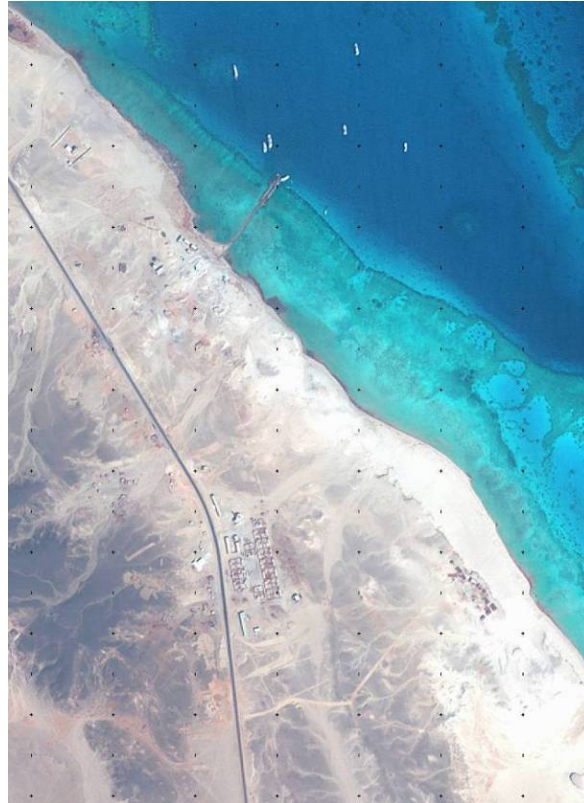




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Egypt LIFE Red Sea Project Hamata Existing Condition Report (Profile)

TECHNICAL REPORT

OCTOBER 2006

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International Development

It was prepared by Chemonics International Inc.

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ACRONYMS & ABBREVIATIONS

CDA	Community Development Association
GoE	Government of Egypt
LIFE	Livelihood & Income From Environment
NGO	Non Governmental Organization
RSG	Red Sea Governorate
USAID	United States Agency for International Development

EGYPTIAN TERMINOLOGY

Tawteen	Housing provided by the municipality as replacement for the shacks
Wadi	Valley or water course, usually associated with the location names
Baladi	Local (built or constructed in the local way)

i- LIFE Red Sea Project Publication Series

The LIFE Red Sea Project produces two general categories of documents: Reports - these are specified outputs, often referred to as document-deliverables of activities that are scheduled in the project Annual Workplans; and, Notes - these are materials that are produced in conjunction with project work, but are not required outputs of scheduled activities.

Accordingly, the LIFE Red Sea Project has developed a Publication Series that distinguishes between these types of documents, but at the same time captures and archives all of this information for reference and future use in the standardized series of reports described below. While the materials in these three series are usually written documents, these materials could also include information in various types of electronic or other formats (e.g., presentations on CDs, satellite photo images, GIS maps, etc.).

All reports in each of the three series follow a standard format that is designed to allow the reader to understand the critical concepts and key information in them. This format includes a cover, a synopsis of the material, and the material itself. For Management and Technical Reports, the full original report submitted to USAID follows the synopsis. For Technical Notes, the original report is attached as an appendix.

a) MANAGEMENT REPORT SERIES

Management Reports are document-deliverables specified by project work plan activities that generally relate to management and administrative functions such as life-of-project planning and formal reporting. These reports are subjected to extensive editing, are reviewed internally by the contractor team and often by project partners, and usually must be approved by USAID.

b) TECHNICAL REPORT SERIES

Technical Reports are documents that may be designated outputs of technical activities, or substantial outputs of work conducted by long-term staff or short-term consultants to the project. These reports are subjected to extensive internal review and editing, but are not generally circulated to the project partners or USAID for review or approval.

c) TECHNICAL NOTE SERIES

Technical Notes are written or other materials that are produced in conjunction with any type of project work. In contrast to reports, the notes may be in varying formats and are not subjected to extensive editing or review. Instead, key information is summarized in the synopses. This allows such information to be easily accessed by users, but avoid the time and cost involved in editing materials that are not essential work products.

ii- Introduction About Existing Condition Report

The report was developed to respond to deliverable Task No.3, activities No. 3.1, 3.2, 3.3 & 3.4 in the LIFE Red Sea project technical activates work plan. Its main objective is to assess the existing current situation in the settlements where the project has physical intervention.

iii- Summary On The Over All Settlement Assessment

The overall assessment report was completed after looking at the south red sea settlements that falls in the project are. The selection of the settlements of intervention was according to a set of criteria:

1. Accordance with the government goals and objective
2. Community capacity and activism
3. The extent of geographic boundaries
4. The percentage of indigenous people in the community
5. The local identify
6. The deterioration of the physical urban structure
7. The amount of change that could be achieved in the quality of life
8. Number of jobs that could be created
9. improvement of quality of life
10. The applicability of the upgrading activities
11. Community willing to participate in upgrading activities
12. Prospectus for cost-sharing in the upgrading

The first round of the assessment gave a qualitative assessment of the suitability of the sites for LIFE project intervention according to the above criteria. The four categories used for each of the 12 criteria for each settlement under consideration are:

Unsuitable [U],

Suitable [S],

Very Suitable [V]&

Extremely Suitable [E], as displayed in the table below.

CRITERIA	MARSA ALAM	ABU-GHOSUN	HAMATA	EL-SHALATEEN
1	S	S	E	E
2	S	U	V	E
3	S	V	V	V
4	E	V	V	E
5	S	S	S	E
6	S	E	E	E
7	S	E	E	V
8	E	V	V	E

9	V	E	E	V
10	E	E	E	V
11	V	U	V	E
12	S	S	E	E

Figure 1 Criteria of selection and towns suitability for each criterion

Weightings were then assigned to the various criteria and a numeric value given to each qualitative assessment level so that a relative weight could be calculated for each criterion in each settlement, as shown in Table 4 below. The un-weighted values assigned are U = 0; S=1; V=2 and E=3.

The relative weight of each criterion was developed reflecting its importance related to other criteria; the sum of these weights is 100%.

Criteria	Weight %	Marsa Alam		AbuGhosun		Hamata		El-Shalateen	
		Value	Relative Weigh	Value	Relative Weigh	Value	Relative Weigh	Value	Relative Weigh
1 Accordance with the governmental goals and objectives	15	1	15	1	15	3	45	3	45
2 Community capacity and activism	3	1	3	0	0	2	6	3	9
3 The extent of geographic boundaries	2	1	2	2	4	2	4	2	4
4 The percentage of the indigenous people in the community	5	3	15	2	10	2	10	3	15
5 The local identity	5	1	5	1	5	1	5	3	15
6 The deterioration of the physical urban structure	10	1	10	3	30	3	30	3	30
7 The percentage change in the quality of life that could be achieved due to project intervention and activities	10	1	10	3	30	3	30	2	20
8 Number of jobs that could be generated due to project intervention and activities	7	3	21	2	14	2	14	3	21
9 The quality of life	8	2	16	3	24	3	24	2	16
10 The applicability of the upgrading activities as a model in other similar areas	10	3	30	3	30	3	30	2	20
11 Community and local individuals willing to participate in upgrading activities	12	2	24	0	0	2	24	3	36
12 Prospects for cost-sharing the local upgrading	13	1	13	1	13	3	39	3	39
Total	100%		164		175		261		270

Figure 2 relative weight for each criterion in each city

As a result of the above assessment the Hamat and el-Shalateen were the highest and the LIFE project started to identify activities in these two settlements.

In addition, there was special attention given to El-Sheikh el-shazli settlement after a rapid assessment that was conducted later according to USAID orientation, especially that el-Sheikh el-Shazli has a very unique characteristics and has a very important seasonal event. The settlemt was not included in the criteria because as the LIFE project started it fell out of the project geographical focus (it is not on the coast and beyond the national park).

iv- Selected Settlements

iii-1 Hamata

iii-2 El-Sheik El-Shazli

iii-3 El-Shalateen

Methodology:

The diagram below shows the sequence in which this report was conducted and the methodology used to describe the process.

The process simply divide the village component to natural elements and man made elements, then conduct a need assessment which identify the project intervention

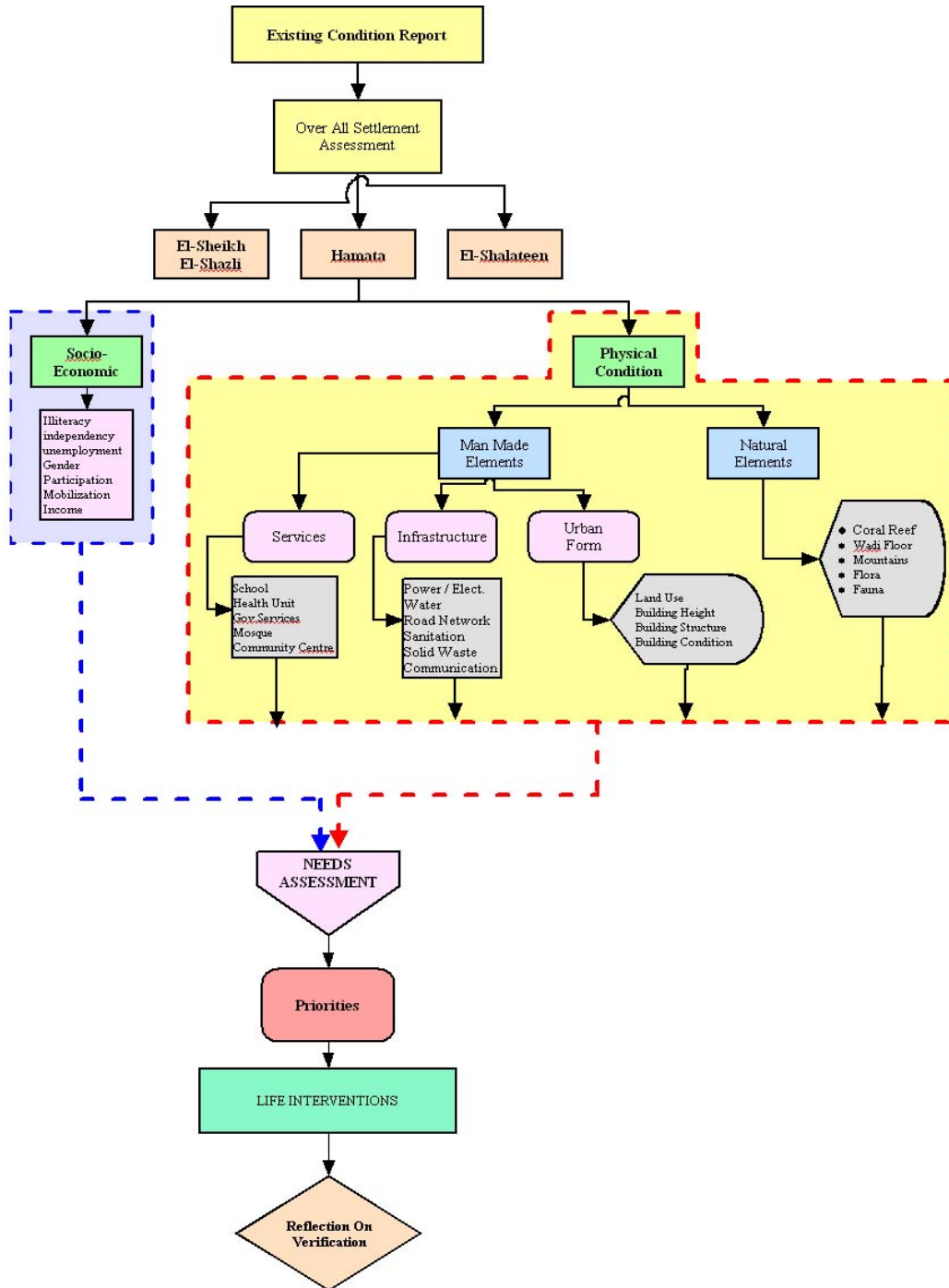


Figure 3 the methodology used in the report

HAMATA SETTLEMENT

CHAPTER ONE: INTRODUCTION

Hamata is the second official village south of Marsa Alam city¹, 158 kms at N24 16 50.0 E35 22 41.4, and it is administratively under the Marsa Alam centre. Hamata village consists of approximately 300 inhabitants representing 62 families. Two thirds of the village population are living in informal housing -shacks and huts erected along the west side of the read, and the other 20 or so families live in government-built single storey concrete houses on the east side.



Figure 4 Topo-map showing Hamata's location

Hamata has an old port with a built jetty and it is used as (1) location where local fishermen depart for fishing and (2) a station where the diving safari vessels stop during the excursions between Marsa alma north and wadi Lahmi south.

¹ After AbuGohsun which is only 78 Km south Marsa Alma

CHAPTER TWO: EXISTING CONDITION

A Physical Condition

The physical condition of a settlement is described into two groups of elements, the first group is describing the natural elements and the second one is focusing on the man made elements.

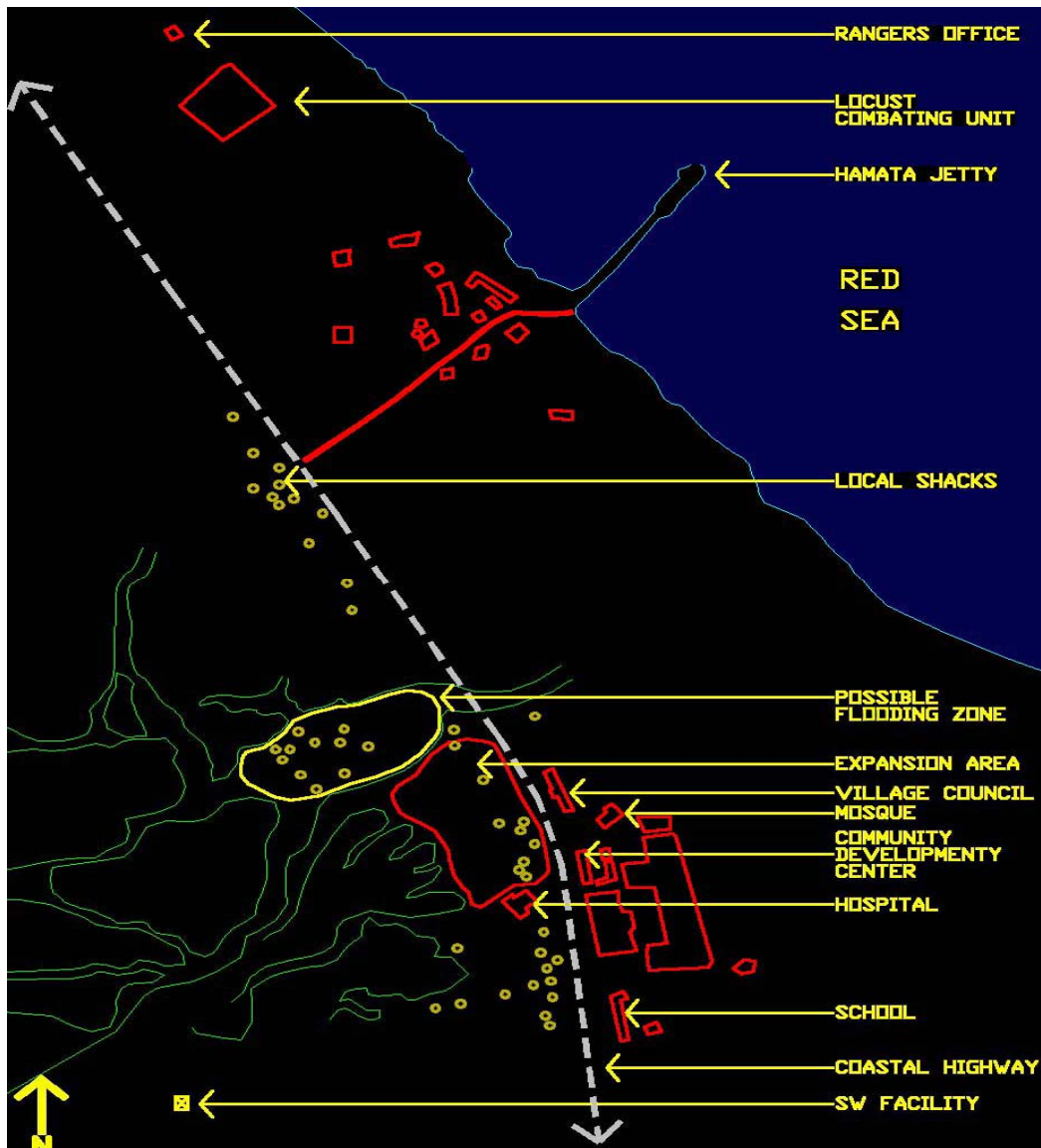


Figure 5 Distribution of current activities in Hamata

A.1 Natural Elements

A.1.1 Wadi floor

The wadis are the natural drainage systems that starts from the watershed points in the mountain range to the coastline. These wadis floods almost every 7 years. Despite the scarcity of water and the aridity of the region allot of species have adapted to live in these harsh condition including human being, (i.e. Ababda & Bashareyya)

A.1.2 Flora

The diversity of flora in the region is evident in many species, the most dominant is the acacia trees where ground water is its main source of life and also in the mangrove which is dense at the shore line north and south Hamata town.

The pictures below in figure (6) shows a wide range of visitation types that could be found in the region near Hamata village on the coastal plain and also in the mountain range.



Figure 6 some samples of the vegetation in the region (in the wadi floor, the inland mountains and the shoreline)

A.1.3 Fauna

Fauna associated with this region vary from Gazzel, reptiles, wilde asses, camels, goats, Hyrax,...,and all kind of birds. Most of the above mentioned use the mountain range to hide, however, they come to the shoreline occasionally for different purposes (water, mangrove, .. and Acasia trees). One of the local population main activities is grazing, and this geographically ranges from the shore line, where Hamata village is situated, and the deep range



Figure 7 some samples of the fauna that could be found in the region near Hamata village

A.1.4 Coral reef

The coral reef in the red sea is a continuous plateau of fringe reef and it runs parallel to the shore line with a distance that goes as less as 10 meters and as wide as 250 meter approximately. This

plateau is interrupted at the wadis areas where the flood makes an opening in the shoreline that creates a natural anchorage. These natural anchorage points had become obvious locating for old towns that evolve to be the current villages and cities.



Figure 8 some pictures of the underwater marine / coral reef biodiversity

A.2 *ManMade Elements*

The manmade elements could be grouped in three groups as illustrated in figure (9) as in the following geographical areas:

1. The development adjacent to Hamata jetty, which encompasses a few buildings that provide services related to the jetty, protectorate rangers outpost and the locust monitoring & combating unit. The condition of the buildings is adequate and maintenance is the responsibility of the various functional units located there.
2. The existing urban fabric, comprising the public service buildings and concrete housing units on the east side of the road. Most are single story buildings, generally in a deteriorated condition.
3. The huts and shacks that spread out along the west side of the highway are all in poor condition and do not offer decent living conditions. They accommodate the expansion of the village as well as a large percentage of the established residents.

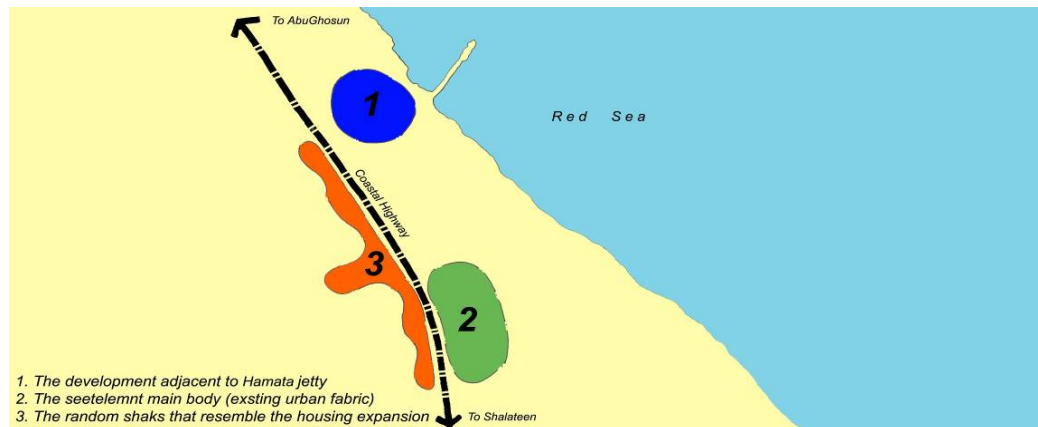


Figure 9 the main three zones of Hamata village

These manmade elements are composed of the urban form (housing and other buildings), the infrastructure and the services in the village:

A.2.1 Urban From

The urban form is a description of the built form in the village and it is usually gives an over view of the existing status, this form analysis includes the building heights, building conditions, building structure and the land use pattern in the village.

- **Building Conditions:**

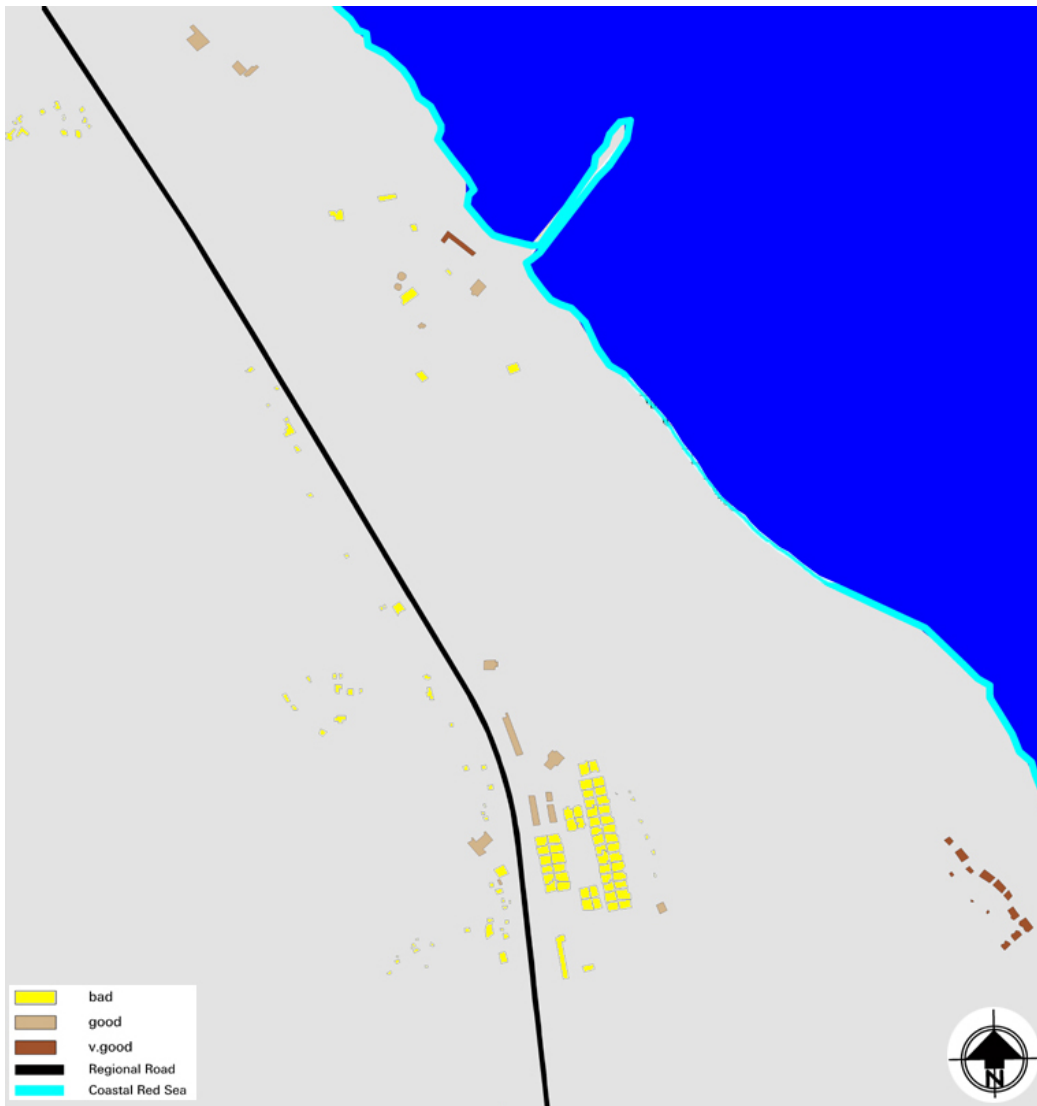


Figure 10 Building Condition of Hamata village

Most of the buildings in the village are in medium or bad condition. The map above shows some buildings in good conditions in the south east of the village (near the coast line) and these are hotel rooms under construction and owned by an investor.

The “Tawteen” building structure is in a very bad condition (located adjacent to the highway-on the east side), together with the shacks spread all over the village, east and west of the road, requires immediate renovation as it does not provide adequate shelter for the residents of the village.

- **Building Material & Structure:**

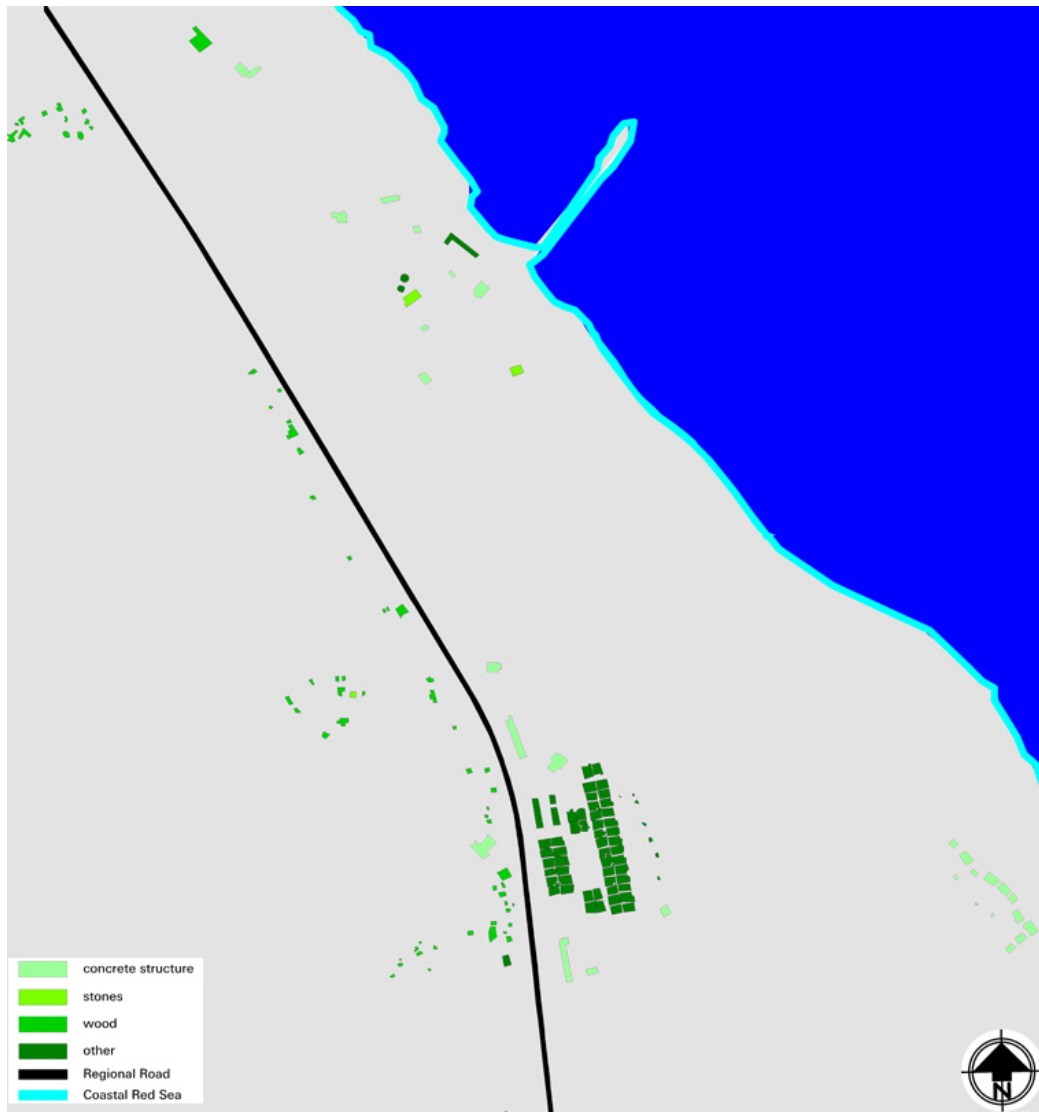


Figure 11 Building material / structure of Hamata Town

The buildings in the village are either built of concrete structure which are the government building, the school, the mosque and some of the buildings associated with the marina (i.e. the water desalination and the diesel generators room). Apart from that, the shacks are built of different combinations of materials, mainly steel sheets and wooden panels and grass mats.

The “Tawteen” buildings are built of stones and its ceiling is made of asbestos.

- **Building Heights:**

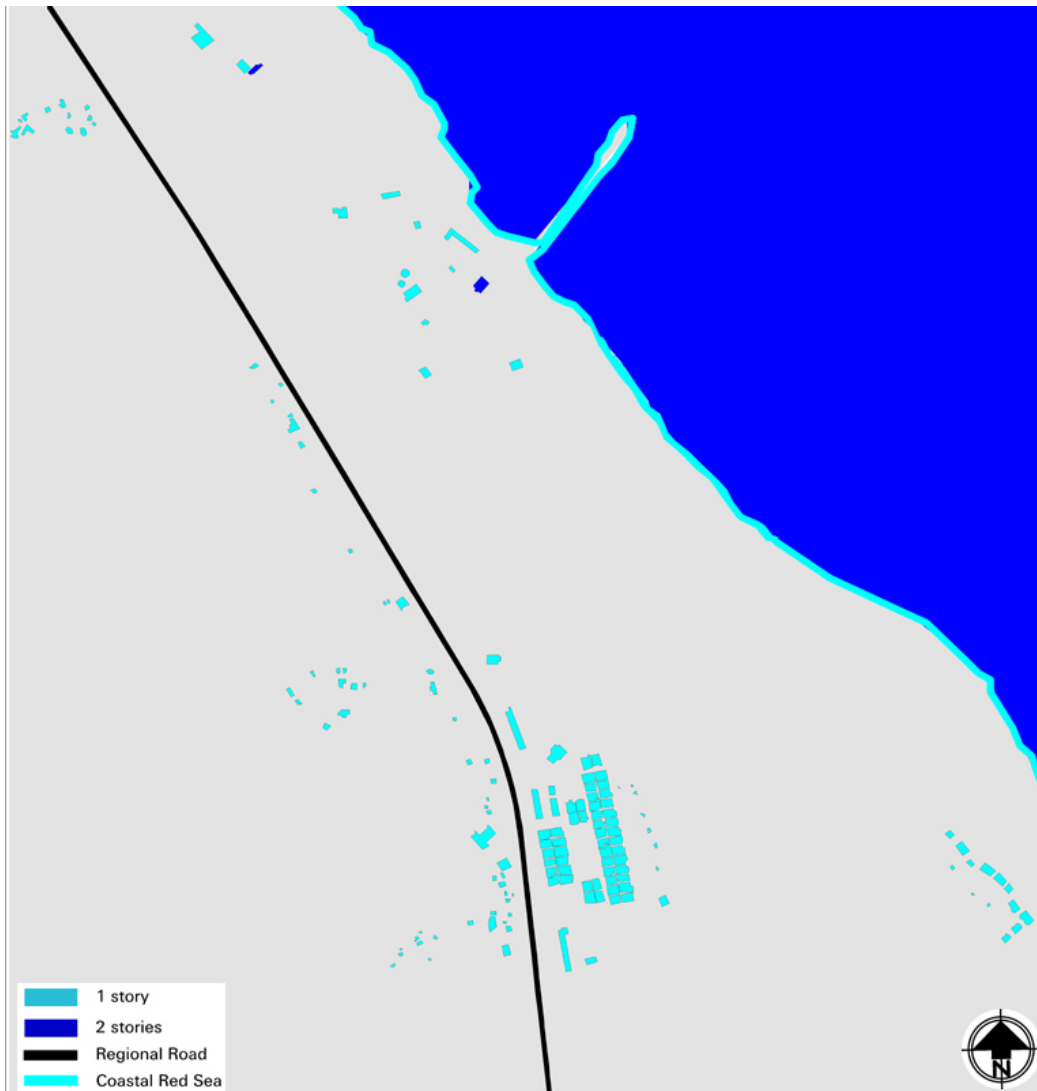


Figure 12 the building heights map

All the buildings are one story in the village (except for the mosque minarets and another services building adjacent to the marina. That makes the topography of the town very visible and makes a very semi-straight skyline.

- Land Use:

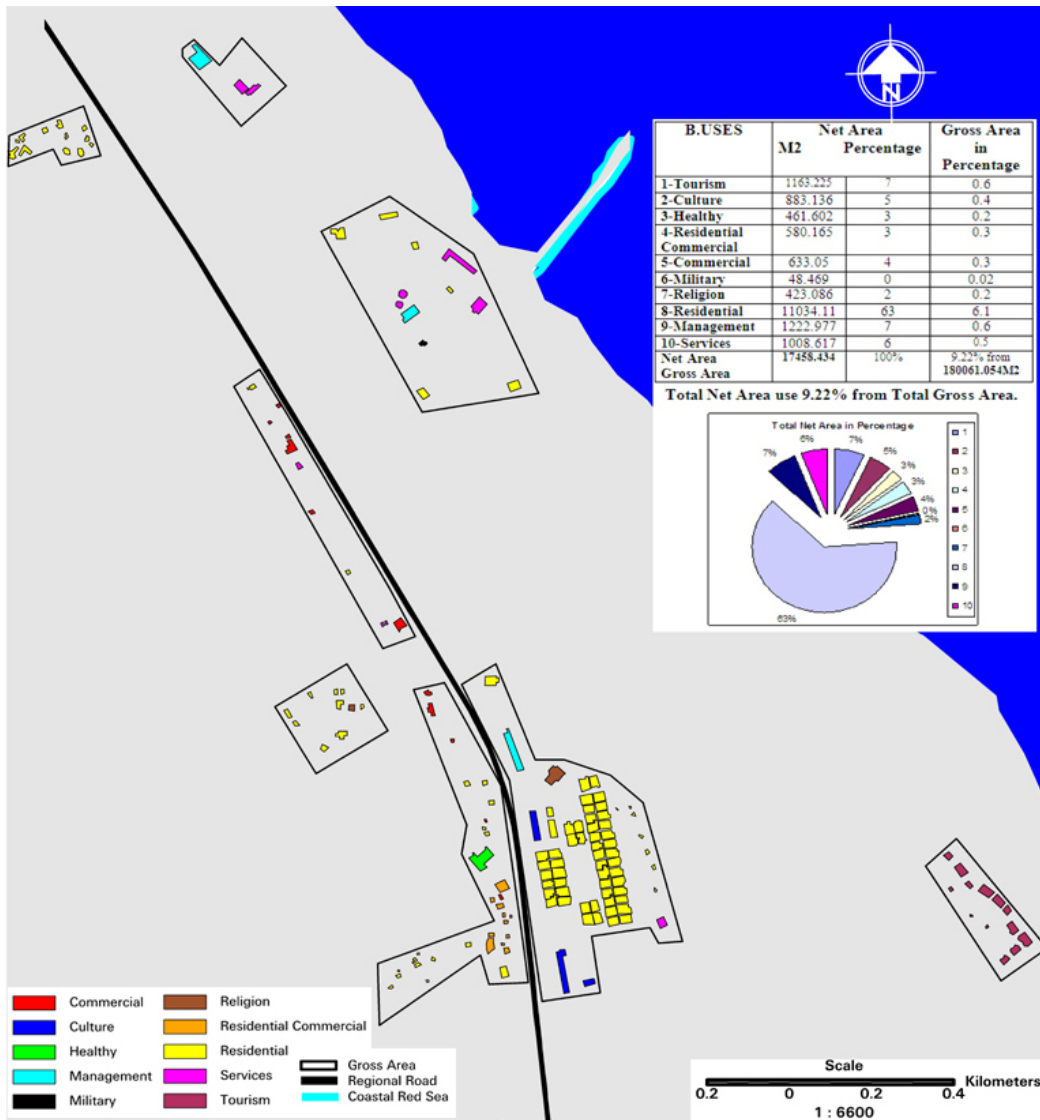


Figure 13 the current land use map of Hamata Village

Apart from the official land uses, some hidden uses were found in the informal shacks that contribute to the day to day activity and the economy of the village.

Although most of the shacks west of the road appear from the first sight to be residential, but after a detailed survey by the LIFE Red Sea team, the following uses were identified:

- Ironist
- Praying space (smaller than a mosques)
- Fish outlet
- Carpenter
- Shops
- Cafeterias
- Brick making workshop
- Construction material outlet

The table below shows the different uses with areas and percentage of the total area of the village:

USE		AREA		% OF USE
		M2	Feddan	
Residential	Residential	11034.1	2.627	63.2
	Res-Commercial	579.6	0.138	3.3
Total Residential		11613.7	2.765	66.50
Commercial		630.0	0.150	3.60
Education	Primary School	596.4	0.142	3.4
Health	Health Unit	457.8	0.109	2.60
Religion	Mosque	420.0	0.1	2.40
Social	Social unit	882.0	0.21	5.00
Administration	Hamata Municipality	621.6	0.148	3.60
	Locust Combating	315.0	0.075	1.85
	Red Sea Rangers	306.6	0.073	1.75
Total Administration		1243.2	0.296	7.2
Facilities	Water desalination & diesel generation room	452.134	0.107	2.7
Tourism		1163.2	0.277	6.60
TOTAL		17458.43	4.156	100

A.2.2 Infrastructure

- Water:

There is a desalination plant with the capacity to generate 100 tons of clean water. This desalination plant consists of a Reverse Osmosis (RO) system. Seawater (salinity $\approx 40,000$ mg/l) is collected via a pump in a 20 m³-concrete settling tank. The intake pump is supported on the end of a breakwater that is about 50 to 60 m long. One third of the seawater fed to the unit is produced as drink water, which is collected in a 500 m³-concrete storage tank. The rest (two thirds of the feed) is returned back directly to the beach upstream to the breakwater.

Currently cylindrical steel tanks supported horizontally on trucks are used to transport water from the storage tank. The tanks have an opening in the top to fill water from the storage tank. They discharge water to the citizens via 3" or 4" valves at the bottom of their rear ends.

Hamata village has in total seven water delivery trucks, a tractor and a tank supported on a trailer. Only two of the trucks are working, which is not enough to serve all the villages regularly.

- Sewage:

The current situation assessment reveals that the current method of excreta disposal and domestic waste water disposal is a sort of a primitive trenches that are locally constructed and needs to be evacuated periodically (some times once every two months). This is costly and the existing level of service (if there is any) needs to be improved.

There are many environmental hazards from the wastewater seepage towards the sea due to the natural topography of the village

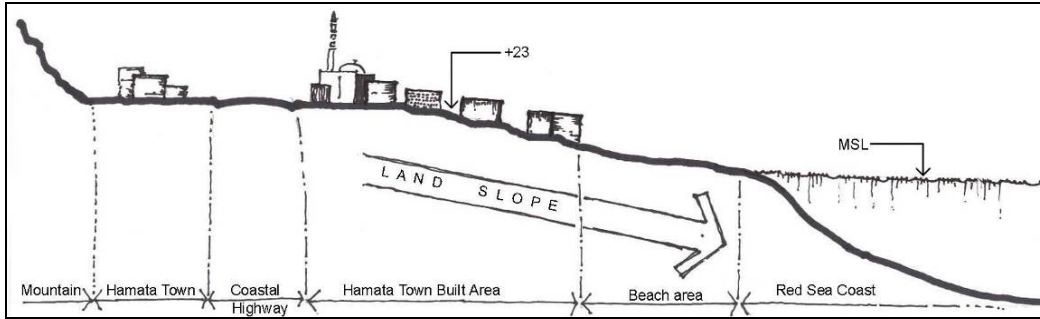


Figure 14 Conceptual Cross section in the village perpendicular to the coast showing the slope direction

- Electricity:

Hamata’s electricity supply is derived from two 1/4mega–250KW power generators, which works alternately and this provide power for the village only few hours during the day.

All generators are brushless rotating field design and supplied with nameplate label. Most nameplates have no visible information or are difficult to read. The Generators building is in a bad condition (no windows/ open doors /..... etc).

One negative aspect that was noticed during the assessment conducted is that the generator sets are exposed to humidity and dust, therefore they can be considered as if they are installed in the open air.

- Road networks:

The street network in this village is extremely simple; there is just one asphalt road, which is the main coastal highway. Residents have developed some local tracks perpendicular to that road. These tracks are mainly used to link the highway with certain activities (i.e the marina, the “Tawteen” units the locust combating unit and the ranger outpost)

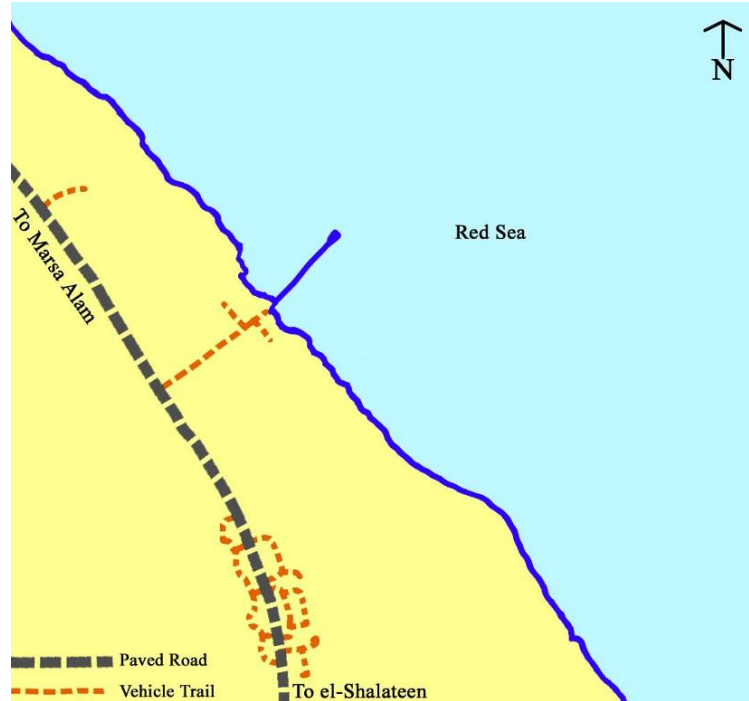


Figure 15 Local Road Network (Paved & Trail)

- Waste Water:

Septic tanks (but no regular clearing of the tanks). There is no sewage system.

A.2.3 Services

- School

Hamata has one school provides basic education school (primary and preparatory)

The picture to the right in figure (17) shows the building of Hamata school looking from the south. As the picture shows it is a one story concrete building in a medium conditions and require some restoration work to accommodate the students activities comfortably



Figure 16 Hamata primary school

The school has 5 elementary classrooms and 2 preparatory ones with total number of students of about 47.

Only government curriculum is taught, no additional programs related to the Red Sea are offered. There is one computer and one printer for each educational level: one for primary and one for preparatory. The school is also equipped with one overhead projector, 2 video VCR's and 2 television sets. There is a dish for satellite reception.

Activities during the summer are limited to the "Reading-for-All" campaign- literacy related. Membership in the Parent Teacher Association (PTA) is by appointment not by selection and PTA's are not active and women are not represented in PTA's.

The education directorate of El-Shalateen has exempted parents from having to pay tuition fees and Hamata is part of El-Shalateen directorate; the education directorate provides the school with some basic classroom needs.

- Mosque

The mosque of Hamata is situated in the middle of the town and it is built of concrete. During the Friday prayer, it serves Hamata and all other shacks that is within walking distance from the village.

There are also other small shacks that serves as small praying spots within the shacks areas west of the road.



Figure 17 The village main mosque

- Health Unit

There is a Health Unit at Hamata village. The physical facility is of sufficient size for the current population but it can barely function even as a first aid post because of the severe lack of medical equipment and the absence of supporting medical services. The local health unit and ambulance are housed in the same building, two doctors alternate shifts, they are assisted by a medical

technician, one nurse, 2 drivers and one janitor.

Equipment in the clinic consists of: blood pressure machine, autoclave, simple surgical tools, examination bed, one desk and a screen.

Patients are mostly children, followed by men and lastly women. Women from the hinterland do not frequent the clinic. Maternity cases reach the clinic only if the midwife has failed to attend the birth. Most of these cases are referred to the hospital in Marsa Alam

- Municipality office

This is the office that manages the municipal activities and issues related to public services and infrastructure such as managing the water distribution and monitoring the diesel generators. The municipal office also keeps all the villages records and data such as the census, the social activities, the NGOs registration and the official communication with Marsa Alam city council.



Figure 18 Municipal office of Bernice / Hamata

- Locust Combating Centre

This is a centre that is usually located in the main villages according to the governmental standards and the geographical location of the town. Its main function is to monitor the invasion of locusts from the south of Egypt and it is connected other central similar units and it gives early warnings



Figure 19 locust combating centre

A.2.4 Housing

1. "Tawteen" Units

These are housing units built to accommodate families, (1 family per unit), it has an inner courts, a living room and two bed rooms. Usually the local slightly modify the design to fit their needs, such as adding a bedroom in the court, covering parts of the court to provide shades, add a wall to develop a corner for the goats or dividing rooms to achieve more privacy.



Figure 20 the “Tawteen” houses are made of concrete stones and asbestos ceilings

2. Shacks

Shacks designs vary from a family to another but it generally has a sleeping space (bed room), a cooking space (kitchen) a living space, a toilet and a “Madiafa” (which is a small external room to receive guests).



Figure 21 example of the shacks in the village of Hamata, (built by wood, steel and grass-mats)

A.2.5 **Solid waste**

The inhabitants of Hamata are considered to be the least waste generator in the area compared to Hamata marina & adjacent resorts. Hamata marina hosts around 7- 10 dive & safari boats, varies according to tourism seasons. Currently, there are about three working resorts and camps, while there are other three are under construction.

Waste is scattered in a non-fenced vast area, which witnesses daily open dumping. This dump site receives, on a daily basis, the waste generated mainly from Zabargad Hotel, Red Sea Safari Camp, Lahmy Bay, and safari & dive boats². These hotels & boats handle the waste collection and transportation by their vehicles.

Some groups of the local population, especially women, recover the organics matter to feed their livestock, in addition to some valuable non-organics to sell them to a small trader who make some further sorting before selling to a larger trader in Qoseir. The remaining waste is subjected to a regular burning process Plastic bags are normally seen flying on the high way & in wadis.

Safari boats usually hire a small truck to transport the waste and dump it in Hamata open dump site for about LE 20 per a truck, and some other time, they just burn their waste in the two metal waste containers, which are installed in the marina and do not receive any collection or transportation service.

² These are the tourism facilities operating till year 2006 and this will expand in the future

No waste collection service is provided to Hamata population; Hamata municipality obtained recently a tractor and trailer to be used for the town various services. However, the tractor and trailer are currently out of service, they lack batteries and other minor small spare parts.

Wadi El Gemal- Hamata rangers had identified a location to establish a controlled dumpsite, but after implementing the Wadi El Gemal transfer station model, they will make it a similar station for waste recovery. The posts have been installed, and only half of the mesh required for fencing is provided by Lahmy bay (a coastal resort), but other items are still needed, in addition to processing equipment and a small budget to prepare the station site.



Figure 22 the fenced area near Hamata for solid waste collection (waste recovery)

Hamata Local municipal unit has also identified a person from the local population to work as a subcontractor for waste collection, transportation, treatment, and final disposal. This person is willing to hire youths (men & women) from Hamata to work for providing this service to the resorts, local population, and marina. He is also willing to operate and maintain the sorting station under supervision of Hamata rangers and municipality. There is a potential here to establish a small enterprise from the local population to handle the solid waste business in a formal way.

The text before described the physical existing situation in the village of Hamata and this indeed is integrated with a socio-economic pattern that lays within these the described physical fabric. The following part will highlight the social and economical aspects of Hamata.

B Socioeconomic Situation

A comprehensive study about the socioeconomic condition in the village was conducted by the LIFE Red Sea project and the main findings of this study brought out the following characteristics:

B.1 History of the local population

El Ababda or correctly 'El Abadla' are said to have acquired their name with reference to Abd Allah bin Zubeir of the "Qureish" tribe from which the Prophet Mohamed (Peace be upon him) originates. The 'Abadla' tribe are said to reside in Egypt, Sudan, Jordan, Saudi Arabia and Tunis³.

In 1935 up until 1945 there was in Hamata a German owned company located in El Zuburgud Mountain. Then in 1940, the Greeks arrived to the area and worked at the talc mine located at Qualaan, which was called El atchan mine. The talc was exported through the haven of Ras Golan.

It is in 1945 that the area began to be called "Hamata". A name that was coined by Nicole Otinger Dengaros, the Greek geologist, who chose the name due to the red trees known as "Hamat" found in Gebel Hamata.

Another Greek Manager called Fatanos Yanni inaugurated another talc mine in Baranice and run. Until 1968 'El Giranab' was the only Ababda clan settling down and in control of the Hamata area. They had come over from Edfu to participate in the mining activities of Abou Ghousoun. At present beside the Giranab clan El Qureigab, Balalab, Fehidab and Ragabab inhabit the area. Most of the villagers are from El Kirgab clan.

Marriage customs have changed drastically over the last 8-9 years. While in the past the groom had to pay a dowry of LE 100-200 to the bride in addition to a camel, goats and sheep, now he has to buy gold and furniture. In previous times the home of the newly weds was called 'brouche', now newly weds seek to furnish flats and settle down in villages and towns.

B.2 Population size and trends (in-migration, birth/death rates)

Bernice Village has a population of ca. 4000 Inhabitants. There are 456 Households registered in Bernice Village with surroundings⁴:

Number of Households	Location
150	Abu Ghousoun
70	Hamata
40	Mansak
30	El Khedai'
70	Ras Banas
80	Arab Saleh
16	Qualaan
456	Total

Out of the 70 households in Hamata, 50 live in the governmental houses and 20 in self-build kiosks.

3 (El Ahrum February 1998 Sanduk El Donia)

4 (Source: Village Council data in Hamata 2006)

B.3 Makeup of population (age, gender, ethnicity)

According to the census as provided by the head of the village council, which excludes El Mansek, Arab Saleh and Kheda' there are 469 females and 487 males.

According to the study undertaken by the consultant in 2003, there were 40 houses in the village of Hamata, of which the Ababa inhabited 30 houses. The remaining 10 houses were said to belong to the workers and employees working in the village or the mining businesses. Among the 10 houses are 4 families who are occupied as traders. The sub-tribe of the Ababa living in Hamata were said to be from the Koreiygab clan.

According to the census of Population, Housing and Establishment of 1996, the population of Bernice Village Unit is categorized as follows⁵:

Parameter	Male	Female	Total
No. of Inhabitants	572	448	1020
No. of Inhabitants below 6 years	62	105	187
No of Inhabitants between 6 & 15 years	132	101	233
No. of Inhabitants between 15 and 65 years	343	239	582
No. of Inhabitants above 65 years	15	3	18

B.4 Level of Educational Achievement

In Hamata, 80 % of the population is illiterate. Only 3 persons have a higher level of education or university degree (2 females and 1 male)

23 males and 14 females have a middle level of education such as diploma in commerce of vocational education. As mentioned earlier in this report, hamata school provides preliminary and preparatory education and students who want to resume their education have to attend secondary school either in El Quseir, or in Marsa Allam.

Currently there are 19 boys, 13 girls in the primary grades, 10 boys, and 6 girls in the preparatory school. There are 16 teachers (16 males and 1 female) employed in Hamata schools. All teachers are seconded from other locations like Menia or Quseir, are only in Hamata during the school days, and leave during the vacations

B.5 Employment profile and trends (% employed in various sectors)

B.5.1 Fishing:

More than 90 % of the local population is involved in fishing primarily in Ras Benas and Qalaan. Fishing is practiced either through nets or hooks or more scarcely through fishing boats. Male and female inhabitants practice the two first modes while the use of boats is confined

⁵ (Source: Socio-Economic Assessment of the Southern Red sea region)

to male fishers, as they could go on sea journeys that may last for days. Fishing is practiced usually during the summer months and seldom if ever in winter. Among the Abadi tribe, the Girbab clan, who originate from Yemen, are said to be the 'sea lovers' and hence make up most of the fishers in Hamata.

B.5.2 Herding:

2 % of the population are actually involved in herding primarily in Arab Saleh and Abou Ghousoun, where herding is the sole activity. Keeping animals however in their homes such as sheep, goats and sometimes camels is an established traditional habit among the Ababda. Thus most inhabitants keep their goats and sheep around them and do not seem aware of their exact numbers when asked. Settlers in Hamata do not keep their animals in separate shelters but leave them to roam around during the day and in the night lock them into their house-yards.

B.5.3 Tourism:

More than 2 % of the people in Hamata are said to be employed in Tourism. Tourism as an economic source of income has been lately introduced. Not many people from the Ababda are involved in tourism because Abadi people are said to be very selective in the types of their occupations. Thus, for example they would not work as bartenders.

Community members however, complain that the tourist restricts involvement in tourism guides who do not allow tourists to intermingle with Ababda. Tourist leaders as well capture most of the profit for them, which renders the Ababda at a loss should they sell any items or service to the tourist. Local inhabitants commonly believe that it is due to their lack of English language proficiency that the tourist guides mistreat them.

B.5.4 Employment:

Employment entails working for money either in the governmental sector, the public or the private sectors. The available employment opportunities however are limited and confined to:

1. The governmental sector such as in the village council where scarce administrative or technical positions are available or in the health unit and the school. Among the 23 employees of the village council, there are 2 female employees who work in the administration. The remaining male employees work in the technical section such as driving or maintenance of cars and electricity supply. All 23 village council employees and the only female teacher employed at the school, as well as the male employee of the fishermen cooperative, the 2 female employees of the CDA and the 3 employees of the environmental preservation authority are local inhabitants of Hamata and are hired on the basis of yearly contracts that have to be renewed.

2. Private owned businesses can be found exemplified in the five grocery stores and two cafeterias found in the village. Groceries are usually managed and operated by the family members of one household.

B.5.5 Handicrafts Production:

Handicrafts production is an activity that is at present confined to the female population. Long times ago, male members of the Ababda were known to produce leather articles such as belts, small bags and shoes. Almost all women of all age categories can produce beads work, while weaving of carpets is rather confined to most of the elder generation of women. Apart from the kelim and beads production, women can be found producing straw and leather articles.

B.6 *Unemployment Rate*

According to the responsible officer of the Environmental Preservation Authority, "In a tribal setting like in Hamata it is not easy to talk about unemployment as most inhabitants are involved in the traditional occupations of herding or fishing". Nevertheless according to the census conducted by the Environmental preservation authority in 2004 there are in Hamata 23 males ranging between the age categories of 16-60 who are unemployed. The census did not include female community members.

B.7 *Poverty Rate*

It is estimated that more than 80% of the population are poor. The local definition for poverty means that they have food, but very little assets such as 2 goats and live in poor living conditions, namely without comfort such as refrigerators or television sets. Usually such families include many household members.

B.8 *Income from outside the community (pensions, social security, seasonal)*

The city council in Marsa Allam addresses the needs of the local communities under their jurisdiction, thus they provide food supplies to deprived households as well as allowances and meals for students. Each deprived household receives 25 kg of flour, 2 kg of sugar and 2 bottles of oil every year. This support is called the support for the 'Orban people': All Inhabitants rely on the governmental in kind support such as sugar and flour from the governorate provisions twice a year. In general, around 90 % of the inhabitants have Identity cards. The same percentage as well is said to own the ration cards for supply and provision.

Inhabitants receive social 'support for desertification', which ranges between LE 50-70 per month from Marsa Allam. There are six widows who receive their husband's pensions.

B.9 *Percapita income and distribution*

According to the findings made during the fieldwork as well as the findings of the survey, monthly revenues of the households range between LE 100 to LE 500 per month. The general average lies at LE 150.

The monthly expenses of the households range between LE 100 – 500 with the average of the households lying between LE 150 – 350.

B.10 Average earnings per job

The average earnings per job are said to range as follows:

- Fishing fluctuates and can reach LE 500 per month during the season time
- Herding can reach up to LE. 2000 – 3000. per year.
- Tourism LE. 300- 600 per month.

CHAPTER THREE: NEEDS ASSESSMENT

A Physical Needs

This part of the report lineout the basic needs according to several assessments conducted by the LIFE red Sea project. These layers of assessments has been conducted through focus group discussions, participatory sessions and also through meetings with the decision meetings as well as the local authorities. The needs could be summarized in the following three groups:

A.1 Housing

The housing conditions are far beyond the basic human needs either the shacks or the “Tawteen” units. Both require immediate upgrading to reach the minimum accepted life standards.

1. The “Tawteen” housing lacks the sewage and its architecture design does not respond to the family needs and therefore it is not a suitable accommodation for families. Also the ceiling of these “Tawteen” units is made of “Asbestos”, which is a very hazardous material that cause cancer on the long term
2. The shacks, in addition to the above shortages, are made of steel sheets, wooden panels and it is in a very bad condition, it does not stop the rain, it does not provide enough privacy and it could collapse at anytime.

A.2 Services

The services were assessed in terms of qualitative and quantities measures in the village and the most shortages were in the qualitative parts as follow.

The, school, health unit, municipal village council, sports centre have building is in bad condition and usually lacks equipment, furniture, interior finishing, ..etc

The school has allot of attention form the local community, the red sea Governorate and the Education directorate and therefore a more detailed and sophisticated analysis was conducted for the structure of the building as well as the architecture suitability to accommodate other evening vocational activities.

A.3 Infrastructure

- Water:

There is a desalination plant with the capacity to generate 100 tons of clean water. Currently water is distributed by car.

- Sewage:

Septic tanks (but no regular clearing of the tanks). There is no sewage system.

- Electricity:

Hamata's electricity supply is derived from two 1/4mega–250KW power generators.

- Road networks:

The street network in this village is extremely simple; there is just one asphalt road – the main coastal highway. Residents have developed some local tracks.

- Waste Water:

Septic tanks (but no regular clearing of the tanks). There is no sewage system.

B Socioeconomic Needs

According to group discussions and focus group sessions that identified the basic services and needs, the following issues were seen as priority requirements, both by the government and the residents:

- Land division and registration is seen as the first priority so that people can build and own their own homes.
- Additional medical service providers are needed in the village. The two mentioned particularly were a dentist and an osteopath (bones doctor).
- The absence of a sewage system is also mentioned to be a serious problem that requires priority attention and has a lot of social impacts.
- Since the urban development of the village is random and haphazard along the sides of the regional road, this reduces the sense of safety (especially for young children).
- Commercial and economic activities have become integrated in the housing areas (e.g. commercial shops, cafeterias, handicrafts workshops). This mixed uses pattern is not preferred by the inhabitants, they require clear separation to have more privacy in their homes. These commercial activities rely on the traffic from the regional road and therefore housing and commercial uses are mixed near the highway.
- The village lacks open-air places and entertainment facilities. People use the regional road as their main relaxation and gathering place, and children use the road as a playground.
- All the buildings have been haphazardly erected, without obtaining prior authorizations, so there are no central records of 'what is where', making it almost impossible to setup any utility such as water or sanitation pipes.
- No adequate emergency services are available should there be an accident or fire, nor are there any measures in place to prevent the spread of disease through lack of cleanliness.

CHAPTER FOUR: PRIORITIES

The LIFE Red Sea project has been conducting many group discussions with the local people before initiating any interventions or setting out any priorities. The project has also worked closely with the local authorities in the region starting from the red sea governorate in Hurghada, Marsa alaam city council and Hamata village mayor

A Local People

Priorities according to the local people in the village could be categorized in the following groups:

A.1 Securing tenure

This is for the shacks west of the road and the activities that fall in the highway buffer. It has been a concern for the local people as they wanted to secure the land so they can invest freely in their buildings and also be secured from the massive trend of tourism development that is hitting the region and can easily capture, secure and own the land that they occupy.

The LIFE Red Sea project proposed, as part of the regularization process, to re-plan the area west of the road (mainly shacks area) and allocate the existing shacks within the newly developed layout. This planned area for housing west of the road shall also accommodate people living in the “Tawteen” houses incase the land was taken back by the governorate to be designated for tourism development⁶.

A.2 Upgrading the exiting “Tawteen” houses

The existing “Tawteen” housing is considered legal as it was built by the governorate in the 1970s, however, it lacks basic infrastructure (such as waste water disposal) and its ceiling is made of “Asbestos” which is a hazardous material that causes cancer on the long term.

The LIFE Red Sea project proposed upgrading a model or two of these houses using the local material and replacing the ceiling with another one alternative using material that is more environmental friendly and safe for the local inhabitants⁷.

A.3 Upgrading the infrastructure

The infrastructure in the village is inadequate & in a very bad condition there were complains on:

- The water distribution:

The LIFE Red Sea had assessed the water distribution system for Hamata and the surrounding villages on the coast line and in the deep range. A comprehensive study and an O-D⁸ matrix was developed. The assessment demonstrated a need to increase the allocation of water that reaches

⁶ USAID did not approve the proposal for planning west of the road and regularising the existing shacks with possible relocation for the people in the “Tawteen” units. Their main policy does not encourage any type of relocation

⁷ This proposal was rejected by the Red Sea Governorate as it was considered waste of resources and an investment that will be put in buildings that will be relocated west of the road sooner or later

⁸ O-D is Origin-Destination

each inhabitant. The estimated current figure is 10 L/Day/ Person and the target that will be achieved is 25 L/Day / Person after the purchase of the two 7T trucks. The detailed study and all related maps and information could be found in Annex (3.C)

- The lack of power generation (number of hours per day and geographical coverage in the village).

The LIFE Red Sea project had assesses the existing situation of the power generation (including the existing diesel generators and the infrastructure installed in the village). The current assessment showed a need to add more power generation source and maintain the cables and the associated hardware in the distribution system.

- Lack of sanitation

Lack of sanitation is not the highest priority for the locals comparing to water and power, however, it remain an existing priority and on their complain list

- Solid waste

Solid waste is on the list as it generates allot of health problems in addition t the visual pollution. The lack of waste collection system is a priority when it comes to upgrade the area to be part of tourism attractive destination.

B Municipal Administration (*Hamata municipality, Marsa Alam city Municipality & Red Sea Governorate in Hurghada*)

Priorities according to the municipal administration was mainly derived from the central decision making (which is in Hamata case, the Red Sea governorate). The main objective of the governorate is to designate the area east of the road for tourism in order to generate jobs and upgrade the area, which will evacuate the residents (and eventually the services) from the east to the west of the road. Leaving no access to the public and allocation the marina area for the private sector. According to this objective, the governorate priorities were:

- In terms oh Housing:

To build new homes for settlers in shacks, or in “Tawteem” units, in the west of the road leaving east of the road for tourism activities

- In terms of Services:

Upgrade as much possible of the services in the village. The LIFE Red Sea project has agreed on focusing on the school building to upgrade its existing function and also to accommodate a vocational and training centre that plays a role in the community even after school hours. The project has studied the school thoroughly and identified the basic needs (structure, equipment, material,... and all refurbishment and renovations needed) as seen in Annex (1.A&1.B)

- In terms of Infrastructure:

The Red Sea Governorate together with Hamata municipality agree that there is a strong need to upgrade the water, the power supplies and the sanitation in the village. The road network comes

here as a lower priority. As mentioned earlier, The LIFE Red Sea project has studied all the infrastructure and agreed to participate in the upgrading of the water and the power supply for the village as the main two priorities⁹.

⁹ Water & power generation & distribution were set as priority and immediately approved on by RSG as well as USAID

CHAPTER FIVE: LIFE RS INTERVENTION

Among the list of needs identified by stakeholders, mainly the local people and the red sea governorate, a set of activities were allocated for the Life Red Sea project as activities in the project work plan. These activities could be explained in the following:

A School Renovation

The LIFE Red Sea project is planning a set of activities in the Hamata school in order to upgrade the school including the physical renovation and the daily operation.

Hamata school serves approximately 50 students in 10 classrooms. The school property is approximately 2,275 square meters. The school building is about 497 square meters (about 60 meters by 9 meters). The adjacent restroom facility is about 93 square meters (about 7 by 13 meters). The buildings are in poor condition, dirty, and lack from general maintenance. The restroom cannot be used. They have fallen into disrepair partly because the facility is adjacent to the main highway and is open to anyone who chooses to stop.

The activities in the school include:

- School Building renovation
- Restroom renovation
- Construction of a fence around the property
- Development of a playground, and
- Construction of a vocational training center.

A.1 School building renovation (class room building)

A complete structure analyses were conducted by LIFE Red Sea to assess the current structure situation of the school.. a complete renovation of the classroom building will include:

A.1.1 Building Roof

- **Roof tiles**
 - Remove tiles of the roof, apply heat and damp proof/insulation layers
 - Placement of slope concrete layer
 - Install singabi roof tiles 20 x 20 cms over a sand layer
 - Roof cornice (Raise roof cornice height with two rows of light bricks)
- **Roof Stairs**
 - Remove mosaic stairs
 - Install Aswani red granite stairs
 - Install granite quadratics “ashlar” or “galalah” for corridors

- **Corridors and Entrance Stairs**

- Remove the mosaic stairs
- Install “Aswani” red granite stairs
- Install granite quadratics or “galalah” for corridors

- **Building Façade**

- Remove the outer layer paintings of facades
- Restore the plastering (basic layer)
- Apply pictured cement layer

A.1.2 Classes rooms

Renovation of the classrooms include upgrading the interior paint, plaster, walls, and al finishing materials that also include the electrical work and provide sufficient lighting for the classes.

A.1.3 School Walls

- Remove existing lime layer
- Restore the cracks between the walls and the concrete columns by applying coating materials or extended wire net before applying the plastering layer
- Plastering the damaged parts
- Apply oil painting at 1.5 m high from the window level and apply plastic painting on the remaining height
- Remove the existing wooden “backings” and apply another 4 x 1 inch “backings”
- Install 3 wooden “backings” sized 2 x 1 inch for using the educational support means on the opposite side of the blackboard with an intermittent separating space of 25 cm, and a height of 1.5 m from the floor

A.1.4 School Floorings

- Remove the existing floor tiles
- Place a standard concrete layer 10 cm thick if necessary
- Install mosaic floor tiles

A.1.5 School Electrical work

- Replace all power lines including main distribution panels, switches, support and distribution racks,
- Provided illumination inside the class composed of 2 searchlights, 2 lamps and one fan

A.1.6 Carpentry

- Replace all existing doors and windows
- Install protective steelworks (frames) on interior and exterior windows

A.2 Rest Room Renovation

A.2.1 Interior Walls

- Remove existing wall ceramics
- Install new ceramics 1.6 cm high from floor level

A.2.2 Exterior Walls

- Remove the outer layer paintings of facades
- Restore the plastering (basic layer)
- Apply pictured cement layer

A.2.3 Floorings/interior

- Remove existing floor ceramics
- Apply standard concrete layer 15 cms thick
- Install damp proof layer
- Install non-sliding floor ceramics (30 x 30 cm)

A.2.4 Floorings/exterior

- Remove existing floor ceramics
- Apply standard concrete layer 10 cms thick if necessary
- Install mosaic floor tiles

A.2.5 Water Supply and Wastewater

- Remove all supply and sewage pipes
- Install supply and sewage pipes with various diameters as necessary
- Establish 4 “inspection” chambers with dimensions (60 x 60 cm)
- Install 4 polyethylene-made water tanks with a capacity of 2 cubic meters each, and uplifted on two steel-made stands according to relevant specifications.
- Restore and connect the main drainage well to the “inspection” chamber

A.2.6 Hygienic Fixtures

- Remove all urinal lavatories and install new units (urinal units used by the Educational Buildings Authority is composed of granite lavatory and partitions equipped with a rinse-washer Install (7) fully-equipped hand-washing tubs (tap + drain pipe)
- Install (8) fully equipped “Baladi” lavatories (a ground –hole lavatory (composed of flusher with drain pipe)
- Install a fully-equipped potable water tap drinking unit covered by ceramics composed of (6) Potable water taps) + drain pipe

A.2.7 Electrical Works

Replace all electrical lines including main distribution panels, switches, support and distribution racks, provided that illumination inside the class is composed of 2 searchlights, 2 lamps + one fan

A.2.8 Carpentry Works

Replace all existing doors and windows

A.3 Construction of fence around the property

Construction of a fence around the property will enclose the school property and therefore provide security. Security is necessary because the current school is open to the public, those traveling down the highway, and children can freely leave the school grounds when they should be in class. The fence will control access to the school. This will help keep the facilities from being abused and misused.

A.4 Development of playground

Development of a new playground will provide an opportunity for recreation in the community. It can be used by the students during school and also by the community for special events and assembly.

A.5 Construction of vocational training centre

Construction of a community vocational training centre will provide a location for women in the Hamata to come and be trained in the skills necessary to participate in the tourism industry. They can be taught and learn the needed skill and also display their goods.

B Solid Waste Management

- The LIFE Red Sea shall support in the implement of an at source separation scheme to organics and non organics, transportation of waste will be done according to that scheme
- Organics waster shall be provided to the local community to feed their animals.
- Establishing this sorting station to receive the non-organic material only. This material to be sorted, processed, and traded through an existing nationwide chain of traders to reach large recycling firms operating according to worker and consumer safety standards. The income generated from the sale of this recovered material goes to the indigenous people who will be working in these recovery facilities, therefore, many jobs will be created; income will be generated; and the residual waste will be minimized.
- The LIFE Red Sea project shall also initiate and organize clean up campaigns in the area, after establishing the station in addition to regular waste collection and transportation for the organics and non organics separately and trade non-organics in existing vibrant markets in Egypt
- Establish a revenue sharing scheme between the institution which manages and operates this facility and its workers.
- A separate site for the residual waste will be allocated to be used for a controlled dumpsite.
- Organics should be diverted to separate sites where animals can access the resource feed on the organics within community established rules and distribution of turns.
- Provide local population basic, essential skills for benefiting from tourism in the Red Sea, such as literacy, business skills, and health and industrial safety to raise the capacity in the areas of operation & management .

- Establish fee for service which the entity takes over the management responsibility, will charge resorts, boats, ..etc. for the service of collecting and transporting waste, processing it and ensuring a clean environment exists in the region to promote the interests of the same resorts and tourism at large.
- Draw up contracts between the operator and resorts & boats for the provision of the full integrated service.
- Train the new institution that will take charge of this activity in operation and management

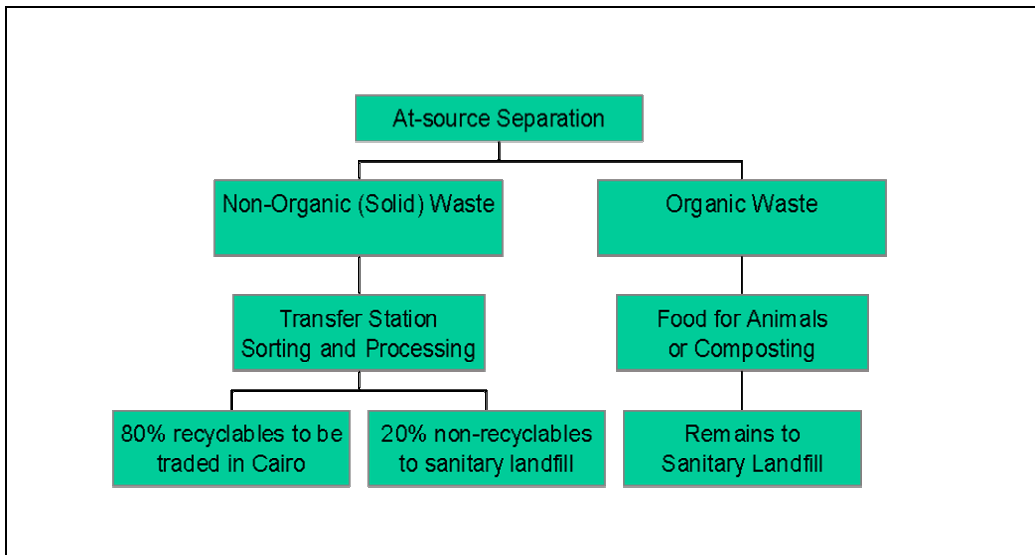


Figure 23 Solid waste management processing flow chart

C Potable Water (Source & Distribution)

The LIFE RS project has assessed the present condition in Hamata pertaining water supply and purpose actions to improve the availability of potable water for domestic use by the local community. This analysis included the water source and the water distribution system.

C.1 Water Source

The analysis report of the drinking water in Hamata prepared by "National Institute of Oceanography Fisheries (NIOF)" is in accordance to the expectations; the RO plant is generally operating well. The drinking water of Hamata was found within the accepted limits, except a slight increase in pH values and the presence of many colony-forming bacteria.

Some adjustments in the RO plant are required to improve the water quality in Hamata, and the following are some recommendations to improve the performance of the existing facility:

- The current discharge point of the brine water is upstream to the intake point. This means that the RO unit is receiving part of this water as feed, which increase the load to the RO unit, i.e. the RO unit is receiving feed water having salt concentration higher than the seawater itself. Thus, it is expected that moving the discharge point to the south of the intake point will enhance the performance of the RO plant, and reduce the load on it. As a result,

the RO cartridges can be cleaned less frequently, or more than one third of the feed seawater can be produced as drinking water with the same quality produced currently.

- An additional storage tank for the desalinated water by the RO plant should be built. This tank is to be used during the cleaning of the main storage tank. This new tank capacity should not be more than 75 m³, i.e. production of one day.
- The amount of chlorine added to the treated water should be increased in order to kill the bacteria and to reduce the pH values.
- Decrease the amount of the sodium carbonates added to the treated water to decrease the pH values of the produced water.
- Clean the desalinated water storage tank more frequently, and close it well to prevent the formation of any bacteria.

C.2 Water Distribution

The LIFE Red Sea project has investigated the water distribution system for Hamata village and its surrounding communities, since the water desalination in Hamata is serving other groups of indigenous population; the existence of these populations has to be taken into consideration. A thorough investigation for each settlement, was conducted including its location, the number of inhabitants, the route in which water trucks take to reach them, the existing need and the future demand.

The project identified 12 settlements:

1. AbuGosun	4. Qulaan	7. Lahmi Community	10. Manazek
2. AbuGosun (K5)	5. Alra'ada	8. Umm Hashim (old)	11. Ras Benas
3. AbuGosun (K12)	6. Arab saleh	9. UmmHashim (new)	12. Satayeh

The water is currently being distributed through, theoretically, 4 water trucks, two of them are not functioning and therefore the actual number of trucks in use is found to be two and the other two are still under maintenance by the RSG. Each water truck comes with a 7.T. water tank (1849 Gallon). The previously mentioned 12 settlements store water in 30.T. concrete or steel tanks and every family (housing unit) is equipped with 1 plastic (or steel) 1.T. water tank



Figure 24 Communal concrete water tank

The picture in figure (24) shows the concrete storage tank. It is usually a box with an opening in the top that has a steel cover, rope and a bucket, it is the main water collection point for the settlement, which means that the water trucks discharge at this tank and the locals use barrels to fill their own small plastic tanks

To the right in figure (25) is also another type of main storage for the settlement, it is a huge steel tank that is often fitted with a water pump to help the water truck discharge, and it is also fitted with a water tap to be used to fill the individual tanks. These collective tanks should be maintained and cleaned from inside as their openings allow a person to get in.



Figure 25 main steel communal water tank



Figure 26 individual families plastic tank (cylinder or cubic shape)

The above pictures in figure (26) show the individual unit (family) tank which is mainly in the shape of a black plastic cylinder as in the picture in the middle (sometimes it comes in white Quebec form surrounded by steel mesh for protection). There are also some plastic barrels that are used if the single tank is not sufficient for the family.

The LIFE Red Sea has analyzed the distribution system to achieve the following:

1. respond to the actual demand for the local inhabitants
2. optimization for the usage of the water trucks (maximize the areas covered and reduce the cost of operation)
3. Improve the distribution efficiency to increase the amount of water that reaches the settlements.

The system was assessed and re-designed using GPS for mapping the trucks routes and using mathematical models to optimize the water trucks usage, as a result of these sophisticated analysis, it has been found that the optimum intervention for the LIFE Red Sea project is by adding two water trucks (7.T. each) to the existing ones¹⁰.

This intervention will increase the amount of water used per person per day from 10 L to 25 L.

¹⁰ The RSG is very much in favour of this intervention and the LIFE Project is coordinating closely with RSG all the process of procurement

The purchase of the two trucks will be accompanied by a sets of spare parts, operation Manuel and maintenance training scheme to guarantee the sustainability of the usage of the newly purchased trucks.

In addition to this increase, there has been specific recommendation by the LIFE Red Sea about the best practices of maintaining the current water tanks and identifying the best routs in the best order to truck the water from the source to the origin.

D Power Generation

The LIFE Red Sea has identified the needs according to a survey done for the local inhabitants and also through a technical \assessment of he existing power supply in the village of Hamata as mentioned earlier.

The optimum intervention was identified to supply, install and commission the manual start diesel generating set with a capacity of 125 KVA with all necessary switchgear, freestanding control cubicles and accessories all as herein specified¹¹.

The installation and fixation will be guided by the power house layout and will indicate the nearest location from which service facilities and spare parts may be obtained in Egypt.

E Environmental Education & Awareness

- Provide Support to the General Department for Environment
- Provide the required equipment for the processing and packing of materials to be recycled from solid wastes, at the Material Recovery Facility (MRF) in Marsa Alam, in collaboration with HEPCA
- Provide Valuable Environmental Awards (Computers, Chemistry Labs, Painting Machines, etc)
- Support for the Environmental Awareness and Communication Activities
- Provide two audio-visual system units (including projectors and monitors), for Marsa Alam and el-Shelateen

F Training

The LIFE red Sea project has significant intervention when it comes to training as it focuses on training for stake holders n multi levels. That include training for GoE (RSG & Municipality of Hamta & marsaalam, training for the local people, training for NGOs,.. and any other stakeholder that is related to project activites.

- Develop and Provide Training Materials and Equipment to Furnish the Training Centre at the Secondary Industrial School
- Training on at- Source Separation for resorts/hotels/camps, diving centres
- Training on preparation for building material and using the local style

¹¹ The RSG is very pleased with this intervention as well as Hamata municipality

- Training on construction (will be mainly through the construction of vocational training centre)

ANNEXES

Report About Different assessments conducted by LRS:

Annex 1: School

- 1.A Architecture Vision
- 2.B Structure Status

Annex 2: Solid Waste Management

MRF (From Concept to implementation)

Annex 3: Potable Water (Source & Distribution)

- 3.A Water Desalination Analysis Report
- 3.B Water Trucks Assessment Report
- 3.C Optimization for Water Distribution

Annex 4: Environmental Education & Communication

Annex5: Training