjini Magharibi Region	232	-													
Magharibi	216	-													
Mjini	15	-													
Kusini Unguja Region	852	-													
Kati	483	-													
Kusini	370	-													
Pemba	1,012	3	0.31	1	0.27	4	1.20	5	1.47	7	2.27	7	2.38	16	4.97
Kaskazini Pemba Region	552	-													
Micheweni	205	-													
Wete	347	-													
Kusini Pemba Region	460	-													
Mkoani	255	-													
Chakechake	205	-													

Table 7: Inundation scenarios on bush land use for coastal regions and districts of mainland Tanzania and Zanzibar in one meter steps of sea level rise up to five meter and at ten meter. Data include bush land lost in hectares and as percentage of current bush land. The higher sea level rise have been included to illustrate area impacted in situations with high surge and wave action during period of extreme weather, pending the development of a surge impact assessment model.

	Area ²	Bush land	Bush land	1 m SLR		2 m SLR		3 m SLR		4 m SLR		5 m SLR		10 m SLR	
	km ²	km ²	% of Area	hectares	% of Bush land	hectares	% of Bush land	hectares	% of Bush land	hectares	% of Bush land	hectares	% of Bush land	hectares	% of Bush land
TANZANIA	895,753	-		1,015.62		1,259.36		1,791.08		2,911.73		4,922.39		39,819.52	
MAINLAND TANZANIA	893,208	-		136.99		311.55		746.80		1,726.41		3,489.50		35,985.86	
Mainland Tanzania Coastal Regions	145,802	-		136.99		311.55		746.80		1,726.41		3,489.50		35,985.86	
Mainland Tanzania Coastal Districts	57,615	11,863	20.59	136.99	0.01	311.55	0.03	746.80	0.06	1,726.41	0.15	3,489.50	0.29	35,985.86	3.03
Tanga Region	28,240	-		47.01		145.25		460.26		1,260.16		2,453.22		11,080.58	
Tanga Coastal Districts	6,679	2,064	30.90	47.01	0.02	145.25	0.07	460.26	0.22	1,260.16	0.61	2,453.22	1.19	11,080.58	5.37
Pangani	1,800	722	40.10	7.09	0.01	22.70	0.03	74.93	0.10	196.76	0.27	561.20	0.78	5,242.11	7.26
Muheza (split in 2007?)	1,537	396	25.77	9.14	0.02	25.04	0.06	54.01	0.14	103.15	0.26	134.04	0.34	227.69	0.57
Tanga	624	316	50.59	0.85	0.00	9.43	0.03	118.25	0.37	304.75	0.97	536.28	1.70	2,236.62	7.08
Mkinga (2007)	2,718	630	23.18	29.92		88.09		213.07		655.50		1,221.70		3,374.15	
Dar es Salaam Region	1,617	-		2.92		11.66		17.02		20.42		26.20		525.72	
Dar es Salaam Coastal Districts	1,617	104	6.42	2.92	0.03	11.66	0.11	17.02	0.16	20.42	0.20	26.20	0.25	525.72	5.06
Temeke	739	12	1.65	2.13	0.18	3.38	0.28	3.69	0.30	5.32	0.44	5.57	0.46	364.99	30.00
Ilala	335	81	24.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kinondoni	542	10	1.90	0.79	0.08	8.29	0.80	13.33	1.29	15.10	1.46	20.62	2.00	160.73	15.59
Pwani Region	31,666	-		3.48		27.05		78.77		170.57		533.39		8,042.62	
Pwani Coastal Districts	24,979	3,889	15.57	3.48	0.00	27.05	0.01	78.77	0.02	170.57	0.04	533.39	0.14	8,042.62	2.07
Rufiji	13,229	1,605	12.13	0.21	0.00	9.36	0.01	21.23	0.01	25.74	0.02	29.92	0.02	2,829.80	1.76
Mafia	477	3	0.61	0.58	0.20	6.75	2.32	18.33	6.31	25.39	8.73	35.55	12.23	105.25	36.21
Mkuranga	2,739	210	7.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bagamoyo	8,534	2,072	24.28	2.69	0.00	10.94	0.01	39.21	0.02	119.43	0.06	467.92	0.23	5,107.56	2.47
Lindi Region	66,610	-		79.26		113.69		158.10		195.44		290.03		7,401.58	
Lindi Coastal Districts	20,401	4,472	21.92	79.26	0.02	113.69	0.03	158.10	0.04	195.44	0.04	290.03	0.06	7,401.58	1.65
Lindi Rural	6,483	2,583	39.83	20.53	0.01	52.46	0.02	92.85	0.04	122.05	0.05	187.90	0.07	3,005.73	1.16
Lindi Urban	239	incl above		incl above		incl above		incl above		incl above		incl above		incl above	
Kilwa	13,679	1,890	13.81	58.73	0.03	61.23	0.03	65.25	0.03	73.39	0.04	102.13	0.05	4,395.85	2.33
Mtwara Region	17,669	-		4.32		13.90		32.64		79.82		186.67		8,935.36	
Mtwara Coastal Districts	3,938	1,334	33.87	4.32	0.00	13.90	0.01	32.64	0.02	79.82	0.06	186.67	0.14	8,935.36	6.70
Mtwara Rural	3,745	1,334	35.62	4.32	0.00	13.90	0.01	32.64	0.02	79.82	0.06	186.67	0.14	8,935.36	6.70
Mtwara Urban	193	incl above		incl above		incl above		incl above		incl above		incl above		incl above	
ZANZIBAR	2,546	112	4.42	878.63	7.81	947.81	8.43	1,044.28	9.29	1,185.32	10.54	1,432.89	12.74	3,833.66	34.10
Unguja	1,534	57	3.69	8.17	0.14	25.22	0.45	58.86	1.04	83.27	1.47	107.51	1.90	496.58	8.78
Kaskazini Unguja Region	450	-													
Kaskazini A	240	-													
Kaskazini B	210	-													
Mjini Magharibi Region	232	-													
Magharibi	216	-													
Mjini	15	-													
Kusini Unguja Region	852	-													
Kati	483	-													
Kusini	370	-													
Pemba	1,012	56	5.52	870	15.58	923	16.51	985	17.64	1,102	19.73	1,325	23.72	3,337	59.73
Kaskazini Pemba Region	552	-													
Micheweni	205	-													
Wete	347	-													
Kusini Pemba Region	460	-													
Mkoani	255	-													
Chakechake	205	-													

Table 8: Inundation scenarios on grassland use for coastal regions and districts of mainland Tanzania and Zanzibar in one meter steps of sea level rise up to five meter and at ten meter. Data include grassland lost in hectares and as percentage of current grassland. The higher sea level rise have been included to illustrate area impacted in situations with high surge and wave action during period of extreme weather, pending the development of a surge impact assessment model.

	Area ²	Grassland	Grassland	1 m SLR		2 m SLR		3 m SLR		4 m SLR		5 m SLR		10 m SLR	
	km ²	km ²	% of Area	hectares	%	hectares	%	hectares	%	hectares	%	hectares	%	hectares	%
TANZANIA	895,753			15.57		60.21		170.57		676.00		2,324.55		43,567.60	
MAINLAND TANZANIA	893,208			10.52		40.42		140.01		618.06		2,224.91		42,615.07	
Mainland Tanzania Coastal Regions	145,802			10.52		40.42		140.01		618.06		2,224.91		42,615.07	
Mainland Tanzania Coastal Districts	57,615	5,882	10.21	10.52	0.00	40.42	0.01	140.01	0.02	618.06	0.11	2,224.91	0.38	42,615.07	7.25
Tanga Region	28,240	-		0.00		0.00		0.00		0.00		0.00		860.17	
Tanga Coastal Districts	6,679	293	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	860.17	2.93
Pangani	1,800	270	15.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	860.17	3.18
Muheza (split in 2007?)	1,537	13	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tanga	624	-		0.00		0.00		0.00		0.00		0.00		0.00	
Mkinga (2007)	2,718	10	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dar es Salaam Region	1,617	-		0.18		5.09		20.87		270.29		554.85		3,822.17	
Dar es Salaam Coastal Districts	1,617	392	24.22	0.18	0.00	5.09	0.01	20.87	0.05	270.29	0.69	554.85	1.42	3,822.17	9.76
Temeke	739	349	47.26	0.00	0.00	0.85	0.00	8.19	0.02	168.60	0.48	272.44	0.78	2,340.27	6.70
Ilala	335	8	2.47	0.11	0.01	0.27	0.03	0.27	0.03	0.27	0.03	1.10	0.13	197.03	23.80
Kinondoni	542	34	6.27	0.07	0.00	3.97	0.12	12.41	0.36	101.42	2.98	281.31	8.27	1,284.87	37.79
Pwani Region	31,666	-		6.60		24.84		90.75		281.02		1,538.66		30,772.81	
Pwani Coastal Districts	24,979	3,769	15.09	6.60	0.00	24.84	0.01	90.75	0.02	281.02	0.07	1,538.66	0.41	30,772.81	8.17
Rufiji	13,229	2,379	17.98	0.00	0.00	0.00	0.00	29.37	0.01	49.87	0.02	82.12	0.03	21,514.58	9.04
Mafia	477	2	0.45	0.00	0.00	0.76	0.35	1.16	0.55	1.80	0.84	3.28	1.54	25.71	12.06
Mkuranga	2,739	464	16.96	0.00	0.00	0.00	0.00	1.64	0.00	7.86	0.02	22.67	0.05	1,399.91	3.01
Bagamoyo	8,534	923	10.82	6.60	0.01	24.08	0.03	58.57	0.06	221.49	0.24	1,430.58	1.55	7,832.60	8.48
Lindi Region	66,610	-		3.75		10.49		28.38		65.48		130.14		3,289.94	
Lindi Coastal Districts	20,401	1,339	6.56	3.75	0.00	10.49	0.01	28.38	0.02	65.48	0.05	130.14	0.10	3,289.94	2.46
Lindi Rural	6,483	475	7.33	1.05	0.00	2.73	0.01	7.72	0.02	14.61	0.03	56.60	0.12	1,181.63	2.49
Lindi Urban	239	incl above		incl above		incl above		incl above		incl above		incl above		incl above	
Kilwa	13,679	864	6.31	2.70	0.00	7.75	0.01	20.66	0.02	50.88	0.06	73.55	0.09	2,108.31	2.44
Mtwara Region	17,669	-		0.00		0.00		0.00		1.26		1.26		3,869.98	
Mtwara Coastal Districts	3,938	89	2.27	0.00	0.00	0.00	0.00	0.00	0.00	1.26	0.01	1.26	0.01	3,869.98	43.26
Mtwara Rural	3,745	89	2.39	0.00	0.00	0.00	0.00	0.00	0.00	1.26	0.01	1.26	0.01	3,869.98	43.26
Mtwara Urban	193	incl above		0.00		0.00		0.00		incl above		incl above		incl above	
ZANZIBAR	2,546	113	4.43	5.04	0.04	19.79	0.18	30.56	0.27	57.94	0.51	99.64	0.88	952.54	8.45
Unguja	1,534	105	6.85	0.65	0.01	1.51	0.01	3.28	0.03	4.92	0.05	8.45	0.08	608.66	5.79
Kaskazini Unguja Region	450	-													
Kaskazini A	240	-													
Kaskazini B	210	-													
Mjini Magharibi Region	232	-													
Magharibi	216	-													
Mjini	15	-													
Kusini Unguja Region	852	-													
Kati	483	-													
Kusini	370	-													
Pemba	1,012	8	0.75	4	0.58	18	2.40	27	3.58	53	6.96	91	11.96	344	45.11
Kaskazini Pemba Region	552	-													
Micheweni	205	-													
Wete	347	-													
Kusini Pemba Region	460	-													
Mkoani	255	-													
Chakechake	205	-													

Table 9: Inundation scenarios on natural forests for coastal regions and districts of mainland Tanzania and Zanzibar in one meter steps of sea level rise up to five meter and at ten meter. Data include natural forest lost in hectares and as percentage of current natural forest. The higher sea level rise have been included to illustrate area impacted in situations with high surge and wave action during period of extreme weather, pending the development of a surge impact assessment model.

	Area ²	Natural Forest	Natural Forest	1 m SLR		2 m SLR		3 m SLR		4 m SLR		5 m SLR		10 m SLR	
	km ²	km ²	% of Area	hectares	%	hectares	%	hectares	%	hectares	%	hectares	%	hectares	%
TANZANIA	895,753	-		286.57		406.96		575.87		747.40		965.96		5,207.33	
MAINLAND TANZANIA	893,208	-		60.46		97.37		138.97		201.32		313.62		3,613.19	
Mainland Tanzania Coastal Regions	145,802	-		60.46		97.37		138.97		201.32		313.62		3,613.19	
Mainland Tanzania Coastal Districts	57,615	5,511	9.57	60.46	0.01	97.37	0.02	138.97	0.03	201.32	0.04	313.62	0.06	3,613.19	0.66
Tanga Region	28,240	-		59.29		93.96		129.42		182.61		267.64		2,939.58	
Tanga Coastal Districts	6,679	530	7.94	59.29	0.11	93.96	0.18	129.42	0.24	182.61	0.34	267.64	0.50	2,939.58	5.54
Pangani	1,800	-		0.00	-	0.00	-	0.00	-	0.00	-	0.19	-	18.29	-
Muheza (split in 2007?)	1,537	300	19.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tanga	624	2	0.37	0.27	0.12	0.27	0.12	3.78	1.64	12.52	5.41	24.28	10.50	124.86	53.98
Mkinga (2007)	2,718	228	8.39	59.02		93.69		125.64		170.09		243.16		2,796.43	
Dar es Salaam Region	1,617	-		0.00		0.00		0.00		0.00		0.00		0.00	
Dar es Salaam Coastal Districts	1,617	26	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Temeke	739	-		0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
Ilala	335	6	1.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kinondoni	542	20	3.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pwani Region	31,666	-		1.17		3.42		9.55		18.71		45.77		627.00	
Pwani Coastal Districts	24,979	3,305	13.23	1.17	0.00	3.42	0.00	9.55	0.00	18.71	0.01	45.77	0.01	627.00	0.19
Rufiji	13,229	1,986	15.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.26	0.02
Mafia	477	9	1.92	0.66	0.07	1.79	0.20	4.55	0.50	7.67	0.84	8.90	0.97	26.46	2.90
Mkuranga	2,739	186	6.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bagamoyo	8,534	1,125	13.18	0.51	0.00	1.62	0.00	4.99	0.00	11.04	0.01	36.87	0.03	567.28	0.50
Lindi Region	66,610	-		0.00		0.00		0.00		0.00		0.21		46.61	
Lindi Coastal Districts	20,401	1,649	8.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	46.61	0.03
Lindi Rural	6,483	308	4.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lindi Urban	239	incl above		0.00		0.00		0.00		0.00		0.00		0.00	
Kilwa	13,679	1,342	9.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	46.61	0.03
Mtwara Region	17,669	-		0.00		0.00		0.00		0.00		0.00		0.00	
Mtwara Coastal Districts	3,938	-		0.00		0.00		0.00		0.00		0.00		0.00	
Mtwara Rural	3,745	-		0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
Mtwara Urban	193	-		0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
ZANZIBAR	2,546	64	2.53	226.12	3.52	309.59	4.81	436.90	6.79	546.08	8.49	652.34	10.14	1,594.14	24.78
Unguja	1,534	42	2.77	19.32	0.46	40.60	0.96	78.64	1.85	105.82	2.49	142.74	3.36	833.18	19.64
Kaskazini Unguja Region	450	-													
Kaskazini A	240	-													
Kaskazini B	210	-													
Mjini Magharibi Region	232	-													
Magharibi	216	-													
Mjini	15	-													
Kusini Unguja Region	852	-													
Kati	483	-													
Kusini	370	-													
Pemba	1,012	22	2.16	207	9.44	269	12.29	358	16.36	440	20.11	510	23.27	761	34.75
Kaskazini Pemba Region	552	-													
Micheweni	205	-													
Wete	347	-													
Kusini Pemba Region	460	-													
Mkoani	255	-													
Chakechake	205	-													

Table 10: Inundation scenarios on woodlands for coastal regions and districts of mainland Tanzania and Zanzibar in one meter steps of sea level rise up to five meter and at ten meter. Data include woodland lost in hectares and as percentage of current woodland. The higher sea level rise have been included to illustrate area impacted in situations with high surge and wave action during period of extreme weather, pending the development of a surge impact assessment model.

	Area ²	Woodland	Woodland	1 m SLR		2 m SLR		3 m SLR		4 m SLR		5 m SLR		10 m SLR	
	km ²	km ²	% of Area	hectares	%	hectares	%	hectares	%	hectares	%	hectares	%	hectares	%
TANZANIA	895,753	-		37.92		98.62		237.39		404.96		726.77		23,179.01	
MAINLAND TANZANIA	893,208	-		12.15		35.78		118.20		194.01		315.27		12,861.01	
Mainland Tanzania Coastal Regions	145,802	-		12.15		35.78		118.20		194.01		315.27		12,861.01	
Mainland Tanzania Coastal Districts	57,615	23,562	40.90	12.15	0.00	35.78	0.00	118.20	0.01	194.01	0.01	315.27	0.01	12,861.01	0.55
Tanga Region	28,240	-		7.30		26.85		102.14		149.11		215.63		5,029.40	
Tanga Coastal Districts	6,679	2,259	33.82	7.30	0.00	26.85	0.01	102.14	0.05	149.11	0.07	215.63	0.10	5,029.40	2.23
Pangani	1,800	536	29.78	5.70	0.01	19.02	0.04	78.96	0.15	93.93	0.18	126.01	0.24	4,861.67	9.07
Muheza (split in 2007?)	1,537	168	10.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tanga	624	133	21.27	0.00	0.00	1.74	0.01	11.94	0.09	30.23	0.23	53.15	0.40	86.86	0.65
Mkinga (2007)	2,718	1,422	52.33	1.60		6.09		11.24		24.95		36.46		80.87	
Dar es Salaam Region	1,617	-		0.00		0.00		0.42		1.83		2.11		112.54	
Dar es Salaam Coastal Districts	1,617	120	7.41	0.00	0.00	0.00	0.00	0.42	0.00	1.83	0.02	2.11	0.02	112.54	0.94
Temeke	739	41	5.60	0.00	0.00	0.00	0.00	0.42	0.01	1.83	0.04	2.11	0.05	112.54	2.72
Ilala	335	10	3.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kinondoni	542	68	12.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pwani Region	31,666	-		1.16		3.30		8.22		16.09		37.60		4,983.56	
Pwani Coastal Districts	24,979	10,049	40.23	1.16	0.00	3.30	0.00	8.22	0.00	16.09	0.00	37.60	0.00	4,983.56	0.50
Rufiji	13,229	5,553	41.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	609.70	0.11
Mafia	477	5	1.13	1.16	0.21	3.30	0.61	8.22	1.53	12.56	2.33	20.21	3.76	51.15	9.51
Mkuranga	2,739	1,153	42.11	0.00	0.00	0.00	0.00	0.00	0.00	3.10	0.00	5.63	0.00	830.30	0.72
Bagamoyo	8,534	3,338	39.11	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00	11.77	0.00	3,492.40	1.05
Lindi Region	66,610	-		3.68		3.93		5.73		17.28		37.25		2,163.75	
Lindi Coastal Districts	20,401	9,956	48.80	3.68	0.00	3.93	0.00	5.73	0.00	17.28	0.00	37.25	0.00	2,163.75	0.22
Lindi Rural	6,483	1,800	27.76	0.85	0.00	0.85	0.00	1.75	0.00	9.01	0.01	16.93	0.01	809.16	0.45
Lindi Urban	239	incl above		incl above		incl above		incl above		incl above		incl above		incl above	
Kilwa	13,679	8,156	59.63	2.83	0.00	3.08	0.00	3.98	0.00	8.27	0.00	20.32	0.00	1,354.59	0.17
Mtwara Region	17,669	-		0.02		1.70		1.70		9.70		22.68		571.77	
Mtwara Coastal Districts	3,938	1,178	29.91	0.02	0.00	1.70	0.00	1.70	0.00	9.70	0.01	22.68	0.02	571.77	0.49
Mtwara Rural	3,745	1,178	31.45	0.02	0.00	1.70	0.00	1.70	0.00	9.70	0.01	22.68	0.02	571.77	0.49
Mtwara Urban	193	incl above		incl above		incl above		incl above		incl above		incl above		incl above	
ZANZIBAR	2,546	805	31.61	25.76	0.03	62.85	0.08	119.19	0.15	210.95	0.26	411.50	0.51	10,318.00	12.82
Unguja	1,534	756	49.28	5.65	0.01	17.30	0.02	40.04	0.05	83.25	0.11	172.60	0.23	7,772.68	10.28
Kaskazini Unguja Region	450	-													
Kaskazini A	240	-													
Kaskazini B	210	-													
Mjini Magharibi Region	232	-													
Magharibi	216	-													
Mjini	15	-													
Kusini Unguja Region	852	-													
Kati	483	-													
Kusini	370	-													
Pemba	1,012	49	4.85	20	0.41	46	0.93	79	1.61	128	2.60	239	4.87	2,545	51.91
Kaskazini Pemba Region	552	-													
Micheweni	205	-													
Wete	347	-													
Kusini Pemba Region	460	-													
Mkoani	255	-													
Chakechake	205	-													

Table 11: Inundation scenarios on salt pans for coastal regions and districts of mainland Tanzania and Zanzibar in one meter steps of sea level rise up to five meter and at ten meter. Data include loss of salt pans in hectares and as percentage of current area of salt pans. The higher sea level rise have been included to illustrate area impacted in situations with high surge and wave action during period of extreme weather, pending the development of a surge impact assessment model.

	Area ²	Salt Pans	Salt Pans	1 m SLR		2 m SLR		3 m SLR		4 m SLR		5 m SLR		10 m SLR	
	km ²	Hectares	% of Area	hectares	%	hectares	%	hectares	%	hectares	%	hectares	%	hectares	%
TANZANIA	895,753	3,386		0.00		0.00		0.00		0.00		0.00		0.00	
MAINLAND TANZANIA	893,208	3,280		0.00		0.00		0.00		0.00		0.00		0.00	
Mainland Tanzania Coastal Regions	145,802	3,280		0.00		0.00		0.00		0.00		0.00		0.00	
Mainland Tanzania Coastal Districts	57,615	3,280	0.06	4.05	0.00	223.89	0.07	352.22	0.11	791.96	0.24	1,466.55	0.45	2,910.44	0.89
Tanga Region	28,240	-													
Tanga Coastal Districts	6,679	651	0.10	1.99	0.00	16.95	0.03	77.67	0.12	220.13	0.34	415.46	0.64	281.63	0.43
Pangani	1,800	-	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
Muheza (split in 2007?)	1,537	-	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
Tanga	624	286	0.46	0.30	0.00	3.99	0.01	39.41	0.14	92.33	0.32	178.07	0.62	281.63	0.98
Mkinga (2007)	2,718	365	0.13	1.69		12.96		38.26		127.80		237.39		0.00	
Dar es Salaam Region	1,617	-													
Dar es Salaam Coastal Districts	1,617	151	0.09	0.00	0.00	1.69	0.01	12.25	0.08	66.70	0.44	132.32	0.88	150.51	1.00
Temeke	739	64	0.09	0.00	0.00	0.00	0.00	0.00	0.00	16.27	0.26	54.99	0.86	63.62	1.00
Ilala	335	-	-	0.00	-	1.69	-	0.00	-	0.00	-	0.00	-	0.00	-
Kinondoni	542	87	0.16	0.00	0.00	0.00	0.00	12.25	0.14	50.43	0.58	77.33	0.89	86.89	1.00
Pwani Region	31,666	-													
Pwani Coastal Districts	24,979	1,271	0.05	2.06	0.00	203.57	0.16	260.00	0.20	498.86	0.39	903.95	0.71	1,263.30	0.99
Rufiji	13,229	49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	48.35	1.00
Mafia	477	-	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
Mkuranga	2,739	117	0.04	0.00	0.00	0.00	0.00	0.00	0.00	5.96	0.05	50.88	0.44	116.52	1.00
Bagamoyo	8,534	1,106	0.13	2.06	0.00	203.57	0.18	260.00	0.24	492.90	0.45	853.07	0.77	1,098.43	0.99
Lindi Region	66,610	-													
Lindi Coastal Districts	20,401	469	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80	0.01	503.78	1.07
Lindi Rural	6,483	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lindi Urban	239	-	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
Kilwa	13,679	417	0.03	0.00	0.00	0.43	0.00	0.43	0.00	0.88	0.00	1.68	0.00	379.45	0.91
Mtwara Region	17,669	-													
Mtwara Coastal Districts	3,938	738	0.19	0.00	0.00	1.68	0.00	2.30	0.00	6.27	0.01	12.02	0.02	711.22	0.96
Mtwara Rural	3,745	-	-	0.00	-	-	-	-	-	-	-	-	-	-	-
Mtwara Urban	193	-	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
ZANZIBAR	2,546	105	0.04	0.00	0.00	12.80	0.12	20.99	0.20	44.62	0.42	14.37	0.14	102.18	0.97
Unguja	1,534	13	0.01	0.00	0.00	6.57	0.50	8.11	0.61	12.56	0.95	14.37	1.09	16.20	1.23
Kaskazini Unguja Region	450	-													
Kaskazini A	240	-	-												
Kaskazini B	210	13													
Mjini Magharibi Region	232	-													
Magharibi	216	-	-												
Mjini	15	-	-												
Kusini Unguja Region	852	-													
Kati	483	-	-												
Kusini	370	-	-												
Pemba	1,012	92	0.09	0	0.00	6	0.07	13	0.14	32	0.35	0	0.00	86	0.93
Kaskazini Pemba Region	552	11													
Micheweni	205	81													
Wete	347	-	-												
Kusini Pemba Region	460	-													
Mkoani	255	-	-												
Chakechake	205	-	-												