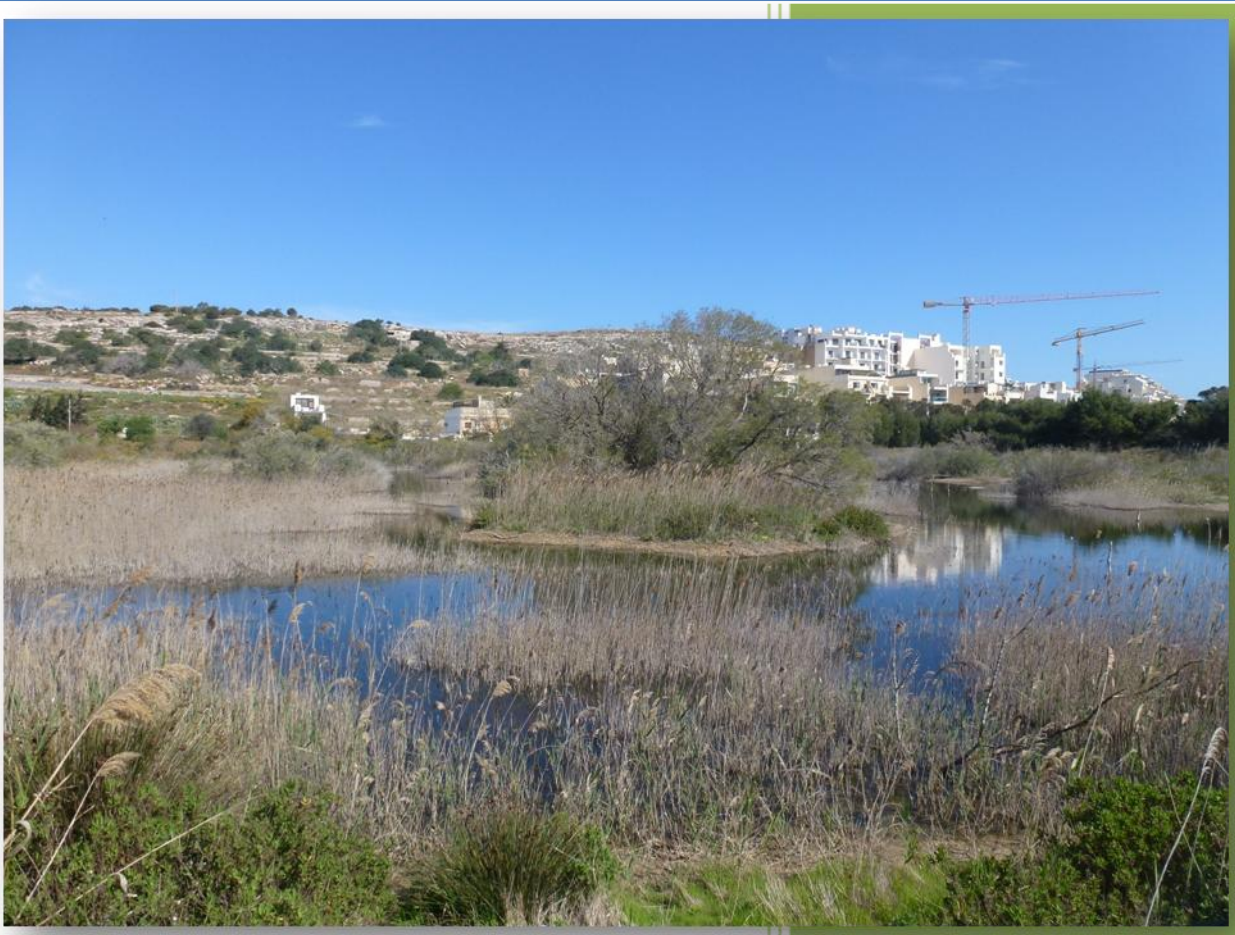
Is-Simar (limiti ta' San Pawl il-Baħar)

Natura 2000 Management Plan (SAC / SPA)



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Project description

The Project **"Management Planning and Implementation of Communication measures for Terrestrial Natura 2000 Sites in the Maltese Islands"** was funded by the EAFRD and pioneered by MEPA. It aims to establish management plans or legal provisions for the management of all terrestrial Natura 2000 sites in the Maltese Islands, and to increase awareness of the Natura 2000 network amongst the general public and stakeholders.

The Project started in October 2012 and ended in March 2014. It is considered a milestone in the protection of Malta's rural environment and undertakes necessary actions required in management planning for the 34 terrestrial Natura 2000 sites: 27 terrestrial Special Areas of Conservation (SAC) and 7 Special Protection Areas (SPAs).

The Project involved gathering information, carrying out surveys, defining Conservation Objectives and identifying management measures with intensive stakeholder involvement. These management plans are not intended to restrain recreational or other economic activities within the sites, but rather to support sustainability of Malta's natural resources with the involvement of stakeholders. A Vision has been formulated for the ideal condition of each Natura 2000 site, to be achieved after a period of management.

The Project delivered awareness campaigns on Natura 2000 sites amongst public and specific target groups such as farmers and land managers. It set the ground and has equipped key stakeholders with knowledge and skills necessary to effectively participate in the management planning process. In that respect, the Project will help Malta fulfil its EU and international commitments by informing, educating, encouraging ownership, and building momentum for the implementation of the EU Natura 2000 network of protected areas whist improving quality of life in rural communities.

Produced by

Epsilon International SA - Adi Associates Environmental Consultants Ltd Consortium, Malta
www.epsilon.gr // www.adi-associates.com // www.natura2000malta.org.mt

Management team

Epsilon International SA	**Adi Associates Environmental Consultants Ltd**
Despina Kallidromitou	Adrian Mallia
Marc Bonazountas	Rachel Xuereb

Key experts

Despina Kallidromitou, Thomas Arapis, Eman Calleja, Perit Philip B. Grech, Marlene Borg, Michael Parlato Trigona, Adrian Mallia

Team experts

Niki Kardakari, Krista Farrugia, Rachel Xuereb, Andrea Pace, Eilis McCullough, Edwin Lanfranco, John Borg, Athanasia Kassela , Dimitris Skarlatos, Fay Nakou, Elli Chourdaki

Contract

No. CT3101/2011, Malta Environmental Planning Authority (MEPA)
St. Francis Ravelin, Floriana, Malta, www.mepa.org.mt
Project leader: Mr Darrin T. Stevens

Disclaimer

For Information

Environment and Resources Authority	+35622923500	info@era.org.mt
Site Designation & Management Team (ERA)	+35622923665	protected.areas@era.org.mt
Adi Associates Environmental Consultants Ltd	+35621378172	info@adi-associates.com
Epsilon International S.A.	+302106898610	central@epsilon.gr

VISION STATEMENT FOR IS-SIMAR (LIMITI TA' SAN PAWL IL-BAĦAR)

The Vision for Is-Simar Special Area of Conservation (SAC) and Special Protection Areas (SPA) presents the desired result once this protected area has been managed for some time. The Vision for the site is:

All natural habitats, native flora and wildlife present at the SAC are sustained

The site is an educational, environmental awareness and nature enjoyment centre of nationwide importance

Agriculture is practiced without disturbing the protected ecological features of the site and contributes to the conservation of the site's biodiversity

The site is receiving full legal protection implemented according to national legislation and local policies.

EXECUTIVE SUMMARY

Introduction

Is-Simar (limiti ta' San Pawl il-Baħar) is found in the north-east coast of Malta. It is part of the St Paul's Bay locality boundary and covers an area of approximately 0.6 km^2. The site is found close to Xemxija and is located in the Pwales Valley and on the Bajda Ridge escarpment.

The east of the site borders Xemxija Bay whilst the west borders the Pwales agricultural area. To the south there is the Wardija Ridge escarpment and to the north there is the Bajda Ridge. This SAC (and SPA) is close to another two SACs; Il-Ballut tal-Wardija and Ix-Xagħra tal-Kortin. The seaward area of the site borders Il-Grigal ta' Malta Marine Protected Area.

The site incorporates various features including an artificially created wetland habitat, which is fenced off, is located behind Xemxija Bay and is 45,000 m^2 in size. It is a coastal site with brackish water pools. The wetland is surrounded by agricultural land that stretches west of the wetland. Further upland, overlooking the valley, a forested area is partially included within the northern boundary of the site. A labiate garrigue is located south of the forested area; a rocky andropogonid grass steppe dominates abandoned agricultural land and forms a mosaic with the garrigue community in places. The garrigue includes temporary rain water rock pools.

The Site's Biodiversity and the Factors Affecting It

The habitats of importance in this SAC (listed in the Habitats Directive under Annex I) include:

- Coastal lagoons (Habitat 1150*)[1];
- Mediterranean temporary ponds (Habitat 3170); and
- Garrigue/phrygana generally dominated by the Shrubby Kidney Vetch (Habitat 5410).

Field surveys, desk studies and expert knowledge were applied to evaluate the conservation status of all Annex I habitats. The garrigue has been recorded to support orchids including the Maltese Pyramidal Orchid and the Maltese Spider Orchid. The Maltese Waterwort was recorded from the rock pools as well as a rare shrimp species.

The wetland provides an important habitat for a number of migratory bird species as well as wintering and breeding species. Species breeding at the site include the Reed Warbler, the Moorhen, the Common Coot, the Zitting Cisticola, and the Sardinian Warbler. The wetland also supports a good population of the Maltese Killifish, a species that tolerates extreme changes in its environment including temperature and salinity. The area provides important foraging ground for bats and certain cultural heritage features are known to provide suitable roosting habitat for the Lesser Horseshoe Bat. The only amphibian species in the Maltese Islands, the Painted Frog, is present at the reserve.

[1] The Habitats Directive assigns codes to the habitat types of conservation interest, these should be referred to for the full technical habitat description.

Is-Simar Wetland Reserve supports the most extensive *Phragmites* reed bed in the Maltese Islands. It is an ideal habitat for several marshland species, providing shelter and food for waterfowl, herons, rails and passerines. It also provides a unique breeding habitat for reed warblers, Little Bittern and moorhens.

An old olive grove is located at the eastern part of the reserve, part of which is not, however, enclosed as part of the reserve. This grove naturally regenerates, the fruits are eaten and the seeds dispersed largely by the Common Starling. A few Mastic trees are also found growing naturally as undergrowth. This is an important habitat for migratory passerines and wintering species.

The SPA includes part of the Mizieb woodland. The Pwales valley is a natural corridor through which birds are funneled during their passage over Malta. The presence of the wetland habitat together with the overlying Miżieb woodland upgrades this passageway into an invaluable feeding, resting and roosting stopover for all avifauna in both migration periods. The woodland habitat of Miżieb lies in a strategic place overlooking the valley and wetland and thus it is particularly valuable as a roosting site for raptors including Marsh Harrier, Honey-buzzard, Black Kite and European Hobby, as well as herons. The woodlands also hold an array of other migratory species, including Turtle Dove, Golden Oriole and other species such as flycatchers, thrushes and warblers.

The Miżieb woodland is also important for several breeding bird species. These include Sardinian Warbler, Zitting Cisticola, Blue Rock Thrush, Spanish Sparrow and Tree Sparrow. Several locally rare species also regularly attempt to breed in the woods, including Serin, Chaffinch, Turtle Dove, Collared Dove and Common Cuckoo.

The conservation status of Annex I habitats, Annex II (Habitats Directive) species (the Killifish) and Annex I bird species (Birds Directive) as well as groups of wintering and migratory bird species was evaluated based on reference to desk studies and expert knowledge.

A number of activities exert pressure on the ecology of the site. The Wetland is located in the urbanized and frequented area of Xemxija, St Paul's Bay and the Miżieb area and this results in pressure from recreational activities, vehicles (the reserve is close to a road), and development.

Part of the plateau is planted with Acacia trees from a past afforestation project. The current trees are a source of propagules that can spread to the rest of the SAC. The trees need to be removed to make space for the restoration of the garrigue.

The Mizieb woodland is used and managed as a hunting reserve. As described above the site is of immense ornithological value and as a result, poaching is a factor that affects this site.

Dumping and burning of rubbish was evidenced amongst the Annex I habitats that are close to the access road.

Management Plan Objectives & Actions

Following the evaluation of the features of conservation importance on the site, as well as the factors, a **vision** was established for the site. This vision was developed together with

local stakeholders. **Management Objectives** were then identified that seek to help achieve the vision.

One of the most important objectives is to ensure that each of the habitats identified above are conserved and improved. Species populations and their habitats also need to be conserved or improved as appropriate. Species specifically described in the Management Plan include in particular the Maltese Killifish. In addition to the important species listed in the Habitats and Birds Directive, the Management Plan seeks to ensure the conservation of species of national interest, for example, species that are endemic.

The Management Plan identifies the potential of the site to continue to act as an important educational and public awareness-raising tool.

The importance of agricultural activities and the need to ensure that they conform to regulation is recognised. Moreover, there is a Management Objective that seeks to ensure that no illegal activities take place in the reserve and to monitor permitted activities.

The full list of Management Objectives can be viewed in Chapter 3 of the Management Plan.

In order to achieve the Management Objectives, the Management Plan sets out a number of **Operational Objectives** and subsequent **Actions**, these are summarised in Chapter 4 of the Management Plan and are discussed briefly hereunder.

In order to achieve a number of Management Objectives related to habitat and species conservation, data gathering, monitoring and surveillance are the subject of various Operational Objectives. Regular water monitoring at the lagoon is required.

In view of a number of the importance of the wetland's size a study for the expansion of the Simar lagoon should be carried out, and a subsequent plan should then be drawn up and implemented. All trapping sites should be removed from within the Bird Sanctuary and the affected habitat restored and invasive alien species should be removed at least from the part of the Mizieb woodland that falls within the SAC. Action Plans for selected Red Data Book species should be drawn up and implemented.

The impacts from agricultural activities need to be managed and the plan seeks to ensure CoGAP compliance within the first 5 years (the lifetime of this plan). In addition, farmers will be encouraged to implement nature management measures. Overall, all site users will be lobbied for better protection of the site.

Other, more general objectives, include the need for patrolling within the site to ensure all activities are carried out legally and within the spirit of this Management Plan. Signposting will continue to be developed, and, monitoring data will be published with a view to raising awareness about the importance of this site.

The actions developed to fulfil the objectives are summarised below:

- Monitoring plans for Annex I habitats and Annex II species and including implementation;
- Water quality monitoring plan for the Simar lagoon;
- An assessment of the possibility of extending the coastal lagoon habitat;

- Removal of trapping sites and habitat restoration within the Bird Sanctuary;
- Invasive alien species control and / or eradication;
- Lobbying with site stakeholders for the conservation management of the site;
- Action Plans for selected Red Data Book species and implementation;
- Wardening/patrolling; and
- Signposting and interpretation panels.

Stakeholder Consultation

An important component of the Management Plan is stakeholder engagement. Stakeholders working together will be a crucial element in ascertaining long term successful management of the SAC/SPA. Amongst the stakeholders that were consulted was the St Paul's Bay Local Council.

A meeting with the Simar Wetland Reserve site manager was also held on site. The site manager highlighted the main issues related to the reserve and the surrounding area.

During a stakeholder workshop, the participants mentioned the need for better enforcement through better signage, barriers and active management which includes the involvement of the residents living in the vicinity. The need to safeguard and restore species and habitats was also mentioned. The salt marsh area can be expanded and more sustainable practices adopted. Education is another important factor. The site has great potential for environmental education (for example school visits) and eco-tourism. Agriculture is also an important activity in the SAC/SPA. Introducing sustainable practices in the area is of great importance. This can be done through training of farmers, controlling the use of pesticides and herbicides in the area, and soil conservation practices.

Conclusion

This Management Plan is the first of its kind for the site with a timeframe of 5 years. During implementation, progress must be reported back to the Competent Authority at least on an annual basis. The Plan is a dynamic one whereby changes will be made as and if required based on the progress report findings and in discussion with the site manager, stakeholders, and the Competent Authority.

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Acronyms

ADI	Adi Associates Environmental Consultants Ltd
AEI	Area of Ecological Importance
AHLV	Area of High Landscape Value
CAP	Common Agricultural Policy
CoGAP	Code of Good Agricultural Practice
EAFRD	European Agricultural Fund for Rural Development
EIA	Environmental Impact Assessment
EIONET	European Environment Information and Observation Network
EPSILON	Epsilon International SA, Environmental Consultants
ERA	Environment and Resources Authority
EU	European Union
FCS	Favourable Conservation Status
FKNK	Federazzjoni Kaċċaturi u Nassaba Konservazzjonisti
FRV	Favourable Reference Values
GIS	Geographic Information System
GN	Government Notice
HNVF	High nature value farmland
IBA	Important Bird Area
IRENA	Indicator on integration of environmental concerns into agricultural policy
IUCN	International Union for Conservation of Nature
LN	Legal Notice
MA	Management Agreement
MALSIS	Soil Information System for the Maltese Islands
MEPA	Malta Environment & Planning Authority
MO	Management Objective
MP	Management Plan
MRA	Malta Resources Authority
MRRA	(former) Ministry for Resources & Rural Affairs
N2K	Natura 2000
NGO	Non-Governmental Organization
NSO	National Statistics Office
NTM	Nature Trust (Malta)
OO	Operational Objective
PA	Policy Agreement
PA	Planning Authority
RDB	Red Data Book
SAC	Special Area of Conservation
SDF	Standard Data Form
SEA	Strategic Environmental Assessment
SMR	Statutory Management Requirements
SPA	Special Protection Area
SSI	Site of Scientific Importance
SWOT	Strengths Weaknesses Opportunities & Threats analysis

1 INTRODUCTION

Europe has a wealth of biodiversity and Malta ought to protect its share of European biodiversity for the benefit of its People and of the Country. European and national legislation place a collective obligation on Malta and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation conditions. The Government, the Malta Environment & Resources Authority (ERA) and other government agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites and of the network as a whole.

Sites of the Natura 2000 network are designated as Special Areas of Conservation (SAC) and Special Protection Areas (SPA) according to the Habitats and Birds Directives, respectively, where habitats and species are listed. The Directives are designated to afford protection to the most vulnerable of the species listed.

Managing a protected area is a continuous iterative process that requires sound planning based on knowledge of the site and its features, as well as factors that affect the site. Based on previous knowledge Conservation Objectives for the site are set, which require a line of measures and actions in order for the Objective to be achieved. A management plan aims to describe how the objectives can be reached and how the vision for the protected site can be realized. Typically, a management plan covers a five year period after which it is updated. These plans pave the way for subsequent investment in the rehabilitation and management of the protected areas and provide further commitment and guidance.

The present report is the Management Plan for **Is-Simar (limiti ta' San Pawl il-Baħar)** Natura 2000 site (SAC and SPA) and is structured as follows:

- Chapter 1 provides an introduction
- Chapter 2 outlines information on the site from the designations set out in planning policies and legislations and provides current knowledge on physical and cultural characteristics, including the habitats and species and their conservation status
- Chapter 3 provides the evaluation of features and of factors impacting the site, followed by the SWOT analysis, Vision Statement, Management Objectives and Operational Objectives for the site
- Chapter 4 describes the management actions, i.e. the measures, duties and projects, to be accomplished in the course of the implementation of the Management Plan
- Chapter 5 indicates an annual Work Plan that needs to be prepared in advance of implementing the Management Plan to detail the timing of actions and the allocation of resources
- Chapter 6 provides guidance on the annual reporting and the five year reporting and review of the Management Plan.

The main text is followed by *Bibliography* listing sources utilized for the preparation of the Management Plan, and *six Annexes* in a separate report. The content of the Annexes is described below:

- Annex 1 describes the methodology adopted for the formulation of the Management Plan
- Annex 2 offers supplementary information in terms of Maltese Planning Policies that are relevant to the management plan site

- Annex 3 supplies a description of the methodology for assessing the Conservation Status of habitats and species
- Annex 4 includes supplementary information regarding several of the proposed management actions and their implementation
- Annex 5 contains revenue generation and self-financing opportunities
- Annex 6 contains the maps of the site in A3 format.

2 SITE DESCRIPTION

2.1 LOCATION AND BOUNDARIES

Is-Simar (limiti ta' San Pawl il-Baħar) Special Area of Conservation (SAC) and Special Protection Area (SPA) is located at 35.9464 N / 14.3794 E. Is-Simar (limiti ta' San Pawl il-Baħar) (hereafter referred to as 'Is-Simar') is found in the north-east coast of Malta. It is part of the St Paul's Bay locality boundary and covers an area of 0.5838 km^2. The site is found close to Xemxija and is located in the Pwales Valley and on the Bajda Ridge escarpment.

The east of the site borders Xemxija Bay whilst the west borders the Pwales agricultural area. To the south there is the Wardija Ridge escarpment and to the north there is the Bajda Ridge. This SAC and SPA is close to another two SACs; Il-Ballut tal-Wardija and Ix-Xagħra tal-Kortin. The seaward area of the site borders Il-Grigal ta' Malta Marine Protected Area.

The site incorporates various features. The area includes large tracts of agricultural land, a wetland reserve, rural structures and cultural features (see Figure 1).

Figure 1: Map of the Special Area of Conservation of Is-Simar (limiti ta' San Pawl il-Baħar) (see *ANNEX 6: Maps* for A3 version)

2.2 LEGAL STATUS AND RIGHTS

2.2.1 Ownership

The southern and south-eastern parts of the SAC/SPA are government land. Other pockets that are government owned are found in the northern part of the SAC/SPA, eastwards of Ix-Xagħra tal-Għansar, the Simar area which is found immediately at the back of the wetland reserve and a small pocket to the north-west of the Xemxija settlement (See Figure 2).

The SAC/SPA includes areas of privately owned land, mostly found to the western, central and northern parts of the site. Ix-Xemxija, Il-Pwales, Ta' l-Imbordin and Ta' Ġannaru are predominately private areas.

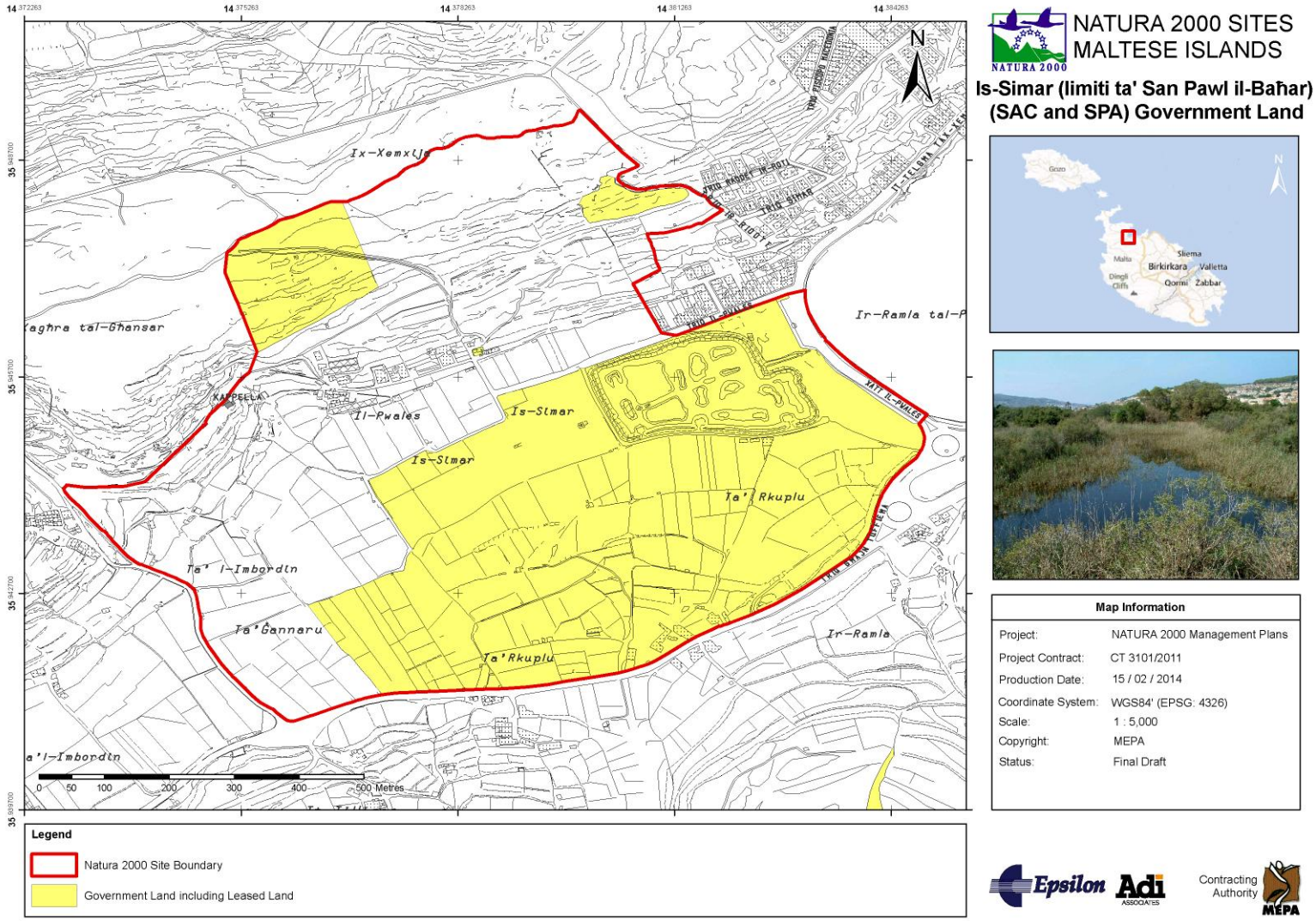

Figure 2: Is-Simar Land Ownership Map (see *ANNEX 6: Maps* for A3 version)

2.2.2 Legal Rights

The Simar Wetland Reserve area is found on government land and is being managed by BirdLife Malta. This site covers an area of 0.052km^2 as seen in Figure 3. The Management Agreement between the Office of the Prime Minister, MEPA and BirdLife Malta 'does not imply any form of title to the above land and/or property located on the site'.

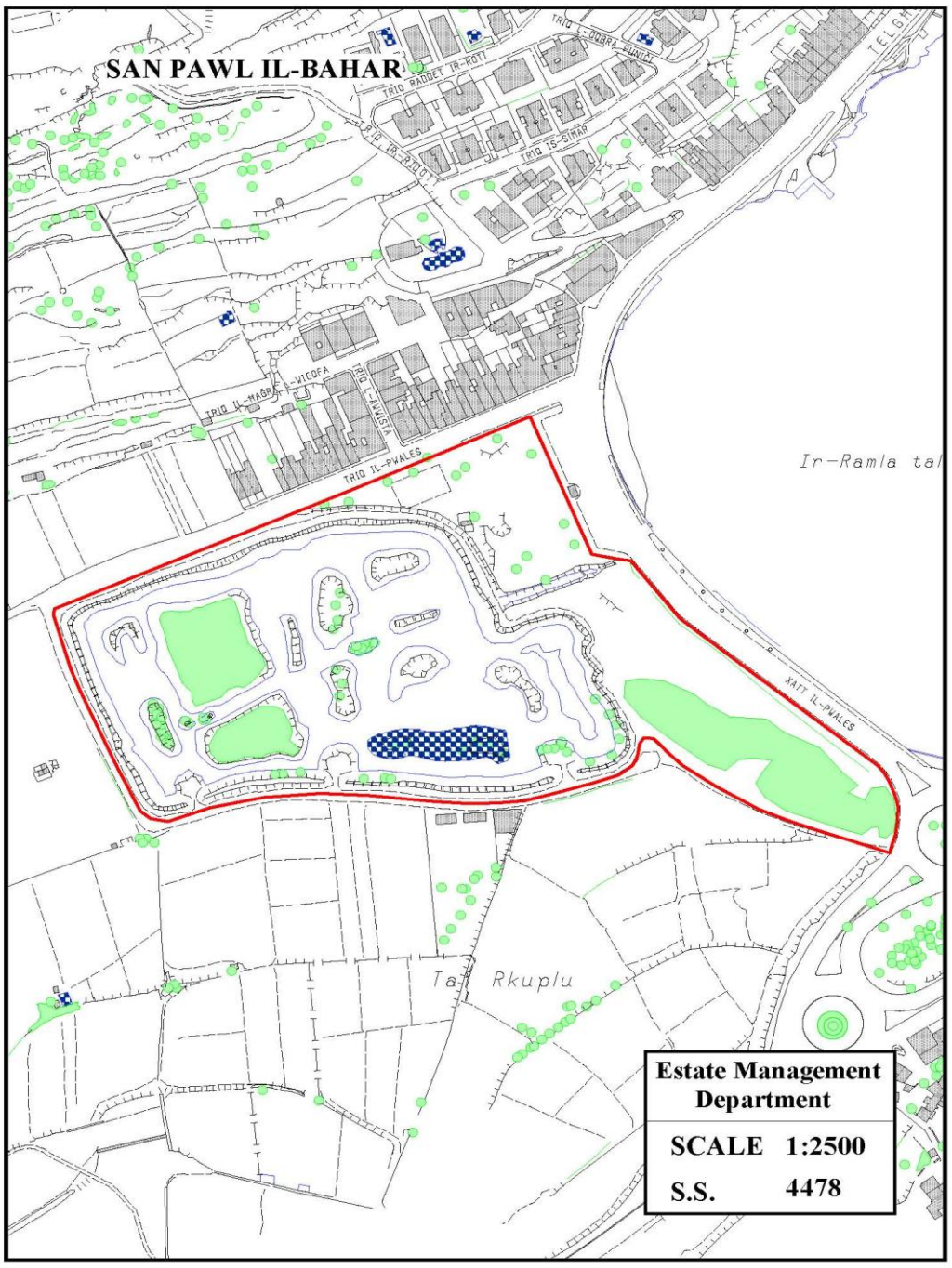

Figure 3: Is-Simar Wetland Reserve area (Estate Management Department)

2.2.3 Site Status

Besides the Special Area of Conservation and the Special Protection Area designations, Is-Simar is characterized by an additional number of statutory and planning designations. These are listed in Table 1. The table includes information on the extent, the type and the respective legislation for each designation. The areas are shown in Figure 4 to Figure 8.

Table 1: Statutory & planning designations

Designation	Name	All / Part of site	Type	Policy / legislation	Figure Reference
Special Area of Conservation – International Importance	Is-Simar (fil-limiti ta' San Pawl il-Baħar)	All	Environment	GN 112/07 LN 311/06	Figure 4
Special Protection Area	Is-Simar (fil-limiti ta' San Pawl il-Baħar)	Part	Environment	GN 112/07 LN 311/06	Figure 5
Area of Ecological Importance, Site of Scientific Importance – Bird Sanctuary (Level 1)	Is-Simar Area	Part	Environment	GN 371/08	Figure 6
Area of Ecological Importance – Garrigue (Level 2)	Is-Simar Area	Part and beyond	Environment	GN 371/08	Figure 6
Area of Ecological Importance – Woodland (Level 3)	Is-Simar Area	Part and beyond	Environment	GN 371/08	Figure 6
Area of Ecological Importance (Level 3 – Buffer)	Is-Simar Area	Part (buffer)	Environment	GN 371/08	Figure 6
Bird Sanctuary	Is-Simar Area	All and beyond	Environment	LN 79/06	Figure 8
Wetland of International Importance	Simar Wetland	Part	Environment	RAMSAR Convention	N/A
Area of Archaeological Importance – Late Neolithic Temple (Class A)	Xemxija	Part	Archaeology	GN 763/98	Figure 8
Area of	Xemxija	Part	Archaeology	GN 763/98	Figure 8

Designation	Name	All / Part of site	Type	Policy / legislation	Figure Reference
Archaeological Importance – Punic Tomb (Class B)					
Area of Archaeological Importance – Buffer	Xemxija	Part	Archaeology	GN 763/98	Figure 8
Scheduled Architecture – Imġiebaħ (Grade 2)	Xemxija	Part	Archaeology	GN 763/98	Figure 8
Scheduled Architecture – Ancient Road (Grade 2)	Xemxija	Bordering	Archaeology	GN 763/98	Figure 8

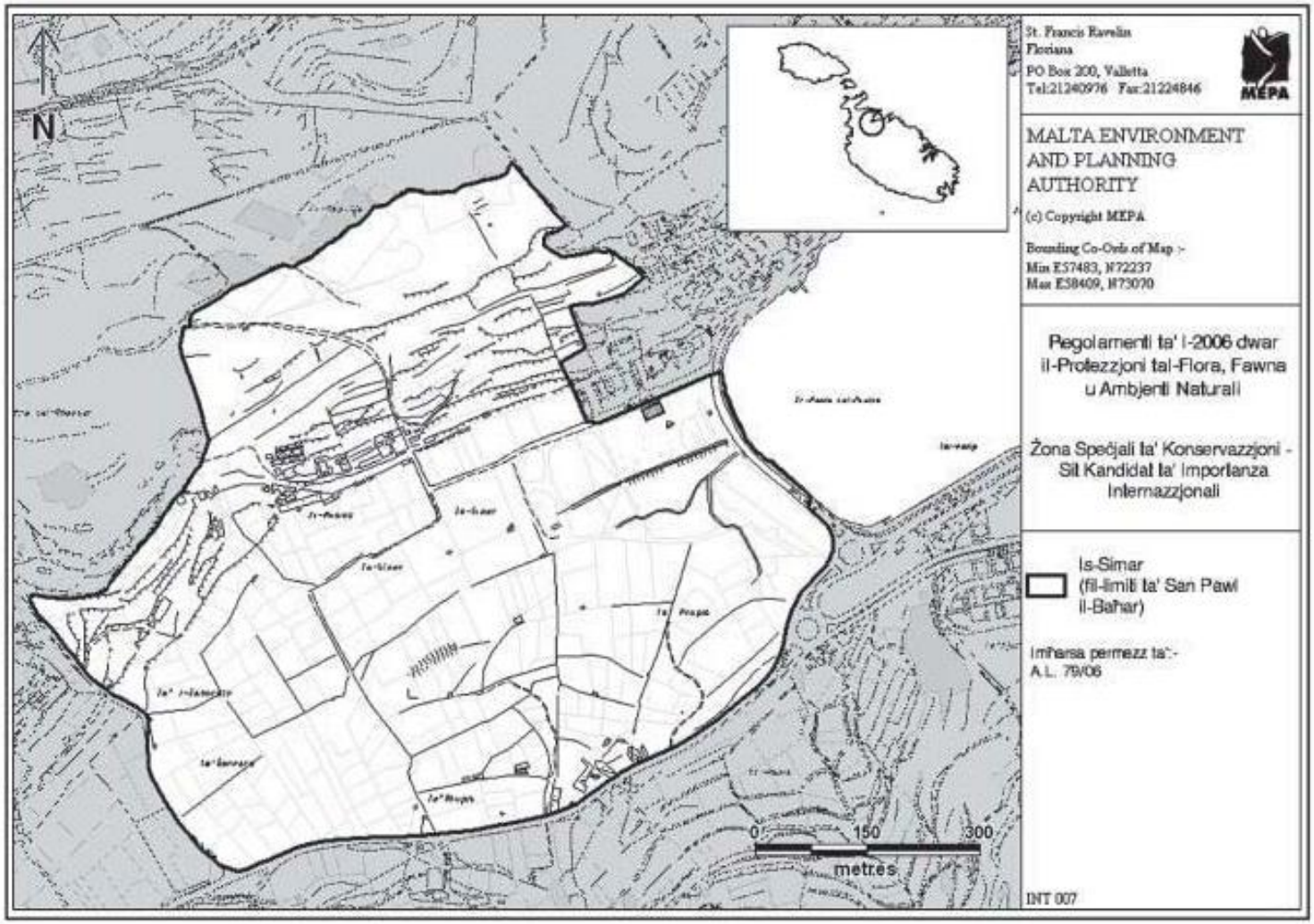

Figure 4: Special Area of Conservation – International Importance

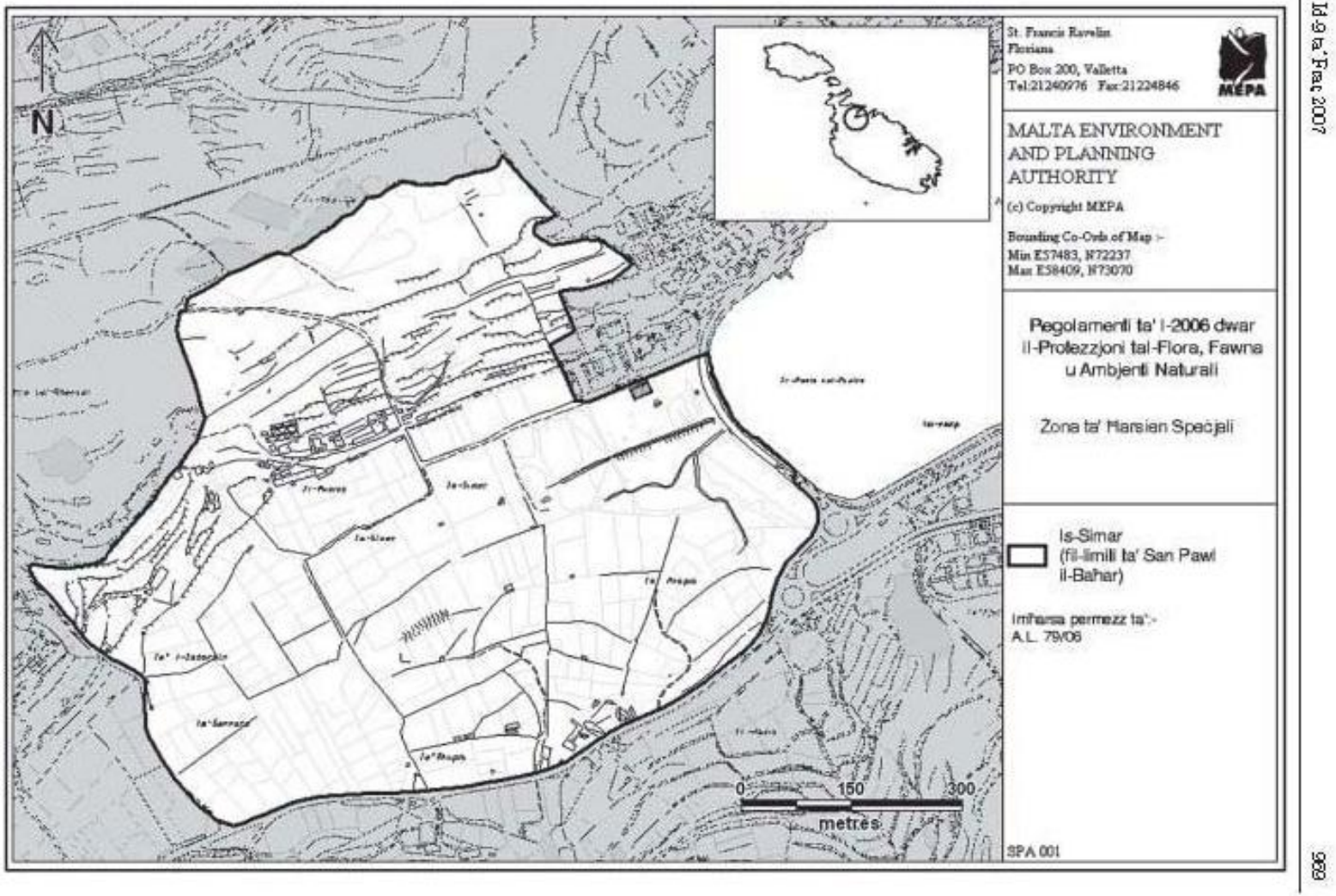

Figure 5: Special Protection Area

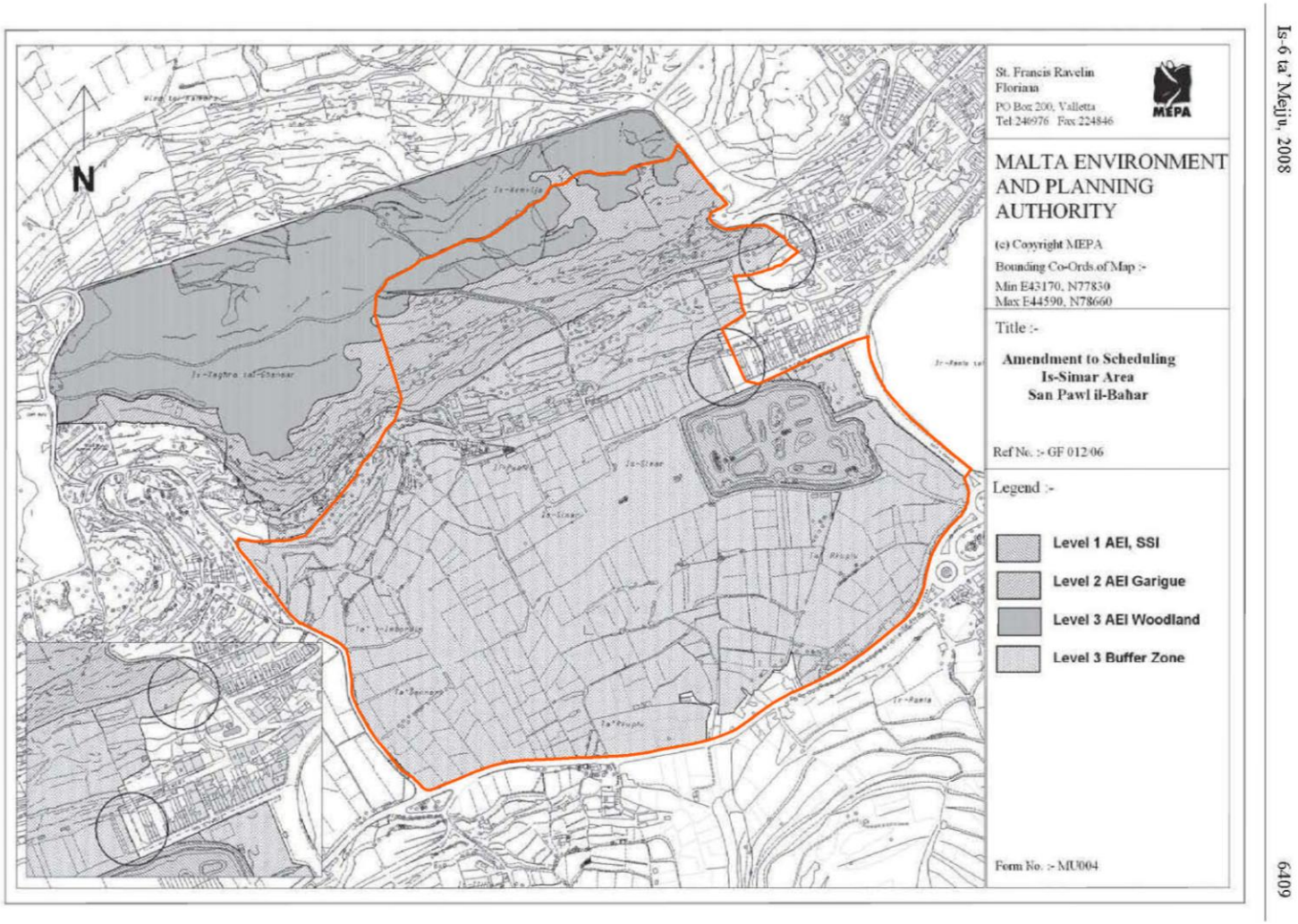

Figure 6: Area of Ecological Importance / Site of Scientific Importance (Is-Simar) (Orange border added to show the limits of the Natura 2000 management plan area)

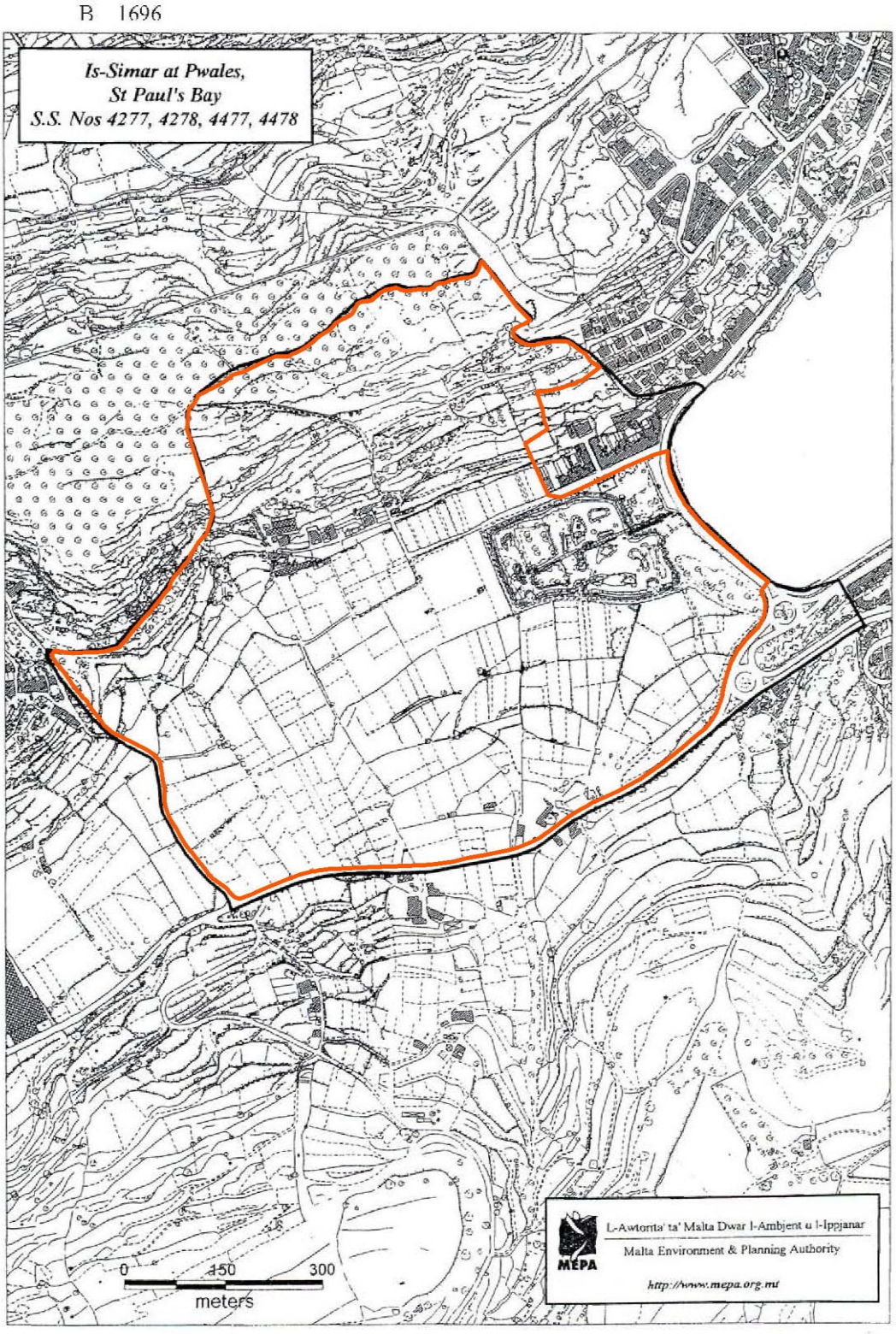

Figure 7: Bird Sanctuary (Is-Simar at Pwales) (Orange border added to show the limits of the Natura 2000 management plan area)

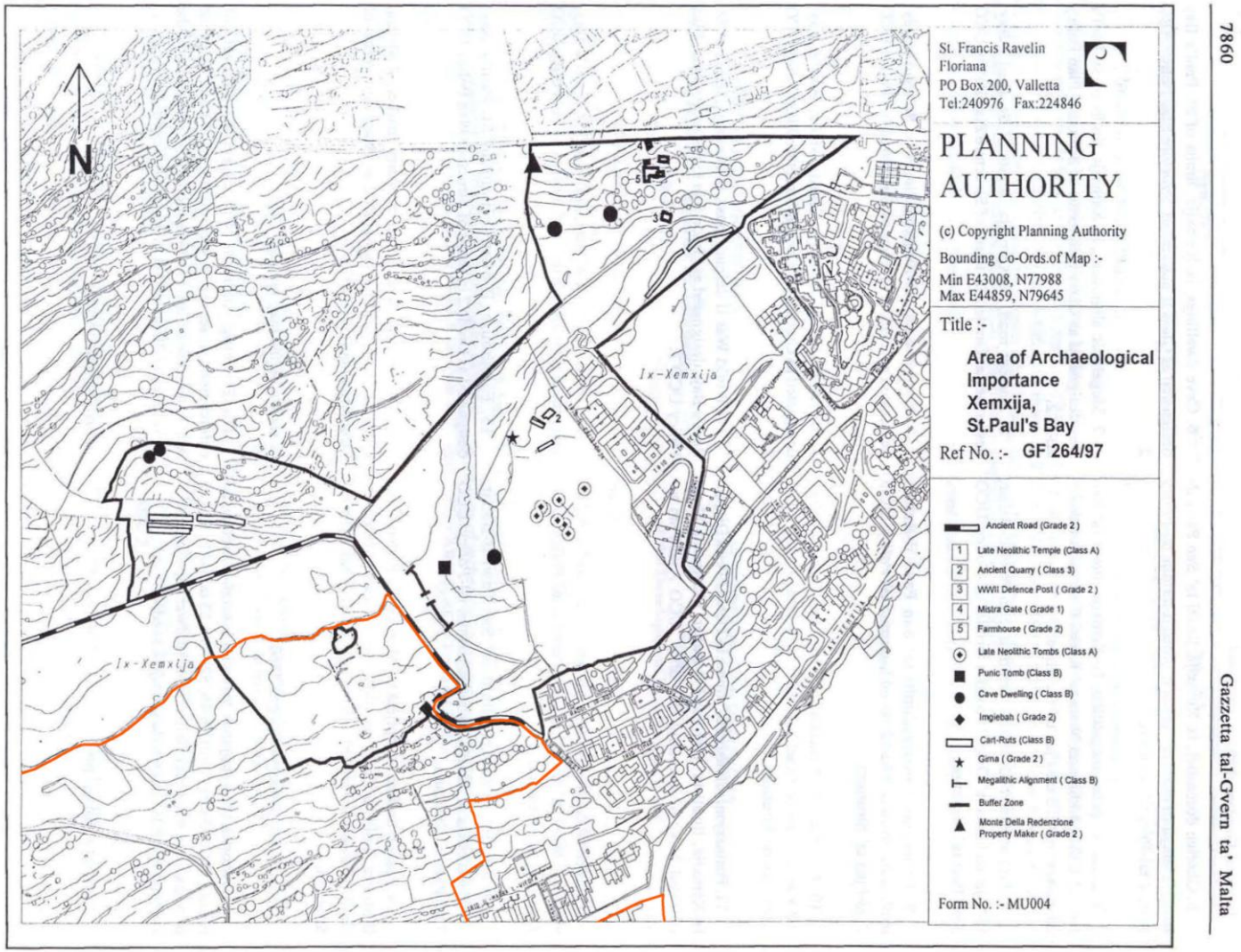

Figure 8: Area of Archaeological Importance (Xemxija) (Orange border added to show the limits of the Natura 2000 management plan area)

2.2.4 Applicable Planning Policies

Policies that concern the development, planning and management of Malta's regions are mentioned in the *Structure Plan for the Maltese Islands* and on *Local Plans*. The main elements of the texts are mentioned below, followed by a focus on the policies applicable to Is-Simar site.

2.2.4.1 Structure Plan

The Structure Plan for the Maltese Islands (1990)[2] has three main goals:

- "To encourage the further social and economic development of the Maltese Islands, and to ensure as far as possible that sufficient land and support infrastructure are available to accommodate it."
- "To use land and buildings efficiently, and consequently, to channel urban development activity into existing and planned development areas, particularly through rehabilitation and upgrading of the existing fabric and infrastructure thus constraining further inroads into undeveloped land, and generally resulting in higher density development than at present."
- "To radically improve the quality of all aspects of the environment of both urban and rural areas."

The Structure Plan policies were reviewed and assessed in order to determine those policies that are relevant to the management planning process. The identified policies are summarised in *ANNEX 2: Relevant Planning Policies*.

The main feature of the SAC/SPA is the saline marshland which is an Area of Ecological Value, a Site of Scientific Importance and a Wetland of International Importance (RCO 1, 10, 11). This feature is already providing an educational platform for the local environment and nature conservation (RCO 39, 41)

The policies related to the improvement and safeguarding of the agricultural sector and rural character are particularly important for this site since this use accounts for more than 60% of the site's land cover (Policies AHF 1, 4, 8, 13, 16). The site also has a number of heritage and rural features which require protection and conservation (AHF 8, RCO 1, ARC 2, 3).

2.2.4.2 Local Plan

The Local Plans present a planning framework that highlights the land use issues to be adopted and implemented at a local level. The Plan corresponding to Is-Simar management plan area is the North West Local Plan (2006). The relevant policies are summarised in *ANNEX 2: Relevant Planning Policies.*

[2] The Structure Plan is currently being reviewed and will be replaced by the Strategic Plan for the Environment and Development (SPED).

Parts of the SAC/SPA are within the limit of development (NWUS 3, 4). The site also includes a Category 3 (NWRS 4) Small Rural Settlement (ODZ) and borders a Category 2 Large Rural Settlement (ODZ).

The Local Plan policies on Agriculture are important due to the extensive agricultural activities present (NWAG 1, 2). Adjacent to the wetland reserve there is a vacant fish hatchery that was used by the aquaculture sector (NWAG 5).

The site also has potential within the tourism sector. Since the SAC/SPA is very close to a main touristic area it can attract tourists to the site. The visitor centre at the Simar Wetland Reserve is in line with NWTO 3 which calls for the development of visitor attractions.

The Local Plan has a number of conservation policies that aim at protecting both the human and natural features of the site (Policies NWCO 4, 6, 7, 8, 10, 13, 14).

2.2.5 Other Plans

Other plans include topic papers that were compiled as part of the Structure Plan Review. The aim of these plans is to recognise the important issues and to recommend a strategic direction. In the case of this management plan, the most relevant topic papers are the following:

- Tourism Topic Paper
- Leisure and Recreation Topic Paper
- Coastal Strategy Topic Paper
- Rural Strategy Topic Paper
- Landscape Assessment Study of the Maltese Islands.

2.2.5.1 Tourism Topic Paper

The topic paper:

- Is particularly relevant for the management plan area because of the presence of Xemxija in the vicinity. The topic paper points out that “tourism offers the opportunity to achieve cultural/environmental conservation and improve the socio-economic fabric of the local residents. It is concerned with the visitor’s experience, and, therefore, embraces wider considerations including hotels, transportation services, restaurants, attractions, the quality of the environment, the attitudes of the local residents, etc”.
- Discusses the presence of Outside Development Zone developments and rural tourism. The topic paper argues that rural tourism should be supported by small-scale infrastructure and development rather than large-scale development. Thus in cases where development is already in place, it would be better to restore and refurbish existing buildings. It is in this spirit that the authenticity of the rural tourism product can be preserved and safeguarded. Is-Simar includes an Agricultural Heritage Museum.
- Identifies a number of activities that are essential for the provision of the rural tourism product. These include horse-riding, trekking, cycling, adventure tourism and nature watching. All these activities are either already present at Is-Simar SAC/SPA or else are possible to implement.
- Cites a Study which identifies Xemxija Bay as a potential location for the development of a new yacht marina.

2.2.5.2 Leisure and Recreation Topic Paper

In the section dealing with Rural Recreational Areas, the Topic Paper identifies Is-Simar Wetland Reserve as a place for bird watching and nature appreciation. The Topic Paper also cited a Study that identified Xemxija Bay as a potential location for the development of a new yacht marina.

2.2.5.3 Coastal Strategy Topic Paper

This topic paper:

- Provides a coastal boundary for Malta by taking into account ecological, physical and administrative factors. Approximately half of the management plan area falls within the Coastal Zone as defined by the topic paper.
- Describes how coastal ecosystems have a very delicate natural equilibrium and are thus sensitive to both natural and anthropogenic disturbances. Is-Simar is an example of a saline marshland.
- Highlights that saline marshlands are a scarce habitat in the Maltese Islands. These habitats are maintained by water which originates directly or indirectly from precipitation and not from tidal influences. During the dry season the water collected starts evaporating becoming more brackish and eventually hyper-saline. Eventually it completely dries out up to the following wet season with the exception of two pools. The number of saline marshlands has reduced over the years and the existing ones are generally under threat from negative human impacts.
- Identifies various sectors that can have an implication on the national coastal strategy. The coastal strategy emphasises that the tourism and recreation industry should be safeguarded and access within the coastal area is protected as long as this does not cause unnecessary negative impacts.
- The proposed coastal strategy identifies the objectives:
    - Protect coastal and marine habitats and biodiversity
    - Protect cultural heritage
    - Protect coastal uses that necessitate a coastal location
    - Promote and protect public access and use
    - Minimize existing and potential user conflicts.
- Describes the Coastal Zone partially covered by the management plan boundary as Predominantly Urban Coast. The strategy for this specific type of coast is "to safeguard the existing legitimate coastal uses and to minimise existing and potential conflicts The protection of open space for public use is to be safeguarded Existing legally approved uses and development within protected areas should be allowed to continue, provided that it does not affect the value of the protected coast negatively".

2.2.5.4 Rural Strategy Topic Paper

The topic paper:

- Addresses three main aspects related to the management plan area, namely, agriculture, country side recreation and conservation. Notwithstanding being identified as a predominantly urban coast by the Coastal Strategy Topic Paper, agricultural fields cover an extensive part of the management plan area. Agriculture is considered a multifaceted practice which contributes "towards food production, landscape

enhancement, protection of the environmental and countryside recreation In this regard, Government's emerging policy on agriculture follows the concept of 'integrated rural development', as outlined in the EU's Rural Development Programme."

- Discusses countryside recreation, which it defines as "any pursuit or activity engaged upon during leisure time, or as part of provision for education and training which makes use of the natural resources of the countryside."
- Identifies the countryside recreational activities in Malta and their compatibility with other countryside recreational activities.
- Identifies the south east area of Malta as an area with potential rural tourism It also suggests that agricultural and non-agricultural activities are integrated in order to diversify the rural economy.
- Touches upon the issue of visitor management and its importance in safeguarding sensitive areas. Visitor management is an essential tool for striking the right balance between rural conservation and countryside recreation.
- Calls for the management of rural areas and suggests the use of the IUCN Protected Area Management Categories (IUCN 1994)[3].
- Refers to the Public Attitude Survey (PAS) published in 2000. The PAS identified those areas in the countryside that the public wants to see protected from development. Xemxija which is partially part of the SAC/SPA got 26 mentions from 3,000 persons as a place that deserves protection.

2.2.5.5 Landscape Assessment Study of the Maltese Islands

This study prescribes and describes the main character areas of the Maltese Islands. There are two Landscape Character Areas within is-Simar SAC/SPA.

- Bajda Ridge (M7) is "a ridge (Horst) stretching from east to west for a distance of around 3 km. Manikata, Xemxija and a number of other small settlements can be found in this area but in general terms this tract of land is rather undeveloped. Considerable areas of the ridge are afforested. Pockets of cultivated areas and garrigue predominate near the western part of the ridge. Extensive views can be appreciated from areas close to the ridge edges". The main detracting features are tipping and dereliction, and high-tension power line lattice towers.
- The Pwales Valley (M8) stretches from Xemxija Bay to Golden Bay. The valley is predominantly cultivated and includes tourist facilities to the south-west of the area. As with the previous Landscape Character Areas high-tension power line lattice towers are a detracting feature.

2.3 MANAGEMENT INFRASTRUCTURE

Most of the site is being managed. The saline marshland is being managed by BirdLife Malta whilst an extensive part of the SAC/SPA is agricultural land which is cultivated and managed by farmers.

[3] It is to be noted that the Topic Paper was written prior to EU accession and the promotion of international management categories at the time was geared more towards the IUCN concept of protected areas.

Up until the 1980s, the is-Simar saline marshland was in a very poor condition and was used as a dump. The original habitat was completely degraded and only small remnants of it remained. The site also had acacia and eucalyptus. The site was converted into a wetland reserve in 1992 by BirdLife Malta.

The SAC/SPA lacks proper management in its northern side. The north-eastern corner includes part of the Xemxija Heritage Trail. This Heritage Trail includes the features found in the Xemxija AAI. The project was started by the San Pawl il-Baħar Heritage Group in 1993.

2.3.1 Facilities and Services

Is-Simar is characterised by the following facilities and services (see Figure 17):

Agriculture and fisheries: The main land use in the area is arable farming (see Figure 9). The Pwales Valley is known as a rich and fertile farming area. There are also a number of green houses. Adjacent to the salt marsh there is a vacant fish hatchery.

Figure 9: Arable farming at Simar

Conservation: The main ecological feature in the SAC/SPA is the Simar Wetland Reserve that is being managed by BirdLife Malta (see Figure 10). The site consists of a human-engineered saline marshland. The site covers an area of around 0.58 km^2. Prior to its conversion into a wetland reserve, Simar was a disturbed site with remnants of a saline marshland. The reserve was created by first excavating the soil to lower the ground leaving some islands. The soil that was removed was used for the creation of embankments. On top of the Bajda Ridge there is also an afforested area, il-Mizieb which is dominated by pine and olive trees (see Figure 11).

Figure 10: Simar Wetland Reserve

Figure 11: Afforested area dominated by pine and olive trees

Recreation and leisure: The SAC/SPA includes a promenade along Xemxija Bay and a permanent kiosk at the Xemxija Bay car parking area (see Figure 12). The site also includes the Xemxija Heritage Trail which includes an ancient road, a punic tomb, an apiary (Imġiebaħ) and a late Neolithic Temple found in the edge of the afforested area (see Figure 13). There is also a proposal for the replenishment of Ir-Ramla tal-Pwales using imported sand (TRK 145703).

Transport: Car parking is found along the Xemxija promenade and close to the kiosk,(see Figure 14). At Ta' Rkuplu and Pwales there are some garages (vehicle storage facilties).


Figure 12: Open spaces along Xatt il-Pwales


Figure 13: Cultural heritage features (late Neolithic temple and Punic tomb)

Figure 14: Car parking facilities close to the kiosk at Xemxija

Utilities and infrastructure: The SAC/SPA has a number of water reservoirs that are used for agricultural purposes (see Figure 15). The site includes a sewerage pump which is located behind the Simar Wetland Reserve.

Residential: The site has a number of dwellings which are found below the Bajda Ridge escarpment in the Pwales area and a Small Rural Settlement (Category 2) at Ta' Rkuplu.

Community services: The only community service found within the SAC/SPA apart from the visitors' centre (educational facility) within the Wetland Reserve, is a chapel dedicated to St. Anne (see Figure 15). This place of worship is located at the foot of the Bajda Ridge escarpment beneath Ix-Xagħra tal-Għansar. Other services were identified outside the SAC/SPA and are related to the tourism industry; mainly restaurants and hotels (for example Xemxija Bay Hotel and Porto Azzurro Aparthotel).

Vacant and derelict: The site includes a vacant land based fish farm which is close to the wetland reserve and an old derelict farmhouse (see Figure 15 and Figure 16).

Figure 15: Derelict farmhouse, reservoirs and St Anne's Chapel

Figure 16: Vacant fish farm

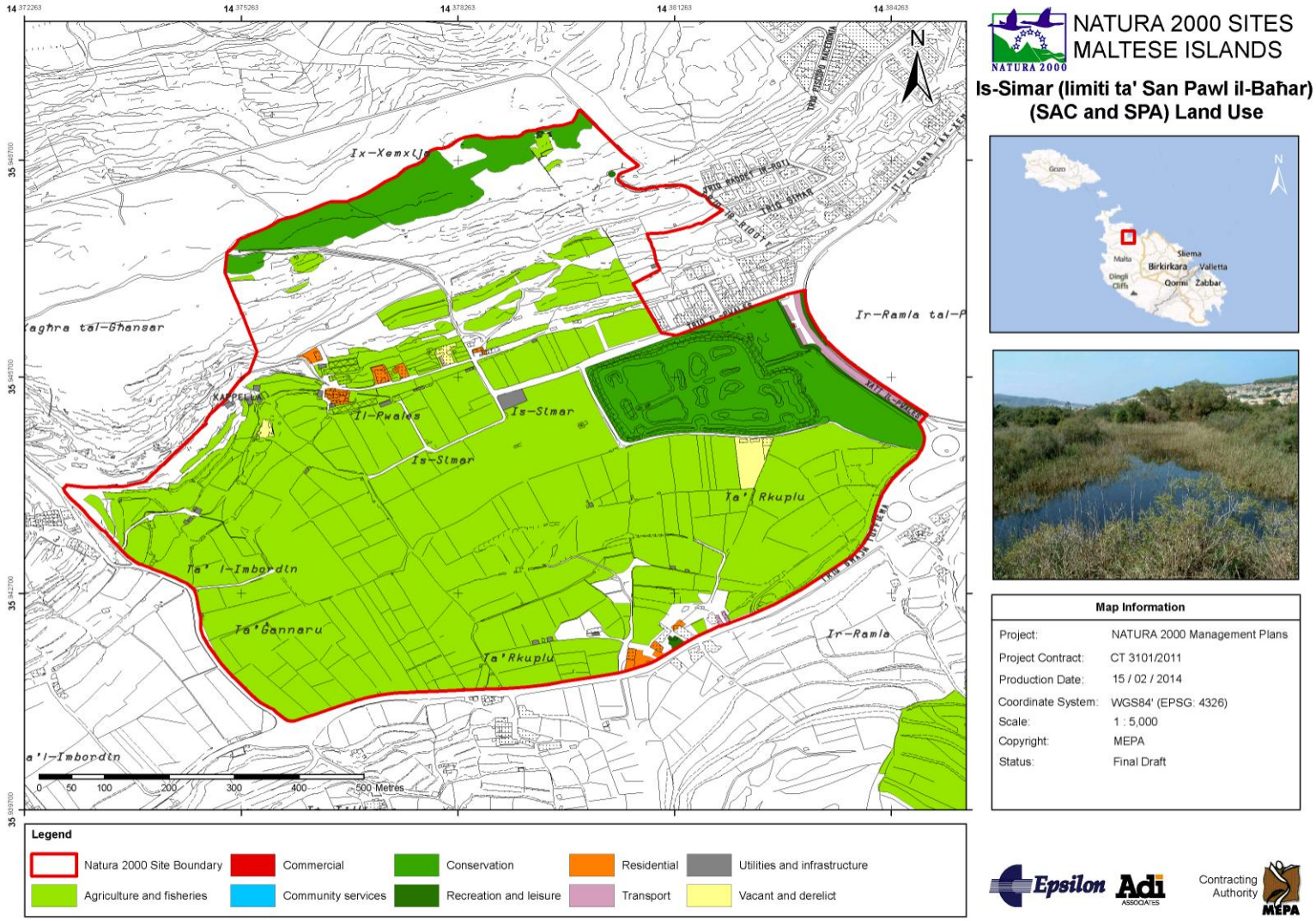

Figure 17: Is-Simar Land Use Map (see *ANNEX 6: Maps* for A3 version)

2.3.2 Health and Safety

This section is not intended to replace a Health and Safety Audit, it is a review of any records of past accidents or problems in the site and surrounding area and a summary of observations made during the site visits carried out in March, May and June 2013.

Is-Simar area does not have many health and safety hazards. There are potential threats throughout the site. Some of these threats include the following elements:

- Signs of fires for barbecues and/or cook outs were noted in the afforested area (pine tree area) (see Figure 18). These activities can result in larger and uncontrolled fires.

Figure 18: Sign of fire in pine tree area

- Dumping and littering in the garrigue areas (see Figure 19).

Figure 19: Dumping and littering

- Remains of former trapping sites and signs of hunting (for example hunting cartridges) (see Figure 20).


Figure 20: Hunting and trapping

- A container of Dissolvine® E3-9, which is a harmful and corrosive chemical, was noted in an abandoned field and was placed on a wooden pallet. It was unclear whether this container really kept this chemical and what is being used for. The main risks are spillages, contamination of the ground water and the Simar water body (see Figure 21).

Figure 21: Container of Dissolvine® E3-9

- The old farmhouse close to St. Anne's Chapel can be structurally dangerous (see Figure 15).

- A wellhead in the field close to the scheduled Miġbaħ, was not properly covered (see Figure 22).

Figure 22: Wellhead close to the scheduled Miġbaħ

2.4 CLIMATE

The Maltese Islands' climate is a typical Mediterranean one with mild wet winters and hot, dry summers. Precipitation is in the form of rain, hail, dew and soft rime. The average precipitation rate calculated over 30 years (1961-2010) is that of 553.12mm with a standard deviation of 156.99 mm (28.38 co-efficient of variation) (see Figure 23).

The average annual temperature is 18.62°C with a standard deviation of 0.40. The annual mean temperature varies from a minimum of 17.9 to a maximum of 19.7. The monthly temperature means vary from 12.4°C in winter to 26.3°C in summer. This variation is the result of the regional weather trends and the moderating influence of the sea (see Figure 24 and Figure 25). Grass-height minimum temperature is also recorded by the Meteorological Office and in this case temperatures less than 0°C were also recorded. The lowest minimum grass-height temperature was recorded in February 1983 when the temperature dropped to -5.1°C (NSO 2011).

Relative humidity during 1961 to 1990 varied from the monthly mean of 87% in January and 61% in June. The highest monthly relative humidity recorded was 89% in December 1993. The lowest monthly level was that of 54%, recorded in June 2006. The Maltese Islands receive a considerable amount of sunshine throughout the year with the most variable month being August due to the changes in weather that start during this month.

The mean annual wind speed over the 1961-1990 period is that of 16.3km/hr. The monthly means show that there is considerable variability. April had the highest mean monthly speed

(19.km/hr) over the same 30 year period. The most dominant wind is the North-westerly wind known as Il-Majjistral and blows on an average of 20.7% of the days per year (see Figure 26).

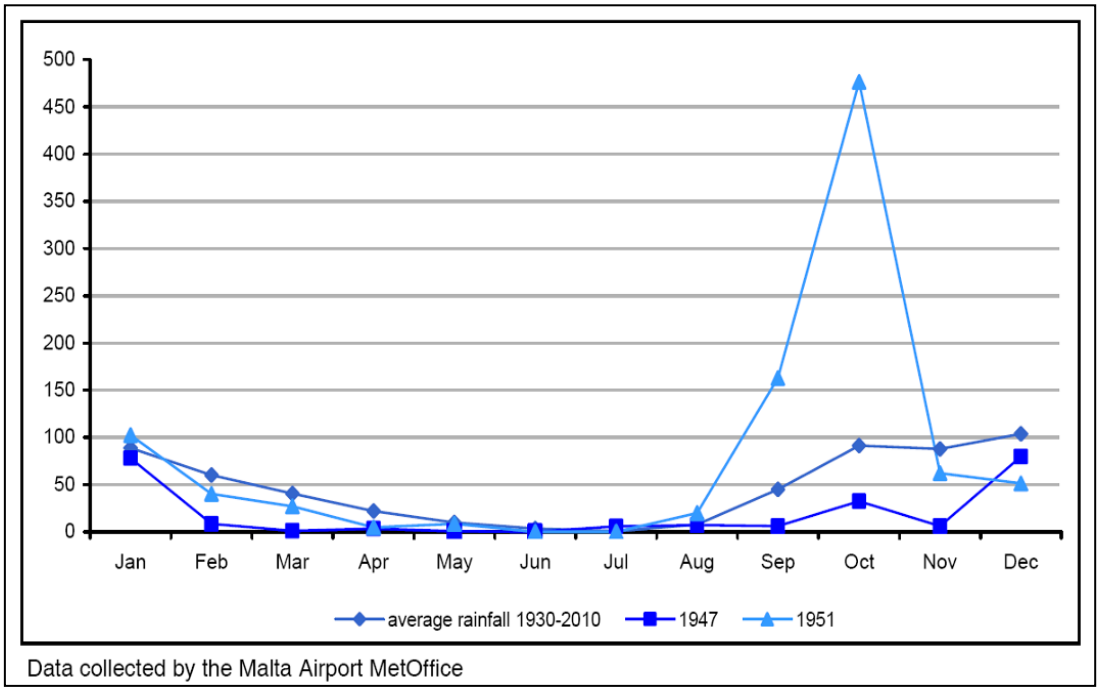

Figure 23: Precipitation; dry/wet yrs compared 1930–2010 averages (NSO 2011)

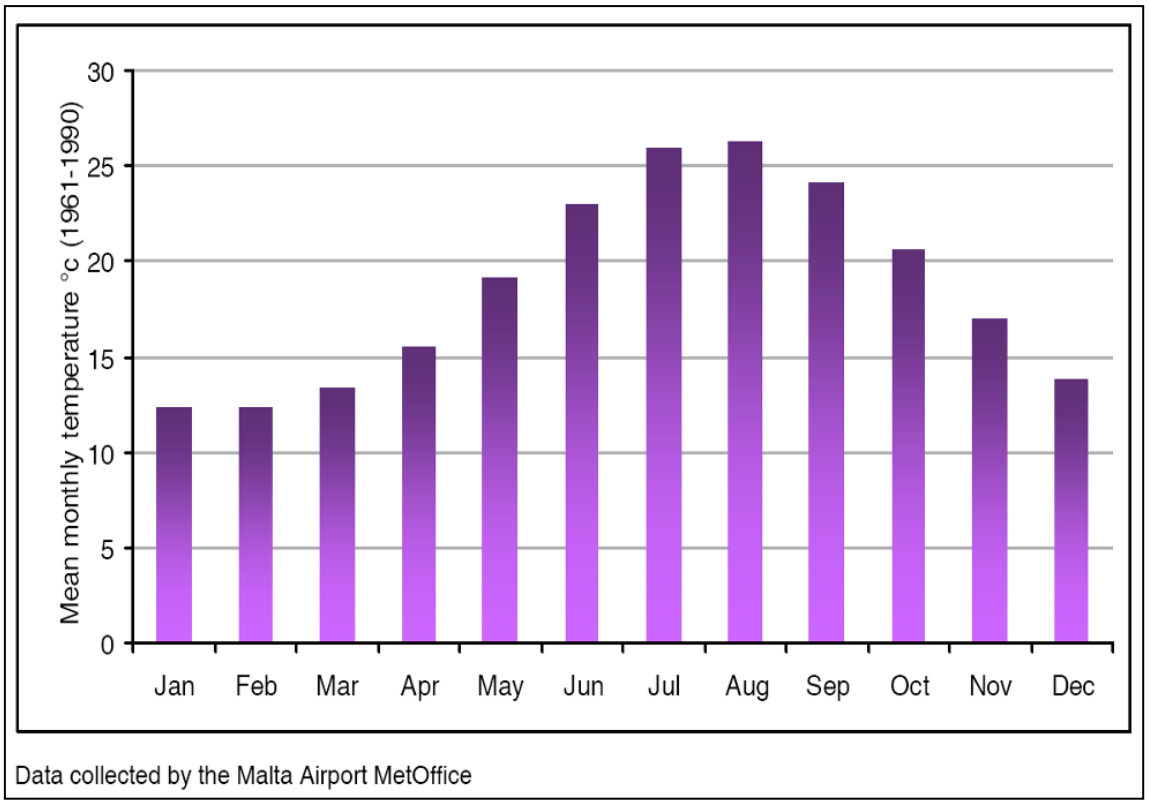

Figure 24: Mean monthly temperature (NSO 2011)

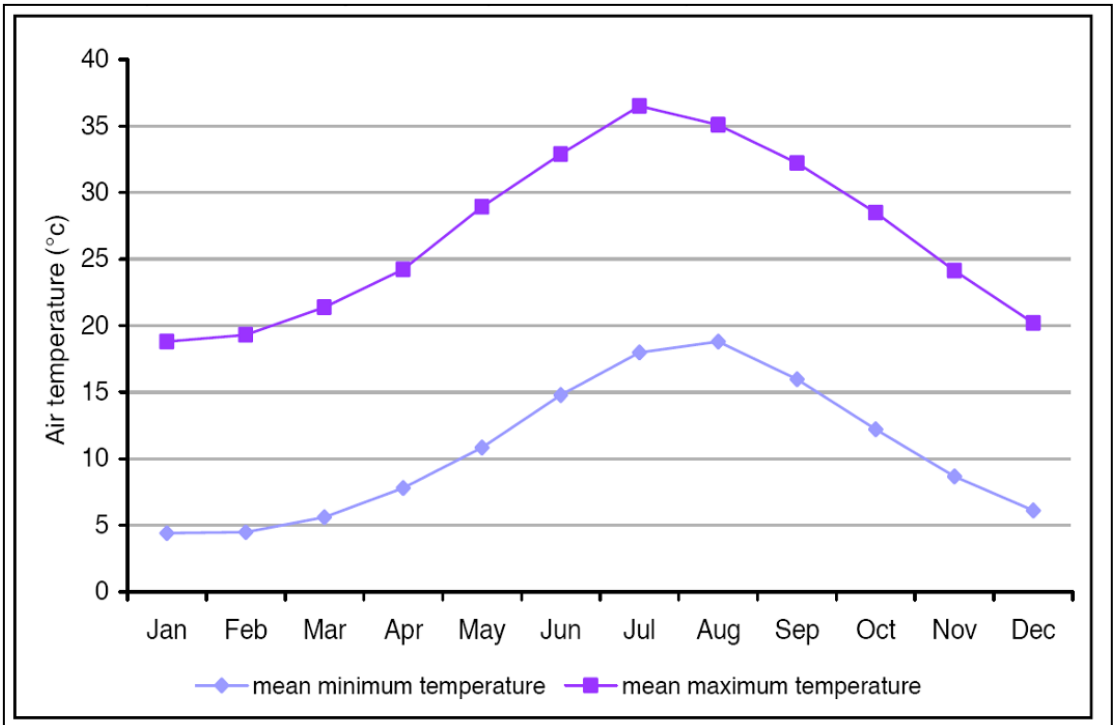

Figure 25: Mean minimum and maximum air temperature [Based on the 30-year climate period] (NSO 2011)

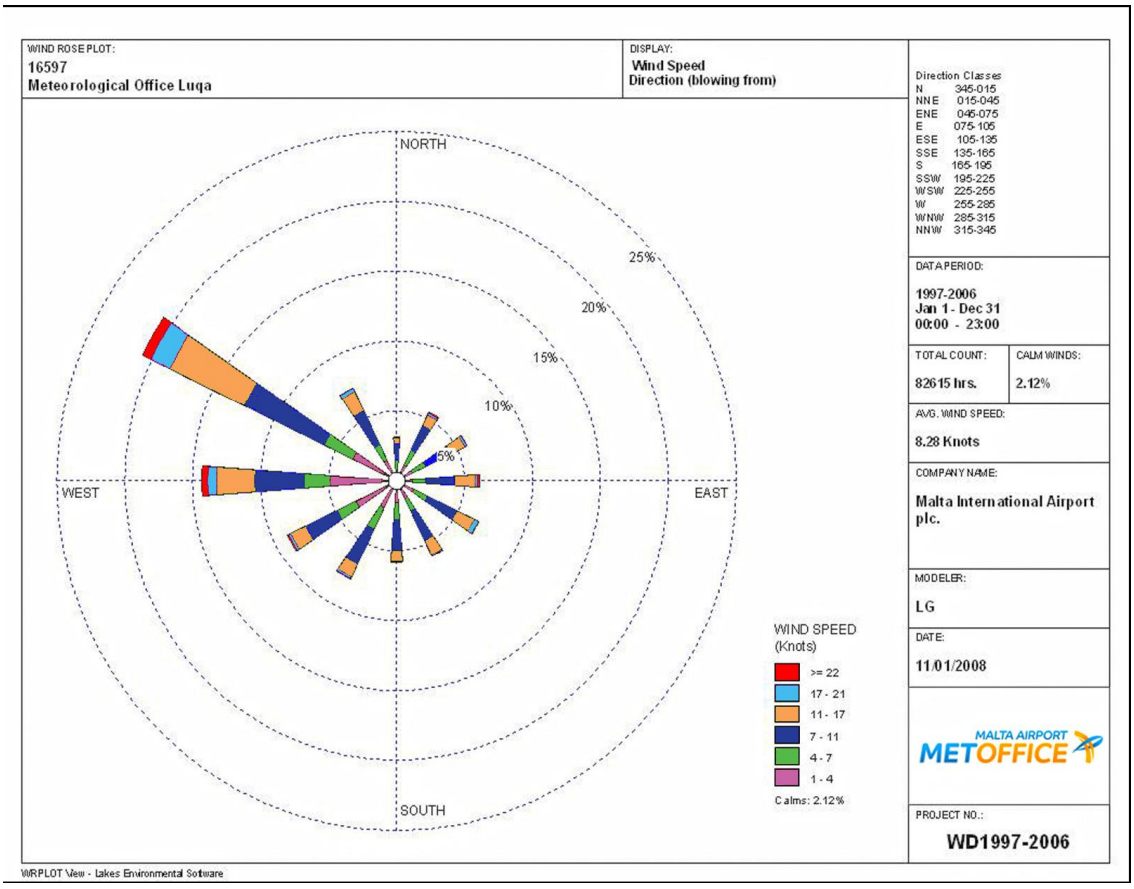

Figure 26: Wind rose for the period 1997-2006 (NSO 2011)

2.5 GEOLOGY

2.5.1 Lithology

The Maltese Islands were formed from marine sediments deposited on the Pelagian Spur during the Oligo-Miocene Age. The detaching of the Sicilian-Tunisian platform from the African Continent and the colliding movement between the African and Eurasian plates resulted in the creation of the Pantelleria Rift Systems. Faulting resulted in the subsiding of rifts and the uplifting of ridges like the Maltese Islands. Once these uplifted sections emerged from below the sea they were exposed to the elements and agents of erosion which sculptured the current landscapes.

The Maltese Islands are made up of following five limestone formations:

- Upper Coralline Limestone Formation (youngest);
- Greensands Formation;
- Blue Clay Formation;
- Globigerina Limestone Formation;
- Lower Coralline Limestone Formation (oldest).

The geology of the management plan is closely linked with the geomorphological aspects and formations. The most common rock formation is the Upper Coralline Limestone (mainly tal-Pitkal Member and an outcrop of Mtarfa Member). There is also a Blue Clay formation outcrop (see Figure 28).

2.5.2 Structural Geology

The Maltese Islands have two main faulting systems. The Magħlaq Fault runs along the North-West – South-East Coast and has resulted in the North East tilt of the Maltese Islands. The Great Fault runs from Pembroke to Fomm ir-Riħ, dividing Malta into two main blocks. The north of the Great Fault is characterised by horst and grabens (i.e. ridges and rifts) whilst to the south of the Great Fault is flat land with the exception of the Rabat-Dingli Uplands. In the southern part of Malta, the Upper Coralline Limestone and Greensands formation have been eroded away and what remain are the Globigerina Limestone and the Lower Coralline Limestone formations. The predominant rock type is the Lower Globigerina Member.

Is-Simar management plan area is located in the area north of the Great Fault which is characterised by horsts and grabens. These features are also identifiable in the same management plan area. The site includes part of the Bajda Ridge and the Pwales Valley. The Pwales Valley is a rift valley found between the Bajda Ridge to the north and the Wardija Ridge to the south. The surface of the Bajda Ridge is characterised by Tal-Pitkal Member (20/30 to 60 m above sea level) with an outcrop of the underlying Mtarfa Member (10 to 30m above sea level) going all across the bottom part of the escarpment. To the eastern part there is also an outcrop of Blue Clay. The Pwales Valley (0 to 10m above sea level) is a downthrown block which is also characterised by Tal-Pitkal Member. This is an indication of the faulting present in the area (see Figure 28 and Figure 29).

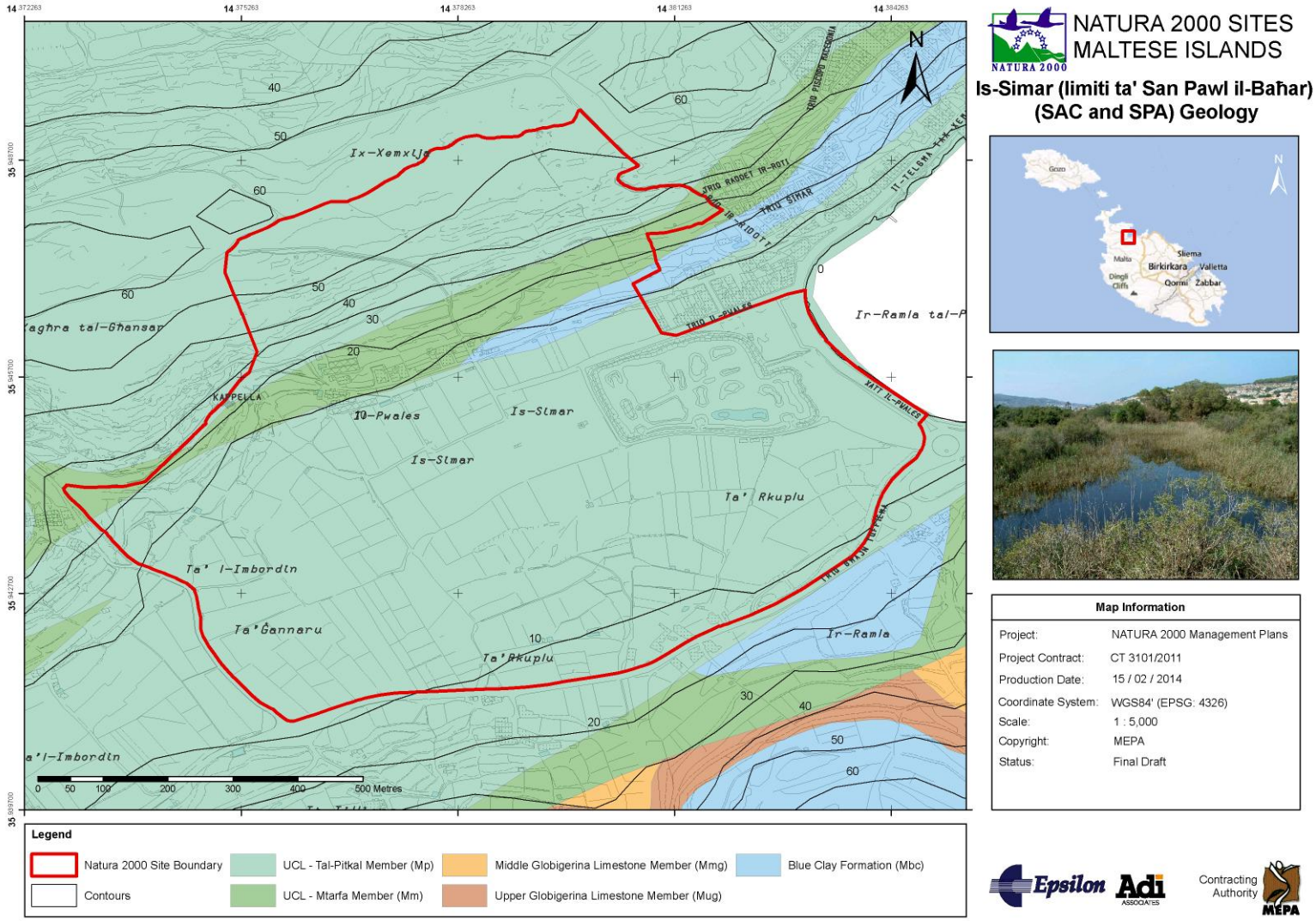

Figure 27: Is-Simar Geology Map (see *ANNEX 6: Maps* for A3 version)

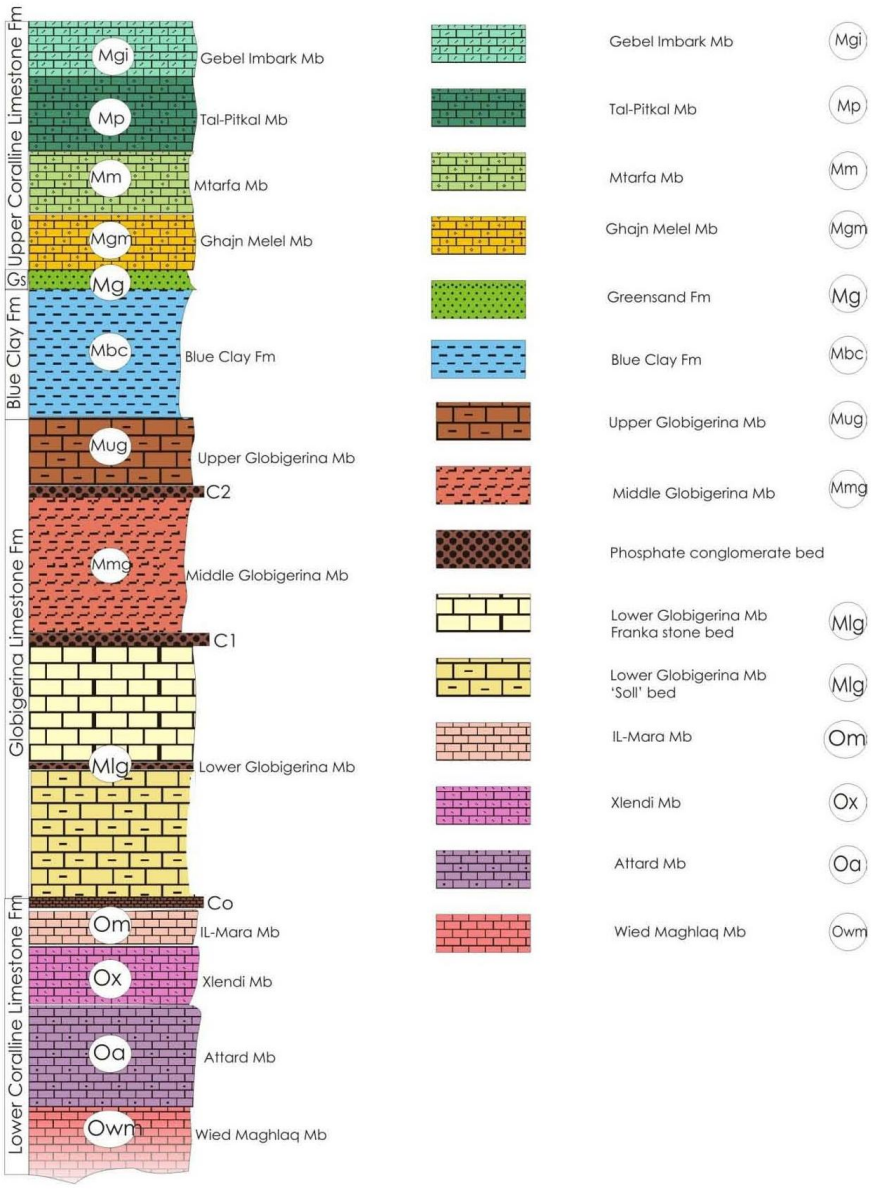

Figure 28: Lithostratigraphic column of the Maltese Islands (Terracore 2013)

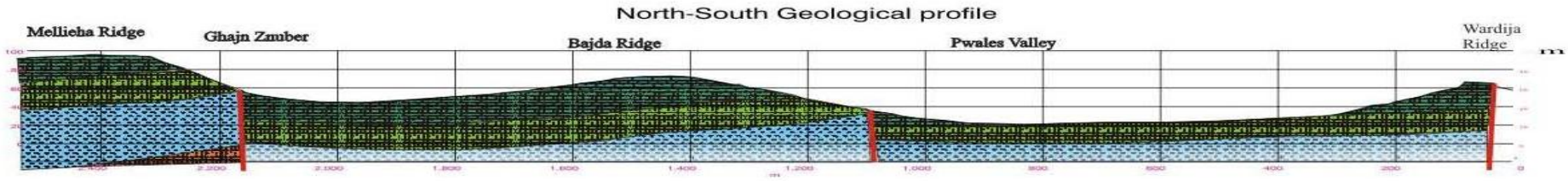

Figure 8: Schematic North –South Cross section extending from Wardija Ridge to Mellieha Ridge

Figure 29: Schematic North-South Cross section extending from Wardija Ridge to Mellieħa Ridge (Terracore 2013)

2.6 GEOMORPHOLOGY

The SAC is located in an area where horsts and grabens are a dominant landform. The highest point of the SAC/SPA is 60m above sea level. The SAC/SPA includes Xemxija Bay. The bay is not particularly deep and deepens to 17m at its mouth. The bay also has a sandy beach (see Figure 12 and Figure 30). Figure 31 shows the status of Ir-Ramla tal-Pwales in the 1930s and 1940s. In 1950s wave breakers were placed and later replaced by a solid wall. Key walls result in reflecting oncoming waves creating an erosive environment. Sediments at Simar indicate that the road was constructed on the beach itself. The solid wall resulted in the erosion of the beach and by 1957 it was greatly eroded. Today only a small pocket of sand in the north-western corner remains (Terracore 2013).

There are two sources for the sediments of Xemxija's sandy beach. The first source is related to the erosion of Upper Coralline Limestone boulders by wave hydraulic action. The other source is a terrigenous source that comes from the Pwales run-off. However this source does not produce an abundant supply of sediment, since the rocks and the fill of the valley are quite permeable and the gradients are low. This results in the settling of the sediment load within the flood plain itself. The discharge point does not show any sediment accumulation.

Figure 30: Xemxija sandy beach covered with *Posidonia oceanica* banquettes

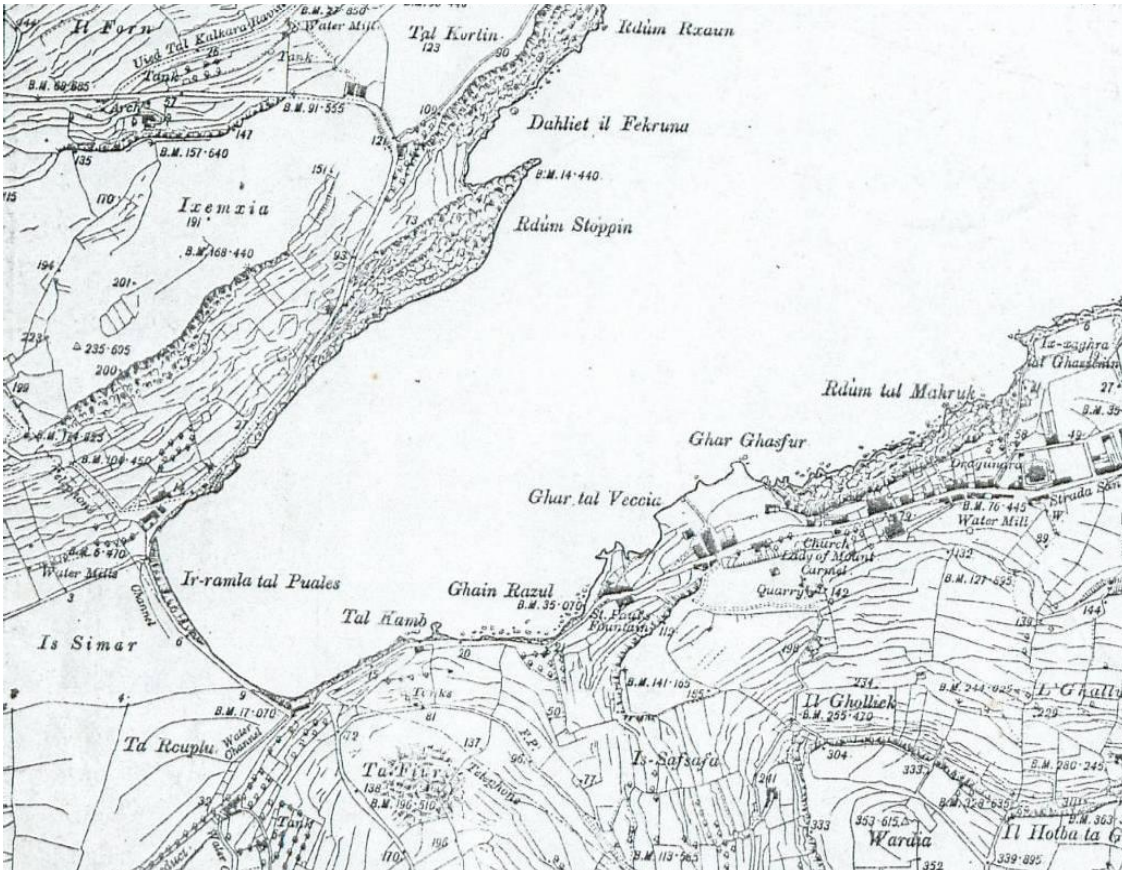

Figure 31: Extent of Xemxija's sandy beach in the 1930s and 1940s (Terracore 2013)


Figure 32: Discharge point at Xemxija Bay

2.7 SOILS AND SUBSTRATES

The main sources of information about soils in the Maltese Islands are the study conducted by Lang in 1960 and the Soil Information System for the Maltese Islands (MALSIS) developed between 2002 and 2004 by the National Soil Unit (Agricultural Services and Rural Development Division, Ministry for Rural Affairs and the Environment) with the technical assistants of specialists from the National Soil Resources Institute (NSRI) of Cranfield University in the UK. Prior to the MALSIS project, the Lang (1960) study remained the sole authoritative source of soil information.

There are various factors that have been crucial in understanding the nature of Maltese soil. These include the young age of the Maltese rocks, which has resulted in close similarities of the soil to the parent material, the climate that has hindered the creation of soil horizons, and anthropogenic activities that have resulted in modifications.

Lang (1960) used the Kubiena classification system to categorise the different soils of the Maltese Islands. He identified four main categories of soils, namely, the Carbonate Raw Soils, the Terra Soils, the Xerorendzinas and the Soil Complexes and Rdum Sequence. Carbonate Raw Soil is associated with the Blue Clay formation, Terra Rossa with Upper Coralline Limestone and Xerorendzinas with Globigerina Limestone.

According to Lang's 1960 survey map the dominant soil within the SAC is Xerorendzinas (Alcol Series). The Alcol Series dominates the Pwalles Valley. The Alcol Series' *parent materials are the valley loams (Quaternary and Recent) composed partly alluvial and partly colluvial material and are erosion products of Terra, rendzina, and carbonate raw soils, often stratified and generally, but not always, well sorted* (Lang 1960).

The top part of the Bajda Ridge is characterised by the Xagħra Series whilst the escarpment is characterised by L'Inglin Complex. Ix-Xagħra Series is a very fertile soil and is found in karstic environments. L'Inglin Complex is found in 'strongly terraced Xaghra landscapes'.

The southern part of the SAC/SPA which is located between the Pwales Valley and the foot of the Wardija Ridge is characterised by the San Lawrenz Series. *The San Lawrenz Series are related to those of the Fiddien, having as parent material Blue Clay and Globigerina soft limestone colluviums and alluvium on Globigerina rock* (Lang 1960).

The MALSIS project resulted in numerous soil surveys between 2002 and 2004 around the Maltese Islands whereby many soil properties and characteristics were recorded. The soil landscape of the management plan area is mainly that of valley fill. The area is characterised mainly by Regosols (MEPA 2005)**.** Regosols are "*a group that includes 'other' soils, with very limited development in virtually unaltered parent material, showing no dark coloured topsoil and no distinct subsoil horizons"*.

The topsoil in the area has medium organic carbon content (20 – 60 mg/kg) whilst the area to the north and south-east of the site has medium organic content (10 – 00 mg/kg). There is a low probability that zinc exceeds its limit in this area. The electrical conductivity is less than 500uS/cm. The area to the west of the site has an electrical conductivity of around 500 to 1000 uS/cm. The limitation to productivity is high to the east, medium in the central part and low to the west.

2.8 HYDROLOGY

Is-Simar management plan area is a site which is rich for its hydrological elements. The main hydrological feature is the Pwales Valley that is a fertile valley dominated by agricultural land.

The hydrological and hydrogeological features comprise:

- The semi confined aquifer of Wied tal-Pwales
- The watercourse and catchment of Wied tal Pwales and its tributaries
- Private extraction in Wied tal-Pwales
- Saline marsh at is-Simar which is a Wetland Reserve
- Diffuse discharge along the coastline into the bay away from the beach (Terracore 2013).

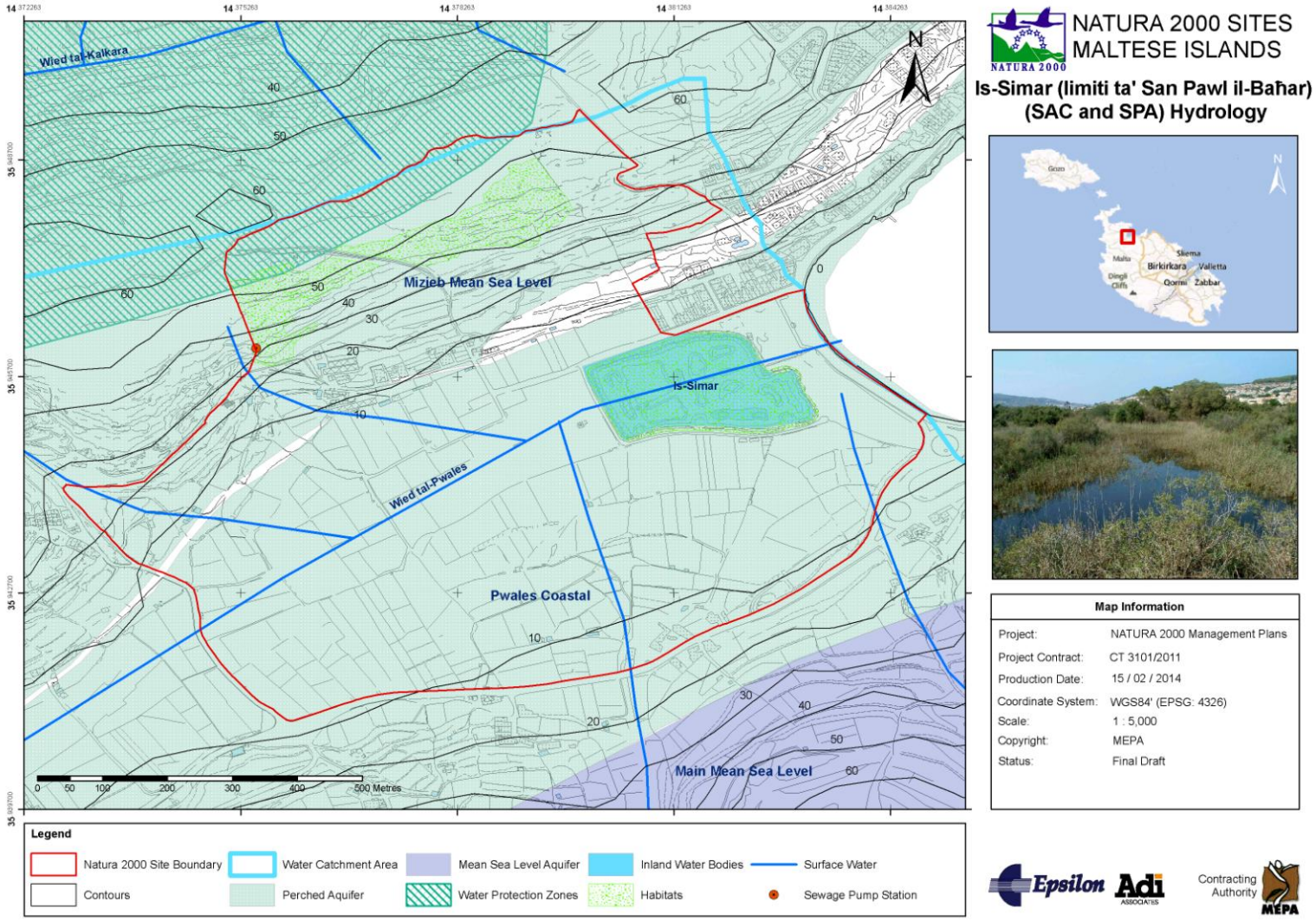

Figure 33: Is-Simar Hydrology Map (see *ANNEX 6: Maps* for A3 version)

2.8.1 Valley

The Pwales Valley is a broad valley found between Wardija Ridge to the east and Bajda Ridge to the West. The surface of the Pwales Valley is Upper Coralline Limestone which is a highly permeable formation. The valley includes a number of tributaries from the adjacent ridges.

2.8.2 Inland / Transitional Water Bodies

The site includes a protected saline marshland at Simar and a protected area of Mediterranean freshwater pools on the escarpment of the Bajda Ridge. The water of the saline marshland originates from direct rain water. When the marshland reaches full capacity water flows to the sea via a ditch that passes beneath Xatt il-Pwales. The saline water reaches the marshland via the substratum, wave action and wind (Coleiro and Casha 2004). The water quality levels are monitored (see Table 2).

Table 2: Is-Simar Inland Water Body sampling[4]

Parameter	Sampling Dates				Units
	02.03.11	06.06.11	06.09.11	24.11.11	
Nitrates	1.10	1.48	1.67	8.93	Ug-at N/L
Phosphates	0.25	0.11	0.62	0.06	Ug-at P/L
Chlorophyll *a*	62.42	17.49	75.78	150.07	Mg/m3
Temperature	13.76	24.75	26.84	17.26	C
Dissolved O_2	69.60	37.40	37.50	120.30	%
Salinity	12.81	21.77	34.94	18.06	Ppt
Conductivity	21,283.00	34,647.00	53,049.00	29,136.00	uS/cm
Turbidity	2.45	4.30	6.30	16.35	NTU
pH	7.80	7.24	7.10	8.04	pH units

Water dependent protected areas falling under the WFD Registry for Protected Areas and thus the water related requirements of any protected species and the functioning of the protected water related habitats have to be met.

2.8.3 Aquifers

The area includes two groundwater water bodies: the Miżieb Mean Sea Level and the Pwales Coastal.

[4] In addition to the above a special water sampling session was also carried out on the 2nd November 2011 since BirdLife Malta suspected pollution through sewage water in the canal area. The tests confirmed such theory and a meeting was later held with WSC and ERA officials in order to get to the root of the problem which was identified and remedial action will be taken in summer 2012 to ensure there will not be a repeat of the incident *(Final Management Effectiveness Reports: July – December 2011).*

The Miżieb Upper Coralline Limestone Aquifer is located between the Miżieb-Mistra Fault and the Manikata-Simar Fault. The Mizieb syncline is the largest 'closed' basin structure known within the Maltese Islands. This groundwater body covers an area of 5.2km^2. The maximum length is 1.3 km and the maximum width is that of 5.7km. This aquifer has a mean thickness of 3.1 m whilst the mean annual recharge is that of 1.1hm^3 (MRA 2005).

The Pwales Coastal Groundwater Body is located between the Wardija and the Bajda Ridges. This aquifer covers an area of 2.8km^2. The maximum length is 0.7km and the maximum width is that of 5.6km. The mean annual recharge is 0.7hm^3 (MRA 2005). This aquifer is used for agricultural activity in the Pwales Valley.

The MAP CAMP Project "Malta" calculated water balances in surface water sheds in the North-Western Region. This included a calculation of the hydrological balance at Miżieb and Pwales.

Mizieb borders the SAC/SPA and has a surface area of 5.2km^2. The precipitation input is estimated at 2,964,000m^3 whilst the evapotranspiration losses and run-off are 1,867,320m^3 and 177,840m^3 respectively. The recharge amounts to 918,840m^3 (UNEP/MAP 2003).

Pwales has a surface area of 5.49km^2. The precipitation input was calculated to be 3,129,300m^3 whilst the evapotranspiration losses and run-off were 1,971,459m^3 and 187,758m^3 respectively. The recharge amounts to 970,083m^3 (UNEP/MAP 2003).

2.8.3.1 Water Quality

In 1943, a water quality study carried out by Robinson gave a salinity measurement of 2,000ppm. In 1952 Morris documented that the water quality could deteriorate due to over abstraction of groundwater. A study to assess the water quality in the area was undertaken in 2005. Two samples were taken from private boreholes whilst another sample was taken from Tal-Pwales Spring (see Figure 34). Nitrate levels were high due to the geological nature of the valley and the intensive agriculture being practiced. The study did not include a study on pesticides (Terracore 2013).

Table 3: Water quality in the aquifer underlying the Pwales Valley and Bajda Ridge perched aquifer

Parameter	Units	Sample 1	Sample 2	Sample 3	EU Standards
		Locality			
		Ta Rkuplu	Il-Pwales	Il-Pwales Spring	
Chlorides	mg/l	2360	2400	290	200
Nitrates	mg/l	75.30	89.49	41.64	50
Nitrites	mg/l	<0.1	<0.1	<0.1	20
Phosphates	mg/l	<0.2	<0.2	<0.2	n/a

Figure 34: Groundwater sampling points

A container of Dissolvine® E3-9, which is a harmful and corrosive chemical, was noted in an abandoned field and was placed on a wooden pallet. This can pose a threat to water quality since leaks can result in contamination of surface water and the aquifer. It was unclear whether this container really kept this chemical and what it is being used for. It is noted that a report on priority substances at Simar indicated that the following contaminants were present in the water column: diphthalates, lead and nickel. These however, were not found in high concentrations.

2.9 Ecosystems / Habitats, Vegetation and Ecological Processes

2.9.1 Description of SAC

The Simar SAC covers an area of 0.58km^2. An artificially created wetland habitat, which is fenced off, is located behind Xemxija Bay and is 45,000 m^2 in size. It is a coastal site with brackish water pools. This wetland is an important habitat for a number of migratory bird species and the Annex II fish species, *Aphanius fasciatus*. The wetland is surrounded by agricultural land that stretches west of the wetland. Further upland, overlooking the valley, a forested area is partially included within the northern boundary of the site. A labiate garrigue is located south of the forested area; a rocky andropogonid grass steppe dominates abandoned agricultural land and forms a mosaic with the garrigue community in places. This habitat type is important for a number of reptiles including the Annex II species, *Elaphe* (*Zamenis*) *situla*. The garrigue includes temporary rain water rock pools. The pools were dry during the time of survey.

2.9.2 Site Management

The wetland area is managed by Birdlife Malta through a management agreement signed with the Office of the Prime Minister. A warden is present on site and the site is open to the public at set days and times. The site is currently operating on an interim measure of an expired plan. Progress reports are issued on an annual basis that present the measures that were implemented throughout the year as well as relevant data gathered.

2.9.3 Methods

The Standard Data Form (SDF, last updated in 2012-09) was used as a reference document prior to site visits and field survey work. The SDF was used to obtain an initial understanding of Annex I habitats and Annex II species that have been noted within the site.

Verification of the information presented in the Standard Data Form and accompanying habitats map was carried out through a site visit and field survey during which, vegetation assemblages and habitats were identified and indicative maps were produced using GIS. It should be noted that the focus of the field surveys was to verify habitat mapping. No attempt was made to carry out an exhaustive survey of species present within the site. For a detailed list of species of interest previously recorded in the site, reference should be made to the Standard Data Form (2012).

The following site visit was carried out:

Table 4: Site and surveying visits

Date of site visit/field survey	Expert
27th March 2013	Krista Farrugia, Edwin Lanfranco, Andrea Pace
14th May 2013	Thomas Arapis, Alex Borg, Niki Karadakiri, Andrea Pace
17th June 2013	Krista Farrugia, Andrea Pace

2.9.4 Assessment of Conservation Status

The methodology is described in detail in *ANNEX 3: Assessment Methodology of Conservation Status* and is based on the methodology as provided by MEPA. It evaluates area, structure and function, and future prospects for each habitat type within the SAC. The assessment is included in Table 5 below.

2.9.5 Vegetation Assemblages

Figure 35 illustrates the habitats map for the SAC that was produced following the field surveys carried out as indicated above.

Annex I habitats noted include:

- 1150 – *Coastal lagoons, see Figure 36
- 3170 – *Mediterranean temporary ponds, see Figure 37

- 5410 – West Mediterranean clifftop phryganas (Astragalo-Plantaginetum subulate).

Table 5: Habitat Evaluation

Annex I habitat	Code	Area	Structure & Function (including typical species)	Future Prospects (as regards area, structure & function)	Current condition
Coastal lagoons	1150*	B2 Area occupied: 33,198.7m^2 This habitat occupies 5.7% of the total surface area of the SAC. This priority habitat type was artificially engineered, largely to attract birds. Migrants do use the reserve, however, the relatively small size of the lagoon limits its capacity in terms of how many birds, and which species can inhabit the reserve at any one time. A number of species are also now breeding in the reserve (see Table 10 and Table 11). One Annex I species bred at Is-Simar, although the last record of successful breeding was in 2000. Many species are territorial when breeding and therefore, the relatively small size of the lagoon is likely to limit the number of successful breeding pairs (personal communication, John J Borg, 2013; also refer to Table 10 and Table 11 below). Moreover, Stewart Jr (2007) cites the relation between wetlands and the population and propagation of various species as being dependent on	B2 Although small in size, the coastal lagoon at Is-Simar represents a good example of this habitat type in the Maltese Islands. It supports underwater vegetation including *Ruppia* sp. and important reedbeds of *Phragmites australis,* both important aspects for *Aphanius fasciatus* as well as nesting birds. Moreover, this lagoon does not experience such extreme fluctuations in abiotic conditions such as salinity and temperature, making it ideal for *A. fasciatus,* and the lagoon supports a stable population of this species[5]. Nonethless, recent water quality results taken from the lagoon have illustrated the presence of certain pollutants although it seems that these levels are not yet having a significant negative impact on the *A. fasciatus* population.. Despite the generally favourable conditions, including the presence of typical species important for the Annex II fish species, and the apparently tolerable fluctuations in	B2 The lagoon experiences pressures and threats including agrochemicals reaching the lagoon from surrounding cultivated land. High nitrate levels have been traced in the water inundating the valley and lagoon attributed to the geological nature of the valley and the intensive agriculture being practiced. Monitoring data collected as part of the WFD implementation has indicated that fluctuations in pH, dissolved oxygen, temperature and salinity do occur in the Simar water body. The following contaminants were present in the water column: diphthalates, lead and nickel, in moderate concentrations. The small size of the wetland has very much reduced the resilience of the system against these factors resulting in significant pressure on the wetland. The expansion of the wetland would improve its future prospects. The	**B2**

[5] It is noted that the species tolerates a wide range of temperatures (5 to 39°C) and salinities (0 to 180 ppt).

Annex I habitat	Code	Area	Structure & Function (including typical species)	Future Prospects (as regards area, structure & function)	Current condition
		(i) number of wetlands in the area; (ii) a wetland's size and depth; (iii) whether the wetland holds water in spring and/or autumn; (iv) the climate; and (v) particular species and their adaptations to wetlands.	abiotic parameters, the recent water quality results suggest a compromised structure and function for this habitat and as a result, the structure and function of the habitat type are considered to be inadequate yet stable. When considering the importance of its role for birds, habitat function can be further improved in terms of size. The larger the lagoon, the more significant it will be for bird species dependent on it Currently, the structure and function of the reserve are not considered to present ideal conditions for certain breeding birds. For example, whilst *Himantopus himantopus* breeds at Ghadira Wetland Reserve, it does not breed at Is-Simar. This may be due to the fact that Simar is characterised by relatively dense vegetation and the small size of the reserve does not therefore allow for a long enough line of sight that this species prefers when breeding (personal communication, John J Borg, 2013).	expansion is currently impeded due to the fact the land for its expansion currently has an alternative use i.e. agriculture. Therefore, this land would need to be earmarked for extension of the wetland. Figure 2 illustrates land ownership. The land immediately adjacent to the wetland, further inland, is Government owned. Political commitment, adequate funds and technical expertise would also be required to ensure the success of the proposed expansion. Given its current area and structure and function, this habitat's future prospects are considered to be inadequate though stable. Expansion of the lagoon size is expected to improve its future prospects in terms of improving the habitat's resilience to described pressures as well as improving its functions as described in the evaluation table.	
Mediterranean temporary ponds	3170*	A Area occupied: 714.3m^2	B The pools are small, however, a couple of the pools support relatively rare	A The temporary pools are considered to be in good condition and the site does	**B**

Annex I habitat	Code	Area	Structure & Function (including typical species)	Future Prospects (as regards area, structure & function)	Current condition
		This habitat occupies just 0.1% of the total surface area of the SAC. Given that this habitat type is present and does occupy the suitable area, area is considered to be favourable.	species including *Triglochin laxiflora, Zannichellia melitensis* and *Elatine gussonei* (an Annex II species). One pool was also observed to support the rare shrimp, *Triops cancriformes* [RDB: R, Rest MI]. Structure and function for this habitat type are therefore considered to be good in those rockpools that support typical and rare species, however, since not all of the pools were populated with these rare species. Some pools were also noted to be suffering effects of eutrophication and therefore function overall is considered to be inadequate. In the absence of long term monitoring it is not possible to determine whether the functions are decreasing, stable or improving.	not appear to experience much disturbance. It should be noted that this habitat type, is however, variable due to the dependence on rainfall. However, future prospects in the short term appear to be stable and, assuming, no immediate threats to their structure and function, the future prospects of this habitat type overall are considered to be favourable.	
West Mediterranean clifftop phryganas	5410	B Area occupied: 30,118.83m^2 This habitat largely occupies karstic terrain, where a number of rock pools have also been identified, and abandoned agricultural land. It has a patchy distribution and occurs intermingled with andropogonid grass steppe. The current area, including areas intermixed with andropoginid grass steppe is considered to be relatively extensive, however, the area	B1 This habitat is characterised by a mixed steppe/garrigue community. Typical species noted during the survey representative of this habitat type included Thymbra capitata, Periploca angustifolia, Teucrium fruticans, Anthyllis hermanniae (dominant), Erica multiflora. Other species noted included Chiliadenus bocconei, Hyparrhenia hirta, Phagnalon graecum ssp. ginzbergeri, and Jacobaea maritima. Given the	A In light of the current extent of the SAC, the habitat prospects for the future are considered to be favourable, as long as the area occupied by the mixed community is not disturbed and is allowed to naturally improved.	**B1**

Annex I habitat	Code	Area	Structure & Function (including typical species)	Future Prospects (as regards area, structure & function)	Current condition
		of habitat for 5410 in its own could be improved and is currently considered inadequate.	mixed nature of the community the structure and function of this habitat type is considered to be inadequate. Nevertheless evidence of natural succession also suggests that it is also improving.		

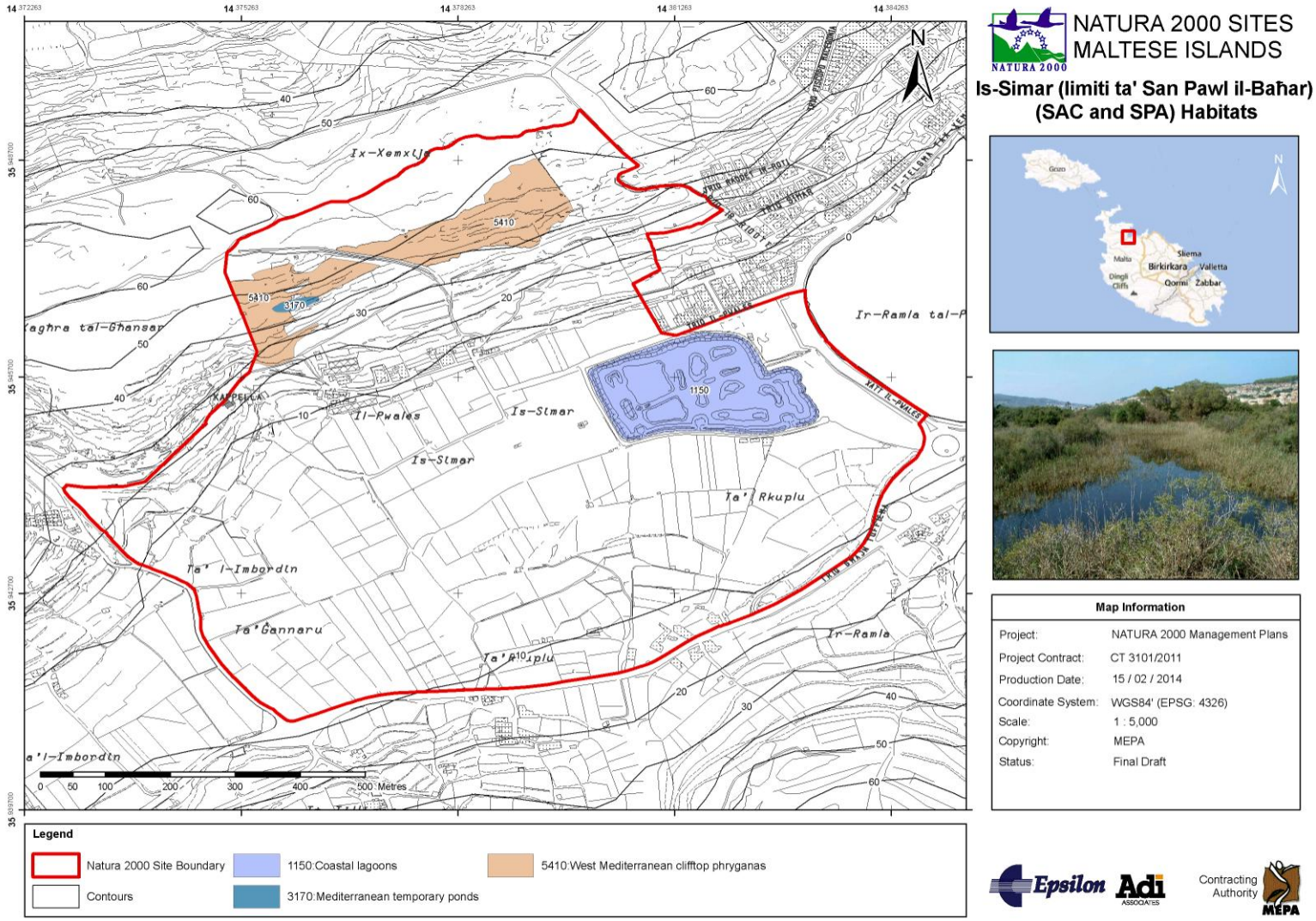

Figure 35: Habitats map for Is-Simar SAC (see *ANNEX 6: Maps* for A3 version)

Figure 36: Habitat 1150* – Coastal lagoons

Figure 37: *Zannichelia melitensis* growing in one of the rock pools of 3170*

Figure 38: Habitat 5410 intermixed with andropogonid steppe

2.10 SPECIES

2.10.1 Annex II Plant Species

Three Annex II species are referred to in the SDF. During the survey the only Annex II plant species noted during the survey was *Elatine gussonei* in habitat 3170*. The species was noted in a number of pools that had lower water levels during March, it was not noted during the later survey in June. This species is a Pelago-Maltese endemic species, i.e. it is confined to the Maltese Islands and Lampedusa. It is listed in the Red Data Book as rare with restricted distribution in the Mediterranean Region and the Maltese Islands. This species is dependent on a habitat type that is ephemeral and also highly sensitive to disturbance, and in fact this species has been noted to have declined in its eastern range on Malta as a result of heavy urbanisation in the region (EIONET Factsheet, downloaded 2013)

The SDF also lists the presence of *Anacamptis urvilleana* and *Ophrys melitensis* at this site. The former is endemic, listed as rare and with a restricted distribution in the Maltese Islands. This species is reported to exhibit a relatively widespread although patchy distribution in the Maltese Islands, and is generally reported in small numbers where found (EIONET factsheet, downloaded 2013). Previously recorded as *Ophrys sphegodes* subsp. *sicula*, *Ophrys melitensis* is endemic and listed as having a restricted distribution in the Maltese Islands.

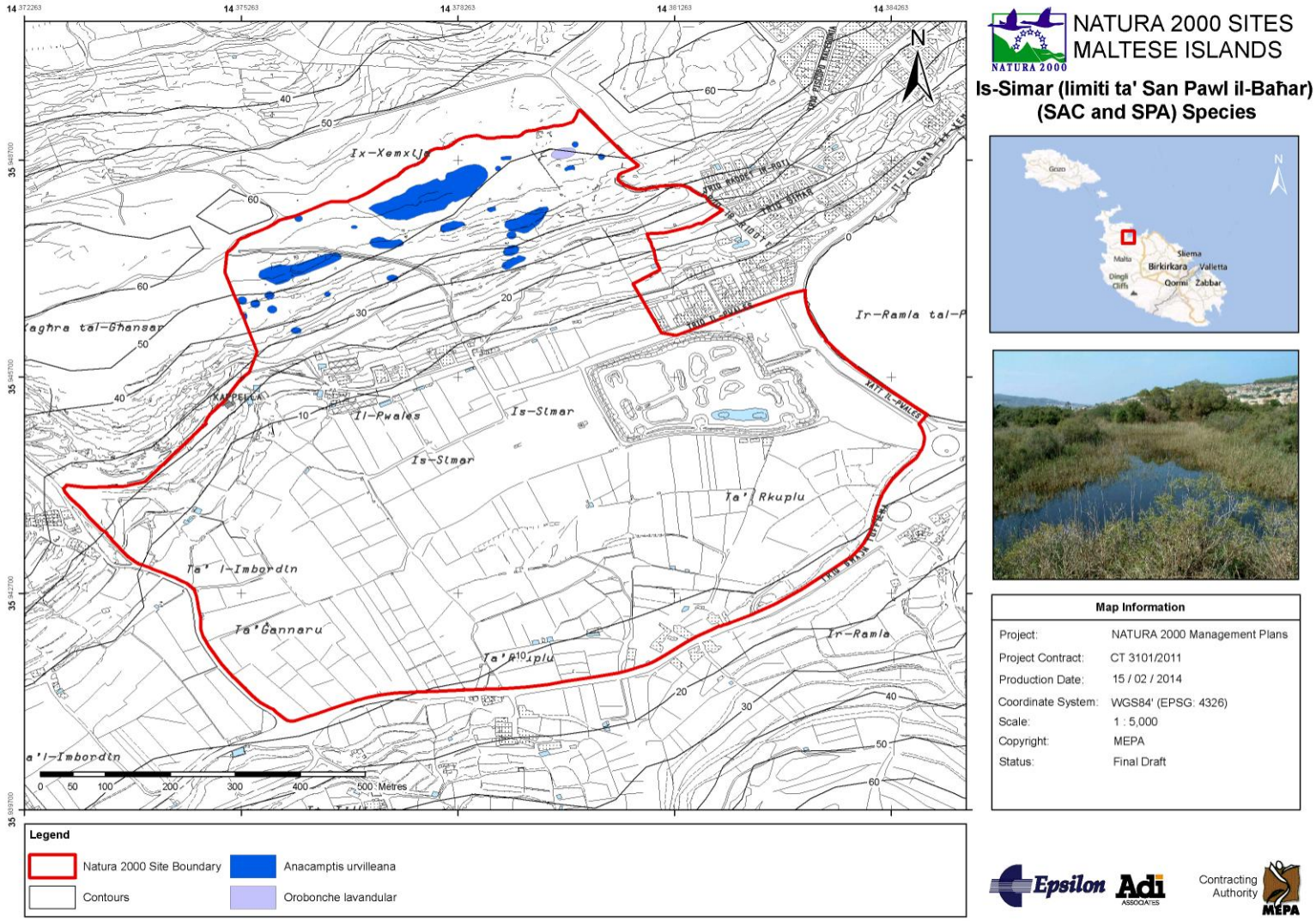

Figure 39: Species map for Is-Simar SAC (see *ANNEX 6: Maps* for A3 version)

2.10.2 Other Plant Species

Table 6: Other plant species

Species	Red Data Book Status	Notes from Published Literature
Anagyris foetida	Very rare, Rest in MI	Noted in the SDF.
Asphodelus fistulosis	Very rare, Rest (MI)	Noted in the SDF.
Chiliadenus bocconei	Endemic	Noted in the SDF and during the 2013 surveys.
Convolvulus oleifolius	Rest in Med	Noted in the SDF.
Convolvulus tricolor	Very rare, Rest in MED & MI	Noted in the SDF.
Cressa cretica	Rare, Rest in MI	Coleiro & Casha (2004)[6] note that this species grows on one of the islands at the reserve and in the olive grove.
Iris sicula	Vulnerable, Rest in MED & MI	Noted in the SDF
Iris pseudopumila	Vulnerable, Rest in MED & MI	Noted in the SDF
Juncus maritimus	Vulnerable, Rest in MI	Listed in the SDF
Laurus nobilis	Rare, Rest in MI	Noted to be growing on the inner embankment of the reserve by Coleiro and Casha, 2004.
Myrtus communis	Vulnerable, Rest in MI	Noted to be growing on the outer embankment of the reserve by Coleiro and Casha, 2004.
Olea europaea	Rest in MI (?)	Noted to be growing on the outer embankment of the reserve by Coleiro and Casha, 2004. An old olive grove is located at the eastern part of the reserve, part of which is not, however, enclosed as part of the reserve. This grove naturally regenerates, the fruits are eaten and the seeds dispersed largely by *Sturnus vulgaris*. This species has also been planted as part of the afforestation at Mizieb.
Phagnalon graecum ssp *ginzbergeri*	Rest in Med	Noted during 2013 surveys
Phlomis fruticosa		Mentioned in the RDB noted to grow in habitats transitional between garrigue and maquis. Noted in the SDF.
Populus alba	Rare, Rest in MI	Noted to be growing on the inner embankment of the reserve by Coleiro and Casha, 2004.
Quercus ilex	Rare, Rest in MI	Noted to be growing on the outer embankment of the reserve by Coleiro and Casha, 2004.
Ruppia maritima	Endangered, Rest in MI	Coleiro & Casha (2004) note that the population of *Ruppia* sp. on the reserve has increased over the years as a result of careful reed-bed management.
Sedum	Rest in MED	Noted in the SDF and 2013 surveys.

[6] Coleiro, C. & Casha, A. 2004. Is-Simar Special Area of Conservation: Management Plan for Simar Wetland Reserve. Managing Warden Simar Wetland Reserve.

Species	Red Data Book Status	Notes from Published Literature
caerulum		
Tetraclinis articulata	Endangered, Rest in MED + MI	Noted to be growing on the outer embankment of the reserve by Coleiro and Casha, 2004.
Thymus capitatus		A dominant garrigue component noted during the 2013 surveys. The SDF notes its presence. The RDB mentions this species given its importance in the Maltese flora, noting that it is often the dominant shrub of Maltese garrigues.
Typha domingensis	Rare, Rest in MI	Encountered in watercourses; noted by Fava et al (1996) from Wied Ilma/Wied il-Mans and Wied il-Port and its tributaries.
Triglochin laxiflora	Rare, Rest in MI	Noted during 2013 surveys.
Urginea pancration	Rest in MED	Noted in the SDF and 2013 surveys.
Tamarix africana	Rare, Rest in MED & MI	This species was present in the area prior to its designation as a reserve. Conditions have been favourable for natural regeneration to occur and it features on most of the islands in the reserve and a thicket is also present. Some management interventions were carried out to manage the new trees (Coleiro & Casha, 2004).
Vitex agnus-castus	Rare, Rest in MI	Noted to be growing on the inner embankment of the reserve by Coleiro and Casha, 2004.
Zannichellia melitensis	Rare, Rest in MI	This species was noted growing in the temporary pools located within the garrigue area during the 2013 surveys.

Table 7: Annex II Plant Species

Annex II Species	Code	Range	Size of population	Habitat for the species	Future prospects	Current condition
Anacamptis urvilleana	4102	B2 Area covered: 6,354 m^2 This species is mostly found in patchy distribution in limestone garrigue/karst and garrigue/ermes communities in abandoned agricultural land. Although it has not been observed during the field surveys, according to the Annex II plant species map it is recorded as being extensively found in various locations on rocky terrain within the site. The long term trend in range is not known in view of the absence of records by others (site survey for Natura 2000, 2013) of this species from this site. However the extent of the range of this species recorded through the SDF maps suggests that the population is stable. In view of this, it is assessed that the prospects for the area in the absence of long term population data,	B2 No data is available on the size of the population at site level. However the extent of sightings recorded for this species suggests that the population is considerable with over 25 different patches where this species was recorded within this SAC covering a total of 6,354 m^2. In view of the lack of data and assumption that the species is not uncommon, it is being presumed that the size of the population is inadequate but stable.	B The species is found in karstic habitats including phrygana and xeric grasslands, often subjected to human-induced pressures. In general, the habitat is large and common but suffering from considerable anthropogenic pressure on a national level including trampling, vandalism, leisure activities and other human impacts. According to the location indicated in the Annex II plant species maps provided by MEPA,this species is inhabiting habitat 5410 and other rocky ground amongst the afforested area on the plateau. The prospects for this habitat are considered to be inadequate according to the assessment carried out for the Annex I habitats. As the range of this species extends beyond the one Annex I habitat recorded (5410), the trend in the entire habitat for this species could	B In view of the existing information, assumptions based on the existing distribution map provided by MEPA for this species and the state of conservation of the habitats supporting this species, it is being assumed that the state of this species is Inadequate. However, there is not enough information to assign a scoring that describes whether the future prospects are improving, stable or deteriorating.	B

Annex II Species	Code	Range	Size of population	Habitat for the species	Future prospects	Current condition
		are inadequate but stable.		not be assessed, and not enough information is available to assign a precise scoring to the trend in habitats within which this species is growing.		
Elatine gussonei	4092	B This species was encountered in most of the rockpools where a suitable habitat was available. Nevertheless it was not found in all of the rockpools, therefore a favourable assessment cannot be assigned. In view of this, it is hereby being assigned an **inadequate** status. Nevertheless, in view of the lack of any past data on the range of either this species or the habitat that supports it, there is not enough information to assign a score to the trend in the range of this species.	B In rockpool species, the range and size of the population are very closely related since the size of the population is actually measured by the area covered by the species, or potentially the number of rockpools it inhabits. In view of this the assessment for the size of the population is the same as that for the Range. This species was encountered in most of the rockpools where a suitable habitat was available. Nevertheless it was not found in all of the rockpools, therefore a favourable assessment cannot be assigned. In view of this, it is hereby being assigned an **inadequate** status. Nevertheless, in view of the lack of any past data on the range of either this species or	B2 The habitat for this species consists of pools with rain water and shallow calcareous soils, in karst on coralline limestone. All rock pools can potentially house *Elatine gussonei*, as long as the ecological requirements of the species are available. The habitat for this species was described as being Inadequate but stable, with a good structure in view of the rare species encountered here. In view of this, the prospects for the habitat for this species are also considered to be inadequate but stable.	B In view of the existing information, and the state of conservation of the habitats supporting this species, it is being assumed that the state of this species is **Inadequate**. However, there is not enough information to assign a scoring that describes whether the future prospects are improving, stable or deteriorating.	**B**

Annex II Species	Code	Range	Size of population	Habitat for the species	Future prospects	Current condition
			the habitat that supports it, there is not enough information to assign a score to the trend in the range of this species.			
Ophrys melitensis	4105	B This species was not encountered during the site survey, and was not indicated on the Annex II species map provided by MEPA . In view of the lack of precise knowledge of the range of this species from the Article 11 range maps provided by MEPA , the lack of confirmed sightings of this species during the site surveys, and the absence of any sizeable populations of importance belonging to this species from the area (Personal communication, Lanfranco Edwin, 2013), a precise scoring for the range of this species cannot be assigned. There is sufficient expert knowledge however to safely assume that the range is neither favourable nor bad. In view of this, it is thus being assumed that the range of this	Unassigned No data is available on the size of the population at site level. However from the lack of sightings during the surveys carried out for this project, the absence of knowledge of any sizeable populations in the area (Personal communication, Lanfranco Edwin, 2013), and the restricted range depicted in the Article 11 range maps provided by MEPA, it is assumed that the size of the population is not favourable. In the absence of more data, there is insufficient expert knowledge to safely assume whether the size of the population is inadequate or bad, and is thus being left unassigned.	B The species is found in karstic habitats including maquis, garrigue and xeric grasslands, often subjected to human-induced pressures. In general, the habitat is large and common but suffering from considerable anthropogenic pressure on a national level including trampling, vandalism, leisure activities and other human impacts. Although the location for this species was not identified neither during the survey nor during the site visit, it is most likely inhabiting habitat 5410. The prospects for this habitat is considered to be **inadequate** according to the assessment carried out for the Annex I habitats. As the precise distribution of	B In view of the existing information, assumptions based on the existing distribution map provided by MEPA for this species and the state of conservation of the habitats supporting this species, it is being assumed that the state of this species is **Inadequate**. However, there is not enough information to assign a scoring that describes whether the future prospects are improving, stable or deteriorating.	**Unassigned**

Annex II Species	Code	Range	Size of population	Habitat for the species	Future prospects	Current condition
		species within the SAC is **Inadequate**.		this species within the SAC is not known, there is not enough information to assign a precise scoring to the trend in habitats within which these species is growing.		

2.10.3 Fauna

2.10.3.1 Reptiles

Coleiro & Casha (2004) note the presence of the Annex II species, *Elaphe* (*Zamenis*) *situla* [RDB: Vulnerable, Rest in MED] from this site, describing it as less common, however, than the other snake species known to occur at the reserve, which include *Hierophis viridiflavus* [RDB: Vulnerable] (described as frequent within the site, with individuals reaching up to 1.5m), and *Telescopus fallax* [RDB: Vulnerable, Rest in MED & MI], which is noted occasionally, feeding at dawn (Coleiro & Casha, 2004). *Tarentola mauritanica* [RDB: Vulnerable] and *Hemidactylus turcicis* [RDB: Vulnerable] are also known to inhabit the reserve, with the former being more common. *Chamaeleo chamaeleon* [RDB: Vulnerable, Rest in MI] is frequent, generally found in the trees and associated habitats, although sometimes also in the reed beds. A couple of specimens were noted in the trees growing on the embankment during the 2013 visits. Coleiro & Casha (2004) further report that *Podarcis filfolensis maltensis* [RDB: Endemic] is very rare at the reserve, although *Chalcides ocellatus* [RDB: Vulnerable, Rest in MED] is a resident that is commonly seen on warm days in the vegetation that grows along the walking trail.

Although *Zamenis situla* is an Annex II species, site-specific data is considered insufficient for status assessment. Relevant data will thus need to be collected during this planning period to enable status assessment at least by the end of the planning period (i.e. in 5 years), although data collected over at least 3 years may allow for conservation status to be established.

2.10.3.2 Mammals

Coleiro & Casha (2004) note mammals identified within the reserve:

Table 8: Mammals

Species	Red Data Book Status	Notes
Erinaceus algirus	Unknown status	Considered to be quite frequent although difficult to observe since it is a nocturnal species
Suncus etruscus	Vulnerable (?)	Dead specimens sometimes found. Also nocturnal and difficult to observe.
Pipistrellus pipistrellus	Vulnerable	Commonly feeds in the reserve, noted in relatively large numbers, especially at dusk and in windless conditions.
Myotis punicus[7]	Vulnerable; Rest in MED	Annex II species. Relatively rare at this site but known to occur
Rhinolophus hipposideros	Vulnerable	Annex II species. This species roosts in the apiaries, located north of the wetland reserve. 1-3 specimens have been recorded roosting; 1-5 feeding at Simar reserve (personal communication, John J Borg, 2013).
Rattus norvegicus		Relatively common.
Apodemus sylvaticus	Unknown status	Rarely seen.
Oryctolagus		Occasionally seen. Specimens were seen within the reserve during

[7] The species referred to in Annexes of the Habitats Directive is *Myotis blythii* s.l. is now considered as *Myotis punicus*. Consequently, *Myotis punicus* is still considered as an Annex II species.

Species	Red Data Book Status	Notes
cuniculus		the 2013 surveys.

2.10.3.3 Fish

The pools at the reserve support a population of the Annex II euryhaline fish, *Aphanius fasciatus*, listed as vulnerable with restricted distribution in the Mediterranean Region and the Maltese Islands. Coleiro & Casha (2004) describe this species as being 'extremely abundant' at Simar. The population at Simar was introduced to the site from Marsa and Salina, thereby representing a mixed parent population (Deidun et al) the only sites thought to contain natural populations (the population at Għadira was also introduced from these sites). Deidun et al note that reproduction in *Aphanius fasciatus* does not include a dispersal phase and there is therefore limited opportunity for populations to mix and gene flow is restricted. The population at is-Simar is considered to be healthy (Deidun et al).

In their paper of 2010, Zammit-Mangion & Deidun studied the populations of *A. fasciatus* at Simar and Għadira and found that these populations experience extreme abiotic conditions during the summer months including large changes in water salinity (increases during summer) and temperature increases. The effect on the population was noted and it was found that the percentage of juveniles present is highest during July-August. Reproductive activity resumes in October. The extremes in abiotic conditions coupled with genetic isolation of the species could put pressure on the long-term viability of the population. Zammit-Mangion & Deidun (2010) identify the need for conservation measures to ensure the sustainability of this species at this site.

This fish is an omnivore and feeds on crustaceans, isopods, eggs of invertebrates, mosquitoes and diatoms and algae (Zammit-Mangion, 2009)[8]. A number of birds feed on the killifish itself.

Zammit-Mangion (2009) reports that *Aphanius fasciatus* is particularly vulnerable to organophosphate pesticides whilst carbamates were noted to have less toxic effects.

Zammit-Mangion (2009) identified and prioritised a number of threats to this species at Is-Simar. These were classified as follows:

High risk:

- Unfavourable growth conditions – even though this species is highly adaptable to changes in salinity and temperature, extreme conditions put physiological pressure on individuals, causing stress, which makes them more susceptible to disease.
- Restricted range – this species only thrives at Is-Simar and Għadira Wetland Reserves. Such a limited distribution makes this species at a higher risk of extinction should anything happen at either one of the two sites.

Medium to high risk:

[8] Zammit-Mangion, M. 2009. Action Plan for *Aphanius fasciatus* at the Għadira Nature Reserve and the Simar Bird Sanctuary.

- Disturbance of water quality – Is-Simar is surrounded by farming and leaching of pesticides into the lagoon water can result in problems for this species both directly, e.g. nitrites reacting with haemoglobin in erythrocytes, thus reducing oxygen transport, and indirectly through bioaccumulation.

Medium risk:

- Limited dispersal – the isolation of the population can result in loss of genetic variation.

Low risk:

- General loss or disturbance of the habitat – the reserve is protected by law and the current fence restricts access and subsequent disturbance.
- Changes in species dynamics – considered unlikely, but population could decline in the light of exceptionally large numbers of predators affecting the population.

Other fish species noted within the site by Coleiro & Casha (2004) include *Chelon labrosus* (common within the reserve) and *Anguilla anguilla*.

2.10.3.4 Amphibians

Discoglossus pictus pictus is noted to be common in the reserve (Coleiro & Casha, 2004).

2.10.3.5 Invertebrates

Although detailed studies have not been carried out several species of Orders have been observed at the reserve including Diptera, Coleoptera, Lepidoptera and Hymenoptera. In the marine environment, *Crangon crangon* inhabits the lagoon and thus appears to have adapted to its brackish conditions (Coleiro & Casha, 2004).

Table 9: Annex II Fauna

Annex II Species	Code	Range	Size of population	Habitat for the species	Future prospects	Current condition
Zamenis situla	1293	Indeterminate This species has been noted from the Simar Wetland Reserve. However, the species occurs in a variety of habitat types that are also found within this SAC and therefore it is likely that this species has a more extended range within the site than has thus far been recorded. In the absence of further information, the range is therefore indeterminate.	Indeterminate There is no data on the population size of this species at this site. The population size is therefore **indeterminate**.	A As reported in the EIONET fact sheet, local habitats for this species include garrigue, rocky steppes, valleys, field edges, gardens, dry stone walls, boulder and stone piles. Micro habitats include crevices and cavities in walls and rocks, and among stones. The Simar SAC provides ample **favourable** habitat for this species.	Indeterminate In the absence of sufficient data of range and population within the site, the future prospects for this species are indeterminate. However, threats to the species include the use of pesticides, restructuring of agricultural land holds, removal of specimens, and interventions to/within habitats and to habitat features that could result in disturbance.	**Indeterminate**
Rhinolophus hipposideros		A This species has been recorded from the is-Simar reserve where it feeds. A number have also been roosting in the apiaries, north of the wetland (personal communication, John J Borg, 2013). This species range within the site includes both a roost and nearby feeding grounds, both important for the long-term survival of this species at this	B2 *R. hipposideros* is a solitary species, rarely forming roosting colonies. Therefore, the low roosting numbers supported at the apiaries are considered to be typical of this species' behaviour. This species is known to move between roosts and such behaviour would be necessary to ensure mating and successful breeding. Therefore, the size of the roosting population at Simar	A A free-hanging bat, the abandoned apiaries represent an ideal roosting habitat for this species. When foraging *R. hipposideros* is known to favour vegetated areas particularly in the vicinity of water bodies. The Simar SAC therefore provides both ideal roosting habitat (the man-made apiaries) and foraging habitat (the wetland and adjacent fields) for *R.*	A The wetland reserve is already a managed site and therefore the foraging site for this species is likely to remain in a favourable condition. In light that the whole of the SAC will be managed, it is also considered likely that the importance of the apiaries will be maintained in a favourable condition. The favourable range of this species within this habitat	**B**

Annex II Species	Code	Range	Size of population	Habitat for the species	Future prospects	Current condition
		site. The range of *R. hipposideros* within this SAC is therefore considered to be **favourable**.	on its own is considered to be inadequate. Based on monitoring, however, the population is considered to be stable (Personal communication, John J Borg, 2013).	*hipposideros*. The habitat for this species is therefore **favourable**.	should therefore also be maintained. If this is the case the size of the existing population should at least remain stable. The future prospects for this species at Is-Simar are therefore considered to be **favourable**.	
Aphanius fasciatus	1152	A This species occupies the lagoon habitat which has an area of approximately 33,198.7m² and a volume of 3,630,000 m^3. The size of the lagoon has been adequate in supporting a stable, viable population of this species (based on population estimates carried out by Zammit-Mangion, 2009) and therefore the range for this species is seen as **favourable**.	A Following sampling, Zammit-Mangion estimated the population of *A. fasciatus* at Is-Simar at 25,271 fish. This was also considered to be an underestimate because due to dense reedbeds and vegetation, fish that hid in these areas were not sampled. Zammit-Mangion (2009) also estimated the 'effective population size' taken to be the size of the population required to ensure long-term sustainability of the population. This was estimated to be 22,462 individuals for Is-Simar. Therefore, in view that the underestimated figure of	B2 Zammit-Mangion (2009) identified a number of aspects at the Simar lagoon that suggest a more ideal environment for *A. fasciatus* than that at Għadira. These include: • The water is brackish and not susceptible to large fluctuations in salinity; and • The Simar lagoon supports rich submerged vegetation, including Ruppia sp. which provides both shelter (reducing risk of predation) and increased food source. However, recent water quality data has illustrated	B2 It is noted that the lagoon at Is-Simar is likely to remain well protected as a result of the legislation in place. As identified in the main text, a main threat to this species at this site includes reduction in water quality and any subsequent changes to the habitat. The maintenance of water vegetation is also important. In light of recent data, future prospects are considered to be inadequate..	**B**

Annex II Species	Code	Range	Size of population	Habitat for the species	Future prospects	Current condition
			over 25,000 fish is higher than the minimum size of the population needed for long-term sustainability, then the population of *Aphanius fasciatus* at Is-Simar is considered to be **favourable**.	that certain pollutants are present within the lagoon. It is not currently known what the tolerance levels of this population are to the pollutant concentrations, and monitoring would be essential to begin to obtain an understanding. Although the habitat at Is-Simar provides a number of favourable aspects, the recent data in water quality raises cause for concern and the habitat is thus judged to be inadequate though stable for the time being.		

2.10.3.6 Birds

The table below summarises data gathered on Annex I birds at Is-Simar Wetland Reserve. It should be noted that population numbers presented in the table reflect numbers of birds recorded to have landed/made use of the reserve; however, it should be noted that much larger numbers have been recorded flying over the SAC in different years.

Birdlife Malta gathers data on the birds that make use of the Simar Wetland Reserve. Research carried out includes bird ringing, taking measurements including weight, and analysis of the lagoon water. Birdlife's observations and relevant data collected are summarized here.

Breeding birds

Table 10 summarises the data gathered on breeding bird pairs at is-Simar.

Table 10: Breeding bird pairs at is-Simar (Birdlife 2010)

Species	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Ixobrychus minutes (Annex I)	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
Tachybaptus ruficollis	0	0	0	0	0	0	0	0	0	1	0	2	1	0	1	
Fulica atra	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1[9]	
Gallinula chloropus	8-10	8-10	8-10	8-10	8-10	8-10	10-12	12	12-15	15	15	15	15	10-15	15	
Acrocephalus scirapaceus	3	3	5	4	5	5	6	7	8	8	8	8	8	5	5+	
Cettia cetti (number of males)	3	4	4	4	4	4	4	5	5	5	5-6	6	5	5	5	
Sylvia melanocephala	4	4	4	4	4	4	4	6	4-5	5	4-5	4-5	4-5	4-5	4-5	
Passer hispaniolensis	50	50	50	50	50	50	50	50	50	50	50	50	50	50+	50+	
Cisticola juncidis (number of males)	5	4	4	5	5	5	5	5	5	4-5	5	5	5	5	5	

[9] As reported by Sultana et al (2011)

Table 11: Breeding Birds at Simar listed as Annex I or regularly occurring migratory birds

Species	Population size at Simar (data from 1997-2012), breeding pairs		Description
	Min	Max	
Ixobrychus minutes	0	1	Annex I. This species was only recorded breeding twice at Simar. Although migrants are noted, breeding has not been observed since 2000.
Fulica atra	0	1	Apart from breeders, Simar also receives visitors of this species. Sultana et al (2011)[10] report that up to 40 individuals visit Għadira and Simar, wintering in the reserves. The first confirmed breeding record at Simar was 2008, chicks were fed by the adults on *Ruppia maritima* and *Phragmites australis*, whilst also feeding on their own, mainly on aphids. In 2009, four chicks were hatched, however, these were later killed by the male. In 2010, up to 10 individuals wintered at is-Simar in January and February, all of which left the site by mid-April. This species is threatened by restriction of breeding habitat and poaching pressure.
Gallinula chloropus	6	15	The data presented in Table X illustrates that the breeding population increased since 1997 and appears to have stabilized over the past two years, with a maximum of 15 pairs a year consistently recorded. When this wetland was first engineered, reed cover was not sufficient to encourage breeding. After some time, however, breeding started at the site, the first record is 1992 (Sultana et al, 2011). Is-Simar now supports the largest breeding population of this species in Malta. At Is-Simar this species feeds largely on plant material, including fruit of Lycium sp., although also on *Aphanius fasciatus* and *Palaeomonetes* sp. They are also known to climb olive trees for the fruit. During the winter, these birds often set up feeding groups, up to 40 have been noted, however, they are highly territorial during the breeding season. Nests are built generally in beds of *Phragmites australis* and Southern Reedmace. Up to two and sometimes three broods are raised in one breeding season. Clutch sizes range from 1 to 15. This species is also a frequent spring and autumn migrant. Although tolerant to a degree of disturbance, persecution from hunters limits this species national distribution and Is-Simar remains an important site for the conservation of this species. Threats to the species within the reserve are mainly from feral cats and dogs that may attack them, as well as nest predation by rodents. It is also restricted by breeding habitat and hunting. This bird's conservation status has been declared as secure by Birdlife International. Hunting of moorhen is allowed in the Maltese Islands (LN 45/1996), however, under the Birds Directive it is still protected during rearing and reproduction phases.
Acrocephalus scirpaceus	3	8	As described by Sultana *et al* (2011), two races are recognized in the Western Palearctic. The breeding population at Is-Simar is small, but considered to be stable, and is, in fact the only stable breeding

[10] Sultana, J., Borg, J. J., Gauci, C., Falzon, V. 2011. The Breeding Birds of Malta. Birdlife Malta, Malta.

Species	Population size at Simar (data from 1997-2012), breeding pairs		Description
	Min	Max	
			population on the Islands (Sultana et al, 2011). Sultana *et al* (2011) consider it unlikely, however, that the small 4.5ha reserve can support any more breeding pairs. The reedbed and Tamarisk groves at Is-Simar provide ideal habitat for this species. This species winters in tropical Africa and begins to arrive at Is-Simar in mid-April. Males start singing and establish a territory. Nest building occurs in late April/early May. Egg-laying begins mid-May, incubation is carried out by both sexes for 11-12 days and the young fledge at about 12 days old. Usually single broods are raised, second broods have been known to be raised by the same breeding pair. Most of the current breeding population was hatched at is-Simar. Prior to the autumn migration, birds have been known to travel within Malta, mainly between Is-Simar, Salina and Għadira. This species is also a fairly common autumn passage migrant, resting at the Simar wetland, generally for about a week, although a record of about a month-long stay (34 days) has also been noted (Sultana et al, 2011). It is a relatively scarce spring migrant. Birdlife International considers the European breeding population of this species to be secure.
Cettia cetti (number of males)	3	6	Two races are recognized in the Western Palearctic. Feeds largely on invertebrates. Nationally, the breeding distribution of this species has increased significantly over the past 30 years. This species is mainly sedentary in Europe, although some dispersal of populations does occur. There is no evidence of migration of Maltese populations although they do disperse to other non-breeding areas during the winter. This species' preferred breeding habitat is damp, densely vegetated valleys. However, given the increase in the breeding population, other habitat types have now also been colonized for breeding including areas with relatively low tree cover, and below rocky inland cliffs, however, an important breeding requirement as recorded by Sultana et al (2011) is an overhead leaf canopy and nests are built in creeping vegetation (e.g. *Rubus ulmifolius*, *Hedera helix*, *Smilex aspera*, and *Rubia peregrina*). 5 males have established their territory at Is-Simar reserve. The earliest nests are completed by end of March, are built by the females, and are nearly always well concealed, making them less vulnerable to predators. Generally, a clutch of 2 to 4 eggs is produced. Incubation and rearing is carried out by the female alone, the former lasts about 17 days and the young fledge after about 14 days. In Malta, single broods are generally known to occur. *Rattus* sp. are the main predators. The population of this species has been on the increase throughout Europe and Birdlife International describes its population status as Secure.
Sylvia melanocephala	4	6	Four races are recognized, the nominate *melanocephala*, inhabits the Mediterranean including the Maltese Islands. Feeds mainly on invertebrates and fruit, also known to make use of bird tables, and drink nectar. Dispersal agent for several species of shrub. Breeding distribution for this species covers most of the larger islands of the Maltese Islands. Breeding occurs between mid-February and mid-July.

Species	Population size at Simar (data from 1997-2012), breeding pairs		Description
	Min	Max	
			Clutches of 4 eggs are most commonly recorded. Incubation takes about 13 days and the young fledge at 12-13 days old. Both male and female are involved in incubation and brooding. This species sometimes carries ectoparasites including Hippoboscidae flies and *Penenirmus* sp. lice. The success of this species is attributed to its high adaptability. Threats to this species may include use of pesticides and insecticides, nest predation by snakes and rats, and urban development.
Cisticola juncidis (number of males)	4	5	Three races occur in the Western Palearctic. Feeds mainly on insects and arachnids. This is a common, widespread, and largely sedentary species. It breeds in a wide range of habitats, grasses and rushes provide most suitable habitat so wetlands and watercourses offer preferred breeding grounds. It also breeds in cereal fields and abandoned agricultural land. Breeding season ranges between mid-February to August. A clutch normally consists of 4-5 eggs. Incubation (about 12-13 days) and brooding (about 13-15 days) is carried out solely by the female. A female tends to raise about 3 broods a year. Aggressively defend their young. Polygynous. Following the breeding season, individuals often roost together in rushes and other grasses. Threat from nest/egg predation by snakes and rats, may be vulnerable to insecticides and pesticides, and urban development.

Data sources: Personal communication John J Borg, Charles Coleiro, Birdlife Progress Reports, Sultana et al (2011).

Migrants

The SDF includes a list of species referred to in Article 4 of Directive 2009/147/EC.

Birdlife Malta's 2008 progress report includes some data regarding number of waders recorded at the reserve between 2002-2008, this data is summarized in Table 12 below. Waders are dependent on the coastal lagoon (priority Annex I, Habitats Directive) habitat type, and therefore are vulnerable to any changes in this habitat type as a result of disturbance, encroachment from other land uses, introduction of invasive alien species, etc.

Apart from direct counts, Birdlife also collects data through ringing and abiotic data including salinity.

Table 12: Number of waders recorded at Simar

Species	Population size at Simar (data from 2002-2008)		Description
	Min	Max	
Tringa glareola	20	41	This Annex I species is a full migrant, leaving its northern breeding grounds in late July through August to October towards the Sahara, during which many birds frequent stop-over sites in the Mediterranean. These birds then leave the non-breeding grounds in Africa, travelling back to the northern breeding grounds in late March/ early April. The overall trend of this species is reported as stable in the Birdlife International 2013 species factsheet, although trends of some populations remain unknown.
Charadrius dubius	4	13	European populations migrate over the Sahara desert towards tropical Africa, leaving their breeding grounds in June to mid-July. They leave the wintering grounds to return to breeding grounds from mid-March. A fully migrant species, small numbers are recorded from is-Simar (Birdlife International species factsheet, 2013). The overall trend of this species is stable although trends of some populations remain unknown. This species breeds at Għadira.
Calidris alpina	3	6	A circumpolar breeder, this species is fully migratory, utilizing a number of migration strategies including short coastal flights as well as long, non-stop overland flights. Generally travels in large groups. Its overall population trend is decreasing although some populations remain stable and the trends of others are unknown (Birdlife International Species Factsheet, 2013). Simar presents a preferred non-breeding habitat type for this species, however, the low numbers stopping over suggest insufficient feeding ground, particularly in light of the fact that this species travels in large numbers (up to 1,500 on passage with large groups of hundreds of thousands of birds congregating in non breeding grounds). This species is vulnerable to changes in this habitat type including introduction of invasive alien species, and is easily disturbed e.g. where paths with frequent foot traffic are present. Management of reedbeds is also important, overgrowth of this vegetation reduces ideal habitat for this species.
Calidris minuta	5	19	Breeds in the tundra, fully migratory travelling on a broad front in groups of 20-30 individuals. Overall population trend in decreasing although some population trends are unknown (Birdlife International Species Factsheet, 2013).
Tringa totanus	0	6	Fully migratory, leaving breeding grounds from June to October and returning between February and April. Overall population trend is uncertain (Birdlife International, 2013)
Gallinago gallinago	8	18	Fully migratory, overall, the population is decreasing, although some populations are stable or unknown. Not a truly gregarious species, however, during migration it often travels in groups. Crepuscular (Birdlife International, 2013).

Species	Population size at Simar (data from 2002-2008)		Description
	Min	Max	
Himantopus himantopus	0	21	Annex I. In 2009, two pairs were recorded at Għadira and is-Simar, courtship displays were observed, however, no mating occurred (Sultana *et al*, 2011). Another pair was noted at is-Simar in early July, 2010. They were observed moving around on a raft (artificially introduced to the site by the site manager to encourage breeding of water birds) and moving nesting material around, however, breeding still did not take place (Sultana *et al*, 2011). The first confirmed breeding of this species occurred at Ghadira in 2011. The breeding pair exhibited aggressive behaviour towards any species that approached the chicks. Since this first breeding episode, 5 breeding pairs have been established at Għadira (Birdlife Malta, personal communication, 2013). To date, no breeding of this species has occurred at Simar. Given the territorial behaviour of this species, however, it is unlikely that the smaller Simar wetland will be able to support the same number of breeding pairs, if breeding does become established. This species is also migratory and returns to its breeding grounds in Mid-March to April. The overall population is increasing although some populations may be stable or are unknown (Birdlife International, 2013).

Table 13: Migratory, Annex I & non-Annex I species recorded at Is-Simar

Species	Description
Sylviidae	Old World warblers. Migrants, large range.
Acrocephalus arundinaceus	Summer visitor. Overall population expected to be in decline as a result of destruction, although European populations appear to be stable. In 2010, captured and recaptured at Is-Simar where it was noted that it gained significantly in weight during its stay at the reserve.
Acrocephalus melanopogon	Annex I Birds Directive. Overall stable population in absence of evidence to the contrary. Generally a scarce but annual passage migrant and winter visitor. 3 specimens were ringed at Simar in 2010.
Acrocephalus schoenobaenus	Overall population in decline.
Hippolais icterina	Moderate decline in Europe.
Locustella lusciniodes	Overall population suspected to be in decline due to ongoing habitat destruction (Birdlife International, 2013).
Phylloscopus collybita	Moderate increase in European populations (Birdlife International, 2013).
Phylloscopus sibilatrix	Moderate decline in Europe (Birdlife International, 2013).
Phylloscopus trochilus	Moderate decline in Europe (Birdlife International, 2013).
Sylvia atricapilla	Moderate increase in Europe. Increasing populations suspected to be a result of afforestation and land use changes resulting in increased shrubby growth (Birdlife International, 2013).
Sylvia borin	Moderate decline in Europe (Birdlife International, 2013).
Sylvia cantillans	Small passerine migratory bird; vagrant.
Sylvia communis	Inhabits open countryside and cultivation, with bushes for nesting.
Scolopacidae	Sandpipers and allies – waders, shore birds. Large range. Use tactile foraging methods.
Actitis hypoleucos	Extremely large range. Migrant, winters in Africa. Overall population in decline.
Calidris temminckii	Unknown population trend.
Gallinago media	Annex I. Overall population trend is decreasing.
Lymnocryptes minimus	Overall population is stable. This species is threatened by loss and degradation of its wetland habitats as well as ingesting lead shot deposited on wetlands.
Philomachus pugnax	Annex I. Common passage migrant and summer visitor. Overall population trend is decreasing (Birdlife International, 2013).
Scolopax rusticola	Stable population. This species is threatened by intensive agricultural practices outside of the breeding season (Birdlife International, 2013)
Tringa nebularia	Stable population. Breeds in boreal forest zone, non-breeding sites frequented include coastal lagoon, saltmarshes, muddy or rocky shores of lakes or rivers, etc. (Birdlife International, 2013)
Tringa ochropus	Breeds in swampy woodland, generally in the vicinity of a permanent water source. Outside of the breeding season it prefers inland freshwater habitats. Stable population (Birdlife International, 2013).
Alaudidae	Larks. Habitats vary widely. Ground birds. Feed on insects and seeds.
Alauda arvensis	Farmland bird, in decline in Europe, largely as a result of intensive agricultural methods.

Species	Description
Calandrella brachydactyla	Annex I. Moderate decline in Europe. In Malta, uncommon breeding visitor; formerly common throughout but numbers now much reduced. Ground-dwelling. Prefer open, dry, treeless countryside. Farmland bird. Threats include predation from snakes, trapping, intensive agricultural methods, disturbance from humans in the countryside and loss of habitat due to urban development. Birdlife International declared the European population as Declining.
Alcedinidae	Kingfishers.
Alcedo atthis	Annex I. Frequent autumn migrant and winter visitor. First birds start arriving in July (Ghadira and Simar NR) where up to five may overwinter. Others frequent to rocky coasts (personal communication, John J Borg, 2013).
Anatidae	Duck, swans and geese. Overall populations in decline except for *A. crecca*, which is unknown. Large worldwide range and migratory. Threatened by habitat destruction, lead shot ingestion, and viruses including avian influenza.
Anas acuta	This species is threatened by wetland habitat loss within its breeding and wintering grounds. Other threats include pollution, wetland drainage and changing wetland management practices. The species is also predated by feral cats and rats. Suffers mortality from lead shot ingestion. It is susceptible to avian botulism and avian influenza. The overall population trend is decreasing (Birdlife International).
Anas clypeata	Threatened by habitat loss, it is susceptible to avian botulism and avian influenza. The overall population trend is decreasing (Birdlife International).
Anas crecca	Threatened by habitat loss and degradation. This species is threatened by human recreational activities, hunting and construction work. Suffers mortality from lead shot ingestion. It is susceptible to avian botulism and avian influenza. The overall population trend is uncertain. (Birdlife International).
Anas platyrhynchos	Threatened by habitat degradation and habitat loss from pollution, wetland drainage, and changing wetland management practices. Suffers mortality from lead shot ingestion. It is also susceptible to duck virus enteritis, avian influenza and avian botulism. Hunted throughout the world. The overall population trend is decreasing (Birdlife International).
Anas querquedula	The most significant threat to this species is habitat deterioration of its breeding grounds in Europe through the drainage and reclamation of wetlands, the increasing climatic aridity and subsequent lowering of the water table, and transformation of wetlands to damned reservoirs. Other threats include nest destruction from agriculture, increased human disturbance, lead poisoning, botulism during hot summers and hunting disturbance. The overall population trend is decreasing (Birdlife International).
Aythya ferina	Threatened by disturbance from hunting, water-based recreation, from machinery noise from urban development, habitat destruction on its wintering grounds due to eutrophication (partially as a result of nutrient run-off from agricultural land), lead ingestion, and drowning in fresh water fishing nets. It is also susceptible to avian influenza. The overall population trend is decreasing (Birdlife International).
Aythya nyroca	Annex I. Scarce annual visitor; recorded in all months. Single birds

Species	Description
	frequently reported from Simar. Rapid population declines reported in Europe.
Motacillidae	Wagtails and pipits. Farmland birds. Threatened across Europe by poaching and trapping and illegal trade.
Anthus campestris	Annex I species. Common visitor, regular in both migrations, up to 10 individuals recorded at Simar (personal communication, John J Borg, 2013). Unknown population trend in Europe, though stable internationally.
Anthus cervinus	Overall population stable.
Anthus pratensis	Overall population in decline.
Anthus trivialis	Overall population in decline.
Motacilla alba	Moderate decline in population in Europe (Birdlife International, 2013).
Motacilla cinerea	Moderate increase in European population (Birdlife Interational, 2013).
Motacilla flava	Moderate decline in population in Europe (Birdlife International, 2013).
Apodidae	Large range. Strongly migratory. Winter in Africa.
Apus apus	Moderate decline in Europe due to reduction in availability of food and nesting sites.
Apus melba	Mountain breeders.
Apus pallidus	Stable population.
Ardeidae	Herons and egrets. Threatened by hunting, wetland degradation and loss through drainage for agriculture, pollution, loss of reedbeds, agricultural encroachment, saltwater intrusion and avian influenza (Birdlife International, 2013).
Ardea cinerea	Moderate increase in European populations. In the past, it was seen as a competitor to fishermen and was persecuted as a result.
Ardea purpurea	Annex I. Frequent passage migrant during both migrations.
Ardeola ralloides	Annex I. Frequent passage migrant during both spring and autumn migrations. Overall population declining.
Botaurus stellaris	Annex I. Scarce passage migrant, single birds reported (over the Maltese Islands) during spring and autumn migration.
Egretta alba	Annex I. Partially migratory.
Egretta garzetta	Annex I. Regular passage migrant, recorded throughout the whole year. Increasing overall population.
Nycticorax nycticorax	Annex I. Frequent passage migrant; recorded in double figures during spring and autumn migration (personal communication, John J Borg, 2013). Overall population trend is decreasing (Birdlife International, 2013)
Strigidae	Owls.
Asio flammeus	Annex I. Regular passage migrant in spring and autumn and irregular winter visitor.
Fringillidae	Finches. Farmland birds; seed-eating songbirds. Threatened by intensive agricultural methods.
Carduelis cannabina	Moderate decline in Europe (Birdlife Malta, 2008).
Carduelis carduelis	Stable population in Europe (Birdlife International, 2013).

Species	Description
Carduelis chloris	Moderate decline in Europe (Birdlife International, 2013).
Carduelis spinus	Moderate decline in Europe (Birdlife International, 2013).
Carpodacus erythrinus	Stable population in Europe (Birdlife International, 2013).
Emberiza schoeniclus	Moderate decline in Europe (Birdlife International, 2013).
Fringilla coelebs	Moderate decline in Europe (Birdlife International, 2013).
Serinus serinus	Moderate decline in Europe (Birdlife International, 2013).
Accipitridae	
Circus aeruginosus	Annex I. Common passage spring and autumn migrant; frequently roosts in open fields. Moderate increase in Europe.
Phasianidae	
Coturnix coturnix	Populations in decline due to netting/trapping of migrating birds.
Hirundinidae	
Delichon urbicum	Migratory passerine, moves on a broad-front (crosses the Mediterranean and the Sahara). Large range.
Hirundo daurica	Population estimated to be increasing.
Hirundo rustica	European populations stable.
Riparia riparia	Decreasing populations (Birdlife International, 2013).
Muscicapidae	Chats and Old World Flycatchers. Generally small arboreal insectivores that take their prey on the wing.
Erithacus rubecula	Stable population in Europe (Birdlife International, 2013).
Ficedula albicollis	Annex I. Common passage migrant. Breeding population confined to Europe, which has undergone a moderate increase.
Ficedula hypoleuca	Moderate decline in populations in Europe.
Ficedula parva	Very rarely seen in the Maltese Islands. Population expected to be stable.
Luscinia megarhynchos	Moderate increase in Europe (Birdlife International, 2013).
Luscinia svecica	Annex I. Scarce visitor in spring and summer, rarely in winter. Most records from Simar and Għadira NR (personal communication, John J Borg, 2013). Two individuals were ringed at Simar in 2010 (Birdlife Malta, 2010)
Monticola solitarius	Overall population suspected to be stable (Birdlife International, 2013). In Malta this species is considered to be a farmland bird and was proposed to be considered in the Farmland Bird Index as part of EU reporting obligations by Birdlife Malta (2008).
Muscicapa striata	Moderate decline in Europe (Birdlife International, 2013).
Oenanthe oenanthe	Moderate decline in Europe (Birdlife International, 2013).
Phoenicurus ochruros	Stable populations in Europe (Birdlife International, 2013).
Phoenicurus phoenicurus	Moderate increase in Europe (Birdlife International, 2013).
Saxicola rubetra	Moderate decline in Europe (Birdlife International, 2013). Used for farmland bird indices in Europe (Birdlife Malta, 2008). Sedentary.
Falconidae	Falcons and caracaras. Carnivorous.
Falco subbuteo	Declining population due to habitat loss.

Species	Description
Falco tinnunculus	Moderate decline in population in Europe.
Falco vespertinus	Annex I. Irregular passage migrant. Very rare in some years but common in others. Usually migrates in flocks. Population in decline due to habitat destruction. The European population (forming 25-49% of the global population) is suffering declines exceeding 30% in ten years, which covers 3 generations (Birdlife International, 2013).
Picidae	Woodpeckers, piculets, wrynecks and sapsuckers
Jynx torquilla	Moderate decline in Europe due to increased rain during breeding season (as a result of climate change), habitat changes, over-use of pesticides and herbicides.
Laniidae	Shrikes
Lanius senator	Farmland bird species. Moderate decline in Europe.
Laridae	Gulls
Larus ridibundus	Overall population decline.
Meropidae	Bee-eaters
Merops apiaster	Population trend in Europe unstable (Birdlife International, 2013).
Oriolidae	Orioles and figbirds
Oriolus oriolus	Moderate increase in Europe (Birdlife International, 2013).
Passeridae	Sparrows, snowfinches and allies
Passer montanus	Farmland bird. Moderate decline in Europe (Birdlife International, 2013).
Phalacrocoracidae	Cormorants. Conflicts with fishermen.
Phalacrocorax carbo	Seen at Is-Simar in 2010, one specimen was noted using the artificial rafts placed in the lagoon by the site manager (Birdlife Malta, 2010). Overall population increasing (Birdlife International, 2013).
Charadriidae	Plovers
Pluvialis apricaria	Annex I. Common passage migrant and winter visitor from October to March. Small to medium sized flocks (c300 max) try to overwinter in airfields. Intensive trapping, especially by means of tape lures, considerable numbers are taken each winter (personal communication, John J Borg, 2010). Overall population decreasing (Birdlife International, 2013)
Podicipedidae	Grebes
Podiceps nigricollis	Fully migratory, uncertain population trends (Birdlife International, 2013).
Rallidae	Rails, crakes and allies. Many species associated with wetlands. Usually omnivorous generalists. Many species eat invertebrates as well as fruit and seedlings.
Porzana parva	Scarce visitor; frequenting areas with slow moving or standing waters, including valleys and nature reserves, including Is-Simar (personal communication, John J Borg, 2013).

Species	Description
Porzana porzana	Annex I. Scarce visitor; frequenting areas with slow moving or standing waters, including valleys and nature reserves, including Is-Simar (personal communication, John J Borg, 2013). Stable population trend overall (Birdlife International, 2013).
Rallus aquaticus	Overall population trend is decreasing. This species is vulnerable to severe conditions (e.g. severe floods) (Birdlife International, 2013).
Prunellidae	Accentors. The only bird family that is endemic to the Palearctic. Only one genus. Not strongly migratory although they leave the coldest parts of their winter range. Typical habitat is mountainous regions.
Prunella modularis	Stable population (Birdlife International, 2013).
Regulidae	Goldcrests and kinglets. Kinglets inhabit the Nearctic and Palearctic ecozones. Adapted to conifer forests, however, adaptable to other habitat types particularly during migration. Constant foraging is required by these species due to their tiny size and fast metabolism. Prey on invertebrates.
Regulus ignicapilla	Stable trends in Europe (Birdlife International, 2013).
Regulus regulus	Moderate decline in Europe (Birdlife International, 2013).
Columbidae	Doves and pigeons. Worldwide distribution and most species have wide ranges. Mainly feed on seeds and fruit.
Streptopelia decaocto	Moderate increase in Europe (Birdlife International, 2013).
Streptopelia turtur	Farmland bird species; European population in decline due to habitat destruction and unsustainable levels of expoloitation (Birdlife International, 2013)
Sturnidae	Starlings
Sturnus vulgaris	Farmland bird species; Birdlife International (2013) refers to a stable European population.
Turdidae	Thrushes. Seed dispersal agents.
Turdus philomelos	Moderate decline in Europe (Birdlife International, 2013).
Turdus pilaris	Moderate increase in Europe (Birdlife International, 2013).
Upupidae	Hoopoe
Upapa epops	Sole extant member of this family.

2.10.4 Assessment of Conservation Status for Annex II Species

The conservation status of the three Annex II species that were recorded during the 2013 survey was determined in accordance with MEPA's methodology. The methodology is described in *ANNEX 3: Assessment Methodology of Conservation Status*.

Table 14: Conservation Status of bird species

Annex II Species	Code	Range	Size of population	Habitat for the species	Future prospects	Current condition
Himantopus himantopus (prospective breeder)		B2 Although this species has not yet bred at Is-Simar, related behaviour has been observed including courtship displays, moving nesting material around, and a breeding pair was observed on a raft, especially placed in the lagoon by BLM to encourage breeding (Sultana et al, 2011). The birds make use of the lagoon and its islets, favouring open views. However, the size of the lagoon in relation to the entire SPA is relatively small and therefore range within the site is considered to be bad, in particular since, to date, breeding has not actually been recorded at this site.	C2 Single pairs have been observed carrying out certain behaviour suggesting that breeding may occur, however, to date breeding of this species does not occur at Simar, and therefore the breeding population can be described as bad.	C2 Whilst the lagoon provides favourable habitat, it is considered that its small size makes it bad to consistently support a breeding population given the strong territoriality exhibited by this bird as well as its need to have wide open views in order to successfully protect its nest.	C2 The lack of an actual breeding record at this site and the small size of the lagoon, including the fact that Is-Simar provides less of an open view than the lagoon at Ghadira, it is considered unlikely that a breeding population will become established at this site, despite recent observed behaviour. If a pair does breed, it is considered that the site is unlikely to support more than one or two pairs. Future prospects for this species as a breeding bird at this site are therefore considered to be bad.	**C**
Breeding wetland species		C2 Non-Annex I species that breed at the wetland include *Fulica atra, Gallinula chloropus, Acrocephalus scirpaceus, Cettia cetti,*	C2 Number of breeding birds recorded at Simar over 15 years are presented in Table 9. *Fulica atra, Gallinula chloropus, and Acrocephalus*	B2 The reedbed and Tamarisk groves at Is-Simar provide ideal habitat for *Acrocephalus scirpaceus*, as well as for *Gallinula*	C2 The small size of Is-Simar lagoon, combined with territorial behaviours is considered to be the limiting factor that hinders other	**C**

Annex II Species	Code	Range	Size of population	Habitat for the species	Future prospects	Current condition
		Sylvia melanocephala Passer hispaniolensis and *Cisticola juncidis.* The size of the lagoon is relatively small in the context of the entire SPA, it is even smaller than the Ghadira reserve and therefore it is considered that the range of species that breed within the reserve, most specifically, the wetland species such as *Gallinula chloropus* and *Charadrius dubius* is badand stable. Six more bird species breed in the reserve, namely *Tachybaptus ruficollis, Fulica atra, Gallinula chloropus, Cettia cetti, Sylvia melanocephala Passer hispaniolensis* and *Cisticola juncidis*, with stable or increasing nesting pairs. The reedbed and Tamarisk groves at Is-Simar provide ideal habitat for *Acrocephalus scirpaceus.*	*scirpaceus* are dependent on the lagoon habitat. Sultana et al (2011) consider that the number of breeding pairs of *Acrocephalus scirpaeus* (between 5 and 8 pairs) is possibly the largest number that the wetland can support. *Fulica atra* was first recorded breeding at Simar in 2008. Since this time, two other breeding events have been recorded (up to 2011 - Sultana et al, 2011) A maximum of 1 breeding pair has been recorded during any one season. The latest breeding pair was recorded in 2011. Once the reedbed had become established at Simar, *Gallinula chloropus* started to breed at this site. Breeding pair numbers seems to have stabilised at approximately 15 breeding pairs. Given that the birds are territorial during the breeding season, it is unlikely that the site can support more breeding pairs. The population sizes of the breeding wetland non-Annex	chloropus and *Fulica atra.* Whilst the habitat type provided by the Simar lagoon is favourable, its limited size affects its function in providing suitable habitat for breeding wetland species.	wetland species from breeding within the SPA. If the lagoon is maintained at its current size, the future prospects for non-Annex I breeding wetland species is considered to be **bad** in that it is not considered likely that additional pairs or species can be supported at the site.	

Annex II Species	Code	Range	Size of population	Habitat for the species	Future prospects	Current condition
			I species at the lagoon are considered to be **bad** in the long-term, in particular when considering that there are only limited sites within the Maltese Islands where these species breed.			
Wintering wetland species		C2 Wintering species include waterfowl such as*, Gallinula chloropus*, *Fulica atra, Tachybaptus ruficollis, Gallinago gallinago, Rallus aquaticus, Pluvialis apricaria, Scolopax rusticola*, *Alcedo atthis, Jynx torquilla, Emberiza schoeniclus, Asio flammeus,* and *Luscinia svecica*. However, the small size limits the availability of suitable resources, thus limiting number of species that can winter at the wetland. Due to the small size of the area supporting wintering species, the range is thus considered to be bad.	C2 Ringing at the reserve helps to gather data on wintering species. The small size of the reserve restricts the number of individuals that the reserve can support. Knowing that the Maltese Islands lie within a major flyway, and the potential for the site to support individuals, it is considered that the population size that the reserve currently supports is considered to be bad.	B2 Wintering species like *Fulica atra* and *Gallinula chloropus* have been recorded at Simar in flocks reaching up to 40 individuals. The reedbed and tamarisk groves at Is-Simar provide ideal habitat for species such as *Tachybaptus ruficollis, Anas crecca, Aythya ferina, Gallinago gallinago Rallus aquaticus Jynx torquilla, Emberiza schoeniclus* and *Scolopax rusticola*. These species are dependent on the reedbeds and lagoons. The small size of the reserve limits the number of birds that can be supported during the winter and thse habitats are thus considered to be inadequate at Simar.	C2 In the absence of any favourable parameters, the future prospects for these species are considered to be inadequate. An increase in the reserve is considered to result in positive impacts for wintering bird species conservation when considering the evaluation parameters.	**C**

Annex II Species	Code	Range	Size of population	Habitat for the species	Future prospects	Current condition
Migratory waterfowl and waders including Annex I migratory herons		C2 The only suitable habitat within this SAC is the is-Simar Wetland Reserve. In light that this habitat type comprises only a small percentage of the overall habitat available, range is considered to be **inadequate**.	C2 Although alarge species diversity has been recorded at the reserve, generally, it is not common for large flocks to necessarily stop at the reserve. The size of the lagoon is considered to be bad in terms of its ability to support large numbers of migratory waterfowl and waders. It is considered probable that migratory populations would benefit from an increase to the Simar reserve that would allow for increased resource availability and therefore help to ensure a favourable staging post for migratory wadersand waterfowl.	B2 Waterfowl such as *Anas acuta, Anas clypeata, Anas crecca, Anas platyrhynchos, Anas querquedula* and *Aythya ferina, Fulica atra, Gallinula chloropus* and waders such as *Charadrius dubius, Calidris alpina, Calidris minuta, Tringa totanus, Tringa nebularia, Tringa ochropus, Gallinago gallinago, Calidris temminckii, Lymnocryptes minimus* and *Actitis hypoleucos,* make use of the open water areas, the islets and embankments. Flocks of herons and egrets frequent the area over an extended period in both migration periods, species include *Casmerodius alba, Egretta garzetta, Ardeola ralloides, Ardea purpurea, Nycticorax nycticorax, Botaurus stellaris* and *Ixobrychus minutus*. Most of these species feed in the lagoon and roost in the	C2 Threatened by poaching, there is a need for improved enforcement. These species use the reserve and flooded fields behind the reserve. It is considered that if the wetland were allowed to extend to include the fields, these species would be less vulnerable to disturbance including poaching. Birdlife research includes ringing of bird species and retrapping and weighing specimens. This monitoring has revealed that a number of species gain significantly in weight whilst occupying the reserve, illustrating the importance of the reserve for long distance migratory species. Examples for which data exists include *Calidris minuta*, *Calidris alpine*, *Calidris ferruginea* and *Actitis hypoleucos*.	**C**

Annex II Species	Code	Range	Size of population	Habitat for the species	Future prospects	Current condition
				Miżieb woodland. Although the habitat is present, it is considered to be too small and thus too vulnerable to potential threats to ensure long-term sustainability, and is thereby judged to be inadequate. It is therefore considered important that the marshland/lagoon habitat type is extended to improve the conservation status for these birds.	In the absence of an extension to the reserve, and in view of its importance for migratory birds seeking wintering grounds ensuring the threats to birds, the future prospects for these species at this site is considered to be inadequate.	
Migratory raptors		B2 The limited area of suitable habitat coupled with the threat from poaching, means that the range for these species is restricted within the SPA. The range is thus considered to be inadequate.	B2 These species do not tend to occur in large numbers at this SPA, although larger numbers are seen flying overhead. Population size of migratory raptors at this SPA is thus considered to be inadequate.	C2 The combined presence of the wetland habitat and the Miżieb woodland that overlooks the wetland and valley makes the woodland probably the best roosting spot for migratory raptors in Malta. Recorded species include: *Circus aeruginosus, Pernis apivorus, Falco vespertinus* and *Milvus*	C2 Possible threats include poaching and change in land use. Conservation measures required include enforcement, monitoring of habitats, food availability and population trends. These threats contribute to considering that future prospects for these species are **bad**.	**C**

Annex II Species	Code	Range	Size of population	Habitat for the species	Future prospects	Current condition
				migrans. Other small falcons making use of the woodland are *Falco subbuteo* and *Falco tinnunculus.* However, the large number of losses of these birds from this site due to poaching is considered to be significant enough to suggest that the habitat in this SAC is bad and stable for these species.		
Migratory wetland passerines		C2 Given the various habitats that these species frequent the distribution of passerines within this site includes Tamarisk trees, olive trees and reed beds in the reserve as well as open ground. However, the limited extent of the habitats of importance results in the conclusion that the range is badand should be improved by increasing suitable habitat.	C2 Migrant Annex I passerines, resting and foraging within the site include *Calandrella brachydactyla, Anthus campestris, Acrocephalus melanopogon, Acrocephalus scirpaceus, Ficedula albicollis* and *Luscinia svecica.* Although the species diversity is extensive, numbers and periods of stay are limited by the inadequate size of the wetland habitat. Wetland species currently avoiding the site, would become regular visitors, should the lagoon gain in size	B2 The reed bed is a national important roosting site for *Riparia riparia, Hirundo rustica* and *Motacilla flava* Other passerines, particularly associated with the reedbeds during migration, include *Acrocephalus scirpaceus, Acrocephalus arundinaceus, Acrocephalus schoenobaenus, Hippolais icterina* and *Locustella lusciniodes.* It is considered that the extent of the reed bed is relatively small in the context of the entire site. Therefore,	C2 In light of the other parameters, the future prospects for migratory passerines are considered to be bad. An extension of the reserve could improve the the other parameters and therefore the future prospects	**C**

Annex II Species	Code	Range	Size of population	Habitat for the species	Future prospects	Current condition
			and open water habitat is increased. Thus, current migrant numbers are considered to be bad.	the habitat is considered to be inadequate yet stable.		
Migratory woodland passerines		C2 Although the Simar reserve includes a number of trees, the necessary habitat is too small to support significant numbers of migrants and they necessarily are also reliant on the Mizieb woodland. However, only a relatively small portion of this habitat lies within the SPA. The limited extent of the habitats of importance results in the conclusion that the range is badand should be improved by increasing suitable habitat.	C2 Migrant passerine species especially utilizing the Miżieb woodland include *Sylvia atricapilla, Sylvia communis, Sylvia borin, Sylvia cantillans, Phylloscopus collybita, Phylloscopus sibilatrix, Phylloscopus trochilus, Carduelis cannabina, Carduelis carduelis, Carduelis chloris, Carduelis spinus, Carpodacus erythrinus, Fringilla coelebs, Serinus serinus, Luscinia megarhynchos, Erithacus rubecula, Ficedula hypoleuca, Ficedula parva, Muscicapa striata, Phoenicurus phoenicurus, Saxicola rubetra, Passer montanus, Prunella modularis, Regulus ignicapilla, Regulus regulus, Turdus philomelos, Turdus pilaris, Oriolus oriolus,Upupa*	C2 The Pwales valley is a natural corridor through which birds are funneled during their passage over Malta. The presence of the wetland habitat together with the overlying Miżieb woodland upgrades this passageway into an invaluable feeding, resting and roosting stopover for all avifauna, including woodland passerines, in both migration periods. The system as a whole provides a potentially valuable stopover for migratory passerines, however, not all of the system is protected as a Bird Sanctuary and SPA and there is considered to be significant disturbance from poaching. Due largely to the limited area available within the SAC accompanied with the	C2 Given the assessment of the parameters, and therefore due to the limited range, limited numbers of migrants that the site can support and the limited suitable protected area, future prospects for migratory woodland passerines are considered to be bad.	**C**

Annex II Species	Code	Range	Size of population	Habitat for the species	Future prospects	Current condition
			epops and *Streptopelia turtur.* Although the species diversity is extensive, numbers and periods of stay are limited by the inadequate size of protected woodland habitat. Thus, current migrant numbers are considered to be bad.	identified pressures, the habitat overall is considered to be bad.		

2.10.5 On-site Observations

Table 15: On-site observations

Observation	Degree	Spread of impact	Background info
Alien species of trees	Mild/Severe	Localised	Part of the plateau is planted with *Acacia cyanophylla* from a past afforestation project. The current trees are a source of propagules that can spread to the rest of the SAC. The trees need to be removed to make space for the restoration of the garrigue.

2.11 ANTHROPOGENIC ACTIVITIES WITHIN THE SITE

The management plan area was surveyed in March and June 2013 to identify the anthropogenic activities on site. The following land uses / activities were observed.

2.11.1 Nature Conservation

The SAC/SPA includes the Simar Wetland Reserve (see Figure 10). This reserve was created in 1992 by BirdLife Malta. Prior to its conversion into a wetland reserve, the area consisted of disturbed land which included acacia and eucalyptus trees. Only a small remnant of the original marshland remained.

The first step that was taken in order to convert the Simar area into a wetland reserve was to excavate soil in order to create a lagoon. Small pockets were not excavated in order to create islands within the lagoon. The material that was extracted was used as embankments around the site.

2.11.2 Agriculture

The predominant use within the SAC/SPA is that of agricultural activity (see Figure 9). The Pwales valley bed is used for intensive arable farming. There are also some pockets of agricultural land along parts of the Bajda Ridge escarpment. Some of the fields in the escarpment area have been left abandoned.

The area also includes typical rural features mainly a derelict farmhouse next to St Anne's Chapel and a Square Girna (Corbelled Stone Hut) which is in a good state (see Figure 15). Such square-planned girna is not common in the Maltese Islands.

Figure 40: Square Girna (Corbelled Stone Hut) from the outside and the inside

2.11.3 Afforestation

On top of the Bajda Ridge there is also an afforested area, il-Mizieb, which is dominated by pine and olive trees (see Figure 11).

2.11.4 Tourism and Recreation

The only touristic and recreational facility within the site is the Xatt il-Pwales promenade and the kiosk in the car park of the promenade (see Figure 12). The wetland reserve *per se* is a visitor attraction particularly with eco-tourists, bird watchers and photographers.

2.11.5 Hunting and Fishing

Even though hunting is illegal within the SPA, this also being a bird sanctuary, evidence of hunting activity was noted on site. This included hunting cartridges and hunting hides. Evidence of trapping activity was also noted. BirdLife Malta (2010) "*discovered that hunters and trappers regularly trap and shoot illegally within the boundaries of the Sanctuary, particularly on the slope between is-Simar Wetland Reserve and Miżieb*". From the 256 hides identified at Miżieb, 23 hides have been located within the Simar Bird Sanctuary.

The small beach at Xemxija Bay is used for angling too.

Figure 41: Hides within the Bird Sanctuary

2.11.6 Extraction

None identified

2.11.7 Water Use

Since one of the dominant land uses within the site is agriculture, the use of water is imperative since the fields require irrigation. The main source of water is rain water collected in reservoirs.

2.11.8 Education, Demonstrations and Research

The main educational facility is the Wetland Reserve. The reserve has a reception centre and three bird hides. The site is important both to raise awareness about nature conservation and the environment, and also to study and monitor bird species that reside, breed and/or migrate to the site. Records include: daily logs kept for different animal species, studies and nest records for breeding species and data for weather conditions and water quality. The wetland reserve is also open for guided school visits.

2.11.9 Other Uses

None have been identified.

2.11.10 Past Human Land Uses

Throughout the centuries landscapes have been modified and have changed radically. A case in point is Xemxija Bay's coastline which in all probability was located further inland than it is today (Gambin 2013).

Bajda Ridge, to the NW of this site, is known for its rich archaeological and cultural heritage among which are a prehistoric temple and the Xemxija tombs, a Punic tomb, a possible Roman road, apiaries and a troglodytic caves cluster. The area was always used for agricultural activity. During the Early Modern time the marshland at Xemxija Bay was drained. Records linked to fiefdom date back to the 16th century. The cultural landscape remained unchanged from the 18th century to date.

The area also has the potential for further archaeological discoveries due to the rich presence of related remains in the area. The site is also important for its environmental archaeology due to its depositional nature. Therefore, any interventions on the site, including excavations, should be monitored.

2.12 Anthropogenic Activities Outside The site

The human impacts outside the management plan area were also evaluated since these two could have a direct or indirect impact on the site. The following land uses / activities were observed.

2.12.1 Nature Conservation

None identified.

2.12.2 Agriculture

Agriculture is a predominant land use all along the Pwales Valley.

2.12.3 Afforestation

The Miżieb area is a wooded area on Bajda Ridge. It covers an area of 85 hectares; around 2.4km long and 0.6km wide. In the late 1950s the Israeli government donated around 10,000 trees to Malta, mainly Aleppo Pine, Olive and Juniper. In the early 1970s more tree planting was carried out. Different NGOs including the Malta Ornithological Society (today BirdLife Malta) were involved in these projects. The site was then handed over to the Għaqda Kaċċaturi u Nassaba in 1986. The Federazzjoni Kaċċaturi u Nassaba Konservazzjonisti (FKNK) claim that the area is a private hunting ground, however, the authorities have failed to provide the legal agreement that resulted in the transfer of this land (BirdLife Malta 2010).

2.12.4 Tourism and Recreation

The site is located close to Xemxija which is an important settlement for tourism and recreation. The closest tourist facilities are the Xemxija Bay Hotel and Porto Azzurro Aparthotel.

Apart from hunting, the Miżieb area is used by the general public and tourists for country side recreation, physical exercise and cultural visits due to the different archaeological features in the area.

2.12.5 Hunting and Fishing

The afforested area at Miżieb is used as hunting and trapping ground. A brief history of this site is provided in § 2.12.3. Over the years, different irregularities have been recorded in the Miżieb area (see Table 16). BirdLife Malta (2010) recorded a total of 256 hides (180 hunting hide and 76 trapping hide) within Miżieb (see Figure 42). This amounts to a density of 183 hides/km^2. On the 20th and 21st September 2009 over 200 dead protected birds were reportedly found within approximately a third of the woodland searched by BirdLife Malta. The results of the police investigation remain unknown.

Table 16: Poaching and illegal trapping incidents recorded by BirdLife Malta within the Miżieb study area between January 2008 and March 2010 (BirdLife Malta 2010)

Description of incident	Jan 2008 - Mar 2010
Total number of illegal incidents	478

Description of incident	Jan 2008 - Mar 2010
Shooting at protected species (# incidents)	23
Poachingout of season (# incidents)	379
Poaching during the closed season	300
Poaching after 15:00 between 15-30 Sept	51
Poaching after 13:00 on Sunday or public holiday Hunting between 2hrs after sunset and 2hrs before dawn	424
Shooting in protected areas (# incidents)	33
Poaching in a Bird Sanctuary (Simar Protected Area)	33
Other (# incidents)	18
Firing more than three shots from a single weapon	18
Trapping out of season (# incidents)	10
Trapping for a protected species (# incidents)	7
Trapping in protected areas (# incidents)	8

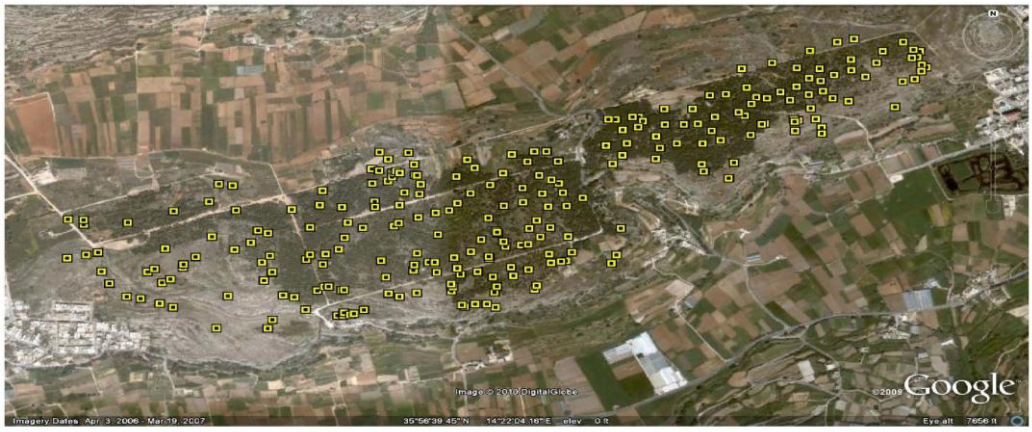

Figure 1. Overview Google map showing the location of all hunting and trapping hides located within the entire Mizieb area.

Figure 42: Overview Google map showing the location of all hunting and trapping hides located within the entire Miżieb area (source: Birdlife Malta, 2010).

2.12.6 Extraction

None identified.

2.12.7 Water Use

Since agriculture is dominant particularly to the south-west of the site, water use is also important outside the site. The main feature to collect water is the reservoir.

2.12.8 Education, Demonstrations and Research

The Xemxija Heritage Trail borders the SAC/SPA and includes various archaeological features ranging from the late Neolithic to Early Modern time.

2.12.9 Other Uses

None identified.

2.12.10 Past Human Land Uses

Human presence in the area dates back to prehistory as evidenced from the late Neolithic remains which have been interpreted to be the remains of an apse. The surrounding area includes remains and sites from classical antiquity. During the Middle Ages the closest human settlement to the area was the medieval village of Marikatu which according to Wettinger is modern day Wardija.

2.13 Economic Aspects and Population

2.13.1 Economic Aspects

The direct economic benefit from the SAC is related to agricultural activity which is the main economic activity within the management plan area.

The area is an important one for the tourism, recreation and leisure industries. There is one kiosk within the site's boundary. The SAC/SPA borders the Xemxija settlement and there are a number of hotels and restaurants outside the SAC/SPA. There is also a proposal for the replenishment of the former beach at Ir-Ramla tal-Pwales using imported sand. This could add to the touristic value of the site (TRK 145703).

The wetland reserve attracts bird watchers and people interested in the environment. BirdLife Malta receives 23,294EUR for the management of the site through a tripartite agreement that exists between MEPA , Office of the Prime Minister and BirdLife Malta. . This has to cover the expenses incurred including tool repair and maintenance, water irrigation and all utility bills. At the reception centre of the reserve, visitors have the opportunity to buy memorabilia and also give donations for new projects within the reserve. The Simar Wetland Reserves Work Plan 2011-2012 includes a budget note to assess the financial situation for management of Is-Simar. Three types of expenses have been identified: Annual (A), an expense that needs to be taken into account every year, Onetime expense (O), relates to a specific project within the site and Circumstantial (C), an expense which is the result of an unlikely or uncommon circumstance. The budget note shows that BirdLife Malta has to rely on external sponsorship since the management agreement income does not cover the projected costs.

The wetland reserve has six full time government employees. The managing warden takes care of the general management of the site whilst the field teacher guides school visitors through the site. The remaining four employees are watchmen. During the weekends there are part-timers employed by BirdLife to guide visitors from the general public.

2.14 STAKEHOLDER CONSULTATION

2.14.1 Organizations / Authorities and their Responsibilities

The key entities that have either a direct or indirect role in the management of the site are described in. This table includes the different categories of entities.

Table 17: Summary of responsibilities

Group	Stakeholder	Responsibility of stakeholder
Government entities	Office of the Prime Minister	Responsible for ERA .
	Ministry for Sustainable Development, the Environment and Climate Change	The management plan area is found outside the development zone in an area. The SAC includes natural habitats and an afforested area.
	Ministry for Transport and Infrastructure (Valley Management Unit)	Important in relation to valley management.
	Department of Agriculture	Important in relation to agricultural portfolio and expertise. Specific interest in ensuring that agricultural land / activities are safeguarded and that the livelihood of farmers is not compromised.
	Paying Agency	Important in relation to agricultural portfolio and expertise. Specific interest in ensuring that agricultural land / activities are safeguarded and that the livelihood of farmers is not compromised.
	Malta Environment and Planning Authority	Regulatory body for planning and environmental protection issues. Contractor for the Natura 2000 Management Plan Project.
	Malta Tourism Authority	Important in relation to role in the promotion of heritage as tourism assets. Specific interest in ensuring that tourism assets, including cultural and natural heritage, are safeguarded, enhanced and positively promoted, and that access to tourist sites is not compromised.
	Superintendence of Cultural Heritage	Important in relation to cultural heritage role and expertise. Specific interest in ensuring that cultural heritage is safeguarded, enhanced and positively promoted.
	Tourism and Sustainable Development Unit	Important in relation to natural and cultural heritage expertise and role in the promotion of heritage assets and tourism. Specific interest in ensuring that natural and cultural heritage is safeguarded, enhanced and positively promoted.
	Water Services Corporation	Important in relation to sewerage network and ensuring the site does not receive sewage overflows.

Group	Stakeholder	Responsibility of stakeholder
Local Councils	St Paul's Bay Local Council	The site falls within St. Paul's Bay locality boundary. Responsible for embellishment works, road surfacing, cleansing and maintenance and promotion of local cultural and natural heritage.
NGOs	Birdlife Malta	Have the expertise on bird species and their habitats. They are also responsible for the Simar Wetland Reserve. Specific interest in ensuring that birds species and habitats are safeguarded and enhanced.
	Hunters Association (FKNK & KSU)	Important in relation to expertise on game bird species and their habitats. Specific interest in ensuring that birds species and habitats are safeguarded and enhanced.
	Nature Trust Malta	Nature Trust might be interested in this site. Promote nature conservation and environmental protection.
	Ramblers Association	Represent hikers and ramblers. The activities within and outside the site may have an impact on the SAC/SPA. Specific interest in ensuring that use of / access to the site by ramblers is not compromised.
Land owners	Lands Department	Specific interest and expectation that management plan does not compromise rights as land owner.
	Private owners	Specific interest and expectation that management plan does not compromise rights as land owner.
Land managers	Birdlife Malta	Have the expertise on bird species and their habitats. They are also responsible for the Għadira wetland reserve. Specific interest in ensuring that birds species and habitats are safeguarded and enhanced.
Public and private operators	Birdlife Malta	Important as managers of the wetland reserve. Specific interest and expectation that management plan will not compromise current

Group	Stakeholder	Responsibility of stakeholder
		use of land / activities, access rights, etc.)
	Kiosk operators	Important as business operating within/vicinity of the site. Specific interest and expectation that management plan will not compromise current use of land / activities, access rights, etc.).
Residents	Local residents	Important as residents living in the vicinity of the site. Specific interest and expectation that management plan will not compromise current lifestyle (use of land / activities, access rights, etc.).
	St Paul's Bay Residents Association / Safeguarding St Paul's Bay Group (Nieħdu Ħsieb San Pawl il-Baħar)	Important as residents living in the vicinity of the site. Specific interest and expectation that management plan will not compromise current lifestyle (use of land / activities, access rights, etc.).
Farmers	Local farmers	Important as persons working / carrying out activities on land in the vicinity of the site. Expectation that management plan will not compromise current use of land / activities, access rights, livelihood, etc.).
Site visitors / other land users	Birdwatchers	Important as recreational visitors to / users of the site and areas in the vicinity of the site.
	Hunters	Important as recreational visitors to / users of the areas in the vicinity of the site.
	Local / foreign tourists	Important as recreational visitors to / users of the site and areas in the vicinity of the site.
	Ramblers	Important as recreational visitors to / users of the site and areas in the vicinity of the site.
	Scouts	Important as recreational visitors to / users of the site and areas in the vicinity of the site.

2.14.2 Stakeholder Engagement

An important component of the Management Plan is stakeholder engagement. A number of stakeholder meetings have been undertaken in the drafting of the plan. Amongst the stakeholders that were consulted was the St Paul's Bay Local Council.

A meeting with the Simar Wetland Reserve site manager was also held on site. The site manager highlighted the main issues related to the reserve and the surrounding area.

During a stakeholder workshop, wherein stakeholders were given information on the benefits of Natura 2000 and information on the site, a 'visioning' exercise was carried out where stakeholders were asked to envision the area in 2018, if the site were ideally managed. The exercise was facilitated by the Consultants who drafted the Management Plan.

The participants mentioned the need for better enforcement through better signage, barriers and active management which includes the involvement of the residents living in the vicinity. The need to safeguard and restore species and habitats was also mentioned. The salt marsh area can be enlarged and more sustainable practices adopted. Education is another important area. The site has a great potential for environmental education (for example school visits) and eco-tourism. Agriculture is also an important activity in the SAC/SPA. Introducing sustainable practices in the area is of great importance. This can be done through training of farmers, controlling the use of pesticides and herbicides in the area, and soil conservation practices.

2.15 CULTURAL HERITAGE

Is-Simar is rich for its rural characteristics and archaeological features as outlined in Sections 2.11.10 and 2.12.10.

2.15.1 Archaeological Artefacts

The north-western part of the site includes a number of archaeological sites. Apart from this area, the Pwales Valley also has the potential for further archaeological discoveries due to the rich presence of related remains in the area. The site is also important for its environmental archaeology due to its depositional nature.

2.15.2 National Historical Monuments

Within the management plan area there are different features of historical interest. The area includes part of the Xemxija Area of Archaeological Importance (AAI) (GN 763/98). This AAI includes different features like the remains of a late Neolithic Temple (Class A), a Punic Tomb (Class B) and Imġiebaħ (Grade 2). The area supports a relic of possibly ancient woodland, a thousand year old carob tree.

The SAC/SPA includes St Anne's Chapel which is built at the foot of the Bajda Ridge escarpment and has been built in the same place as an older chapel dedicated to the Nativity of Mary. The chapel dedicated to the Nativity of Mary suffered considerable damage when it was vandalised

by the occupying French soldiers of Napoleon. Nowadays the Association of Lyceum Past Students is responsible for taking care of this chapel.

The site also includes an Agricultural Heritage Museum located at Ta' Rkuplu.

A number of rubble walls are also identified as cultural heritage features. These are shown on Figure 43.

Table 18: Protected areas and structures

Designation	Name	All / part of site	Type	Policy / legislation	Figure Reference
Area of Archaeological Importance – Late Neolithic Temple (Class A)	Xemxija	Part	Archaeology	GN 763/98	Figure 8
Area of Archaeological Importance – Punic Tomb (Class B)	Xemxija	Part	Archaeology	GN 763/98	Figure 8
Area of Archaeological Importance – Buffer	Xemxija	Part	Archaeology	GN 763/98	Figure 8
Scheduled Architecture – Imġiebaħ (Grade 2)	Xemxija	Part	Archaeology	GN 763/98	Figure 8
Scheduled Architecture – Ancient Road (Grade 2)	Xemxija	Bordering	Archaeology	GN 763/98	Figure 8

2.15.3 Cultural Events

None identified.

Figure 43: Cultural Heritage Map (see *ANNEX 6: Maps* for A3 version)

2.16 LANDSCAPE FEATURES AND EVALUATION

Is-Simar SAC/SPA includes parts of Bajda Ridge (M7) and Pwalles Valley (M8). The former is characterised by afforested areas and pockets of agricultural land and garrigue. The latter is a highly cultivated area.

The landscape of the area has changed over the centuries and in all probability the coastline was further inland. The cultural landscape of the area has remained unchanged from the 18th century.


Figure 44: Landscapes of Is-Simar SAC/SPA and the surrounding area

2.17 VISITOR ACCESS

Is-Simar SAC/SPA can be accessed from different points. The site is bound by Xatt il-Pwales to the north, Triq Għajn Tuffieħa to the east, Triq il-Miżieb to the south and a lane within the Miżieb afforested area. Triq il-Pwales cuts through the SAC/SPA and is a main entry point to the area. There is also the ancient road that leads to the Miżieb area of the site. There is also a steep road that directly links the Pwales Valley to the Bajda Ridge escarpment and leads to Ix-Xagħra tal-Għansar which is located outside the site. The Simar Wetland Reserve is accessed through the main entrance at Triq il-Pwales.

Visitor access to the Wetland Reserve for the general public is limited to the weekends between November and May, see Figure 45 and Figure 46. A total of 930 persons visited the Wetland Reserve from January to June 2011 whilst another 332 persons visited the reserve in November and December. The reserve is opened in this time period to coincide with the autumn and spring migrations that are the prime time for avifuana species present in the reserve. In addition, during the summer months the water levels of the wetland are very low and in the driest summers can also dry out. The Wetland Reserve is also visited by students during the scholastic year; see Figure 47 and Figure 48. A total of 1,334 students visited the wetland reserve from January to June 2011 whilst another 546 students visited the reserve from September to December.

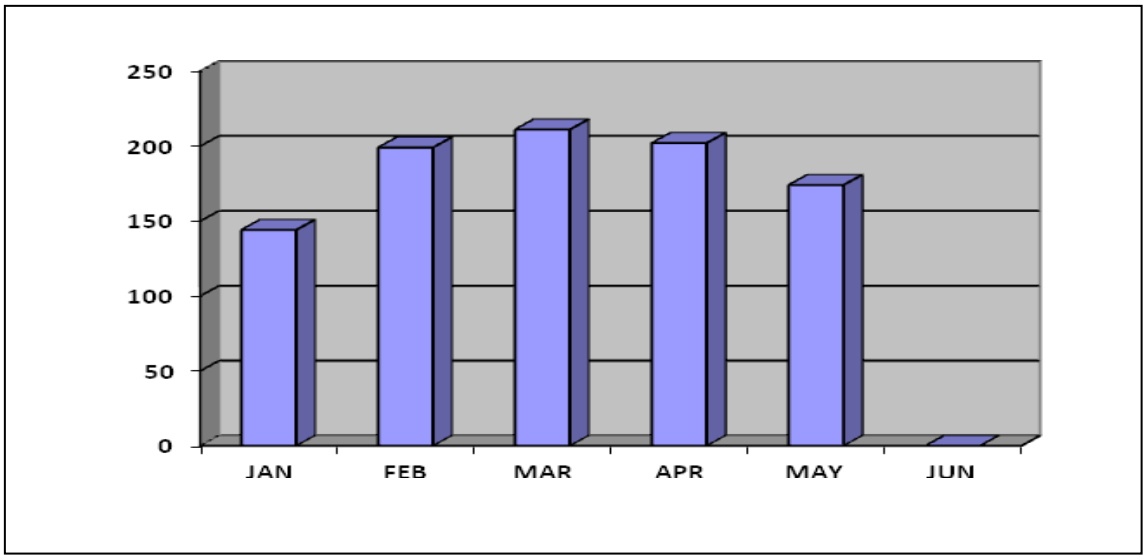

Figure 45: Number of visitors recorded at Is-Simar (January to June 2011) (Final Management Effectiveness Report: Simar Wetland January – June 2011)

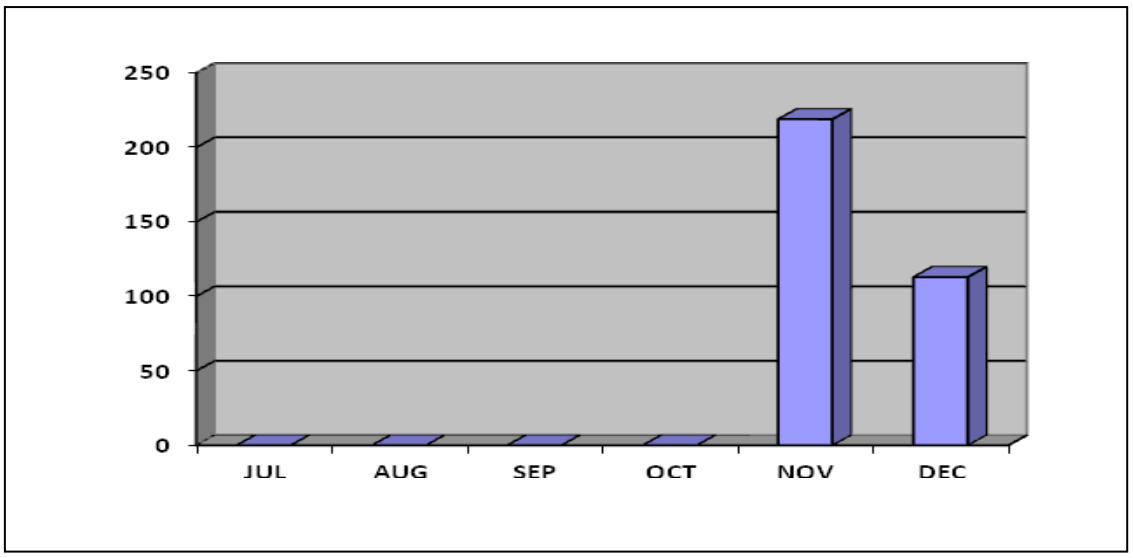

Figure 46: Number of visitors recorded at Is-Simar (July to December 2011) (Final Management Effectiveness Report: Simar Wetland July – December 2011)

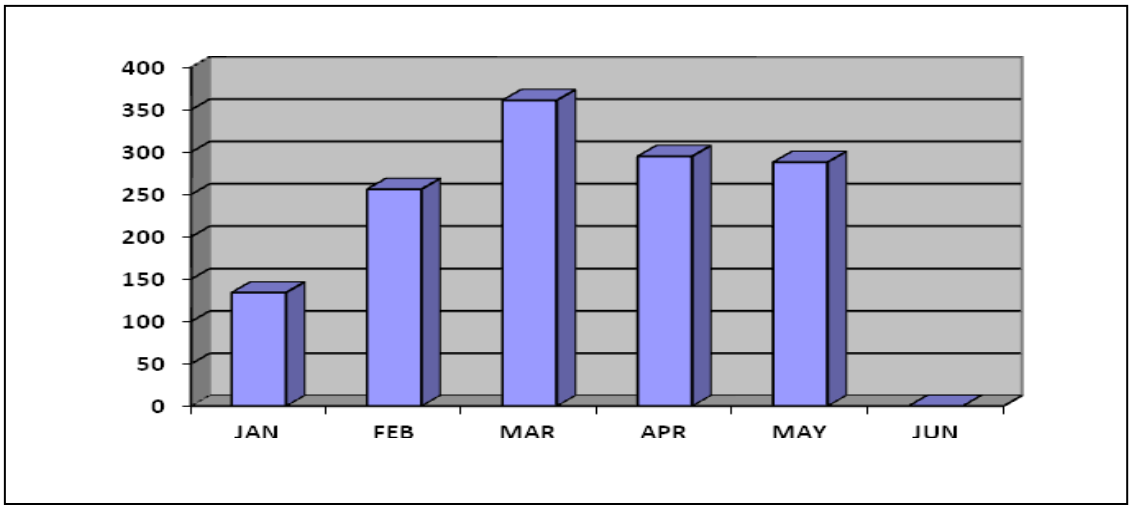

Figure 47: Number of students recorded at Is-Simar (January to June 2011) (Final Management Effectiveness Report: Simar Wetland January – June 2011)

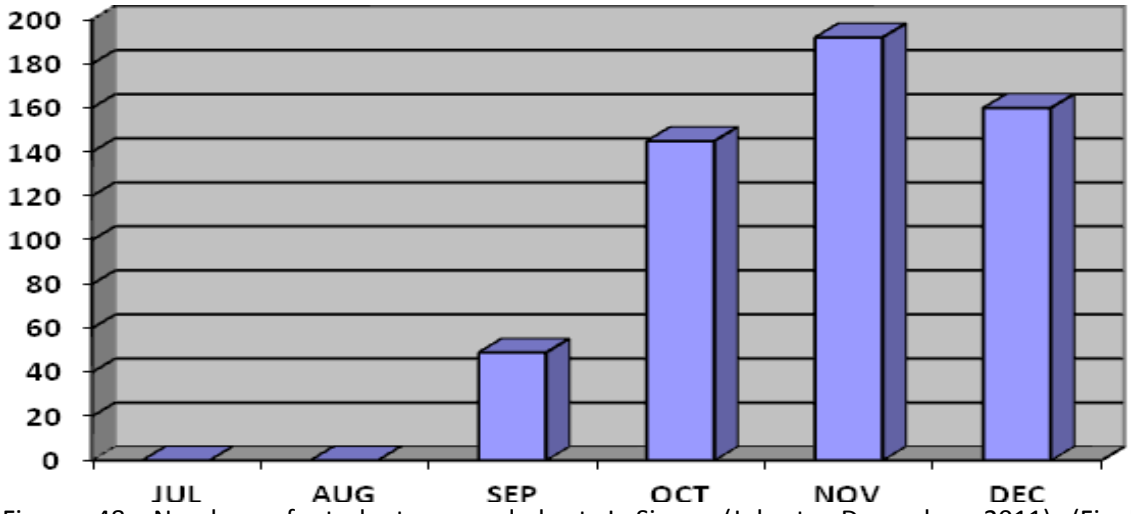

Figure 48: Number of students recorded at Is-Simar (July to December 2011) (Final Management Effectiveness Report: Simar Wetland July – December 2011)

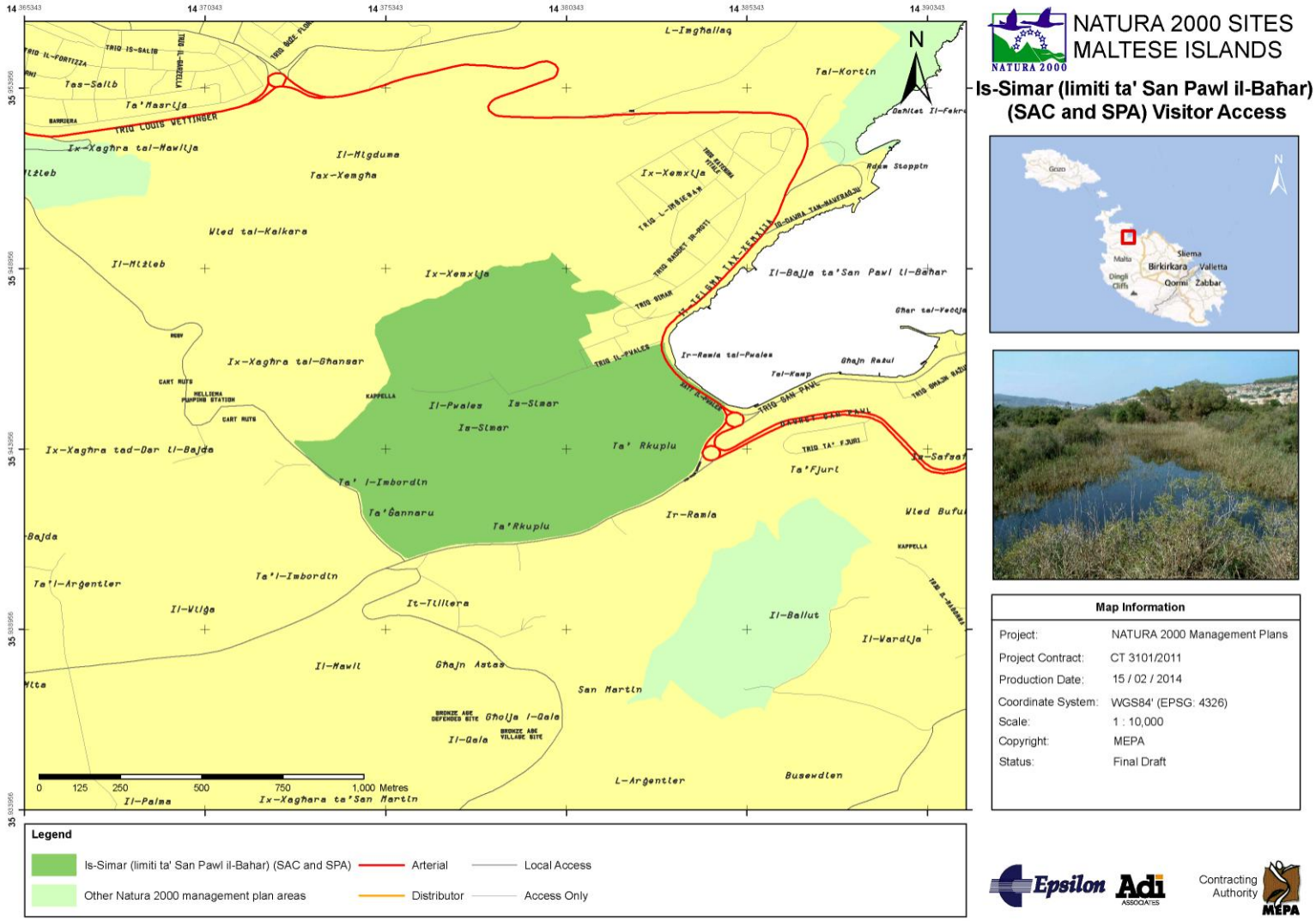

Figure 49: Visitor Access Map (see *ANNEX 6: Maps* for A3 version)

2.18 SOCIO-ECONOMIC EVALUATION

The previous sections have highlighted the features and the uses making up Is-Simar SAC/SPA. The main feature of the SAC/SPA is the Wetland Reserve. The context of the site is that of a rift valley with two ridges on both sides. The rift valley ends at the sea at Xemxija Bay.

One of the main socio-economic activities in the area is agriculture. It is not known what the total revenue from this economic activity is. The site has also a potential to be developed as an eco-tourist destination. The main attraction is the Wetland Reserve. The surrounding area is also a tourist and recreational destination. The Agriculture Museum present within the SAC/SPA can continue increasing the value of the site. In addition to the natural and agricultural value, the surrounding area is also important for its archaeological and cultural heritage value.

The Simar Wetland Reserve is also being used for educational awareness of school children and the general public and recreational/scientific activities such as bird watching and photography.

3 EVALUATION & CONSERVATION OBJECTIVES

As described in *ANNEX 1: Management Plan Development* the first phase of evaluation is an important step for diagnosing important issues for the management of the site and identifying needs for further input. A provisional *list of features and factors* was derived from the Standard Data Forms and the data collected and presented in Chapter 2 of this MP.

The second phase of evaluation is a *conclusive step* regarding the issues previously identified, this phase consolidates known information, allowing the application of a SWOT analysis that supports a proposed vision and site management (conservation) objectives.

3.1 EVALUATION OF FEATURES

The features that were identified as key components of the SAC/SPA are the three Annex I habitats and principally the coastal lagoon that supports the majority of the fauna diversity present in the SPA. The site features three Annex II flora species, four Annex II fauna species and a considerable number of Annex IV endemics and rare species. A Mediterranean woodland, a reed bed and an olive grove form, together with the lagoon, the supporting habitat mosaic for a remarkable diversity of Annex I and migratory bird species.

3.1.1 Annex I Habitats

The following three Annex I habitat types were identified and mapped during the field survey carried out in the context of this study:

- 1150 – *Coastal lagoons
- 3170 – *Mediterranean temporary ponds
- 5410 – West Mediterranean clifftop phryganas

Is Simar Wetland Reserve

The **Coastal Lagoon** (1150*) priority habitat occupies an area of 4.5 Ha or 5.7% of the site. The lagoon has been engineered in a former wetland area for the benefit of birds.

The water of the brackish lagoon originates from rain water. Excess water is discharged into the sea via a ditch that passes beneath Xatt il-Pwales. Sea water and spray reaches the marshland via the substratum, wave action and wind. Water levels and salinities in the lagoon are regulated through a sluice and culvert at the seaward side and a freshwater reservoir inland.

The wetland supports the macrophyte Widgeongrass *Ruppia* sp. and *Phragmites australis* reedbeds while the banks of the lagoon and the islets support other marshland species, such as *Juncus acutus* and *Carex divisa*. The lagoon supports a thriving population of the endemic Annex II species, *Aphanius fasciatus* and a considerable number of Annex I and migratory bird species.

As assessed in Chapter 2, the functions of this habitat are considered to be inadequate due to its limited size. This inadequacy of functioning to the benefit of the Annex II and especially of the Annex I and migratory birds using the lagoon is further discussed below.

Mediterranean temporary ponds (*3170) priority habitat type occupies an area of 714.3m^2 (just 0.1% of the total surface area of the SAC) located amongst the grass steppe community. The pools support relatively rare species including *Triglochin laxiflora, Zannichellia melitensis* and *Elatine gussonei* (an Annex II species). The ponds are considered to be in good condition and the site does not appear to experience much disturbance.

West Mediterranean clifftop phryganas (Astragalo-Plantaginetum subulate) (5410) occupies 5.2% of the SAC in karstic terrain and abandoned agricultural land. It has a patchy distribution and occurs intermingled with andropogonid grass steppe.

3.1.2 Important Bird Habitats

- The Miżieb Woodland

The Pwales valley is a natural corridor through which birds are funneled during their passage over Malta. The presence of the wetland habitat together with the overlying Miżieb woodland upgrades this passageway into an invaluable feeding, resting and roosting stopover for all avifauna in both migration periods. The woodland habitat of Miżieb lies in a strategic place overlooking the valley and wetland and thus it is particularly valuable as a roosting site for raptors including Marsh Harrier *Circus aeruginosus*, Honey-buzzard *Pernis apivorus*, Black Kite *Milvus migrans* and European Hobby *Falco subbuteo*, as well as herons. The woodlands also hold an array of other migratory species, including Turtle Dove *Streptopelia turtur*, Golden Oriole *Oriolus oriolus* and other species such as flycatchers, thrushes and warblers.

The Miżieb woodland is also important for several breeding bird species. These include Sardinian Warbler *Sylvia melanocephala*, Zitting Cisticola *Cisticola juncidis*, Blue Rock Thrush *Monticola solitarius*, Spanish Sparrow *Passer hispaniolensis* and Tree Sparrow *Passer montanus*. Several locally rare species also regularly attempt to breed in the woods, including Serin *Serinus serinus*, Chaffinch *Fringilla coelebs*, Turtle Dove *Streptopelia turtur*, Collared Dove *Streptopelia decaocto* and Common Cuckoo *Cuculus canorus*.

It has to be stressed that the Wetland Reserve at is-Simar is too small to host even a few individuals of the above mentioned species and so all migratory arboreal avifauna have to rely on the adjacent Miżieb woodland for resting, roosting and nesting refugees, part of which is located within the SAC/SPA boundary.

- The Olive Grove

An old olive grove is located at the eastern part of the reserve, part of which is not, however, enclosed as part of the reserve. This grove naturally regenerates, the fruits are eaten and the seeds dispersed largely by *Sturnus vulgaris.* A few *Pistacia lentiscus* are also found growing naturally as undergrowth. This is an important habitat for migratory passerines and wintering species.

- The Reedbed

Is-Simar Wetland Reserve supports the most extensive *Phragmites* reed bed in the Maltese Islands. It is an ideal habitat for several marshland species, providing shelter and food for waterfowl, herons, rails and passerines. It also provides a unique breeding habitat for reed warblers, Little Bittern and moorhens.

3.1.3 Annex II Plant Species

The following three Annex II plant species are recorded as present in the site:

- *Elatine gussonei*
- *Anacamptis urvilleana*
- *Ophrys melitensis*

Elatine gussonei was the only Annex II plant species noted in a number of the 3170* pools during the 2013 survey. This species is a Pelago-Maltese endemic species and is listed in the Red Data Book as a rare species with a restricted distribution in the Mediterranean Region and the Maltese Islands.

Anacamptis urvilleana is an endemic species listed in the Red Data Book as rare with a restricted distribution in the Maltese Islands. It grows mainly in garrigues and rocky steppes. The flowers of *Anacamptis urvilleana* are highly productive in terms of seed dispersal, however, as with all orchids, it is dependent on a specific fungus for successful seed germination and the plant takes approximately 10 years to mature. This system, i.e. orchid mycorrhiza, is highly sensitive to disturbance and any damage, including littering, transplanting and/or other interventions can affect the symbiosis to the detriment of the orchid. The SDF threat reference about trampling may apply to it and casual collection can also be anticipated.

No data is available on the size of the population at site level; according to its known distribution it is extensively found in various locations on rocky terrain within the site.

Ophrys melitensis, as described in the Red Data Book is listed as endemic with a restricted distribution in the Maltese Islands. The species is found in karstic habitats including maquis, garrigue and xeric grasslands, often subjected to human-induced pressures.

This species was not encountered during the site survey, and was not indicated on the Annex II species map provided by MEPA. No data is available on the size of the population at site level and on the precise distribution of this species within the SAC.

3.1.4 Annex II Fauna Species

Fish

One Annex II fish species is present on site:

- *Aphanius fasciatus*

The pools at the reserve support a population of the Annex II euryhaline fish, *Aphanius fasciatus* (Maltese Killifish), listed as vulnerable with a restricted distribution in the

Mediterranean Region and the Maltese Islands. This fish is extremely important to the food web within the reserve since a wide range of shoreline birds feed exclusively on it.

This species occupies the lagoon habitat which has an area of approximately 11,000m^2 and a volume of 3,630,000m^3.

Favourable habitat parameters for the species are the limited salinity fluctuations of the lagoon and the existing rich submerged vegetation, including *Ruppia* sp. which provides both shelter and increased food source.

Risks to the species are associated with low water quality, especially presence of organophosphate pesticides leaching from the surrounding fields and possible genetic depression due to population isolation. Although the size of the lagoon is considered adequate in supporting a viable population of this species, possible expansion of its lagoon habitat, resulting in increased water volume, would benefit it.

Reptiles

One Annex II reptilian species is present on site:

- *Zamenis situla*

The subspecies *Zamenis situla leopardina* is listed in the Red Data Book as vulnerable and it is considered to have a restricted distribution in the Mediterranean Region. It is an eastern Mediterranean subspecies that in the central Mediterranean is found in southern Italy, eastern Sicily and the Maltese Islands.

This species is dependent on typical Mediterranean maquis, normally found in shrubs such as *Pistacia lentiscus* and *Cistus* spp, areas of long grass or in rubble walls. Site-specific data for the species is considered insufficient for status assessment.

Mammals

Two Annex II bats have been recorded from this site:

- *Rhinolophus hipposideros*
- *Myotis punicus*

Rhinolophus hipposideros range within the site includes both a roost and nearby feeding grounds, both important for the long-term survival of this species at this site. The species roosts in the apiaries, located north of the wetland reserve. 1-3 specimens have been recorded roosting while 1-5 recorded feeding at Simar reserve (personal communication, John J Borg, 2013).

Rhinolophus hipposideros is highly vulnerable to disturbance, use of agricultural pesticides, and reduced hunting areas. Winter roosts are occupied between September and March, when the females move into the nurseries. It hunts in valley bottoms, along vegetated walls and along hedges, amongst bushes and shrubs. Its diet mainly includes small nocturnal beetles, moths, and mosquitoes.

Myotis punicus is seen feeding at this site. This is a cave dwelling bat, frequently found occupying human habitations, open areas and agricultural land. Other potential habitats include valleys retaining fresh water throughout most of the year. No records of roosts of this species at this site have been identified. This species usually feeds over open grounds, in sheltered valleys and in agricultural grounds. Its diet consists of Orthoptera 65%, Coleoptera 15%, and Lepidoptera 20%. Feeding grounds are usually less than one kilometre away from roosts. Males are usually sedentary while females move considerable distances. Certain species of *Myotis* bats are known as short distance migrants. To date migration to and from the Maltese Islands has not been confirmed. Single bats, usually males, are known from several localities. Females are more colonial in both winter and summer roosts. Bats disperse into winter roosts till the second/third week of March when they congregate in nurseries. Ideal roosting habitat includes caves and all sorts of hypogea, also inside man-made structures. Borg (1998) gives a breakdown of roosting habitats as follows: Caves 52%, WWII Shelters 14%, Water Tunnels (Mina) 14%, Catacombs 10%, Human Habitations 7% and Fortifications 3%.

Both bat species utilize the food resources provided by the abundance of insects attracted by the wetland environment. The small size of the lagoon is therefore a factor limiting the numbers of bats present in the site and possible expansion of the lagoon would improve the quality of their hunting grounds.

3.1.5 Annex I Birds of the Birds Directive

As already stated the main reason behind the creation of the Is-Simar wetland was to provide a variety of bird species with ideal breeding grounds, as well as an important feeding and resting area for migratory birds.

The Wetland Reserve Manager, Birdlife Malta, collects systematic data on year round use of the site by birds, by direct counts and ringing. Research carried out includes bird ringing, taking measurements including weight, and analysis of the lagoon water.

Two Annex I species are of particular interest here:

- *Ixobrychus minutus* has bred twice at Simar. Although migrants are noted, breeding has not been observed since 2000. Absence of breeding pairs for such an extended period of time reflects a no-longer extant breeding population. Given that adequate food is available for the species it is considered that the small extent of the reedbed surrounding the lagoon is the main limiting factor that hinders consistent breeding of the species.
- *Himantopus himantopus* has been a prospected breeder at Is-Simar as courtship displays and prolonged summer stays have been observed in recent years. The species has recently established a breeding population of 3-5 pairs in Għadira, but it does not breed at Is-Simar.

As assessed in Chapter 2 this may be due to the fact that is-Simar is characterised by relatively dense vegetation and the small size of the reserve does not allow for a long enough line of sight that this species prefers when breeding. Preference for open habitat that enables long views is true for most waders and waterfowl. These habitat parameters may also hinder *Charadrius dubius* to breed at Is-Simar as it does at Għadira.

The small size of Is-Simar lagoon, combined with territorial behaviours is considered to be the limiting factor that hinders other wetland species from breeding within the SPA. Territorial behaviour will also further limit the numbers of breeding pairs of species that might eventually attempt to breed at Is-Simar.

The idea of extending the lagoon has already been discussed in the site's Management Plan 2004-2008:

"…The nature reserve lies behind a main busy road, and in its vicinity are apartments and hotels. The bay outside the reserve is not fit for swimming[11] *and as such relatively little or no disturbance at all comes from bathers in summer. The fields around the reserve today occupy much of the original habitat of marshland. The reserve will benefit if the size of the marshland is increased…*

"…The present wetland is very small; hence larger birds could be easily disturbed especially larger birds like Ardea *spp. The reserve's wildlife will benefit if these fields are returned back to nature and the marshland is increased…"*

Regularly occurring Annex I Migratory birds

The site is an important stopover in both spring and autumn migration periods. Recorded Annex I migrants include *Aythya nyroca, Pluvialis apricaria, Himantopus himantopus, Gallinago media, Philomachus pugnax, Porzana porzana, Asio flammeus, Tringa glareola* and *Alcedo atthis.*

Migratory Raptors

The combined presence of the wetland habitat and the Miżieb woodland that overlooks the wetland and valley makes the woodland probably the best roosting spot for migratory raptors in Malta. Recorded species include: *Circus aeruginosus, Pernis apivorus, Falco vespertinus* and *Milvus migrans*. Other small falcons making use of the woodland are *Falco subbuteo* and *Falco tinnunculus.*

Flocks of herons and egrets frequent the area over an extended period in both migration periods, species include *Casmerodius alba, Egretta garzetta, Ardeola ralloides, Ardea purpurea, Nycticorax nycticorax, Botaurus stellaris* and *Ixobrychus minutus*. Most of these species feed in the lagoon and roost in the Miżieb woodland.

Pluvialis apricaria and *Alcedo atthis* are regular wintering species while rare winter visitors include *Asio flammeus and Luscinia svecica.*

[11] This situation has since changed and the quality of the water is now deemed to be "Excellent" as a bathing water following repairs to the sewerage network. The Water Services Corporation reports that sewage contamination sometimes takes place following episodes of heavy rainfall. The Malta Tourism Authority plans to replenish this beach in the coming years. An EIA for this project is currently underway. Plans to upgrade further the sewerage system in the area are also in preparation.

Migrant Annex I passerines, resting and foraging within the site include *Calandrella brachydactyla, Anthus campestris, Acrocephalus melanopogon, Acrocephalus scirpaceus, Ficedula albicollis* and *Luscinia svecica.*

Although the species diversity is impressive, numbers and periods of stay are limited by the inadequate size of the wetland habitat. Wetland species currently avoiding the site, would become regular visitors, should the lagoon gain in size and open water habitat is increased.

3.1.6 Annex IV and/or Red Data Book Species

Plants

The site supports a number of plant species of interest as listed in the Standard Data Form, a number of which are listed in the Red Data Book. Species associated with the wetland include *Ruppia maritima, Iris sicula, Iris pseudopumila, Juncus maritimus, Typha domingensis, Sedum caerulum, Cressa cretica, Triglochin laxiflora,* and *Convolvulus tricolor.*

Tamarix africana is an important species, present in the area prior to its designation as a reserve. It is now present on most of the islands in the reserve.

Garrigue species include *Phlomis fruticosa, Thymbra capitata* and *Phagnalon graecum* ssp *ginzbergeri.*

Woodland species growing on the embankments include *Olea europaea, Laurus nobilis, Quercus ilex, Tetraclinis articulata, Populus alba, Myrtus communis* and *Vitex agnus-castus.*

Invertebrates

Although detailed studies have not been carried out species of several Orders have been observed at the reserve including Diptera, Coleoptera, Lepidoptera and Hymenoptera, whilst *Crangon crangon* inhabits the lagoon.

Amphibians

Discoglossus pictus pictus is noted to be common in the reserve. This is the only amphibian present in the Maltese Islands, associated with freshwater rockpools, ponds, valley watercourses, springs and reservoirs. Vulnerable, it has a restricted distribution in the Mediterranean region and the Maltese Islands, becoming more restricted due to habitat destruction, pollution and persecution. The population size is not known.

Reptiles

Snake species known to occur at the reserve, include *Hierophis viridiflavus* [RDB: Vulnerable] (described as frequent within the site, with individuals reaching up to 1.5m), and *Telescopus fallax* [RDB: Vulnerable, Rest in MED & MI], which is noted occasionally, feeding at dawn (Coleiro & Casha, 2004). *Tarentola mauritanica* [RDB: Vulnerable] and *Hemidactylus turcicis* [RDB: Vulnerable] are also known to inhabit the reserve, with the former being more common. *Chamaeleo chamaeleon* [RDB: Vulnerable, Rest in MI] is frequent, generally found in the trees and associated habitats, although sometimes also in the reed beds. Coleiro & Casha (2004) further report that *Podarcis filfolensis maltensis* [RDB: Endemic] is very rare at the reserve,

although *Chalcides ocellatus* [RDB: Vulnerable, Rest in MED] is a resident that is commonly seen on warm days in the vegetation that grows along the walking trail.

Mammals

Mammals recorded within is-Simar Wetland Reserve include the Algerian Hedgehog *Erinaceus algirus,* the Wild Rabbit *Oryctolagus cuniculus,* the Pygmy White-toothed Shrew *Suncus etruscus,* the Pipistrelle *Pipistrellus pipistrellus* and the Weasel *Mustela nivalis.* The rodents *Rattus norvegicus* and *Apodemus sylvaticus* are also present.

Site specific data on populations, conservation status and trends of the above species outside the Reserve and within the boundaries of the site is insufficient. No published site specific or general data/guidelines exist on measures and recommendations required for their conservation.

3.1.7 Other Important Bird Species

Six more bird species breed in the reserve, namely *Tachybaptus ruficollis, Fulica atra, Gallinula chloropus, Cettia cetti, Sylvia melanocephala Passer hispaniolensis* and *Cisticola juncidis*, with stable or increasing nesting pairs. The reedbed and Tamarisk groves at Is-Simar provide ideal habitat for *Acrocephalus scirpaceus.*

Wintering species include waterfowl like *Fulica atra* and *Gallinula chloropus* in flocks reaching up to 40 individuals. The reedbed and tamarisk groves at Is-Simar provide ideal habitat for species such as *Tachybaptus ruficollis, Anas crecca, Aythya ferina, Gallinago gallinago Rallus aquaticus Jynx torquilla, Emberiza schoeniclus* and *Scolopax rusticola*.

Migrants

During both spring and autumn migration the different habitats of Is-Simar support several species that can be observed feeding or resting in the reserve and the Mizieb woodland. Waterfowl such as *Anas acuta, Anas clypeata, Anas crecca, Anas platyrhynchos, Anas querquedula* and *Aythya ferina, Fulica atra, Gallinula chloropus* and waders such as *Charadrius dubius, Calidris alpina, Calidris minuta, Tringa totanus, Tringa nebularia, Tringa ochropus, Gallinago gallinago, Calidris temminckii, Lymnocryptes minimus* and *Actitis hypoleucos,* make use of the open water areas, the islets and embankments.

Aerial species such as *Apus apus, Apus melba, Apus pallidus* and *Merops apiaster* feed over the lagoon on the large numbers of insects attracted by the open water.

The reed bed is a national important roosting site for *Riparia riparia, Hirundo rustica* and *Motacilla flava* and hosts skulking species like *Podiceps nigricollis, Porzana parva, Rallus aquaticus.* Passerines, particularly associated with the reedbeds during migration, include *Acrocephalus scirpaceus, Acrocephalus arundinaceus, Acrocephalus schoenobaenus, Hippolais icterina* and *Locustella lusciniodes.*

As already stressed, the small size of the lagoon sets narrow limits to the abundance of the individuals that can be supported by it during migration, while suppressing its ability to serve as a nesting place for a number of them.

Species especially utilizing the Miżieb woodland include *Sylvia atricapilla, Sylvia communis, Sylvia borin, Sylvia cantillans, Phylloscopus collybita, Phylloscopus sibilatrix, Phylloscopus trochilus, Carduelis cannabina, Carduelis carduelis, Carduelis chloris, Carduelis spinus, Carpodacus erythrinus, Fringilla coelebs, Serinus serinus, Luscinia megarhynchos, Erithacus rubecula, Ficedula hypoleuca, Ficedula parva, Muscicapa striata, Phoenicurus phoenicurus, Saxicola rubetra, Passer montanus, Prunella modularis, Regulus ignicapilla, Regulus regulus, Turdus philomelos, Turdus pilaris, Oriolus oriolus,Upupa epops* and *Streptopelia turtur.*

The open garrigue areas attract species such as *Alauda arvensis, Anthus cervinus, Anthus pratensis, Anthus trivialis, Coturnix coturnix, Oenanthe oenanthe, Phoenicurus ochruros* and *Lanius senator.*

3.1.8 Agricultural Land

Agriculture is the predominant land use in the SAC as it is also all along the Pwales Valley. Water is discharged in the valley through tributaries from the adjacent ridges, presumably forming in its natural state an extensive inundated and probably temporarily flooded flatland. This system was drained during Early Modern time to give way to fields, which today are used for intensive arable farming and greenhouse cultivations. Most fields are irrigated with rain water collected in reservoirs. There are also some pockets of agricultural land along parts of the Bajda Ridge escarpment as well as abandoned fields.

3.2 EVALUATION OF FACTORS

The principal factor identified as affecting the site features is the conservation management for Is-Simar Wetland Reserve, which constitutes the core area of the site. Pressures associated with the intensively cultivated agricultural land surrounding the lagoon and with the activities taking place in the Miżieb woodland are crucial factors affecting the conservation status of the SAC/SPA.

3.2.1 Legislation, Policies and Plans

A series of legislative measures, plans plans and policies applying to the site are relevant and consistent to its conservation management. These are described in Table 19.

Table 19: Overview of relevant acts and policies per topic addressed

Topic	Act / Policy
Landscape	• The draft Landscape Assessment Study of The Maltese Islands • Structure Plan for the Maltese Islands (1990): Policy ARC 2 • North West Local Plan (2006): Policy: NWLA 1
Natural resources protection	• Structure Plan for the Maltese Islands (1990): policies SET 11, SET 12, BEN 5, AHF 1, RCO 1, RCO 10, RCO 11, RCO 20, RCO 39, RCO 41 • North West Local Plan (2006): Policies NWCO 4, NWCO 6, NWCO 7, NWCO 8, NWCO 10, NWCO 13, NWCO 14, • Coastal Strategy Topic Paper (2002) • Utilities Topic Paper (2002)

Topic	Act / Policy
Agricultural policies	• Agri environmental legislation • Structure Plan for the Maltese Islands (1990): Policies AHF 1, AHF 4, AHF 8, AHF13, AHF 16, RCO5, RCO6, RCO 7, RCO8, RCO9 • North West Local Plan (2006): Policies NWAG 1, NWAG 2, NWAG 5 • Rural Strategy Topic Paper (2002)
Tourism, Recreation, education, research, awareness potential & infrastructure	• Tourism Topic Paper (2001) • Structure Plan for the Maltese Islands (1990): Policies AHF 8, RCO 1, ARC 2, ARC 3 • Leisure and Recreation Topic Paper (2002) • Rural Strategy Topic Paper (2002) • North West Local Plan (2006): Policies NWRE2, NWRE6
Access	• Rural Strategy Topic Paper (2002) • Coastal Strategy Topic Paper (2002) • Structure Plan for the Maltese Islands (1990): Policy: CZM 3 • North West Local Plan (20026): Policy: NWTR 6

3.2.2 Site Management: Is Simar Wetland Reserve

The Simar Wetland Reserve area and RAMSAR wetland is found on public land and it is located behind Xemxija Bay, surrounded by agricultural land. Up until the 1980s the area consisted of disturbed land, with the original habitat completely degraded, with a small saltmarsh remnant, Acacia and Eucalyptus plantations and a dumping ground.

Is Simar wetland was created in 1992 by BirdLife Malta by first excavating the soil to lower the ground leaving some islands. Thus, a lagoon was created while the soil that was removed was used to create embankments. The site was then fenced off and vegetation was planted along the embankments.

Site Management: The wetland area is managed by Birdlife Malta through a management agreement signed every two years between OPM, MEPA and BLM. A warden is present on site and the site is open to the public at set days and times. The site is currently operating on an interim measure of an expired plan. Progress reports are issued on an annual basis that present the measures that were implemented throughout the year as well as relevant data gathered.

Management Content: The Wetland Reserve management is executed according to a Management Plan prepared by BLM in 2004 and corresponding biannual Work Plans. The technical evaluation of proposed measures and their implementation is executed by ERA .

The Wetland Reserve Management Plan approved for the period 2010-2014 is currently in use and its provisions have been taken into account throughout the preparation of this Management Plan.

Staff: The management structure includes six full time government employees, who work within the reserve. The managing warden takes care of the general management of the site whilst the field teacher guides school visitors through the site. The remaining four employees are watchmen. During the weekends part-timers employed by BirdLife Malta guide visitors around the reserve.

Finances: BirdLife Malta receives €23,294 for the management of the site as per Management Agreement. No fees are charged for entrance to the reserve, however people are encouraged to leave donations, with the money going towards new projects that are carried out within the reserve. The status and popularity of the reserve makes it attractive to prospective sponsors and several agreements have been reached with companies, banks and private entities that result in extra funding for the reserve. Such funds are usually tied down to a specific project that needs to be carried out within a pre-established timeframe.

3.2.3 Recreation, Education, Research, Awareness Potential and Infrastructure

The main educational facility is the Wetland Reserve. The reserve has a reception centre and three bird hides. The site is important both to raise awareness about nature conservation and the environment, and also to study and monitor bird species that reside, breed and/or migrate to the site. Records include: daily logs kept for different animal species, studies and nest records for breeding species and data for weather conditions and water quality. The reserve is also open for guided school visits. The reserve also attracts eco-tourists, bird watchers, photographers, and people interested in nature.

Visitor access to the reserve for the general public is limited to the weekends between November and May. The reserve is opened in this time period to coincide with the autumn and spring migrations that are the prime time for avifuana species present in the reserve.

A total of 930 persons visited the reserve from January to June 2011 whilst another 332 persons visited the reserve in November and December. The reserve is also visited by students during the scholastic year. A total of 1,334 students visited the reserve from January to June 2011 whilst another 546 students visited the reserve from September to December.

The site also includes an Agricultural Heritage Museum located at Ta' Rkuplu and St Anne's Chapel built at the foot of the Bajda Ridge escarpment.

Human presence in the area dates back to prehistory. The Xemxija Heritage Trail borders the SAC/SPA and includes various archaeological features ranging from the late Neolithic to Early Modern time. Bajda Ridge, to the NW of this site, is known for its rich archaeological and cultural heritage. The area also includes typical rural features.

The Miżieb area is used by the general public and tourists for countryside recreation, physical exercise and cultural visits due to the archaeological features in the area.

The site is located close to Xemxija which is an important settlement for tourism and recreation. There are a number of dwellings below the Bajda Ridge escarpment in the Pwales area and a small rural settlement at Ta' Rkuplu. The closest tourist facilities are the Xemxija Bay Hotel and Porto Azzurro Aparthotel. The SAC/SPA includes a promenade along Xemxija Bay and a permanent kiosk at the Xemxija Bay car parking area.

The site presents the following attributes (see Table 20).

Table 20: Site Attributes

Site Attribute	Description
Landscape and aesthetic qualities	• Bajda Ridge (M7) is "a ridge (Horst) stretching from east to west for a distance of around 3km. Extensive views can be appreciated from areas close to the ridge edges".
National historical monuments	• Punic Tomb • Roman road • Apiaries • Prehistoric temple and the Xemxija tombs • A troglodytic caves cluster • Square Girna
Visitor access	• Is-Simar SAC/SPA can be accessed from Xatt il-Pwales to the north, Triq Għajn Tuffieħa to the east, Triq il-Miżieb to the south and a lane within the Miżieb afforested area. Triq il-Pwales cuts through the SAC/SPA and is a main entry point to the area and the Simar Wetland Reserve. There is also a steep road that directly links the Pwales Valley to the Bajda Ridge escarpment and leads to Ix-Xagħra tal-Għansar outside the site. • A car parking facility is found along the Xemxija promenade and close to the kiosk.

3.2.4 Point Factors Affecting the Site

The abandoned land-based fish farm

The management plan area includes a small aquaculture unit that is in disuse and in a derelict state. This structure occupies an area of 2,328 m^2 and is situated adjacent to the salt marsh.

There are two policies associated with this development in the North West Local Plan (2006), while Policy NWCO 8 refers to the enlargement of the is-Simar Wetland Reserve.

NWAG 5 *PA will permit a land-based hatchery within the plan area subject to all the following criteria being met:*
i. Prior approval is obtained from the Malta Resources Authority;
ii. The siting and design should be sympathetic with the existing character and appearance of the area;
iii. The hatchery should be located, wherever practical, outside residential areas but within existing or committed built up areas, have good road access and be in accordance with veterinary requirements;
iv. A landscape scheme shall be submitted and approved with any planning application, which shall be implemented in its entirety within the first planting season and thereafter maintained.

AHF 16 *Large land based aquaculture units will be restricted to industrial estates and former quarries, and multi storey structures used where feasible. Small units will be permitted on forms in conformity with Policy AHF 5. All offsite water supply and discharge pipes will be underground, and the reuse of water, other than seawater, is mandatory. Detailed planning criteria and permit conditions will be developed to ensure suitable safeguards.*

NWCO 8 *The area of sanctuaries for birds within the existing Nature Reserves at l-Ghadira, Is-Simar and Ta' Qali will be enlarged. ERA will initiate and support the establishment of managed nature reserves as indicated on Map 18 based on areas of ecological importance and/or sites of scientific importance and will seek to enter into management agreements with the landowners, local councils, non-government organisations and others to ensure the long-term protection and enhancement of such reserves.*

No development of any kind will be permitted within the boundary except for suitable maintenance of existing structures and construction of minor amenities designed to enhance the conservation or educational use of the area

It is evident that the aquaculture activity is not compatible with the protected character of Is-Simar or with the above policies. A new use is to be found or the whole structure removed and the area restored to a natural state, taking into account the conservation priorities as set by the present Management Plan.

The Miżieb Woodland case

The Miżieb afforested area was created in the late 1950s with the planting of 10,000 trees mainly Aleppo Pine, Olive and Juniper, and was further developed in the early 1970s with more tree planting carried out by the State and nature conservation NGOs. It is today one of the biggest woodlands in Malta and, as already explained, a site of immense ornithological value. The Miżieb woodland is also extensively used as a hunting reserve and managed as such by the Federazzjoni Kaċċaturi Nassaba Konservazzjonisti (FKNK).

According to policy NWCO 10 the Miżieb Woodland is a *Woodland Conservation Area* designated for protection and passive recreation activities. It is therefore used by the public for recreational purposes (such as picnics and country walks) and tourists from hotels in Xemxija and the wider area. The general area has a wealth of archaeological structures, including Roman Baths, Bronze Age structures, Roman Apiaries and Granaries, further adding to the touristic attraction of the Miżieb area.

In the context of the designation of the Maltese Natura 2000 sites, the south-eastern part of the Miżieb Woodland was included in the Special Area of Conservation and Special Protection Area MT00006 of Is-Simar. This segment is included in the Is-Simar Bird Sanctuary, which encompasses the full extent of the SAC/SPA.

The location of the SAC/SPA boundary, incorporating part, but not all, of the Miżieb Woodland seems odd in that there does not seem to be any scientific reason to exclude the rest of the woodland, if a part of it is included in the SAC since this is a homogeneous habitat presenting the same ecological attributes throughout its extent.

Furthermore, since part of the Miżieb Woodland is a Bird Sanctuary, the following regulations apply under Section 24 of LN 79 of 2006:

24. Except as provided in paragraph (d) of sub-regulation (2) of regulation 23 of these regulations no person:
(a) shall hunt, injure, take or try to hunt, injure or take any bird in a bird sanctuary;
(b) shall, at any time and by any means whatsoever, have in his possession or under his control any bird, dead or alive, or part of a bird, in a bird sanctuary;

(c) shall have in his possession or under his control, any fire-arm, ammunition, decoys, net or any other means to hunt, or take any bird in a bird sanctuary

Despite the above mentioned legislation and despite the partial designation of the Miżieb Woodland as part of the Natura 2000 network, this site is presently used as a hunting ground.

Surveys undertaken by Birdlife Malta in 2008/9 indicate the presence of at least 256 hunting or trapping hides (sometimes hides are used for both activities) within the entire Miżieb Woodland. Of these, 23 were located within the boundary of the bird sanctuary, specifically on the slopes between is-Simar Wetland Reserve and Miżieb.

Unfortunately, despite the efforts of the hunting associations to reduce poaching and other illegal activities related to hunting, the Miżieb Woodland remains a hotspot of illegal activity. Data from Birdlife Malta for the period January 2008 to March 2010 indicate several incidents of "out-of-season" hunting as well as the killing of protected species such as Night Herons, European Hobby, Black Kites, and other birds of prey. Though more recent data is not currently available, it is evident that a greater concerted effort by all concerned needs to be made to eliminate poaching from this area.

The Miżieb Woodland provides excellent habitat for a number of bird species, such as the Turtle Dove, Collared Dove, and the Common Cuckoo; however, intensive hunting pressure, whether from legal hunting (due to the high density of hunters / trappers in this area), or from poaching or out-of-season activities, prevents these species from establishing viable breeding populations within the area. Doves and cuckoos have often been recorded at Miżieb after the spring migration has ended and on a number of occasions, pairs of these species established territories and engaged in breeding displays; however, these never led to nesting, with Birdlife Malta claiming that this may be due to the birds being disturbed by the onset of the rabbit hunting season.

MP conclusions

1. The Miżieb woodland is a hot spot for avifauna within the SPA. This is due to (i) its geographical position along the Pwales valley, which serves as a migration corridor, (ii) on account of its proximity to Is-Simar wetland, which is a hot spot for all avifauna all year around, and (iii) due to its large size.

2. Malta is in severe scarcity of similar habitats and this combination is actually unique on the island.

3. Part of Miżieb is a Bird Sanctuary, a Special Protection Area and Special Area of Conservation.

4. The Miżieb woodland is also used as a hunting reserve and managed by the FKNK.

5. Miżieb is also a Woodland Conservation Area designated for protection and passive recreation activities.

6. In its current state the Miżieb Woodland not only fails to serve the objectives assigned by its multiple protective designations but the limited enforcement of hunting regulations in this area has led to several instances of poaching being recorded from this site and the SAC/SPA itself. It is evident that more needs to be

done by all stakeholders, *in primis* by the FKNK who manages the woodland as a hunting reserve.

7. The current situation in the Miżieb woodland is therefore not in line with conservation and sustainability principles. The site needs to be properly and urgently regulated. Therefore, the Management Plan urges that immediate action is taken to ensure the proper management of the Miżieb woodland and the involvement of all relevant stakeholders to ensure that legal activities are undertaken within the bounds of their permissions, to reduce user conflicts within the woodland (including family recreation) and the habitats and species within the SAC/SPA are properly protected.

3.2.5 Non Point Factors Impacting the Site

The following have been recorded from the SAC's SDF and/or noted during the field surveys:

Human induced changes in hydraulic conditions/ modifying structures of inland water courses / Modification of hydrographic functioning, general / modifying structures of inland water courses / drying out / Water abstractions from surface waters / siltation rate changes, dumping, depositing of dredged deposits / use of biocides, hormones and chemicals/ fertilization / eutrophication (natural) / accumulation of organic material.

Pollution to surface waters (limnic, terrestrial, marine & brackish)/ / Pollution to groundwater (point sources and diffuse sources)/ Diffuse groundwater pollution due to agricultural activities.

These issues are attributed to the past draining and habitat modification actions and the present cultivation practices within the site. Intensive cultivation is practiced in all land surrounding the lagoon. No control on the use and no gradient in the amounts of agrochemicals that would create a buffer zone around the wetland are applied.

High nitrate levels have been traced in the water inundating the valley and lagoon attributed to the geological nature of the valley and the intensive agriculture being practiced. The water quality is monitored by the Site Manager. Monitored parameters include nitrates, phosphates, chlorophyll *a*, temperature, dissolved oxygen, salinity, conductivity, turbidity and pH. No specific monitoring of pesticide levels is conducted.

Monitoring data collected as part of the WFD implementation has indicated that fluctuations in pH, dissolved oxygen, temperature and salinity do occur in the Simar water body. The following contaminants were present in the water column: diphthalates, lead and nickel, in moderate concentrations.

The small size of the wetland has very much reduced the resilience of the system against these factors and so immense pressure on the wetland is exerted, the mitigation of which requires constant management effort by the Site Manager.

It is noted that is-Simar Wetland Reserve has been listed under the WFD Protected Area Registry. Furthermore, the whole of the Maltese Islands are designated a Nitrate Vulnerable Zone (NVZ) according to the Nitrates directive. Therefore, the water related requirements of

the wetland have to be integrated within the WFD and the Nitrates Action Programme implementation.

Outdoor sports and leisure activities, recreational activities / motorised vehicles /paths, tracks, cycling tracks / Camping and caravans/ Trampling, overuse / Roads, motorways / Urbanised areas, human habitation /discontinuous urbanization. These threats mostly refer to the urbanized and frequented area of Xemxija, St Paul's Bay and the Miżieb area.

Invasive and non native trees /Artificial planting on open ground (non-native trees) Part of the plateau is planted with *Acacia cyanophylla* from a past afforestation project. The current trees are a source of propagules that can spread to the rest of the SAC. The trees need to be removed to make space for the restoration of the garrigue.

Taking and removal of animals (terrestrial) / collection of animals (insects, reptiles, amphibians) / trapping, poisoning, poaching / other forms of taking animals / Taking / Removal of terrestrial plants, general. As with poaching, this issue calls for a more intense and strict guarding of the protected area and its species.

Disposal of inert materials, disposal of household / recreational facility waste / Storage of materials. Dumping and burning of rubbish was evidenced amongst the Annex I habitats that are close to the access road. There is a recorded incident of storage of a container of harmful chemicals Dissolvine® E3-9.

Table 21 summarises the above identified factors and identifies potential and current impacts that are affecting the site's habitats and species of conservation importance (Annex I habitats and Annex II species). These impacts are described in terms of the intensity of the impact, i.e. whether it is mild, medium or high, whereby:

- Mild impact describes those impacts that are currently not resulting in or are expected to result in significant negative effects within the next 5 years (this programming period). Factors resulting in mild impacts are not considered to be of high priority for the first programming period;
- Medium impact describes those impacts that could result in or are resulting in impacts that are or are likely to, in the short to medium term result in certain significant negative effects. Factors resulting in medium impacts may require monitoring to better qualify the degree of impact over time and whether the viability of habitats and species are being significantly negatively affected.
- High impact describes those impacts that are resulting in or could result in significant negative effects such that the integrity of the habitat or species population is at risk. The management of factors resulting in high impacts will be given priority for this programming period (next 5 years).
- Unknown - In cases where too little information or evidence is currently available, impacts are described as unknown. The management of the site for the first programming period would require surveillance or other monitoring measures to determine the extent of this impact.

Impacts also have a spatial context and their extent can be defined as being Localised or Widespread, whereby:

- A Localised impact is one that has a limited spatial effect that is confined to one or a number of areas.

- A Widespread impact is one that has an extensive spatial effect and is affecting much of the site

Table 21: Factors impacting the site

Factor	Resulting effect / impact	Intensity / Extent
Modification of hydrographic functioning, general / modifying structures of inland water courses / Water abstractions from surface waters / siltation rate changes, dumping, depositing of dredged deposits / use of biocides, hormones and chemicals/ fertilization	Pollution to surface and groundwater waters, eutrophication of lagoon waters, deterioration of water quality, threats to benthic organisms, submerged vegetation and *Aphanius fasciatus*	High / Widespread
Eutrophication (natural) / human induced changes in hydraulic conditions / modifying structures of inland water courses		Medium / Widespread
Accumulation of organic material / Siltation rate changes, dumping, depositing of dredged deposits		Mild / Widespread
Pollution to surface waters (limnic, terrestrial, marine & brackish) / Pollution to groundwater (point sources and diffuse sources) / Diffuse groundwater pollution due to agricultural and forestry activities		High / Widespread
Outdoor sports and leisure activities, recreational activities / motorised vehicles /paths, tracks, cycling tracks / camping and caravans/trampling, overuse / Roads, motorways / Urbanised areas, human habitation /discontinuous urbanisation / other patterns of habitation /structures, buildings in the landscape	Habitat loss, disturbance, overall site degradation Intrusion, trampling, over-use, noise nuisance, noise pollution	Medium to mild / Localised
Invasive and non native trees / Artificial planting on open ground (non-native trees)	Habitat modification and loss of representativity, competition with indigenous species	Medium / Localised
Poaching, illegal hunting	Direct loss of rare and protected bird species, disturbance	High / Localised
Taking and removal of animals (terrestrial) / collection of animals(insects, reptiles, amphibians) / trapping, poisoning, / Taking / Removal of terrestrial plants, general.	Negative effects on Annex II and IV species populations, overall biodiversity decline	Mild / Widespread
Disposal of inert materials, disposal of household / recreational facility waste /storage of materials	Overall site degradation	Medium to mild / Localised

3.3 Evaluation of Key Features and Definition of Management Objectives

Key features in this SAC are the Annex I habitats, Annex I bird species and Annex II species present within its boundaries. Based on the assessment of the conservation status as assigned in Chapter 2, the Targeted Condition for each key feature to be achieved within the next 20 years is given in the following tables. This is followed by the definition of respective Management Objectives by which the targeted condition will be achieved. The factors specifically influencing the key features are also identified, whenever applicable.

The operational objectives and actions addressing the management objectives associated with each key feature are presented in subsequent sections of the Management Plan.

In the evaluation tables presented below, it should be noted that the targeted condition for future prospects will be addressed by operational objectives and actions controlling the factors identified for each feature.

Table 22: KEY FEATURE: ***Coastal Lagoons*** (1150*)

Parameter	Current Condition	Targeted Condition	Management Objective
Area	B2	The area of the lagoon habitat 1150* has increased.	MO1. To expand habitat 1150* into adjacent land. MO2. To ensure the long term maintenance of the area, structure and function of the lagoon habitat 1150*.
Structure & Function (including typical species)	B2	The structure of the lagoon habitat 1150* is maintained and its function is improved through the expansion of its size.	
Future Prospects (as regards area, structure & function)	B2	The future prospects for lagoon habitat 1150* are improved as a result of its expansion.	
Factors	Limited habitat size due to former wetland modification resulting in reduced resilience against negative agricultural practices and natural siltation		

Table 23: KEY FEATURE: ***Mediterranean temporary ponds*** (3170*)

Parameter	Current Condition	Targeted Condition	Management Objective
Area	A	The area for habitat 3170* is maintained.	MO3. To ensure the long term maintenance of the area, structure and function of habitat 3170*.
Structure & Function (including typical species)	B	The structure and function of habitat 3170* are improved.	
Future Prospects (as regards area, structure & function)	A	The future prospects for habitat 3170* are maintained.	

Parameter	Current Condition	Targeted Condition	Management Objective
Factors	None identified		

Table 24: KEY FEATURE: ***West Mediterranean clifftop phryganas*** (5410)

Parameter	Current Condition	Targeted Condition	Management Objective
Area	B	The area for habitat 5410 is maintained.	MO4. To ensure the long term maintenance of habitat 5410 area, structure and function.
Structure & Function (including typical species)	B1	The structure and function of habitat 5410 are allowed to improve naturally.	
Future Prospects (as regards area, structure & function)	A	The future prospects for habitat 5410 are maintained.	
Factors	Invasive tree species present in adjacent Miżieb woodland threatening the habitat's structure and function Trampling / access		

Table 25: KEY FEATURE: ***Anacamptis urvilleana***

Parameter	Current Condition	Targeted Condition	Management Objective
Range	B2	The range of *Anacamptis urvilleana* is improved and subsequently maintained.	M05. To extend the range of *Anacamptis urvilleana* at this site.
Size of population	B2	The population size of *Anacamptis urvilleana* is improved and subsequently maintained.	MO6. To ensure that the population size of *Anacamptis urvilleana* achieves a favourable status.
Habitat	B	The structure and function of the habitat for *Anacamptis urvilleana* is improved and subsequently maintained.	M07. To improve the structure and function of the habitat for *Anacamptis urvilleana* and subsequently maintain it.
Future prospects	B	The future prospects for this species are improved	
Factors	Invasive tree species present in adjacent Miżieb woodland threatening the species' habitat		

Table 26: KEY FEATURE: ***Elatine gussonei***

Parameter	Current Condition	Targeted Condition	Management Objective
Range	B	The range of *Elatine gussonei* is improved and subsequently maintained.	M08. To extend the range of *Elatine gussonei* at this site.
Size of population	B	The population size of *Elatine gussonei* is improved and subsequently maintained.	MO9. To ensure that the population size of *Elatine gussonei* at this site achieves a favourable status.
Habitat	B2	The structure and function of the habitat for *Elatine gussonei* is improved and subsequently maintained,	MO10. To improve the structure and function of the habitat for *Elatine gussonei* and subsequently maintain it.
Future prospects	B	The future prospects for *Elatine gussonei* are maintained.	
Factors	None identified		

Table 27: KEY FEATURE: ***Ophrys melitensis***

Parameter	Current Condition	Targeted Condition	Management Objective
Range	B	The range of *Ophrys melitensis* is improved and subsequently maintained	MO11. To ensure that the range of *Ophrys melitensis* at this site improves and is subsequently maintained.
Size of population	Indeterminate	The population size of *Ophrys melitensis* is at least maintained until its extent is determined, following which it may be increased or maintained.	MO12. To ensure that the population size of *Ophrys melitensis* at this site achieves a favourable status.
Habitat	B	The habitat for *Ophrys melitensis* is allowed to improve naturally following which it is maintained.	MO13. To ensure that the habitat of *Ophrys melitensis* is improved and subsequently maintained.
Future prospects	B	The future prospects for *Ophrys melitensis* are improved	
Factors	Invasive tree species present in adjacent Miżieb woodland threatening the species' habitat		

Table 28: KEY FEATURE: ***Aphanius fasciatus***

Parameter	Current Condition	Targeted Condition	Management Objective
Range	A	The range of *Aphanius fasciatus* is maintained in the existing wetland or extended as a result of lagoon expansion.	MO14. To ensure the long term maintenance of the range, population size, and habitat of *Aphanius fasciatus* MO1 also applies.
Size of population	A	The population size of *Aphanius fasciatus* is maintained in the existing wetland or increased as a result of lagoon expansion.	
Habitat	B2	The habitat for *Aphanius fasciatus* has expanded and water quality remains adequate for its conservation	
Future prospects	B2	The future prospects for *Aphanius fasciatus* are improved as a result of lagoon expansion and improved water quality	
Factors	Limited habitat size due to former wetland modification resulting in reduced resilience against negative agricultural practices and natural siltation		

Table 29: KEY FEATURE: ***Zamenis situla***

Parameter	Current Condition	Targeted Condition	Management Objective
Range	Indeterminate	*Zamenis situla* occupies its full range within the site.	MO15. To ensure that *Zamenis situla* occupies its full range within the site.
Size of population	Indeterminate	The *Zamenis situla* population is at least maintained until its extent is determined, following which it may be increased.	MO16. To ensure the long term maintenance of the range, population and habitat of *Zamenis situla*
Habitat	A	The habitat for *Zamenis situla* is maintained.	
Future prospects	Indeterminate	Future prospects for *Zamenis situla* are at least maintained.	
Factors	Taking of specimens Accidental or deliberate killings		

Table 30: KEY FEATURE: ***Rhinolophus hipposideros***

Parameter	Current Condition	Targeted Condition	Management Objective
Range	B2	The foraging range of *Rhinolophus hipposideros* is expanded through the wetland expansion	MO17. To ensure the long term maintenance of the range, population size, and habitat of *Rhinolophus hipposideros.* MO18. To ensure foraging grounds for *Rhinolophus hipposideros*, including relevant features, are maintained. MO19. To ensure conservation of roosting habitat of *Rhinolophus hipposideros.* MO1 also applies.
Size of population	B2	The foraging populations of *Rhinolophus hipposideros* are increased through the wetland expansion	
Habitat	A	The roosting habitats for *Rhinolophus hipposideros* are at least maintained and the foraging habitat is extended	
Future prospects	A	The future prospects for *Rhinolophus hipposideros* are maintained	
Factors	Accidental or deliberate killings Threats from agriculture intensification Reduced hunting areas nationwide Reduced roosting areas nationwide		

Table 31: KEY FEATURE: ***Myotis punicus***

Parameter	Current Condition	Targeted Condition	Management Objective
Range	Indeterminate	The foraging range of *Myotis punicus* is expanded through the wetland expansion	MO20. To ensure the long term maintenance of the range, population size, and habitat of *Myotis punicus* MO21. To ensure foraging grounds for *Myotis punicus,* including relevant features, are maintained. MO22. To ensure conservation of potential roosting habitat of *Myotis punicus* MO1 also applies.
Size of population	B2	The foraging populations of *Myotis punicus* are increased through the wetland expansion	
Habitat	A	The roosting habitats for *Myotis punicus* are at least maintained and the foraging habitat is extended	
Future prospects	A	The future prospects for *Myotis punicus* are maintained	
Factors	Accidental or deliberate killings Threats from agriculture intensification Reduced hunting areas nationwide Reduced roosting areas nationwide		

Table 32: KEY FEATURE: ***Ixobrychus minutus***

Parameter	Current Condition	Targeted Condition	Management Objective
Range	C2	The range of *Ixobrychus minutus* is increased through the wetland expansion	MO23. To ensure the long term maintenance of the range, population and habitat of prospected breeders *Ixobrychus minutus and Himantopus himantopus,* breeding and wintering wetland species, migratory wetland and woodland species and migratory raptors. MO1. also applies.
Size of population	C2	At least one breeding pair of *Ixobrychus minutus* has been re-established	
Habitat	B2	The reedbed habitat has been extended	
Future prospects	C2	Future prospects of *Ixobrychus minutus* have improved through the wetland expansion	
Factors	Limited size of nesting (reedbed) and foraging (lagoon) habitat		

Table 33: KEY FEATURE: ***Himantopus himantopus***

Parameter	Current Condition	Targeted Condition	Management Objective
Range	C2	The range of *Himantopus himantopus* is increased through the wetland expansion	MO1 and MO23 apply.
Size of population	C2	At least one breeding pair of *Himantopus himantopus* has been established	
Habitat	B2	The open water habitat has been extended	
Future prospects	C2	Future prospects of *Himantopus himantopus* have improved through the wetland expansion	
Factors	Limited size of nesting and foraging lagoon habitat		

Table 34: KEY FEATURE: **Breeding wetland species** (*Tachybaptus ruficollis, Fulica atra, Gallinula chloropus, Acrocephalus scirpaceus. Cettia cetti)*

Parameter	Current Condition	Targeted Condition	Management Objective
Range	C2	The range of breeding wetland species is increased through the wetland expansion	MO1 and MO23 apply.
Size of population	C2	Breeding pairs of wetland species are increased through the wetland expansion	

Parameter	Current Condition	Targeted Condition	Management Objective
Habitat	B2	Breeding habitat of wetland species has been extended	
Future prospects	C2	Future prospects of breeding wetland species have improved through the wetland expansion	
Factors	Limited size of nesting and foraging lagoon habitat		

Table 35: KEY FEATURE: **Annex I and not Annexed wintering wetland species** (*Gallinula chloropus*,*Fulica atra, Tachybaptus ruficollis, Gallinago gallinago, Rallus aquaticus, Pluvialis apricaria, Scolopax rusticola*, *Alcedo atthis, Jynx torquilla, Emberiza schoeniclus, Asio flammeus, Luscinia svecica)*

Parameter	Current Condition	Targeted Condition	Management Objective
Range	C2	The range of wintering wetland species is increased through the wetland expansion	MO1 and MO23 apply.
Size of population	C2	The population size of wintering wetland species is increased through the wetland expansion	
Habitat	B2	Reedbed and open water habitats have been extended	
Future prospects	C2	Future prospects of wintering wetland species have improved through the wetland expansion	
Factors	Limited size of roosting and foraging habitat		

Table 36: KEY FEATURE: **Annex I and not annexed migratory waterfowl and waders** (*Aythya nyroca, Anas acuta, Anas clypeata, Anas crecca, Anas platyrhynchos, Anas querquedula, Aythya ferina, Fulica atra, Gallinula chloropus*, *Podiceps nigricollis, Porzana parva, Rallus aquaticus, Pluvialis apricaria, Himantopus himantopus, , Philomachus pugnax, Porzana porzana, Tringa glareola*, *Charadrius dubius, Calidris alpina, Calidris minuta, Tringa totanus, Tringa nebularia, Tringa ochropus, Gallinago gallinago, Gallinago media, Calidris temminckii, Lymnocryptes minimus, Actitis hypoleucos)*

Parameter	Current Condition	Targeted Condition	Management Objective
Range	C2	The range of migratory waterfowl and waders is increased through the wetland expansion	MO1 and MO23 apply.
Size of population	C2	The population size of migratory waterfowl and	

Parameter	Current Condition	Targeted Condition	Management Objective
		waders is increased through the wetland expansion	
Habitat	B2	Reedbed and open water habitats have been extended	
Future prospects	C2	Future prospects of migratory waterfowl and waders have improved through the wetland expansion	
Factors	Limited size of roosting and foraging lagoon habitat		

Table 37: KEY FEATURE: **Annex I migratory herons** (*Casmerodius alba, Egretta garzetta, Ardeola ralloides, Ardea purpurea, Nycticorax nycticorax, Botaurus stellaris, Ixobrychus minutus)*

Parameter	Current Condition	Targeted Condition	Management Objective
Range	B2	The range of migratory herons is increased through the wetland expansion and the Bird Sanctuary enlargement	MO24. To incorporate all or parts of the Mizieb Woodland within the Bird Sanctuary boundaries MO1 and MO23 also apply.
Size of population	B2	The population size of migratory herons is increased through the wetland expansion and the Bird Sanctuary enlargement	
Habitat	C2	Foraging (wetland) habitat has been extended and roosting habitat (Miżieb woodland) has been secured	
Future prospects	C2	Future prospects of migratory herons have improved through the wetland expansion and the Bird Sanctuary enlargement	
Factors	Limited size of foraging habitat (wetland) Limited size of roosting habitat, poaching and disturbance on roosting grounds (Miżieb Woodland)		

Table 38: KEY FEATURE: **Annex I and not Annexed migratory raptors** (*Circus aeruginosus, Pernis apivorus, Falco vespertinus, Milvus migrans*, *Falco subbuteo, Falco tinnunculus)*

Parameter	Current Condition	Targeted Condition	Management Objective
Range	C2	The range of migratory raptors is increased through the Bird Sanctuary enlargement	MO23 and MO24 apply.
Size of population	C2	The population size of migratory raptors is increased through the Bird Sanctuary enlargement	
Habitat	C2	Foraging (wetland) habitat has been extended and roosting habitat (Miżieb woodland) has been secured	
Future prospects	C2	Future prospects of migratory raptors have improved through the wetland expansion and the Bird Sanctuary enlargement	
Factors	Limited size of roosting habitat, poaching and disturbance on roosting grounds (Miżieb Woodland)		

Table 39: KEY FEATURE: **Annex I *and not Annexed* migratory wetland passerines** *(Anthus campestris, Motacilla flava, Acrocephalus melanopogon, Acrocephalus scirpaceus, Acrocephalus arundinaceus, Acrocephalus schoenobaenus, Locustella lusciniodes, Hippolais icterina, Riparia riparia, Hirundo rustica*, *Ficedula albicollis*, *Luscinia svecica)*

Parameter	Current Condition	Targeted Condition	Management Objective
Range	C2	The range of migratory wetland passerines is increased through the wetland expansion	MO1 and MO23 apply.
Size of population	C2	The population size of migratory wetland passerines is increased through the wetland expansion	
Habitat	B2	Reedbed and open water habitats have been extended	
Future prospects	C2	Future prospects of migratory wetland passerines have improved through the wetland expansion	
Factors	Limited size of roosting and foraging wetland habitat		

Table 40: KEY FEATURE: **Migratory woodland passerines** (*Sylvia atricapilla, Sylvia communis, Sylvia borin, Sylvia cantillans, Phylloscopus collybita, Phylloscopus sibilatrix, Phylloscopus trochilus, Carduelis cannabina, Carduelis carduelis, Carduelis chloris, Carduelis spinus, Carpodacus erythrinus, Fringilla coelebs, Serinus serinus, Luscinia megarhynchos, Erithacus rubecula, Ficedula hypoleuca, Ficedula parva, Muscicapa striata, Phoenicurus phoenicurus, Saxicola rubetra, Passer montanus, Prunella modularis, Regulus ignicapilla, Regulus regulus, Turdus philomelos, Turdus pilaris, Oriolus oriolus,Upupa epops,Streptopelia turtur)*

Parameter	Current Condition	Targeted Condition	Management Objective
Range	C2	The range of migratory woodland passerines is increased through the Bird Sanctuary enlargement	MO23 and MO24 apply.
Size of population	C2	The population size of migratory woodland passerines is increased through the Bird Sanctuary enlargement	
Habitat	C2	Foraging and roosting habitat (Miżieb woodland) has been secured	
Future prospects	C2	Future prospects of migratory woodland passerines have improved through the Bird Sanctuary enlargement	
Factors	Limited size of roosting habitat, poaching and disturbance on roosting grounds (Miżieb Woodland)		

3.4 SWOT ANALYSIS

In this step the site features are summarized and assigned a positive (*strengths*) or a negative (*weaknesses*) value. Similarly, the factors influencing the site are summarized and assigned a positive (*opportunities*) or a negative (*threats*) value.

Table 41: SWOT Matrix

FEATURES	FACTORS
Strengths (S)	***Opportunities (O)***
S1. Three Annex I habitats present S2. Three Annex II flora species S3. Four Annex II fauna species S4. Annex I and migratory birds present S5. Annex IV species present S6. Important bird habitats present (Mizieb woodland)	O1. Legislation and policies O2. Part of SAC / SPA already under conservation management O3. Adjacent woodland currently under management by hunting federation O4. Recreation, education, research and awareness potential and infrastructure established

FEATURES	FACTORS
Weaknesses (W)	***Threats (T)***
W1. Inadequate size of 1150* habitat W2. Lack of Favourable Reference Values for some Annex I habitats W3. Insufficient knowledge on some Annex II flora species conservation and lack of Favourable Reference Values for certain species W4. Insufficient knowledge on the conservation status of some Annex II fauna species W5. Insufficient knowledge on the conservation requirements for some RDB fauna species	T1. Intensive cultivation surrounding the lagoon habitat T2. Intense bird poaching and persecution T3. The Miżieb Woodland black spot T4.Insufficient wardening and law enforcement

3.5 VISION STATEMENT

The Prospect Matrix for the site is depicted in Table 42:

Table 42: Prospect Matrix

Principal objectives of conservation								
Prospects		**Annex I habitats**	**Annex II flora**	**Annex II fauna**	**Annex I & migratory avifauna**	**Annex IV species**	**Mizieb woodland**	**Whole site**
Institutional prospects	**Existing legal framework & policies**						T2. O1. O3.	O1. O2. T1. T2. T3. T4.
Ecological prospects	**Conservation status**	W2.	W3.	W4.	T2. T3. O1.	W5.		
	Size & Integrity	W1.						O1.
	Naturalness	W1.						T3.
Social prospect	**Education, recreation, research and nature enjoyment**						T2. O1.	O1 O2. O4. T3. T4.
	Creation of revenue							O2.

Table 43: Vision Statements

- All natural habitats, native flora and wildlife present at the SAC are sustained
- The site is an educational, environmental awareness and nature enjoyment centre of nationwide importance
- Agriculture is practiced without disturbing the protected ecological features of the site and contributes to the conservation of the site's biodiversity
- The site is receiving full legal protection implemented according to national legislation and local policies.

3.6 Management Objectives and Operational Objectives for the Site

The Management Objectives define the policies through which the vision will be achieved and they can also be viewed as the Mission through which the Vision will be reached. Each Management Objective corresponds to a vision statement and it is derived by addressing the issue present in each cell of the particular line. Management Objectives for the key features identified for the site are derived from Section 3.3.

For every Management Objective (MO) defined, a number of Operational Objectives (OO) are assigned. These are the objectives to which all the management work is directly related and lay the groundwork for management actions. The Operational Objectives for the key features are partially derived from the factors identified as affecting them. Relevant Operational Objectives defined through the approved Work Plan for Is-Simar Wetland Reserve have also been incorporated.

The Management Objectives arising from the Vision Statement and the respective Operational Objectives are depicted in Table 44.

Table 44: Management Objectives and Operational Objectives for site

Vision	Management objective (MO)	Operational Objective (OO)
All natural habitats, native flora and wildlife present at the SAC/SPA are sustained.	MO1. To expand habitat 1150* into adjacent land	OO1.1. To plan and implement a plan for the enlargement of the Simar lagoon habitat.
	MO2. To ensure the long term maintenance of the area, structure and function of the lagoon habitat 1150*.	OO2.1. To establish a monitoring programme for the first five years following creation of the new lagoon areas.
	MO3. To ensure the long term maintenance of the area, structure and function of habitat 3170*.	OO3.1. To undertake seasonal surveillance inspections to monitor the size, structure and function of habitat 3170*.
	MO4. To ensure the long term maintenance of habitat 5410 area, structure and function.	OO4.1. To eradicate invasive species from Mizieb woodland.
		OO4.2. To monitor the size, structure and function of habitat 5410 and establish its favourable conservation status within the site.
	M05. To extend the range of *Anacamptis urvilleana* at this site.	OO5.1. To monitor the range, assess and monitor the population size of *Anacamptis urvilleana* and establish its favourable conservation status within the site.
	MO6. To ensure that the population size of *Anacamptis urvilleana* achieves a favourable status.	
	M07. To improve the structure and function of the habitat for *Anacamptis urvilleana* and subsequently maintain it.	OO4.1 and OO4.2 apply.
	M08. To extend the range of *Elatine gussonei* at this site.	OO8.1. To monitor the range, assess and monitor the population size of *Elatine gussonei* and establish its favourable conservation status within the site.
	MO9. To ensure that the population size of *Elatine gussonei* at this site achieves a favourable status.	
	MO10. To improve the structure and function of the habitat for *Elatine gussonei* and subsequently maintain it.	OO3.1 applies.
	MO11. To ensure that the range and population size of *Ophrys melitensis* at this site improves and is subsequently maintained.	OO11.1. To monitor the range, assess and monitor the population size of *Ophrys melitensis* and establish its favourable conservation status within the site
	MO12. To ensure that the population size of *Ophrys melitensis* at this site achieves a favourable status.	
	MO13. To ensure that the habitat of *Ophrys melitensis* is improved and subsequently maintained.	OO4.1 and OO4.2 apply.
	MO14. To ensure the long term maintenance of the range, population size, and habitat of *Aphanius fasciatus.*	OO14.1. To establish and implement a programme for the annual monitor of the range and population size of *Aphanius fasciatus* in the lagoon.
		OO14.2. To undertake regular water quality monitoring of the waters in the lagoon.

Vision	Management objective (MO)	Operational Objective (OO)
	MO15. To ensure that *Zamenis situla* occupies its full range within the site.	OO15.1. To determine the range and population of *Zamenis situla* within the site and the possible factors affecting its population.
	MO16. To ensure the long term maintenance of the range, population and habitat of *Zamenis situla*	OO16.1. To undertake seasonal surveillance of the species to monitor trends in the range and population size of *Zamenis situla*.
	MO17. To ensure the long term maintenance of the range, population size, and habitat of *Rhinolophus hipposideros.*	OO17.1 To monitor the use of this site by *Rhinolophus hipposideros* including population numbers, range, and roost composition.
	MO18. To ensure foraging grounds for *Rhinolophus hipposideros*, including relevant features, are maintained.	OO18.1 To establish the context of the site and its importance in light of the national population of *Rhinolophus hipposideros* and its ecological requirements.
	MO19. To ensure conservation of roosting habitat of *Rhinolophus hipposideros.*	OO19.1. To identify and protect roosting habitats from inappropriate use / activities and consider options for providing new roosting habitats for *Rhinolophus hipposideros*.
	MO20. To ensure the long term maintenance of the range, population size, and habitat of *Myotis punicus.*	OO20.1 To monitor the use of this site by *Myotis punicus* including population numbers, range, and roost composition.
	MO21. To ensure foraging grounds for *Myotis punicus,* including relevant features, are maintained.	OO21.1 To establish the context of the site and its importance in light of the national population of *Myotis punicus* and its ecological requirements.
	MO22. To ensure conservation of potential roosting habitat of *Myotis punicus.*	OO22.1. To identify and protect roosting habitats from inappropriate use / activities and consider options for providing new roosting habitats for *Myotis punicus*.
	MO23. To ensure the long term maintenance of the range, population and habitat of prospected breeders *Ixobrychus minutus and Himantopus himantopus,* breeding and wintering wetland species, migratory wetland and woodland species and migratory raptors.	OO23.1. To monitor the range, population size and habitat suitability of prospected breeders *Ixobrychus minutus and Himantopus himantopus,* breeding and wintering wetland species, migratory wetland and woodland species and migratory raptors.
	MO24. To maintain healthy populations of the RDB and Annex IV species present in the site.	OO24.1. To elaborate Action Plans for RDB species and apply the actions and the recommendations prescribed.
	MO25. To maintain and where necessary restore habitats and species within the Wetland Reserve.	OO25.1. To maintain and enhance the saline marsh and associated wetland habitats.
		OO25.2.To maintain and enhance tree and shrub cover.
		OO25.3. To maintain and enhance the olive grove and the tamarisk grove habitats.

Vision	Management objective (MO)	Operational Objective (OO)
		OO25.4.To undertake a programme of research/survey/monitoring.
		OO25.5. To provide new nesting sites for birds.
The site is an educational, environmental awareness and nature enjoyment centre of nationwide importance.	MO26. To raise public awareness and appreciation of the site among the general public.	OO26.1. To design, construct and install information/interpretation/warning signposting and produce promotion material about the SAC/SPA to complement that available for the wetland reserve.
		OO26.2. To promote the site's environmental importance locally and internationally including through publication of surveillance and monitoring information from the site.
	MO27. To use the Wetland Reserve as an educational tool for visiting students and members of the public.	OO27.1. To develop a high positive profile with key audiences.
		OO27.2. To manage the reserve for visitors.
		OO27.3. To offer a programme of high quality environmental education.
		OO27.4. To maximize reserve income by developing appropriate resources.
		OO27.5. To maintain the integrity of the reserve and equipment and manage the reserve in an efficient and cost effective manner.
Agriculture is practiced without disturbing the protected ecological features of the site and contributes to the conservation of the site's biodiversity.	MO28. To ensure that existing agricultural activities conform to legislation	OO28.1. To enforce compliance of compulsory CoGAP measures and promote the implementation of the voluntary ones.
		OO28.2. To engage local farmers on nature conservation management.
The site is receiving full legal protection implemented according to national legislation and local policies.	MO29. To ensure that no illegal activities take place within the site and to monitor the impacts of allowable activities for any future controls that may be required.	OO29.1 To patrol/warden the site according to an established roster throughout the year, with increased frequency during the hunting season, during weekends, public holidays and during planned activities.
		OO29.2. To lobby with users of the site (campers, hunters, ramblers, bird watchers, farmers, general public) for the better protection of the site.
		OO29.3. To ensure the removal of all trappings sites from within the

Vision	Management objective (MO)	Operational Objective (OO)
		bird sanctuary boundaries and restoration of the land.
		OO29.4. To maintain the site as a disturbance free refuge for flora and fauna

Note: Shaded cells show objectives defined for Is-Simar Wetland Reserve

4 MANAGEMENT ACTIONS

Following the establishment of Management Objectives and Operational Objectives, the following section of the Management Plan describes the Management Actions. One or more management actions are defined for each operational objective and the fulfilment of operational objectives is achieved through the implementation of these actions.

4.1 FORMULATION OF MANAGEMENT ACTIONS

The first step in the formulation of Management Actions is the setting of a **priority rating** for the operational objectives identified above. The priority rating is defined as follows:

- Critical: The fulfilment of this objective is a prerequisite for the implementation of the Management Plan as a whole. It must be dealt with within the first two years of the implementation period.
- High: The objective is of main importance and its fulfilment is a prerequisite for the implementation of a major part of the Management Plan. To be accomplished within the first three years of the implementation period.
- Medium: The objective is of main importance but it either follows the accomplishment of another objective or it can be accomplished at any time within the five year period of the implementation period.
- Low: The objective is of complementary importance. To be accomplished within the last two years of the Management Plan, it may also be transferred to the next management period.

For each operational objective one or more **titles of actions** are defined. Each action is directly linked to the delivery of a specific operational objective and it requires a single procedure for its accomplishment. The management actions are described in further detail in subsequent sections.

The proposed actions are **categorised** as follows:

- Measures: Regulations and restrictions imposed by the central or local administration.
- Duties: Routine or recurring management activities, assigned by the administration to some competent entity
- Projects: Planned activities of a definite time range to accomplish particular targets

Appropriate **performance indicators** are given to enable measurement of the effectiveness of each action and the **monitoring requirements** of each action are also defined.

For the Operational Objectives identified for the site, the priority ratings, the actions and respective performance indicators and monitoring requirements are shown in Table 45.

Table 45: Operational Objectives and related priority rating, performance indicators, actions, category of actions and monitoring requirements

Operational Objective (OO)	Priority rating	Title of Action	Code of action	Category of action	Performance Indicators	Monitoring requirements / Means of verification
OO3.1 / OO4.2. To undertake annual inspections to monitor the size, structure and function of Annex I habitats 3170* and 5330 and determine the favourable conservation status of habitat 5330 OO5.1. / OO8.1. / OO11.1. To monitor the range, assess and monitor the population size of the Annex II flora species *Anacamptis urvilleana*, *Elatine gussonei and Ophrys melitensis* and determine their favourable conservation status within the site OO14.1. To establish and implement a programme for the annual monitor of the range and population size of *Aphanius fasciatus* in the lagoon OO15.1. / OO16.1. To undertake seasonal surveillance of the species to determine and monitor trends in the range, population size and possible factors affecting the population of *Zamenis situla* within the site.	High	Elaboration of detailed monitoring programmes for the Annex I habitats 3170* and 5330 and the Annex II flora species *Anacamptis urvilleana*, *Elatine gussonei and Ophrys melitensis,* the Annex II fauna species *Aphanius fasciatus, Zamenis situla, Rhinolophus hipposideros, Myotis punicus* and the bird species *Ixobrychus minutus, Himantopus himantopus* and *the* wetland and woodland species	**P1.**	Project	Number of monitoring plans for the Annex I habitats, the Annex II species and the bird species present in the site	Progress reports
		Implementation of the monitoring plans for the Annex I habitats 3170* and 5330 and the Annex II flora species *Anacamptis urvilleana*, *Elatine gussonei and Ophrys melitensis,* the Annex II fauna species *Aphanius fasciatus, Zamenis situla, Rhinolophus hipposideros, Myotis punicus* and the bird species *Ixobrychus minutus, Himantopus himantopus* and *the* wetland and woodland species - determination of favourable conservation status of habitat 5330 and species *Anacamptis urvilleana*, *Elatine gussonei and Ophrys melitensis*	**P4.**	Project	Number of monitoring reports on the Annex I habitats, the Annex II species present in the site and the bird species present in the site	Progress reports

Operational Objective (OO)	Priority rating	Title of Action	Code of action	Category of action	Performance Indicators	Monitoring requirements / Means of verification
OO17.1 / OO20.1 To monitor the use of this site by *Rhinolophus hipposideros* and *Myotis punicus* including population numbers, range, and roost composition. OO18.1 / OO21.1 To establish the context of the site and its importance in light of the national population of *Rhinolophus hipposideros* and *Myotis punicus* and their ecological requirements. OO19.1. / OO22.1. To identify and protect roosting habitats from inappropriate use / activities and consider options for providing new roosting habitats for *Rhinolophus hipposideros* and *Myotis punicus*. OO23.1. To monitor the range, population size and habitat suitability of prospected breeders *Ixobrychus minutus and Himantopus himantopus,* breeding and wintering wetland species, migratory wetland and woodland species and migratory raptors.						
OO14.2. To undertake regular water quality monitoring of the waters in the lagoon.	High	Elaboration and implementation of a water quality monitoring plan of the Simar lagoon	**P3.**	Project	Delivery of plan Number of samplings conducted annually	• Progress reports • Water monitoring

Operational Objective (OO)	Priority rating	Title of Action	Code of action	Category of action	Performance Indicators	Monitoring requirements / Means of verification
						reports
OO1.1. / OO2.1. To plan and implement and monitor a plan for the enlargement of the Simar lagoon habitat.	Medium	Assess the possibility of extending the coastal lagoon habitat	**P6.**	Project	Delivery of the study	Progress reports
OO29.3. To ensure the removal of all trappings sites from within the bird sanctuary boundaries and restoration of the land.	High	Removal of trapping sites and habitat restoration within the Bird Sanctuary	**P7.**	Project	Delivery of the action Area of habitat restored annually	Progress reports
OO4.1. To eradicate invasive species from Mizieb woodland.	Medium	Planning and implementation of an IAS control and / or eradication programme	**P8.**	Project	Percentage decrease in cover by alien tree species at the end of the five year period of MP implementation	• Progress reports • Habitat monitoring reports (Action P4)
OO24.1. To elaborate Action Plans for RDB species and apply the actions and the recommendations prescribed.	Medium	Elaboration of Action Plans for selected RDB species	**P2.**	Project	Number of Action Plans for the RDB species and species groups present in the site	Progress reports
		Implementation of actions and recommendations prescribed by the Action Plans	**P5.**	Project	Delivery of actions as they will emerge from action P2.	Progress reports
OO28.1. To enforce compliance of compulsory CoGAP measures and promote the implementation of the voluntary ones.	High	Implementation and enforcement of the Maltese Code of Good Agricultural Practice (CoGAP) and the Nitrates Action Programme in the agricultural land within the SAC	**M2.**	Measure	Annual percentage of cultivations under compliance with CoGap	Keeping record of Department of Agriculture formal statistics concerning cultivations under compliance

Operational Objective (OO)	Priority rating	Title of Action	Code of action	Category of action	Performance Indicators	Monitoring requirements / Means of verification
		Regulation for the exclusion of established Annex I habitat patches from agricultural development	**M1.**	Measure	Size of Annex I habitats at the end of the five year period of MP implementation compared to initial value	• Annex habitats monitoring report (Action P4) • Keeping record of formal Dept. of Agriculture formal statistics on agricultural plots
OO28.2. To engage local farmers on nature conservation management. OO29.2. To lobby with users of the site (campers, hunters, ramblers, bird watchers, farmers, general public) for the better protection of the site.	High	Lobbying with site stakeholders for the conservation management of the site	**P9.**	Project	Number of meetings/ joined ventures and events held per year.	Progress reports
OO26.1. To design, construct and install information / interpretation /warning signposting and produce promotion material about the SAC/SPA to complement that available for the wetland reserve. OO26.2. To promote the site's environmental importance locally and internationally including	High	Elaboration of a study for the design and technical specifications for information / interpretation / warning signposting and promotion material	**P10.**	Project	Timely delivery of the technical study	Progress reports
		Construction and installation of information / interpretation / warning signposting and production of promotion material	**P11.**	Project	Timely installation of signposting and production of promotion material	Progress reports

Operational Objective (OO)	Priority rating	Title of Action	Code of action	Category of action	Performance Indicators	Monitoring requirements / Means of verification
through publication of surveillance and monitoring information from the site.						
OO29.1 To patrol/warden the site according to an established roster throughout the year, with increased frequency during the hunting season, during weekends, public holidays and during planned activities.	High	Prescription of a patrolling schedule	**P12.**	Project	Timely delivery of action	Progress reports
		Implementation of the patrolling schedule	**D1.**	Duty	Percentage annual decrease of incidents	Ordered reporting and annual review

4.2 DESCRIPTION OF MANAGEMENT ACTIONS

For each action the following details are given:

Code/Title	Each action is given a code number with an initial M, P or D corresponding to Measures, Projects, Duties and a serial number.
Description	A description of the action to be delivered is given.
Expected results	A brief description of the output (deliverable) is given.
Priority rating	Priority in accordance to the prioritisation given in Table 16 and a time span for the completion of each action is given.
Constraints	Any foreseen constraints to the delivery of the action are stated and alternatives are suggested. It is noted that reference is made mainly to technical or institutional constraints and drawbacks foreseen. Constraints such as conflicting interests, social disputes or the funding requirements, which should have been resolved by the time of implementation, are not included.

A. MEASURES

4.2.1 Code and Title of Action: M1. Regulation for the exclusion of established Annex I habitat patches from agricultural development

Description

According to the North West Local Plan" *the reclamation of abandoned or derelict land for agricultural purposes including viticulture or afforestation will be supported providing the land is not designated, protected or scheduled for other purposes in the Local Plan or, otherwise of ecological, scientific, landscape and/archaeological importance".*

In compliance with this statement, ERA is required to issue a regulation through which former agricultural land that has been overtaken by Annex I habitats will be excluded from reclamation for agriculture reinstatement.

This measure will be implemented in cooperation with the Department of Agriculture, as the competent authority for the agricultural sector. The success of this measure will be monitored through the formal statistics kept and processed by the Department of Agriculture, regarding the number and size of agricultural plots. Additional relevant information

will be provided through the monitoring report for Annex I habitats (Action P4).

Expected results: The maintenance of the size and integrity of the Annex I habitats within the site

Priority rating: High. To be accomplished within the first year from the start of the MP implementation period

Constraints: Coordination among different administrative authorities is the prerequisite for the accomplishment of this action.

4.2.2 Code and Title of Action: M2. Implementation and enforcement of the Maltese Code of Good Agricultural Practice (CoGAP) and the Nitrates Action Programme in the agricultural land within the SAC

Description: This measure requires the Department of Agriculture, in consultation with ERA , to ensure that the Maltese Code of Good Agricultural Practice (CoGAP) that applies to the surrounding agricultural land, is put into force. Since the land area within the SAC comprises agricultural land the implementation of the following codes are to be given priority: 41, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54. In accordance with the CoGAP, where farmers enter into any agri-environment commitment and/or are in receipt of compensatory allowances in Less Favoured Areas[12] the following codes must also be implemented: 10, 19, 56, 76, 86, 87, 89, 91, 92, 93, 94, 95, 96, 97, 100. Strong liaison with the farmers is required so that they understand the importance of the CoGAP as well as their position within a Natura 2000 Site.

Furthermore, it is recommended that all agricultural land within the SAC is subject to the requirements of CoGAP related to Good Farming (in particular Codes 56, 76, 86, 87, 89, 91, 92, 93, 94, 95, 96, 97, 100) and Voluntary Actions (in particular Codes 36, 37, 38, 39, 40, 42, 43, 55, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 77, 78, 79, 80, 81, 82, 83, 84, 85, 88, 90, 98, 99).

The obligations emanating from the Nitrates Action Programme (2011) must also be met by the farmers and enforced by the Department of Agriculture.

The obligations emanating from the Pesticides Control Act and its subsidiary legislation must also be met by the farmers and enforced by the competent authority.

Farmers in the SAC are also encouraged to take up the measures prescribed in Malta's Rural Development Plan 2014-2020 particularly

[12] This has been renamed Areas Under Natural Constraints or ANC under the CAP and Rural Development Policy for 2014-2020

those that will assist the farmer to contribute towards landscape management and ecological conservation. This will allow farmers to provide an active role in contributing to meeting the SAC's conservation objectives.
The implementation of the CoGAP, the Nitrates Action Programme, and regulations concerning use of pesticides will also contribute towards the following measure set by Malta's National Biodiversity Strategy and Action Plan 2012-2020 that is aimed at the reduction of the direct pressures of biodiversity:

- Farmers receiving financial assistance under the Common Agricultural Policy are compliant with the Statutory Management Requirements (SMR) in line with EU and national legislation

This measure will be implemented in cooperation with the Department of Agriculture, as the competent authority for the agricultural sector. The success of this measure will be monitored through the formal statistics kept and processed by the Department of Agriculture, regarding CoGAP and statistics from those parcels receiving financial assistance under the EAFRD (2007-2013 and 2014-2020).

Expected results: Agriculture is practiced without disturbing the protected ecological features of the site and contributes to the conservation of the site's biodiversity.

Priority rating: High. To be accomplished within the first 2 years from the start of MP implementation period and monitored throughout the duration of the MP.

Constraints: Although no major constraints are foreseen, the level of awareness of farmers on the requirements emerging from their obligation as described in the CoGAP and the Nitrates Action Programme may be low and this may need to be addressed by the Management Group.

B. DUTIES

4.2.3 Code and Title of Action: D1. Implementation of the patrolling schedule

Description: The competent authority will provide for the engagement of the proper staff to carry out the scheduled tasks specified by Action P12. This may be in addition to the systems already provided by the state for the control of illegal activities in a nationwide scale.

The progress and success of this action will be monitored through monthly and annual reports as specified by Action P12.

Expected results: The prevention of illegal activities and reporting on the site's status and

emergency issues.

Priority rating: High. To start in the first year of the implementation of the Management Plan implementation period and continue throughout.

Constraints: Coordination among different administrative authorities is the prerequisite for the accomplishment of this action.

C. PROJECTS

4.2.4 *Code and Title of Action: P1. Elaboration of detailed monitoring programmes for the Annex I habitats 3170* and 5330 and the Annex II flora species* Anacamptis urvilleana*,* Elatine gussonei *and* Ophrys melitensis*, the Annex II fauna species* Aphanius fasciatus*,* Zamenis situla*,* Rhinolophus hipposideros*,* Myotis punicus *and the bird species* Ixobrychus minutus*,* Himantopus himantopus *and the wetland and woodland species*

Description

In the course of the preparation of the present Management Plan, a method for the evaluation of the conservation status of Annex I habitats and Annex II species of the Habitats Directive and of the Annex I species of the Birds Directive at the site scale was developed in accordance with the methodology provided by MEPA (See chapter 2). This methodology was applied to give the assessment of the conservation status of the foretold habitats and species per N2K site in year 2013.

This work has set the basis for the formulation of national Standard Monitoring Protocols (plans) for the foretold habitats and species. This is a task to be accomplished within the first period of implementation of the Management Plans.

The Standard Monitoring plans will also deal with the determination of the Favourable Reference Values which will then inform the Favourable Conservation Status to be assessed for habitats and species.

During the first period of implementation of the MP, Favourable Reference Values will be determined for the following habitats and species:

Annex I habitats:

- 5330 – Thermo-Mediterranean and pre-desert scrub

Annex II flora species:

- *Anacamptis urvilleana*
- *Elatine gussonei*
- *Ophrys melitensis*

The Standard Monitoring plans will be applied to the sites through Action

P4 in order to:

- Assess the conservation status of habitats and species within 5 years from the 2013 assessment
- Determine the Favourable Reference Values and the Favourable of Conservation Status for the above listed Annex I habitats and Annex II species
- Enable the five year revision of the Management Plan, i.e. the review of Operational Objectives and subsequent management actions.

Guidelines for the elaboration of the standard monitoring plans are given in *ANNEX 4: Specifications of Management Actions.*

Expected results	Nine standard monitoring plans for the two Annex I habitats, three Annex II flora species *and four Annex II fauna species* present in the site. Four standard monitoring plans for the Annex I bird species and the wetland and woodland bird species groups.
Priority rating	High. Monitoring Plans to be delivered within the first two years from the start of the MP implementation period
Constraints	No major constraints foreseen

4.2.5 Code and Title of Action: P2. Elaboration of Action Plans for selected RDB species

Description

The Competent Authority will prepare guidelines for the elaboration of National Species Action Plans for endemic and threatened species and prepare a priority list based on the national and international status of the species and on the species' presence within the Natura 2000 sites. For these species, Action Plans should be prepared on a national level as part of the Management Plans implemented in each Natura 2000 site. The Action Plans can be either single species Action Plans or tackle groups of species and should justify and propose tailored conservation measures for every species or group. These plans will guide the implementation of Action P5.

General Guidelines for the elaboration of the Action Plans are given in *ANNEX 4: Specifications of Management Actions.*

For this site Action Plans are recommended for the following species/species groups:

- Amphibian & Reptiles: *Discoglossus pictus, Podarcis filfolensis maltensis, Telescopus fallax*
- Mammals: *Oryctolagus cuniculus, Suncus etruscus, Pipistrellus pipistrellus, Mustela nivalis*.

Expected results	Seven national Action Plans for the conservation of threatened Red Data Book species present in the site
Priority rating	Medium. Action Plans to be delivered within the first three years from the start of MP implementation period
Constraints	No major constraints foreseen

4.2.6 Code and Title of Action: P3. Elaboration and implementation of a water quality monitoring plan of the Simar lagoon

Description	The water quality is already monitored by the Site Manager. Monitored parameters include nitrates, phosphates, chlorophyll *a*, temperature, dissolved oxygen, salinity, conductivity, turbidity and pH while pesticide levels are not monitored. Monitoring data were also collected by the competent authorities as part of the WFD implementation. This action calls for the integration of the existing monitoring protocols to the WFD and the Nitrates Action Programme requirements. The Competent Authority responsible for implementation of WFD should be consulted on this action to ensure streamlining with existing monitoring efforts.
Expected results	A standard monitoring plan and annual reports on the water quality of Simar lagoon
Priority rating	High. To start at the first year of the MP implementation period.
Constraints	No major constraints foreseen

4.2.7 Code and Title of Action: P4. Implementation of the monitoring plans for the Annex I habitats 3170* and 5330 and the Annex II flora species Anacamptis urvilleana, Elatine gussonei *and* Ophrys melitensis, *the Annex II fauna species* Aphanius fasciatus, Zamenis situla, Rhinolophus hipposideros, Myotis punicus *and the bird species* Ixobrychus minutus, Himantopus himantopus *and the wetland and woodland species - determination of favourable conservation status of habitat 5330 and species* Anacamptis urvilleana, Elatine gussonei *and* Ophrys melitensis

Description	ERA will provide for the implementation of the monitoring plans according to the specifications provided for in the respective studies (Action P1).
Expected results	Twelve reports on the conservation status of the Annex I habitats, and two reports on the conservation status of the Annex II flora species present in the site. Three reports concerning the Favourable Reference Values of Annex I habitat 5330 and Annex II flora species *Anacamptis urvilleana* and *Elatine gussonei.*
Priority rating	Implementation will follow the delivery of the relevant monitoring plans (Action P1), therefore it may start from the second year of the MP implementation period. In any case it cannot exceed a 5 years period

from the previous first assessment, i.e. the 2013 year assessment undertaken in the context of the MP preparation.

Constraints — No major constraints foreseen

4.2.8 Code and Title of Action: P5. Implementation of actions and recommendations prescribed by the Action Plans

Description — Following the prescriptions of the species specific Action Plans (Action P2) ERA or the Site Manager will have to judge which of them are applicable to the site and decide on the urgency for their implementation.

Expected results — A series of actions that will mitigate possible adverse effects on RDB species and lead to an overall improvement of the site quality for them.

Priority rating — Medium. To start after the delivery of the relevant Action Plans (Action P2).

Constraints — Although these are usually low cost, small scale/microhabitat management actions, their exact nature and extent cannot be foretold and possible constraints cannot be foreseen at this point.

4.2.9 Code and Title of Action: P6. Assessment of the possibility of extending the coastal lagoon habitat

Description — A study will be conducted in order to assess the possibility of extending the coastal lagoon habitat. The study will:

- Identify suitable land for expansion. It is noted that this Management Plan has already indicated the adjacent abandoned fish farm, occupying an area of 2,328 m^2, as a first possibility. The study must go beyond this and examine the physical suitability of the fields surrounding the wetland for lagoon expansion
- Proceed with deliberations with the local stakeholders and the competent authorities for the availability of suitable lands. Lobbying with the local farmers will be facilitated by Action P8.
- Assess the magnitude of alterations that will be imposed to the current setting both in physical and social terms
- Determine the nature, extent and environmental impacts of the engineering and habitat management works required
- Estimate the budget required for the foreseen works

It is noted that although the creation of open water 1150* habitat is the main scope, an expansion of the existing reedbed by the same ratio as presently, is also desirable as this will improve the breeding habitat for *Ixobrychus minutus.*

Expected results — A study that will assess the possibility of extendingthe lagoon habitat.

Priority rating	High. To be delivered within the first year from the start of the MP implementation period
Constraints	No major constraints foreseen for undertaking of the study.

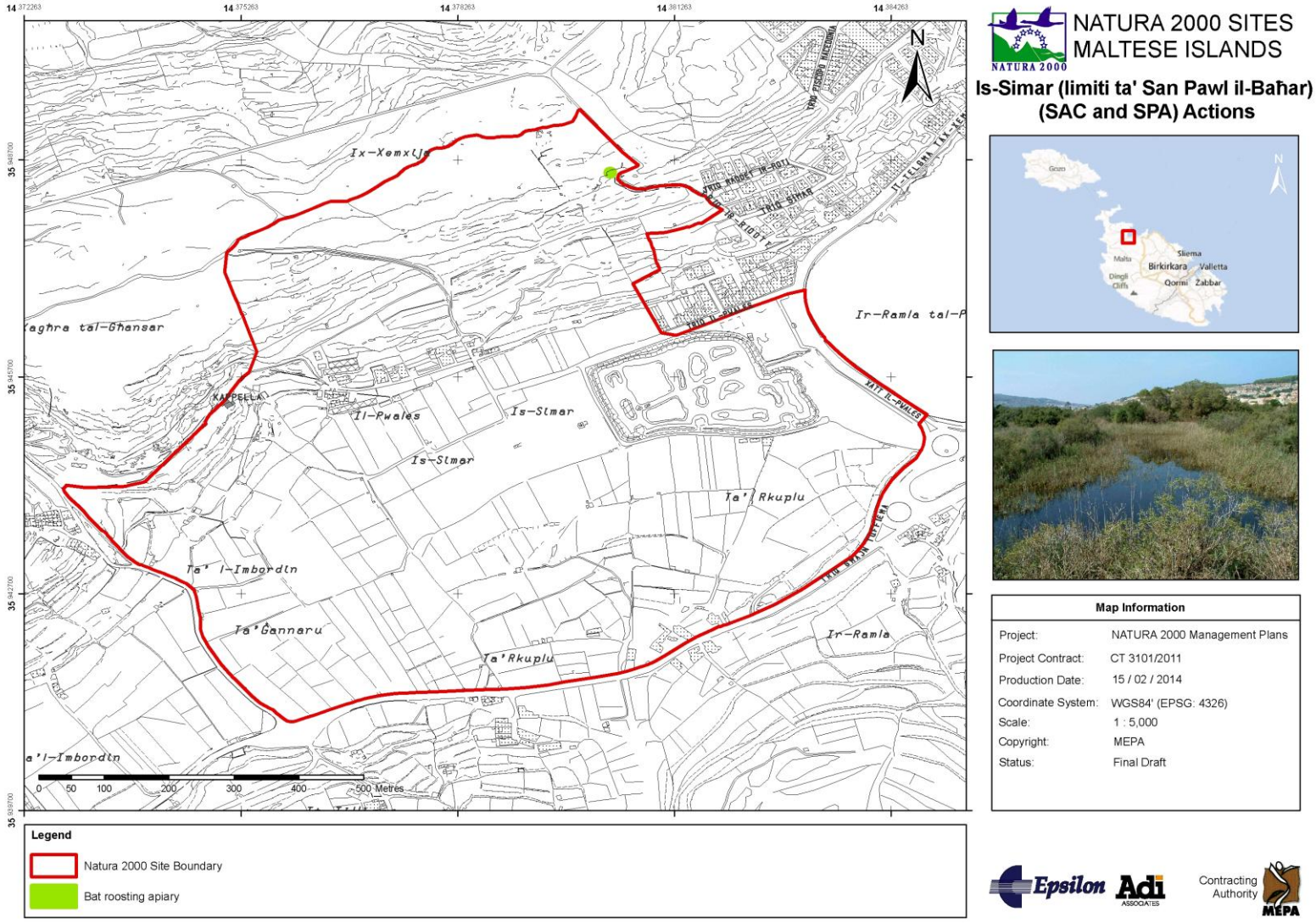

Figure 50: Actions Map (see *ANNEX 6: Maps* for A3 version)

4.2.10 Code and Title of Action: P7. Removal of trapping sites and habitat restoration within the Bird Sanctuary

Description	ERA will provide for the implementation of the required works that will result in the removal of the trapping devices and constructions and appropriate disposal of the material. Assisted natural regeneration or habitat restoration interventions will be applied according to a plan that will be finalized after the completion of the removal works. Mapping of the intervention area and guidelines for the restoration of the disturbed habitat patches are given in *ANNEX 4: Specifications of Management Actions.*
Expected results	The restoration of natural integrity and the removal of a major source of habitat and bird disturbance within the Bird Sanctuary.
Priority rating	High. To be delivered within the first two years from the start of the MP implementation period
Constraints	No major constraints foreseen.

4.2.11 Code and Title of Action: P8. Planning and implementation of an IAS control and / or eradication programme

Description	Based on the "Guidelines on managing non-native plant invaders and restoring native plant communities in terrestrial settings in the Maltese Islands" (MEPA 2013) and the site specific guidelines given in *ANNEX 4: Specifications of Management Actions,* the competent authority or the Site Manager will proceed with a site specific schedule for the gradual eradication of the IAS species and restoration of native communities present within the first management plan implementation period. Birdlife Malta is be involved in this action since any species eradication programme needs to be appropriately timed with the migration of birds.
Expected results	A technical plan that will guide the gradual eradication of alien and invasive plant species from the Annex I habitats and other sensitive areas within the Natura 2000 sites. Delivery of the eradication and rehabilitation actions foreseen for the first management implementation period.
Priority rating	Medium. Study to start at the second year of the MP implementation period
Constraints	This can be a sensitive social issue, in cases where the targeted trees have been planted and cared for by local individuals. Whenever such issues arise, it is advised that action is postponed until public awareness

and consensus has been adequately built up.

4.2.12 Code and Title of Action: P9. Lobbying with site stakeholders for the conservation management of the site

Description

ERA and BIRDLIFE MALTA will undertake actions in order to:

- Engage local farmers on nature conservation management and
- Lobby with other site users for the better protection of the site

As regards the local farmers, ERA /the entity responsible for this action will:

- Keep updated on agri environment legislation and train the management group accordingly
- Liaise with the Department of Agriculture with respect to the measures to be funded under the European Agricultural Fund for Rural Development (EAFRD) as implemented through the Rural Development Programme 2014-2020
- Seek cooperation with farmers on implementation of agri measures through funding
- Assist in securing funds for the site

A major lobbying task refers to the hunting and trapping activity taking place within or in the vicinity of the site.

The Management Plan has stressed that the current situation in the Miżieb woodland is not in line with conservation and sustainability principles. The Management Plan urges that immediate action is taken to ensure the proper management of the Miżieb woodland and the involvement of all relevant stakeholders to ensure that legal activities are undertaken within the bounds of their permissions, to reduce user conflicts within the woodland (including family recreation) and the habitats and species within the SAC/SPA are properly protected. It is stressed that involved stakeholders and mainly FKNK are expected to proceed responsibly to full compliance with the requirements of a site of European conservation importance and with the Maltese social demand for recreation and nature enjoyment for present and future generations.

The progress and achievements of these actions will be monitored though patrolling (Action D1), habitat monitoring reports (Action P4) and the annual and five year reporting by the Reserve Manager.

It is stressed that the resolution of the issues described above concerning the Mizieb woodland should be addressed during the first five year period of Management implementation with a view to resolve the situation.

Expected results	An active network of stakeholders that will enable the smooth implementation of the Management Plan
Priority rating	High. Lobbying activities to proceed parallel to main actions involving/affecting specific stakeholders
Constraints	Stakeholders' response may be below expectations at the beginning of the implementation. Regardless of this, the action must continue as foreseen throughout the 5 year period of MP implementation and fully assessed only during the revision phase.

4.2.13 Code and Title of Action: P10. Elaboration of a study for the design and technical specifications for warning/ information/interpretation signposting and promotion material

Description

A technical study will be elaborated which will:

- Define the contents and design layouts of the signposting and the promotion material based on the features identified in the current MP and following consultations with ERA
- Prescribe technical specifications for the implementation of the respective technical works
- The study will include the analytical budget for the implementation of the required technical works.

The study will check the existing signage within the Ghadira Reserve and suggest any replacements needed so that uniformity and branding are ensured.

General guidelines as regards contents of signposting/promotion material and indicative posting places are given in *ANNEX 4: Specifications of Management Actions.*

Expected results	A study and accompanying technical specifications that will guide the implementation of the relevant action (Action P11).
Priority rating	High. To be completed within the first two years from the start of the MP implementation period
Constraints	No major constraints foreseen

4.2.14 Code and Title of Action: P11. Construction and installation of warning / information / interpretation signposting and production of promotion material

Description	ERA will provide for the implementation of the technical works according to the specifications provided for in the respective study (Action P10).

Expected results	The installation of infrastructure and facilities prerequisite for visitor attraction and raising of awareness and appreciation for the site
Priority rating	High. To start after the completion of the respective study (Action P10).
Constraints	No major constraints foreseen

4.2.15 Code and Title of Action: P12. Prescription of a patrolling schedule

Description	A document prescribing the patrolling requirements and annual schedules will be prepared. Illegal activities already identified by the Management Plan should be set as priorities for control and prevention. This schedule will be also based on the annual Work plan (see below) and will be revised according to the requirements arising from the progress of the management actions. An initial set of patrolling and reporting requirements and proposed routines, staff and equipment needed is given in *ANNEX 4: Specifications of Management Actions.*
Expected results	The annual schedule of patrolling the site as it will be implemented through the relevant action (Action D1)
Priority rating	High. To be delivered within the first year from the start of the MP implementation period
Constraints	No major constraints foreseen.

5 WORK PLAN STRUCTURE

Prior to the Management Plan implementation, a detailed work plan must be prepared by ERA . This is made on an annual basis and reviewed at the end of each year. In order to prepare a functional work plan **the management scheme**, **the overall management strategy, the methods of implementation/operation and the available financial and human resources must have been defined by the Administration / Government.** Revenue generating and funding opportunities have been identified in *ANNEX 5: Cost Recovery Mechanisms.*

The preparation of the work plan will be based on:

- The preceding description of the Management actions
- An indication of the financial resources needed annually for the implementation of each action as given in Table 46. It must be noted that, for a number of actions, costs cannot be estimated at this stage; therefore this exercise provides only a basis for the allocation of resources.
- The annual time schedule for the implementation of each action, checklist of the expected deliverables and year of delivery of each action and the entity proposed as responsible to deliver the actions, as shown in Table 47.

Table 46: Financial Plan

Action	Expenditure per year (€)					Total (€)
	1st year	2nd year	3rd year	4th year	5th year	
M1. Regulation for the exclusion of established Annex I habitat patches from agricultural development	2,000	0	0	0	0	2,000
M2. Implementation and enforcement of the Maltese Code of Good Agricultural Practice (CoGAP) and the Nitrates Action Programme in the agricultural land within the SAC	10,000	10,000	10,000	10,000	10,000	50,000
D1. Implementation of the patrolling schedule	15,000	15,000	15,000	15,000	15,000	75,000
P1. Elaboration of detailed monitoring programmes for the Annex I habitats 3170* and 5330 and the Annex II flora species *Anacamptis urvilleana*, *Elatine gussonei and Ophrys melitensis,* the Annex II fauna species *Aphanius fasciatus, Zamenis situla, Rhinolophus hipposideros, Myotis punicus* and the bird species *Ixobrychus minutus, Himantopus himantopus* and *the* wetland and woodland species	5,000	5,000	0	0	0	10,000[13]
P2. Elaboration of Action Plans for selected RDB species	4,000	4,000	0	0	0	8,000[14]
P3. Elaboration and implementation of a water quality monitoring plan of the Simar lagoon	4,000	1,000	1,000	1,000	1,000	8,000
P4. Implementation of the monitoring plans for the Annex I habitats 3170* and 5330 and the Annex II flora species *Anacamptis urvilleana*, *Elatine gussonei and Ophrys melitensis,* the Annex II fauna species *Aphanius fasciatus, Zamenis situla, Rhinolophus hipposideros, Myotis punicus* and the bird species *Ixobrychus minutus, Himantopus himantopus* and *the* wetland and woodland species - determination of favourable conservation status of habitat 5330 and species *Anacamptis urvilleana*, *Elatine gussonei and Ophrys melitensis*	0	0	#	#	#	#
P5. Implementation of actions and recommendations prescribed by the Action Plans	0	0	#	#	#	#

[13] Cost is calculated for the horizontal action and site specificity has been taken into consideration in terms of the number of habitats and species present on site
[14] Cost is calculated for the horizontal action and site specificity has been taken into consideration in terms of the number of species present on site

Action	Expenditure per year (€)					Total (€)
	1st year	2nd year	3rd year	4th year	5th year	
P6. Assessment of the possibility of extending the coastal lagoon habitat	2,000	0	0	0	0	2,000
P7. Removal of trapping sites and habitat restoration within the Bird Sanctuary	5,000	8,000	0	0	0	13,000
P8. Planning and implementation of an IAS control and / or eradication programme	5,000	5,000	0	0	0	10,000
P9. Lobbying with site stakeholders for the conservation management of the site	400	400	400	400	400	2,000
P10. Elaboration of a study for the design and technical specifications for information / interpretation / warning signposting and promotion material	1,000	0	0	0	0	1,000[15]
P11. Construction and installation of information / interpretation / warning signposting and production of promotion material	0	#	#	0	0	#
P12. Prescription of a patrolling schedule	0	0	0	0	0	0[16]
ANNUAL EXPENDITURE	**53,400+**	**48,400+**	**26,400+**	**26,400+**	**26,400+**	**181,000+**
GRAND TOTAL						**181,000+**

= To be derived by the respective studies/plans/schedules at a later stage

[15] Cost is calculated for the horizontal action

[16] The patrolling schedule has been elaborated in this Management Plan. It is assumed that fine tuning of this schedule will be undertaken by the site manager and will not require additional costs

Table 47: List of actions, timeframe, deliverables and year of delivery, action total budget estimate and entities involved in the delivery of the actions

Action	Timeframe(Years)					Deliverable	Year of Delivery	Budget (€) (derived from financial plan)	Involvement
	1	2	3	4	5				
M1. Regulation for the exclusion of established Annex I habitat patches from agricultural development						Issue of regulation	1st year	2,000	ERA / DEPARTMENT OF AGRICULTURE
M2. Implementation and enforcement of the Maltese Code of Good Agricultural Practice (CoGAP) and the Nitrates Action Programme in the agricultural land within the SAC						Processed formal statistical data showing compliance rates	Continuous	50,000	ERA / DEPARTMENT OF AGRICULTURE
D1. Implementation of the patrolling schedule						Monthly and annual patrolling reports	From 1st year on	75,000	ERA / ENTITY WITH EXECUTIVE POWERS
P1. Elaboration of detailed monitoring programmes for the Annex I habitats 3170* and 5330 and the Annex II flora species *Anacamptis urvilleana*, *Elatine gussonei and Ophrys melitensis,* the Annex II fauna species *Aphanius fasciatus, Zamenis situla, Rhinolophus hipposideros, Myotis punicus* and the bird species *Ixobrychus minutus, Himantopus himantopus* and *the* wetland and woodland species						Nine standard monitoring plans for the two Annex I habitats, three Annex II flora species *and four Annex II fauna species* present in the site. Four standard monitoring plans for the Annex I bird species and the wetland and woodland bird species groups.	2nd year	10,000[17]	ERA
P2. Elaboration of Action Plans for selected RDB species						Seven National Action Plans for RDB species groups present in the site	3nd year	8,000[18]	ERA
P3. Elaboration and implementation of a water quality monitoring plan of the Simar lagoon						A standard monitoring plan and annual reports on Simar lagoon water quality	From 1st year on	8,000	BIRDLIFE MALTA
P4. Implementation of the monitoring plans for the Annex I habitats 3170* and						Two monitoring reports for the Annex I habitats, seven monitoring	From 3rd year on	#	ERA / BIRDLIFE MALTA

[17] Cost is calculated for the horizontal action and is not assigned a per site cost
[18] Cost is calculated for the horizontal action and is not assigned a per site cost

Action	Timeframe(Years)					Deliverable	Year of Delivery	Budget (€) (derived from financial plan)	Involvement
	1	2	3	4	5				
5330 and the Annex II flora species *Anacamptis urvilleana*, *Elatine gussonei and Ophrys melitensis,* the Annex II fauna species *Aphanius fasciatus, Zamenis situla, Rhinolophus hipposideros, Myotis punicus* and the bird species *Ixobrychus minutus, Himantopus himantopus* and *the* wetland and woodland species - determination of favourable conservation status of habitat 5330 and species *Anacamptis urvilleana*, *Elatine gussonei and Ophrys melitensis*						reports for the Annex II species present in the site and three monitoring reports on the bird species and species groups present in the site			
P5. Implementation of actions and recommendations prescribed by the Action Plans						Delivery of the conservation actions prescribed by the Action Plans	From 3rd year on	#	ERA / BIRDLIFE MALTA
P6. Assessment of the possibility of extending the coastal lagoon habitat						One study assessing the possibility of extending the Simar lagoon	1st year	2,000	ERA / BIRDLIFE MALTA
P7. Removal of trapping sites and habitat restoration within the Bird Sanctuary						Removal of trapping sites and habitat restoration	2nd year	13,000	ERA
P8. Planning and implementation of an IAS control and / or eradication programme						A plan for IAS species eradication plan and resulting works	2nd year	10,000	ERA / BIRDLIFE MALTA
P9. Lobbying with site stakeholders for the conservation management of the site						Conclusion of deliberations regarding lagoon expansion Measurable progress achieved regarding poaching within the Bird Sanctuary	Continuous	2,000	ERA / BIRDLIFE MALTA
P10. Elaboration of a study for the design and technical specifications for information / interpretation / warning signposting and promotion material						A technical study for N2K signposting and production of promotion material	1st year	1,000[19]	ERA

[19] Cost is calculated for the horizontal action and is not assigned a per site cost

Action	Timeframe(Years)					Deliverable	Year of Delivery	Budget (€) (derived from financial plan)	Involvement
	1	2	3	4	5				
P11. Construction and installation of information / interpretation / warning signposting and production of promotion material						Delivery of works prescribed by the technical study	From 2nd year on	#	ERA
P12. Prescription of a patrolling schedule						One patrolling schedule note	1st year	0	ERA /ENTITY WITH EXECUTIVE POWERS

PROPOSED MANAGEMENT STRUCTURE FOR THE SITE

Part of the site, namely the Simar Reserve is already under the management of BIRDLIFE MALTA. From table 3 the following authorities/entities are involved in the site management:

ERA	: Competent authority
DEPARTMENT OF AGRICULTURE	: Competent authority
ENTITY WITH EXECUTIVE POWERS	: Competent authority
BIRDLIFE MALTA	: Simar Reserve Manager

- ERA is the leading authority and responsible for the overall management of the site.
- ERA is responsible for the implementation of actions P1, P2, P6, P7, P10 and P11.
- ERA and the Department of Agriculture will collaborate and join forces for the implementation of action M1 and M2.
- ERA and the patrolling entity will collaborate and join forces for the implementation of actions D1 and P12.
- BIRDLIFE MALTA will collaborate and facilitate ERA for the implementation of actions P3, P4, P5, P8 and P9
- BIRDLIFE MALTA will collaborate and facilitate the patrolling entity for the implementation of action D1

ERA will receive and approve the scheduled/annual reports delivered by the patrolling entity for action D1.
BIRDLIFE MALTA is responsible for the compilation of the annual reports and reviews and for the five year revision of the Management Plan (see next chapter).

6 REPORTING AND REVIEW PLAN

Review is an evaluation of the effectiveness of all or part of a management plan in achieving the stated objectives. Reporting on what has been achieved is a prerequisite for the preparation of a review.

6.1 ANNUAL REPORTING AND REVIEW

The section provides guidance on how to keep record of the basic annual reporting obligations and of the assessments and decisions made during the reviewing. Table 48 summarizes the basic annual recording and reporting obligations.

Table 48: Annual Reporting and Review summary

Action	Start of implementation	End of 1st year	End of 2nd year	End of 3rd year	End of 4th year	End of 5th year
Detailed Work plan	Delivery of Work plan					
M1. Regulation for the exclusion of established Annex I habitat patches from agricultural development		Progress record				
M2. Implementation and enforcement of the Maltese Code of Good Agricultural Practice (CoGAP) and the Nitrates Action Programme in the agricultural land within the SAC		Progress record	Progress record	Progress record	Progress record	Progress record
D1. Implementation of the patrolling schedule		Annual report	Annual report	Annual report	Annual report	Annual report
P1. Elaboration of detailed monitoring programmes for the Annex I habitats 3170* and 5330 and the Annex II flora species *Anacamptis urvilleana*, *Elatine gussonei and Ophrys melitensis,* the Annex II fauna species *Aphanius fasciatus, Zamenis situla, Rhinolophus hipposideros, Myotis punicus* and the bird species *Ixobrychus minutus, Himantopus himantopus* and *the* wetland and woodland species		Progress record	Date of delivery			
P2. Elaboration of Action Plans for selected RDB species		Progress record	Date of delivery			
P3. Elaboration and		Progress	Progress	Progress	Progress	Date of

Action	Start of implementation	End of 1st year	End of 2nd year	End of 3rd year	End of 4th year	End of 5th year
implementation of a water quality monitoring plan of the Simar lagoon		record	record	record	record	delivery
P4. Implementation of the monitoring plans for the Annex I habitats 3170* and 5330 and the Annex II flora species *Anacamptis urvilleana*, *Elatine gussonei and Ophrys melitensis,* the Annex II fauna species *Aphanius fasciatus, Zamenis situla, Rhinolophus hipposideros, Myotis punicus* and the bird species *Ixobrychus minutus, Himantopus himantopus* and *the* wetland and woodland species - determination of favourable conservation status of habitat 5330 and species *Anacamptis urvilleana*, *Elatine gussonei and Ophrys melitensis*				Progress record	Progress record	Date of delivery
P5. Implementation of actions and recommendations prescribed by the Action Plans				Progress record	Progress record	Date of delivery
P6. Assessment of the possibility of extending the coastal lagoon habitat	Date of delivery					
P7. Removal of trapping sites and habitat restoration within the Bird Sanctuary	Progress record	Progress record	Date of delivery			
P8. Planning and implementation of an IAS control and / or eradication programme	Progress record	Progress record	Date of delivery			
P9. Lobbying with site stakeholders for the conservation management of the site	Progress record	Progress record	Progress record	Progress record	Progress record	Progress record
P10. Elaboration of a study for the design and technical specifications for information / interpretation / warning signposting and promotion material	Date of delivery					
P11. Construction and installation of information / interpretation / warning signposting and production of			Progress record	Date of delivery		

Action	Start of implementation	End of 1st year	End of 2nd year	End of 3rd year	End of 4th year	End of 5th year
promotion material						
P12. Prescription of a patrolling schedule	Date of delivery					

For each management action the following questions should be answered:

- Was each the management action implemented within the planned time period, was it achieved completely or significantly altered?
- Were the steps towards implementation being recorded?
- Were the effects being monitored?

The following format can be used to keep a record of any new developments or trends affecting the site:

Table 49: Table template for recording new developments or trends affecting the site

New Developments or Trends			
	Within the site	Outside the site	Impact
Positive developments			
Negative developments			

The following format can be used to keep a record of any changes made to the Management Plan document during the annual reviews:

Table 50: Table template for recording management plans updates during the annual reviews

Management Plan Updates			
Chapter	Sections	Principal author	Date
1. Background			
2. Site description			
3. Evaluation and Objectives			
4. Management Actions			
5. Work Plan Structure			
6. Reporting and Review Plan			

6.2 THE FIVE YEAR REPORTING AND REVIEW

The five year report (Table 51) is largely the compilation of the deeds and results recorded in the annual reports together with an in depth evaluation of the five year management of the site. This section provides some guidance for the site assessment and the reviewing process. The following set of questions should be asked by the reviewer (i.e. the Site Manager):

Table 51: Five year reporting process questions

Contents	Questions
Site Description	• Has the site been described in detail, adequate for its management? • Were changes in the biological /physical systems of the site, including both the impacts of management and natural processes being systematically recorded?
Definition of Boundaries	• Is the site big enough to conserve the special features? • Are the site boundaries relevant in that they permit effective conservation of the resource on site? • Are the site boundaries identifiable on the ground?
Legal Powers	• Was there an adequate body of national conservation law, local bye-laws or regulations to implement the objectives? • Were there sufficient legal powers to implement the measures? Comment on the level and significance of law-enforcement. • Has there been adequate patrol staff?
Operational Objectives	• For each OO the following questions should be answered: ○ Was the operational objective S.M.A.R.T.? ○ Was it fulfilled through the implementation of the relevant action or alternatively? ○ Was there any significant deviation from the Operational Objective?
Changes in the Planned Management	• Has the planned management had to change within the plan period? • Was the change significant? • What caused the change? • Has the management plan been reviewed to take this change into account?
Changes Proposed	

A list of **performance indicators** must be derived to assess the appropriateness of the Operational Objectives defined of the first Management Plan implementation period. The final list of indicators will evolve gradually as management progresses, but an initial list, derived directly from the expected results of the respective to each Operational Objective action (s) is given in Table 52.

Table 52: List of proposed (initial) Performance Indicators for the assessment of the Operational Objectives

Operational Objective (OO)	Performance Indicators
OO3.1 / OO4.2. To undertake annual inspections to monitor the size, structure and function of Annex I habitats 3170* and 5330 and determine the favourable conservation status of habitat 5330 OO5.1. / OO8.1. / OO11.1. To monitor the range, assess and monitor the population size of the Annex II flora species *Anacamptis urvilleana*, *Elatine gussonei and Ophrys melitensis* and determine their favourable conservation status within the site OO14.1. To establish and implement a programme for the annual monitor of the range and population size of *Aphanius fasciatus* in the lagoon OO15.1. / OO16.1. To undertake seasonal surveillance of the species to determine and monitor trends in the range, population size and possible factors affecting the population of *Zamenis situla* within the site. OO17.1 / OO20.1 To monitor the use of this site by *Rhinolophus hipposideros* and *Myotis punicus* including population numbers, range, and roost composition. OO18.1 / OO21.1 To establish the context of the site and its importance in light of the national population of *Rhinolophus hipposideros* and *Myotis punicus* and their ecological requirements. OO19.1. / OO22.1. To identify and protect roosting habitats from inappropriate use / activities and consider options for providing new roosting habitats for *Rhinolophus hipposideros* and *Myotis punicus*. OO23.1. To monitor the range, population size and habitat suitability of prospected breeders *Ixobrychus minutus and Himantopus himantopus,* breeding and wintering wetland species, migratory wetland and woodland species and migratory raptors.	• Standard monitoring plans for habitats and species, valid for the next 20 years, have been finalised and tested in the field. • Reports assessing the conservation status of habitats and species under standard methodology, valid for 5 years, have been finalised • Favourable conservation Status for the appointed habitats and species, valid for the next 20 years, have been determined • Active conservation measures have been taken in favour of bats leading to an improvement of the species' conservation status within the site
OO14.2. To undertake regular water quality monitoring of the waters in the lagoon.	A standard water monitoring plan has been finalised and tested in the field.
OO1.1. / OO2.1. To plan and implement and monitor a plan for the enlargement of the Simar lagoon.	• A plan and technical specifications for the enlargement for Simar lagoon has been produced • Conclusive steps towards the implementation of the enlargement Plan have been taken or programmed for the next management period

Operational Objective (OO)	Performance Indicators
OO30.4. To ensure the removal of all trappings sites from within the bird sanctuary boundaries and restoration of the land.	Trapping devices have been eliminated allowing for the rehabilitation of Annex I habitats and the overall ecological and landscape upgrading of the site
OO4.1. To eradicate invasive species from Mizieb woodland.	• A national plan for the consistent eradication of IAS from the Natura 2000 sites has been produced • A significant area of Mizieb woodland has been cleared from IAS species and/or further interventions programmed for the next management period
OO25.1. To elaborate Action Plans for RDB species and apply the actions and the recommendations prescribed.	• National Species Action Plans, valid for at least 5 years have been produced • A number of concrete conservation actions emerging from the Action Plans have been implemented or else programmed for the next management period
OO29.1. To enforce compliance of compulsory CoGAP measures and promote the implementation of the voluntary ones..	• A system of recording cultivations under compliance has been established • 100% compliance has been reached and/or trends for the next management period are encouraging (positive)
OO29.2. To engage local farmers on nature conservation management. OO30.2. To lobby with users of the site (campers, hunters, ramblers, bird watchers, farmers, general public) for the better protection of the site.	Lobbying with local farmers, hunters and other stakeholders has been functional and has facilitated the implementation of certain actions and the overall site management.
OO27.1. To design, construct and install information / interpretation /warning signposting and produce promotion material about the SAC/SPA to complement that available for the wetland reserve. OO27.2. To promote the site's environmental importance locally and internationally including through publication of surveillance and monitoring information from the site.	A study introducing a brand system of signage and promotion of the Maltese Natura 2000 network has been produced
OO30.1 To patrol/warden the site according to an established roster throughout the year, with increased frequency during the hunting season, during weekends, public holidays and during planned activities.	A standard patrolling system covering the whole national N2k network has been established and functional Significant percentage decrease in illegal incidents has been recorded and/or trends for the next management period are encouraging (positive)

Table 53 should be used to record of any changes that are proposed to the under review Management Plan document.

Table 53: Table template for reported changes in Site Management Plan

Type of Recommended Change(s)	Details
Information (research needed)	
Management Objectives	
Operational Objectives	
Strategies	
Management Policy	
Management practices	
Resourcing – Staff	
Finances	

BIBLIOGRAPHY

BirdLife Malta – *Simar Wetland Reserves Work Plan 2011-2012*

BirdLife Malta (2010) *Mizieb Report*

BirdLife Malta (January – June 2011) *Final Management Effectiveness Report: Simar Wetland*

BirdLife Malta (July – December 2011) *Final Management Effectiveness Report: Simar Wetland*

Coleiro, C. and Casha, A (2004) *Is-Simar Special Area of Conservation: management Plan for Simar Wetland Reserve 2004/2008*

Gambin, T (2013) *Report on Maritime Archaeology for the proposed beach replenishment at Xemxija*

Kilin (2000) *A Hundred Wayside Chapels of Malta and Gozo*, Valletta: Heritage Books

Lang, D. M. (1960) *Soils of Malta and* Gozo, Colonial Office: Colonial Research Studies No. 29 [including accompanying Soils Map]

MEPA (1990) *Structure Plan for the Maltese Islands*

MEPA (2001) *Tourism Topic Paper*

MEPA (2002a) *Leisure and Recreation Topic Paper*

MEPA (2002b) *Coastal Strategy Topic Paper*

MEPA (2003) *Rural Strategy Topic Paper*

MEPA (2004) *Landscape Assessment Study of the Maltese Islands*

MEPA (2005) *State of the Environment Report 2005 – Background Report – Soils*

MEPA (2006) *North West Local Plan*

MEPA (2012) *Guidelines on Management Planning for Protected Areas in the Maltese Islands*

MEPA (2012) *Working hand in hand with Nature - Malta's National Biodiversity Strategy and Action Plan*

MRA (2005) *Introductory Document to the Article 5 Report under the Water Policy Framework Regulations, 2004 (Final Draft for Public Consultation*)

NSO (2011) *The Climate of Malta: statistics, trends and analysis 1951-2010*

Oil Exploration Directorate, Office of the Prime Minister – Malta (1955) *Geological Map of the Maltese Islands* (1993 revision)

Pedley, M., Hughes Clarke, M. and Galea, P. (2002) *Limestone Isles in a Crystal Sea: The Geology of the Maltese Islands*, San Gwann: PEG Ltd.

Sammut, S. (2005) *State of the Environment Report 2005 – Background Report – Soils*

Schembri, P.J. (1993) *'Physical Geography and Ecology of the Maltese Islands: A Brief Overview'* in Options Méditerranéennes, Sér. B / n°7

Sultana, J., Borg, J. J., Gauci, C., Falzon, V. 2011. *The Breeding Birds of Malta*. Birdlife Malta, Malta

Terracore (2013) *Environmental Impact Assessment for the Proposed Xemxija Bay Beach Replenishment Project: Geo-Environmental Baseline Study*

UNEP/MAP (2003) *MAP CAMP Project "Malta": Final Integrated Project Document and Selected Thematic Documents – Volume II*

Vella, S.J. (n/a) *Soil Survey and Soil Mapping in the Maltese Islands: the 2003 Position*, European Soil Bureau – Research Report No. 9

Zammit-Mangion, M. 2009. *Action Plan for Aphanius fasciatus at the Għadira Nature Reserve and the Simar Bird Sanctuary*.