

# Feasibility Study on the development of a regional water observation mechanism in the Mediterranean region

## Country Report MALTA

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MEDA Water



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## Abbreviations and Acronyms

<b>ACCOBAMS</b>	Agreement for the Conservation of Cretaceans in the Mediterranean, Black sea and their Contiguous Zone
<b>BICC</b>	Building Industry Consultative Council
<b>CIRCA</b>	Communication and Information Research Centre Administration
<b>CITES</b>	Convention on International Trade on Endangered Species of Wild Flora and Fauna
<b>DWD</b>	EU Drinking Water Directive
<b>EEA</b>	European Environmental Agency
<b>EHU</b>	Environmental Health Unit – Health Department
<b>ESDS</b>	Economical and Social Data Services
<b>ESS</b>	European Statistical System
<b>ESSD</b>	European Strategy for Sustainable development
<b>EUROBATS</b>	Agreement for the Conservation of European Bats
<b>EUROMED</b>	Euro-Mediterranean Partnership – Barcelona Convention
<b>EU</b>	European Union
<b>FAO</b>	Food and Agricultural Organisation
<b>FCCD</b>	Fisheries Conservation and Control Division
<b>GIS</b>	Geographical Information System
<b>Lm</b>	Maltese Lira
<b>ICOD</b>	Euro-Mediterranean Centre on Insular Coastal Dynamics
<b>IWRM</b>	Integrated Water Resource Management
<b>IWMS</b>	Integrated Water Management System
<b>MCSD</b>	Mediterranean Commission on Sustainable Development
<b>MCFS</b>	Malta Centre for Fisheries Science
<b>MEDPOL</b>	The Programme for the Assessment and Control of Marine Pollution in the Mediterranean region
<b>MEPA</b>	Malta Environment and Planning Authority
<b>MFSS</b>	Ministry for family and Social Solidarity
<b>MHEC</b>	Ministry of health, Elderly and Community Care
<b>MIIT</b>	Ministry for Innovation and Information Technology
<b>MRA</b>	Malta Resources Authority
<b>MRAE</b>	Ministry for Rural Affairs and the Environment
<b>MRI</b>	Ministry for Resources and Infrastructure
<b>MSSD</b>	Mediterranean Strategy for Sustainable Development
<b>MTA</b>	Malta Tourism Authority
<b>NGO</b>	Non Governmental Organisations

<b>NSO</b>	National Office of Statistics
<b>NWIS</b>	National Water Information System
<b>OSCE</b>	Organisation for security and co-operation in Europe
<b>O&amp;M</b>	Operation and Maintenance
<b>PDG</b>	Planning Design Guidance
<b>RACs</b>	Regional Activity Centres
<b>RES</b>	Renewable Energy Sources
<b>RO</b>	Reverse Osmosis Desalination
<b>RWH</b>	Rainwater Harvesting
<b>SEA</b>	Strategic Environmental Assessment
<b>SPSS</b>	Statistical Package for Social Scientists
<b>WFD</b>	EU Water Framework Directive
<b>WHO</b>	World Health Organisation
<b>WSC</b>	Water Services Corporation
<b>WRM</b>	Water resource management
<b>UN</b>	United Nations
<b>UNCSD</b>	UN Commission for Sustainable Development
<b>UNEP</b>	United Nations Environmental Programme
<b>UNGA</b>	United Nations General Assembly

## **Feasibility Study on the development of a regional water observation mechanism in the Mediterranean region**

### **Executive summary**

The fulcrum of this report is data management at both a national and regional level, focussing on the current needs and expectations of the Maltese stakeholders that either collect water data or any data related to water resources; or rely on its provision from other stakeholders. Thus the aim of this study is to expose the existing potential, within a national context, of the possible functionalities, needs and expectations of these different stakeholders in order to develop a Mediterranean Water Observation mechanism.

In order for this potential to be fully described the report follows three steps: First it gives a general synopsis of the current management of water resources in the Maltese Islands by means of the depiction of the present institutional structure. In so doing it critically assesses the current situation of stakeholder relationships when it comes to actual data sharing and management in Malta. This permits the execution of the second objective of this report, to fully determine the existing capacity within different stakeholders to manage and process data effectively and coherently; as well as highlight any strength and difficulties that might need to be surpassed in order for a Mediterranean Water Observation Mechanism to be established.

This study was carried out by means of primary and secondary data gathering. All primary data was collected by means of in-depth interviews with different authorities or agencies identified as being main stakeholders in water data or data related to water management. Secondary information came from a desktop analysis of the various national internet sites together with an analysis of the existing European or International information systems used for water resource management, to which Malta is signatory to.

At face value most of the stakeholders interviewed acknowledged the need for a centralised water observation mechanism in the Mediterranean region but on further questioning it was revealed that priority should be given to developing a strong national central database that does not solely focus on water or water-related data but be all encompassing in its outlook towards other issues of environmental concern such as land use, planning issues, energy concerns, waste management, agriculture, health issues, etc. Moreover, it was argued that such a national database system would provide the only strong take off point for further encouraging a water observation mechanism at the regional scale. In as much it was again pointed out that this regional database should again not only focus on water issues but be linked with other existing environmental databases in the Mediterranean.

Consistent and reliable data management is still in its embryonic stage in the Maltese Islands. Malta's accession to the European Union has meant that major developments have taken place in the field of data collection, validation, and storage. The Aarhus Convention has encouraged different stakeholders to take data management one step forward, to make data readily accessible to the public. However capacity building in this field is needed if Malta wishes to contribute towards a regional database mechanism without putting unnecessary added pressure on the already limited human resource pool existent in so many stakeholder agencies.

## Foreward

The Water Directors of the Euro-Mediterranean region agreed, during their last conference in Rome in November 2005, upon *'Studies, with interested countries, the objectives and the feasibility of building up within EMWIS a regional water observation mechanism to monitor the achievements of the Millennium Development Goals related to water and sanitation in the Mediterranean, as well as the implementation of the water related section of the Mediterranean Strategy of Sustainable Development, based on the information provided by the National Water Information Systems, whenever they exist'*.

National and regional mechanisms such as these would facilitate the establishment and enhancement of a global mechanism that would enable the improvement of data collection and the comparison of information.

The first phase of this feasibility study aims at defining the key orientations of the water observation mechanism, on the basis of diagnostic studies on the needs and expectations of different stakeholders. It is also based on the analysis of existing systems for the processing of data including amongst others data collection, information production, data mining and ease of public access. Thus three pilot countries have been selected for this phase: Cyprus, Malta, Morocco and this report tackles the case for Malta.

This report is divided into three parts:

### **Section 1:** Chapters 1 and 2-Introduction and Methodology

- An overview of water management in the Maltese Islands by focusing on existent legislative, administrative and institutional structures.
- An update of the country profile of Malta that was prepared for the Johannesburg Summit in 2002
- The methodology applied in order to carry out this study.

### **Section 2:** Chapters 3 and 4-Current data processing mechanisms and needs and expectations of individual stakeholders for the development of a Mediterranean regional water observation mechanism.

- An assessment of the various stakeholders related to integrated water resource management and who contribute towards the availability of water data or water-related data.
- An analysis of existing processes for the production of data, its validation, updating and final dissemination.
- A look at the existing National Water Information System for Malta, its achievements and requirements
- An analysis of the stakeholders' needs and expectations for the establishment of a Mediterranean Regional mechanism.

### **Section 3:** Recommendations and Conclusions for the development of a Mediterranean regional water observation mechanism.

## Chapter 1

### Introduction

#### 1.1 The management of water resources in the Maltese Islands

The legal, administrative and institutional set up influences the way water data is managed in the Maltese Islands. Prior to European Union (EU) accession the requirement of Malta to be in line with the *aquis* meant that data had to be collected, validated and disseminated in an effective manner. This meant that Malta's accession to the EU sparked a national movement towards the collection of data across environmental, social and economic spheres in the Islands in order to fulfill new legal requirements and cross-sectoral demands. Moreover, the promotion of sustainable development at the European and Mediterranean level through the European Sustainable Development strategy (ESSD) and Mediterranean Sustainable strategy, (MSSD); together with the encouragement of integrated resource management, have also driven the need for the collection of all sorts of data that are related in some way to water resources management.

##### 1.1.1 Legal structure for the management of Water resources

The Maltese Islands have no national water law per se. While the Civil Code includes a clause dealing with entitlements to water from springs, it is the Malta Resources Authority (MRA) Act that sets out the regulatory arrangements for water resources. The MRA is mandated under Article 2 of its founding legislation to “*secure and regulate the acquisition, production, storage, distribution or other disposal of water for domestic, commercial, industrial or other purposes*”. In as much the MRA has the duty to ensure the proper and sustainable use of all water resources in the Maltese Islands, while respecting hydro-environmental and socio-economic constraints.

In the field of water management the main legislative instruments include:

- (i) L.N. 194 of 2004, Water Policy Framework Regulations, 2004 establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater and transpose the provisions of EU Directive 2000/60/EC
- (ii) L. N. 203 of 2002 Regulations for the protection of groundwater against pollution caused by certain dangerous substances gives effect to the Groundwater Directive, 80/68/EEC
- (iii) LN 343 of 2001 Protection of waters from pollution caused by Nitrates from Agricultural Sources Regulations seeks to reduce or prevent the pollution of water caused by the application and storage of inorganic fertilizer and manure on agricultural land and gives effect to The Nitrates Directive 91/676/EEC.
- (iv) LN 340 of 2001 The Urban Waste Water Treatment Regulations impose requirements in relation to discharges from urban waste water treatment facilities and give effect to Directive the Urban Waste Water Directive (91/271/EC) and the Water Framework Directive ( 2000/60/EC)
- (v) LN 23 of 2004 Quality of Water intended for human consumption Regulations gives effect to the Drinking Water Quality Directive (98/83/EC)
- (vi) LN 238 of 2006 ‘*Minimum requirements on the Energy Performance of building Regulations*’ is recently enacted legislation that establishes guidelines for the construction of rainwater harvesting cisterns in buildings.

When it comes to the actual dissemination of water data to the public the Aarhus Convention has to be considered. Many authorities are now taking this under their wing and working on means of implementing it.

### 1.1.2 Administrative and Institutional structure of water management in the islands

The administrative and institutional set up for water management has also determined the production process of water data and any other water-related data on the islands, several different modes of communication and memorandum of understandings to provide data between various authorities has been established. A pictorial representation of all stakeholders that manage water data together with the water utility and end-users is depicted in Figure 1.1.

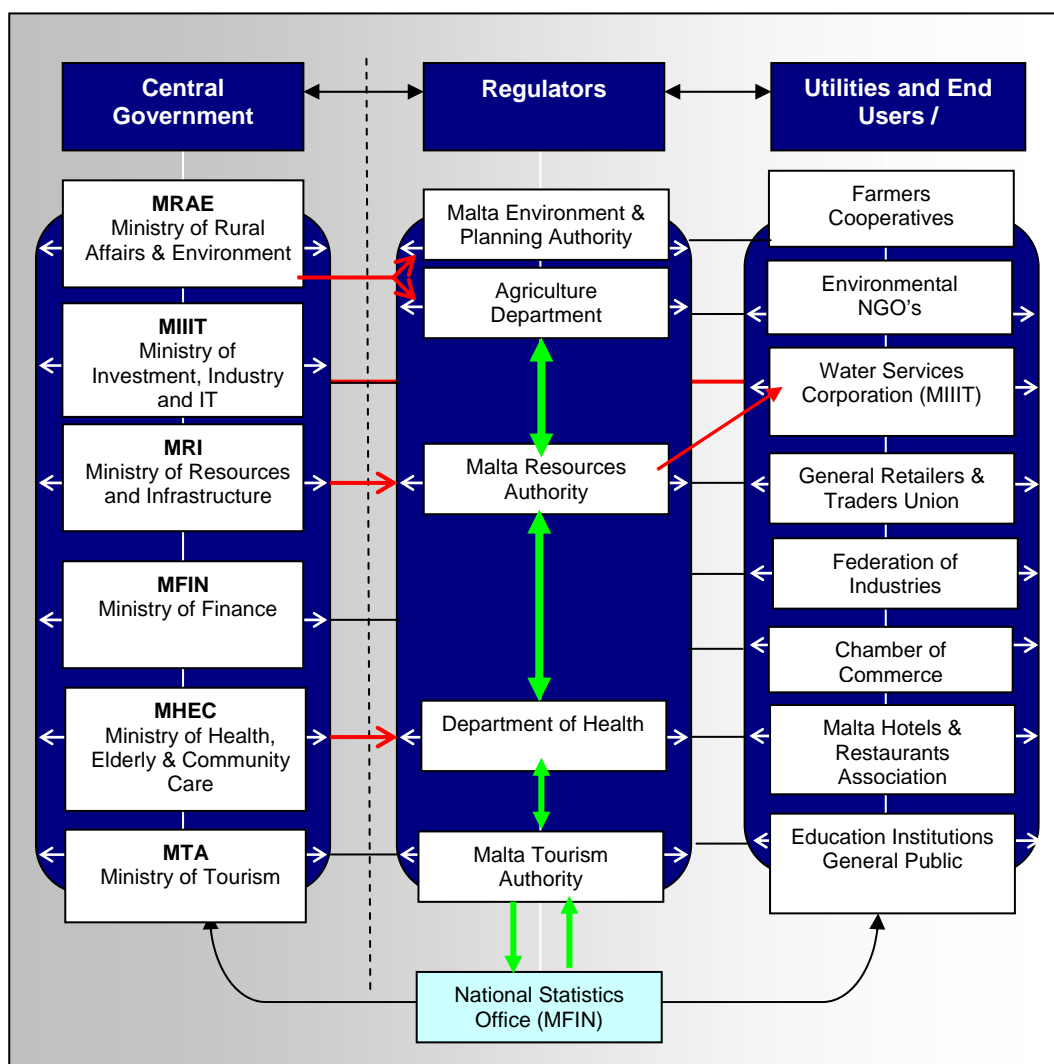


Figure 1.1: The Institutional structure of data management in the Maltese Islands

Most institutions rely heavily on data that is provided by the National Statistics Office (NSO). The NSO is responsible for the collection, compilation, analysis and publication of a wide range of statistical information for parliament, government and community needs. This does not prevent other government departments or institutions from collecting their own statistical data for internal purposes. All information supplied to the National Statistics Office is treated as strictly confidential



and the information is used solely in the compilation of statistical reports that are published on a regular basis. However as the need for more specialised and complex data is required authorities are finding it exceedingly difficult to rely on the data that this agency offers.

That is why a degree of internal and cross-agency dissemination of water data occurs and thus it can be said that data collection and dissemination occurs on three levels; firstly through the NSO and Central government ministries; secondly through data compiled by the various authorities under their separate ministerial umbrella. These then exchange information across ministries. Thirdly end users support regulatory authorities by providing them with occasional data that is carried out by each respective authority in the form of interviews, questionnaires and annual reports. Further detail regarding the type of data produced and production processes involved at each level is given in Chapter 3.

## **1.2 An Update of the Johannesburg Summit 2002 Country Profile for Malta**

In 2002, Malta played an active role at the World Summit on Sustainable Development (WSSD) held in September in Johannesburg. An update of the chapters 2, 17, 18 and 40 follows.

### **1.2.1 International Cooperation to accelerate sustainable development in developing countries and related domestic policies**

#### **Decision-Making:**

Malta's foreign policy recognises the need for participation in international sustainable development affairs to strengthen relations with other countries regionally and globally. Several legal obligations emerge from multilateral legal agreements and also from membership of international organisations to which Malta is party. Malta has actively participated in a number of international organisations and is committed towards the ideals of the UN and its specialised agencies. These include UNGA, UNCSD, UNEP. Under the auspices of the UN Malta is also party to the ECE and the Mediterranean Action Plan (MAP). The former is essential in particular for the Aarhus Convention on Access to Information and Access to Justice in Environmental Matters. This Convention obliges State Parties to give the public right of access to environmental information, the right to participate in the decision making process and the right to access to justice in environmental matters.

The latter has sparked a series of regional cooperation especially through its focal points: the Mediterranean Commission on Sustainable Development (MCSD), the Programme for the Assessment and Control of Marine Pollution in the Mediterranean region (MEDPOL) and the 6 Regional Action Centres (RACs) scattered around the Mediterranean. Other International organisations which Malta is party to include the Commonwealth, the OSCE (Organisation for Security and C-operation in Europe), the Council of Europe, the International Maritime Organisation (IMO), the World Intellectual Property organisation (WIPO) and the International Telecommunications Union (ITU).

Various multilateral agreements have been established to foster sustainable development in various fields in the Maltese Islands. The conservation of biodiversity

has most prominently been highlighted through the numerous conventions and agreements Malta plays party too. These include CITES, the International Plant Protection Control, the RAMSAR, the Convention on the Management of straddling fish Stocks and Highly Migratory fish, the Bonn Convention on the Conservation of Migratory Species of Wild Animals and the UN convention on Biological Diversity. International cooperation to accelerate sustainable development particularly in the field of environmental management has also become significant with Malta's accession to the European Union in 2004. Biodiversity EU related agreements include the Convention on the Conservation of European wildlife and Natural Habitats, EUROBATS, and ACCOBAMS.

**Programmes and Projects:**

There are several ongoing projects related to sustainability impact assessment, spatial planning, coastal management, environmental legislation, Marine (MEDPAN), nature Protection, Waste, Pollution, urban regeneration and Agriculture and the environment. A full list of programmes and projects that have been completed, are currently active or are at the proposal stage are included in Appendix 3.

**Status:** on-going

**Capacity-Building, education, training and awareness raising:**

Several capacity building programmes have been initiated. These include capacity building to introduce the polluters pays principle through economic instruments to implement the EU Environment Acquis; Improving regulatory effort and compliance with EU environmental directives, Institution building in the Environmental Sector which aims at strengthening the Maltese administration to enable it to fully comply with the requirements of the EU Acquis.

**Information:** Information on foreign aid and domestic aid can be accessed on the MFA website <http://www2.mfa.gov.mt/pages/default.asp> and sustainability issues involving both EU and international affairs related to the environment can be viewed on the MEPA website at:

[http://www.mepa.org.mt/index.htm?eu\\_int\\_affairs/eu\\_affairs/mainpage.htm&1](http://www.mepa.org.mt/index.htm?eu_int_affairs/eu_affairs/mainpage.htm&1)

**Research and Technologies:**

**Financing:**

Most projects are funded through EU funds provided through INTERREG, LIFE, TAIEX, DG Environment Grants, EU delegation grants, the European Environmental Agency, UNEP, Structural and Cohesion funds, the Transitional facility programme for Malta, the FP5 and FP6 framework Programmes, the Leonardo da Vinci programmes and also some funds from individual international Universities.

**Cooperation:** (see section Decision Making)

### **1.2.2 Protection of the Oceans, all kinds of seas, including enclosed and semi-enclosed seas, and coastal areas and the protection, rational use and development of their living resources**

#### **Decision-Making:**

There are two competent authorities for the protection of Oceans, Seas and coastal areas. These are the Malta Maritime Authority and the MEPA. The former authority is responsible for ensuring that no pollution is induced from maritime activities. The latter authority together with the Fisheries Conservation and Control Division (FCCD) is also responsible for the protection and rational use and development of their living resources. Like MEPA, the FCCD is an official branch of the MRAE and its main goal is to implement sound fisheries management and to ensure the sustainability of living marine resources. Highest priority is given to the management of the unique Maltese 25-mile Fisheries Management Zone to ensure effective conservation of local and sub-regional fisheries resources. Within the FCD the Malta Centre for Fisheries Science (MCFS) is responsible for scientific monitoring and research related to capture and culture fisheries.

#### **Programmes and Projects:**

##### ***Projects implemented by the Fisheries Division***

In January 2005, MCFS initiated an annual fisheries scientific data collection programme in line with EU regulations EC1639/2001 and EC1581/2004. The MCFS is also a key partner in an EU project dealing with the reproduction of and feasibility for domestication of *Thunnus thynnus*.

##### ***Projects implemented by MEPA***

MEPA has been engaged in a number of projects, some of which have been funded by the European Union. In 2000-2002 Malta participated in the Mediterranean Action Plan for a Coastal Area Management program (MAP/CAMP). The programme focused on coastal area management in the North of Malta and intense public consultation programmes were activated. The farming community was involved in the decision making process of the definition of this programme. The CAMP Project ended in 2002.

In 2000-2004 MEPA participated in the EUROSION project aimed at providing the EC with a package of recommendations for policy making and information management practices to address coastal erosion in Europe. The study looked in particular at the Xemxija-Ghajj Tuffieha area, also in the North of Malta.

The DEDUCE programme aimed at developing sustainability indicators for the European coastal zone in line with the EU ICZM recommendation and promote interregional co-operation between regional and other public authorities across the entire EU territory and neighbouring countries. One of the main outcomes of the DEDUCE project is the establishment of a network of excellence in coastal management and the use of Geographic Information Systems (GIS). The DEDUCE Network is based on the application of the EU Recommendation on Integrated Coastal Zone Management (ICZM) adopted by the European Council and Parliament in 2002. The key objective is to enhance the visibility of coastal information to enable

optimum decision-making. A set of 27 sustainability indicators related to ICZM have been calculated. The partners are in the process of developing a methodological framework to calculate these indicators. They will identify their application at different levels of decision-making: from the European level to the national level and down to the local level. This involves the collection of necessary coastal data, its analysis using Geographic Information Systems and preparation of fact sheets for each indicator.

### ***LIFE Project NTM***

The "Setting up the first coastal nature reserve in Malta - Dwejra" project is financed from LIFE (third countries) Community Programme. This programme supports technical assistance activities for promoting sustainable development and environmental improvement.

This project, which is led by Nature Trust Malta, aims to create the first coastal nature reserve in the Maltese Islands. Dwejra is considered to be a unique area due to its ecological, geomorphologic, palaeontological and archeological features.

### ***Monitoring and Conservation of Shearwaters and Petrels in the Maltese Islands (GARNIJA-MALTIJA)***

The project "Monitoring and Conservation of Shearwaters and Petrels in the Maltese Islands (GARNIJA-MALTIJA)" aims to conserve natural habitats and the wild fauna and flora of European Union interest, according to the Birds and Habitats directives, thus supporting implementation of the European Union's nature conservation policy and the Natura 2000 Network.

Over the last 25 years Malta has seen a decline in the *Puffinus yelkouan*, a species of strategic importance at the European level, in Malta. This was caused by premature mortality, loss of breeding habitat, and human disturbance at nesting sites. This project intends to reverse this decline and increase the *Puffinus yelkouan* population at Rdum tal-Madonna. BirdLife Malta are leading this project in partnership with two other conservation NGO's and four Government Authorities.

#### **Status:**

The DEDUCE project will end in June 2007. By June MEPA will provide an overview of the usefulness of the list of sustainability indicators as developed within the context of the EU ICZM Expert Group, for the Maltese context. The overall project results should be launched soon on the MEPA website.

#### **Capacity-Building, education, training and awareness raising:**

The MCFS provides formal courses and training at technical and scientific levels. The Higher National diploma Course in Fisheries Science, for instance is one such course. This is a multi-disciplinary 2 year course including training in stock assessment, fisheries management, socio-economics, fisheries oceanography, fisheries statistics, law and policy, seamanship and fisheries biology. It is run by the MCFS in collaboration with the University of Plymouth and certified by Edexcel Foundation (UK) and is open to all Mediterranean Countries. These however are not continuous. Occasionally, courses for fishers and other persons involved in the fishing industry are also conducted.

**Information:** Information is accessible through the main competent authorities' websites: [www.mepa.org.mt](http://www.mepa.org.mt), the FCCD ([www.maltafisheries.gov.mt/main.htm](http://www.maltafisheries.gov.mt/main.htm)) and the MMA (<http://www.mma.gov.mt/>).

**Research and Technologies:**

*Research carried out by the FCCD*

Since 1998, MCFS has participated actively in various international scientific projects, including COPEMED<sup>1</sup>, since 1998 and MEDSUDMED<sup>2</sup>, since 2002. Both are FAO Mediterranean sub-regional projects, which have helped Malta prepare for future demanding challenges in managing marine resources in a responsible manner and using an ecosystem approach. MCFS also participates in various scientific activities of subsidiary bodies of the General Fisheries Commission for the Mediterranean, and the International Commission for the Conservation of Atlantic Tunas.

**Financing:**

The FCCD has had access to funds available from the EU through the Financial Instrument for Fisheries Guidance (FIG), research programmes and data collection programmes. The MEPA programmes have had funding assistance from LIFE, Interreg, and have self funded projects to aid NGOs out.

Other funding programmes for both entities include the FP 7, Competitiveness and Innovation Framework Programme (CIP), Integrated Action Programme in Lifelong Learning , European Regional Development Fund (ERDF), European Social Fund (ESF), European Agricultural Fund for Rural Development (EAFRD), European Fisheries Fund (EFF), Cohesion Fund.

**Cooperation:** (see Projects and Financing)

**1.2.3 Protection of the quality and supply of freshwater resources:  
Application of integrated approaches to the development, management and use of water resource**

**Decision-Making:**

Over the past few years a number of activities have been taken up, with the aim of introducing Integrated Water Resource Management into different economic sectors. The most important step towards the promotion of Integrated Water Resource Management at the National scale has been a move towards the creation of a national water policy. MRA has launched for public consultation, policy proposals which recognize the importance of groundwater and surface waters in the specific insular context of Malta. The proposals aim to promote the sustainable management of water resources in the light of environmental factors that influence the status of the aquifers and the local socio-economic factors that impact directly on the well-being of

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<sup>1</sup> COPEMED was initiated in 1996 to strengthen scientific collaboration among Western and Central Mediterranean countries involved in the management of fisheries in this area. Morocco, Algeria , Tunisia , Libya, Malta, Italy, France and Spain have adhered to the project. The main objective of the project is to widen scientific knowledge and regional cooperation for the sustainable management of the Mediterranean fisheries.

<sup>2</sup> MEDSUDMED is the assessment and monitoring of fishing resources and ecosystems in the Straits of Sicily

the Maltese community. In this context, therefore, several strategic measures are proposed with the aim of:

- achieving 'good' quantitative and qualitative status of groundwater bodies by controlling abstractions and reducing the pollution threats arising from point or diffuse sources.
- improving water-efficiency.
- ensuring equitable allocation of the resource to different stakeholders.

The value of public health and the right to an equitable and sustainable access to water services are deemed to be the founding principles of the future policy strategies. Concurrently, economic development should not be constrained by lack of water service, whilst environmental systems including groundwater, and surface waters should be adequately protected. As water is considered to be both an economic and a social good emphasis is made to the polluter pays principle meaning that "users" must pay for the water they use whilst "polluters" pay for the damage they cause. Statutory and legal instruments are required to support the policy and empower the institutions with sufficient enforcement capability to ensure an effective application of management measures. Regulations have been drafted for this purpose and are being currently vetted by legal experts.

New Legislation (LN 238 of 2006 '*Minimum requirements on the Energy Performance of building Regulations*') requiring the construction of domestic cisterns with all new developments has recently been enacted, and guidelines have been issued by the Development Regulator on the sizing of such structures. Also, a campaign for the rehabilitation of water storing infrastructure in the major valley lines in the island has been initiated by government.

### **Programmes and Projects:**

#### ***Water demand management through the reduction of leakages***

The net water demand of the sector has been relatively stable in recent years. This since effects due to the increasing consumption have been dampened with an intensive leakage reduction programme carried out by the WSC. It has been estimated that leakage has been reduced over the whole distribution system from 2,692m<sup>3</sup>/hour in 1995 to about 900m<sup>3</sup>/hour by July 2004. The unavoidable annual loss of the distribution system is estimated to be 300m<sup>3</sup>/hour, and the WSC plans to reach this target by 2010. Other programmes initiated by the WSC, sought to tackle the issue of unaccounted for water through the replacement of old and relatively inefficient water meters and a clampdown on water theft.

#### ***On-going studies on the use of Treated Sewage Effluent in different economic sectors***

It is planned that all the wastewater generated in the island will be treated prior to disposal by end-2008. This will entail the commissioning of three new wastewater treatment plants, located in the vicinity of the current outfalls. These plants will be producing an annual volume of 20hm<sup>3</sup> of treated effluent, which can be used in lieu of other water sources such as groundwater, in particular by the agricultural and the industrial sector. Options for the re-use of the treated effluent are also being investigated.



### ***Projects initiated in 2006-2007***

PRODIM is a transnational co-operation project financed under the EU Programme – Interreg III B Archimed. The overall objective of the PRODIM project is to develop a comprehensive pro-active management plan to combat drought and water scarcity in drought-prone areas of the Mediterranean region with particular reference to the islands and coastal areas.

WATER-MAP is a transnational co-operation project financed under the EU Programme – Interreg III B Archimed. The overall objective of the WATER-MAP project is the application of the DRASTIC method in the Archimed area in order to produce vulnerability maps related to groundwater pollution, and the utilisation of these maps in a spatial model for the monitoring and management of groundwater resources.

INWATERMAN is a project financed under the EU Programme – Interreg III A-cooperation between Italy and Malta 2004-2006. The overall objective of the INWATERMAN project is the sustainable management of conventional and non-conventional water resources in arid and semi-arid insular settings.

In the context of the implementation of the European Union (EU) Water Framework Directive (WFD), the Malta Resources Authority (MRA) has launched a project for the development of the programme of measures in the Maltese Water Catchment District. The project focuses on groundwater resources and water supply and aims at identifying the most cost-effective option for restoring the status of groundwater resources in line with the requirements of the WFD.

**Status:** All of the above projects are ongoing. The INWATERMAN project is nearing completion whilst the WFD POM will be completed in June 2007.

**Capacity-Building, education, training and awareness raising:** Capacity-building is limited in the field of freshwater resources although university courses do offer individual modules in water resources management. These however are of short duration. Indirect capacity-building within authorities is often prompted through projects or programmes which tackle various issues in freshwater management. The

**Information:** Various documents regarding freshwater can be found on four main websites. Groundwater data and information is downloadable from the MRA website [www.mra.org.mt](http://www.mra.org.mt), surface water data and related ecosystems can be found on the MEPA website [www.mepa.org.mt](http://www.mepa.org.mt). Information related to water production and wastewater can be found on the WSC website ([www.wsc.com.mt](http://www.wsc.com.mt)) under the annual report section. The Health Department website has information on registered private water supplies and related health issues (<http://www.health.gov.mt/dph/ehuhome.htm>)

### **Research and Technologies:**

Technologies currently being employed in the management and use of water resources consist of the following:

Reverse Osmosis technology – the upgrading of facilities with new membranes and energy recovery devices to improve the unit cost of desalinated product. Technology advancements include the installation of modern energy recovery technology in the desalination plants in Malta. This led to reduction in the specific energy consumption from 4.5kWh/m<sup>3</sup> to 3.6kWh/m<sup>3</sup> through installation pelton wheels on 6 trains employing reverse running pumps at Pembroke Phase II, and the reduction in

the specific energy consumption from 4.8 kWh/m<sup>3</sup> to 3.2 kWh/m<sup>3</sup> through pressure exchangers at Lapsi R.O. Plant.

The WSC also has plans for installation of additional pressure exchangers and new membranes at its RO plants to increase the production capacity of RO plants, improve the quality of the desalinated water, decrease the energy consumption in the RO plants as well as decrease the reliance on groundwater for potable water supply. This project is expected to increase the production capacity from 70,000 m<sup>3</sup>/day to 97,000 m<sup>3</sup>/day, the chloride levels reduced from 250 mg/l to 150 mg/l while the specific power reduced from 5.5 kWh/m<sup>3</sup> to 4.4 kWh/m<sup>3</sup>, leading to an annual electricity savings of approximately 13 million kWh.

1. Water Catchment technologies include the cleaning of dams and the maintenance of reservoirs
2. Leakage detection technologies are being employed by means of increasing investment in 'smart' devices to control pressure and flow through the network. Moreover there is an intensification of leakage detection programmes by WSC accompanied with meter replacements.
3. Sewage treatment technologies involve the construction of two waste water facilities, one on Malta and the other in Gozo. These are to be completed by the end of 2007. The third facility and the largest one, is located at Ta' Barkat, South west Malta. It is currently in its planning application stage.

**Financing:** see section Programmes and Projects

**Cooperation:** Cooperation is usually based on a European level and also a regional level

#### 1.2.4 Information for Decision-Making

**Decision-Making:** Despite the fact that the National Statistics Office (NSO) remain a main data provider to major stakeholders and the Government in Malta, the increase of cross-sectoral collaboration and data sharing has certainly amplified ever since Malta acceded to the European Union. The facilitation of all this has been the upgrading of websites and the Governments successful implementation of e-government which permits a considerable amount of data to permeate across all levels of society.

The NSO, however remain an important organization with regards data provision to stakeholders and now issues a range of news releases that relate to issues in all the three pillars of sustainability – Economic, Social and Environmental. Apart from news releases, several different in depth studies within certain sectors are also published through the carrying out of extensive censuses. In 2005 the last demographic census was carried out, but this similar census such as ones on agricultural, education and housing have also become major publications that are central to decision making. With accession to the EU the NSO have now moulded their statistics collection and representation according to the indicators established by EuroStat. This has enabled the homogenization of data at European level and even international level.

The main legal notices that govern over data management and acquisition at national level are the Data Protection act and Aarhus convention. Other directives such as the Transparency Directive at EU level is also currently being transposed into Maltese



Law. The interception of the Aarhus convention has led to a major breakthrough when it comes to public availability of information. This is true both at national and agency level with several publications now being distributed throughout the year. Public dissemination seminars have also increased and project initiatives within state authorities are often open to public invitation for consultation on main findings or experiences.

**Programmes and Projects:** With an ongoing improvement in an already strong e-government, most information is made accessible via the internet. Local Councils also offer the service of free internet access to residents and several internet booths have been set up in central public spaces around the towns and villages. Newspaper and media coverage of on-going programmes and events has also improved substantially. In the environmental field all EIAs are now made accessible via the internet and public consultation meetings are advertised in the local media and organised. GIS usage is also being gradually taken up by major authorities. The MEPA GIS system incorporates both planning and environmental data at very localised level and is accessible for public use on the internet.

**Status:** There has been a radical change in the amount of national publications that are easily-accessible via the internet. Most agencies and authorities now enable the downloading of major reports on their respective websites. The State of the Environment Report remains a key national document since it tackles all environmental issues and is compiled from data that is obtained from nation wide public and private entities.

**Capacity-Building, education, training and awareness raising:**

The dependency on information technology as a means of disseminating information has been backed up with a national plan to enhance IT knowledge and instigate capacity-building in the younger generations. The MIIIT has also embarked on an IT mission to improve IT use at the domestic and school level. IT giant MICROSOFT it has offered Windows XP packages at extremely reduced prices for school children, university students, teachers and lecturers.

**Information:** Most information is accessible on the NSO website [www.nso.gov.mt](http://www.nso.gov.mt). Downloadable information includes news releases, censuses, surveys and reports which cover a wide range of topics. Links to the Eurostat website, its RAMON metadata structure and also access to an internal database are available to subscribers. Information on research and technologies can be found on the MIIIT website <http://www.miti.gov.mt/site/page.aspx>.

E-Government facilities and related information is accessible on the following webpage: <http://www.gov.mt/egovernment.asp?p=116&l=2>

**Research and Technologies:** A major shift towards IT training has been experienced in the last few years with the encouragement of students to take up IT studies at University and private institutes, The 'My potential' scheme was introduced just a year ago to help fund students who wished to take up IT.

**Financing:** funding is available through the MIIIT for some projects related to information exchange by means of IT.

**Cooperation:** MICROSOFT co, Eurostat

## Chapter 2

### Methodology

#### 2.1 Identification of stakeholders

A group of water professionals and major stakeholders were identified using the stakeholder map represented in figure 1.1 above, and in-depth interviews were administered accordingly. Table 2.1 indicates the persons contacted at each respective agency. The main aim of this exercise was to expose not only the prevailing view of professionals on their needs and expectations of the setting up of a regional water observation mechanism in the Mediterranean, but elicit their perceived problems regarding data management at the national level and how these could be surpassed in order to ensure the setting up of such an observation mechanism.

The study was carried out during March and April 2007. Interviews were mainly carried out at the different authorities and at times via email or telephone. Initially an email was sent out to the identified stakeholders notifying them of the study (Appendix 1).

Type of organisation	Name of Organisation	Contact Person	Location
National	<b>Malta Environment and Planning Authority</b> Environmental Directorate	Ms. Sarah Debono (ecology) Ms. Ramona Delia (Integrated Pollution Prevention and Control)	Floriana Kordin
National	Planning Directorate	Ms. Marguerite Camilleri Ms. Monique Hili Mr. Savior Formosa	Floriana
National	Rural Development Plan Division	Ms. Sonya Sammut Mr Tony Meli	Ghammieri
National	Agricultural Department	Mr. Anthony Mifsud	Ghammieri
National	<b>Malta Resources Authority</b> Water Directorate	Dr. John Mangion Mr. Manuel Sapiano Ms. Carmen Delia	Marsa
National	Energy Directorate	Eng. Godwin Sant	Marsa
National	EU affairs	Mr George Cassar Ms. Miriam Micallef Sultana	Marsa

Type of organisation	Name of Organisation	Contact Person	Location
National	<b>National Statistics Office</b>	Mr. George Said Mr. Jeffrey Galea	Valletta
National	<b>Health Department</b>	Mr. Charles Bonnici	Zabbar
National	<b>Malta Tourism Authority</b>	Ms. Marie Louise Mangion	Valletta
Utility	<b>Water Services Corporation</b>	Mr. Paul Micallef Ms. Paula Bonnici	Luqa
Cooperative	<b>Farmers Cooperative</b>	Mr. Godfrey Camilleri	
University	<b>University of Malta</b> Physics Division Biology Division Geography Division Agricultural Institute	Prof. Mallia Dr. Alan Deidun Dr. John Schembri Mr. Avertano Role	Tal-Qroqq Msida
NGO	<b>Non Governmental Organisations</b> <b>Nature Trust (Malta)</b>	Mr. Vince Attard Ms. Annalise Farrugia	Tal-Qroqq Msida
Private Consultants	<b>Sustech Consulting</b>	Eng. Marco Cremona	Sta. Venera
Environmental Journalists/ Reporters	<b>Main environmental journalists on the Island</b>	Ms. Anne Zammit Dr. Alan Deidun	

Table 2.1: List of stakeholders consulted

Elaboration on personal experience in the field of data management was also invited since this enabled further understanding of any perceived constraints. The interviews were crucial in unveiling the existing state of relations between different key players in the water sector. A cooperative rapport between professionals and authorities is a sign of an enabling environment through which a national water information system could be successfully endorsed and thus lead to the setting up of a regional one. Thus, what level of rapport actually existed had to be observed.

## Chapter 3

### Analysis of the information production process

#### 3.1 Assessment of the organisations managing water data at the national level

This section gives an overview of the type of water data generated by each of the main stakeholder organisations when it comes to providing and managing water or water-related data in the Maltese Islands. The assessment only tackles the responsibilities of each organisation in relation to water data management and collection and is by no means an exhaustive list of all the responsibilities carried out by each.

Before this exercise is executed, it is essential at this stage to identify all kinds of water or water-related data that is, or can potentially be generated by the various stakeholders. Moreover it is appropriate that the importance of all generated data sets, including their relationship with each other could be revealed to all stakeholders in order for them to fully comprehend the important role a coherent and updated database could play within each of their planning cycles. This was attempted by drawing up a schematic diagram as shown in figure 2.1 below:

Water resources	Main Pipe line	End User	
<b>Natural resources</b> Surface, Inland and coastal – MEPA groundwater – MRA  Water Service Corporation - abstraction and production	<b>Professional services</b>  Consultants ADI Sustech consulting	<b>Agriculture</b> Command and Control Environmental control – MEPA/ MRAE  Irrigation systems  Water treatment – WSC, Health department MRA	
<b>Desalination</b> Water Services Corporation MRA	<b>Water Distribution</b> Command and control / infrastructure/ System integrators WSC	<b>Industry</b> Command and control Infrastructure Water treatment System Integrators Waste water Treatment Sewage	
<b>wastewater reuse</b> WSC MRA HD	<b>Research and Development</b> University of Malta NSO NGOs	<b>Municipality</b> Command and control infrastructure Drinking water Water treatment Sewage treatment	<b>Home User and tourism</b> Infrastructure Drinking water  Desalination Lesiure

### 3.1.1 The Ministry for Rural Affairs and the Environment

The Ministry for Rural affairs and the Environment is responsible for the carrying out of all environment and agricultural related tasks established under the EU Aquis. It consists of 16 officially appointed bodies that are responsible for specific regulatory and policy making tasks in relation to environmental and agricultural issues. A full list of the appointed bodies and the complex organisational structure can be found in Appendix 2. From this organisational structure it can be seen that water related data, and to a lesser extent water data, is produced from three main divisions:

1) Waste data ([www.wasteservmalta.com](http://www.wasteservmalta.com))-data related to solid waste production, its disposal and compost production (included in catalogue metadata).

2) Environmental Data ([www.mepa.org.mt](http://www.mepa.org.mt)) (section 3.1.1.1 below): which can be divided into: (i) Planning and land-use data; pollution control data that defines pressures and impacts on water resources, (ii) Coastal and marine data, ecological and habitat data related directly to surface water ecosystems

b) Agricultural data ([www.agric.gov.mt](http://www.agric.gov.mt) – see section 3.1.1.2), such as pesticide data, rural development plan data and related information, treated sewage effluent data regarding quantities of water used in the agricultural sector.

#### 3.1.1.1 Malta Environment and Planning Authority

MEPA is a major contributor to the management of all sorts of environmental data, including water-related data in the Maltese Islands. By means of its 4 directorates the authority is all encompassing in its approach to tackling development planning and environmental issues, in that together, each directorate facilitates the coordination of EU and multilateral affairs, Information resource management, planning and environmental issues.

The *Director General Office* coordinates development planning and environment protection, with the aim of achieving sustainable development in the practices it proposes. Policy is coordinated through the supervision of local planning and environmental issues and also coordinates recommendation on major projects. Hence the need for a well informed DG office is essential and requires substantial backing by the other three directorates. These are the Corporate Service Directorate (CSD), the Environment Protection Directorate (EPD) and the Development Planning Directorate (DPD).

Amongst other responsibilities, the CSD is in charge of information resource management and provides research and assistance to the planning and environment protection directorates in data creation and data management. Moreover it is responsible for ICT infrastructure management and for the development of information systems and user-end system support. E-Government has also become a major strong hold of this Directorate. The CSD is also responsible for Land Survey and mapping and functions as a National Mapping Agency.

The EPD is responsible for the establishment of both long-term and short-term strategies in the environmental field. It sets up guidelines and regulations for the control and management of activities having an impact on the environment through a licensing and permit system. The EPD includes three sections:

- I. The Nature Protection Unit – whose main role is to safeguard marine and terrestrial ecosystems through the administration and implementation of international agreements such as CITES, RAMSAR, BONN, BERNE, CBD and

- UNCED; and publishes environmental data on species and habitats, It also monitors sites designated for protection under international legislation or conventions such as the NATURA 2000 sites and Ramsar sites.
- II. The Pollution control, Wastes and Mineral unit processes applications and other permits for various discharges to air, water, soil etc. It prevents pollution, mitigates and controls air, water and soil quality and maintains environmental databases on pollution and related matters under the guidance of the Information Resources team. The waste team formulates waste management strategies dealing with gaseous, liquid and solid wastes from domestic, industrial and construction industry sources, as well as hazardous and toxic wastes, sewage and water discharges. The Mineral Unit also has its data collection on quarries and the mineral industry in general. They liaise with the MRA and BICC. The Radiation, Noise, energy and Air Quality unit coordinate climate change and desertification issues. It also establishes environmental quality standards and monitors the quality of the environment.
  - III. Finally the Resource Management Unit deals with natural resources planning by forwarding planning and local plans on natural resources, including coastal, aquaculture and marine; and coordinates the Environmental Impact Assessment Process.

The DPD is responsible for the promotion and control of proper land development, both public and private, in accordance with approved policies and plans. It seeks to achieve sustainable development through the preparation and implementation of development plans that is the Structure Plan, local plans, subject plans and action plans, through scheduling and the enforcement of development regulations. The development control or enforcement unit under this same directorate keeps enforcement case files and reports regularly on site visits.

**Data processing & Management:** MEPA is a major contributor to environmental data management in the Islands mainly due to its strong data support systems and ICT infrastructure management. Data management at the Malta Environment and Planning Authority is based on a centralised system whereby a data architect is responsible for collecting all data from the different directorates and even from external sources. MEPA's fully fledged database system has enabled data sharing to easily take place between directorates within the Authority.

**GIS system** – MEPA is the only authority to have a comprehensive GIS system on line. It provides detailed information on both planning and environmental issues and is a major informative tool utilised within other authorities for decision making. Several GIS layers available include: planning applications, enforcements, Development notifications, scheduled property, Corine Landcover, elevation, terrestrial, marine environmental protection areas, Posidonia baseline survey, Natura 2000 sites and candidate special areas of conservation as well as special conservation areas.



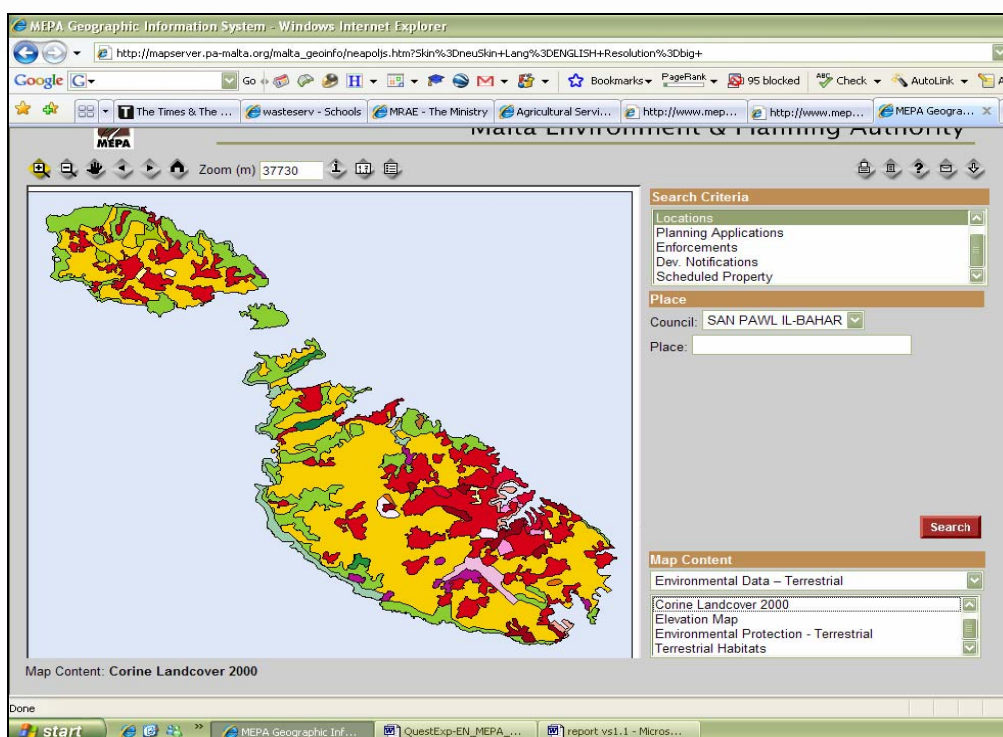


Figure 3.1: Fully fledged GIS system on MEPA website ([www.mepa.org.mt](http://www.mepa.org.mt))

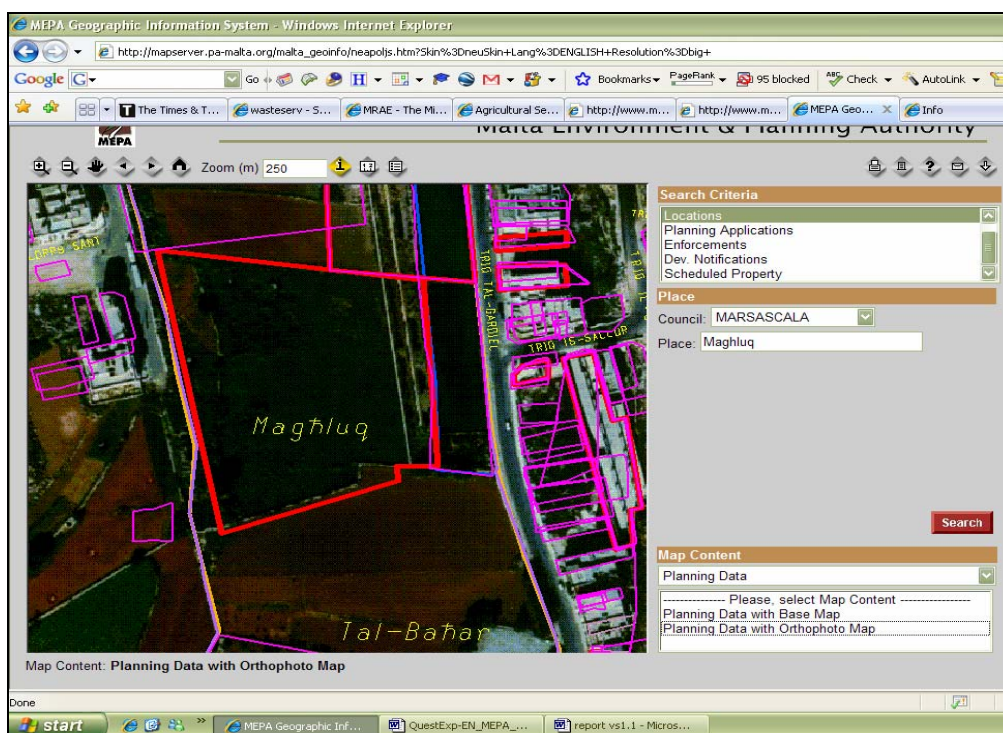


Figure 3.2: The level of detailed information available to the public via the GIS system.

### 3.1.1.2 The Agricultural Department

The Agricultural Department is mainly divided into 7 units, three of which directly contribute to water related data today. The seven directorates include:

- Fruit trees and Crop husbandry unit,
- Animal Husbandry Unit;
- Rural Development Unit,

Plant health Unit,  
Viticulture and Oenology,  
Land and Water  
Organic Framing Unit

The Animal Husbandry Unit provides data on the amount of animal husbandry units registered within the agricultural department and provided a very important service when the agricultural extension services still existed. What is of major importance to water data management today is the National Rural Development Strategy for Malta 2007-2013. This strategy contributes to the implementation of the agriculture and forestry Natura 2000 network; to the Goteborg Commitment to reverse biodiversity decline by 2010; and to the Water Framework Directive objectives and the Kyoto Protocol targets for climate change mitigation. The implementation of this management plan, particularly the measures outlined under Axis II, that lead to the sustainable use of natural resource particularly soil and water, will require that sufficient data would be available on the costings of animal farm upgrading and waste management strategies adopted to prevent water pollution; and economic data on water irrigation systems, cisterns and animal waste treatment. To date the only sources of information found on these issues are from draft reports that are inaccessible to the public and restricted to internal use only.

There is a lack of data on pesticide application in the islands and this gap would hopefully be filled when the Plant Health Unit is in full function. A pesticide control board has been set up but as yet no pesticide studies have been made available on the public domain.

The Land and Water Unit provides data on all registered farmers and the land they cultivate, since all farmers are issued with a Farmers' Registration Card (F.R.C.). This is done to safeguard against illegal dumping and any malpractice that renders the soil infertile, according to the Preservation of Fertile Soil Act (1973). This Section is also responsible for the distribution of the plants' effluent to the local farmers. It controls the distribution of water from the five main reservoirs to the channels that lead to the farmers' fields. Data on the area covered by the system and the average daily effluent that is distributed can be provided.

### **3.1.2 The Ministry for Resources and Infrastructure**

The Ministry for Resources and Infrastructure is mainly responsible for major infrastructural works, public cleansing, and major construction projects that are carried out throughout the Maltese Islands. Both the MRA (section 3.1.2.1) and the BICC are under its wing but it has two main operational branches, which are the Works Division and the Services Division.

1. The Works Division has the responsibility for the Building Engineering Department (BED), the Construction and Maintenance Department (CMD) and the Financial Management Department (FMD). Therefore data which is provided is limited to cost data on the amount spent on hydrological-heritage related embellishment works such as the restoration of the Wignacourt's aqueducts and even storm water projects, to manage flood waters across the Islands.
2. The Services Division was only recently established in 2006 but is responsible for a number of water related projects. The Marine and Storm



water unit deals with the implementation of marine and storm water infrastructural works, the valley management unit deals with the maintenance of valleys and the building regulations office tackles with the drafting of new building regulations. These are units which are necessary data providers to other authorities since they are the only sources of data for major indicators of sustainable water management, such as total reservoir capacity, silting up of dam reserves, human and economic impacts of floods etc,

### **3.1.2.1 The Malta Resources Authority**

The Malta Resources Authority is a public corporate body with regulatory responsibilities relating to water, energy and mineral resources in the Maltese Islands. In respect of this there are three directorates within the Authority each executing regulatory functions of the respective resources mentioned above. As pointed out previously it is the Malta Resources Authority (MRA) Act that sets out the regulatory arrangements for water resources. The MRA is mandated under Article 2 of its founding legislation to “*secure and regulate the acquisition, production, storage, distribution or other disposal of water for domestic, commercial, industrial or other purposes*”. In as much the MRA has the duty to ensure the proper and sustainable use of all water resources in the Maltese Islands, while respecting hydro-environmental and socio-economic constraints.

Only recently the MRA established its own internal server with funding assistance provided by EMWIS. This has definitely facilitated the processing of data sharing and it has reduced the duplication efforts of data processing and manipulation. In fact the MRA is slowly but surely developing its very own coherent data structure, however advances need to be made in database structuring to collate all data from the separate directorates into a coherent hierarchical format. Also human resources remain limited and a fully trained data architect is lacking.

The Water Directorate has been processing and gathering data over the past few years from various stakeholders, mainly the WSC, MEPA, the NSO and the Agricultural Department. Memoranda of understanding do exist between the Health Department and the MRA as well as between the MRA and MEPA. Data on water issues has become increasingly available especially with the publication of the Water Framework Directive initial characterization reports being published online for public consultation, together with the FAO Water Resources Review that was published in 2006. In fact it can be said that these groundwater related documents were the first of their kind to be accessible to the public and filled a huge gap in providing information on groundwater to the public.

Most information related to water is in fact accessible through the internet, with information on consultations, decisions taken, licenses, press releases, publications, speeches, tariffs and projects frequently updated. With several projects underway the amount of information envisioned, to be of interest to stakeholders and the public alike, calls for the need of further development of the website in order to disseminate better research findings of the various projects.

### **3.1.3 The Ministry for Information and technology**

#### **3.1.3.1 The Water Services Corporation**

The Water Services Corporation was set up in 1993 with its main responsibilities being to produce and distribute potable water in the Maltese Islands. Potable water is

produced from a range of sources including groundwater abstraction from underground galleries, boreholes and springs as well as desalination plants. Apart from providing information on quantity and quality of water produced from these sources the WSC has also been given the responsibility of wastewater and sewerage services and management.

Most data collected or processed by the WSC is provided through the publication of their Annual reports, all of which are published and accessible on their website [www.wsc.com.mt](http://www.wsc.com.mt). Apart from providing information on the technical, administrative and financial aspects of the Corporation, data which covers water quality and quantity data, laboratory tests, and technical upgrading of equipment is also given. The availability and upkeep of this essential data is guaranteed through the GIS system developed over the years, incorporating modelling and spatial databases; together with an Integrated Water Management System (IWMS).

Currently the WSC are embarking on the implementation of the IUBS, an integrated system that covers most of the core functions of the Corporation and is being implemented in conjunction with Enemalta Corporation. This system is comprised of four themes namely the Enterprise Resources Planning (ERM) which will replace the current financial systems of the Corporation and will also cover Works Management; the Customer Relationship Management (CRM) and Billing system which will replace the current Customer Contact System to provide more functionality on customer profiling and intelligence. This will also contain an integrated Billing system to replace the current Billing application; an Automated Meter Management (AMM) systems, that will allow the Corporation to automatically collect meter readings from the Head office. This will reduce on-site meter reading and be able to provide almost real-time information to consumers; and finally the IUBS will integrate to a Common Data Base (CDB), a Geographical Information system (GIS) and other in-house applications.

#### **3.1.4 The National Statistics Office**

The NSO is an important national organization with regards to data provision to stakeholders and the Government alike. It is governed by the National Statistics Authority Act. Through its dissemination it ensures that major issues are dispersed to the public through a range of publications that relate to issues tackling all three pillars of sustainability – Economic, Social and Environmental. These include economy and finance, population and social conditions, industry and services, agriculture and fisheries, external trade, transport, environment and energy and science and technology.

The information production processes executed by the NSO involve various methods-including carrying out surveys and questionnaires to stakeholders as well as the general public, and the use of other techniques such as aerial photography. Information on the sources and methods used to collate data for various economic sectors in the Maltese Islands is also accessible on the internet.

Dissemination through the frequent publication of news releases is the most effective way of informing public entities. However, apart from news releases, there exist several different sources of information made accessible on line. These include reports of the various surveys and questionnaires carried out, and different census reports. There also exists 'Regional Statistics' publication which provide a description of the regions, districts and localities of the Maltese Islands covering a wide range of demographic, social, industrial and economic statistics. There are 13 chapters in all,

with 'water' being one. To date, data given for the water chapter, is in aggregate form and not broken down by district. This includes data on water production and consumption sources for the Island of Malta and Gozo. The information is given in clear tables, and charts. Regional statistics is widely used by policy-makers and planners in both the public and private sectors; marketing professionals; researchers; students and teachers; journalists; and anyone with a general interest in regional information. Again this Publication brings together data from a number of different sources.

Information on selected indicators is also given. These include main indicators which are used by the National Accounts Unit for the compilation of GDP; structural indicators to facilitate the analysis of inter-related sets of socio-economic data that is made available in a document; and also national accounts which are compiled in accordance with the European System of Accounts (ESA 1995) as recommended by the European Union statistical agency - Eurostat.

The NSO forms part of the European statistical system (ESS) whose aim is to provide homogenized and therefore comparable data at EU level. In being a part of the ESS, this signifies NSO's role in promoting the CIRCA and ESDS systems which are incorporated within the ESS. Both the CIRCA and ESDS follow the free dissemination policy established by the EU. The ESDS Centre at the NSO forms part of an EU-wide network of ESDS centers who have, as their main objective, the provision of support for users of European statistical data. A designated team is available to offer their support and help users find the data required.

The NSO have also direct links to RAMON, the Eurostat metadata server. The metadata categories available through RAMON are the following:

- Concepts and definitions
- Classifications
- National Methodologies
- Legislation and methodology
- Glossaries and Thesauri

In addition to the above, to ease access to data, the NSO have an on-line statistical database whereby users are requested to register online in order to access the statistical database.

### **3.1.5 The Health Department**

The Health Department is also a fundamental data provider with regards to data related to water health issues. The Health Department has its own Environmental Health Inspectorate which is responsible for carrying out regular bathing water monitoring quality tests and also for ensuring that all private owned water carriers which are licensed to supply potable water are classified adequate for human consumption.

Bathing water monitoring reports are available for download on an annual basis and cover the whole of the islands. Reports since 1997 are available on line for public use. What is also of importance is the availability of the public bowser registry which is essential information since it informs the public of acceptable drinking quality standard water availability.

### 3.2 Overview of the water information production processes

Enhancement			Access to basic information			Comments (Difficulties, wishes, etc.)
Nature of the synthetic information produced (indicators, maps, etc.)	Author of the synthetic product	Objective / Targeted Public / Production and dissemination process	Information sources used (producer organizations)	Process used for gathering basic information	Common language (yes/no)	
<b>1. MEPA Information Production Processes</b>						
Vector GIS data layer (shows the coastal water bodies, plotted to 1nm from the coast of the Maltese Islands)	Information Resources Section, ICT, MEPA	MEPA is a landuse and environmental agency. Its remit includes the creation of all related datasets pertaining to both use, cover and designations as required by both national and international planning and environmental legislation  Stakeholders including public  Viewable free online/Free on request	MEPA	Plotting of area of one nautical mile from coast according to the definition of coastal waters found in L.N. 194 / 04	English	n/a
Vector GIS data layer (illustrates the inland water bodies including any rivers, lakes etc.)	Information Resources Section, ICT, MEPA	MEPA is a land use and environmental agency. Its remit includes the creation of all related datasets pertaining to both use, cover and designations as required by both national and international planning and environmental legislation  Stakeholders including public  Viewable free online/Free on request	MEPA	On-site surveys	English	n/a
Vector GIS data layer (refers to the underground aquifers including	Information Resources Section, ICT, MEPA	MEPA is a landuse and environmental agency. Its remit includes the creation of all related datasets pertaining to both use, cover and designations as required by both national and international planning and environmental legislation	MRA	Data collection from MRA	English	n/a

the mean sea level, lower coralline and upper coralline limestone aquifers)		Stakeholders including public Viewable free online/Free on request				
Vector GIS data layer (illustrate all the areas protected by any of the existing national and international legislations)	Information Resources Section, ICT, MEPA	Spatial layer visualizing protected areas covered by environmental legislation Stakeholders including public Viewable free online/Free on request	MEPA	Digitised areas as identified by Legal Notices	English	n/a
Topological maps (These data layers form the basis of all the other reference data layers as they are the main topological maps of the Maltese Islands utilised at a national level)	Mapping Unit, MEPA	Large scale topographic map of the Maltese Islands Stakeholders including public Viewable free online/Access or use against payment or license agreement	MEPA	Digitised data based on 1988 orthophotos, regularly updated via applications and newer orthophotos (2004)	English	n/a
Original in paper format digitised to a Vector GIS data layer	Malta Resources Authority	To have a geological reference data layer Access or use of vector data layer reserved for MEPA internal use Acquisition through MRA	MRA	Direct digitising from hard copy	English	n/a
Raster or Ascii x,y,z co-ords	Mapping Unit, MEPA	To have a digital terrain model of the Maltese Islands Stakeholders including public Access or use against payment or license agreement	MEPA	Interpolation from surveyed height points / levels	English	n/a

**2. MRA Information Production Processes**

Nature of the synthetic information produced (indicators, maps, etc.)	Author of the synthetic product	Objective / Targeted Public / Production and dissemination process	Information sources used (producer organizations)	Process used for gathering basic information	Common language (yes/no)	Comments (Difficulties, wishes, etc.)
Geological map of the Maltese Islands (Cartographical map)	Oil Exploration Department	Basis of geological, architectural and hydrogeological assessments / produced and accessible at the Department of information	Geological surveys	Cartography and mapping	English	n/a
Aquifer Protection Zone (GIS layer)	MRA	To act as an advisory tool in planning and environmental management  Internal use only	Delineated according to water sources present and created buffer zones Producer organization: WSC	Other maps and groundwater vulnerability studies	English	Requires revision
Private abstraction sources: Boreholes (GIS layer)	WSC & MRA	To keep record of private water abstraction and provide legal backing to water rights and land ownership. Basic data required for tracking of unauthorised activity; contributes to hydrochemical understanding of aquifers  Layer with attribute data for internal use only, layer used as a map is accessible in the WFD reports accessible to general public on <a href="http://www.mra.org.mt/wfd_introduction.shtml">http://www.mra.org.mt/wfd_introduction.shtml</a>	Produced by registration papers of private boreholes in 1997 carried out by the WSC. Updated by the MRA in 2005.	Direct digitizing from registration papers	English	Maps are not accurate and direct digitising is open to several sources of error
Private abstraction sources: wells (GIS layer)	WSC & MRA	To keep record of private water abstraction and provide legal backing to water rights and land ownership. Basic data required for tracking of unauthorised activity; contributes to hydrochemical understanding of aquifers  Layer with attribute data for internal use only, layer used as a map is accessible in the WFD reports accessible to general public on <a href="http://www.mra.org.mt/wfd_introduction.shtml">http://www.mra.org.mt/wfd_introduction.shtml</a>	Produced by registration papers of private wells in 1997 carried out by the WSC. Updated by the MRA in 2005.	Direct digitizing from registration papers	English	Maps are not accurate and direct digitising is open to several sources of error
Private abstraction sources: springs (GIS layer)	WSC & MRA	To keep record of private water abstraction and provide legal backing to water rights and land ownership. Basic data required for tracking of unauthorised activity; contributes to hydrochemical understanding of aquifers	Produced by registration papers of private springs in 1997	Direct digitizing from registration papers	English	Maps are not accurate and direct digitising is

		Layer with attribute data for internal use only, layer used as a map is accessible in the WFD reports accessible to general public on <a href="http://www.mra.org.mt/wfd_introduction.shtml">http://www.mra.org.mt/wfd_introduction.shtml</a>	carried out by the WSC. Updated by the MRA in 2005.			open to several sources of error
Water Galleries (GIS layer)	WSC & MRA	Public utility water galleries required for planning and environmental assessments, surveying of potential impacts and pressures posed by developments; basic data for the designation of protected aquifer zones  Layer with attribute data for internal use only	Old British maps	Digitising directly from maps	English	Maps are not accurate and direct digitising is open to several sources of error
Clay contour layer (GIS layer)	MRA	Basic data for the delineation of perched groundwater boundaries. Basis for hydrogeological analysis and to inform planning issues.  Layer with attribute data for internal use only	Extensive and in-depth geological surveys carried out during British rule	Scanning, change of raster into vector format through digitising	English	Changing raster into vector is open to data loss and sources of error
Animal Husbandry layers  Including Beef, Dairy cow, cattle, Pigs, Poultry, rabbit	MRA	Location and capacity of farms for Pressure and Impact analysis of livestock farms on groundwater resources. Information to assess potential sources of nitrate contamination.  Layer with attribute data for internal use only Hard copy available on request at the MRA offices.	Information based on registration statistics and excel sheets obtained from the Agricultural Department	Direct creation of vector polygon data through digitising	English	
Agricultural Fields by groundwater body	MRA	Assessment of pressures and impacts and extent of agricultural land-use up take.  Available on request	MEPA	Data manipulation directly from GIS layer of agricultural fields provided by MEPA	English	digitising is open to several sources of error



Water Quality data: Parameter Nitrate	MRA	Water quality data contours to aid in decision making regarding planning development applications, EIAs and environmental issues. Baseline monitoring data for initial characterization of groundwater qualitative status.  For internal use only.	MRA WSC monitoring data on nitrate quality	Inputting of data in GIS and interpolation of monitoring points with similar nitrate values	English	Need for more detailed quality data Will be updated once groundwater monitoring network is in place
FAO Water Resources Review Report	FAO & MRA	Water resources Review – to inform public bodies and government of present water status and future water needs. First step towards raising awareness at the policy maker level as well as at public level. Accessible on request and downloadable in pdf. format from the MRA and FAO website.	FAO and MRA	Literature Review, collection of primary data from various stakeholders and use of proxy to create scenarios	English	Wish to revise and update review over the years
Water Framework Directive Documents	MRA	As noted above the MRA is the competent authority as far as groundwaters are concerned in the WFD. The characterization report together with the economic analysis and pressure and impact analysis documents all fulfill the public consultation requirements put forward by the WFD. Accessible on : <a href="http://www.mra.org.mt/wfd_introduction.shtml">http://www.mra.org.mt/wfd_introduction.shtml</a>	MRA	Onsite surveys and compilation of data gathered from geological survey reports and digitized mapping.	English	
<b>3. Agricultural Department Production Process</b>						
Farm registry	Agricultural Department	Registry of agricultural activity to keep record of livestock husbandry activities and agricultural production. Keeps record of part timers and full timers. This aids in the definition of criteria for farmers eligible for funding and/ or assistance when it comes to farm upgrades or crop incentives.  Accessible on request	Agricultural department	Inputting registered farmer community information in a database.	English	digitising is open to several sources of error
Rural Development Plan 2004 -2006	Agriculture Department and MRAE	Main objective is to help coordinate the various aspects of the rural environment and its human, natural and economic resources in order to achieve sustainable development. It guides planners from various agencies to integrate the main findings and policies within their own policy framework.  Accessible on the following link: <a href="http://www.agric.gov.mt/Rural%20Development/rural_dev_rdp04.htm">http://www.agric.gov.mt/Rural%20Development/rural_dev_rdp04.htm</a>	NSO, Agricultural Department, MRAE, MEPA, MRA,	Data gathering from different stakeholders and translating foreseeable scenario building into appropriate and practical action plans/ measures.	English	



Rural development Plan 2007-2013	Agriculture Department and MRAE	<p>Document is still in draft form and is currently being formulated and refined. The purpose is to take issues identified to be of priority in the first RDP further and enhance the integration of policies within different stakeholder</p> <p>Accessible on the following link:  <a href="http://www.agric.gov.mt/Rural%20Development/rural_dev_rdp07.htm">http://www.agric.gov.mt/Rural%20Development/rural_dev_rdp07.htm</a></p>	NSO, Agricultural Department, MRAE, MEPA, MRA,	Data gathering from different stakeholders and translating foreseeable scenario building into appropriate and practical action plans/ measures.	English	
MALSIS MAPS	MRAE	<p>To design and implement a soil information system for Malta and to contain and interpret the soil data collected. MALSIS attempts to address issues relating to data storage, manipulation, visualisation and interpretation.</p> <p>Maps and related data at this stage are not accessible on line.</p>	MRAE / Agricultural department	Soil sampling and testing over the Maltese Islands	English	Needs to be made accessible Does not cater for very localized needs
<b>4. Health Department Production Process</b>						
Weekly bathing monitoring reports	EHU	<p>Bathing Water Quality is tested and if found to be of risk to bathers, the EHU issues health warnings, identifying the localities where bathing would be temporarily not recommended. Samples from these effected sites are collected on a daily basis until three consecutive results within the recommended levels of microbial counts.</p> <p>Results are accessible on line at:  <a href="http://www.health.gov.mt/dph/ehuhome.htm">http://www.health.gov.mt/dph/ehuhome.htm</a>  <a href="http://www.health.gov.mt/dph/ehu5.htm">http://www.health.gov.mt/dph/ehu5.htm</a></p>	EHU	All sites are monitored for Faecal Coliforms every week and once every fortnight all sites are monitored for Total Coliforms (as per EU Directive for Bathing Water) and Faecal Streptococci.	English	Sampling prone to errors
Bathing water quality annual reports	EHU	<p>Bathing water quality reports are then issued on an annual basis and are accessible online. Bathing reports from 1997 to 2005 are available in pdf. Format.</p> <p><a href="http://www.health.gov.mt/dph/ehuar.htm">http://www.health.gov.mt/dph/ehuar.htm</a></p>	EHU	Compiled using information based on the above (Weekly bathing monitoring reports)	English	

Registered private Water suppliers	EHU	<p>Following the transposition of the European Union Directive 98/83/EC on the quality of water intended for human consumption by L.N. 23 of 2004 and amended by L.N. 116 of 2004, all private water supplies intended for human consumption have to conform to the requirements of the above mentioned regulations. Hence, they have to be registered with the Health Authority according to the provision under L.N. 357 of 2004.</p> <p><a href="http://www.health.gov.mt/dph/ehupdffiles/Priv_Water_Reg.pdf">http://www.health.gov.mt/dph/ehupdffiles/Priv_Water_Reg.pdf</a></p>	EHU	Compiled by means of registration forms that are accessible to any supplier on line.	English	Still in process
Registered pools	EHU	<p>The Swimming Pools Regulations, 2005 (L.N. 129 of 2005) published under the Public Health Act, 2003 (Act No. XIII of 2003) requires the responsible person to register any swimming pool on his premises i.e. being a conventional pool used for recreational bathing, wading pool, spas, diving pool or special purpose pool, which is not used or intended to be used as a pool at a single family residence but found at hotels, apart hotels, farmhouses, health centres, beauty clinics, gyms, etc.,</p> <p><a href="http://www.health.gov.mt/dph/ehupdffiles/RegPools.pdf">http://www.health.gov.mt/dph/ehupdffiles/RegPools.pdf</a></p>	EHU	Compiled by means of registration forms that are accessible to swimming pool owner on line.	English	
<b>5. WSC Production Process</b>						
Public Utility boreholes (GIS Layer)	WSC	<p>Public utility abstraction boreholes required for planning and environmental assessments, surveying of potential impacts and pressures posed by developments; basic data for the designation of protected aquifer zones</p> <p>Layer with attribute data for internal use only</p>	Old British maps WSC	Digitising directly from maps	English	Maps are not accurate and direct digitising is open to several sources of error
Annual Reports	WSC	<p>The annual reports provide data regarding water quality, water production, leakage reduction and on-going initiatives, wastewater and sewerage infrastructural maintenance.</p> <p><a href="http://www.wsc.com.mt/default.aspx?MLEV=4&amp;MDIS=15">http://www.wsc.com.mt/default.aspx?MLEV=4&amp;MDIS=15</a></p>	WSC	Collation of reports and data from different departments within the WSC. Use of their internal IWMS and GIS systems, water quality and sample data from laboratory tests	English	

Weather data	Meteorological Office	Hourly/daily/annually Weather data comprising of rainfall, maximum and minimum temperature, sunshine, wind speed. Data not available online	Meteorological Office	Weather instruments – anemometer, barometer, rain gauges etc.	English	Lack of data where there is system malfunction in apparatus reading
<b>6. NSO Production Process</b>						
Regional Statistics	NSO	<a href="http://www.nso.gov.mt/site/page.aspx?pageid=176">http://www.nso.gov.mt/site/page.aspx?pageid=176</a>		Data compiled from various sources collected from different competent authorities, Excel sheets used.	English	
Demographic Census	NSO	<a href="http://www.census2005.gov.mt/">http://www.census2005.gov.mt/</a>	NSO	Census questionnaire sent to all households in the Maltese Islands. Census is carried out every 10 years	English	Often NSO presents data by region and locality- further break down of data is not always available for public use.
Survey reports	NSO	Several survey reports which are published are a means of updating the census carried out every few years so that updated statistics in different economic, social and environmental sectors is gradually built upon. All survey reports are made accessible online and target the Government, Institutional bodies and the general public alike.	NSO	Through sampled questionnaires and surveys – surveys themselves are also available for public viewing.	English	

News Releases on Water	NSO	<a href="http://www.nso.gov.mt/themes/theme_page.aspx?id=58">http://www.nso.gov.mt/themes/theme_page.aspx?id=58</a> Similar to the survey reports mentioned above, the news releases are data updates on a smaller scale which target specific topics. In the case of water use – news releases cover water production and consumption patterns across sectors and over the year.	NSO	Through data provided by the WSC	English	Mainly published on world environment day and world water day
<b>7. Private consultants and Educational organizations</b>						
Private consultants	Several reports and individual studies carried out by private consultants are not available to the public. Often these are unpublished sources. When asked whether these consultants would be willing to make available the findings of these studies, most were willing at a cost.					
Academic institutions	Several theses exist on water resources and its management. These are accessible on the University of Malta library database. However only students have online access to these sources. Someone from the general public has to visit the library to make use of the available resources. A memorandum of understanding has to be reached between the NWIS and the University in order for these to be made publicly available.					

### **3.3 The National Water Information System for Malta, its achievements and requirements**

The main findings of the NWIS feasibility report that was carried out in 2005 revealed that at that time there are no water information systems in Malta that can be linked to a NWIS except that of MEPA. The study itself focused on the 5 major stakeholders managing data in the Maltese Islands being MRA, WSC, MEPA, NSO and the HD. Other minor stakeholders such as the Agricultural Department, Meteorological Office, NGOs and educational institutions were thought of as other possible stakeholders that could be potentially included in the NWIS.

Since the study was carried out some developments in the 5 major stakeholders have taken place. Internal data management and information exchange has improved in some of the authorities. The MRA has established an internal information system which is still in its embryonic stage but developing. The staff has different access rights and can share information freely through the established network.

The WSC has developed its Integrated Water Information System and has updated its website to improve public access to information related to service provision and water quality issues. MEPA has continued to strengthen its internal information system, which is centrally controlled. MEPA has already expressed an interest with the MRA to establish a central database system particularly to tackle information provision and data gaps that often arise when collecting information required to assess environmental indicators at the European Union level.

There still remain difficulties in the exchange of water information due to problems that had been identified in the 2005 NWIS report. These include the lack of standard operation procedures for the collection of information across authorities, unclear roles and responsibilities, no standard data exchange formats and structures, the unavailability of computerised information systems, the lack of human resources, and problems related to data readiness, availability and reliability.

Despite the fact that the NWIS report stated that all stakeholders were eager to establish a NWIS in Malta, several authorities raised the point during the interviews carried out that an environmental information system should be set up instead. The reason given was the fact that different information systems that target the specific needs of the different authorities can cause data confusion and inconsistency.

## Chapter 4

### Analysis of the needs and expectations

#### 4.1 The opinion of water resource managers on the indicators disseminated by the country at the international level

Various indicators in the environmental field are being collected by various stakeholders in the Maltese Islands. The ones related to water include those defined by the Blue Plan, and the Mediterranean Strategy for sustainable development, Water and sanitation indicators, Water Scarcity and Drought, the Millennium Development Goals and those agricultural indicators used by the FAO. Thus stakeholders have become aware that there is a need for comprehensive and consistent data on nearly all aspects of water resources at the national level.

It is generally acknowledged by all stakeholders that indicators facilitate the simplification of complex scientific information and synthesize it. It was also stated that indicators help to translate a wide variety of environmental data and information into a simple system that can be easily communicated and show trends over time. Thus it was pointed out that it is essential that the indicators used are scientifically sound and easily understood by the interpreters and end users. Several stakeholders stated that the significance of valid indicators lies in their ability to be sensitive to the transformations that they intend to measure and also that they are measurable to the extent that they are capable of being updated regularly without the problems of data collection. It was concluded that indicators in themselves are valid benchmarks of performance at local, national and even at regional level.

Some limitations are, however, inherent in compiling a statistical description of national water-quality conditions and trends because reliable national data do not exist for many aspects of water resource management. The primary reason for the lack of quality related data is that water-quality monitoring is technically demanding and expensive. In Malta a strong monitoring network for groundwater is only lately being developed. This does not exclude the fact that water monitoring has long been established in the islands. However as monitoring programs have evolved over the past 20 years, ideas have changed about which water-quality indicators are important and how to measure them. As a result, long periods have elapsed between recognition of water-quality problems and the availability of national-level data that describe their occurrence, severity, and trends over time. Also, in conducting a statistically based analysis of water-quality trends, as many as 10 consecutive years of water-quality data commonly are needed to help distinguish short-term variability from long-term changes.

Other limitations identified were case specific to a few indicators which were judged to be too generalized and unscientific. There is a general tendency to be reluctant to use indicators that rely on subjective judgements that weigh only a few of the numerous variables which could exist. In other words some stakeholders claimed that some indicators do not tell the whole story.

There was also the mention of contradictory figures found in various sources which reveal the degree of uncertainty or lack of expertise in the formulation of these indicators, hence reducing the quality of the national estimates used and indicator reliability. However, it was also acknowledged that with the formulation of agreed standard methods, defined by various EU and regional organisations this degree of uncertainty is substantially reduced.

Another point made was linked with data and information being readily available. In cases where staff is extremely limited, the successful execution of indicators places considerable pressure on existing human resources since data collection, retrieval, manipulation and presentation is extremely time consuming.

In light of what was discussed above, it can be concluded that the indicators developed by the various organisations at EU and Mediterranean level have definitely led to the enhancement of better understanding of water issues at the national scale. In order to fully benefit from the compilation of various indicators it is all the more necessary to construct a CDS. Only once a fully fledged system that is built on standard operation procedures of data collection and indicators is in place, can full participation in a Regional Observation Mechanism be ensured.

#### **4.2 The formation of the Regional Water Observation mechanism – analysing the decision makers needs and expectations**

It is evident from the NWIS study that most of the stakeholders needs rotate around IT support and capacity building, enhancement of internal databases and data management. Key to all this is human resources and financial resources. It seems that unless stakeholders are given the necessary backing through the provision of officers responsible for data management or trained data architects, then data management within the respective authorities will remain to be a slow process since priorities due to time management would be diverted elsewhere – to tackle issues considered more at stake. Despite this, it must be mentioned that with an increasing need for data to be collected from different stakeholders at the local and national level due to significant data requirements at European level, stakeholders are becoming aware of the benefits that can be obtained from a central database system which not necessarily centres on water-but the environment.

Another issue that once again pushes the need for a national water observation mechanism is the fact that many major stakeholders are now facing a reality of hesitance and hostility by some economic sectors to provide data they require in a form other than that collected by the NSO. This is because of a number of repeated data collection procedures, through interviews, questionnaires etc., which take place throughout the year and which are executed by different stakeholders. Therefore apart from the duplication of effort executed by the different authorities to collect information, there is a repetitive provision of data to various stakeholders upon request which is deemed to be a waste of time. Moreover in itself, such a process gives rise to data redundancy, inconclusive data and inconsistency.

In order to ensure the timely collection of processed data by different stakeholders, and simultaneously cut down on costs brought about by purchasing it from others, it is

necessary that different memoranda of understandings are established between authorities to enhance ties. The transparent sharing of data would also reduce the degree of unreliability often brought about by crude estimates and use of proxies rather than the actual quantification of it.

Also lots of information that is available internally is not reported by stakeholders. NGOs and University faculties have a series of reports carried out by researchers and students which have been compiled using primary data- with very valuable outcomes, and yet never published. Valid information is not only limited to unpublished dissertations or post-graduate thesis, which is accessible at the University library, but can be found in a huge number of reports which go unnoticed. There is, however, certain reluctance, particularly from some NGOs to share information due to the costs that are incurred.

As mentioned in the previous section, there is a need for the setting up of standard procedures to collate all data. The various stakeholders have seen a gradual move towards this due to the standard procedures set at the EU level. However much is still to be desired at the national scale.

Despite the fact that the expectations of most stakeholders rotate around the current needs to establish a national observation mechanism rather than a regional one, it must be made clear that the sharing of information at the Mediterranean level is deemed to be essential since in itself it is a learning process and there is much to be gained from regional collaboration. Cooperation between European and North African Countries is believed to be central to managing water conflicts in this semi-arid region. The sharing of data is thus envisioned as a possibility to enhance relationships between countries. Despite the fact that the Maltese Islands have no transboundary waters, it was stated that data sharing and management would lead to better exchange of experiences and, transboundary water management would surely benefit. In the case of the creation of the regional water observation mechanism, common thesauri, metadata approaches and language were deemed essential ingredients.



## Chapter 5

### Conclusions and Recommendations

The report indicates that there has been a major shift towards the improvement of water data and water related data at the national level, especially in the last 5 years. EU legislation has been an important trigger for the collation of this data. The emphasis on public consultation and a free dissemination policy at all levels has set off a movement towards the making available of data at authority level.

There is still a lack of stakeholder initiative to enable the homogenisation of data collected at a national, let alone bring it under one regional observation mechanism. It has been acknowledged that national water data, needs to be stored in a central repository system, and requires agreed upon Standard Operation Procedures (SOPs) of data collection, data use, accuracy and application between authorities in order to ensure homogeneity of data across authorities and ministeries. In that way inaccuracies would be avoided and the easy distribution of hydrogeological data through well structured databases would be guaranteed.

The implications of the adoption of this model at a National scale will indirectly bring about homogeneity in the structuring of regional and transboundary hydrogeological geodatabases such as the Regional Water Observation mechanism being proposed.

However it cannot be denied that the very structuring of a national or even regional water observation mechanism is a demanding task since it has to be coherent and compatible to even the inexperienced user especially if it is desired that the lay man has access to certain parts of this database or if it should be utilised as a public participation tool.

The recommendations of the NWIS were never taken up again since priorities fell elsewhere. Now in the face of the requirements put forward by the Aarhus convention the main recommendations outlined in the NWIS report need to be re-instigated at national level. One of the recommendations was the setting up of a committee that would oversee the creation of a NWIS in Malta. Since different stakeholders expressed a particular interest in environmental data, rather than water data per se, the recommendations outlined in the NWIS report could be taken to this new level.

## APPENDICES

### Appendix 1: Letter of invitation sent to consultants

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Dear esteemed expert,

A major problem with water information and data in the Maltese Islands arises due to the lack of consistency in data collection amongst stakeholders, its fragmentation and dispersion amongst stakeholders and the repetitive process of data gathering through questionnaires that are carried out by different authorities and agencies time and time over. This naturally causes nuisance and hostility whenever the need arises to gather any required information for national assessments and also European scale assessments.

In light of this the **Euro-Mediterranean Information System on the Know-How in the Water Sector** has commissioned a national study to assess the various organisations managing water or water-related data at the national level. This study will shed light on the water information production processes and initiate the creation of a first national catalogue of data sources, guidelines and online tools.

For this reason you have been identified as a major stakeholder or user and I would really appreciate if I could meet you during the next two weeks (**26 March – 6 April**) to gather your opinion on:

1. The current state of play of water or water-related data.
2. The indicators disseminated by the country at the international level.
3. Your expectations with regards to the creation of this common **Regional water observation mechanism in the Mediterranean**.

Looking forward to hearing from you.

Thanking you in advance

Kind Regards,

Claudine Cardona

## Appendix 2: The Organizational structure of the MRAE

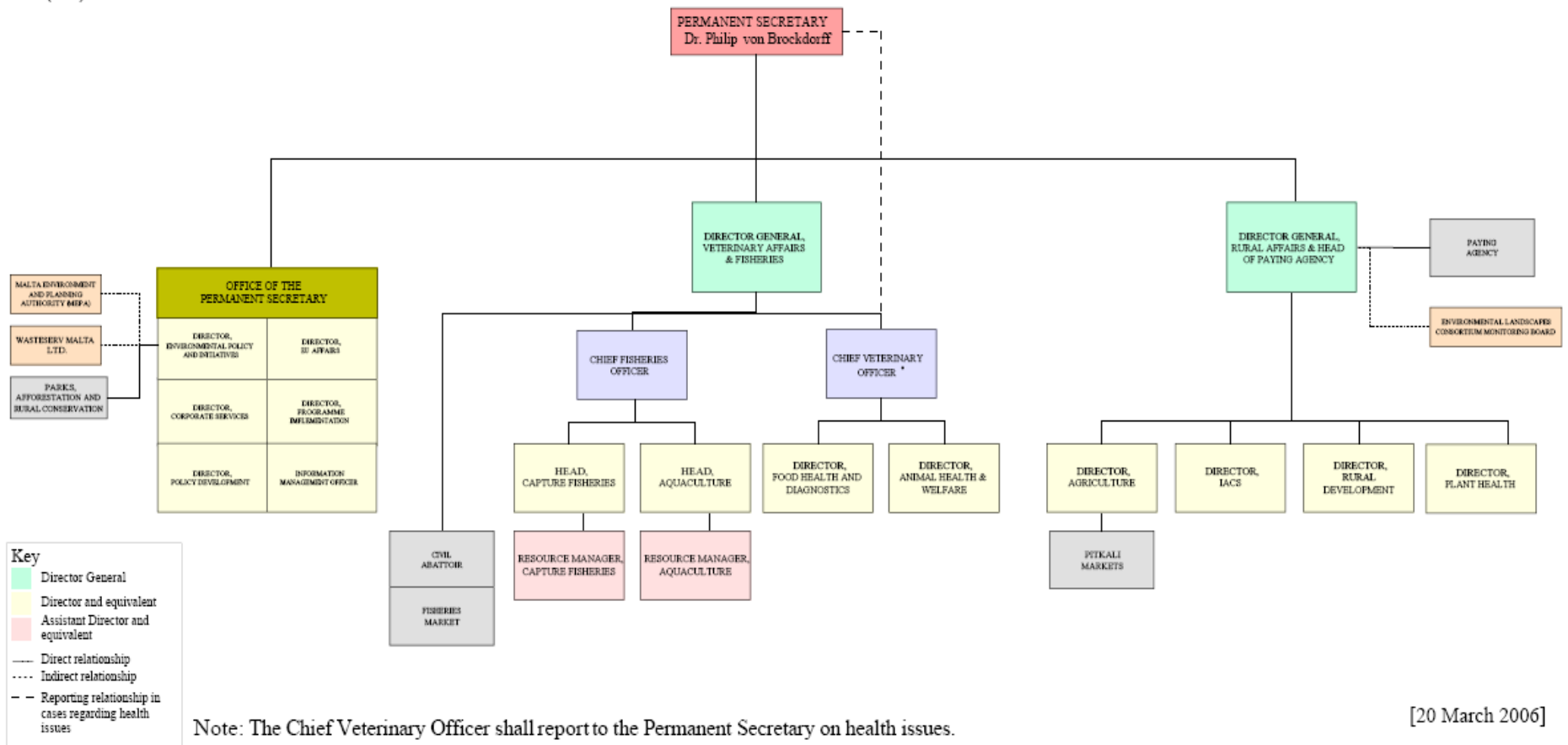
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### Officially Appointed Bodies in the Ministry for Rural Affairs and the Environment:

- Animal Welfare Council
- Biosafety Co-ordinating Committee
- Competent Authority on Organic Farming in Malta
- Development Control Commission
- Financial Assistance Commission
- Fisheries Board
- Heritage Advisory Committee
- Integrated Pollution Prevention and Control Committee
- Inter-Departmental Planning Committee
- Malta Environment & Planning Authority
- National Commission for Sustainable Development
- Ornis Committee
- Pesticides Advisory Board
- Planning Appeals Board
- Scientific and Technical Committee
- Strategic Environment Assessment Audit Team
- WasteServ Malta Ltd

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MINISTRY FOR RURAL AFFAIRS AND THE ENVIRONMENT



**Key**

- Green box: Director General
- Yellow box: Director and equivalent
- Pink box: Assistant Director and equivalent
- : Direct relationship
- : Indirect relationship
- - -: Reporting relationship in cases regarding health issues

Note: The Chief Veterinary Officer shall report to the Permanent Secretary on health issues.

[20 March 2006]

