Qawra/Dwejra Heritage Park

MINISTRY FOR GOZO

Approved Plan











2005 2010



With the support of the Ministry of Rural Affairs and the Environment



Salt-pans

2.14.1.5 Extraction of salt (Plate 21) was in the past an important economic activity, which utilised natural depressions on the surface of the hard coralline outcrops in the area.

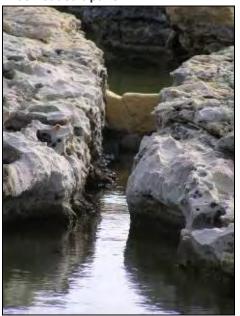
Ras il-Wardija Sanctuary

2.14.1.6 The rock-hewn cave at Ras il-Wardija excavated in 1963-67, enjoys universal repute, even if its location makes it very vulnerable to erosion. It has unfortunately also been subject to vandalism in recent years. The 1960s excavations have moreover accentuated the site's vulnerability to erosion.

It-Turretta

2.14.1.7 The remains of what was possibly a defensive structure, probably dating back to the reign of the Knights of St. John, lie above the site of the above-mentioned Sanctuary. The place name 'it-Turretta' also indicates that the site could have been the location of a watch tower.

Plate 21 Rock-cut salt-pans



Underwater archaeological remains

2.14.1.8 The Dwejra area has yielded some Roman amphora remains. Additionally, several reports have been made to the Superintendence of Cultural Heritage by fishermen when items of archaeological interest have been caught in their nets. On the other hand, the archaeological potential of the area also fuels a thriving illegal business. On a more recent note, a huge unexploded mine dating back to World War Two was in the past located on the seabed in the area opposite the Qawra Tower. This was removed a few years ago by the Armed Forces of Malta.

Rock-cut features related to Fungus Rock

- 2.14.1.9 As discussed in Section 1.3.14 above, Fungus Rock was fiercely guarded by the Knights of St. John, as it was considered to be the only source of the so-called Malta Fungus, believed to possess medicinal properties. Access to the islet was strictly prohibited and only an assigned person could use the cable-car installed between the mainland and the islet's steep face, so as to collect specimens for local use or for export. Rock cut chambers are located on both sides of this cable-car arrangement. A small cistern was also noted on the islet.
- 2.14.1.10 Other features include a rock cut path and rock cut boathouses found at il-Bajja tad-Dweira.



2.14.2 National historical monuments

The Qawra Tower

2.14.2.1 The Qawra Tower dates back to the reign of the Knights of St. John. It was one of 13 coastal forts constructed by the Grandmasters de Redin and Lascaris. A restoration project is currently underway, under the management of the local principal heritage NGO Din I-Art Helwa.

The Qawra/Dweira area possesses a rich heritage of cultural features, testimony to the area's long history of human land use. This heritage is of importance not only on a national but also on an international scale, and efforts will therefore be made for the preservation and appreciation of such features.

Landscape and aesthetic qualities 2.15

Figure 13

Extract from the Landscape Sensitivity Map - Maltese Islands (MEPA 2004)



- scape Sensitivity (AVHLS)
- Area of High Landscape Sensitivity (AHLS)
- Area of Significant Landscape Sensitivity (ASLS)

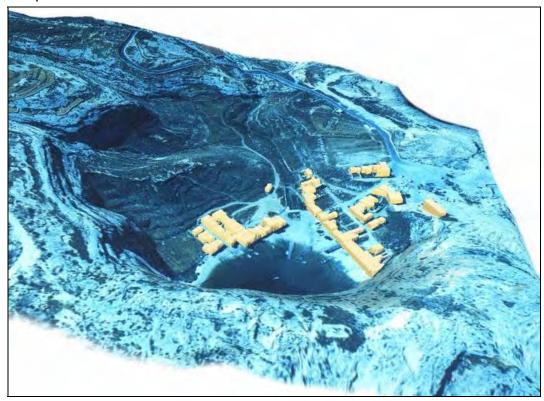
- 2.15.1.1 Visually the Dwejra area retains a high element of unique natural beauty as the area displays a great variety of form and profile (Figure 13). Three of the five main landscape types of the Maltese Islands are found within the area, i.e. coastline, valleys and gorges and terraced fields. The other two landscape types, plateaux and escarpments, are also present within close proximity of the Site. The area also harbours a number of unique landscape features such as the Azure Window and the Inland Sea. In addition, the whole area provides a sense of wilderness and awe-inspiring beauty, enriched by unique natural and cultural features.
- 2.15.1.2 MEPA's Landscape Assessment of the Maltese Islands (draft issued for public consultation on 23rd September 2004) describes the area as fol-

This is one of the most picturesque areas of the Maltese Islands and most of the geomorphological features can be appreciated from a landward viewpoint. The interplay between the majesty of the cliffs and the special karst features (including the almost circular structures of the two main dolines) with the sea creates a very dramatic ambience which is enhanced by the direct backdrop of the setting sun over the distant horizon. The intersecting Wied Ilma contributes to the composition as do a number of terraced fields that adorn some of the moderate slopes in the area. Natural vegetation tends to dominate the watercourses in the area and this imparts a welcome touch of greenery contrasting with the rather harsh surrounding landscape.



- 2.15.1.3 The Landscape Assessment Study also recognises features which detract from the aesthetic qualities of the area including:
 - the boathouse settlements and ancillary accretions;
 - slipways around the Inland Sea;
 - a disorganised parking area;
 - extensions to the chapel which were not complementary to the building's context; and
 - the impact of the nearby quarries.

Figure 14
Computer Generated 3D visualization of the Inland Sea and the boathouses - MEPA



2.15.1.4 It is worth noting that Malta signed the European Landscape Convention on 20th October 2000 thus recognising the need for protection, management and planning of the landscape. The Convention has to date, however, not been ratified.

The unique combination of geological, geomorphologic and biological features within the Qawra/Dwejra area, as well as its location, combine to give the area a picturesque quality and wilderness feel, properties which are becoming increasingly hard to find in the Maltese Islands. Protection of the landscape is therefore a priority.



3 Evaluation and Objectives

3.1 Initial Evaluation

Prior to the formulation of objectives of this Plan, the Site information presented in the previous section was analysed under the following criteria:

- Ecological Criteria.
- Socio-economic criteria.
- Potential value.

3.1.1 Ecological Criteria

3.1.1.1 The ecological criteria used here are based on those developed for site selection by Ratcliffe (1977).

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Table 4 Ecological criteria	
Fragility	Relatively inaccessible parts of the site, such as cliff faces, may be considered to be relatively robust. Other areas, such as cliff tops, are vulnerable to human impact and hence quite fragile.
Rarity	The proposed reserve area contains within its boundaries several habitats, assemblages and species which are rare on a local scale. Uncommon habitats include freshwater wetland, saline marshland, freshwater pools and shingle beaches.
Naturalness	Some of the habitats within the area are still relatively untainted by man, such as the Fungus Rock islet and the coastal cliffs.
Typicality	The area includes several habitats typical of the Maltese Islands such as karstic terrain with steppe and garrigue, gently sloping rocky coast, vertical cliffs and various types of <i>widien</i> .
Special interest	The area is of special importance for several reasons, including the presence of several endemic species and rare habitats as described above. It is also of geological, geomorphological and cultural interest. Additionally, it is one of the few places in the Maltese Islands which offers a sense of 'wilderness'.
Size	The area is not particularly large; however, by local standards it is substantial. It also includes an array of habitat types, as described above.
Diversity	The area is diverse in terms of habitat types and species present, as described in Sections 2.8 and 2.9.1.4 above.
Stability and Instability	The existing assemblages would likely be relatively stable in the absence of human impact. However, human activities have effected changes in some ecosystems within the site.
Ecological position	The position of the Site is important for several reasons. It is located on the western coast of Gozo, characterised by Lower Coralline Limestone cliffs, which provide a rare habitat for rupestral species. The relative inaccessibility of the cliffs also safeguards against damage to these species. The position of the site is also important for birdlife, as described in section 2.10.4 above. The location of the Maltese Islands in the central Mediterranean is also important from a biogeographical point of view.
Replaceability	The features within the site are not replaceable.



3.1.2 Socio-economic criteria

- As discussed in Section 2.11.8.1 above, the key economic activities within the area are quarrying, agriculture and tourism. Other enterprises include fishing, boat trips and tourist guiding. The most difficult activity to reconcile with the conservation of the site is quarrying. The industry causes widespread environmental damage and irreversibly scars the landscape. Furthermore, several quarries are operating outside their legal limits (refer to Section 2.11.5) However, quarrying also provides employment for a number of people. In addition, the Globigerina quarries in the Dwejra area are the only source of such stone in Gozo. Alternative methods of extraction or alternative sources of supply and/or recycling will therefore need to be considered (see also Section 4.2.9 and 4.3.1.24 below).
- 3.1.2.2 Agriculture is on the decline in the area, as described in Section 2.11.2 above. The principal conflicts between agriculture and nature conservation stem from the use of fertilisers and pesticides. In addition, the decline of rubble walls following the abandonment of fields is also detrimental.
- Tourism is also an important consideration for the area (as well as for Malta in general). As mentioned above, the area is visited by approximately 750,000 tourists a year, 40,000 of which visit the site specifically for diving.
- 3.1.2.4 Other economic activities in the area are minor and include boat trips and scuba diving enterprises, as well as services offered in the area such as snack bars and souvenir shops. These target both the tourist population and local visitors.

3.1.3 Potential value

Ecological improvement

3.1.3.1 There is scope for ecological improvement in a number of ways. Protection of key habitats/species should allow for ecological improvement by natural processes in some cases. This may include, for instance, designation of no-take zones within the proposed Marine Protected Area and designation of restricted access areas within the terrestrial reserve. In other cases, a more active role may be necessary. This may include, for instance, planting indigenous tree species within certain parts of the reserve (refer also to Section 4.3 below). In addition, zoning of the area, with particular uses being restricted to particular sites, should allow for ecological improvement of more fragile areas.

Landscape improvement

3.1.3.2 The area's landscape is of high aesthetic quality; nevertheless, there is room for improvement. The biggest scars on the landscape are the quarries. As discussed in section 4.3.1 below, quarry restoration will need to be a key consideration. In addition, alternatives to further quarry expansion need to be explored. Mounds of construction debris from quarries can only be utilised for planting of indigenous trees and shrubs if the material is found to be appropriate by the relevant authorities. Additionally, degraded rubble walls within the area could be restored, serving both to improve the landscape and also to prevent loss of soil from fields.



Education/research opportunities

3.1.3.3 The area has great potential as an educational site. Several activities can be organised in this regard, such as organised school visits. Further research should also be encouraged, not only by professionals but also by university students. Stakeholders can also be involved in scientific data gathering. The construction of a visitor's centre on site should also be greatly beneficial for educational purposes. Such a centre should, however, be sensitively located within the reserve. Educational material on the area should also be readily available on site.

Generation of revenue

- 3.1.3.4 There are a number of potential avenues for the generation of revenue from the proposed reserve. These include:
 - the establishment of guided tours at a small cost;
 - a visitor's donation mechanism;
 - allowing non-detrimental filming activities in the area at a contribution.

Demonstration possibilities to other land managers

3.1.3.5 Successful management of the area could serve as an example for other protected areas in the Maltese Islands. In addition, more specific demonstration possibilities exist, such as through the organisation of courses on rubble wall construction and restoration.

Stronger protection through legislation or designation

3.1.3.6 For the reserve to achieve its potential, it will be necessary to strengthen the legal backing of management. This could be done in several ways, including extension of scheduling within the site, designation of a Marine Protected Area and extension of the bird sanctuary. In particular, protection of all areas designated as core zones is paramount. Reference is also made to Section 4.3.1.

Public/visitor enjoyment

- 3.1.3.7 The area has great potential for public/visitor enjoyment. The area's potential could firstly be enhanced through the construction of facilities for visitors' use, such as a visitor's centre. The visitor's experience can also be greatly improved through the use of appropriate signage and the designation of footpaths, as well as the establishment of guided nature walks. Appropriately managed boat trips can also enhance visitors' experience by allowing them to appreciate parts of the area inaccessible on foot. The reserve can also target particular sectors of the public, such as for instance:
 - astronomy enthusiasts, as Dwejra is one of the few sites in the Maltese Islands with low levels of light pollution;
 - divers/ snorkelling enthusiasts, possibly through the provision of guided tours.

Maintenance of cultural, social, historical or traditional heritage or ways of life

The area has much to offer the visitor in terms of cultural heritage. Well-preserved archaeological/historical sites within the area provide an added attraction for visitors. Educational material on features of interest should also be readily available on site. Consultation is currently ongoing to assess the possibility of using Qawra Tower for an exhibition by the NGO *Din I-Art Helwa* on the cultural heritage of the area. Other exhibits could



tackle subjects such as the salt pan industry and the traditional Maltese boats used for fishing trips.

3.2 Ideal objectives for the site

3.2.1.1 The following are the ideal objectives that are considered to be applicable to the Site:

Qawra/Dwejra Heritage Park Action Plan – Ideal objectives

Aspects	Ideal Objective
Ideal designations	 World Heritage Site Biosphere Reserve Marine Special Area of Conservation Natura 2000 site Extension of scheduling within site Extension of bird sanctuary to encompass all designated core areas (refer to Section 4.3.1 below)
Biodiversity	 To restore and maintain habitats types and species to a favourable conservation status. To protect nesting sites of seabirds To eliminate indiscriminate hunting and trapping To set up a Marine Protected Area to allow protection and regeneration of marine species
Aggressive or dominant species	 To curb the spread of alien species and to phase out those al- ready established
Traditions	 To encourage the maintenance of traditional rubble walls in fields To reconcile traditional practices with the conservation objectives of the area
Fragile features	 To create different management zones with different uses permitted in each zone, thus safeguarding fragile features from damaging uses To control visitor impact
Balance	 To restore degraded habitats within the site through restoration activities To allow natural regeneration of certain long-abandoned fields already undergoing secondary succession To control further physical development



Qawra/Dwejra Heritage Park Action Plan – Ideal objectives

Aspects	Ideal Objective	
Research and education	 To set up a monitoring station for sightings of marine mammals and reptiles To set up a visitor's centre in the Qawra tower To train guides and wardens to provide customer assistance and environmental wardening as well as in reporting of sightings To educate visitors and users of the site as to appropriate 'green' behaviour To educate users of the site in environmentally-friendly practices To provide assistance to farmers and fishermen to enable them to follow sustainable practices To encourage respect of site by all users 	
Local economy	 To set up revenue-generating activities with minimal impact on the reserve To reconcile mineral extraction operations in the region with nature conservation objectives To promote organic farming practices within the area To reconcile tourism and conservation through ecotourism/specialized tourism 	
Landscapes	 To safeguard the quality of the existing landscape To eliminate eyesores through encouragement of practices such as quarry restoration and landscape management To improve the landscape in the boat-house area of the Inland Sea To minimise light pollution in the area To ensure that the design of all buildings within the area is aesthetically pleasing and sensitive to the surrounding context 	
Miscellaneous	 To ensure enforcement of all relevant regulations through effective wardening To ensure the provision of interpretation facilities and provision of educational material on site To make use of energy-saving renewable technologies 	

3.3 Constraints or modifiers

Despite the best attempts of managers, the achievement of objectives may be limited by certain constraints or modifiers. These can be classified into those potentially occurring within the site and those potentially occurring outside the site.

3.3.1 Potentially occurring constraints or modifiers 'within the site'

- 3.3.1.1 Within the site, potentially occurring constraints or modifiers could include the following:
 - Alien species difficult to control: Difficulty phasing out exotic species for various reasons, such as physical difficulty of doing so or the fact that these may now be serving a new ecological role, such as biodiversity corridors or roosting sites;



- <u>Difficulty implementing organic agriculture</u>: Environmental constraints may limit the success of organic agriculture ventures; alternatively, economic constraints may mean that implementing organic agriculture would set farmers at an unsustainable financial disadvantage;
- <u>Difficulty implementing/modifying quarrying activities</u>: There may be difficulty finding economic alternatives to the quarries in the region; there may also be problems finding alternative sources of Globigerina. Attempts to restore quarries may run into various difficulties such as availability of finances;
- <u>Lack of financial resources</u>: There may not be sufficient funds available to implement all objectives;
- <u>Lack of personnel</u>: There may not be adequate personnel available to ensure good management and an effective warden function;
- <u>Lack of training for personnel</u>: At least a basic level of training should ideally be provided to protected area managers. This however comes at costs of time and money which may not be affordable;
- <u>Difficulty altering existing constructions</u>: It may be difficult and highly controversial to attempt to modify buildings already existing on site;
- <u>Limitations of Qawra tower as visitor centre</u>: Although the Qawra tower would be ideal in many respects as a visitor centre, limitations include difficulty of access to the tower by persons with a disability, the relatively out-of-the-way location of the tower, its small size and the utilisation of the tower by other entities;
- Widespread extent of hunting and trapping: The widespread extent of hunting and trapping in the area will possibly make control of these activities difficult;
- Popularity of site: The popularity of the site with both locals and tourists presents a challenge for managing visitor impact in the area;
- <u>Land ownership:</u> Much of the land in the area is privately owned and management success may therefore be dependent on the goodwill and cooperation of landowners.

3.3.2 Constraints or modifiers 'outside the site'

- 3.3.2.1 Constraints or modifiers emanating from outside the site could include:
 - <u>Lack of awareness</u>: Management of the site may be constrained by the lack of environmental awareness of the various visitors and users of the Site;
 - <u>Pollution from outside the site</u>: Various forms of pollution emanating from outside the site may affect the area, including air pollution and marine pollution;
 - Global change: The area may be affected by changes beyond the control not only of site managers but also of individual states. Such changes may include global climate change and ozone depletion. The effects of such global change phenomena are often difficult to predict. However, given the interdependent nature of many ecosystems, changes even in minor components of ecosystems can effect widespread changes throughout entire ecosystems and large land areas.

3.4 Operational objectives

- 3.4.1.1 Operational objectives were designed, as far as possible, to conform to the following five criteria:
 - 1. Specific
 - 2. Measurable



- 3. Achievable
- 4. Realistic
- 5. Attainable within an established time scale
- 3.4.1.2 Operational objectives are derived from the ideal objectives listed in Section 3.2 and modified according to the constraints identified in Section 3.3.
- 3.4.1.3 The following operational objectives have been formulated:

Qawra/Dwejra Heritage Park Action Plan – Operational objectives

Aspects	Objectives	Timescales
Important designations	■ To designate the area as the Qawra/Dwejra Heritage Park and to afford it protection as an Area of Ecological Importance, a Site of Scientific Importance, an Area of Archaeological Importance and an Area of High Landscape Value, as per the draft Gozo and Comino Local Plan policy GZ-Slwz-1 and Structure Plan Policies RCO1, RCO 10, RCO11, RCO12 and RCO14.	1 year By end 2006
	To extend the area designated as an SAC and Natura 2000 site.	1 – 2 years Beginning 2007
	 To prepare the site to be eligible for World Heritage Site status. 	5 – 10 years
	To set up a Marine Protected Area to allow protection and regeneration of marine spe- cies and to devise practical guidelines for en- forcement within the Marine Protected Area.	1 – 3 years
	 To extend the area designated as a Bird Sanctuary to encompass all the designated core zones (refer to Section 4.3.1 below). 	1 – 2 years
Important species	 To safeguard particularly important communities and species of wild flora and fauna and their habitats by ensuring their strict protection through: Designation of core zones subject to strict protection; and Enforcement of all legislation currently in force protecting important species. 	Ongoing
	 To protect nesting sites of seabirds by limiting potentially damaging activities when/where necessary. 	Ongoing
	 To eliminate indiscriminate hunting and trap- ping as far as possible. 	Ongoing
Aggressive or dominant species	 To curb the spread of alien species as far as possible and to implement strict controls to ensure that no further alien species are intro- duced to the site. 	Ongoing



Qawra/Dwejra Heritage Park Action Plan – Operational objectives

Aspects	Objectives	Timescales
Traditions	 To encourage the maintenance of traditional rubble walls in fields. 	Ongoing
Fragile features	 To create different management zones with different uses permitted in each zone, thus safeguarding fragile features from damaging uses. 	Immediate after approval
	 To clearly delineate allowed uses within each management zone. 	1 year
	 To implement an effective wardening system to ensure that only allowed uses are carried out within the individual management zones. 	3 – 5 years
Balance	 To restore degraded habitats within the Site through restoration activities, which however will be limited to: areas of the Site recommended by experts; the use of species recommended by experts. 	Long-term (beyond 5 years)
	 To allow natural regeneration of long-abandoned fields through secondary succession as far as possible. 	Long-term (beyond 5 years)
	 To provide the legal instruments through which physical development in the Site can be controlled. 	Immediate after approval
Research and education	 To set up a monitoring station for sightings of marine mammals and reptiles. 	1 year
	 To set up a system for the monitoring of the conservation status of protected habitats and species. 	Ongoing
	 To provide adequate training for guides and wardens. 	2 years
	To educate visitors and users of the Site as to appropriate 'green' behaviour through adequate interpretation facilities, the provi- sion of educational material on site and the presence of trained guides and wardens.	Immediate/ongoing
	 To educate persons earning a living from the Site in appropriate environmentally-friendly behaviour. 	Immediate/ongoing



Qawra/Dwejra Heritage Park Action Plan – Operational objectives

Aspects	Objectives	Timescales
Research and education	 To provide assistance to farmers in the area by providing assistance for the implementation of Good Agricultural Practice guidelines; making expert advice available where necessary, both as regards practices and as regards potential avenues of financial assistance. 	Long-term (beyond 5 years)
	 To establish contacts with University departments to encourage research to be carried out in the area. 	Immediate after approval
Local economy	To put forward proposals for alternatives to current quarrying methods in the area to the relevant authorities.	Immediate – 1 year
	 To put forward proposals for quarry restora- tion possibilities in the area to the relevant authorities. 	Immediate – 1 year
	 To promote good agricultural practice in the area, and to assess the feasibility of imple- menting organic agricultural practices on a gradual basis. 	Immediate – 1 year
	 To actively promote the Site as an ecotour- ism/specialized tourism destination. 	Immediate – 1 year
Landscapes	 To put forward proposals for the elimination of eyesores in the area to the relevant au- thorities. 	Immediate – 1 year
	 To put forward proposals for the manage- ment of the boat-house area. 	Immediate – 1 year
	 To initiate discussion with the Church regard- ing design options for the Church building in Dwejra. 	Immediate – 1 year
Miscellaneous	 To devote adequate resources to wardening of the area. 	Ongoing
	 To encourage locals and visitors to the site to act as 'temporary wardens' by reporting ille- gal activities observed. 	Immediate/ongoing
	 To ensure the provision of at least some edu- cational material on site. 	1 – 2 years
	 To set up a website with further educational material on the site. 	1 – 2 years
	 To make use of energy-saving renewable technologies. 	1 – 2 years



4 Implementation

4.1 Overview of key management issues

4.1.1 Key considerations

- 4.1.1.1 Key considerations for management of the area include the following measures as listed:
 - 1. the construction and operation of an interpretation centre;
 - 2. the management of the boathouses and surrounding areas in Qawra;
 - 3. the improvement of St. Anne's Chapel;
 - 4. the management of parking;
 - 5. the use of appropriate material for surfacing of roads and car parks;
 - 6. the conservation of rubble walls:
 - 7. the use and management of the Qawra Tower;
 - 8. the taking and implementation of decisions regarding the preservation of the feature known as the Azure Window (*It-Tieqa*);
 - 9. the taking and implementation of decisions regarding the future of quarrying in the area;
 - 10. the management of tourism-related activities;
 - 11. the potential of the site for walking trails;
 - 12. refuelling and lubrication of boats;
 - 13. health and safety precautions;
 - 14. restoration of degraded sites;
 - 15. the management of water and sewage services;
 - 16. the use of solar energy technologies;
 - 17. the management of alien and invasive species of flora and fauna;
 - 18. visitor management;
 - 19. funding:
 - 20. the management of climbing, abseiling and cycling activities;
 - 21. the management of diving activities;
 - 22. publicity and promotion of the Heritage Park; and
 - 23. traffic management;
- 4.1.1.2 These measures are each described in further detail below. Where different options are proposed, these may or may not be mutually exclusive.

4.2 Management measures

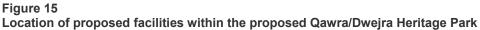
4.2.1 Interpretation centre

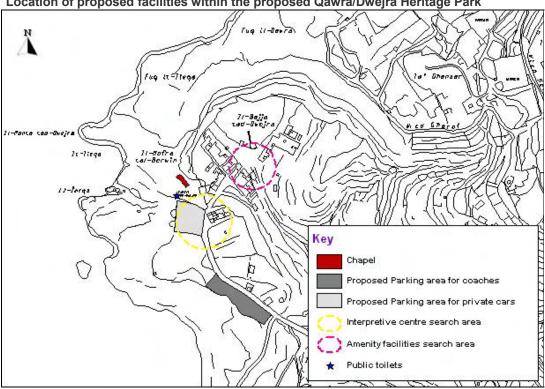
4.2.1.1 An interpretation centre will be constructed within the Qawra/Dwejra area in order to provide facilities for visitors and information about the site. The interpretation centre will incorporate the following facilities:



Public Function	Indicative Dimensions
Toilets	50.0m ²
Showers	
Interpretation centre	
 Audio-visual room, preferably stand-up only, with a capacity of up to 20 per- sons at a time 	30.0m ²
 Souvenir shop 	30.0m ²
 Administrative office 	12.0m ²
Clinic	12.0m ²

Furthermore, it is being identified that the same site of the interpretation centre will also incorporate a catering facility (Use Class 6, Use Classes Order – 1994, as amended) to serve the visitors.





4.2.1.2 The centre should be located within or very close to the existing car-parking facility as indicated in Figure 15.



- 4.2.1.3 San Lawrenz Local Council is to issue an expression of interest to accommodate the interpretation centre. The interpretation centre shall be located within the identified search area as indicated in Figure 15 above and shall be situated at ground floor level. The site shall:
 - Either utilise an existing building through an application for a change of use; or

Plate 22 Pjazza tad-Dwejra



 A vacant plot of land, located contiguous to an existing building for the construction of a new centre. The new building should consist of a reversible structure.

In either of the above cases, the public functions at ground floor level are to be managed by the Local Council. The beneficiary of the EU Life Project, shall enter into agreement with the Local Council for the running of the centre. The roof area is to cater for an open-air bar/restaurant, but the storage facilities and kitchen shall be located not higher than the ground floor level. In case the centre is located on a vacant plot, it should be designed and constructed to be reversible and appear to be reversible;

The construction of public toilets and showers will go ahead at the site indicated above as per MEPA permit PA 02256/01. New toilets and showers will also be constructed within the interpretation centre;

- 4.2.1.4 In addition to the above, the Local Council is to issue an expression of interest for public amenity facilities to be provided within the search area indicated in red on Figure 15. The amenities shall incorporate facilities for divers, public utilities (toilets and showers) and a small parking area with 3 to 10 spaces (refer to para. 4.2.4.3). These facilities shall either be located within existing buildings or shall be located contiguously to existing buildings, close to the jetty and preferably located on disturbed land.
- 4.2.1.5 Furthermore, the management team proposes that the location of the centre need not necessarily be permanent. The possibility of locating the interpretation centre within a disused quarry, in order not to further increase the development footprint, was explored but did not prove feasible at this stage. Should such a possibility arise in the future, the Management Board will explore the advantages, disadvantages and feasibility of relocating the interpretation centre.



4.2.2 Inland Sea

Boathouses

- 4.2.2.1 As indicated in Figure 16, several boathouses at il-Qawra were present before 1962, i.e. the year in which *Ordinance No. XV of 1962* was enacted and Malta was declared a planning area:
 - ...no person shall lay out, construct or close any street, or erect any building or increase the height of or otherwise modify any existing building, or change the use of any land or building in any part of such area (whether or not an approved scheme exists in respect thereof) without a permit from the Chief Secretary who may in his discretion, refuse the grant of a permit or, in granting it, impose such conditions as in his discretion he may deem proper³⁴.
- Thus the boathouses which were built before the above-mentioned Ordinance came into force, have to be assumed to have been constructed legally. However, such constructions could only be identified after the 1965 Survey Sheet Maps of Gozo were issued. MEPA have indicated that the aerial photographs used for these maps were taken in 1957 and field revised by Office of Public Works, Malta in 1964³⁵. For this reason, the owners of the boathouses, which do not appear on the 1965 survey sheet maps, shall be required to apply for a MEPA development permission.
- 4.2.2.3 Given that the area is considered to be on a relatively sensitive site close to the foreshore, it is felt that the public facilities being recommended in this Action Plan would be sufficient.

The applications can be submitted for either of the following uses:

- boathouse;
- hand-crafts making retail outlets (up to a maximum floor space area of 50 sq m) not requiring the provision of any extra infrastructural services to the existing onsite; and
- diving centres (excluding compressors or cylinder filling on site).

Following the Management Plan initiatives for the Inland Sea Area, MEPA notes that the provision of parking spaces within the Inland Sea area will involve damage to the environment and entail disturbance to the built infrastructure of the area. In this respect, MEPA restricts vehicular parking in this area to protect the general environment and provides for appropriate sites for managed and organised parking areas to service this sensitive area.

MEPA designates two car parking areas at Dwejra as indicated on Figure 15. Considering the sensitive environment of the Inland Sea Area at Dwejra, MEPA will discourage the parking of private vehicles within the Inland Sea (refer to para. 4.2.4.2). MEPA will

notes and references

^{34 ----}Government of Malta: Ordinance No. XV of 1962 (The Code of Police Laws (Amendment) No. 2 Ordinance, 1962 – An Ordinance to further Amend the Code of Police Laws Cap 13) (09 February) A 273-281).

^{35 ---}Sheet 2690 - © Maltese Government 1965, published by Directorate of Overseas Surveys – D.O.S. 152 (Series M897)



only consider small scale development in this area, subject to all necessary environmental considerations and will not require onsite-parking provision for development planning applications around the Inland Sea.

4.2.2.4 The approval of the applications shall be made subject to the following conditions:

- 1. The applicants shall be expected to enter into a planning obligation with MEPA as specified in Article 40 of the DPA, 2002.³⁶ The amount of this planning obligation will be Lm30 per m² if paid within 3 months of approval of permit; or Lm50 if paid after the 3 month period and not later than 5 years. The approved permit will only be issued when the payment is finalised.
- All structures which were built after 1962 and not shown on the 1965 survey sheet map and which are not covered by a development permit are invited to

Plate 23
Existing 'boathouse area' in the Inland Sea



submit the relevant planning application to sanction the illegal development by 31st January 2006. All illegal structures which are not sanctioned will be subject to enforcement action as per the Development Planning Act. No new structures / buildings will be permitted by MEPA other than as advised by this Action Plan, the Draft Gozo & Comino Local Plan and Structure Plan Policies.

3. Any funds collected through the planning obligations mechanism shall be invested in the Heritage Park area.



- 4. All boathouses constructed after 1965 are to be limited to one storey, with higher structures demolished to this level, unless covered by an appropriate permit. For this purpose, the survey sheets of 1965 shall provide the basis of assessment.
- 5. Owners/occupiers of these boathouses shall be required to either
 - a) restore the stone work in accordance with established restoration principles. This will include replacement of degraded stones on facades and the cleaning and pointing of weathered stonework.
 - b) repair (through the use of modern plastering techniques and materials) and paint the walls of the boathouses according to a pre-established palette of colours. The palette will be based on colours used in traditional lime washes. Acceptable colours (refer to Appendix 1) include S 1005-Y70R, S 1005-Y90R, S 1010-Y70R, S 1010-Y90R, S 2010-Y70R, S 2010-Y90R, S 1005-R10B, S 0505-Y50R, S 1010-R10B, S1005-Y50R, S 2010-R10B, S 2005-Y50R and natural stone. (The numbers refer to the Natural Colour System). These colours merge well with the summer as well as winter rural landscapes.
- 6. Owners/occupiers have the option to cover rooftops using a weatherproofing membrane according to the pre-established colour palette or natural stone, as shown in Appendix 1.
- 7. Water tanks and any other furniture or additional structures will not be permitted on roof-tops.
- 8. All apertures are to be constructed of timber excluding any use of aluminium material, roller-shutters and up-and-over, vertically lifting doors or doors on hinges .

Other Facilities

- 4.2.2.5 MEPA shall permit the placement of
 - fresh water fountains, and
 - portable waterless/chemical toilet-and-washing facilities in specified strategic locations around the Inland Sea.

Shore Facilities and Maintenance

- 4.2.2.6 A study shall be carried out by the Management Board to identify a way to improve accessibility along the Inland Sea shore for boathouses, while at the same time minimizing the visual impact created by the concrete slipways in place today.
- 4.2.2.7 Managed clearing of the pebbles currently located around the jetties will be followed so as to allow for the safe mooring and access of sea crafts. A method statement will be required by MEPA prior to any commencement of works.



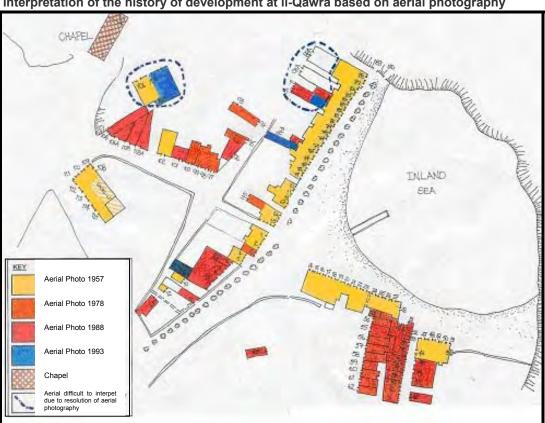


Figure 16 Interpretation of the history of development at il-Qawra based on aerial photography

Source: MEPA

4.2.3 Chapel

4.2.3.1 The Management Board shall start discussions with the Diocese of Gozo to determine possible options for upgrading or demolition of the existing chapel and the construction of a new chapel. This proposal shall consist of a less intrusive design more appropriate to the surroundings. The current chapel is shown in Plate 22. Construction shall cover the same footprint as the current legal building.





Plate 24
Photo-montage of proposed design principles for parking area

Artistic impression of il-Pjazza tad-Dwejra are indicative and not binding.

4.2.4 Parking areas

- 4.2.4.1 Two parking areas are proposed, one for coaches and one for private cars. These are indicated in Figure 15. A planimetric and altimetric survey of the two tracts will be carried out in order to enable the proper design of parking layouts.
- 4.2.4.2 No parking will be permitted in the Inland Sea area except in designated spaces, although vehicles may be allowed access in order to deliver supplies and services, for the transport of bulky diving equipment and in other such circumstances. In these special circumstances (e.g. maintenance works, loading/unloading), following a request to the Local Council, access of vehicles to the Inland Sea may be permitted.
- 4.2.4.3 Following the expression of interest as specified in para. 4.2.1.3, the Local Council will allocate a maximum of four parking spaces for diving schools related vehicles, a maximum of four parking spaces for the Inland Sea users and a maximum of two parking spaces for persons with special needs. Considering the policy direction being followed to minimize vehicular access into the Inland Sea, only one mobile hawker will be allowed in this area.



- 4.2.4.4 The proposed parking area for private cars and small motor vehicles will be surfaced with grass blocks of a light brown colour and will be landscaped through planting of trees in between parking bays. Whilst it is acknowledged that tree planting will reduce the area available for parking, the visual benefits of landscaping are deemed considerable enough to make this option worthwhile. A photo-montage of the proposed parking area is indicated in Plate 24.
- 4.2.4.5 The proposed parking area for coaches, private cars and small motor vehicles is not located in an ideal location as the visual impact is considerable. However, at present there seem to be no better options. For this reason, it is proposed that the parking area remains temporary. This area shall not be surfaced although the need is identified to level the present surface with adequate materials and introduce measures to mitigate against the transportation of gravel by storm water onto sensitive ecological areas. All works require a method statement to be submitted to MEPA.
- 4.2.4.6 No parking will be allowed except in designated parking areas.
- 4.2.4.7 Provision will be made to ensure that the area will be accessible to emergency vehicles and that these will have adequate turning circles.
- 4.2.4.8 Road markings and signs in the area will be improved.
- 4.2.4.9 The Malta Transport Authority (ADT) will be requested to make available the possibility of visiting the site by means of public transport. The coach parking area could also serve as a terminus for buses.

4.2.5 Surfacing material

4.2.5.1 The road surfacing material to be used for the road linking *Pjazza ta' Dwejra* with *San Lawrenz* is to be preferably coloured following further investigation. Such a material will be of the same light brown shade as the grass blocks used in the coach parking area.

4.2.6 Dry rubble walls

- 4.2.6.1 Rubble walls are an integral feature of the landscape of the area and therefore ought to be maintained in good condition as required by L.N. 160 of 1997 and L.N. 169 of 2004. Proposed way forward is through any of the following alternatives:
 - Restoration and maintenance of rubble walls is left to the initiative of individual farmers.
 - b) Courses in rubble wall construction and restoration are organised by Nature Trust Malta and farmers within the area are invited to participate free of charge or at minimal cost.
 - c) The Site Manager will issue a call for quotation for the restoration of dry-stone rubble walls in the area.

4.2.7 Qawra Tower

4.2.7.1 The Qawra Tower would be ideal as an interpretation centre; however, there are problems related to location and accessibility, which limit its viability for this use.



It is therefore proposed that the Tower will be used as an annex to the interpretation centre, as well as being utilised by the heritage organisation *Din I-Art Helwa*. The Tower will also serve as a look-out post for wardens.

4.2.8 It-Tiega

4.2.8.1 It-Tieqa (Plate 25) is a key feature of the Dwejra area. It has developed naturally, but eventually the same natural processes will also lead to the collapse of the arch, leaving a stack. The arch may either be left to evolve naturally into a stack or else the feasibility of preserving the arch may be assessed. Should such a study to assess the possibility of preserving the arch be commissioned, this will not be covered by funds issued for this Life Project.

Plate 25

It-Tiega - Azure Window



- 4.2.8.2 Access to the arch will be closed off through appropriate signage for health and safety reasons.
- 4.2.8.3 Should it be decided that the arch is left to evolve naturally, the geological processes should be monitored periodically, both for health and safety reasons and for purposes of scientific interest.
- 4.2.8.4 In any case, it is proposed that marketing of the area should not centre merely around *it-Tieqa*, but should rather focus on other features such as Fungus Rock and the Inland Sea.



4.2.9 Quarries

- 4.2.9.1 As discussed previously, the operation of the quarries is not compatible with many of the conservation objectives within the area. However, they are of importance as the primary source of Globigerina Limestone blocks in Gozo, as well as because they provide employment.
- 4.2.9.2 The Management Board proposes that action should be taken to enforce the legal limits of quarries and that action is taken to halt operations outside approved zones/plans (see Figure 12).
- 4.2.9.3 The Management Board also proposes that a detailed assessment is commissioned to assess possible future strategies which will be more compatible with the sensitive ecological context of the quarries. These may include exploring the possibility of mining, rather than open-cast quarrying and/or assessing the feasibility of importing stone from abroad.
- 4.2.9.4 A further proposal is that the restoration of any disused quarries or parts thereof is initiated as soon as possible.
- 4.2.9.5 As noted previously, the number of soft-stone quarries in the management plan area amount to 9. Quarries generate a considerable amount of waste; it is being proposed that the Management Board encourages and promotes the recycling of waste generated from the quarries. The recycling plant may be located in one of the existing quarries, although it should not be excluded that an alternative site may be located in a better suited site outside the management plan area. However, the acceptability or otherwise of each proposal will depend on the environmental characteristics surrounding each quarry.
- 4.2.9.6 Should a site be deemed acceptable for such purposes, request for development permission may be subject to an environmental impact assessment (EIA);
- 4.2.9.7 It is also proposed that the implementation of the Codes of Practice for Quarry Working and Restoration established in Annex 3 of the Mineral Subject Plan for the Maltese Islands³⁷ be encouraged.

4.2.10 Tourism

- 4.2.10.1 The area is currently very popular with tourists; however, it is proposed that the area should be designed to cater for and focus on specialized tourism rather than mass tourism. It is therefore proposed that the Management Board through consultations with the Malta Tourism Authority, Gozo Tourism Association and other stakeholders, promote the Site as a specialized tourist destination. Such promotions should focus on particular niche markets.
- 4.2.10.2 The Site will also be promoted locally as an important resource to attract tourists (both internal and external tourism).

notes and references

^{37 ----}The Mineral Subject Plan for the Maltese Islands was approved by MEPA Board on 29th May 2003 and is currently awaiting Ministerial approval.



- 4.2.10.3 Interpretation facilities on Site, such as signs, will be multilingual and consist of an identifiable colour code for the Qawra / Dwejra Heritage Park rather than follow normal urban street signage design and colour.
- 4.2.10.4 Guided trails for tourists may be marked out on Site, depending on the outcome of decisions regarding walking trails as discussed in Section 4.2.11 below.

4.2.11 Country and Coastal Walkway Trails

- 4.2.11.1 Surveys of existing footpaths and visitor flow along these footpaths will also be carried out. Such surveys would provide guidance as to how best to channel flow along footpaths and may also indicate additional footpaths which may be closed off and allowed to regenerate naturally.
- 4.2.11.2 Should agreement be reached regarding access to land, the designation of walking trails is proposed. Two potential routes in addition to the MTA/Ministry for Gozo route, are proposed, one short route focusing mainly on the Dwejra area and another longer route extending beyond the Site, covering the areas of the neighbouring villages.

4.2.12 Refuelling of boats

- 4.2.12.1 Refuelling and lubrication of the engines of boats is currently carried out within the Inland Sea, using jerry cans and other primitive containers. It is proposed that such refuelling of boats within the area will be allowed to continue as it involves very small quantities, but will be restricted to vehicles operating from the Inland Sea.
- 4.2.12.2 In addition, the Management Board will make available booms which can be placed around boats whilst refuelling is being carried out. These will safeguard against spillages and will facilitate collection of any spilt oil. The booms will be made freely available to boat owners; their use, however, will be made compulsory.
- 4.2.12.3 Care must be taken in the selection of booms because on occasion, conditions within the Inland Sea can be stormy. Booms must therefore be selected to withstand such conditions.

Plate 26
Traditional Boats at the Inland Sea





4.2.13 Health and safety measures

- 4.2.13.1 Discussions will be held with the Department of Civil Protection to plan a safety/life-saving system for the area. This may include:
 - Training of wardens in basic first aid;
 - Training of wardens in life-saving skills;
 - Setting up of a room within the interpretation centre for first aid purposes; and
 - Ensuring ease of access to the site by emergency vehicles.

4.2.14 Ecological restoration

4.2.14.1 Ecological restoration will be carried out through the planting of trees and shrubs in selected areas. Examples of such areas include abandoned agricultural fields. Any planting carried out will be in the appropriate ecological context and will be based on consultation with experts. Compatibility with the landscape will also be a key consideration. Trees or shrubs planted will be archaeophytic or indigenous species appropriate to the site. Species may include *Tamarix africana*, *Atriplex halimus* and *Vitex agnus-castus*. Source material for planting of trees and shrubs will be from within the area itself or from within the island of Gozo. Prior to any planting activities, the Management Board will submit method statements to MEPA and no works will be carried out prior to MEPA approval being obtained.

4.2.15 Water/sewage management

- 4.2.15.1 The current use of cesspools is not sustainable as it is potentially polluting. Sewage management will therefore need to be provided within the area. Proposed way forward is as follows:
 - **a.** One facility will be set up to service all public facilities for the whole area, preferably close to the Interpretation Centre.
 - **b**. A water reservoir will be constructed under the proposed car parking area at *II-Pjazza tad-Dwejra*.
 - **c**. Water will be passed through a separator for filtering before being stored in the reservoir. Recycled water could then be used for watering trees planted for landscaping purposes.

4.2.16 Energy saving and renewable technologies

- 4.2.16.1 The Qawra/Dwejra area is not linked with the power grid and this characteristic is to be retained. The proposed Interpretation Centre shall therefore be provided with energy through the use of a diesel powered super silent 40kVA generator, and seek to supplement the power supply by means of photovoltaic panels and water heating solar panels integrated into the architectural features.
- 4.2.16.2 The Management Board shall also keep a stock of solar lanterns and other solar equipment which can be hired to users of the Heritage Park.
- 4.2.16.3 Given that that this will be the first time that such stand-alone (not attached to the power grid) applications of solar powered equipment are to be made use of in Malta, large pro-



ducers and suppliers could be requested to provide assistance. In this regard, the Management Board shall attempt to obtain sponsorship for such ventures.

4.2.17 Exotic/invasive species

4.2.17.1 A systematic assessment of exotic/invasive species established on site will be carried out to determine their role in ecological systems. This is necessary as it may be that certain exotic species now serve a beneficial ecological role as biodiversity corridors and their removal will impact negatively on other species and/or ecological processes. If it is recommended that particular species are phased out, the feasibility of doing so will be assessed through detailed studies. If removal of certain species proves to be disproportionately costly in financial terms as compared to benefits accrued, or if their removal will involve damage to other species, this may not be advisable. Should phasing out be recommended for any species, detailed method statements shall be submitted to MEPA before any works are carried out and such works will only be conducted under the supervision of specialists.

4.2.18 Visitor management

- 4.2.18.1 The area will be actively promoted with both locals and tourists. Management will therefore need to provide for the flow of visitors and to ensure that this does not negatively impact the Site. This will require monitoring of visitor impacts and monitoring of service quality.
- 4.2.18.2 A monitoring plan for the area will be developed based on the selection of indicators. The monitoring plan will also specify methods of measurement, limits of acceptable change, monitoring procedures, responsibilities for monitoring and procedures for data analysis and display of results.
- 4.2.18.3 Monitoring will be focused particularly on fragile or vulnerable areas of the site.
- 4.2.18.4 If results of visitor impact monitoring reveal that resources are being negatively impacted, particular areas of the Site may be temporarily designated no access or restricted access zones.
- 4.2.18.5 The Management Board will also explore possibilities for seeking assistance and support from other agencies and institutions in order to conduct monitoring. These may include university departments, other NGOs and private sector tourism operators.

4.2.19 Funding

- 4.2.19.1 Funding is a critical variable determining the feasibility of achieving objectives set out. For this reason, management strategies must also consider funding possibilities for the Site. The Management Board will therefore commission a long-term financial plan to determine strategies for extending the life of the project beyond the period covered by Life funding.
 - 1. Attempts will also be made to establish contacts with potential funding sources other than the European Union.
 - 2. Control and auditing mechanisms will be implemented.



- 3. The Management Board will also explore possibilities for extraordinary funding in cases of emergencies.
- 4. The Management Board will also explore the possibility of introducing a visitor's donation mechanism which may include the assistance of the commercial entities using Dwejra.

4.2.20 Climbing, abseiling and cycling

4.2.20.1 Climbing, abseiling and related activities (see Section 2.11.3.1) are currently carried out primarily in the Inland Sea area. Such activities shall be limited to designated routes. Plate 27 indicates proposed climbing routes. Should such activities be carried out in areas other than the Inland Sea, similar routes will be mapped for such areas.

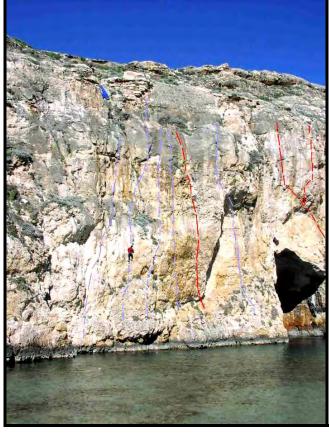
4.2.20.2 The Management Board shall:

- be empowered to restrict activities should the need arise. This may occur, for instance, should certain birds such as, but not exclusively, raptors and seabirds, establish a nest. Activities may also be restricted should monitoring reveal unforeseen negative impacts;
- explore the possibility of using disused quarries for abseiling purposes; and
- work together with climbers' associations to develop guidebooks for climbing and abseiling in the area. These will indicate approved routes and will also include explanations of the environmental significance of the site and guidelines for environmentally-friendly behaviour.

4.2.20.3 Should a climber wish to develop a new route, the approval of the

Plate 27 Climbing routes within the Inland Sea







- Management Board will first be required and such new routes will need to be registered.
- 4.2.20.4 Access to climbing areas will be by means of established pathways and routes. If new access routes are necessary, the Management Board will be consulted in order to determine the least-damaging path.
- 4.2.20.5 It is not envisaged that recreational climbers will be charged a fee. However, any commercially-organised activities for groups will be charged a fee, according to the number of people involved. Additional revenue-generation may be through the sale of guide-books (as discussed in Section 3) and through the sale and rent of relevant equipment.
- 4.2.20.6 The Management Board will make every effort to develop a collaborative approach with relevant associations organising climbing and abseiling activities within the area. Climbers will be encouraged to aid management through the provision of monitoring data if possible.
- 4.2.20.7 Possible ways of managing cycling activities within the area will be explored, together with issues of access to footpaths discussed in Section 4.2.11 above. If possible, cycling will be restricted to footpaths.

4.2.21 **Diving**

- 4.2.21.1 The proposed way forward is as follows:
 - Management of diving activities will be based on collaboration between the Management Board, diving associations and schools.
 - The Management Board will make available information about the significance of the site to divers and diving schools and associations. Interpretation information will educate divers as to environmentally-friendly and damaging practices when diving and a code of good conduct will be established.
 - Diving in caves will not be encouraged and diving schools and associations will be asked to discourage such diving except by advanced divers.
 - The Management Board may enter into partnership with interested NGOs and non-profit organisations to manage the underwater environment.
 - A kitting area for divers is proposed in il-Pjazza tad-Dwejra and marked in Figure 17 below and in addition further facilities are being proposed at the Inland Sea.
 - Considering that the appropriate safe access to the Blue Hole area is important for the users of the site including the health and safety of divers, a pedestrian link route is identified (Figure 17) for improvement. It is required that the pedestrian link improvement be satisfactory to MEPA. Considering the sensitive nature of the area, possible options include the employment of a suspended demountable walkway consisting of wood and supporting light-weight steel frame.





Figure 17
Location of proposed diving facilities within the proposed Qawra/Dwejra Heritage Park

4.2.22 Publicity and Education

4.2.22.1 The site will be actively promoted by the Management Board in various ways. These will include the setting up of a website, the publication of leaflets and the production of a video. Until the interpretation centre becomes operational, the Management Board will also embark upon a programme of informative talks and site visits/walks targeting the general public. Such activities have already been taking place on a small scale. Articles will also be published in local newspapers and other publications. In particular, Nature Trust (Malta) will be dedicating a whole issue of its magazine ARCHIPELAGO to the proposed Qawra/Dwejra Heritage Park. This magazine is widely read by members of the NGO as well as by students and members of the general public. Short courses will also be organised to create awareness of the site's importance.



- 4.2.22.2 A number of panels will be erected around the site detailing information regarding the project and its sponsors, the geology of the site, Fungus Rock, the flora and fauna, the Qawra Tower and the Marine Protected Area.
- 4.2.22.3 As per para. 2.12.7, there already exists a wealth of scientific knowledge on the area. However, in order to promote education, this scientific knowledge which is mostly contained in academic and professional papers and reports needs to be translated into more widely accessible educational material that reaches a wider audience. This measure would increase local efforts geared towards environmental communication and educational initiatives that reach the general public.

4.2.23 Traffic management

- 4.2.23.1 As part of the monitoring of the site, traffic surveys will be conducted in the summer of 2006, to determine volumes and patterns of traffic in the area. The timing of such surveys is intended to coincide with periods of peak visitor flow to the area.
- 4.2.23.2 Following such surveys, the Management Board will then be in a position to formulate traffic management plans and guidelines for the area.

4.2.24 Additional proposals for management

4.2.24.1 Additional proposals for management include the following

Activities	Proposals	
Hunting and trapping	A proposal will be put forward to the responsible authorities for the extension of the bird sanctuary to the whole of the area pro- posed as a core zone (see Section 4.3.1).	
Filming	Should any requests for filming production activities in the area be made, these will be facilitated in consultation with MEPA.	
Construction	 There shall be a presumption against any further constructions in the area (excluding management facilities). 	
Zoning	 Different management zones are identified within the area, as described in Section 4.3 below. Further details of activities permitted within each zone are also provided in Section 4.3 below. 	
Clean-up	 A general clean-up of the area should be organised at the start of the project. Such an operation should be carried out under super- vision and using only small mechanical and hand tools. 	



4.3 Zoning and Policy Guidance

4.3.1 Management zones

Terrestrial

- 4.3.1.1 The proposed terrestrial zoning scheme adopts the system designed by the UNESCO Man and the Biosphere Programme (MAB) for biosphere reserves and takes into consideration the ecological assemblages and land uses as well as the relevant conservation objectives for the area as may be reviewed by MEPA from time to time. It classifies the area into three inter-related segments: core, buffer and transition zones.
- 4.3.1.2 Such zoning aims at fulfilling three complementary functions:
 - A conservation function: to contribute to the conservation of landscapes, ecosystems and genetic variation;
 - A development function: to foster economic and human development which is socio-culturally and ecologically sustainable;
 - A logistic function: to provide support for research, monitoring, education and information exchange related to local, national and global issues of conservation and development.
- 4.3.1.3 The proposed zones are indicated in MAP 3.

Core areas

- 4.3.1.4 Core areas are designed to give long-term protection to the landscapes, ecosystems and species they contain. Within core areas, conservation and protection are therefore a priority. Because of the national and international importance of Dwejra, many of the natural or semi-natural habitats of the area are proposed for inclusion in core areas.
- 4.3.1.5 The two main core zones proposed are the western edge of the reserve and the valley systems. The western core zone includes important coastal cliffs, which have been minimally influenced by anthropogenic activities and which provide a habitat for assemblages rich in endemic forms. Important endemic species include Allium arvense, Cremnophyton lanfrancoi, Helichrysum melitense, Limonium melitensis, Darniella melitensis and Matthiola incana subsp. melitense. The cliffs also provide an important habitat for several species of birds including Calonectris diomedea, Falco tinnunculus and Falco peregrinus.
- 4.3.1.6 The valley systems are also proposed as core zones. They harbour important assemblages, including tree spurge formations, labiate garrigues and *Hypericum* phrygrana. Several endemic or regionally important species are found within the valleys, including *Hyoseris frutescens*, *Hypericum aegyptiacum* and *Urginea pancration*. Temporary freshwater rockpools are also formed in valley beds during the wet season, providing a habitat which is rare locally. The valleys are also important for ornithological purposes, as they provide a possibility for migrant bird species, particularly passerines, to funnel into inland locations.



- 4.3.1.7 Also included as a core zone is the minor islet Fungus Rock, geomorphologically a stack and legislatively already a nature reserve. Fungus Rock harbours important rupestral and maritime garrigue communities, including six species of higher plants endemic to the Maltese Islands. Other species of interest include the so-called Malta Fungus (*Cynomorium coccineum*). The most important faunal element is the General's Rock Lizard (*Podarcis filfolensis generalensis*), endemic to the islet.
- 4.3.1.8 Additional proposed core habitats include the freshwater pool at *il-Qattara* and the permanent freshwater pool at *I-Ghadira ta' Sarraflu*, which both provide a habitat type that is very rare locally and sustain a unique freshwater flora and fauna. L-*Ghadira ta' Sarraflu* is also frequented by several species of bats throughout the year. Such species include *Myotis blythi punicus*, *Pipistrellus pipistrellus* and *Pipistrellus kuhli*. Another species of bat, *Plecotus austriacus* has been recorded at *il-Qattara*. Other proposed core habitats include the transitional coastal wetland assemblage dominated by the rare Chaste Tree (*Vitex agnus-castus*), and important areas of garrigue.
- 4.3.1.9 All of the core area has to be afforded legal protection. Parts are already protected by means of various legal instruments as described in Section 2.2.3 above. It must be ensured, however, that protection is extended to all of the proposed core area.
- 4.3.1.10 Activities which are not necessarily detrimental to the conservation objectives of the area may be allowed but need to be regulated and controlled after an assessment of the conservation status of the area has been carried out. Such activities may include recreational activities such as trekking and climbing. Management policies should however allow for the possibility to restrict even such relatively benign activities should the need arise. Such a circumstance could arise, for instance, should certain birds such as, but not exclusively, raptors and seabirds establish a nest. In addition, certain activities (such as climbing) may be restricted according to pre-established numbers. Reference is made to Section 4.1 above.
- 4.3.1.11 The scientific richness of the core areas also makes them ideal sites for environmental education purposes. Educational activities can be supported within parts of the core zone, provided that they are organised and managed in such a way that they do not cause damage.
- 4.3.1.12 Activities directly detrimental to conservation need to be eliminated from core areas. Such activities include bird shooting and trapping. In this regard, it is proposed that the bird sanctuary is extended to encompass all core areas, as indicated in MAP 4.
- 4.3.1.13 Where it is not possible to eliminate certain less-desirable activities or practices, these should be strictly restricted to particular areas. This applies for instance to vehicle access and camping activities. Illegal activities such as off-roading and fossil collecting need to be eliminated through adequate enforcement.
- 4.3.1.14 Efforts should also be made to safeguard the integrity of the biotic assemblages in core areas. Introductions of exotic species into the area ought to be discouraged. Where, as in the case of I-Għadira ta' Sarraflu, exotic species are already established, studies should be conducted to examine the feasibility of progressively phasing these out.



DMP 1 - Development within the Core Areas

MEPA will consider development planning applications within the Core Zone for the following uses:

- a) Interpretation Centre (as per para. 4.2.1)
- b) Boathouses (as per para. 4.2.2)
- c) Parking Areas (as per para. 4.2.4 and 4.2.23)
- d) Re-use of Qawra Tower (as per para. 4.2.7)
- e) Infrastructural improvement (as per para. 4.2.15)
- f) Signage (as per paras. 4.2.10, 4.2.18 & 4.2.22)

No additional development is permitted by MEPA within the environmentally sensitive Core Zone as indicated on the Terrestrial Zoning Scheme MAP 3 other than the land uses indicated by the Action Plan.

Other permitted, regulated and controlled land uses include, activities that are not detrimental to the conservation objectives of the Core Zone as follows:

- a) Informal outdoor recreational activities including
 - trekking/walking (as per para. 4.2.11)
 - climbing (as per para. 4.2.20)
 - shore-based diving related facilities (as per para 4.2.21)
- b) Educational activities including organised and managed group site visits (as per para. 4.2.18)

Furthermore, MEPA will support and enforce all efforts to eliminate from the Core Zone any activity which is directly detrimental to the conservation objectives and to safeguard the integrity of the flora and fauna and landscape of the Core Zone. In the case were such land uses cannot be eliminated these will be restricted and controlled within particular areas.

Tree/shrub planting will only be permitted by MEPA within the Core Zone following a detailed method statement and if the proposed site is acceptable to MEPA and it is confirmed that the planting will not adversely affect any protected site within the Core Area. All tree/shrub planting is to be in accordance with the requirements of Para. 4.2.14 and MEPA's 'Guidance on Trees, Shrubs and Plants for Planting and Landscaping in the Maltese Islands (2002)'.

Buffer zones

4.3.1.15 Buffer zones surround or are contiguous to the core areas and aim to protect the conservation objectives of the core areas. In the Dwejra area, much of the proposed buffer



- zones comprise agricultural areas and abandoned fields, both those recently abandoned and those already undergoing secondary succession.
- 4.3.1.16 Agriculture may be an effective buffer to core areas; however, agricultural practices need to be compatible with conservation objectives within the core zones. Conflicts between existing practices and conservation aims in core zones need to be identified. Such conflicts may include, for instance, damage to species in freshwater habitats because of high concentrations of pesticides that leach from fields. Other practices, such as the torching of fallow agricultural land and wasteland, are highly detrimental to birdlife.
- 4.3.1.17 Although theoretically ideal, in practice it may not be feasible to pursue a goal of purely organic farming, as this will likely put those farmers within the buffer zone at a considerable economic disadvantage. This is especially the case given that agriculture within the area already suffers from other constraints as discussed in Section 2.11.2 above. Given this situation, guidelines for Good Agricultural Practice³⁸ should be implemented on a gradual basis, in conjunction with an awareness-building programme for farmers.
- 4.3.1.18 Abandoned fields may also serve as an effective buffer to core zones. In some areas, abandoned fields may be ideal for rehabilitation through, for instance, tree planting. Where tree planting is carried out, this needs to be done with attention to the core areas. This would prevent the spread, through regeneration, of planted trees into core areas and would also safeguard against the alteration of micro-climate in the core area through, for instance, the shade cast by trees. Species used in tree planting should be carefully selected for compatibility with existing assemblages. They must not only be indigenous but should be planted within ecological context too, as discussed in Section 4.2.14 above.
- 4.3.1.19 In areas where fields have been abandoned for a long time and are already undergoing secondary succession³⁹, the best policy might be one of no intervention. This is especially the case where such fields lie adjacent to core areas, and might provide the opportunity for assemblages from the core areas to spread further afield through natural regeneration. Before any tree planting activities are carried out within abandoned fields, an assessment should therefore be made of which sites are suitable, and which are best left unaltered.
- 4.3.1.20 Management policies also need to be formulated with regard to exotic species like *Eucalyptus* spp., *Opuntia ficus-indica, Agave americana, Pittosporum* spp. and *Carpobrotus* spp.. The spread of such species should be discouraged and where the replacement of such species by indigenous plants is possible and feasible, this should be encouraged. However, where such exotics have become established and serve as important biodiversity corridors or as important habitats, then a policy of no intervention may be best. Studies are therefore necessary before any activities to phase out exotics are undertaken.

notes and references

^{38 ----}Good Agricultural Practice guidelines for Malta were established by the Department of Agriculture in 'The Maltese Code of Good Agricultural Practice' forming part of the Malta Rural Development Plan (2004).

³⁹ ----Secondary succession may be defined as ecological succession on a previously vegetated surface, as compared to primary succession where vegetation develops on land not previously occupied by plants.



DMP 2 - Development within the Buffer Zone

Similarly to the Core Zone as per Policy DMP 1, MEPA will not permit any development other than as stipulated by the Action Plan.

Within Buffer Zone, MEPA will only permit agricultural developments that act as an effective buffer to the Core Zone. However such permissible agricultural practices are to be compatible with the conservation objectives within the Core Zone. Thus, MEPA will not permit any agricultural activities that by their nature or operation:

- a) result in the damage to species in the freshwater habitats because of high concentrations of pesticides that may leach from fields;
- b) involve the torching of fallow agricultural land and derelict agricultural land areas or wasteland; and
- c) involve activity that is highly detrimental to bird life.

MEPA encourages projects that involve the promotion and introduction of organic farming in the Buffer Zone.

In the case of any initiatives, both public and private, to rehabilitate any abandoned and derelict agricultural fields through tree planting, MEPA will require that these sites be investigated prior to any rehabilitation to ensure the suitability of these areas for such a purpose. MEPA may refuse any such initiatives if from investigations it results that certain important ecological habitats have established over time.

Tree/shrub planting will only be permitted by MEPA within the Buffer Zone following a detailed method statement and if the proposed site is acceptable to MEPA and it is confirmed that the planting will not adversely affect any protected site within the Buffer or adjacent Core Zone. All tree/shrub planting is to be in accordance with the requirements of Para. 4.2.14 and MEPA's 'Guidance on Trees, Shrubs and Plants for Planting and Landscaping in the Maltese Islands (2002)'.

Transition zones

- 4.3.1.21 The transition zones within the Qawra/Dwejra area are comprised primarily of quarries.
- 4.3.1.22 A review of relevant documents immediately indicates that these quarries have exceeded their legal footprint, as discussed in section 2.11.5 above. The responsible authorities must take steps to control the situation. Quarrying, as presently carried out, is not compatible with the conservation objectives of the area, as recognised in the Gozo and Comino Local Plan:



Given the sensitivity of the site and the provisions of Structure Plan policies MIN 5, RCO 4, RCO 35, RCO 36 and RCO 37; additional quarrying activity in the area shall be considered as being incompatible with the environmental qualities of the locality.

4.3.1.23 The Gozo and Comino Local Plan further states that:

There shall be a general presumption against the lateral extension of quarries in this area, except for extensions directed away from the Qawra/Dwejra Heritage Park area (provided that the extensions do not infringe upon other protected areas and sites) and screened from long distance views into the site. All such extensions shall be subject to an Environmental Impact Assessment.

4.3.1.24 Given that these quarries constitute the only source of soft-stone in Gozo and given their economic importance, one alternative approach in the future could be to explore the possibility of mining. Should such a technique be adopted, strategic plans would need to be formulated to ensure minimisation of negative impacts on the remainder of the area. Key considerations might include, for instance, the effects of mining activities on cliff stability. At the same time, any future strategy must also consider plans for rehabilitating spent quarries. The Gozo and Comino Local Plan encourages the rehabilitation of disused quarries in the area through infill and subsequent conversion to agriculture.

DMP 3 - Development within Transition Zones

Within these areas, there shall be a general presumption by MEPA against the lateral extension of quarrying activity in this area. Existing quarries are to be screened from long distance views into the site and that these areas are to be fully restored following the Minerals Subject Plan (2002) policy guidance, when the quarrying activity is exhausted.

Considering the sensitive nature of this area, MEPA will require phased restoration of exhausted parts of the quarry to be fulfilled following agreement with MEPA. A rehabilitation method statement shall be required by MEPA prior to restoration. The introduction of tree/shrub planting is recommended and encouraged within Transition Areas for restoration purposes. All tree/shrub planting is to be in accordance with the requirements of Para. 4.2.14 and MEPA's 'Guidance on Trees, Shrubs and Plants for Planting and Landscaping in the Maltese Islands (2002)'.

Mining processes are to be investigated further as possible alternatives to the existing open pit method. MEPA will support efforts to promote recycling of material (refer to para. 4.2.9). Any requests for development permission may be subject to an Environmental Impact Assessment (EIA).



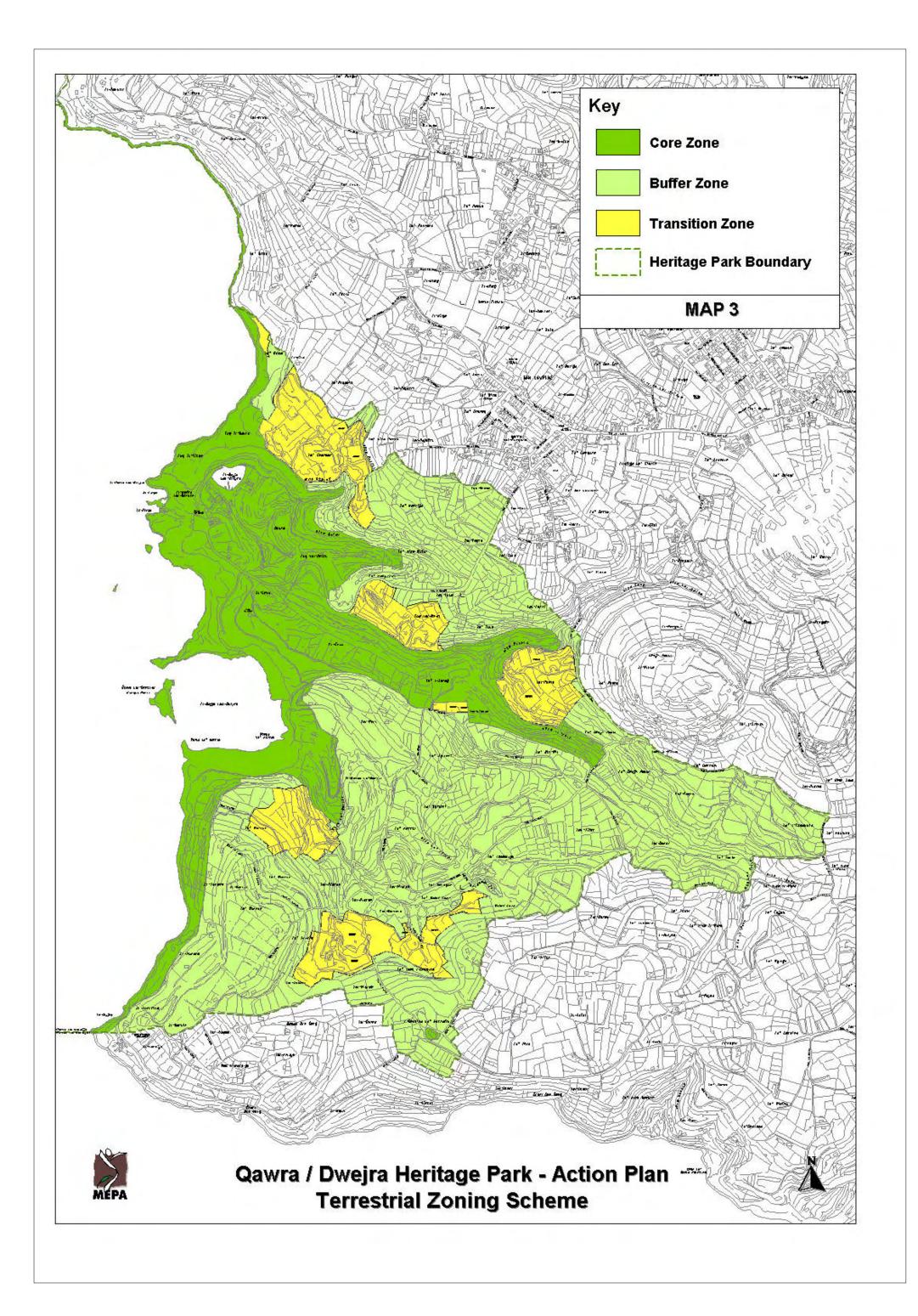
DMP 4 – Infrastructural Services

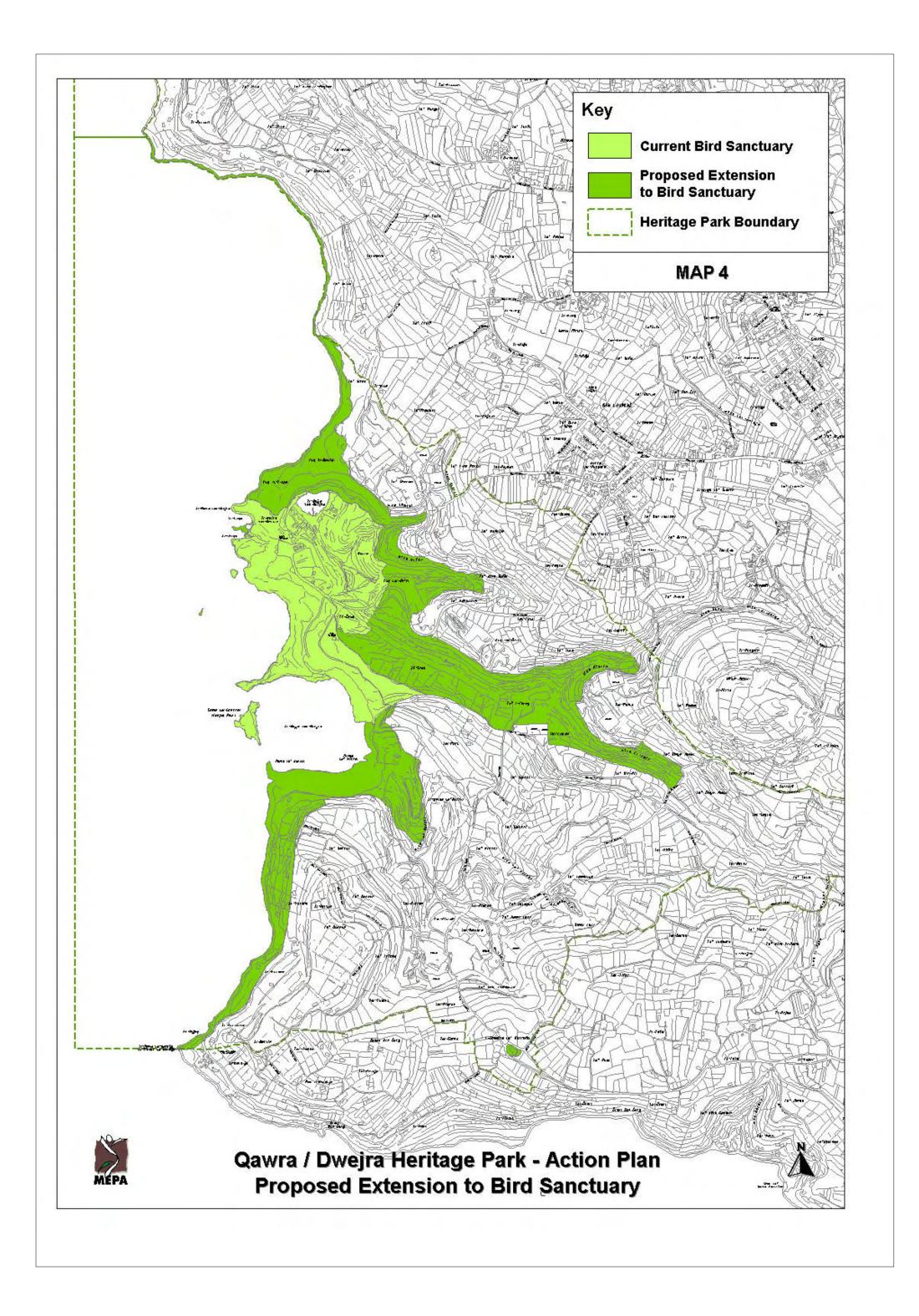
There shall be a general presumption against the introduction of utility services in the Heritage Park Area except were identified specifically in this Action Plan.

Furthermore, since the area is identified as forming part of the Dark Sky Heritage protected zones (as proposed by the Draft Gozo & Comino Local Plan), where relevant, reflective signs shall be employed to guide driving at night whilst the installation of lighting which is not related to aerial or maritime navigation, shall be strongly discouraged.

DMP 5 - Development and the Management Board

In the processing of any development planning applications within the Heritage Park Area, MEPA will seek the views of the Management Board to ensure consistency and monitor the impact of the above policies on the protection and conservation of the area.







Marine

- 4.3.1.25 The proposed zoning scheme within the Marine Protected Area adopts the proposals of the Malta Environment and Planning Authority, as established in the Guidelines and Designation Framework for Marine Protected Areas (2005).
- 4.3.1.26 Four zones are proposed:
 - Core zones
 - Secondary zones
 - General purpose zones
 - Buffer zones

Plate 28

II-Port, located within the Core Zone.



4.3.1.27 The proposed zones are indicated in MAP 5.

General provisions

- 4.3.1.28 Anchorage in the part of the core area known as II-Port will be allowed only on the sandy bottom. No permanent moorings will be provided in any part of the MPA.
- 4.3.1.29 No refuelling of visiting boats will be permitted within the Inland Sea.
- 4.3.1.30 No spear fishing / harpoon fishing will be allowed within the MPA.
- 4.3.1.31 The Management Board together with the Malta Maritime Authority, the Malta Tourism Authority, the Gozo Tourism Association and other interested third parties (including



commercial vessel owners that visit the MPA) shall seek funding to commission a study to identify impacts arising from use of the Marine Protected Area. In case that negative impacts are identified, mitigation measures are to be proposed by the study taking into account both environmental and socio-economic considerations. This study shall aim to ascertain a measure by which the above mentioned Agencies can guarantee a sustainable usage capacity for the area.

Core areas

- 4.3.1.32 Core areas are those in which the strictest protection measures will be applied.
- 4.3.1.33 The proposed core area extends outwards and northwards from il-Port. The area includes important geomorphological features such as caves and arches. It also includes important habitats such as *Posidonia oceanica* meadows and important cave biota.
- 4.3.1.34 It is proposed that all core areas will be no-take zones, in which no forms of commercial fishing will be permitted.
 - Diving will be allowed. Reference is however made to the options proposed in Section 4.2.21.
 - Swimming will be allowed.
 - Core habitats and species will be monitored, possibly with the assistance of divers.
 - The Management Board with the approval of the Malta Maritime Authority may impose restrictions on zones/times when boat trips, diving and swimming are allowed.
 - Following consultation with the Fisheries Department, recreational fishing will be permitted, but only with approved gear as follows:
 - Wind drawn surface long line Imrejkba;
 - o Rod and line Qasba;
 - Trolling Rixa;
 - o Hand line Xlief tal-qiegħ jew Ħjiel jew Kulpara;
 - o Pots Nassi (refer to Para 4.3.1.35 below)
- 4.3.1.35 Fishing using traditional pots will be allowed provided that the material is made of traditional caneworks targeting adult bogue. This type of activity may cause a problem with the balance of stocks and lead to ghost fishing. Thus each pot should not exceed 1.5 metre in height and a maximum of 1 metre diameter. Any such activity is to be registered every year at the San Lawrenz Local Council before it is carried out. The Local Council shall regularly inform and update the Heritage Park Site Manager on the number of registered activities so as to coordinate and retain reasonable control on the activity. The number of traditional pots is not to exceed 2 pots at any given moment by any single fishing activity and at least one registered person is to form part of each fishing activity.
- 4.3.1.36 If any pots are lost at sea, the registered fisherman must report this loss to the Local Council within 72 hours, stating the approximate location of the loss. This is required so that the lost pots may be retrieved to ensure that no ghost fishing occurs hence damaging the fish stock. The activity of fishing by pots will be surveyed on an annual basis to evaluate its effect on the area and if the study reveals a significant impact on the Core and Secondary Zones of the MPA, then this policy may be reviewed as necessary.



Secondary areas

- 4.3.1.37 Secondary areas are those with lesser protection and less stringent regulations than the core areas. The proposed secondary areas are those bounding the cliffs north and south of the proposed core areas.
- 4.3.1.38 It is proposed that limitations on certain types of fishing are exercised within secondary areas. These include bans on spear fishing and commercial fishing. Following consultation with the Fisheries Department, recreational fishing will however be permitted, but only the type involving approved gear as in the Core Zone.

General purpose areas

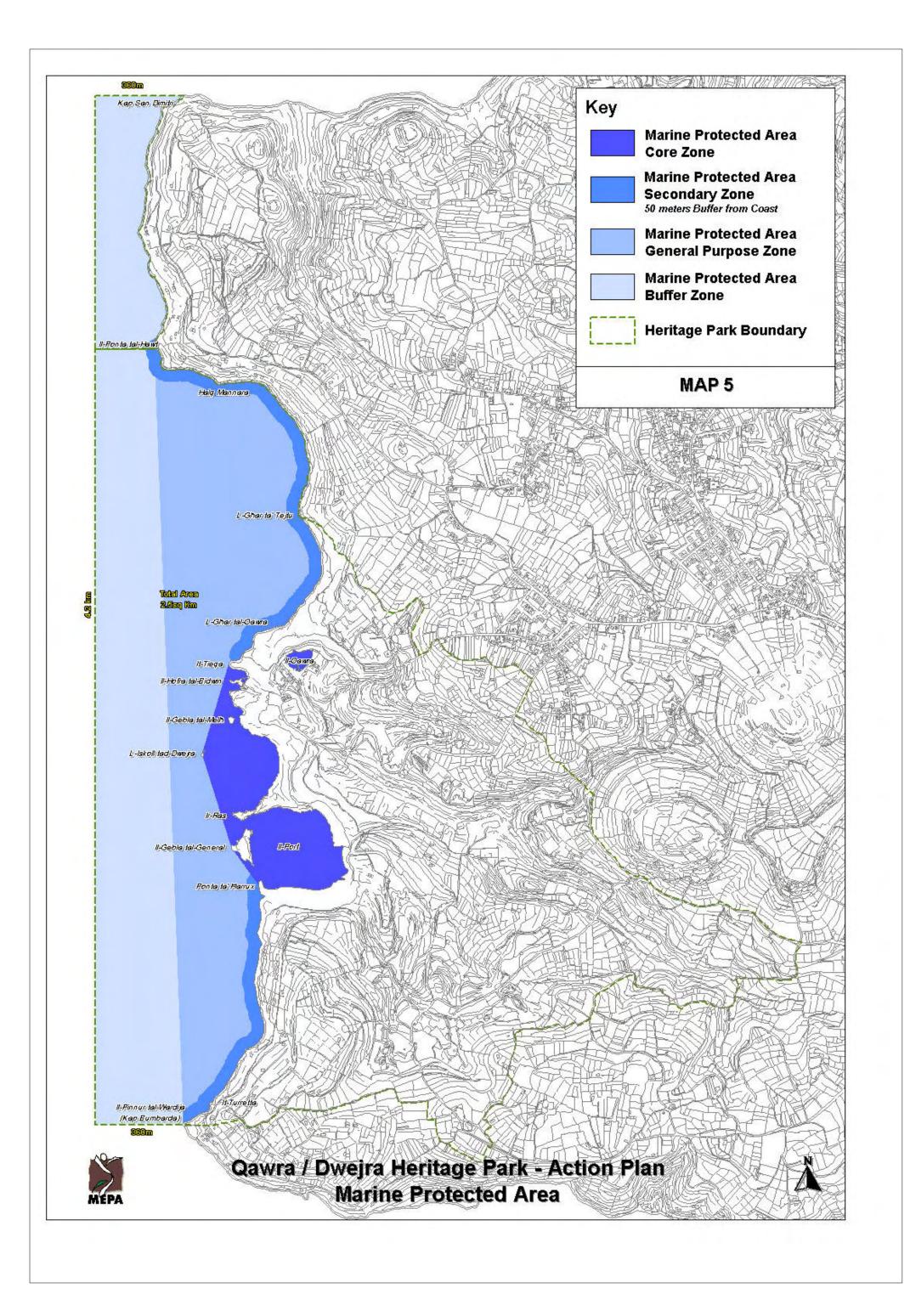
- 4.3.1.39 General purpose areas are those in which little protection and few rules are applied. The general purpose area extends outwards from the core and secondary areas.
- 4.3.1.40 As in secondary areas, following consultation with the Fisheries Department, fishing within general purpose areas will be subject to approved gear as follows:
 - Wind drawn surface long line Imrejkba;
 - o Rod and line Qasba:
 - Trolling Rixa;
 - o Hand line Xlief tal-qiegħ jew Hjiel jew Kulpara;
 - o Pots Nassi:
 - Demersal bottom set long lines Konzijiet tal-qiegħ;
 - Surface drifting long lines Konzijiet tal-wiċċ;

Buffer zones

- 4.3.1.41 Buffer zones will encircle the entire MPA in order to protect the more sensitive and more important regions from activities occurring outside the MPA boundary.
- 4.3.1.42 Physical developments will be permitted in the buffer zone only if an EIA can prove that such development will not have any negative effect on the Marine Protected Area.
- 4.3.1.43 The Management Board will continuously monitor the buffer zone for any events which cause negative impacts on the core areas and together with the Civil Protection Department prepare a contingency plan for any eventuality.

4.4 Projects and Work plans

4.4.1.1 Detailed projects and work plans for management of the reserve will be prepared as part of an operational plan for the area. These will be derived from the operational objectives listed in Section 3.4 above and the management strategies listed in Section 4.2.





Review of Action Plan

- 4.4.1.2 The review of the Action Plan and related operational and project plans is recognised as an important component of the cycle of management. It should be based on extensive evaluation of management effectiveness. Evaluation will serve at least three key functions (Hockings 1997):
 - As an aid in problem identification and priority setting for programming.
 - To facilitate adaptive management.
 - For accountability.
- 4.4.1.3 Key criteria for evaluation may include the following:

Table 5
Criteria for periodic evaluation of management

Field	Variable	Sub-variable
Biogeographical characteristics	Size	
	Shape	
	Connectivity	
	Vulnerability	
Knowledge	Biophysical, cartographic and socio-economic	Currency and availability of information
	information	Research
	Cultural heritage	Knowledge of cultural heritage
		Consideration of cultural heritage in management planning
		Marketing of cultural heritage
	Monitoring and feedback	Mechanisms for monitoring and feedback
		Use of species indicators
		Ecological restoration
	Traditional knowledge	
Planning	Management plan	Existence and dating of plan
- -		Plan implementation
		Characteristics of planning team
		Management plan quality
	Compatibility of other relevant plans with management plan	
	Operative plan	Existence and dating of operative plan
		Plan implementation
	Zoning within the PA	



Table 5 Criteria for periodic evaluation of management

Field	Variable	Sub-variable
Administrative	Personnel	Quantity
		Quality
		Capacity for contracting additional staff
		Staff incentives
		Volunteer programme
	Finances	Annual operating budget
		Regularity of budget preparation
		Extraordinary funding
		Capacity to generate own funds
		Links with potential funding sources
		Training of financial management personnel
		Preparation of budgets and spending programmes
		Budget spending reports and timeliness of expenditures
		Auditing
	Infrastructure	Equipment and tools
		Condition of facilities
		Basic services
		Safety
		Demarcation of boundaries on site
Legal	Land tenure	Possession
		Conflicts
	Set of general laws and regulations	
	Law creating the protected area	
	Enforcement	
	Security	
Legal uses	Agriculture, quarrying, fishing, hunting, recreation, tourism, filming activities, physical development, education and/or others	



Table 5
Criteria for periodic evaluation of management

Field	Variable Sub-variable	
Illegal uses	Extraction of flora and fauna (other than hunting), fishing, hunting, recreation, tourism, physical development, quarrying, taking of fossils and/or others	
Threats	Impact by visitors, marine pollution, freshwater pollution, land pollution, fires, exotic species, advancement of human settlements, natural disasters, physical development and/or others	
Policy	Community support and participation	
	Support from central institutions	
	National administration of the protected area system	
	External support	

4.4.1.4 It is proposed that a review of the Action Plan is carried out every two years, as established in Article 28 (1) of the DPA. The following schedule will be adhered to:

Year One	
January	
February	
March	
April	Period for submission of ideas from different stakeholders through the
May	
June	
July	filling of suggestion forms by visitors to the Site
August	
September	
October	
November	
December	



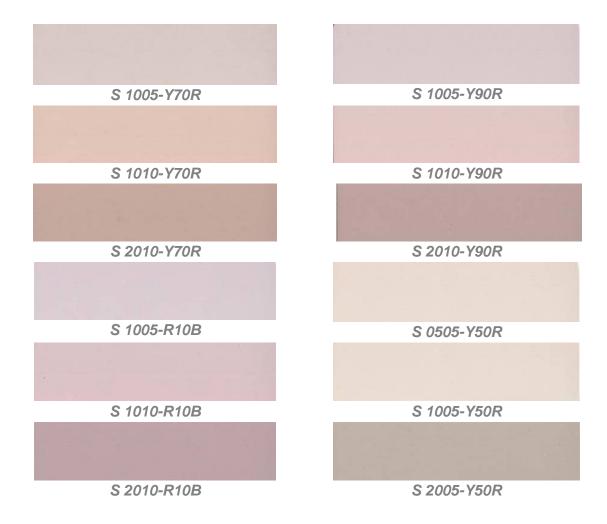
Year Two		
January	Period for submissions of ideas from different stakeholders through the filling of suggestion forms by visitors to the Site	
February		
March		
April - June	Throughout this 3 month period	Formal consultation meetings with stake-holders.
July	Throughout the month	Draft proposals for review to be completed by the end of the month.
August	August to mid- September	Consultation meetings with stakeholders regarding draft proposals
September - November	Mid-September to end November	Formulation and Completion of Final Review
December	Beginning of December	Submission of Final Review for MEPA approval

- 4.4.1.5 Independently of the two-yearly review, minor modifications not affecting the substance of the plan may be carried out by MEPA, either on its own motion when it considers to do so in the interests of proper planning of the area, or following a minor modifications application submitted to it by any person. For the purposes of this Action Plan, such minor modifications, as defined in the DPA, constitute minor changes in zoning.
- 4.4.1.6 Any applications for minor modifications will be published for submissions and comments by the public before a decision is taken by MEPA. Representations may be submitted within a specified period of not less than six weeks, as established in Article 28 (6) of the DPA.



5 Appendix 1

Pallette of Colours derived from NCS - Natural Colour System®©



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6 References

- Berthold, P. (1996) Control of Bird Migration. London: Chapman & Hall.
- Bonanno, A. (1991) Qawra/Dwejra Area in Gozo: Technical Studies Archaeology. Msida: Malta University Services.
- Borg, J., Fiore, M., Violani, C. and Zava, B. (1990) Observations on the chiropterofauna of Gozo, Maltese Islands in *Bollettino del Museo Regionale di Scienze Natu*rali – Torino, Vol. 8, No. 2, 501-515
- Borg, J.A., Dimech, M. and Schembri, P.J. (2004) Report on a survey of the marine infralittoral benthic habitats in the Dwejra/Qawra area (Gozo, Maltese Islands) made in August-September 2004. Mosta: Ecoserv.
- Borg, J.A., Micallef, S.A., Pirotta, K., & Schembri, P.J. (1997) Report on a survey of the marine infralittoral habitats and benthic assemblages in the Qawra/Dwejra area (Gozo). Stage I. Msida: Malta University Services Ltd.
- Census of Population and Housing 1995, Volume 1 Population, Age, Gender and Citizenship Final Report, (1997). Valletta: Central Office of Statistics, Department of Information.
- Cassar, L.F., Lanfranco, S. and Schembri, P.J. (2004) Report on a Survey of the Terrestrial Ecological Resources of the Qawra/Dwejra area, Western Gozo, commissioned by Nature Trust (Malta). Mosta: Ecoserv.
- Census of Population and Housing 1995, Volume 4 –Education and Economic Activity Final Report (1997). Valletta: Central Office of Statistics, Department of Information.
- Fava, G., Micallef S., Lanfranco E., Schembri, P.J. and Cassar, L.F. (1996) A report on the potential of the Qawra/Dwejra area in Gozo as a site of national and international scientific importance: Ecological Aspects. Msida: Malta University Services Ltd.
- Government of Malta (1990) Structure Plan for the Maltese Islands: Draft Final Written Statement and Key Diagram. Floriana: Planning Services Division.
- Government of Malta (2004) *Rural Development Plan for Malta* 2004-2006, Valletta: Rural Development Department, Ministry for Rural Affairs and the Environment.
- Holme N. A. & McIntyre A. D. (1984) Methods for the study of marine benthos. Oxford: Blackwell Scientific Publications.
- Kasap, D. (2003) Managing Public Access to the Countryside: A challenge towards implementation of countryside recreational planning policy in the Maltese Islands. Unpublished M.A. Town and Country Planning dissertation, University of the West of England in Bristol (UK).
- Lang, D. M. (1960). Soils of Malta and Gozo. Colonial Research Studies No. 29. London: HMSO.
- Malta Tourism Authority Press Release, 19th June 2003, Dwejra Blue Hole voted one of top beaches and dive sites in Europe.
- Malta University Services (1996) Qawra/Dwejra Area (Gozo) Geology, Geomorphology and Hydrology. Msida: Malta University Services Ltd.



- MEPA (2002) Gozo and Comino Local Plan (Public Consultation Draft) Floriana: Planning Directorate.
- Pedley, M., Hughes Clarke, M. and Galea P. (2002) *Limestone Isles in a Crystal Sea: The geology of the Maltese Islands*. Malta: PEG Publications, 109 pp.
- Pirotta K. & Schembri P. J., (1997) Characterisation of the major marine biotopes of the hard substrata around the Maltese Islands. In E. Özhan (ed.) Proceedings of the third international conference on the Mediterraean coastal environment, MED-COAST '97, 1: 9-24.
- Public Transport Authority (1997) Dwejra Boat Trip Licenses: Explanatory Memorandum.
- Ratcliffe I. (1977) A Nature Conservation Review. Nature Conservancy Council, UK.
- Schembri, P.J. and Sultana J.[Eds.] (1989) *Red Data Book for the Maltese Islands*. Valletta: Department of Information.
- Sultana, J. and Borg, J.J. (2002) Coastal Zone Management Subject Plan: Ornithology. Malta: Birdlife Malta.