

Title:

**Draft Management Plan
For Ir-Ramla and Environs, Gozo
Nov. 2000**

**LIFE Project TCY99/M/95
Integrated Management of Specially Protected Coastal Areas in
Malta**

Project Partners:

**The Gaia Foundation
Euro-Mediterranean Centre on Insular Coastal Dynamics (ICoD)
Ministry for the Environment, Malta**

Compiled by

| | |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| The Gaia Foundation | Rudolf Ragonesi LLD - Team Leader Samantha Matthews BA - Coordinator |
| James Madison University (Virginia, USA) | Rita Teutonico PhD– Madison Project Supervisor Emily Johnson Katie Lang Stephanie Eggermann |
| IcoD | Alfredo Capps Anton Micallef PhD Michelle Cassar MSc. |

Table of Contents

- 1.0 *Executive Summary*
- 2.0 *Mission Statement*
- 3.0 *Site Description and Plan Summary*
 - 3.1 *Site Description*
 - 3.2 *Plan Summary*
 - 3.2.1 *First Intervention Measures and Rights of Access*
 - 3.2.2 *Wardens and Regulations*
 - 3.2.3 *Photographic Survey*
 - 3.2.4 *Historical Sites and Other Structures*
 - 3.2.5 *Beaches and Footpaths*
 - 3.2.6 *Education*
 - 3.2.7 *Geology and Geomorphology*
 - 3.2.8 *Hydrology*
 - 3.2.9 *Ecology*
- 4.0 *First Intervention Measures and Rights of Access*
 - 4.1 *Access Points*
 - 4.2 *Access Control*
 - 4.3 *Property Rights*
 - 4.4 *Landfill*
- 5.0 *Wardens and Regulations*
 - 5.1 *Wardens*
 - 5.2 *Site Regulations*
 - 5.2.1 *Structure Plan Policy RCO 10*
 - 5.2.2 *Structure Plan Policy RCO 12*
 - 5.2.3 *Structure Plan Policies*
- 6.0 *Photogrammetric Survey*
- 7.0 *Historical Sites and Other Structures*
 - 7.1 *Historical Sites*
 - 7.2 *Other Structures*
- 8.0 *Beaches and Footpaths*
 - 8.1 *Footpaths*
 - 8.2 *Beaches and Waste Management*
- 9.0 *Conservation Profiles*
 - 9.1 *Geology and Geomorphology*
 - 9.2 *Ecology*
 - 9.3 *Hydrology*
 - 9.4 *Protection Levels, AEI's and SSI's*

1.0 Executive Summary

This document is the overview of the management plan that will be implemented by The Gaia Foundation, within the context of the EU-LIFE funded project “Integrated Management of Specially Protected Coastal Areas in Malta”, in order to preserve and maintain areas of ecological importance in Ramla Bay, Gozo. Ramla Bay is mapped out according to its ecological protection levels (1-4) as well as its designated land use.

These ecological protection levels dictate the amount of ecological attention that is allotted to the divided land. Along with this information, the Ramla Bay site is also divided into government-leased land and private land. It is imperative that the government-leased land be properly utilized in order to ensure ecological integrity. The sand dunes in Ramla Bay are also of ecological importance. There are presently only three sand dunes that are left in the Maltese Islands, and the dunes at Ramla Bay are the most extensive and the last remaining in Gozo.

The project’s proposed actions for these environmental concerns are listed in section 3 under the First-Intervention and Rights to Access. Some of the key steps are designating footpaths and constructing fences that will protect the areas of ecological importance by minimizing the exposure to humans. The goal of the Gaia Foundation is not to eliminate the human contact with these areas of ecological importance but to integrate environmental awareness and protection with the consideration for public use and appreciation.

Wardens are going to be employed to enforce the regulations and policies. This is an important move to assure that the actions that the site managers take are carried out and maintained in the future. Photogrammetric surveys will be taken in order to monitor the progress of the Ramla Bay site in years to come.

A progressive time line is included in this management plan. This scheduled sequence of events is planned to organize positive environmental productivity over the years.

2.0 Mission Statement

This section should give the project's objectives, as well as the aims of The Gaia Foundation as the implementing body.

The Ramla Bay Project was developed within the context of the EU-funded LIFE project TCY99/M/095, entitled *Integrated Management of Specially Protected Coastal Areas in Malta*. The overall aim of the project is to implement integrated management practices at two protected coastal areas in the Maltese Islands, in order to promote their sustainable use for tourism and conservation. Ramla Bay is the second project site, and this draft management plan is therefore based on the successful pilot project at Ghajn Tuffieha, which has been managed by the Gaia Foundation since 1997. The partners in this project are The Gaia Foundation, the Euro-Mediterranean Centre on Insular Coastal Dynamics, the Ministry for the Environment and the Environment Protection Department, with funding being provided jointly by the European Union and by the Ministry for the Environment. Consultation will be conducted with representatives of the said agencies, as well as, amongst others, the Local Councils, the Planning Authority, the Malta Tourism Authority, the Museums Department, local farmers and bar operators. Financing of archeological conservation and an interpretation Centre will depend on other sources. The EU funding is not only intended to raise the environmental standards in Malta to meet those of the European Union, but also to help Malta gain entry into the EU.

The main objective of the Gaia Foundation is *to promote and implement means and ways through which human beings can meaningfully interact with their environment*. The Gaia Foundation is dedicated to the protection and understanding of the environment. Protection and understanding denote the intention and underlying thrust behind The Gaia Foundation's work. The daily degradation of the environment, including the sensitive and unique sand dune and blue clay slope ecosystems, serves as justification in implementing the following plan for Ramla Bay with a sense of urgency and effectiveness.

Through the implementation of this project, it is the intention of the project partners to protect and manage Ramla Bay as a habitat. This is the only sure way of also protecting the individual species. This is in accordance with the Environmental Protection Act of 1991, the Development Planning Act of 1992, the Coastal Area Management Programmes (CAMP) of the Mediterranean Action Plan. It is clear that habitats have a greater value than simply the sum of their collective species.

3.0 Site Description and Plan Summary

3.1 Site Description

Ramla Bay is unique not only because it is an area of ecological, archeological and scientific importance, with the presence of a number of endemic and threatened species, and Baroque and Roman ruins, but also because it is the venue for thousands of visitors, particularly during the summer months. In accordance with the integrative coastal management model, the priority here is to protect the site and therefore human activity must be channeled and controlled without being unnecessarily inhibited.

As is often the case, the vast majority of visitors do not harm the site. Even less harm will come to the site when the visitors are given the knowledge to curb destructive behaviors that are usually unconsciously committed. In fact, it is expected that the measures to be taken, including the presence of Wardens, will be considered to be a very positive move. It is a very small minority that is in fact causing damage and degradation. Therefore, the first intervention measures and regulations proposed in this management plan are designed to address this, and educate those who simply do not know better.

The vision that the project partners have for Ramla Bay is a place where one can enjoy the rugged beauty of Gozo's coastal region and bay, while remaining aware of its fragile environmental balance. It is a common area for outdoor walks and sunbathing. These recreational activities provide an excellent opportunity for the general public to enjoy an outdoor activity with full respect for the environment and also learn about the natural heritage surrounding them. In order to take advantage of this opportunity, The Gaia Foundation is designing educational signs and interactive mapped routes for short walks through the site. These exercises will continue to provide the Ramla Bay visitor with recreation and an additional environmental lesson provided by the project.

The Gaia Foundation has in the past months been primarily engaged in establishing contact, developing ideas, and planning the work to be done with organizations and persons considered to be the main players in this project. These include:

- ❑ The Malta Tourism Authority re: tourist information.
- ❑ The Planning Authority re: first intervention measures and conservation orders.
- ❑ Department of Agriculture re: agricultural methods and flora.
- ❑ The Xaghra Local Council
- ❑ The Nadur Local Council
- ❑ Dept. of Health re: sanitation.
- ❑ The Museums Dept. re: cultural heritage.

Wardens are to be employed. This service, which is described at greater length in section 5, will commence this year.

The following management plan is a comprehensive document addressing the project from as many angles as possible. The reason for this is twofold: first, only a holistic

approach could hope to provide a solution for a site such as Ramla Bay with such a variety of factors affecting its environment; secondly, this plan can, together with the Ghajn Tuffieha Management Plan, form a basis for the protection of similar sites in the Maltese Islands.

It is imperative to secure the Ramla Bay management plan as a dynamic approach to preserving and conserving coastal areas. This particular site is of unquestionable value to the Maltese people. The Maltese Islands at one time had over sixteen areas of sand dunes. Sadly, that number has diminished to three, while the dunes at Ramla are the only sand dune ecosystem remaining on Gozo. Like the environment, this management plan is constantly evolving to adapt to new site discoveries as well as government protection level adjustments. This current management plan provides a basic framework. It is subject to amendments and enhancements, as the site manager becomes more involved with the Ramla Bay site.

The area covered by this management plan is located on the northern coast of Gozo. The Bay forms the mouth of a wide, water-eroded valley (wied). Wied ir-Ramla lies between two plateaus. Atop the eastern plateau lies the village of Nadur while the village of Xaghra lies on the western plateau. On the western side of the managed area is a boulder shore that lies below Rdum tal-Marin. The boundary of the site to the west lies between the northern coastal border Rdum tal-Marin and the southern coastal border of Il Geddum. San Blas is located to the east, while to the south the Ramla site extends along Triq Ir-Ramla. Directly south of the beach area of Ramla, behind the dunes, are several small agricultural plots.

3.2 Plan Summary

The main objectives that the project partners are looking to fulfill through the development of this management plan are the following:

- ❑ Environmental protection
- ❑ Understanding the ecological balance
- ❑ Conservation of the historical sites
- ❑ Regeneration and protection of the sand dunes and blue clay slopes
- ❑ Encouragement of the use of traditional farming methods
- ❑ Enjoyment of the site for walking and bathing by the general public
- ❑ Creation of an interpretation centre for educational use
- ❑ A model to form part of a growing coastal area management plan

3.2.1 First Intervention Measures and Rights of Access

There are measures that need to be implemented with speed in order to stop the degradation of Ramla Bay and its delicate sand dune system. The features most at risk are the blue clay slopes, the sand dunes and the archeological ruins. These dune formations must be protected at all costs, as they have no parallels on the Maltese Islands. The measures that are to be implemented immediately are designed to restrict access to the

sand dunes and block vehicular access to the highly degraded blue clay slope region on the western portion of the site. This intervention is aimed at curbing the illegal use of this slope area as a parking lot, as well as the degradation of the dunes due to human interaction and offroading of vehicles. Directly adjacent to the degraded blue clay slopes are remains of a Roman Redoubt. Because this is a level 1 protected archeological site, in accordance with Policy RCO 8 it will be immediately closed to offroaders.

The area covered by the management plan is public land, and includes a sandy beach, leased land that is used for agriculture, sand dunes, blue clay slopes, a watercourse leading to a temporary wetland and boulder scree. Agricultural land is located east, south and west of the beach and the. The interventions and restoration work can only be carried out by the manager on public land, while the latter may offer advise and assistance to the owners of the land bordering it. The managers of Ramla will seek the cooperation of the tenants of government-leased land and owners of private land in order to better manage the site by clearing waterways and rehabilitating degraded areas.

3.2.2 Environment Wardens and Regulations

Environment Wardens will be scheduled to patrol the site on weekends, possibly using the existing Police Station as a Warden Station. Their duties will include patrolling the site, site maintenance, and enforcing the regulations relating to the site. Wardens will take special care in preventing offroading, camping, fires and the trampling of the dunes. The human activities that are recommended are swimming, sun bathing, and walking along designated footpaths. The proposed regulations aim at enhancing these activities and adding a new appreciation of the environment. Beach security could be augmented with the hiring of police personnel.

3.2.3 Photogrammetric Survey

A series of digitally-processed aerial photographs will be used for evaluation of progress of rehabilitation and maintenance of existing boundaries. They are also important to determine boundaries of farmland, the condition of the sand dunes, and footpaths located within the sand dunes. These photographs will be used to assess the progress of the project as work continues. In addition, the photos will be given to farmers on the site to facilitate their sense of participation with the project. The aim is to educate farmers that protecting their livelihood depends so much on the conservation of the environment.

3.2.4 Historical Sites and Other Structures

The historical sites at Ramla Bay include the Roman Redoubt, part of a Blockhouse of the Nadur Battery, a Fougasse, an underwater sea wall, Salient of Ramla Redoubt, remains of the Belancourt Battery, remains of Retrenchment, an ancient pathway and a statue of Our Lady. Some of the other structures located at the site are toilets, a disused police station, an agricultural storehouse, a telephone box with a solar powered light, and two bar/restaurants that operate with oil powered generators.

3.2.5 Beaches and Footpaths

Human activity on the site is mainly centered around and on the beach, footpaths, and blue clay slopes. These are focal points for the visitors and are the points at which people interact with the Ramla Bay environment. The beaches are to be kept clean, footpaths will be clearly marked, and access to the blue clay slopes will be limited to footpaths.

Footpaths could be designated on the sand dunes by constructing low fences to map out the most desirable access paths. Other footpaths that are currently in use, that are not designated as footpaths, will be filled in with shrubs to deter.

3.2.6 Education

An educational interpretation center, which must be funded through sources outside the LIFE programme, can be set up at the disused police station to inform the general public of the importance of the site and its restoration, and to get a better appreciation of the environment. Permission from the Police Department should be requested. In order to keep development to a minimum, the possibility of utilising the current police outpost could be considered as an ecological and archeological interpretation centre. The public should be informed of the social and environmental importance of these sites to increase their appreciation of Ramla Bay.

3.2.7 Geology and Geomorphology

Ramla Bay contains diverse areas and houses various ecosystems. The geomorphologic features of the area include valleys, plateaus, escarpments, boulder scree, hills, clay taluses, blue clay outcrops, greensand, boulders, sand dunes, and a sandy beach.

Four geological formations of the Maltese Islands are present at Ramla Bay. These are, from top to bottom in stratification terms: Upper Coralline Limestone, Greensand, Blue Clay, and Globigerina Limestone. (Personal consultation with Dr. Saviour Scerri PhD. Geol. (Milano))

The sand dunes at Ramla Bay are declared a Site of Scientific Importance and an Area of Ecological Importance by the Ecological Survey conducted of the site by Malta University Services. The dune area also includes a complex of six Sites of Scientific Importance (SSI).

The site manager's efforts shall centre around preserving the integrity of the site and ensuring that the only works carried out shall be those deemed necessary for its conservation, but not exploitation. The work envisioned in the area thus far includes protection, conservation, and rehabilitation of the degraded areas. Otherwise, control of the access points to the site should be sufficient to avoid degradation.

3.2.8 Hydrology

Located on site there is a fresh watercourse¹ that empties out into the sea. This source passes through agricultural land, along Triq Ir-Ramla. During the rainy season it flows across the beach just east of the parking lot. The stream remains shallow and does not cut off access to the eastern part of the beach. It is an important aspect of the ecosystem because it supports fresh water flora and fauna in the coastal environment. Protection of the water is an important part of the management plan. All debris should be kept clear from the stream in order to keep the water source healthy. In addition, proper bridges should be placed over the stream behind the dunes, by the agricultural land to allow the water to pass freely.

Other important hydrological aspects of the site are the two potentially endangered water sources located by the landfill to the west of Ramla Bay on a field trip carried out in May, 2000 by the management plan team of the Gaia Foundation. The placement of the landfill is directly in the course of two springs that empty into the sea. Due to the poor management of the landfill space the area has become filled to capacity, and more and more trash is continually being dumped. These springs are being potentially polluted owing to the spill from the landfill. This is a very strong concern because the sources may empty directly into Ramla Bay, and a full Hydrology Survey of the area is urgently required, in order to confirm this threat.

A third hydrological aspect of the site is the saline and freshwater marshlands that form there in the winter months. These are precious and fragile habitats that need proper management. One detriment to the marshes is pesticide run-off from the other surrounding agricultural land. Although the direct use of pesticides cannot be controlled, farmers working the land can be made aware of the effect of the pesticides on the surrounding land. This will be done in the hope that this knowledge will allow them to make more educated decisions about the use of their land.

3.2.9 Ecology

An ecological survey of the Ramla Bay site was commissioned by the Environmental Management Unit of the Planning Authority, following the issue of an Emergency Conservation Order for the site in 1994.

This survey describes the five important biotic communities: Sand dune system, *Crithmo-Limonietum* association, Freshwater Wetland community, *Ononis natrix* garigue, and Disturbed ground. These communities broadly follow the SSI's. The sand dune system is characterized by the presence of sand-binding grasses and is home to many rare and endemic species. The *Crithmo-Limonietum* association describes the rocky coastline on either side of the bay that supports the typical community of the Mediterranean low-lying rocky shores. The freshwater wetland community is formed by runoff from the valley watercourse that flows across the beach during the rainy season and carries with it

¹ Ramla80.jpg

sediment and soil. Located to the east of the sand dunes, behind the Tamarisk, lies the garigue community. The disturbed ground (blue clay slopes) extends between the road to the sandy beach and westward. The seagrass banquettes are formed when the dead leaves of the Neptune Grass are washed to shore during the winter and autumn months. The sand dune system, the freshwater wetland community, and the *Ononis natrix* garigue all contain species that are restricted, rare, or endangered on the Maltese Islands. The sand dunes also make Ramla Bay qualify as an Area of Ecological Importance. There are six endangered species, four vulnerable species and three restricted plant species all found at Ramla. All of these make the site a Site of Scientific Importance.

Further studies of the ecology of the surrounding areas of rdum coast to the east and west of the beach and dune system, and of the Wied ir-Ramla watercourse, will be commissioned shortly, since these areas form an integral part of the Ramla Bay site and were not covered in the previous survey.

4.0 First Intervention Measures and Rights of Access

The first intervention measures are designed to control the access points to the area and curb those activities that are the most detrimental to the site. The persons and vehicles having access to the site today can be split between those who gain access to partake in traditional activities that have a low or negligible impact on the ecosystem and those that have actively contributed to the degradation of Ramla Bay.

- A. Persons and vehicles partaking in traditional, low or negligible impact activities:
 - Farmers (if no more encroachment of dunes occurs)
 - Maintenance of Site
 - Bathers
 - Hikers (when remaining on designated paths)
 - Ambulance and Fire Brigade
 - Beach Cleaning – removal of waste and seaweed banquettes
 - Vehicles parking on the designated road, Triq Ir-Ramla

- B. Persons and vehicles having access to the area that actively contribute to its degradation:
 - Motorcycles/Cars – offroading
 - Mountain Bikes
 - Four wheel drive vehicles – offroading
 - Any vehicle driving on beach/dunes
 - Sunbathers, picnics, camping, barbeques, and fires on dunes/clay slopes or historical monuments.

4.1 Access Points

According to the above quoted ecological survey, the most serious damage to the ecology and geomorphology of Ramla Bay appears to be caused from vehicles having access to the beach, dunes, and clay slopes. The major problem causing this is the use of the restricted blue clay slopes as a car park². The access point to this car park is the road that leads to the beach parking lot, Triq Ir-Ramla. Entering from the road, the parking lot extends to the left of the toilets. At this point there is a breach in the rubble wall that is supposed to mark the end of vehicular access to the beach and surrounding area. However, due to this breach, vehicles are able to drive past the wall onto the highly degraded blue clay slopes. Located directly east of this access point is another path that leads down to the beach. It is this path that allows cars to gain access to the sandy beach as well as the sand dunes. If the initial access point adjacent to the toilets is blocked off, then all other vehicular access to the beach and dunes will cease. Such access to the blue clay slopes is illegal under the Maltese offroading law, while the farmer's permit for agricultural use does not allow operation of a parking lot. Such a change in use from agriculture to a parking lot would require a separate permit that he presently does not have.

4.2 Access Control

Access to the beach, dunes, and clay slopes through the major access point will be inhibited by the installation of a gate at the opening of the damaged rubble wall. There is government land that is under an agricultural lease directly south of the degraded area. The purpose of installing a gate rather than a complete wall is to allow this farmer access to his land. The farmer working the land, the warden, and any other persons granted access to this land would receive a key to the gate. If this gate is left open continuously, or proper responsibility is not used with regards to gate access, then the site manager will have the option to deny rights of access. This same access point is the main entryway for another individual who uses the easternmost portion of the dunes as a parking spot for his vehicle. This individual owns a small shack at the eastern end of the beach and typically drives his vehicle across the beach and parks on the dunes³. It is illegal to drive on sandy beaches and sand dune areas according to Maltese law. Policy RCO 17 that states:

“Overnight camping on sandy beaches, and any camping on sand dunes will be prohibited, and access of vehicles to sandy beaches and dune areas will be prevented.”

Unfortunately, the sandy beach is the farmer's only means of access to his farm. Because of these extreme circumstances, an exception is recommended. The farmer will be allowed access but it will only be allowed for agricultural purposes. Upon personal contact with this farmer, a more explicit agreement will be reached as to how often beach access will be allowed.

4.3 Property Rights

² Ramla20.jpg, Ramla26.jpg

³ Ramla29.jpg

The land, buildings, and agricultural leases are as following:

Land or Building

- Bathroom stalls- small building located west of entrance to the sandy beaches
- Police Station⁴- small white rectangular building located SW of entrance to the sandy beaches
- Agricultural storage building⁵- 400 year old building located east of entrance, south of sand dunes and farms
- Shed- small shed located directly east of entrance to sandy dunes

Agricultural Leases

- Agricultural Land – area east of entrance, south of the dunes, and north of Ta' Venuta
- Agricultural Land/Illegal car park – area west of entrance and south of degraded area

The employment of Wardens and the establishment of site regulations are crucial for the success of the management plan. There is no way the site managers can be successful in their endeavors unless the Planning Authority issues a conservation order with site specific regulations. The site manager will keep the landowners informed of the management of the public site and any regulations that pertain to it.

4.4 Landfill⁶

A field trip was carried out in May, 2000, by the management plan team around the Ramla Bay site to identify the buffer zones for the area. The site was visited in the Xaghra region that is being used as the “landfill” for Gozo and is managed by the Xaghra council. From observation, it can be seen that this landfill is extremely detrimental to the surrounding environment. There is no buffer zone around the landfill on the cliff edge⁷. Trash literally spills over the cliff edge onto vegetation, streams and clay slopes into the water. The landfill has negative effects on two main watercourses. Structure Plan Policy RCO28 and RCO29 specifically protect watercourses. A spring and a valley are both most likely affected. A survey needs to be conducted to find the degree of destruction, pollution, and danger the landfill is having on surrounding ecosystems. It is recommended that the site managed in this plan be extended to the landfill edge. Also, the Xaghra Local Council needs to be kept informed of the status and development of the landfill. It is also important for the landfill to be maintained properly as it is far from meeting the European Union’s standards for the conservation and protection of the environment.

⁴ Ramla68.jpg

⁵ Ramla72.jpg

⁶ Ramla58.jpg

⁷ Ramla56.jpg

5.0 Wardens and Regulations

The presence of Environmental Wardens is essential to enforce the regulations through government law enforcement agencies.

5.1 Wardens

The Wardens will be trained in first aid, rescue, and life saving as well as attending environment related courses.

The tasks to be carried out during the shift are:

- Patrol the entire site regularly to enforce regulations
- Monitor the state of the dune communities
- Prevent vandalism, offroading, open fires and camping, and restrict barbeques to the sandy beach away from the dunes and historical monuments.
- Oversee proper waste management
- Act as a liaison with farmers accessing the cultivated land
- Guide the flow of human activity along footpaths and away from sensitive areas
- Act as a medium of education to the general public about the effort being carried out at Ramla Bay and on environmental matters generally.
- Fund raising activities
- Control access into the bay by motorized boats and jet skis
- Assist in the restoration and clean up activities
- Prevent further encroachment on government leased land
- Ensure proper use, defined by the government, of the government leased land
- Carry out maintenance work
- Planting and watering of indigenous species

Special attention should be given to the following:

1. Prevention of the picking of flora and the removal of sand or clay
2. Preventing pilfering and stealing of trees and equipment
3. Prosecution of vandalism of the site
4. Enforcement of fire safety measures
5. Elimination of off-roading and barbeques
6. Ensuring that visitors to the sand dunes respect the designated paths

In order to ensure the best protection for the site, a site specific conservation order should be set in place by the Planning Authority as soon as possible.

5.2 Site Regulations

Site regulations are imperative to the management of Ramla Bay. These are the regulations that justify the management plan's actions and scheduling of the site by the Planning Authority in 1994.

5.2.1 Structure Plan Policy RCO 10

Ramla Bay is defined as an Area of Ecological Importance. This is defined by Policy RCO 10 because of the presence of sand dunes in Ramla Bay. An essential part of the management of the site is to be devoted to preserving and conserving the sand dunes in accordance with this law.

5.2.2 Structure Plan Policy RCO 12

The Gaia Foundation is recommending detailed site regulations that stem from its interpretation of the Structure Plan Policy RCO 12. Clause 9.3 in the section on conservation profiles adequately divides the protected zone between levels 1 to 4. RCO 12 states that in local plans, the Planning Authority will give protection ratings to Areas of Ecological Importance (AEI) and Sites of Scientific Importance (SSI) according to the following guidelines.

Activities to be excluded are:

- Development
- Activities likely to be a fire risk
- Noxious emissions nearby AEI and SSI

Additional guidelines state that:

- Intrusive elements should be removed
- Buffer zones should be included to further protection

RCO 12 provides for 4 levels of protection and the following is a brief explanation of each and the recommended regulations for the areas falling under each level.

5.2.3 Structure Plan Policies

Policy RCO 8 states that in Rural Conservation Areas, individual cultivators will be required to illustrate to the Planning Authority how any planned agricultural development will not harm the ecological, archeological, and scenic value of the Area.

Policy RCO 16 states no form of permanent construction will be allowed in sandy coastal areas and existing constructions will be removed wherever practicable.

These two laws are applied to any further and current standing agriculture developments that will hinder the value of the Roman Ruins, rare plant life and sand dunes, and the scenic value of the Ramla Bay beachfront.

The Gaia Foundation is recommending detailed site specific regulations that stem from its interpretation of the Structure Plan Policy RCO 17 from the Sandy Beaches and Dune Areas section of the conservation profiles.

Policy RCO 17 states that overnight camping on sandy beaches and any camping on sand dunes will be prohibited, and access of the vehicles to sandy beaches and dune areas will be prevented.

Furthermore the beach and sand dunes are not to be utilized as a through way to other government leased land or privately owned land. In addition, the beach and sand dunes are not to be used for parking vehicles.

Policy RCO 20 states that positive action will be taken to rehabilitate identified areas of degraded habitat and landscape. In addition, proposals from Government agencies and non-government bodies for rehabilitation schemes for these areas, will be supported subject to scrutiny and approval by competent experts provided that such schemes do not conflict with other policies and/or regulations.

Policy RCO 20 is specific to the areas of the sand dunes where degradation has occurred. In these areas, the site manager plans to concentrate in regeneration of natural plants and shrubs propagated in the Gaia Foundation's Elysium Nursery situated at Ghajn Tuffieha in accordance with the recommended list of the ecological survey dated October 1994.

Policy RCO 39 states that educational programs are to be promoted, aimed at creating positive patterns of behaviour of individuals, groups, and of society as a whole, towards the environment.

Policy RCO 40 states that in conjunction with the Department of Education and the Government's environment agency, the Planning Authority will establish a resource centre for the environmental education whose functions will be to:

1. Keep the Maltese public adequately informed about environmental matters
2. Increase awareness of the necessity for environmental protection and the wise management of natural resources
3. Provide the mass media with good quality information and educational material on the environment

Policy RCO 39 and Policy RCO 40 explain in detail the importance of the Gaia Foundation's environmental education and awareness information signs. These informative signs will be posted outside the sand dunes and archeological sites to direct and educate the general public in Ramla Bay.

6.0 Photogrammetric Survey

A series of digitally processed aerial photographs will be commissioned on a regular basis, and will serve as a visual record of the existing site. In the future, they will be used to evaluate the progress of rehabilitation and maintenance of the site. They are also important to determine boundaries of farmland, the condition of the sand dunes, and footpaths located within the sand dunes.

The aerial photograph will cover the entire Ramla Bay site including:

- Agricultural lands
- Sandy beach
- Sand dunes
- Underwater sea wall
- Statue of Our Lady
- Sites of archeological importance
- Clay slopes
- Watercourse
- Temporary wetland

Copies of relevant photographs will be given to the farmers in Ramla Bay in order to inform them of the project and to give them a sense of participation with the project. In addition, they will become more aware that their livelihood depends on the protection of the environment. Such an action is consistent with an integrative coastal management model, where all those individuals who are previously involved with the site are still given an opportunity to play a role in its management. By including the farmers in this management plan, they will be far more likely to cooperate with the new implementations of the site management.

7.0 Historical Sites and Other Structures

There are several historical sites and other structures located at Ramla Bay. The recommendations for the handling of these sites will be discussed in later sections.

7.1 Historical Sites

The Historical buildings include:

- Roman Redoubt
- Part of Blockhouse of Nadur Battery
- Fougasse
- Underwater sea wall
- Salient of Ramla redoubt⁸
- Remains of Belancourt Battery⁹
- Remains of Retrenchment

⁸ Ramla79.jpg

⁹ Ramla85.jpg

- ❑ Statue of Our Lady¹⁰
- ❑ Agricultural Storeroom
- ❑ Ancient Road, leading down from Calypso's cave to the Roman remains.

The Belancourt Battery and ancient road will remain accessible to the public. Educational signs will be placed by the sites which will contain valuable information pertaining to the sites to give the public a greater understanding and appreciation of these priceless artifacts. It is suggested that a fence be placed around the Belancourt Battery in order to deter people from walking on the sites. It is also suggested that the fence will be composed of pine wood posts connected with two strands of wire. The fences will purposely be made to blend with the natural environment, while also providing adequate protection of this historic site. Protection of these sites will also bring a sense of Maltese national heritage to Ramla Bay.

An expert should be commissioned to identify the ancient road that may be connected to the Roman remains, and to assess the damage caused by offroaders.

There is an old agricultural storage room on site, which local farmers claim to be date back around four hundred years. If permission is granted, this building may be shared as a tool shed by the site manager. The farmer currently has an irrigation system in place, which may be used if it is found to be of sufficient quality and approval of the farmer is obtained. Future investigations will be held to see if the farmer's irrigation system is a possible site where the managers can obtain water for any plants that are propagated during the rehabilitation of the dunes.

Following recommendations by the Museum Department, the Roman Redoubt located adjacent to the Statue of Our Lady, will remain buried. This was decided upon through personal consultation with the Director Tony Pace and Reuben Grima in February 2000. The site will continue to be accessible to the public but it is recommended that educational signs not be posted. This is to avoid any negative attention towards the artifacts, such as the vandalism or improper excavation of the site.

Plans for the above recommendations will be prepared and submitted to the Museums Department and the Planning Authority.

7.2 Other Structures

The other structures located on site include:

- ❑ The toilets
- ❑ Police station¹¹
- ❑ 2 Cafés/ kiosks
- ❑ An umbrella kiosk
- ❑ A shed for tools
- ❑ Solar lit Telephone Booth
- ❑ 400-year-old farm house

¹⁰ Ramla79.jpg

¹¹ Ramla68.jpg

The police station located directly west of the entrance may be the location for an interpretation center. The interpretation center would contain information pertaining to the important historical and ecological sites. It is the hope of the Gaia Foundation that such educational signs will raise the awareness of Ramla Bay visitor to the historical, archeological, and ecological significance of the area. Through increasing such awareness, the Gaia Foundation plans to achieve increased cooperation and participation from the public and the farmers. This project lies beyond the scope and funding of the LIFE Programme.

8.0 Beaches and Footpaths

The flow of human activity at Ramla Bay is centered along the beach, the clay slopes and the dunes. The Tourism Department estimates that about 500 patrons visit the bay on an average summer weekend. A Carrying capacity survey commissioned by the department should be published soon and yield a more accurate figure. The quoted figure is quite substantial for a 17,000m² beach, although it may well be less than other sandy beaches in Malta and Gozo. In order to ensure that Ramla Bay remains a popular area for swimming and sunbathing, proper measures must be taken to protect it.

8.1 Footpaths

Footpaths will be placed at selected archaeological and ecological sites, including the Roman Redoubt, sand dunes and blue clay slopes. This is done in order to protect these features from being further degradation. Fences will be constructed to close access to disused paths, as well as to highlight designated ones along the Sand Dunes. It is suggested that the first series of fences be composed of 2cm x 5cm wooden stakes bounded by tie wire and spaced 10cm-15cm apart. The stakes should be 180 cm long (60cm of which will be buried for support). The fences that will line the trails on either side of the sand dune path will be very low, under 40 cm, made to look natural so as not to create a visual intrusion. The footpaths put in place through the Roman Redoubt, sand dunes and blue clay slopes will be circular routes to prevent further wandering at the end of a one way trail.

There are presently several paths already worn into the sand dunes due to past activity. The most frequently used paths connect the beach to agricultural land. These specific paths will be made into footpaths, which will be designated. The paths that are closed off to the public will be rehabilitated through the planting of indigenous species in accordance with the recommended list in the 1994 ecological survey. Reducing the number of these paths is one of the more important tasks to be carried out on this project. The channeling of human activities, especially on the dunes and slopes is a major means of protection.

The footpaths will be clearly marked with signs. These signs will state the purpose of the footpaths and also important information pertaining to the site. The footpaths will be

maintained so that they are clean and interesting routes. The footpaths give visitors an opportunity to see the rich diversity of flora and fauna that live in these ecosystems.

The selected footpath begins at the beach in front of the Bay, it passes through the dunes to the east and a four hundred year old agricultural storage room. This is a chosen path because it has already been worn. A nature trail may be created in the future that would connect San Blas to the old road past the four hundred-year-old farmhouse to Calypso's Cave.

8.2 Beaches and Waste Management

As the focus of most visitors' attention, the beach requires a specific management plan, to be developed and implemented within the context of the management of the entire site. It is proposed that the beach management plan is developed by ICoD in collaboration with the Gaia Foundation, based on the work of Micallef (2000). The beach management plan would be developed in 3 phases:

- Phase I -** data collection of a wide variety of information regarding the beach/dune system and its immediate environment, to be collected from field surveys as well as existing records and research projects.
- Phase II:** Establishment of a Beach / Shoreline Management Committee.
- Phase III -** Application of Management Guidelines for bathing areas in the Maltese Islands.

In the meantime, the following guidelines are proposed for immediate implementation
At Ramla Bay

- Ecological qualities should be carefully considered in the adoption of shore cleaning guidelines and techniques. Mechanical cleaning of the more sensitive protected beaches concerned should be replaced by a manual approach. Selective beach cleaning can also provide a particularly useful opportunity to include community participation as part of beach management strategy.
- Different management strategies should be considered for different shore types rather than taking a blanket management approach for the entire island. Bathing areas such as Ramla Bay, which is frequented mainly by those seeking solitude and a desire to experience a natural environment should have conservation oriented priorities as an integral part of their management strategy.
- Management of bathing areas in Malta, particularly those of an environmentally sensitive or protected nature should be preferably carried out by specialised agencies. Bye-laws supported by appropriate resources for enforcement appear to be the most effective tool for such environmental management.

- This management of bathing areas should include programmes for educating not only bathers and recreational users but also managers and authorities responsible for coastal management.
- Environmental Impact Statements and risk assessments should be carried out not only with proposed developments on or near to bathing areas but also of management strategy itself so as to assess the likely long-term impact on that shore
- The highest priority should be given to maintenance or restoration of dunes as these form without fail, an integral part of beach systems
- Where vegetation or other natural habitats are associated with bathing areas, the entry of heavy or other vehicles should be strictly prohibited unless absolutely necessary as the potential damage to such vegetation can be extensive. Protecting dunes from those activities which destroy their surface should be one of the highest priorities in related management strategy
- On environmental conservation oriented beaches such as Ramla Bay, accumulated sea-grass *banquettes* should not be cleared until the beginning of the summer season as these provide a medium for beach fauna (Schembri & Lanfranco, 1994) physical protection from erosive impact of storm waves and water run-off following intense wind and precipitation storm events and reduce unintentional removal of beach sediment trapped within the sea-weed *banquettes*. While the latter aspect appears as yet unconfirmed in scientific literature, it would seem very likely that the often thick (1 – 1.5 meters) and well matted form of such a protective layer (personal observation) will offer considerable protection to the beach.

Proper waste management is essential to environmentally correct beach management. The manner in which the waste is generated from the beach is also important. The areas to be covered here are:

- ❑ Establishing an approximate beach population capacity that the beaches and the site can maintain
- ❑ Ensure that the beach cleaners contracted by the Tourism Authority do their work effectively at Ramla Bay
- ❑ An efficient waste management system through the introduction of waste disposal bins and the separation of recyclable materials at source to be removed for recycling.
- ❑ Follow up with the Planning Authority on progress with respect to the issue of site specific regulations.
- ❑ (A study of the wave patterns at Ramla Bay coastal zone to see their effects on the sandy beaches, and more specifically the effect on the size of the beaches and the creation of seaweed banquettes – these aspects will be dealt with within the beach management plan)
- ❑ Cooperation with the Public Cleansing Department for maintenance of the toilet facilities

- A number of aesthetically pleasing ashtrays, made of stones or stone flower pots, should be placed throughout the sandy beach to prevent the sand from being used as an ashtray.

Located to the west of Ramla Bay, within the municipality of Xaghra, is the only dump located in Gozo. This site is called a landfill, but in actuality, there is no hole dug into the ground and the trash is in the form of a huge mound that has encroached to the cliff's edge. It is a hazard not only because it is not a properly managed landfill, but this site is also found to be overflowing onto two water sources located on the Level 1 protected scree below the cliff. In addition to serious compromising of the watercourses, this is dangerously close to Ramla Bay. Although this site is not currently part of the management proposal for Ramla Bay, it is a major environmental concern. It is recommended that an ecological survey be commissioned in order to protect the ecologically fragile ecosystems on the scree below the dumpsite. Also because of the possibility of polluted run-off entering Ramla Bay, this site is an immediate priority.

Another important aspect of waste management that needs to be addressed is the possibility of untreated sewage waste being dumped into San Blas drifting into Ramla Bay. Following up on a field trip to San Blas, it appears that it may be an Area of Ecological Importance. It is necessary that a survey be conducted to assess whether the effluent from San Blas is affecting the waters around Ir-Ramla Bay. This is of concern for the protection of the immediate area and also the ecological importance of San Blas.

9.0 Conservation Profiles

Existing surveys carried out contain a large quantity of detailed information and recommendations, as also does the Structure Plan for the Maltese Islands.. This section will outline the general plan of action that will be guided by the information found in the scientific surveys and the manager's own observations. This plan is intended to set strict parameters by recommendations and is not definitive. Technical knowledge, experience, and observation will further define the action to conserve the Ramla Bay site.

The formulation of the management plan is envisaged as an interactive process, building on the detailed information and recommendations contained within existing site surveys, and arising from further survey work, within the framework of Structure Plan policies, and supplemented by the practical observations and on-site experience of the site managers.

9.1 Geology and Geomorphology

Policy RCO 12 states the following for general protection of designated Areas of Ecological Importance (AEI) and Sites of Scientific Importance (SSI):

- 1) A general presumption against development, including roads and public utility services, and particularly on crests of ridges and the edges of coastal and inland cliffs

- 2) A general presumption against activities likely to be a fire risk to a significant wooded area
- 3) A general presumption against development where noxious emissions are likely to create problems in nearby AEI and SSI
- 4) The removal of intrusive elements

Level 1 – AEI's and SSI's

- Human intervention kept to the barest minimum
- No physical development
- All efforts made to protect the identified features of scientific interest
- Management by the competent agency in an appropriate manner

Level 2 – AEI's and SSI's

- Human intervention strictly controlled
- Physical development limited to the maintenance of already existing structures and construction of minor amenities designed to enhance the educational and recreational use of the area. Any such developments to be carried out with the least possible damage to the environment
- Traditional activities can continue, unless in conflict with other policies, but no new land diverted to these uses except for the suitable re-establishment of abandoned fields for agriculture

Level 3 – AEI's and SSI's

- No residential, industrial, commercial, or tourism development
- No infrastructure or public utility works
- Small scale physical development can be considered providing the adjacent AEI's and SSI's are protected, and this is demonstrated by a suitable environmental impact assessment, and is consistent with other policies

The findings of the Ecological Survey of Ramla Bay, Gozo, indicate that intervention, where it is necessary, should be non-invasive, as much as possible, using novel application of traditional structures. The most important measure is for the site to be protected from further abuse, which mainly stems from human activity and therefore should be channeled and controlled. No further development should be allowed in the entire area covered by the plan.

The planning authority has given the following levels of protection for this site:

Level 1 – Sand Dune System (AEI, SSI)

Level 2 – Leased Farm Land in the Sand Dune System

- Blue Clay Slopes
- Fresh Water Wetland Community (through Sandy Beaches)

Level 3 – Sandy Beaches

The recommended measures to be taken include :

Sand Dune System¹²

- ❑ Entry of vehicles, camping, barbeques, hunting, littering, removal of sand or sand dune vegetation, etc. should be prohibited whilst all forms of trampling should be strictly controlled outside of the designated footpaths.
- ❑ Fencing off of the sand dune to defend the area against casual wondering, taking on the form of bamboo posts with twine for the main areas and short wooden posts for the entrances of utilised paths. Signs should also be posted informing the visitors of the importance and reasons why the sand dunes have newly restricted access.

Leased Agricultural Land

- ❑ Wardens should work with the leased landowners to ensure that no new soil is introduced so as to not disturb the delicate balance of the sand dune ecosystem. They should also work to prevent any further encroachment of the agriculture.
- ❑ Measures need to be taken to enforce farmers to use the land for the leased use, not for others such as parking lots, etc. Using the land for other purposes is blatantly a violation of Maltese Law.
- ❑ Monitor pesticide use and evaluate, make recommendations and educate on alternatives.

Blue Clay Slopes¹³

- ❑ The slopes should be blocked off from the illegal “car park” currently in use by the visitors because of the slopes ecological, scientific, and scenic importance.
- ❑ The slope will be blocked off at the end of Triq Ir-Ramla by a padlocked gate¹⁴ extending from the existing rubble wall. A key will be given to the farmer to access his field.
- ❑ A sign will be posted in front of the “car park” to warn off-roaders of the consequence of the off-roading law. There will also be a sign explaining why the agricultural land has been cut off from public use as a car park.

Sandy Beaches¹⁵

- ❑ All presently ongoing activities, such as sunbathing and barbeques, (as long as these are kept at a safe distance away from Level 1 and Level 2 zones) may be continued
- ❑ Removal of sand and sand-binding or any other vegetation and entry of vehicles, other than for essential services, should be prohibited.
- ❑ Signs should also be posted informing the visitors of the regulations of the sandy beaches and why these regulations are essential to the conservation of the area.

¹² Ramla74.jpg, Ramla75.jpg

¹³ Ramla87.jpg

¹⁴ RamlaGate.jpg

¹⁵ Ramla78.jpg

The following table indicates the time scales in which the measures of intervention shall occur

Table 1. Measures of Yearly Intervention

| SSI | Year 1 | Years 2 to 3 | Years 4 to 7 | Years 8 to 10 |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|
| Blue Clay Slopes (degraded area) | 1) Prohibit unauthorized entry of vehicles, camping, barbeques, open fires, trappers, littering and removal of clay 2) Posting of informational signs 3) Establish main features of this SSI and the conservation profile | 1) Control access with the use of wooden fence and a wooden gate 2) aeration, tilling of compacted blue clay slopes 2) Plant trees and shrubs at selected sites | 1) On going study and monitoring of blue clay slopes. | 1) On going study and monitoring of blue clay slopes. |

| | | | | |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Sand Dunes | 1) Prohibit entry of vehicles, camping, barbeques, bird trapping, littering, removal of sand or sand dune vegetation. 2) Designation Of footpaths 3) Build Wooden fence to mark off designated footpaths 4) Place informative | 1)Maintenance of fencing 2) On-going study and monitoring of sand dunes. 3) Assist sand dune vegetation recovery | 1)Maintenance of fencing and access control 2) On going study and monitoring of sand dunes. | 1)Maintenance of fencing 2) On going study and monitoring of sand dunes. |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|

| | | | | |
|--|-------------------------------|--|--|--|
| | signs in front of sand dunes. | | | |
|--|-------------------------------|--|--|--|

| | | | | |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------|------------------------------------------|
| Ononis natrix garigue | 1) Prohibit unauthorized entry of vehicles, littering, and removal of vegetation 2) Protection of endangered species | 1) Planting of endangered and other indigenous species to help in the recovery of the site. | 1) On going study and monitoring of site. | 1) On going study and monitoring of site |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------|------------------------------------------|

| | | | | |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------------|
| Fresh Water Wetland Community | 1) Human Intervention should be strictly controlled 2) Prohibit the Unauthorized entry of vehicles 3) Prohibit The removal of sand and sand binding vegetation, camping, sunbathing, and unnecessary trampling. 4) Monitor pesticide use of the farmers to prevent contamination. | 1) Objects that restrict flow of the water course should be removed (concrete bridges, and rubble). 2) On going Study and monitoring of site. | 1) On going study and monitoring of site. | 1) On going study and monitoring of site. |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------------|

| | | | | |
|----------------------|------------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------|-------------------------------------------|
| Sea-Grass Banquettes | 1) Prohibit unauthorized entry of vehicles, bathers, camping, littering, and | 1) On going maintenance study and monitoring of site. | 1) On going study and monitoring of site. | 1) On going study and monitoring of site. |
|----------------------|------------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------|-------------------------------------------|

| | | | | |
|--|------------------------------------------------------------------------------------------------------------------|--|--|--|
| | removal of vegetation. 2) Banquettes should be left undisturbed in winter and all year round in western area. | | | |
|--|------------------------------------------------------------------------------------------------------------------|--|--|--|

| | | | | |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|
| Crithmo-Limonietum Association | 5) Human intervention should be strictly controlled. 6) Prohibit the unauthorized entry of vehicles 7) Prohibit the removal of sand and sand binding vegetation, camping, sunbathing, and unnecessary trampling. | 1) Slow removal of exotic plants 2) Planting of native plants to guide in the recovery of site. | 1) On going maintenance, study and monitoring of site. | 1) On going maintenance, study and monitoring of site. |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|

9.2 Ecology

The main management objectives in the area of Ecology are:

- ❑ Conservation of indigenous plants and animals and their habitats
- ❑ Regeneration of native vegetative communities in appropriate areas
- ❑ Promoting of low impact recreational activity; for example walking, picnics (on the Sandy Beach), and bathing.
- ❑ Visitor education through the establishment of an interpretation centre and signs placed throughout the site.
- ❑ Protection of cultural heritage such as traditional agriculture and historical buildings.

The Gaia Foundation strongly suggests that at least the areas designated as Levels 1 and 2 are also declared protected in terms of the Environment Protection Act 1991. This will enable the issuing of regulations for the better management of an area of such great ecological and scientific importance. This is also recommended in the ecological survey carried out by The Malta University Services. It would also integrate the work of the Planning authority and the Environment Protection Department with respect to the conservation and protection of this site.

9.3 Hydrology

The two water sources that flow down through the landfill flows into a valley just below the cliff that the landfill is located on. The landfill is already spilling over the edge of the cliff. According to Policy RCO 29, Section 3: “The Planning Authority will take positive action, in collaboration with the appropriate Government agencies, in order to prevent the dumping of domestic waste, building rubble, and other refuse into valleys.” The present spill constitutes a huge hazard to the area as well as Ramla Bay itself, and in violation of RCO 29. A proper management plan should be implemented for the landfill.

9.4 Protection Levels, AEI's, and SSI's

The following is based upon details listed in the ecological survey of Ramla Bay, 1994.

Areas of Ecological Importance

| Description | Content |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Crithmo-Limonietum Association (Boulder Shores) | Located on opposite sides of the bay, they contain large quantities of Greensand boulders, a feature that is not common in the Maltese Islands as a whole. Present to the east of the beach are halophytes, Golden Samphire, Maltese Sea Lavender, Spiny Chicory, Shrubby Birds Foot Trefoil, <i>Hainardia cylindrica</i> , Sea Hard Grass. Backed by a belt of African Tamarisk. Present to the west of the beach are Golden Samphire, Maltese Salt Tree, Prickly Pear, Sea Ragwort, Wild Artichoke, and Halberd Leafed Orache. |
| Sandy Beaches | The present beach consists of Modern Beach Sand of Holocene Age, backed by wind-blown dunes and raised beach deposits which extend at least 200 metres inland and extending to the South East border of the site. During the rainy season, a temporary stream forms across the beach about 30 metres to the east of the end of Triq Ir-Ramla, bisecting the beach in two. |
| Sand Dune Systems | Presence of sand binding grasses creates a network of roots that |

| | |
|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>entrap sand and thus act as sand stabilizers. The area behind the sand-binding grasses is colonized by a variety of trees, shrubs, and other plants. The principle sand binding grasses are the Sand Couch and the Dropwort Grass. A belt of African Tamarisk traverses the dune. Isolated shrubs of the Chaste tree also occur, specific to Gozo, and rare in Malta. Other sand dune species include: Spiny Echinophora (endangered), the Sea Hdly (vulnerable), Sea Daffodil (vulnerable), Sea Spurge (endangered), Coast Spurge (vulnerable), Purple Spurge (endangered), Sea Medick (vulnerable), Sea Kale, and Sand Fern Grass (rare). Rarer species only located local to Ramla include the Sand Restharrow and the Sand Carrot. The sand-dwelling mushroom, <i>Montagnites arenaria</i>, is also only known locally. Not restricted to the dunes are the Spiny Chicory, Spiny Saltwort, and the Yellow Thistle. Th animal species found on the dunes are: <i>Odontellina sexoculata</i>, <i>mesophorus chembrii</i>, <i>Brachytripes megacephalus</i>, <i>Hypocaccus dimidatus</i>, <i>Xenonychus</i>, <i>Hypocaccus</i>, <i>Anthicius fenestratus</i>, <i>Harpalus</i>, <i>Masoreus</i>, <i>Eurynebria</i>, <i>Ophonus</i>, <i>Trachymesopus darwini</i>, <i>Leptothorax</i>, <i>Prionyx lividocictus</i>, <i>Sphex pruinosus</i>, <i>Philanthus raptor sculus</i>, <i>Bembix oculata</i>, <i>Bembecinus tridens</i>, <i>Psuedoapis unidentata</i>, <i>Talitrus saltator</i>, <i>Tylos latreilli</i>. The following are the protected species known from the Ramla dunes: the Maltese Wall Lizard, Ocellated Sking, Black Whip-Snake, and the Gozo Shrew. Evidence is also marked of the Golden Samphire and the Wild Carrot.</p> |
| <p>Fresh Water Wetland Community (through Sandy Beaches)</p> <p>Ononix Natrix Garigue (east of the Sand Dunes)</p> | <p>Freshwater wetland including: beds of the Great Reed, the Common Read, and the rarer Southern Reed Mace. Also, the African Tamarisk and the Spiny Saltwort are present along the banks of the watercourse.</p> <p>Dominated by the Shrubby Restharrow. Other species present include the Sea Daffodil, the Viscous Fleabane, the Spiny Asparagus, and the Sand Galingale.</p> |
| <p>Sea-Grass Banquettes</p> | <p>Compresses mounds of dead leaves and rhizomes, forming structures called “Banquettes.” The banquettes support a habitat of amphipods, isopods, and insects.</p> |
| <p>Blue Clay Slopes (disturbed ground)</p> | <p>Clay Taluses overlying Globegarina Limestone. Capped with rdum of Upper Coralline Limestone with a thick Greensand layer at their bases. Plant species present are the Land Caltrops, Wild Oat, and Wall Barley.</p> |

The sand dune communities qualify the entire Ramla Bay site as an area of ecological importance under Structure Plan Policies. The following tables, based upon the

ecological survey , 1994, interpret those areas within the site as Areas of Ecological Importance (AEI's), Sites of Scientific Importance (SSI's), and the levels of protection.

Areas of Ecological Importance & Sites of Scientific Importance

| AEI | SSI |
|--------------------------------------|------------------------------------------------------------------------|
| Sand Dunes (RCO10:3) | Local endemic collembola (RCO11:3, 11:1) |
| | Species with restricted distribution in Maltese Islands (RCO11:2) |
| | Water course at beach junction (RCO11:8) |
| | Best represented species at Ramla Bay in the Maltese Islands (RCO11:8) |
| Freshwater Coastal Wetland (RCO10:9) | |
| | Blue Clay Slopes (11:7) |

Protection Levels

| Landscape | Protection Level |
|------------------------------------------------------------|-------------------------|
| Sand Dune System | 1 |
| Leased Land (in sand dune system) | 2 |
| Freshwater Coastal Wetland Community | 2 |
| Blue Clay Slopes (Disturbed Ground) | 2 |
| <i>Ononis Natrix</i> Garigue | 2 |
| <i>Chrithmo-Limonietum</i> Association | 2 |
| Sandy Area by Sand Dune (buffer zone) | 2 |
| Sandy Beaches | 3 |
| Agriculture Land Surrounding Site Boundaries (buffer zone) | 3 |

Sand Dunes

| | Restricted to Maltese Island | Local to Ramla Bay |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Rare Vulnerable | African Tamarisk, Chaste Tree, Sand Fern Grass Sea Daffodil, Coast Spurge, Sead Holly, Sea Medick, Specid Wasps, Subterranean Cricket, Ocellated Skink | |
| Endangered | Spiny Echinophora, Sea Spurge | Purple Spurge, Sand Restharrow, Sand Carrot, mushroom <i>Montagnites</i> |

| | | |
|--|--|-----------------|
| | | <i>arenaria</i> |
|--|--|-----------------|

Chrithmo-Limonietum Association

| |
|----------------------|
| Endemic |
| Maltese Sea Lavender |
| Maltese Salt Tree |

Freshwater Wetland Community

| | |
|-------------|--------------------------------------|
| | Restricted to Maltese Islands |
| Rare | Southern Reed Mace |

Ononis Natrix Garigue

| | |
|-------------------|----------------------------------------------------|
| | Restricted to Maltese Islands |
| Rare | Sand Galingale, Dune Snail |
| Vulnerable | Burrowing Cricket <i>Brachytripes megacephalus</i> |

The following procedures should be adopted by the relative public agencies:

- The publication of site specific regulations through the declaration of a Conservation Order by the Planning Authority.
- SSI's and AEI's are to be so designated under the Development Planning Act 1992.
- The Environment Protection Department is to declare areas designated Levels 1 and 2 in terms of RCO 12 of the Structure Plan a *Nature Reserve* in order to enable it to endorse the same regulations in terms of the Environment Protection Act 1991.

The Gaia Foundation feels that this plan shows that it has the approach, strategy, organisation, and technical backup necessary to undertake this task successfully. Full implementation is only possible if the Foundation's Environmental Wardens can liaise with law enforcement agencies to enforce the said required regulations.