

State of the Environment Report for Malta 2002

3

**Physical
Background,
Demography,
Tourism,
Mineral
Resources &
Land-Use**

Team Leader: Adrian Mallia

**Team Members: Marie Briguglio (Mineral Resources)
 Anthony E. Ellul (Tourism)
 Saviour Formosa (Population)**

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3.1 Introduction

In August 2001, the above team was assigned the responsibility to compile the section concerning the use of land resources for this second State of the Environment Report for the Maltese Islands (SoER 2002). As for the first edition of the SOER, this section includes data on the population structure and demography of the Maltese Islands, data on tourism trends and on non-renewable resources, with a major emphasis on quarrying and resource exploitation, apart from the more general land-use issues.

In this second edition of the SOER, this section will deal with the following topics: The Maltese Islands, Geology, Climate, Geomorphology and Landscape, Population, Tourism, Mineral Resources, Land, Land-Use and Land Cover. Each of these topics will be evaluated, giving the current state of affairs and, where possible, comparing the current situation with that in 1997/1998, extrapolating trends and possible responses to the pressures evident today. Indicators for the major aspects of each topic are also proposed for future comparison purposes.

In order for the data presented in this report to be more readily comparable with eventual future reports (as well as with trends in other countries), a list of sustainability indicators is also provided.

It is important that the reader reviews also the relevant data presented in the first SOER (Axiak *et al.*, 1999a) when using data presented in this report since, in many cases, direct reference and comparisons are made with the first report and only in this way can trends in the quality of the environment be gauged.

3.2 The Maltese Islands – Facts, Figures and Trends

The Maltese Islands consist of three inhabited islands (Malta, Gozo and Comino) and a number of uninhabited islets and rocks scattered around the shoreline of the three major islands.

Located just 96 km south of Sicily and 320 km North of Tripoli (Azzopardi, A, 1995), the Maltese Islands are Europe's southernmost outpost and largely function as a crossroad in the middle of one of the most populated and trafficked regions of the world. This geographical situation has, over the centuries brought about considerable trade and mixing of peoples, which is manifested in the Islands' archaeological heritage, magnificent and varied architecture, as well as the national language. Other often less noticed effects of this central location of the archipelago are the unique ecological characteristics and species associations present on the islands.

Malta is one of the smallest countries in the world and one of the most densely populated. The population of the Maltese Islands established at the last population census carried out in 1995, stood at 376,335 individuals. Since 1995, the population has continued to increase and in 2000 stood at 388,613¹ (Planning Authority, 2001a). International migration has declined. Population trends and demographic data are further elaborated upon in **Section 3.4**.

Tourism figures for the period have continued to increase although at a slower rate, possibly indicating that the Maltese Islands are fast reaching their carrying capacity with regard to tourist arrivals.

Quarrying has obviously remained the most significant user of natural resources on the Islands. The Islands lack significant natural resources, except for the very same limestone they are composed of. This is the only resource that is exploited in a significant commercial manner on the Islands. Today, over 100 active limestone quarries exist on the Islands of Malta and Gozo, apart from a host of disused quarries. Quarrying on the Islands is an old activity² and although changes have been undertaken in the method of rock extraction and processing (especially in the case of hardstone quarries), the industry as a whole has not renewed itself to the desired extent, although a number of individual operators have

¹ This is a mid-year estimate compiled by the Research and Information Section of the Planning Authority.

² Although today quarries are relatively large and operate on a commercial basis, some centuries ago it was very common for buildings to be built of stone quarried from the same construction site. A number of these shallow quarries still exist as part of the Islands' archaeological heritage.

taken it upon themselves to upgrade their operations and products. Further investment in and support to the industry, which is currently being run by an aging workforce, is therefore desired to help it to restructure itself and be run on more sustainable lines.

Although one would expect certain physical aspects of the Maltese Islands not to change drastically, physical infrastructure over the past four years has actually led to changes in both the surface area and length of the coastline. The most drastic changes have been those associated with the expansion of the Freeport, the excavation of the Portomaso marina and the reclamation of land at Cirkewwa in connection with the new Ferry Terminal development. No such drastic changes took place on Gozo or Comino.

Of interest is that new and more accurate data on the size of the Islands generated by the Mapping Unit of the Planning Authority through digital orthophotography of the Maltese Islands, shows that the size of the various islands is actually different from that quoted to date. **Table 3.1** gives the latest figures and compares them to the old figures. As can be seen, the major difference lies in the length of coastline, largely altered through coastal engineering works as well as through rectification of minor errors in previous data. The recorded size of the minor islets and rocks has also been affected through this exercise.

Table 3.1 – Area and length of coastline for the Maltese Islands

	Old Figures		New Figures	
	Area (km ²)	Perimeter (Km)	Area (km ²)	Perimeter (Km)
Malta (Including Manoel Island)	246.51	183.94	246.50	193.32
Gozo	65.79	53.74	65.79	55.09
Comino	2.87	14.68	2.86	14.54
Other ³	0.19	5.70	0.21	8.26
Total	315.37	258.07	315.36	271.22

Source: Mapping Unit, Planning Authority

Other considerable alterations affected the landscape of certain parts of Malta. Without doubt, the most controversial have been those with the greatest visual impact (some visible from several localities in the Maltese Islands), namely the Magtab dump, the Qortin dump and the Portomaso tower block. Other smaller-scale changes to the landscape have also occurred and several other, even major, changes approved, such as new tower blocks at Tigne⁴.

Other trends that have been recorded in previous years have continued, including the loss of agricultural land, albeit at a decreased rate, development in the countryside, and the chronic dumping of waste in areas not designated as waste management facilities. Some positive initiatives have also been registered and existing ones improved upon during this period. These have included management of important natural and historic sites, restoration of monuments and buildings, demolition of illegal structures, including major environmental blights, and the commencement of afforestation projects involving a combined effort of various Ministries, Departments and Local Councils.

On the legislative front, a number of changes have also occurred, both in terms of the enactment of new legislation as well as the updating of existing laws. The drive towards EU accession has been particularly instrumental in this regard.

³ This includes all the minor islets and rocks around the coastline.

⁴ New high-rise buildings approved in the area include a tower block as part of the Tigne' Point project and a high-rise building as part of the Fortina Hotel expansion.

Administrative changes have also occurred throughout this period, again mainly fuelled by the EU accession process. A number of new Authorities have been set up in order to separate the regulatory functions from the operational measures. Responsibilities have been streamlined or even transferred from one Department to another. Perhaps the most significant of these moves has been that announced in December 2001 merging the Environment Protection Department with the Planning Authority to form a new organisation, which has not been named as yet⁵.

3.3 Geology, Climate, Geomorphology and Landscape

3.3.1 Geology

The Maltese Islands are composed of sedimentary limestone rocks and clays deposited in a marine environment during the Oligo-Miocene period. In some localised areas, deposits of a terrestrial origin (quaternary deposits of the Pleistocene era) are also found, mainly associated with valleys, caves or other cavities. No igneous, intrusive, extrusive or metamorphic rocks exist anywhere on the islands. The various rock layers form an interesting stratigraphy, which is classified into five formations and 11 members. **Table 3.2** gives an overview of this stratigraphic sequence.

Table 3.2 – Stratigraphy of the Maltese Islands.

Rock Layer	Maximum Thickness	Rock members	Age	Thickness
Upper Coralline Limestone	175 m	Gebel Imbark	Miocene, Early Messinian	4-25m
		Tal-Pitkal	Miocene, Late Tortonian to Early Messinian	30-50m
		Mtarfa	Miocene, Late Tortonian	12-16m
		Ghajn Melel	Miocene, Late Tortonian	0-16m
Greensand	16 m	-	Miocene, Early Tortonian	0-16m
Blue Clay	75 m	-	Miocene, Serravallian to Early Tortonian	15-75m
Globigerina Limestone	227 m	Upper Globigerina	Miocene, Langhian	2-26m
		Middle Globigerina	Miocene, Aquitanian to Burdigalian	15-38m
		Lower Globigerina	Miocene, Aquitanian	0-80m
Lower Coralline Limestone	120 m (AMSL)	Il-Mara	Oligocene, Chattian	0-20m
		Xlendi	Oligocene, Chattian	0-22m
		Attard	Oligocene, Chattian	10-15m
		Maghlaq	Oligocene, Chattian	>38m

Source: Mallia et al., 1999

⁵ The new organisation will be set up in the second quarter of 2002 and will be named the Malta Environment and Planning Authority (MEPA). It will have two Directorates, one responsible for Planning and the other responsible for Environment Protection.

For a detailed description of these various rock formations see the report on “Population, Tourism, Land-use and Non-Renewable Resources” (Mallia *et al.*, 1999), in the first State of the Environment Report, 1998 (Axiak *et al.*, 1999a)

3.3.2 Climate

The Climate of the Maltese Islands is generally warm, with an average temperature of 14.1°C in winter and 32°C in summer. The hottest months are July, August and September. Rainfall is scarce, averaging 578mm annually (with a maximum ever recorded of 1031 mm and a lowest record of 191 mm). The sun shines for an average of 6.46 hrs in winter and 10.11 hours in summer. **Table 3.3** gives a summary of the average hours of sunshine, monthly average rainfall figures as well as minimum and maximum air temperature and sea temperature for a typical year.

Table 3.3 – Weather statistics

Month	Sunshine Hours	Rainfall (mm)	Temp ° C		Sea ° C
			Min	Max	
January	5.46	90.1	15.1	9.5	14.5
February	6.36	60.8	15.3	9.3	14.5
March	7.33	44.7	16.5	10.2	14.5
April	8.46	24	18.8	11.9	16.1
May	9.99	8.9	23.1	15.1	18.4
June	11.23	3.8	27.4	18.6	21.1
July	12.15	0.9	30.2	21.2	24.5
August	11.36	8.8	30.6	21.8	25.6
September	9.00	40.4	27.8	20.4	25.0
October	7.22	123.6	23.8	17.2	22.2
November	6.5	76.8	20.0	13.9	19.5
December	5.2	100.2	16.6	11.1	16.7

Source: Malta Government website, 2002

The climate of the Maltese Islands is one of the factors moulding its geomorphology and landscape.

3.3.3 Geomorphology and Landscape

The geomorphology of the Maltese Islands is largely determined by tectonism, drainage, doline features, drowned valleys and drowned doline structures (Mallia *et al.*, 1999). These various geological processes have produced an interesting geomorphology, with low lying rock shores, inlets and coves crowned by sandy beaches, cliffs and boulder screes, valleys and hills – all packed in a few square kilometers.

Geomorphology is intimately tied with its aesthetic appeal in the form of its landscape. A landscape is the way that humans interpret the environment around them. Landscapes are one of the nation’s primary natural resources. The landscape of Malta has a timelessness about it, partly brought about by the traditional architecture and the continuing use of local materials. Nonetheless, very little, if any, of the landscape of the Maltese Islands is unaffected by man’s activities.

The main changes to the landscape experienced in the review period were brought about by human activity and not natural forces. These have included new projects (e.g. hotels ODZ or high-rise buildings), intensification of previous uses (e.g. construction of greenhouses on agricultural land) and

the extension of uses leading to the conversion of one land use to another (e.g. “reclamation” of land for agriculture). Further details on these development types are available in later sections of this report.

The character of urban areas has also experienced change, largely for the worse, with newer buildings not reflecting the general character of an area and with the architectural design being bland and not in keeping with its surroundings, leading to a deterioration in the quality of the particular area. The use of alien materials, fittings and fixtures as well as non-traditional approaches to the treatment of facades all contribute to a decline in the quality of the urban areas.

Modern settlement areas, apart from often having a haphazard feel about them, with every property being designed and built out of synchrony with the rest, also lack focus. The older settlements have a repeating pattern, with the church and a few other landmark buildings dominating the skyline, something that is rarely found in newer settlements. In the latter case, hotels or other commercial buildings, if any, often dominate such settlements.

Despite the rapid rate of urbanisation that has characterised the past few decades, very little thought has been given to the planning of open spaces in the newer settlements so that most are just a sea of white buildings. Landscaping is virtually absent except for the occasional playing field or small garden and, in newer areas, by the vegetation grown in front gardens of private houses, which help to break some of the monotony of the facades.

The advent of Local Councils has helped to increase the number and areas of public gardens and playgrounds, although there still exists a tendency to pave most of these areas rather than providing a soil cover and planting more trees and shrubs.

A move from hard to soft landscaping in public areas should be actively encouraged.

One of the most discordant aspects of urban areas undoubtedly is the roovescape, with its paraphernalia of structures ranging from water tanks, TV aerials, satellite dishes, air conditioning units and solar water heaters. While all of these structures are a commodity very few people would do without, there needs to be a holistic intervention to hide these structures from view. Arguably, it is not always possible to locate these structures at roof level to hide them completely from view. The use of appropriately coloured wooden screens would be particularly effective in these cases.

It has not all been bleak over the review period. Positive trends have been registered, mainly as a result of initiatives taken by Local Councils, particularly within Urban Conservation Areas (UCAs). A number of areas have been paved⁶ and pedestrianised and street luminaires, planters and street signage installed. **Table 3.4** provides information on upgrading projects undertaken by Local Councils between 1998 and 2001.⁷

Table 3.4– Upgrading projects undertaken by Local Councils in urban areas over the period 1998-2001, including costs in Lm.

Council	1998	1999	2000	2001
Qormi			Rehabilitation of Pjazza Narbona (Lm 24923)	
Zabbar		Initial works on Regional Park (Lm 3,092.54)		Project in Pjazza Medjatrici and Misrah is-Sliem (Lm45,000)
Attard	Upgrading Pjazza Tumas Dingli (Lm	Afforestation (Lm20,000)	Paving of alleys & restoration of chapel and historic features	Public Garden at Tal-Fuklar (Lm52,000)

⁶ *Although the use of the ubiquitous red-coloured paving blocks should be re-thought. A more mundane and sober colour, on the lines of those used in most other European countries for historic centres, should be considered for future paving works.*

⁷ *Note that not all Local Councils responded to a questionnaire circulated by the Local Councils Association.*

	45,000)		(Lm21,000)	
Balzan		Restoration in Three Churches Street (Lm1692)		
Fontana				Restoration of Ghajn il-Kbira (Lm515.26)
Gharghur			Garden in Triq San Gwann (Lm 26537)	Recreation area at ix-Xwieki (Lm4000)
Hamrun		Upgrading in Pjazza il-Kappillan Muscat (Lm40,000*)	Rehabilitation of Trejjet Sant' Anna and Trejpet San Pietru (Lm6965.53)	Rehabilitation of Misrah il-Vittmi Hamrunizi (Lm13,000*)
Kercem			Upgrading of garden in Triq Madre Margerita De Brincat (Lm17,000)	
Marsa			Pavement works, Embellishment in housing estates(Lm23557.50)	Upgrading in various roads and squares & building of playing field (Lm62760.83)
Mqabba				Old Hospital Restoration Parish Square (Lm21,000)
Santa Venera				Playground/garden Dalam l-Ahmar (Lm100,000 *)
Tarxien			Rehabilitation of Misrah tas-Suq (Lm5,800)	Rehabilitation of Misrah ir-Repubblika (Lm2,000 *)
Xghajra				Rehabilitation of Triq il-Knisja (Lm40,000)

* Projects undertaken in partnership with central government (costs shared)

Source: Local Councils Association

3.4 Demography

3.4.1 Introduction

Population change is a process that can be gauged over an extended period of time, where rapid changes are rare and are not expected to occur in the space of a few years. Thus, the differences between the SoER 1998 and the current study are very few. It is interesting to note, however that recent studies conducted in the interim period indicate changes over the long-term especially as regards to population structure in the different aggregation areas (local plan areas⁸).

Demographic analysis indicates that Malta is still experiencing a population growth decline and an increased household figure due to change in household structure, internal migration and an ageing population.

⁸ Local Plan Areas are based on the aggregation of local councils into 7 areas that are spatially distinct as designated by the Planning Authority: Central Malta, Gozo and Comino, Grand Harbour, Marsaxlokk Bay, North Harbours, North West, and South Malta.

3.4.2 Population Change

The Maltese Islands have been experiencing low birth and mortality rates for a long period of time, a situation that can be regarded as late transitional in character. However, in the near future, it is expected to reach a post-transitional stage, where natural increase will be either very low or zero. This means that population change will not be very large. Whilst at first glance this could appear to be encouraging since there would be neither a population loss nor increase, in actual fact it is the changes within that structure that are cause for concern.

The changes are already apparent and include issues for further research, such as the lack of working age cohorts, a declining young aged component, and an increase in resource consumption of a very specific nature due to a rapid increase in the elderly component.

At 2000, the Maltese population stood at 388,613 persons. It is expected to increase by 2,300 persons annually, reaching 434,000 by 2020.

The Maltese population has increased from a base population of 378,132 in 1995 to 388,613 (mid-year estimates) in 2000. It is expected to increase to 434,000 by 2020 at an average increase of 2,300 persons per year. The increase will place further pressures on the socio-economic and socio-cultural structures in the Maltese Islands mainly due to the following factors:

A larger population: from 378,132 in 1995, to 388,613 in 2000. This figure is expected to increase to 434,260 in 2020.

A higher proportion of males-to-females, from a ratio of 97:100 in 1995, to 98:100 in 2000 and is expected to increase to 100:100 in 2020.

A higher proportion of persons aged over 60 years: from 16 per cent in 1995, to 17 per cent in 2000, a figure that is expected to increase to 25 per cent in 2020. It is important to note that the Maltese Islands will also experience a large increase in the 80+-year-old component.

A slightly lower birth rate: from 12.5 per 1,000 in 1995, to 12.3 per 1,000 in 2020 (rising between 1995 and 2010, then falling again).

A higher death rate: from 7.8 per 1,000 in 1995, to 9.8 per 1,000 in 2020, mainly due to the higher number of elderly persons.

A declining fertility rate: from 2.11 in 1992, to 1.81 in 1995, this then increased to 1.92 in 2000. This is expected to increase to 1.97 in 2020, though this is still below replacement levels, indicating a dying out of the Maltese population should these trends be sustained for a number of decades.

A higher life expectancy for males: from 74.9 years in 2000, to 76.5 in 2020 and a marginally higher life expectancy for females: from 80.3 in 2000 to 81.5 in 2020.

A declining average international migration from 1000 in 1991 to 350 in 2000.

Tables 3.5, 3.6 and 3.7 and Figures 3.1 and 3.2 show the population structure and the respective population pyramids. Whilst the 2000 pyramid shows a middle-aged concentration with declining younger age cohorts and a comparatively small higher age cohorts, this will drastically change in the 2020 scenario when over 25% of the structure will be taken up by the 60+ age cohorts.

Table 3.5: Population by Gender 1995

Year: 1995			
Age (Years)	Total	Males	Females
All Age Groups	378,132	186,836	191,296
0-4	25,780	13,278	12,502
5-9	27,966	14,403	13,563
10-14	29,025	14,883	14,142
15-19	29,188	15,112	14,076
20-24	26,577	13,657	12,920
25-29	23,195	11,806	11,389
30-34	26,876	13,632	13,244
35-39	29,925	14,995	14,930
40-44	28,311	14,235	14,076
45-49	30,729	15,337	15,392
50-54	21,724	10,552	11,172
55-59	18,624	8,844	9,780
60-64	16,930	7,615	9,315
65-69	14,520	6,473	8,047
70-74	12,495	5,538	6,957
75-79	7,825	3,381	4,444
80+	8,442	3,095	5,347

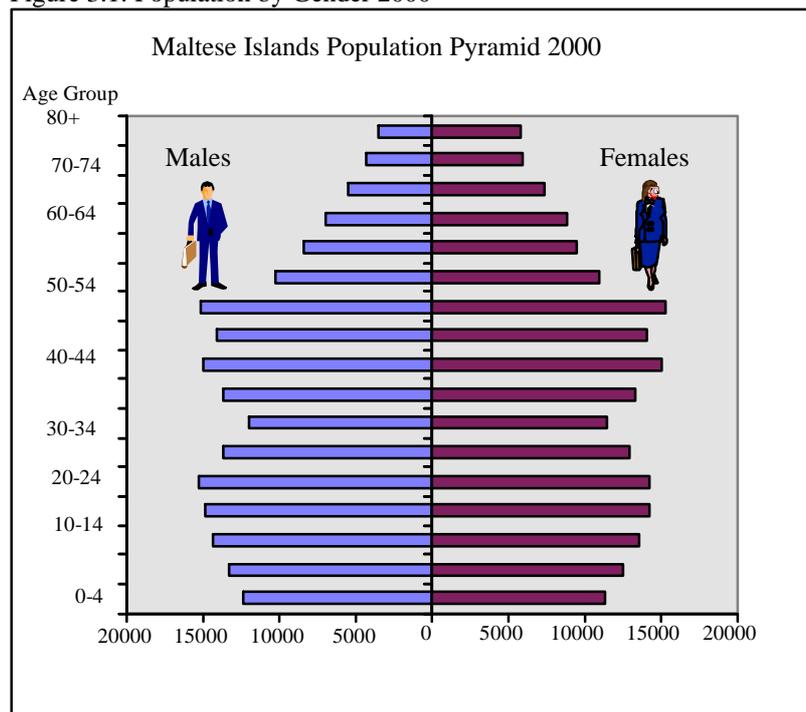
Source: *Census of Population and Housing 1995, COS 1997*

Table 3.6: Population by Gender 2000

Year: 2000			
Age (Years)	Total	Males	Females
All Ages	388,613	192,581	196,032
0-4	23,740	12,365	11,375
5-9	25,724	13,241	12,483
10-14	27,952	14,407	13,545
15-19	29,038	14,871	14,167
20-24	29,361	15,197	14,164
25-29	26,636	13,708	12,928
30-34	23,418	11,937	11,481
35-39	26,971	13,672	13,299
40-44	29,909	14,963	14,946
45-49	28,155	14,138	14,017
50-54	30,344	15,099	15,245
55-59	21,179	10,221	10,958
60-64	17,898	8,396	9,502
65-69	15,833	6,977	8,856
70-74	12,958	5,584	7,374
75-79	10,183	4,290	5,893
80-84	9,314	3,515	5,799

Source: Demography Topic Paper, May 2001, Planning Authority, Malta

Figure 3.1: Population by Gender 2000



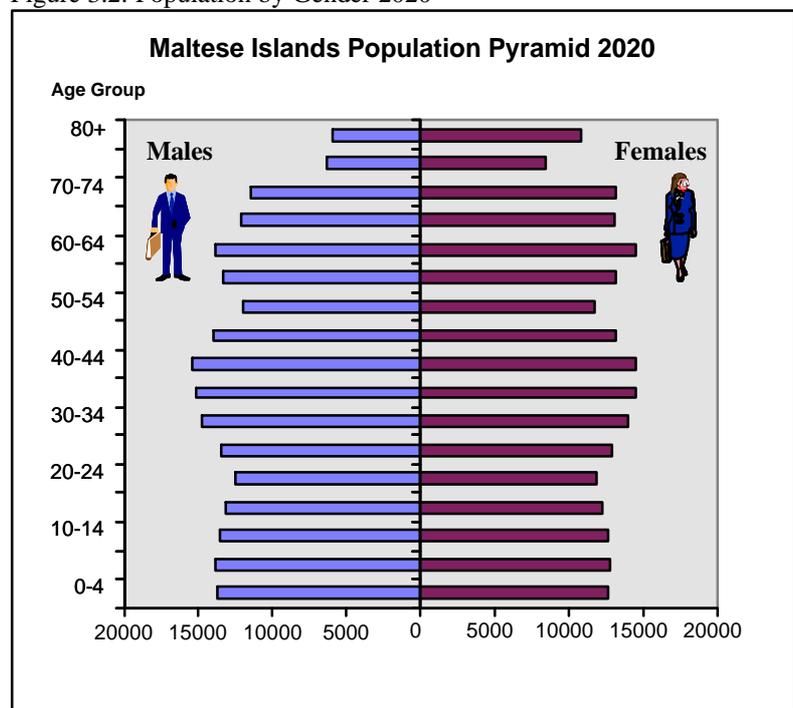
Source: Planning Authority, Malta

Table 3.7: Population by Gender 2020

Year: 2020			
Age (Years)	Total	Males	Females
All Ages	434,263	217,136	217,127
0-4	26,360	13,727	12,633
5-9	26,874	13,985	12,889
10-14	26,609	13,859	12,750
15-19	25,626	13,323	12,303
20-24	24,504	12,748	11,756
25-29	26,635	13,736	12,899
30-34	29,110	15,036	14,074
35-39	30,242	15,525	14,717
40-44	30,408	15,730	14,678
45-49	27,522	14,124	13,398
50-54	23,951	12,144	11,807
55-59	26,604	13,339	13,265
60-64	28,290	13,849	14,441
65-69	25,176	12,148	13,028
70-74	24,746	11,478	13,268
75-79	14,855	6,370	8,485
80+	16,751	6,015	10,736

Source: Demography Topic Paper, May 2001, Planning Authority, Malta

Figure 3.2: Population by Gender 2020



Source: Planning Authority, Malta

3.4.3 Population Density

Population density in the Maltese Island is very high and with the disappearance of Macau and Hong Kong from the list of countries topping the world's most densely populated countries list (through their integration with China), Malta has steadily edged its way nearer to the top. With over 1,200 persons per square kilometer, this density posits the need to study the impact of such stresses on the environmental, socio-economic and socio-cultural issues making up the sustainable fabric of the Islands. In addition, density is not uniformly spread over the whole area and varies over the regions making up the islands as well as between the islands themselves, with low densities in Gozo and Comino and a high density in Malta.

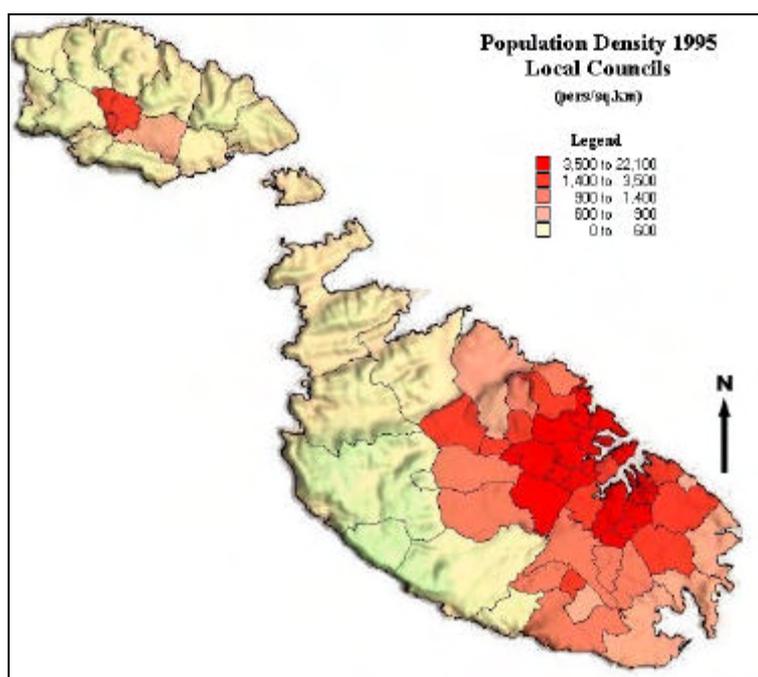
Whilst it is expected that high densities would centre around the metropolitan area that stretches from Naxxar to Zabbar and from Valletta to Zebbug, other areas are rapidly becoming centres of high density with localities such as St. Paul's Bay and Marsascala experienced very rapid growth in population, households as well as the number of developments occurring therein.

However, even within the same metropolitan area, regional densities are experiencing fluctuations. As an example, the Grand Harbour Local Plan Area has been continuously losing population since the early 1950s and is expected to maintain this trend unless drastic action to reverse it is taken. Between 1995 and 2000, the population outflow has not been stemmed and population projections indicate that the whole area could reach drastic lows should the current rate of loss continue⁹. In spite of this, some areas within the Grand Harbour still have the highest density rates in Malta, with Senglea registering 22,074 persons per square kilometre (**Figure 3.3**).

At 22,074 persons per square kilometre, Senglea has the highest population density in the Maltese Islands.

An overview of the repercussions on the social and physical fabric is immediately apparent, especially with gross depopulation in the old areas, increasing number of vacant dwellings, high crime rates, and migration to as yet pristine areas.

⁹ *Demography Topic Paper, (May 2001), Planning Authority indicates that should the current rate of loss in the Grand Harbour Local Plan continue the total population in that area in 2020 would be around 7000 persons. However, the study assumed that the rate of loss would be stemmed by 2005 due to favourable conditions and policy implementation in the area and the estimated figures would be around 14,000, which is still a significant loss from the 1995 population of 31,000.*

Figure 3.3: Population Density 1995

Source: *Census of Malta 1995 Web-Mapping Project*: <http://CensusofMalta1995>, Formosa, 2000

3.4.4 Decreasing Household Size

Household size in the Maltese Islands has continued to decline between 1995 and 2000. This steady decrease has been evident over the last years and will continue decreasing over the coming years from 3.1 in 1995 to 3.0 in 2000, a figure that is expected to reach 2.7 in 2020. The impact of such changes is immediately apparent with the relative need for additional dwellings, amenities, services and other social needs experienced by modern society.

The increase in the number of households has been accentuated by increased female independence, a growing elderly component, an increasing number of separations and continued secularisation of the Maltese society. Single parents as well as economic independence have helped to increase the number of persons opting to move out of the parent's home to seek alternative accommodation. Government policy to encourage elderly persons to continue living in their own locality through the concept of intergenerational solidarity has put pressure on the physical scenarios in that a number of dwellings are not being released for new families since elderly persons prefer to stay in their own homes rather than move to smaller abodes. Whilst institutionalisation is expected to grow due to the increasing number of frail elderly (80+ year-olds), the current proportions will not be sustained due to the preference of the elderly to stay in their own community.

The main change between 1995 and 2000 was an increase of 8,418 new households, which translates to an average increase of 1,684 new households per year. The population in private households refers to the total population less those persons who have been institutionalised.

An increase of 8,418 new households has been registered between 1995 and 2000.

Projecting further into the future, the study carried out by the Planning Authority as part of its Structure Plan Review for 1995-2020, indicates that there will be a total increase of 40,000 new households between 1995 and 2020. The total number of households in 2020 is expected to reach 159,926 (Table 3.8).

Table 3.8: Private Households (Population, Number and Size)

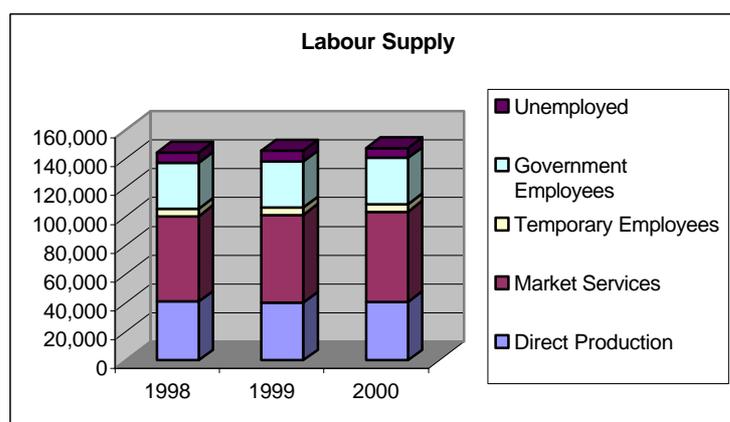
Private Households			
Year	Population In Private Households	Private Households	Mean Household Size
1995	372,657	119,479	3.1
2000	382,592	127,897	3.0
2005	394,114	136,776	2.9
2010	406,109	145,640	2.8
2015	416,983	153,642	2.7
2020	425,513	159,926	2.7

Source: *Demography Topic Paper, May 2001, Planning Authority, Malta*

An analysis of these households by Local Plan Area indicates that all local plans will gain their household component except for the Grand Harbour Local Plan, which will lose over 1,256 households. It is interesting to note that whilst the Central Malta Local Plan area will be the most populated Local Plan area as against the current South Malta, the latter will retain the largest number of households due to its structural makeup: smaller families, a larger number of elderly, single parents, etc. All Local Plan Areas are expected to see a decline in the mean household size with the largest being expected in the Grand Harbour Local Plan Area, where the mean household size will shrink rapidly from 2.8 in 1995 to 1.4 in 2020, mainly due to a decreasing population, and increasingly ageing structure and the incidence of single households.

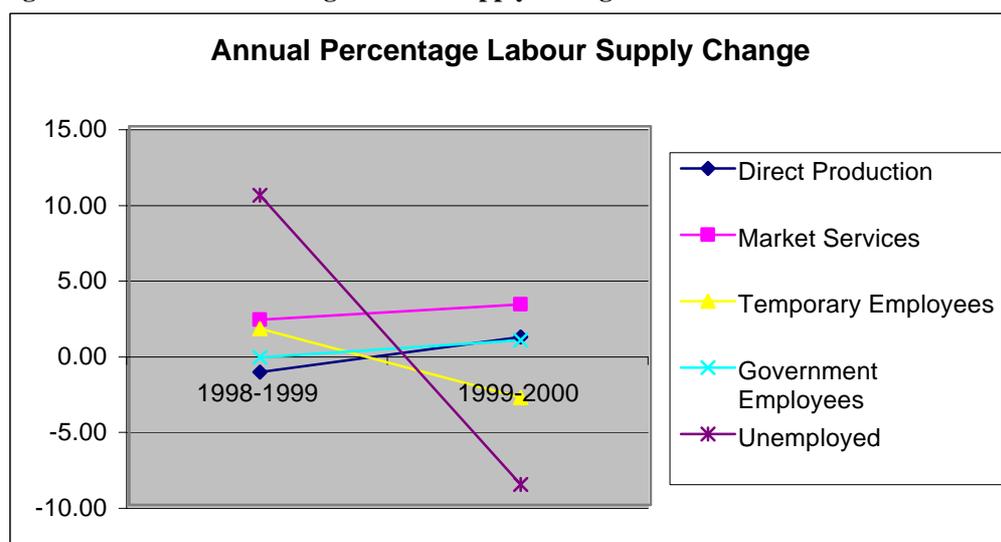
3.4.5 Working Population

There have been little changes between 1998 and 2001 as regards to the working age groups, with the main changes being expected in the long-term. The information given in SoER 1998 still holds. An interesting addition to the working age group situation can be seen from the perspective of labour supply. The decline expected in the future through a decrease in the number of working-age citizens shall be partly compensated for by the increase in employment of females. The labour supply is expected to stop growing but will stabilise in the long-term. **Figures 3.4** and **3.5** and **Table 3.8** indicate the changes experienced in both the employed and the unemployed sectors.

Figure 3.4: Labour Supply: 1998-2001

Source: *Planning Authority Data*

Figure 3.5 shows that employment in direct production and market services have both increased, as was the case with government employees. Temporary employment decreased over the period. Unemployment in 2000 was back to the 1998 figures at 4.8% of the total labour supply.

Figure 3.5: Annual Percentage Labour Supply Change: 1998-2001

Source: Planning Authority Data

Table 3.9: Labour Supply: 1991-2001

Labour Supply (in thousands)								
Year	Labour Supply	Direct Production	Market Services	Temp. Employees	Gov. Employees	Total Employed	Unemployed	Unemployment Rate
1991	133.69	44247	48535	4549	28318	125649	8041	6.00%
1992	136.46	44065	49988	4670	30524	129247	7213	5.30%
1993	138.28	43156	51732	4870	32090	131848	6432	4.70%
1994	136.33	42079	51970	4933	32330	131312	5018	3.70%
1995	139.77	42313	53633	4583	32271	132800	6970	5.00%
1996	142.3	42431	57054	4450	32155	136090	6210	4.40%
1997	143.95	41537	58612	4725	32361	137235	6715	4.70%
1998	144.05	40897	59392	4655	32124	137068	6982	4.80%
1999	145.59	40392	60711	4731	32044	137878	7712	5.30%
2000	147.46	40832	62665	4592	32326	140415	7045	4.80%

Source: Planning Authority Data

3.4.6 Migration

The migration factor is an important aspect for the Maltese scenario. It will remain a volatile component of population change, mainly due to the indications given by the above forecasts that show that the population structure is undergoing rapid and drastic changes. The decreasing proportion of persons of working age and the relative increase in the number of elderly places a major question on whether Malta will reach a critical stage at which the situation becomes unsustainable. The need to import labour, both due to absolute figure shortages as well as due to skill shortages is already being felt and a number of organisations, mainly in the construction and health sectors have already started this process. The need to resort to international migration in the Maltese Islands, even if temporary, is based on the structural changes being wrought in the demographic structure. This situation is not expected to reverse itself and pressures on maintaining the current standard of living and improving it

will lead to major decisions being taken at a legislative and executive level on the need to have a population policy and the supply of and demand for labour.

The other major components of migration include returning migrants and a small number of emigrants. The figures for the period 1995 to 2000 have shown that the balance has been very small following the highest peak experienced in 1991, with 121 emigrants and 349 returning migrants in 1998 and 67 emigrants and 450 returning migrants in 2000. Changes in the international attractiveness of the Maltese Islands are expected to increase the possibility of international migration growth, with an average annual positive migration component of 700 persons.

When considering population changes based on migration, the other component that is vital for the Maltese Islands involves internal migration. Regional population studies show that the key factors contributing to internal migration are the formation of new households and the availability of accommodation in preferred areas as well as availability of affordable dwellings. Thus, as an example, the last few years have seen a mushrooming of population in Marsascala and St. Paul's Bay.

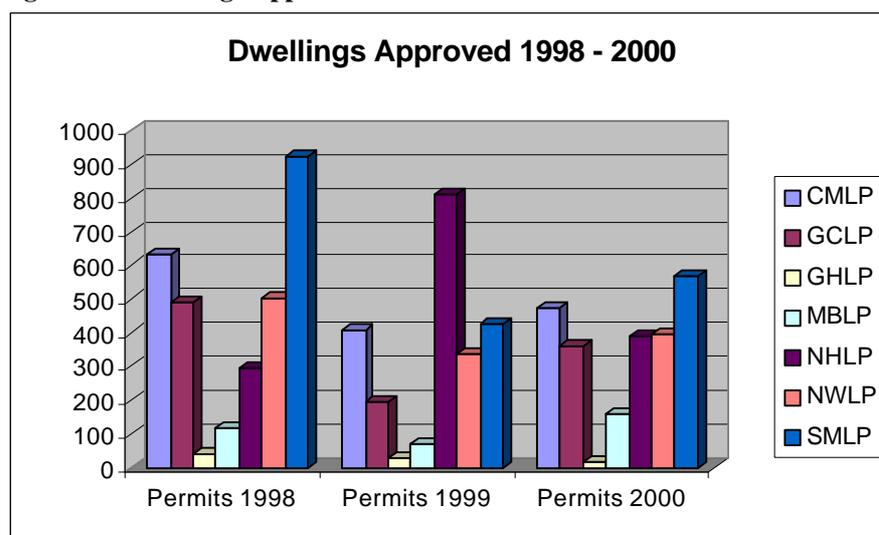
3.4.6.1 Housing development 1988-2000 (see also Section 3.9.12)

Malta was host to 155,202 dwelling units as at Census day, 90 percent of which were located on the island of Malta. Sub-locational analysis shows that most dwellings are located in the South, Central and North Harbours Local Plan areas. The most common type of dwelling involves the terraced, semi-detached and fully detached residences (houses), which account for over 40 percent of the total dwellings. Whereas terraced houses dominate the South and Central Local Plan areas, the North Harbours Local Plan area has the highest number of apartments, which incidentally is the most common dwelling type after the house. Apartments primarily dominate the Grand Harbour Local Plan area, whilst Gozo has the lowest ratio of apartments to houses.

3.4.6.2 Dwellings Approved (see also Section 3.9.12)

Data on dwellings approved from 1998 to 2000 show that there has been a 3% increase, from 164,968 in 1998 to 169,610 in 2000 (**Table 3.10** and **Figure 3.6**). This data has been made available by the Planning Authority in its work on the Dwellings Database, which covers the years from 1994 to 2000. The Planning Authority monitors the permissions it grants for residential development, and the data includes newly built units as well as conversions and redevelopments. The data indicates that residential development rates in the late nineties fell relative to those in the mid-1990s.

One has to note that there has been a drastic shift of permits approved as per dwelling type with almost 50 percent more apartments being granted permission in 2000, relative to 1994. This is a positive result in the context of the Structure Plan's second goal, which concerns the efficient use of land. At the same time, the number of terraced houses being built has decreased, with this market segment falling from 23 percent to 10 percent in this period (see also Section 3.9.12).

Figure 3.6: Dwellings Approved 1998-2000

Source: Dwellings Database, Planning Authority

Table 3.10: Total Approved Dwellings (1994–2000 And 1998-2000)

LPA	Stock 1995	Permits 1996	Permits 1997	Permits 1998	Stock 1998	Permits 1999	Permits 2000	Stock 2000	% Change 1995-2000	% Change 1998-2000
CMLP	36,282	858	657	635	38,432	410	476	39,318	8	2
GCLP	15,448	559	559	490	17,056	194	362	17,612	14	3
GHLP	13,317	16	68	39	13,440	26	16	13,482	1	0
MBLP	4,689	91	91	117	4,988	72	160	5,220	11	5
NHLP	26,567	363	466	296	27,692	809	393	28,894	9	4
NWLP	19,353	516	560	502	20,931	337	396	21,664	12	4
SMLP	39,546	948	1010	925	42,429	425	566	43,420	10	2
TOTAL	155,202	3,351	3,411	3,004	164,968	2,273	2,369	169,610	9	3

Source: Dwellings Database, Planning Authority

3.4.7 Data Availability

Data availability on the population of the Maltese Islands is very extensive and is published annually by the National Statistics Office (NSO). In addition, projects such as the Planning Authority's Demographic Topic Paper and the Structure Plan Monitoring Reports, keep these figures up to date in the inter-census period.

The main issue that needs to be given proper attention involves the migration component. Different departments, mainly customs and the police departments recorded data¹⁰. Definitions and methodologies have changed and figures need to reflect the actual persons who can be listed as being

¹⁰ Emigration data was gathered by the Department of Labour until 1995. Since 1996 the figures are presented by the respective embassies, which data is rarely kept up to date, especially since in 2000 only UK data was received. Regarding returning emigrants the data is gathered by the Customs Department (Source: Demographic Review, (2000), National Statistics Office).

migrants. Double citizenship and persons who stay in Malta for a few years then return back to their native country have not helped this issue.

3.4.8 Indicators

In order to facilitate future comparisons, a set of indicators is being proposed. Refer to Section 2.10.2 for a description and computation of these indicators. The first 4 indicators can be found under the UN and MAP/Blue Plan Indicators list. The addition of the Ageing Rate has been felt to be important in the Maltese context due to the rapid change being undergone by this component and the way it will affect the population structure in the near future.

Population growth rate

Net migration rate

Total fertility rate

Population density

Ageing rate

3.5. Tourism

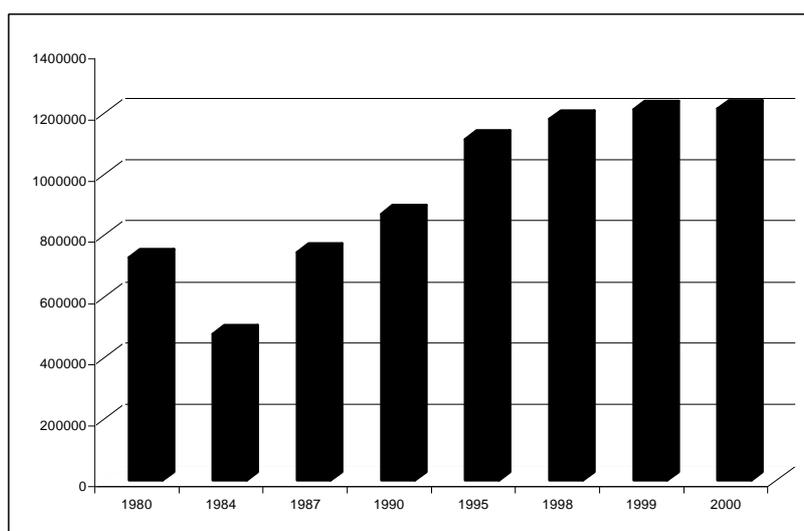
3.5.1 Background to tourism development between 1998 - 2000

Tourism continued to play an important role in the economic development of the Maltese Islands. Between 1998 and 2000 tourist arrivals kept increasing although at a slower rate. Tourist arrivals in 2000 reached a figure of 1,215,713, an increase of 33,473 tourists over the 1998 figure of 1,182,240 (COS, 2001). This and other factors indicate that the Maltese Islands as a tourist destination is nearing or has even reached the saturation stage in its tourist area life cycle, even though some growth is expected during certain periods of the year. Nonetheless average annual growth rates are not expected to reach the late 80s and early 90s levels.

Annual tourist arrival figures increased by 33,473 over the 1998 figure to reach a total of 1,215,713 in 2000.

Average annual growth rates in tourist arrivals between 1987 and 1990 stood at 5.6%. This decreased to 4.45% between 1990 and 1998; whilst between 1998 and 2000 an annual increase of 1.42% was registered. **Figure 3.7** below shows the trend in tourism arrivals for selected years for the past two decades.

Figure 3.7 – Tourist arrivals for selected years



Source: National Tourism Organisation of Malta/Malta Tourism Authority/COS

Apart from tourist arrivals, the “total annual guest nights” is another important indicator of tourism performance. “Total annual guest nights” relate to the number of days tourists stayed on the Islands. Between 1990 and 1998 total annual guest nights increased from 9,604,000 to 11,325,611 (COS, 2000). This means an increase of 2.24% each year; half the annual rate of increase in tourist arrivals. Between 1998 and 2000, the total annual guest nights increased from 11,325,611 to 11,658,245 in 1999 but decreased in the following year to 10,266,188 (COS, 2001). Thus between 1998 and 2000 guest nights decreased by an average 4.7% each year. The annual movements in guest nights and tourist arrivals further confirm the stage reached by the Maltese Islands in its tourism development. Thus any future strategy for strengthening the tourism sector should include rejuvenating strategies aimed at transforming the Malta offer, image and experience.

Between 1998 and 2000, the guest nights decreased by an average 4.7% annually.

The decrease in guest nights is a result of a decrease in the average annual length of stay, which decreased from 9.4 days in 1998 to 8.4 days in 2000. The decrease in the length of stay was not adequately matched by an increase in tourist arrivals during this same period.

Tourism receipts for the period 1990 – 1998 increased from Lm157.4 million to Lm254.618 million, an average annual increase of 7.7%. Between 1998 and 2000 tourism earnings increased to Lm 268.5 million, an annual increase of 2.7% (NSO, 2001g). Per capita expenditure increased from Lm180.6 in 1990 to Lm215.4 in 1998 to Lm 220.8 in 2000 (NSO, 2001g). Although gross earnings increased during this period, nonetheless the ratio of tourist earnings to the exports of goods and services decreased from 21.8% in 1998 to 17.1% in 2000 and as a ratio to exports of manufactured goods the decrease was from 38.6% in 1998 to 27.7% in 2000 (Ministry for Economic Services, 2002). Although tourism earnings are still important towards the external payments position of the domestic economy, the figures show that this importance is decreasing relative to other sectors, particularly the manufacturing sector.

In 2000, tourism catered for an employment complement of 9,659 or 7% of the full-time total gainfully occupied in hotels and catering establishments (MTA, 2000b). An Economic Impact Study carried out by the then National Tourism Organisation (NTOM) and published in 1999 has gone into greater detail to estimate the contribution of tourism to the economy and has concluded that as a result of the multiplier effect, tourism generates an employment complement of 40,000 (NTOM, 1999). The cruise-liner sector has also shown consistent growth with the number of cruise-liner passengers increasing from 144,100 in 1998 to 170,800 in 2000 (MTA, 2000b).

The setting up of the Malta Tourism Authority (MTA) in 1999 as a result of the Malta Travel and Tourism Services Act (Act XII of 1999) was an important step in the restructuring of the way the public sector side of tourism was organised. The MTA brought together under one authority the important public sector functions that were previously dispersed under different organisations – The National Tourism Organisation (NTOM), which was responsible for marketing, the Hotels and Catering Establishments Board (HCEB), which was responsible for the classification, licensing and monitoring of accommodation and catering establishments and the Department of Tourism, which was responsible for product development. These main functions, as well as others, have now been entrusted to the MTA and specifically to its Main Directorates, which are:

Product Planning and Development Directorate
Marketing and Promotion Directorate
Enforcement Directorate
Human Resources and Support Services Directorate

The first main task of the MTA was the formulation of a strategy covering the years 2000 – 2002. The Corporate Mission of the MTA as stated in this strategy is:

“To advance the economic and social activity of tourism in the national interest by working with all stakeholders to develop a sustainable industry for current and future generations.”

MTA, 2000a

The main goals of the strategy are the following:

Deliver value and customer satisfaction to tourists by upgrading product, environment and quality of service.

Implement programmes to exploit Malta's unique value proposition.

Diversify markets to improve seasonality and value.

Provide information for decision-making.

Regulate the industry on the basis of defined standards.

Build alliances with stakeholders.

These goals were still similar to those set out in the Tourism Development Plan for the Maltese Islands, which was prepared by Horwath and Horwath in 1989. Reducing seasonality and diversifying the product and markets were still crucial to the development of a sound tourism sector. Although there was remarkable improvement in diversification throughout the 1990s, a better distribution of arrivals during the year proved to be an arduous task. **Table 3.11** below shows the percentage market share for the main markets for selected years up to 2000.

The diversification amongst national markets has continued to improve between 1998 and 2000. The British market still dominates the local tourism market and, at least in the near future, it is not expected that this would decrease substantially from its current level. Nonetheless, improvements have been experienced in the other main markets particularly Scandinavia, Netherlands and France. The "Others" category, which includes all other markets, has also expanded indicating that the Maltese tourism industry is attracting new markets to compensate for the possible decrease in arrivals experienced in its main markets.

Table 3.11 Percentage Market Share for Main Countries for selected years

Country	1980	1989	1994	1997	1998	1999	2000
UK	76.5	60.79	45.09	39.3	38	34.8	35.3
Germany	2.65	11.07	17.02	17.37	17.2	17.5	16.8
Italy	3.75	6.42	8.39	8.1	7.7	7.6	7.6
France	1.67	3.35	5.84	5.6	6.1	6.0	6.2
Belgium	0.5	1.03	1.52	2.3	2.1	2.3	2.2
Netherlands	1.0	2.09	3.85	4.7	4.8	5.4	5.3
Libya	2.25	3.76	3.45	3.5	3.2	3.7	3.6
USA	0.96	1.18	1.01	1.34	1.5	1.5	1.6
Scandinavia	2.78	3.24	2.92	3.53	3.5	4.2	4.4
Others ¹¹	7.94	7.07	10.91	14.26	15.9	17	17

Source: National Tourism Organisation of Malta/COS

The monthly pattern of tourist arrivals was such that most of the tourists were coming to the Islands during the summer period, i.e. July to September. Although recent years have seen a gradual spread of arrivals into the shoulder months, nonetheless, the seasonality pattern has shown minimal changes over the last ten years. **Table 3.12** below shows that between 1990 and 2000 there has only been a slight change in the percentage share of annual arrivals for the months of July to September. Some progress, albeit slight, has been registered in the period January to March and April to June. If one were to compare the average annual increase in tourist arrivals for each month, results would show that between 1990 and 2000, April experienced an average annual growth rate of 3.47%, followed by January and December at 3.46% and 3.45%, respectively. The summer months of July, August and September increased at an average annual rate of 3.06%, 2.52% and 2.35%, respectively. Thus with regard to specific months there has been an improvement in decreasing the share of tourist arrivals in the summer months and increasing that in the winter months and this trend should be strengthened and

¹¹ The 'Others' category includes other countries not mentioned specifically particularly countries in Eastern Europe, Middle and Far East, Africa, Australia, South America, Canada and Asia.

extended to other months through an improvement in the product offer (e.g. heritage) and the introduction of new products (e.g. rural tourism), aimed at attracting the off-peak markets.

Table 3.12 Percentage Share of tourist arrivals by month

Month	1990	1996	1997	1998	1999	2000
January	3.4	3.7	3.3	3.2	3.7	3.7
February	4.4	5.2	4.7	4.7	4.9	4.6
March	6.2	8.0	7.4	6.6	7.5	6.8
April	8.8	8.6	9.5	9.2	8.6	9.7
May	9.4	9.3	10.6	9.8	9.6	9.3
June	10.5	9.6	8.9	9.6	9.7	9.9
July	12.2	11.7	12.2	12.3	12.3	12.6
August	13.3	13.3	13.4	13.4	13.1	12.8
September	11.6	11.0	10.4	10.7	10.6	10.9
October	9.6	9.2	9.1	9.4	9.5	9.2
November	6.0	5.6	5.7	6.0	6.0	5.6
December	4.6	4.9	4.9	4.9	4.3	5.1

Source: National Tourism Organisation of Malta/COS

3.5.2 The development of tourist accommodation

The submission of applications to the Planning Authority for the development of tourist accommodation facilities (both new and extensions) has shown a decrease during this period, relative to previous years as shown in **Table 3.13** below.

Table 3.13 Number of tourist accommodation applications submitted to the PA 1993- 2000

	1993	1994	1995	1996	1997	1998	1999	2000
Applications submitted	17	33	20	15	28	28	23	22

Source: Planning Authority

Various major projects have been approved during this period primarily the Outline Permit for the Manoel Island/Tigne' Point project, which proposed a hotel with 600 beds as part of the development and the Cottonera waterfront project with a hotel having 310 beds. In addition to these a Development Brief was issued for the redevelopment of the White Rocks complex, which would account for another 1000 beds a net increase of over 600 beds.

It is estimated that future bed supply is likely to increase by about 8000 beds once projects that are currently under construction or which have a valid development permit materialise, whilst it is estimated that a further 3036 beds are still in application phase (Ministry for Tourism, 2001).

The future bed supply is expected to increase by about 8000 beds once projects currently under construction materialise. A further 3000 beds are still at an application stage.

It is encouraging to note that no new tourism accommodation developments were approved in areas outside the development zone boundary and in cases where such development was allowed this replaced or improved existing facilities. It is important to note, however, that extensions were approved to accommodation developments located outside the development zone boundary thus increasing the level of urban development in these areas. Even though in certain cases such development was limited to the boundaries of the site, this was not always so, and even when it did; it still constituted an increase in the massing of urban development within a rural area. Examples in this regard include the

extensions approved to the Seabank Hotel and the Riviera Resort Hotel, both in Mellieha and the extensions approved to the San Lawrenz Leisure Resort in Gozo.

Table 3.14 - Number of approved and refused tourist accommodation projects between 1998 and 2000

	1998	1999	2000
New projects	2	3	2
Extensions/refurbishment	4	5	9
Beds approved in new tourist projects	486	1354	430
Beds approved in extension/refurbishment projects	1016	538	1692
Total beds approved	1502	1892	2122
Tourist accommodation applications refused	9	10	3

Source: Planning Authority records

An analysis of the figures in **Table 3.14** shows that the numbers of new tourist accommodation establishments being approved are decreasing, yet the amount of existing tourist establishments requesting an extension is on the increase. Although on the one hand this has been generally limited to the re-conversion of existing structures or an increase in building height, nonetheless, the result is an increase in the intensity of tourist activity in the locality. Some extensions consisted in a request to extend by over 100 beds and this could be an indication of the mass tourism syndrome whereby with more beds the tourist accommodation establishment can reduce its costs per room and therefore be in a better position to negotiate advantageous rates with tour operators. Various establishments have requested incremental extensions and this process is certainly not sustainable. High increases in bed extensions result in a greater dependence on the tour operators to fill the beds and the local control over one's operations is thus impaired.

Despite these approvals the increase in bed capacity in all tourist accommodation, excluding holiday apartments increased from 38,932 beds in 1998 to 40,688 in 2000.¹² The distribution of the bed supply by type of accommodation during this period is given in **Table 3.15**. The share of beds in the five and four star hotel categories have increased during this period and in 2000 constituted 38.3% of tourist beds in serviced accommodation, an increase of 4% over the 1998 figure. On the other hand, the share in the lower category accommodation, i.e. three, two and one-star hotels and guesthouses has decreased. The bed capacity in holiday complexes, aparthotels and tourist villages increased by 3%. This scenario is a result of a policy emphasis on improving the quality of hotel accommodation and encouraging the development of the upper category establishments and extensions to existing tourist complexes. Unfortunately, this has resulted in a number of three-star properties changing business and diverting their interest into the senior citizens residential home market instead. Between 1998 and 2000 the number of beds in holiday flats increased from 7,500 in 1998 to 5,000 in 2000 (MTA, 2000b).

¹² *Central Office of Statistics data.*

Table 3.15 – Distribution of bed supply in serviced-tourist accommodation by category and class for 1998 - 2000

Accommodation category and class	1998	%	1999	%	2000	%
5 star hotel	2878	7.4	3526	8.6	3750	9.2
4 star hotel	10461	26.9	11119	27.2	11821	29.1
3 star hotel	8369	21.5	8322	20.3	7191	17.7
2 star hotel	2097	5.4	2061	5.0	1575	3.9
1 star hotel	210	0.5	188	0.5	159	0.4
Unclassified	468	1.2	-	0	-	0
Holiday complex/aparthotel/tourist village	12900	33.1	14181	34.7	14692	36.0
Guesthouse	1401	3.6	1374	3.4	1234	3.0
Hostel	148	0.4	148	0.4	266	0.7
TOTAL	38932	100	40919	100	40688	100

Source: Central Office of Statistics

Between 1998 and 2000 the St. Paul's Bay area (including Bugibba and Qawra) decreased its share of tourist beds whilst St. Julians and Gozo increased their share. This is an indication that St. Paul's Bay has reached a saturation stage and it is likely that the bed supply in this locality will decrease in future. St. Julians has become the hub of tourist and entertainment facilities whilst Gozo has seen a considerable development of tourist beds over the last years. The trends show that Gozo's tourist bed supply will increase further with the completion of the Chambray project and the extension of the San Lawrenz hotel. **Table 3.16** below summarises this information.

Table 3.16 - Change in share of tourist accommodation by the main tourist localities between 1998 and 2000 (incl. self-catering)

Locality	% share (1998)	% share (2000)
St Paul's Bay (including Bugibba/Qawra)	36.8	33.91
Mellieha	11.4	11.4
St Julians	15.9	17.35
Sliema	15.6	15.5
Marsascala	2.7	2.66
Gozo	6.0	7.9
Other	11.6	11.28
TOTAL	100	100

Source: Hotels and Catering Establishments Board

3.5.3 Impact of tourism activity on key resources

Tourists visiting the Maltese Islands, in general, do not spend their entire holiday within the precincts of their hotel or complex, but move around and visit and make use of a number of attractions and facilities. The heritage, which is an important element in the Maltese Islands tourist product, is one of the main attractions that most tourists coming to the islands make a point not to miss. Visits to heritage sites, museums and archaeological sites are an important activity during a tourist's stay on the Islands. Some prefer taking organised tours whilst others venture on their own using public transport or a hired car.

During this period the Hypogeum was re-opened after the site had undergone various improvements related to visitor management and interpretation. There is more visitor control to the site and one should book prior to visiting the site. Museums and Historical sites statistics for 2000 were not yet published during the compilation of this report and therefore the following Tables will examine the figures for the years 1997 – 1999. During this three-year period the number of paid individual admissions to museums increased by 154,509 or 43.4% to 510,349. During this same period museums income increased by 24.4% to Lm 571,223 in 1999 from Lm 459,251 in 1997. Admission figures are given in **Table 3.17** below.

Revenue from admission fees totalled Lm 403,305, Lm 536,127 and Lm 508,865 for the years 1997, 1998 and 1999, respectively (NSO, 2001f). This would mean that the revenue earned per each paying visitor was Lm 0.40 in 1997, Lm 0.41 in 1998 and Lm 0.39 in 1999. Considering the importance of tourism to the Islands and the potential of tourism to assist in the maintenance and upgrading of heritage sites through revenue earned, it is certainly discouraging to see such a meagre contribution to the Islands' prime resources. Tourism can certainly contribute more to such sites encouraging better presentation and interpretation of the heritage sites themselves and an upgrading or provision of visitor facilities.

Tourism can contribute more to the upgrading and maintenance of heritage sites and natural areas, including provision of interpretation and visitor facilities.

Another aspect in this regard, especially considering that over 1 million tourists visit the Islands, is that the number of visits to the various sites can increase. The figures quoted above include tourists as well as locals visiting the sites, particularly school children, and therefore, although the actual number of tourists visiting sites is not available, it can be calculated that the average number of sites visited by tourists is less than 2.

Table 3.17– Group admissions to museums and historical sites in the Maltese Islands 1997 – 1999

Museum/ historical site	1997	1998	1999	1997	1998	1999
	No. of paying visitors	No. of paying visitors	No. of paying visitors	No. of visitors entering free	No. of visitors entering free	No. of visitors entering free
Art	133,163	177,082	164,732	24,478	30,995	38,203
Archaeology and history	49,582	152,196	172,317	7,929	15,848	17,300
Natural History & Natural Science	9,483	14,317	9,379	10,808	11,599	13,162
Science and Technology	-	-	-	-	-	-
Ethnology & Anthropology	42,708	46,603	51,518	50,481	32,335	39,169
Monuments & Sites	485,535	587,920	596,142	111,856	75,580	85,073
Specialised	285,451	328,028	323,422	27,659	31,702	29,995
TOTAL	1,005,922	1,306,146	1,317,510	133,211	198,059	222,903

Source: National Statistics Office, 2001f

3.5.4 Tourism and the Infrastructure

The size of the Maltese Islands and its increasing population poses a serious problem on the infrastructural capacities of the Islands and with the addition of the tourists visiting the Islands the problems are compounded further. A good and adequate infrastructural capacity is imperative for a

thriving tourism industry, however, tourism places demands on water supply, electricity supply and the sewerage systems, as well as the road infrastructure and public transport, and contributes to the creation of waste.

It is estimated that tourism activity accounts for 9% of water consumed (Azzopardi, E., 2001). The demand for water by the tourism sector for the period 1998 – 2000 is presented in **Table 3.18** below. It is to be noted that annual water production figures refer to the period August to July.

Table 3.18 – Water demand by tourism for the period 1997/98 – 1999/2000

	1997/98	1998/99	1999/2000
Total annual water production (m ³)	40,772,926	37,963,808	36,604,128
Production to satisfy tourism demand (m ³)	3,669,563	3,416,742	3,294,371
Per capita demand per day (m ³)	0.324	0.293	0.321

Source: Water Services Corporation, 1998, 1999, 2000

The above Table presents estimated figures based on production levels. However, the billed consumption for tourism establishments for 1998/99 stood at 1.44 million m³ (WSC, 2000). This would mean that each tourist would be using approximately 0.125 m³ of water each day.

Although a sewage treatment plant exists, which treats a small percentage of the sewage produced (see **Section 3.9.7.2**), it is likely that most of the sewage produced from tourist establishments are flushed untreated into the sea¹³. It is estimated that 80% of water used is disposed of as sewage, according to the Sewerage Master Plan. Therefore, the total amount of sewage produced as a result of tourist activity in 1998/99, based on the figure of 1.44 million m³, is estimated at around 1.152 million m³.

With regard to the use of public transport, the report Tourism Carrying Capacity for the Maltese Islands, prepared by the Ministry of Tourism estimates that 88% of tourists make use of public transport. This would mean that for 1998, 1999 and 2000, 1,040,000, 1,068,000 and 1,069,000 tourists made use of the public transport at least once during their stay. It would be important to have more precise information on the actual number of trips made by tourists, however this information is not available.

Car rental is also another service which tourists avail themselves of. The Tourist Survey, carried out by the Planning Authority in 1996/97, estimated that 30%, 30.2% and 25% of the respondents coming in the summer, winter and shoulder months, respectively, make use of hired cars. Therefore, using these estimates the following number of tourists made use of car hire vehicles during each season for the years 1998 - 2000.

Table 3.19 – Tourists making use of a hired car by season

	1998	1999	2000
Summer	129,000	132,000	133,000
Winter	68,000	68,700	69,000
Shoulder months	132,000	136,700	136,200

Source: The Tourist Survey, Planning Authority, 1997

The following estimates by month may give an indication of the increased level of traffic resulting from tourism in terms of daily number of cars on the road as a result of tourist activity.

¹³ However, over the past few years, a few Hotels have constructed their own sewage treatment plants and water so treated is used for irrigation of their landscaped areas.

Note: Figures indicate approximate number of cars on the road as a result of tourism and are based on an assumption of 2 persons per car during the months of January – April and November – December and 3 persons per car during the other months.

The impact of tourism on waste generation is not so easy to quantify since no exact records are kept on the amount of waste generated by tourists. Blue Plan estimates that each tourist generates 1kg of waste each day (Lanquar, 1995). Therefore, basing estimates on this figure, tourism may have generated 11.3 million kg, 11.7 million kg and 10.3 million kg of waste during 1998, 1999 and 2000, respectively.

Table 3.20 – Daily number of cars on the road as a result of tourism

Month	1998	1999	2000
January	1712	2417	2098
February	3371	3018	2467
March	2660	2882	2581
April	3864	3723	3725
May	2611	2568	2365
June	2866	3005	2514
July	4866	4696	4514
August	5629	6026	4438
September	4400	4470	397
October	2813	3075	2493
November	2947	3412	3063
December	2723	2362	2694

Source: *The Tourist Survey, Planning Authority, 1997, NSO.*

3.5.5 Social Issues and Tourism

The impacts of tourism on the local community is very high in small islands; higher than it is in other larger countries, particularly since the contact ratio between tourists and the entire population is much higher in small islands than in larger countries where tourism is generally concentrated in specific areas. Thus it is important to monitor the impacts that locals perceive tourism to be generating with respect to their living environment.

In March 2000, the Malta Tourism Authority undertook a survey to monitor this aspect. Respondents were asked to indicate the impact of tourism activity on specific facilities and resources identifying impacts by season. The results are presented in **Table 3.21** below.

Table 3.21 – Perception of local residents of impacts resulting from tourism activity by season

Problem/Issue	Summer (%)	Winter (%)	Both seasons (%)
Pressure on infrastructure	37.4	23.1	26.3
Traffic/parking	33.0	15.4	19.8
Overcrowding	26.1	20.5	15.0
Dirt	25.1	17.9	27.0
Beach problem	24.7	20.5	11.3
Deterioration of values/mixing of cultures	20.7	12.8	25.5
Public transport	20.6	10.3	20.4
Increase in prices	20.4	10.3	30.9
Criminality/drugs	10.5	12.8	23.3
Noise pollution	9.6	2.6	4.8
Pollution	9.5	5.1	11.2
Diffusion of disease	8.1	15.4	15.5
Uncontrolled development/environmental problems	6.1	10.3	12.3
Less land available for Maltese	4.8	0.0	5.4
Misuse of resources	4.6	5.1	5.1
Shortage of goods	4.2	2.6	3.3
Roads/road signs	4.0	10.3	16.3
Tourist arrogance	2.0	0.0	2.6
Unemployment in winter	1.7	33.3	0.6
Deterioration of heritage sites	1.0	0.0	2.2
Seasonality	0.9	35.9	1.0
Illegal migration/work	0.9	0.0	2.6
Entertainment areas for tourists only	0.9	0.0	1.8
Improvement only in tourist areas	0.4	0.0	0.6
Low spending tourists	0.3	0.0	1.0
Language problem	0.3	0.0	0.8

Source: Malta Tourism Authority, 2001

The local residents indicated that tourism activity is creating serious negative impacts on the infrastructure and increasing the traffic and parking problems as well as a sense of overcrowding particularly during the summer months. Other major impacts have been perceived in the increase in prices throughout the year and seasonal unemployment in the sector resulting from the seasonality pattern of tourist arrivals. Locals also perceive that the use of public transport by tourists during the summer is creating negative impacts. It is also interesting to note that the locals have the perception that tourism activity encourages more criminality and drug abuse as well as a deterioration of values.

It is important to carry out such studies on a regular basis so as to monitor the impacts on the social fabric and on the residents, thus identifying the main recurring problem areas that would require specific actions. Nonetheless it is still clear that the majority of Maltese and Gozitans perceive tourism as an important economic sector.

The distribution of tourists between localities is also another important factor to determine the pressure of tourism on specific localities. The distribution of daily tourists by locality for each season is based on the results obtained from the Tourist Survey undertaken by the Planning Authority in 1996 – 1997.

From **Table 3.22** one can conclude that between 1998 and 2000 there has been a decrease in the number of tourists staying on the Islands each day. This was a result of the decrease in the total guest nights for the period, which reflects on the daily number of tourists on the Islands. This decreases the pressure on the local community and on the use of facilities and services. One should also note the high variation in the daily tourist population staying in St. Paul's Bay, Mellieha and Gozo in the winter months and those staying during the summer period. This confirms the seasonal nature of these localities compared to areas like St. Julian's, Sliema and Marsaskala. The above Table also indicates the importance of other localities, which are generally not considered as the main tourist areas, in attracting visitors during the shoulder months, possibly since their character offers an attractive element sought by such visitors. Hence the importance to retain the characteristics of these other localities and ensure that any development allowed respects the main features of these areas.

Table 3.22 - Estimated daily number of international tourists at each tourist locality for each season.

Locality	Winter '98	Shoulder '98	Summer '98	Winter '00	Shoulder '00	Summer '00
St Paul's Bay	3,773	3,965	13,256	3,535	3,660	11,592
Mellieha	2,577	2,845	6,873	2,414	2,626	6,010
St Julians	3,479	5,780	8,346	3,259	5,337	7,298
Sliema	5,890	8,383	9,819	5,518	7,740	8,586
Marsascala	699	938	1,473	655	866	1,288
Birzebbuga	166	91	491	155	84	429
Comino	0	91	491	0	84	429
Gozo	442	484	3,928	414	447	3,435
Valletta / Floriana	644	1,301	982	604	1,201	859
Rabat/Mdina	129	272	0 (*)	121	251	0 (*)
Attard	166	363	0 (*)	155	335	0 (*)
Others	2,301	5,750	3,437	2,156	5,309	3,005
TOTAL	18,407	30,264	49,095	17,245	27,941	42,932

Source: Planning Authority, Central Office of Statistics

(*) Although no figures have been indicated for these localities, this does not mean that no tourists stay in these localities. The results obtained from the survey, through a random sample of tourists, simply did not pick any tourist staying in these localities.

3.5.6 Indicators

Between 1998 and 2000, there has been an improvement in the availability of data relating to tourism activity, particularly as a result of continuous studies and research being carried out by the Malta Tourism Authority. Nonetheless, certain data that is important to determine the environmental impacts of the sector and assist in the planning of the sector is still lacking. It is proposed that the following indicators (see also Section 3.10.3 for a description of these indicators), be collected regularly in order to monitor trends in the environmental effects of tourism:

- Number of tourists staying in the main tourist localities each day by month
- Number of tourists at sandy beaches per day
- Number of bus trips per tourist per day
- Number of tourists visiting historic sites each day by month
- Average daily number of divers at main diving sites by month
- Daily number of cars on the road used by tourists
- Net tourism earnings (deducting imports for tourism)

3.5.7 Conclusion

The above analysis provides some information on the state of the environment with respect to specific tourism issues. Naturally, the above is not exhaustive. Other important data needs to be collected to determine, for example, the impact on ecological and marine resources particularly as a result of safari tours or diving activity. This will require specific studies and monitoring of specific areas (e.g. impact on historical sites). It is also important to distinguish between impacts resulting from tourist activity and impacts as a result of locally generated activity particularly from recreational activity. The Carrying Capacity Study¹⁴ will provide some further insight into the impacts of tourist activity on the economic, social and environmental fabric.

3.6. Mineral Resources

3.6.1 Introduction

The minerals industry in Malta is dominated by the extraction of limestone for use in the construction industry. This chapter concentrates on this sector. It defines Minerals Resources and examines the following aspects:

Current and Future demand for Mineral Resources

Current and Future Supply of Mineral Resources

Environmental implications and remedial action

Ways forward

3.6.2 Definition

Limestone may be grouped into two types namely “Softstone”, derived from the Lower Globigerina Limestone layer, and used mainly as building stone, and “Hardstone”, derived from the Upper and Lower Coralline Limestone layers (outcrops mainly confined to cliff faces, valley sides and inliers) and used mainly for aggregates.

3.6.2.1 Softstone

Typically this stone is fine-grained, homogenous, workable yet strong enough to build with. The Maltese softstone industry commonly identifies three categories of stone, namely best quality (typically used for churches, facades, etc.), second quality (typically used as dimension stone for houses) and poor quality (typically used in foundations etc.). The quarry operator on the basis of appearance, colour and sonority typically undertakes judgement on the quality of the stone.

3.6.2.2 Hardstone

Hardstone tends to be variable in nature, with single quarries often exhibiting considerable variation in the nature of the exploited limestones. Hardstone may be classified as first quality (being hard and nonporous) and second quality (being soft, more porous and less resistant to weathering). The physical and mechanical properties of limestone, do not compare favourably with examples of limestones used in construction in other countries (including British Standards). In fact, there is a noticeable lack of road surfacing material in Malta and Maltese limestone is especially prone to polishing.

3.6.2.3 Other Minerals

In addition to the mineral resources described above, lime is used for mortars and for agriculture; marble is used for decorative uses, clays for the manufacture of pottery, and boulders for sea defences. There has been offshore and on-shore exploration for oil and gas but no financially viable reserves have as yet been found. Although a salt industry thrived until 1979, at present saltpan facilities are largely small scale coastal facilities scattered along low lying shorelines, with the exception of that at Salina (see also Section 3.8.6).

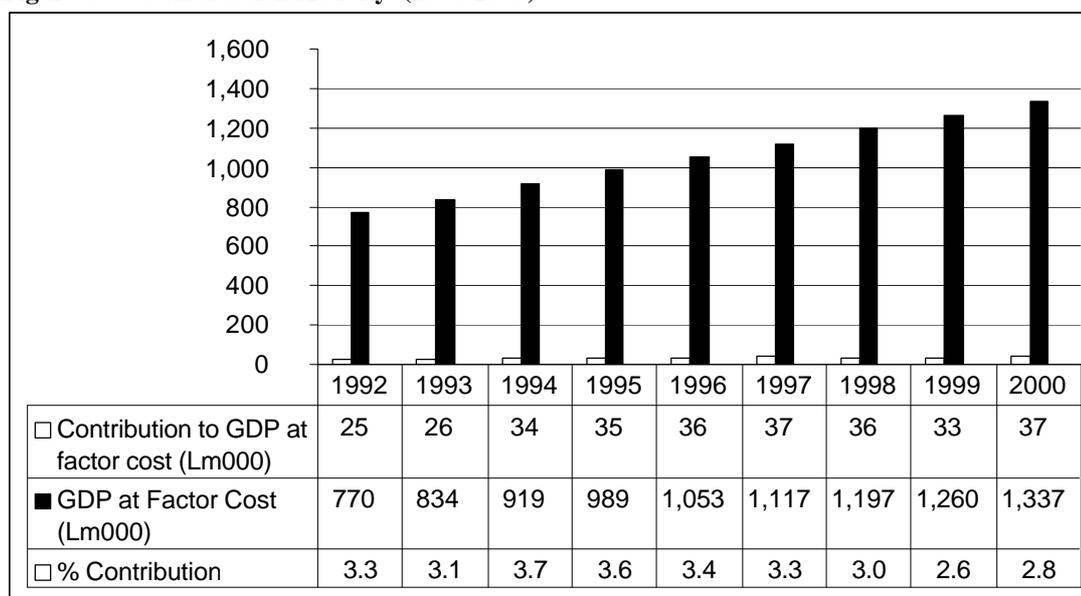
¹⁴ *This study was published in February 2002.*

3.6.3 Demand

3.6.3.1 Sources of Demand

Demand for limestone emanates exclusively from local sources, chiefly by the construction industry. Moreover, local resources provide the main raw material for the construction industry with little imports to compete with the produce. **Figure 3.8** gives an indication of the level of construction activity taking place in the Maltese economy of the years 1990 and 1999. Other sources of demand for quarried material are also identified in **Table 3.23**.

Figure 3.8 - Construction Activity (1990-1999)



Source: NSO 2002c

Table 3.23 - Sources of demand for limestone

Upper Coralline Limestone "Hardstone"	Tarmac,,Concrete,Facing of buildings Flagstones
Upper Coralline Limestone "Marble"	Decorative purposes
Globigerina Limestone "Softstone"	Buildings, Structures, Facing of buildings Restoration works, Monuments,, Limestone fill Paving slabs, Animal feed
Lower Coralline Limestone "Hardstone"	Plastering ,material , Tarmac, Concrete, Flagstones
Blue Clay	Pottery, Impermeable lining systems
Cliff fall boulders	Sea defences.

Source: Adapted from Wardell Armstrong, 1996

3.6.3.2 Future Demand

The future need for hardstone and softstone in the Maltese Islands will reflect the amount of construction likely to take place in connection with building works, road construction and other infrastructure projects. Employment-based construction work is difficult to predict accurately, but a steady need for housing stock can be safely predicted. Another key sector that consumes significant quantities of stone is road building, where the key requirements are for hardstone products. Most of the Island's roads will continue to be subject to repair and maintenance, so there will be a continuing demand for road building materials.

More specifically, demand for hardstone is linked to activity in the construction industry and to investment in buildings and infrastructure. As indicated above, key markets for hardstone aggregates are the manufacture of concrete products (ready-mix concrete, pre-cast structures and blocks), building and civil engineering projects, and road building and maintenance. Major projects consume significant quantities of materials and wide fluctuations in demand can be experienced in the hardstone sector due to substantial 'one-off' projects. The Minerals Subject Plan extrapolates estimates of historic production and computes a total demand of 7.5 million m³ of hardstone over the next 10 years.

Softstone tends to be more heavily used in buildings that are up to 6 to 8 storeys in height, but its aesthetic quality means that there will be a continued demand either for construction or for cladding. The Minerals Subject Plan computes a total demand of 4 million m³ of softstone over the next 10 years.

3.6.4 Supply

3.6.4.1 Overview

Most quarries in the Maltese Islands are privately owned. Active quarries include both those operating with Police licences and/or those having Planning Authority permits (**Table 3.24**). There are also a number of quarries, which although not currently operational, may be reactivated in the future. Over and above these there are a number of quarries where the Planning Authority has suspended operations (a total of 7 according to the Minerals Subject Plan, Planning Authority, 2002d). Quarries that cannot be considered as potential suppliers are the few restored quarries, and a number of abandoned quarries where no future operations are expected.

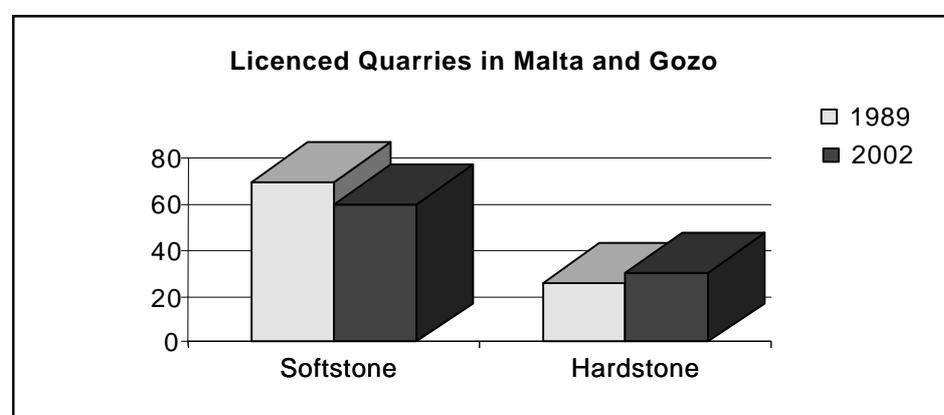
Table 3.24 - Licensed and Active Quarries in Malta and Gozo

	Malta	Gozo
Softstone	57	9
Hardstone	23	5

Source: Minerals Subject Plan, Planning Authority, 2002d

Figure 3.9 below shows the number of licensed quarries in Malta and Gozo in 2001 and compares this to the number in 1989. Whilst the number of softstone quarries has declined from 70 to 66 over the period, the number of hardstone quarries has increased from 26 to 28 (not including sites that are no longer operating or that have been suspended). The proportion of area occupied by the two different classes of quarries has also changed markedly, with hardstone quarries occupying an ever-increasing proportion of the total quarrying footprint. This change has been brought about by a number of factors, chiefly a slowdown in demand for softstone and decreasing levels of profitability (prices have been relatively stable, whilst costs have increased) on the one hand, and increasing levels of demand for hardstone on the other hand.

Figure 3.9 - Number of Quarries in Malta and Gozo



Source: Minerals Subject Plan, Planning Authority, 2002d

3.6.4.2 Location

Given that minerals can only be worked where they are found, the natural distribution of rock types has significantly influenced the location of quarries. Urban and other development, together with natural and cultural sites and areas, reduce the Islands' exploitable limestone resources. To the south of the Victoria Lines escarpment is the lower lying area to the east, comprising the main population centres, which poses a significant constraint on extraction, while to the west, the land rises sharply and includes the karstic limestone plateau, the Dingli-Rabat Plateau, and cliffs. In the western area, sensitive areas scheduled for ecological or landscape importance pose another important constraint. North of the Victoria Lines are a series of ridges and valleys with steep sides and rugged limestone exposures. In Gozo, coastal and exposed location of many quarries places landscape impacts as key concerns.

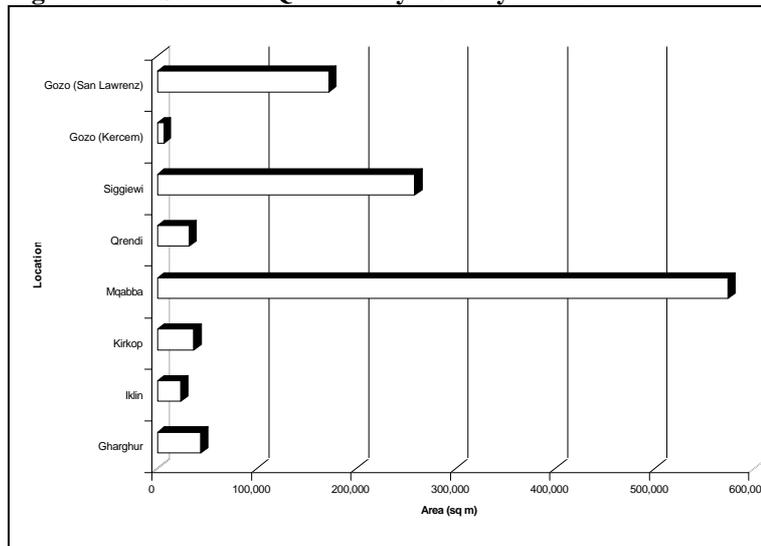
The softstone industry is mainly located in the central and eastern areas of Malta, whilst in Gozo the small number of quarries are located in San Lawrenz and Kerzem. In 1999, the overall surface area occupied by licensed softstone quarries, was approximated 1.1km², distributed as shown in **Table 3.25** and **Figure 3.10**. Hardstone quarries tend to be more widely distributed in Malta, with limited activity taking place in Gozo, as shown in **Table 3.26** and **Figure 3.11**. The overall surface area occupied by hardstone quarries was estimated to be some 1.3km² in 1999. **Figure 3.12** shows the geographic distribution of quarries.

Table 3.25 - Softstone Quarries by Locality in 1999

Locality	Total Area m ²
Gharghur	43,755
Iklin	23,728
Kirkop	36,763
Mqabba	573,981
Qrendi	31,759
Siggiewi	259,077
Gozo (Kerzem)	6,600
Gozo (San Lawrenz)	172,271
TOTAL	1,147,934

Source: Minerals Subject Plan, Planning Authority, 2002d

Figure 3.10 - Softstone Quarries by Locality in 1999

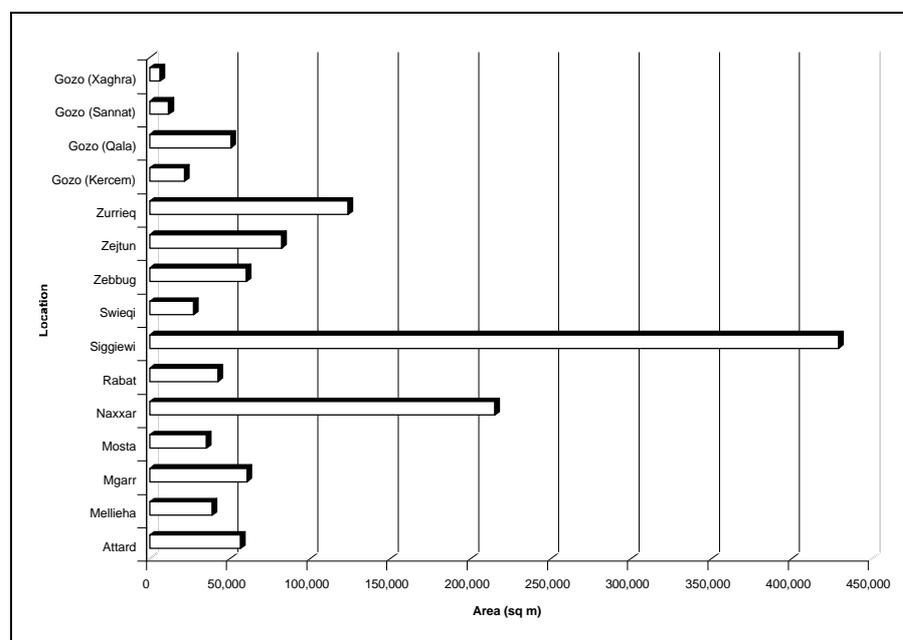


Source: Planning Authority

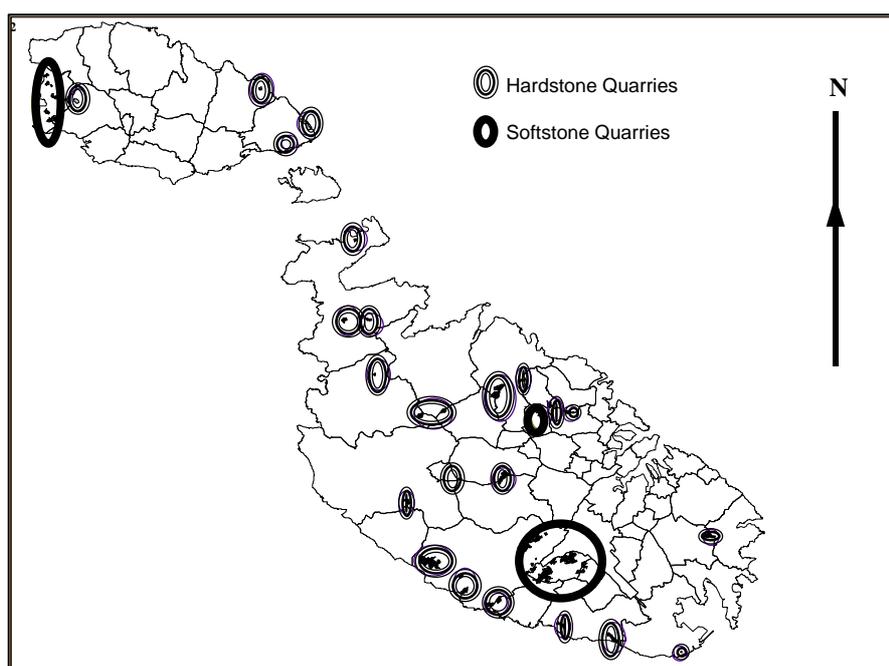
Table 3.26 - Hardstone Quarries by Locality in 1999

Locality	Total Area m ²
Attard	56,760
Mellieha	39,140
Mgarr	60,725
Mosta	35,540
Naxxar	214,953
Rabat	42,770
Siggiewi	429,280
Swieqi	27,350
Zebbug	60,180
Zejtun	82,190
Zurrieq	123,620
Gozo (Kercem)	21,665
Gozo (Qala)	50,712
Gozo (Sannat)	11,902
Gozo (Xaghra)	6,424
TOTAL	1,263,211

Source: Minerals Subject Plan, Planning Authority, 2002d

Figure 3.11- Hardstone Quarries by Locality in 1999

Source: Planning Authority

Figure 3.12 – Location of Quarries in Malta and Gozo

Source: Planning Authority

3.6.4.3 Regulation

Until 1992, Police licences provided the only means of control over the industry. These controls included few environmental conditions and little consideration for site restoration. With the setting up of the Planning Authority in 1992, quarry development became an activity requiring a development permit, however, active licensed quarries remained operating under the Police License regime and consequently the Planning Authority could only act by recommending that the Police take action in the case of infringements. New quarries and extensions to old ones required a development permit and so fell within the control of the Planning Authority, including more comprehensive controls and enforcement. Despite this, illegal quarrying and related activities have occurred at many sites, with many quarries infringing either their police license or a development permit, or both! (Planning Authority, 2002d). There is lack of compliance with licence and planning conditions, and evidence of illegal quarrying activity outside permitted boundaries, with many enforcement notices issued for illegal quarrying. Effective monitoring of licence and permit conditions remains difficult due to the sheer number of operators and sites. This is particularly true for the softstone industry. Nonetheless, there is an urgent need to bring the entire quarrying industry under one permitting, monitoring and enforcement regime while the authorities should be encouraged to try to instil a more sustainable approach to mineral exploitation within the industry itself. There seems to be much scope for closer partnership and discussion with the industry on matters such as environmental protection, restoration and reduction of nuisance on neighbours.

3.6.4.4 Production

Softstone quarries operate using a system of vertical and horizontal circular saws which shape ready-made building blocks to a pre-determined standard size. On the other hand, the extraction of hardstone for use as aggregates is a relatively new industry and incorporates modern techniques. Rock is extracted by means of explosives. This is followed by crushing and grading to prescribed particle sizes.

In view of the lack of a nationally agreed database on production the Planning Authority has sought to estimate softstone and hardstone output in its Monitoring report, and subsequently in its draft Minerals Subject Plan (2001), through aerial photography.

The Planning Authority had initially indicated that production could be in the region of 800 000 m³ of softstone and some 1.4 million m³ of hardstone (Mallia *et al.*, 1999). However, recent research based

upon aerial photography taken in 1994 and 1998, estimated an annual production of 400 000 m³ of softstone and 750 000 m³ of hardstone (Planning Authority, 2002d). The trend towards an increased contribution of hardstone to overall construction requirements has also been observed.

It is evident however that more data is required on this sector. One of the key issues highlighted in the Minerals Subject Plan is, in fact, the need for more accurate estimates of production.

3.6.4.5 Future Supply

During the period 1995 - 2000, the Planning Authority granted development permission for 27 developments consisting in extensions to existing quarries or new quarries. Permitted reserves are in the region of 13.5 million m³ (softstone) and 28.5 million m³ (hardstone), estimated to provide supply adequate for 34 years (softstone) and 38 years (hardstone) at current production rates (Planning Authority, 2002d).

In addition to reserves that are currently being exploited (i.e. operational quarries), the Mineral Resources Assessment, commissioned by the Planning Directorate identifies 26 search areas for future extraction where minerals development is considered to be potentially viable and gives estimates of volumes. A total potential resource of 467 million tonnes of hardstone (175 million m³) and 428 million tonnes (238 million m³) of softstone is estimated. The amount of years that permitted reserves are expected to last is shown in **Table 3.27**, although this cannot be determined with accuracy due to lack of precise information on the volume of permitted reserves and on the current production rates.

A total potential resource of 467 million tonnes of hardstone and 428 million tonnes of softstone is estimated.

Moreover, given that environmental considerations have not yet been incorporated into the assessment, the amount actually feasible from a planning and environmental perspective is likely to be lower than that predicted by the report.

Table 3.27 - Reserves in Malta and Gozo

	Softstone		Hardstone	
	Volume	Years	Volume	Years
Permitted	13.5 million m ³	34	28.5 million m ³	38
Potential ¹	238 million m ³	600	175 million m ³	233

Source: Minerals Subject Plan, Planning Authority, 2002d

Note 1: Potential resources include Indicated and Inferred Resources based on the Minerals Resources Assessment, 1996

3.6.5 Environmental Impact and Remedial Actions

While the built environment of Malta is very much shaped by “franka” stone for use in buildings, structures, as facing stone, decorative purposes and restoration of historic monuments and buildings, the negative environmental impacts caused by quarrying (of both soft stone and hard stone) can be significant. These include problems of resource depletion, impacts on landscape, ecology, water resources, archaeological sites and buildings, as well as generation of noise, air pollution and waste. These environmental problems, in turn, can generate secondary impacts on other economic activities such as agriculture (good quality soil and areas of high agricultural land may be damaged as a spill-over effect) and tourism (in areas of conflict, tourism activity suffers a negative spill over effect from unsightly and polluting activities).

3.6.5.1 Resource Depletion

One of the key areas of concern is that Limestone is a non-renewable natural resource. Current rates of production, consumption, and waste cannot be sustained indefinitely into the future, even with

discoveries of new resources. There is reason to assume that rates of depletion are higher than optimal owing to economic factors that work against keeping the resource *in situ*. In addition, there have been instances (e.g. Quarries at Tad-Dawl and Ta' Kandja, limits of Mqabba and Tal-Balal) where quarries were abandoned prematurely or quarrying areas built upon (e.g. L-Iklin).

In response to this concern, the Planning Authority's Minerals Subject plan states that there exists an adequate supply of permitted hardstone and softstone for the period to 2010 and sets out policy against the development of any new quarries until the first review of the Plan (a period of 5 years). A framework is also put in place to guide quarry extensions. Areas identified as priorities by the Minerals Resources Assessment are being considered as constraints on development by the Planning Authority to avoid further sterilisation of good resources. In addition, all applications for new quarry development require an Environmental Impact Assessment including requirements to explain need for the resource. Efforts to regulate waste generated also have a direct bearing on sustainability (see below).

3.6.5.2 Damage to Landscape, Ecological Areas, Water Sources, Archaeological Sites, Buildings and Infrastructure

Softstone quarries with sheer, almost vertical sides and hardstone quarries developed through blasting mechanisms, result in the scarring and breaching of hillsides, valleys, coastal cliffs, and faults. Unsightly stockpiles of stone and unusable rubble, mechanical plants, buildings and vehicles serve to generate considerable landscape damage. Quarries themselves have often led to a complete destruction of habitats and species. This, coupled with the building of roads and the generation of traffic through the countryside, creates substantial damage to ecological areas. Blasting, storage of fuel, oil chemicals and other potential contaminants, septic tanks, the deposit of refuse and oils in quarries pose a threat to groundwater and watercourses. The use of drilling and blasting in hardstone quarry operations can cause further damage to archaeological sites when the quarry is in operation, and quarries have sometimes led to the complete destruction of archaeological sites. In addition to the risk of damage to buildings and infrastructure through vibrations caused by drilling and blasting, quarries can also cause deterioration to roads around quarry area by heavy trucks.

In the past, some disused quarries had been crudely restored or rehabilitated to agricultural use or partly infilled with a variety of materials including inert quarry and construction waste, scrap and domestic refuse. The Planning Authority's Minerals Subject Plan now seeks to encourage restoration and to protect environmental assets, including agriculture and water supplies, as well as society through the control of site operations that may cause disturbance. Policies are included which seek to improve on current practice. In addition, a code of practice regulates the way quarries should be operated in a way that causes minimal environmental damage and the Planning Authority closely monitors blasting activities. Furthermore there are efforts aimed at the protection of historical urban areas and of areas of ecological, scientific or archaeological importance through the Planning Authority's scheduling mechanism, and through the National Protective Inventory.

3.6.5.3 Noise, Air Pollution and Dust Generation

Another host of environmental problems stem from the use of mechanical equipment (particularly drilling and blasting in hardstone quarries) together with the generation of traffic. The Minerals Subject plan seeks to control site operations that may cause disturbance with policies striving to improve on current practice. The Code of Practice also provides guidance in order to minimise disturbance.

3.6.5.4 Waste Generation

The Planning Authority's Waste Management Subject Plan (Space For Waste) estimates that that waste from construction and demolition totalled some 1.2 million tonnes in 2000, roughly 80% of total wastes deposited at Maghtab. Planning Authority estimates also reveal that almost half the material extracted from softstone quarries is discarded, the percentage being significantly lower in hardstone quarries. This in turn has often created landscape, ecological, and dust generation problems, as well as having important repercussions on the sustainability of the quarrying industry.

The Planning Authority's Minerals Subject Plan encourages an increase in the contribution of alternative supplies, particularly through the recycling of inert construction, demolition and quarry

wastes. In fact, it looks at disused quarries as potential landfills for inert wastes and proposes policies that regulate such development. There are also related initiatives taking place within the Waste Management Implementation Strategy of the Ministry for the Environment¹⁵. Dumping of inert waste is now only legally possible against payment of a fee and the separation and re-use of inert waste is actively encouraged and enabled.

3.6.6 The Way Forward

The extraction, use and subsequent disposal of minerals, generates considerable environmental impacts, not all of which can be effectively mitigated. Moreover, the fact that limestone is a non-renewable natural resource constitutes an important consideration in the futurity of the quarrying and construction industry as it stands.

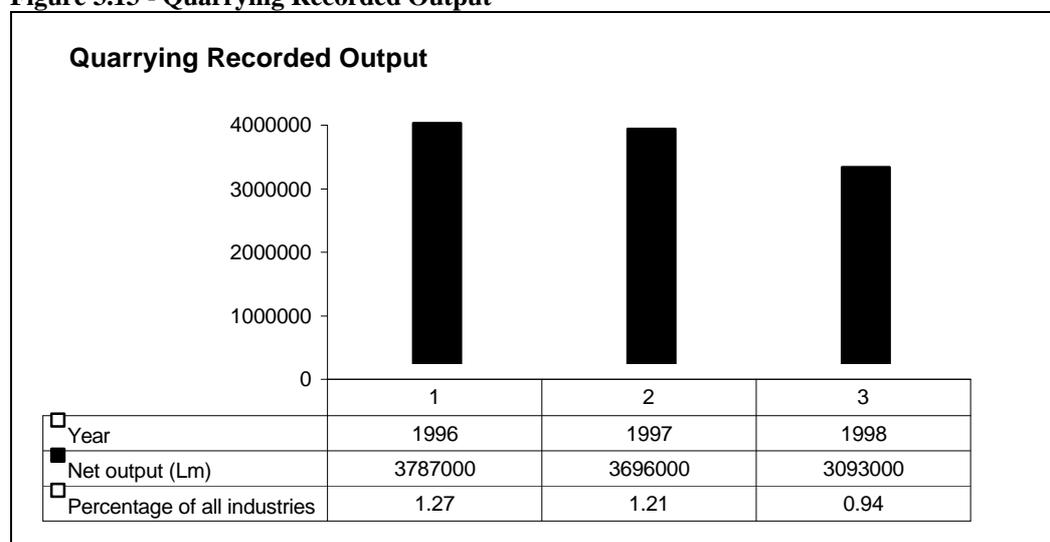
At the same time, mineral resources constitute an important input to the Maltese economy. They provide the main raw material for the construction industry to be used in housing, roads, schools, hospitals and other aspects of the Islands' infrastructure. According to the Employment Training Corporation the quarrying industry employed some 241 persons in 2001, with the declared employment figures showing a marked downward trend. It generated a net output of some Lm 3.1 million (Table 3.28 and Figure 3.13).

Table 3.28 - Employment in Quarrying (including self employed)

Year	90	91	92	93	94	95	96	97	98	99	00	01
Employees	325	308	299	288	287	287	307	260	261	263	255	241

Sources: Employment & Training Corporation.

Figure 3.13 - Quarrying Recorded Output



Source: Industry Statistics, COS 1993-7

Although the proportion of GDP generated by the sector is relatively low in comparison to other sectors in the economy (such as Manufacturing), however it has important linkages with other domestic sub-sectors. The construction industry (including the quarrying industry) employed 4200 persons in 1998 and generated a gross output of some Lm86 million (COS, 1993-7).

There is a need to balance the economic benefits of the construction industry with environmental considerations, in the context of sustainable development.

¹⁵ This Ministry has been renamed Ministry for Resources and Infrastructure in March 2002.

There is therefore a need to balance the economic benefits of the construction industry with environmental considerations, in the context of sustainable development. In this regard, the Minerals Subject Plan constitutes the first strategic and comprehensive attempt by the Planning Authority to provide for the future supply of minerals and to control the impacts of extraction. It covers a 10-year period from 2000 to 2010, and formulates policies and recommendations aimed at extending planning controls across the industry. The Plan recommends a review of the legislative system in order to address the issues related to the longer-term and continuous nature of the minerals development process. It is also worth noting that the Planning Authority's Minerals Subject Plan encourages industry to set up a single representative trade organization to facilitate the development of technologies, improved environmental standards and effective liaison with Government.

3.6.7 Indicators

Although some data improvement has been registered over the review period, mainly through the work associated with the Minerals Subject Plan, a more rigorous and continuous data collection exercise related to mineral production, demand and supply is required in order to ensure a steady supply of resources of the right type.

The following indicators are being proposed in order to assess the performance and environmental impacts of the minerals industry:

- Construction Activity
- Production of hardstone and softstone
- Permitted reserves in Malta and Gozo years to depletion
- Potential reserves in Malta and Gozo
- Area of licensed and active quarries in Malta and Gozo
- Construction and Demolition waste balance per annum
- Employment in quarrying

These indicators are further elaborated upon in Section 3.10.4.

3.7 Land, Land-Use and Land Cover

3.7.1 Introduction

Land is a finite resource and in such a small country as Malta, the rational use of land is possibly the most difficult of responsibilities. The type and quality of the land affects its use and while some land can be used for a limited range of activities, other land can accommodate a wide range of potentially conflicting uses. The conflicting requirements expressed by various activities on such a small landmass as that of the Maltese Islands, can be considerable and unless an appropriate management structure is in place, these conflicts can bring about huge environmental problems. This management structure is embodied in the local spatial planning process, which, despite the constant need for improvement and vigilance, has brought about significant changes to the way development control is exercised locally, also resulting in increased environmental protection, despite the occasional controversial decision.

Land use is a term that evokes considerable conflicting feelings depending on the position of the person concerned, that is, whether the person is a landowner or simply a land user (the latter includes uses such as recreation). The amounts of each land type used for particular purposes are not static and the extent and rate of these changes are of critical importance in the development of planning policies as well as in their implementation and monitoring.

Of particular interest are changes that occur in the following land types:

- areas within the development zone
- areas outside the development zone
- areas taken up by housing development
- areas used for agriculture

- areas supporting natural habitats

Current land use is a product of historical, political, environmental, economic and social influences that have acted in unison or interchangeably over time. Many of the uses are interchangeable, change being often brought about by environmental, economic and social pressures. A specific use of land is largely limited by its “carrying capacity” that, if exceeded causes irreversible and often undesirable change.

When the carrying capacity of a parcel of land is reached, its “flexibility” is greatly reduced. This is a crucial point since the availability and amount of land that can be used flexibly for a variety of land uses is a critical environmental factor. Loss of flexibility is brought about by built development, quarrying and landfilling with no or poor restoration.

Changes from one land use to another affect other environmental issues. The most important of these changes are those resulting in loss of rural land to urban uses as well as changes in the way that rural land is managed.

3.7.2 Classifying Land-Use

Various classifications of land-use or land-cover exist. These have been developed at state level (e.g. Washington), at national level (such as those developed in the UK, Australia, most EU Member States, Switzerland and Japan), as well as at International or Regional level (for example, the classifications established by FAO and Eurostat and the Anderson classification).

Although land use categories have for long been used locally in the formulation of plans and in mapping, no formal land-use classification has as yet been agreed. A number of land use classifications have therefore been applied for different projects, leading to potential conflicts and lack of data comparability¹⁶. It is therefore of utmost importance that a National Land Use Classification be adopted for the Maltese Islands in the short term so that all plans, programmes and maps refer to the same agreed categories, thereby facilitating comparisons between plans. In discussions with the National Statistics Office, the author has been informed that a National Land Use classification based on the CORINE classification will be adopted for the Maltese Islands in the coming months¹⁷.

It is of utmost importance that a Land Use Classification for the Maltese Islands is adopted in the short-term.

In view of an absence of an agreed National Classification, this report is using the draft Classification System on Land Cover and Land Use being developed by the Statistical Office of the European Communities (Eurostat) based on a number of existing systems (both international and national) (Eurostat, 2000). The applicability of this system for use locally as well as its compatibility with other datasets (e.g. Habitats classification), should however be assessed by the competent authorities before it is formally adopted. The classification that will be used in the rest of this report is reproduced in **Table 3.29** below.

We would like to clarify that for the purposes of this report, the concept of “Land” is considered to extend to coastal waters as well. Of particular importance is to clarify the distinction between Land Use and Land Cover¹⁸. Land Cover refers to the physical aspects of land – “the observed physical cover of the earth’s surface” (Eurostat, 2000), whereas Land Use refers to the functional aspects related to land – “the description of the same areas in terms of their socio-economic function”.

¹⁶ This is a common problem across the world but one that has started to be addressed through harmonisation projects at an international level. The cross-functionality and globalisation of issues has resulted in the same datasets being required by different disciplines (e.g. environmental and regional policy or agriculture and territorial planning) so that comparability and transferability of datasets is crucial.

¹⁷ One must however note that although it contains some land-use elements, the CORINE classification is essentially a Land Cover not a Land-Use classification. A classification adopting both the CORINE Land Cover Database and a Land-Use classification such as that developed by EUROSTAT should be considered.

¹⁸ These two terms are sometimes incorrectly considered to be synonyms of each other.

Once a National Land-Use Classification is established, other possibilities would present themselves, including linking land uses with socio-economic activities (e.g. through linking with NACE¹⁹ or ISIC²⁰) or even bridging with other complementary classification systems such as the EUNIS Habitat classification or CORINE Land Cover database.

Table 3.29 – Land Use classification proposed for the Maltese Islands adapted from ESTAT/LAND/48 (Eurostat, 2000)

Use Class	Sub-class	Land-use	DESCRIPTION
U1	U11	Agriculture	Areas utilised for agricultural purpose; including growing of cereals, vegetables and other crops, horticultural specialities and nursery products, fruit, nuts, beverage and spice crops; farming of cattle, dairy farming, farming of sheep, goats, horses, swine, poultry, rabbits, bees and other animals; including mixed farming.
	U12	Forestry	Areas utilised for forestry purposes; Here taken to mean “woodland and other areas having an appreciable tree cover”, including areas used for afforestation purposes. In the case of the Maltese Islands, this will be the same as the Land Cover class falling under “Woodland”.
	U13	Fishing	Areas utilised for fishing purpose; including offshore and coastal fishing, taking of crustaceans and molluscs, hunting of aquatic animals (e.g. sea urchins, etc.), gathering of marine materials; operation of fish hatcheries and fish farms, including tuna penning, algae farming, etc.
	U14	Quarrying	Areas utilised for quarrying purposes; including quarrying of limestone, quarrying of stone for construction, production of salt, extraction of natural gas and crude petroleum.
U2	U21	Energy Production	Areas utilised for producing and generating energy; including production of electricity by all means including thermal, nuclear, gas turbine, diesel and renewables; manufacture of gas by purification, blending and other processes from gases of various types and production of gas for the purpose of gas supply by carbonation of coal or from by-products of agriculture.
	U22	Industry, Manufacturing	Areas utilised for industrial and manufacturing purposes; including manufacture of food products and beverages, tobacco products, textiles, wearing apparel, dressing and dyeing of fur, tanning and dressing of leather, manufacture of leather products; manufacture of wood, cork and wood products, pulp, paper and paper products, publishing, printing and reproduction of recorded media; manufacture of coke, refined petroleum

¹⁹ NACE is the classification of economic activities developed by the European Union

²⁰ ISIC is the International Standards Industrial Classification developed by UNIDO.

			products and nuclear fuels; manufacture of chemicals and chemical products, rubber and plastic products; manufacture of non-metallic mineral products (glass, ceramics, tiles, bricks, cement, lime, plaster, concrete, etc.), basic metals, fabricated metal products, machinery and equipment; computers, radio, television and communication equipment, medical, precision and optical instruments, watches and clocks; motor vehicles, trailers and semi-trailers, transport equipment, manufacture of furniture and recycling
U3	U31	Transport, Communication, Storage, Protective Works	Areas utilised for transport, communication, storage and protection; including transport via railways, other land transport, transport via pipelines, water transport and air transport; steam and hot water supply; telecommunications networks; storage and warehousing; protective works (excludes distribution of electricity and gaseous fuels other than transport via pipelines)
	U32	Water, Waste Treatment	Areas utilised for water and waste treatment; including recovery and purification of water; stations to raise water levels, for purifying waste water; decanters; spreader areas; waste disposal and reduction; sewage and refuse disposal.
	U33	Construction	Areas utilised for construction whatever the degree of completion.
	U34	Commerce, Finance, Business	Areas utilised for commercial, financial and general business activities, including handcraft; including wholesale distribution, retail distribution and services; maintenance and repair services; hotel and catering services; banks, credit institutions, insurance, financial auxiliaries; renting services, personal services, business activities; handicrafts.
	U35	Community Services	Areas utilised for public administration, local authorities, defence, education, health and social work, religion; including central and local government administration services; justice administration services; community protection services; national defence; social security, public health, sanitary and veterinary services; social work services; education and research/development and religion.
	U36	Recreation, Leisure, Sport	Areas utilised for recreational, leisure and sport purposes; including library, archives, museum and other cultural activities; amenity, amusement and show activities; motion picture, video, radio and television activities; sporting activities; holiday camping and allotments.
	U37	Residential	Areas utilised for housing purpose; excluding hotels, old people's homes, children homes, prisons, monasteries and convents.

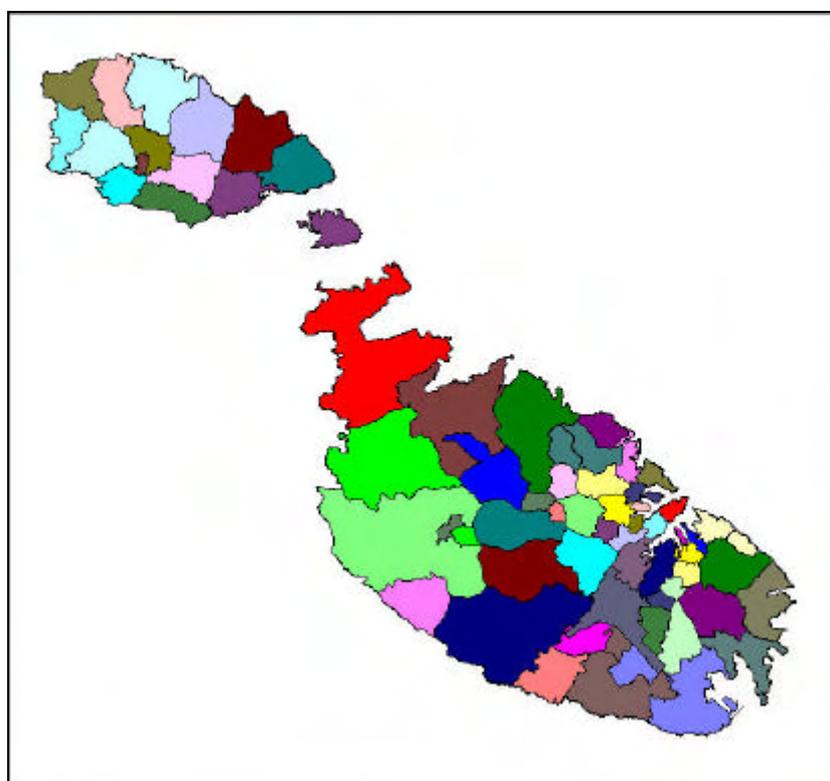
U4	U40	Unused	Unused areas; including unused lands, unused land formerly developed (vacant or derelict)
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The above land use classification excludes natural areas, such as garrigue and maquis, which are included in Land Cover classifications, such as the CORINE Land Cover and that developed by EUROSTAT. A draft Land Cover classification for Malta is proposed in Section 2.7.4.

3.7.3 Land Classifications

An understanding of how land is actually being used at any given time is essential for a full understanding of land-use. Administratively, the Maltese Islands are divided into 68 Local Councils, 54 on Malta and 14 on Gozo²¹ (see **Figure 3.14**). The largest Local Council is that of Rabat (Malta), with a land area of 26.60 km², whereas the smallest is Senglea with a land area of 0.16 km². In terms of population density, the Council with the highest density (22,074 individuals per sq km) is also Senglea, whereas that with the lowest population density is Ghasri, with 74 individuals per sq km. **Table 3.30** gives the land area of the various Local Councils, together with their respective population densities.

Figure 3.14 – Local Council boundaries



Source: Mapping Unit, Planning Authority

²¹ *Comino is under the administrative jurisdiction of Ghajnsielem.*

Table 3.30 – Land Area and Population Densities per Local Council

Council	Island	Area (km ²)	Population 1995	Persons per km ² 1995
Attard	M	6.64	9,214	1,388
Balzan	M	0.60	3,560	5,964
Birgu	M	0.52	3,069	5,852
Birkirkara	M	2.74	21,281	7,760
Birzebugia	M	9.21	7,307	793
Bormla	M	0.91	6,085	6,703
Dingli	M	5.67	2,725	481
Fgura	M	1.14	11,042	9,663
Floriana	M	0.94	2,701	2,863
Fontana	G	0.47	817	1,725
Ghajnsielem	G	7.18	2,176	303
Gharb	G	4.63	1,030	222
Gharghur	M	2.02	1,991	988
Ghasri	G	5.00	369	74
Ghaxaq	M	3.85	4,126	1,071
Gudja	M	2.25	2,882	1,281
Gzira	M	0.97	7,872	8,097
Hamrun	M	1.05	11,195	10,624
Iklin	M	1.73	3,098	1,795
Isla	M	0.16	3,528	22,074
Kalkara	M	1.76	2,833	1,611
Kercem	G	5.49	1,557	283
Kirkop	M	1.14	1,957	1,715
Lija	M	1.10	2,497	2,279
Luqa	M	6.72	6,150	915
Marsa	M	2.76	5,324	1,932
Marsascala	M	5.38	4,770	887
Marsaxlokk	M	4.71	2,857	606
Mdina	M	0.89	377	426
Mellieha	M	22.64	6,221	275
Mgarr	M	16.12	2,672	166
Mosta	M	6.78	16,754	2,472
Mqabba	M	2.60	2,613	1,004
Msida	M	1.70	6,942	4,084
Mtarfa	M	0.73	1,506	2,074

Table 3.30 – Land Area and Population Densities per Local Council .../Cont.

Council	Island	Area (km ²)	Population 1995	Persons per km ² 1995
Munxar	G	2.82	780	276
Nadur	G	7.17	3,882	541
Naxxar	M	11.57	9,822	849
Paola	M	2.50	9,400	3,764
Pembroke	M	2.30	2,213	961
Pieta	M	0.45	4,307	9,536
Qala	G	5.86	1,492	255
Qormi	M	5.03	17,694	3,518
Qrendi	M	4.90	2,344	478
Rabat (Malta)	M	26.60	11,484	432
Rabat (Victoria)	G	2.90	6,524	2,251
Safi	M	2.28	1,731	758
San Giljan	M	1.61	7,352	4,570
San Gwann	M	2.62	12,011	4,589
San Lawrenz	G	3.57	552	155
San Pawl il-Bahar	M	14.53	7,392	509
Sannat	G	3.85	1,604	417
Santa Lucija	M	0.72	3,605	4,991
Santa Venera	M	0.91	6,183	6,826
Siggiewi	M	19.88	7,097	357
Sliema	M	1.30	12,906	9,958
Swieqi	M	3.05	6,721	2,201
Ta' Xbiex	M	0.29	1,732	5,933
Tarxien	M	0.88	7,412	8,451
Valletta	M	0.84	7,262	8,635
Xaghra	G	7.62	3,669	481
Xewkija	G	4.53	3,128	691
Xghajra	M	0.97	685	709
Zabbar	M	5.35	14,138	2,643
Zebbug (Ghawdex)	G	7.56	1,446	191
Zebbug (Malta)	M	8.66	10,398	1,201
Zejtun	M	5.37	11,379	2,120
Zurrieq	M	8.46	8,684	1,027

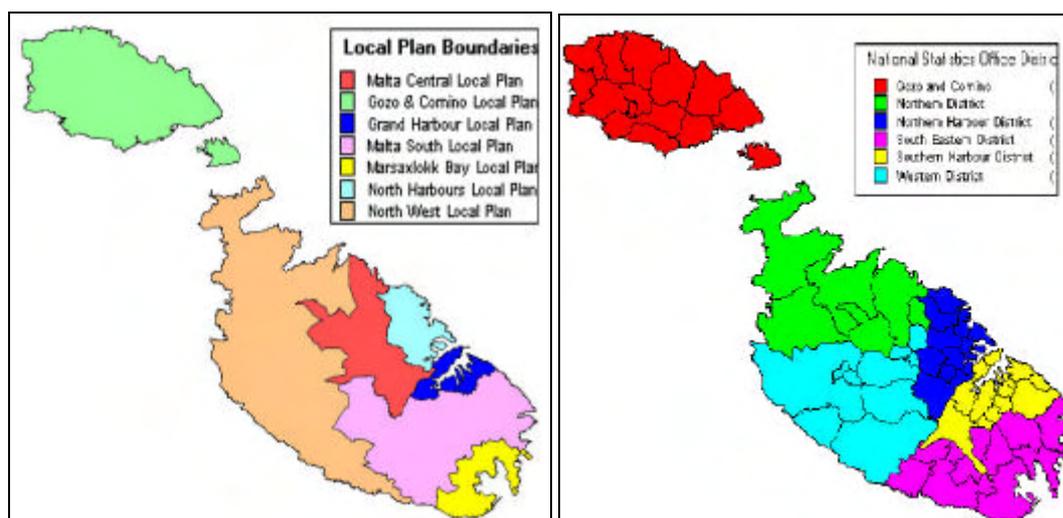
Source: Planning Authority

The Maltese Islands are also sub-divided into a number of regions for planning or statistics reasons. Unfortunately, different Government departments or Agencies have used different classification regions for their own specific purpose leading to a lack of comparability of similar or related data collected by different entities. For example, while the National Statistics Office classifies the Maltese Islands into six Districts for statistical purposes, the local planning system as established by the

Planning Authority classifies the Islands into seven different Local Plans. This apart from other administrative districts such as the agglomerations used by the Drainage Department and the districts used by the Police and Health Department.

Figure 3.15 gives the various classification Plan systems applied locally for statistical and planning purposes.

Figure 3.15 Map of the Maltese Islands showing the categorisation into Local Plan areas (left) and into National Statistics Office Districts (NUTS 2) (left).

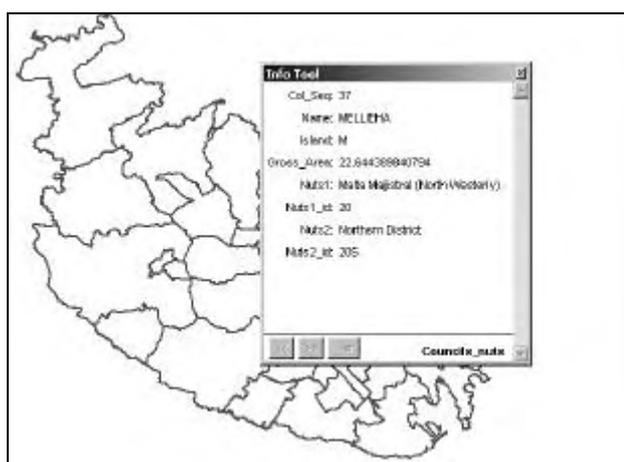


Source: Planning Authority

There is therefore a dire need for these various entities to develop one common system that can be adopted by all. A probable candidate is the NSO system, which follows the NUTS²² Coding System developed at a European level. In fact, the NSO Districts are equivalent to the NUTS 2 category²³. **Figure 3.16** illustrates an example from the Maltese NUTS coding system.

Figure 3.16 – Example of the NUTS coding system for Malta

Source: National Statistics Office/Planning Authority



²² NUTS stands for “Nomenclature for territorial units for statistics”. It was established by Eurostat to provide a single uniform breakdown of territorial units for the production of regional statistics for the EU. It is a five-level hierarchical classification (three regional levels and two local levels).

²³ The National Statistics Office classifies the Maltese Islands into NUTS 1 (Regions), NUTS 2 (Districts) and NUTS 3 (Local Councils).

3.7.4 Land Cover

Between 1991 and 2001, the Planning Authority undertook a number of environmental resources surveys that covered the entire islands. This body of data has generated a complete habitats map of the islands, which, together with other data from aerial photography, has been instrumental in building a land cover geographic information system²⁴. 16 different types of land use have been identified, as shown in **Table 3.30**.

One basic classification is that dividing the landmass into Urban or Rural areas. These two land types, together with their sub-categories, will now be considered separately.

Table 3.30 - Land Cover statistics for Malta²⁵

Land cover	Area (km ²)	% of Malta's surface area (247 km ²)
Urban	61	24.7
Greenhouses	0.38	0.15
Cropland	89.6	36.3
Woodland/Afforested	3.7	1.5
Maquis	1.9	0.77
Garigue ²⁶	24	9.72
Watercourses	1.8	0.73
Boulder Screes & cliffs	2.4	1
Steppe	2.0	0.81
Bare land	0.2	0.08
Coastal waters	N/A	NA
Rocky Shores	N/A	N/A
Sandy Beaches	0.1	0.04
Wetland ²⁷	0.2	0.08
Clay Slopes	1.9	0.77
Disturbed Ground ²⁸	8	3.24

Source: Environmental Management Unit, Planning Authority

3.8 Rural Land Uses

3.8.1 Natural Resource Land-Uses (U1)

In a small country like the Maltese Islands, a range of different rural land types, and particularly different intensities of management, is desirable in environmental and sustainability terms. The maintenance of natural rural areas (i.e. areas of land not under cultivation) is very important as it helps support the island's important biodiversity as well as enhancing the rural experience. Hence, the amount of non-arable rural land-use is an important indicator of the diversity of the countryside and the extent of natural areas, though it gives no indication on their quality or management.

²⁴ The map is not yet entirely digitised so that only partial cover is currently available although work is currently underway to finalise the digitising of data on the entire territory.

²⁵ Some of this information still needs to undergo a consistency check. Data for Gozo and Comino is still being digitised.

²⁶ This category includes rocky steppe and maritime garigue.

²⁷ This category includes all wetland types – salt marshes, salt water lagoons, transitional coastal wetlands and large temporary pools (excluding small kamenitzas)

²⁸ This category includes disturbed steppic ground

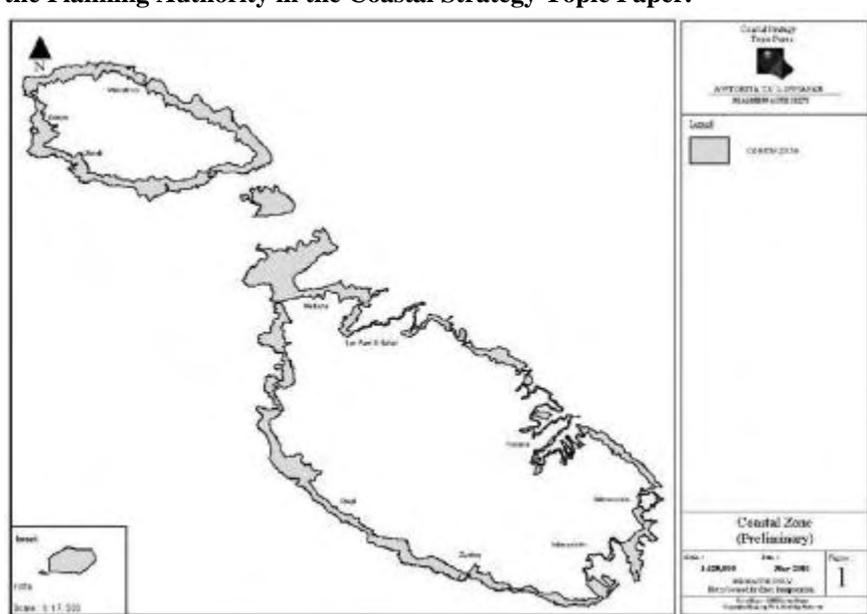
Therefore the presence of rural land not in arable production is a positive attribute. Indicator LU1 picks up this trend.

Indicator LU1: Non-arable Rural Land-Use
Aim: To monitor trends in the amount of rural land set aside for nature conservation or informal recreation
Measure: % of rural area not used for agriculture purposes or not taken up by urban-type land uses such as quarrying, industry and residential development.

3.8.2 Inland vs. Coastal Rural Areas

The total land area classified as rural (whether arable or otherwise) totalled 244 sq km in 2000, 186 sq km on Malta and 58 sq km on Gozo. This can be further broken down on the basis of location, i.e. whether coastal or inland. The extent of the coastal area for the Maltese Islands has for long been a disputed issue. This has now been resolved, at least in planning terms, through the Planning Authority's recent publication of the Coastal Strategy²⁹; one of the Topic Papers being prepared for the review of the Structure Plan for the Maltese Islands. **Figure 3.17** gives the coastal zone boundary as established in the topic paper.

Figure 3.17 – Map showing the coastal zone boundary for the Maltese Islands as established by the Planning Authority in the Coastal Strategy Topic Paper.



Reproduced from the Coastal Strategy Topic Paper, Planning Authority, 2002a

Hence, splitting the total rural area into “inland” and “coastal”, gives us a further statistic which is important especially in view of agricultural and biodiversity concerns. This is because on average, the coastal areas contain more abandoned agricultural land due to salinity problems than inland rural areas; the coastal areas also support a higher biodiversity.

²⁹ *The Coastal Strategy was published by the Planning Authority for public consultation in December 2001. Following feedback received during the public consultation phase, the Strategy has been amended and the final version approved by the Planning Authority in February 2002.*

Table 3.31 provides an overview of this data.

Table 3.31 – Rural Land Areas in the Maltese Islands

Island	Area Outside the Development Zone (ODZ) (sq km)	Inland Rural Areas (sq km)	Inland Rural Areas as percentage of Area ODZ (%)	Coastal Rural Areas (sq km)	Coastal Rural Areas as percentage of Area ODZ (%)
Malta	186	153	82	33	18
Gozo	58	39	67	19	33
Total	244	192	79	52	21

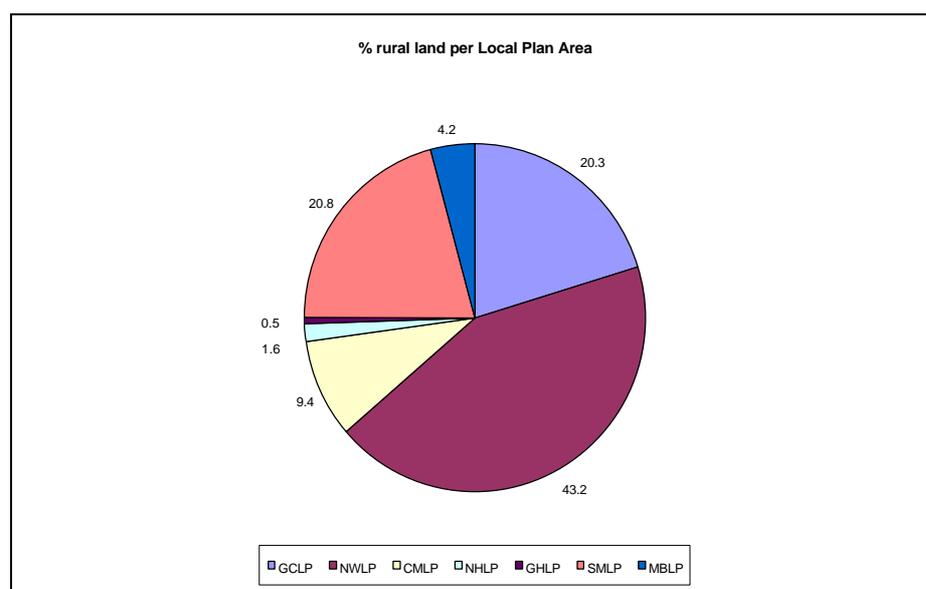
Source: Environmental Management Unit, Planning Authority

Obviously, this rural area is not equally distributed around the Maltese Islands, with some localities (e.g. Valletta, Sliema, Floriana, Senglea, Birgu, etc.) completely lacking rural areas. Data on rural areas located in the various Local Plan Areas is given in **Table 3.32** and **Figure 2.18**.

Table 3.32 – Distribution of rural areas by Local Plan Areas

Local Plan Area	Area of Local Plan (sq km)	Rural Area (sq km)	Percentage rural land in local plan area (%)
MALTA			
North West	115	83	72
Central Malta	33	18	55
North Harbours	15	3	20
Grand Harbour	8	1	13
South Malta	61	40	66
Marsaxlokk Bay	15	8	53
TOTAL	247	153	62
GOZO			
Gozo and Comino	69	39	57
TOTAL	69	39	57

Source: Environmental Management Unit, Planning Authority

Figure 3.18 - Rural Area per Local Plan as percentage of total rural area in the Maltese Islands

In view of the importance of the coastal zone for nature protection, biodiversity, and recreation, an important indicator would be the extent of protected area within the coastal zone boundary.

Indicator LU2: Protected Coastal Zone

Aim: To monitor trends in the extent of protected area within the Coastal Zone

Measure: % of the total area within the Coastal Zone boundary as established by the Planning Authority in the Coastal Strategy Topic Paper that is legally protected through scheduling or other legal designations.

3.8.3 Agricultural Land-use (U11)

This land-use category includes uses related to both crop production as well as animal husbandry. Crops grown locally are various and include cereals, fodder, vegetables, fruits, and horticultural produce.

3.8.3.1 Agricultural Land

Agricultural land in the Maltese Islands totalled 10,738.4 hectares in 2000 (NSO, 2001a). This figure (which is still a provisional figure pending more detailed survey work) includes dry land, irrigated land and land classified as unutilised (which includes areas of garigue and rocky steppe). When compared to the previously available figure (COS, 1991), this shows an overall drop of 396 hectares, although dry land decreased by 763 hectares, whereas irrigated land increased by 367 hectares³⁰.

Between 1991 and 2000, the surface area of the Maltese Islands devoted to agricultural land decreased by a further 1.2%

Indicators LU3 and LU4 monitor this trend.

³⁰ *It must be noted that these statistics are based on questionnaires and not direct measurement of field size and hence their accuracy depends on the accuracy of the declarations submitted by the individual farmers.*

Indicator LU3: Amount of agricultural land
Aim: To demonstrate the changes in agricultural land in the country.
Measure: Extent of agricultural holdings as a percentage of the total rural area (or of the surface area of the islands)

Indicator LU4: Loss of good quality agricultural land
Aim: To demonstrate the trend in loss of good quality agricultural land (whether to development or simply abandonment).
Measure: To be devised since it depends on the establishment of a local agricultural land classification scheme. Probably will be a percentage loss.

3.8.3.1.1 Pressures

Pressures on agricultural land have been registered from a number of different land uses, though their individual impacts have been of varying degrees. These have included hotels, hospitals, schools, industrial development, residential development, farms, quarries and construction plants. Not all loss of agricultural land is however to be viewed in the same light. This is because a considerable part of the areas earmarked for development in the 1988 Temporary Provision Schemes are actually in active arable production. Hence, the development of these areas (which are considered to be “urban” (since they fall within the development zone), will further contribute to a decrease in the effective agricultural land area. Hence, a distinction between agricultural land within scheme and agricultural land outside the development zone needs to be made. What is definitely of concern is the loss of agricultural land in areas outside scheme through conversion to urban-type land uses.

The most significant impact was that resulting from the conversion of agricultural land to schools, hotels and hospitals. According to the Structure Plan, schools should have been developed within the development zone, however, due to a lack of adequately sized areas and the need to upgrade educational facilities, no less than 5 schools were granted permission between 1994 and 2000. Together, these have resulted (or will result) in the loss of 98,000 m² of agricultural land.

School development in rural areas has resulted in the loss of approximately 10 hectares of agricultural land between 1994 and 2000.

Table 3.33 gives a summary of these developments and the areas they have committed to development.

Table 3.33 – Approved new school developments in rural areas (1994 – 2000)

Locality	Type of School	Former Land Use	Site Area (m2)
Mgarr	Early School	Agricultural land	24,960
Msida	Secondary School	Agricultural land	13,370
Zebbug	Junior & Senior School	Agricultural land	45,760
Santa Lucija	Secondary School	Non-agricultural land	16,830
San Gwann	Secondary School	Agricultural land	13,920
Total			114,830

Source: Environmental Management Unit, Planning Authority

Apart from the above, the Planning Authority is currently processing two other applications for the development of schools outside the development zone. Both proposals are undergoing an Environmental Impact Assessment, partly due to the impact on agricultural land. Between them, they are proposing converting around 27,000 m² of agricultural land to an urban-type use.

Between 1994 and 2000, very few applications for hotels have been approved outside the development zone boundary. However, due to the extensive area of land associated with such developments, they also contribute significantly to the loss of rural land. The same can be said for the development of the Tal-Qroqq Hospital. The latter development, together with the development of the San Lawrenz Hotel in Gozo, resulted in the loss of 110,000 m² of agricultural land (approximately 11 hectares).

Hotel and hospital development in rural areas has resulted in the loss of 11 hectares of agricultural land between 1994 and 2000.

Further tourism development currently proposed in the form of golf courses would, if approved, result in further loss of agricultural land. Of the four golf course applications currently being processed by the Planning Authority, three are being proposed on agricultural land (the fourth is proposed on important ecological areas scheduled as Areas of Ecological Importance and Sites of Scientific Importance). Had these three applications to be approved, a total of 1,798,800 m² of agricultural land (180 hectares) would be lost.

Pending applications for golf course development in the Maltese Islands are being proposed on 180 hectares of agricultural land.

A further land use that has contributed to the loss of agricultural land is the development of farm buildings. While this kind of development is a legitimate use in rural areas, a more judicious site selection (especially in land-use zoning) should be attempted in order to minimise the impacts on agricultural land (while avoiding environmentally sensitive areas).

In 2000, farm buildings in the inland rural area occupied an area of 1 sq km of the countryside. This figure excludes farms located within the development zone or in the coastal zone.

Through an examination of approved development planning applications for the period 1994 to 2000, the Planning Authority has ascertained that no less than 8 hectares of agricultural land were lost to new farm buildings over this time period. **Table 3.34** gives this information together with its spatial distribution.

Table 3.34 – Area of farm structures approved between 1994 and 2000, by Local Council.

Local Council Area	Area in sq m	Area in hectares
Qormi	7,880	0.8
Siggiewi	14,330	1.4
Zejtun	1,370	0.1
Ghaxaq	1,080	0.1
Munxar	5,090	0.5
Nadur	320	0.03 (insignificant)
Naxxar	26,940	2.7
Paola	1,680	0.2
Safi	56	0.003 (insignificant)
Zebbug (Gozo)	3,020	0.3
Zurrieq	17,600	1.8
Total	79,366	8.0

Source: Environmental Management Unit, Planning Authority

This loss was further compounded by conversion of land in the coastal zone that was used for the building of farms. Between 1994 and 2000, over 4 hectares of land within the coastal zone were developed as farms (both legally and illegally) or permits issued for their construction. **Table 3.35** summarises this information.

As can be seen from **Table 3.35**, Local Councils where most agricultural land has been lost to new farm buildings have been Naxxar, Zurrieq and Siggiewi, which, together accounted for 79% of the agricultural loss due to this conversion. Whereas, the local council with the highest number of applications within the coastal zone is Mellieha (although this is to be expected in view of the large percentage of coastal zone present in this council area).

However, the most significant land use that has affected agricultural land has undoubtedly been quarrying. New quarries and extensions to existing quarries, a considerable number of which were undertaken illegally, affected significant areas of former agricultural land. One could argue that quarrying is a temporary land use and once the resource is exploited, the land will (or can) be returned to productive agricultural use. Indeed this has happened in a number of areas (e.g. Tal-Balal, Mqabba, Siggiewi, Dwejra) where former quarries have been rehabilitated to agriculture or orchards, however, a significant number of disused quarries are still not reclaimed and instead have been left as gaping holes with no productive use. Nonetheless, the loss of agricultural land cannot always be easily replaced with newly created fields and issues such as fertility and agricultural capacity come into play.

Between 1994 and 2000, 8 hectares of agricultural land and 4 hectares in the coastal zone were lost due to the construction of new farm buildings

Table 3.36 gives the extent of agricultural land lost to quarrying between 1994 and 2000 as captured from approved planning applications and enforcement notices.

The loss of rural land to urban land uses is considered to be one of the major environmental concerns. Indicator LU5 aims to demonstrate this trend for the Maltese Islands. Ideally this indicator would use annual data to determine the rate of loss but this may not be possible for all categories. Planning data could be used as a proxy but one must emphasise the point that the number of applications or units approved does not necessarily equate with the extent of development that actually happened. A positive trend in this indicator would be for less land to be diverted to urban-type uses per year as compared to the previous year.

Table 3.35 – Applications for farm structures located in the coastal zone approved (or requesting sanctioning) between 1994 and 2000

Local Council	Request	Decision	Area in m ²
Munxar	Sanction broiler farm	Refused	6,559
Ghajnsielem	Sanction bee-keeping sheds	Refused	37
Mellieha	Extension to Guinea Fowl farm	Granted	21,050
Mellieha	Addition of milkroom	Granted	141
Mellieha	Sanctioning new sheds in existing farm	Refused	16,100*
Mellieha	Regularising broiler farm	Refused	1,065
Mellieha	Sanctioning additional room in sheep farm	Refused	106
Mellieha	Sanctioning bee-keeping area	Pending	1,172
Rabat	Sanction extension to farmer's residence	Refused	85

* Area refers to entire farm

Source: Environmental Management Unit, Planning Authority

Table 3.36 Agricultural land affected by quarry development by Locality

Locality	Area	Area of agricultural land lost (m ²)	Area of agricultural land lost (ha)
Gharb	Ix-Xghira	3,630	0.4
Kercem	Ta' Habel Lazz	4,400	0.4
Mgarr	Ta' Torri Falka	33,290	3.3
Mqabba	Tax-Xantin	5,140	0.5
	Tal-Qattus	10,100	1.0
	Tal-Warda	11,200	1.1
Naxxar	In-Nigret	4,000	0.4
Qala	Ghar id-Dar/Ta' Klement	63,296	6.3
San Lawrenz	Ta' Slima / Qawra / Dwejra	137,127	13.7
Siggiewi	Tad-Debbiet	10,360	1.0
	Taz-Zebbiegha	30,300	3.0
	Ta' l-Ibragg	12,000	1.2
	Tal-Harruba	36,200	3.6
Rabat (Malta)	Xaghra tal-Lunzjata	9,300	0.9
Zejtun	Wied iz-Ziju	18,500	1.9
Zurrieq		1,500	0.2
Total		390,350	39

Source: Environmental Management Unit, Planning Authority

Indicator LU5: Loss of Rural Land to Development
Aim: To demonstrate the trend in loss of rural land.
Measure: Percentage of total surface area of the Maltese Islands in rural land use (excluding urban-type uses in rural areas, such as quarries, residential developments, farms, etc.)
Comment: This indicator will not be readily available on an annual basis but will more likely be computable for larger periods of time and linked to availability of remote-sensed data (e.g. aerial photography)

Of the registered agricultural land, 1355 hectares (or 12%) were recorded as being garigue or land that was unutilised due to shallow soil. **Table 3.37** gives the distribution of agricultural land by NSO district and type of land.

Table 3.37 Agricultural land by District and Type

District	Total Area (Ha)	Dry Land (Ha)	Irrigated Land (Ha)	Unutilised / Garigue Land (Ha)
Southern Harbour	523.773	360.315	120.524	42.934
South Eastern	1960.909	1579.941	139.514	241.454
Northern Harbour	349.741	241.588	79.092	29.061
Western	3524.665	2728.043	301.062	495.560
Northern	2597.021	1825.524	414.958	356.539
Gozo and Comino	1782.239	1505.016	87.623	189.600
Total	10738,348	8240.427	1142.773	1355.148

Source: National Statistics Office, 2001

Through the NSO census, agricultural land was recorded in 21,733 discrete parcels of varying sizes. 25.7% of these parcels (or 29.8% of the agricultural land) were located in just three localities – Rabat, Mgarr (Malta) and Siggiewi. Irrigated land alone was mainly concentrated in Dingli, Mellieha, Mgarr (Malta), Qormi, Rabat (Malta), St Paul's Bay and Zabbar (NSO, 2001a).

3.8.3.2 Crops

Crops grown locally include vegetables (e.g. artichokes, beans, beetroot, broccoli, carrots, cauliflowers, cabbages, cucumbers, garlic, lettuce, potatoes, spinach, endive, pumpkins, tomatoes, salad vegetables, marrows, onions, mushrooms, etc.), fruit (e.g. apples, apricots, bananas, grapes, nectarines, plums, peaches, strawberries, melons, oranges, figs, prunes, pomegranates, etc.), flowers (especially carnations, chrysanthemums and roses), vines and fodder (including cereals and legumes). According to Malta's EU Accession Position Paper on Agriculture, the annual production of vegetables and fruit in Malta amounts to 72,000 tons and 6,000 tons respectively, equivalent to 65% of the annual needs in value terms (MIC, 2002a).

Flowers are cultivated in around 18 hectares of land, whereas vines currently occupy 320 hectares of land. It is claimed by local viticulturists that for Malta to be self-sufficient in the production of local wine grapes to satisfy the demand of the local wineries, the area of land under vines should grow to 1,000 hectares. Vines also contribute to the local landscape by providing greenery in an erstwhile barren summer landscape, as well as potentially making use of less productive agricultural land. Vineyards grown on sloping land also help reduce soil erosion.

One land use implication related to the development of the viticulture industry is the reputed need for wineries. Wineries are industrial operations concerned with the processing of the annual grape harvest and are not essentially required on site. The size of the winery would depend on the size of the harvest and the time period required for wine storage and fermentation. Wineries tend to have a significant footprint and also a high visual impact and therefore dedication of a rural area to new wineries has the potential to increase visual impact and further decrease the amount of agricultural land in active production.

CASE STUDY: Agriculture Survey for Gozo and Comino

Malta University Services Ltd

Meli, A., 2000

As part of the formulation of the Gozo and Comino Local Plan, the Planning Authority commissioned a number of environmental resource surveys for the islands. These included a survey of the agricultural resource, including the arable land and ancillary infrastructure. The survey, which was carried out in 1999 mapped the agricultural land on Gozo and Comino and described its status at that point in time. Various categories were used as follows: fallow, fodder, irrigated, semi-irrigated, summer crops, fruit trees, silviculture, flower crops, abandoned land. The various greenhouses, built areas, reservoirs, large ponds, etc., were also mapped.

A land cover map of the agricultural land on Gozo and Comino was produced (see Figure 8.3.2.1).

Gozo's pervading hills and plains, the quantity and quality of the remaining soil and the availability of water has determined the variety of crops that farmers can produce. These factors are also strongly influenced by various socio-economic conditions such as land fragmentation and the emergence of pluriactivity as a means of economic survival.

A visual appraisal of Gozo's landscape will impart the impression that urbanisation of the fringes of most villages in Gozo is making considerable inroads on surrounding agricultural land.

On the other hand, in sharp contrast due to its extent, is the land abandonment around the coast, especially at the four corners of the island. Fields having difficult access and shallow soils that are mostly used for fodder production typify these zones. Abandonment in the northwest and north east appears to be attributed to adverse climatic and soil conditions and access problems, whereas quarrying activity seems to be the most detrimental factor for agriculture in the south-western and south-eastern sectors.

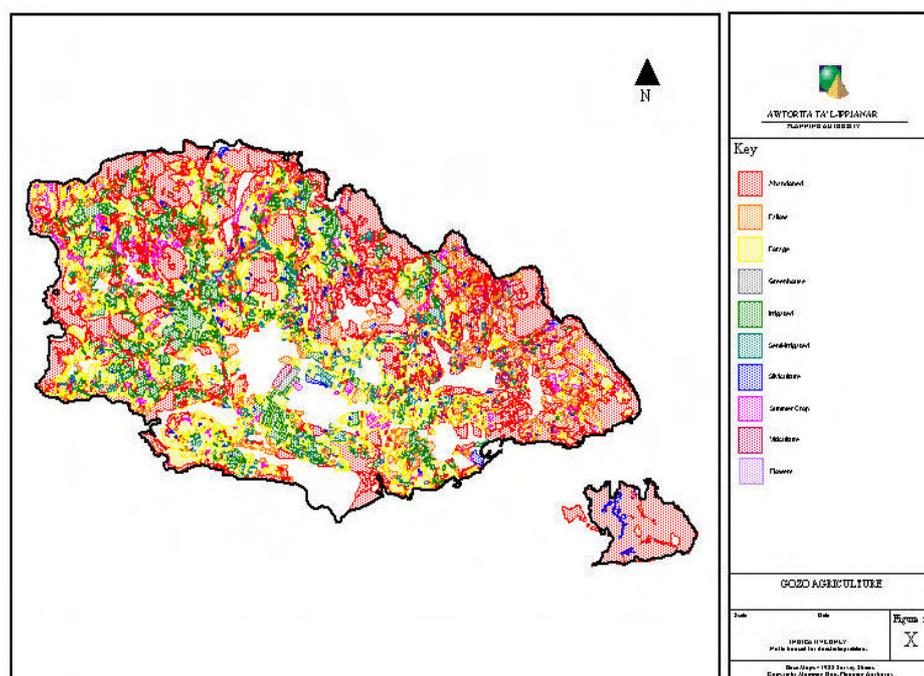
Some of the most productive areas on the islands are those in the Lunzjata and Xlendi valleys.

GIS assessment of the data so gathered indicates the following approximate areas for the various categories used in the study:

GOZO					
Land cover	Area (m ²)	%	Land Cover	Area (m ²)	%
Abandoned	18,309,000	27.29	Irrigated	6,288,000	9.37
Forage	15,447,000	23.02	Semi-irrigated	1,505,000	2.24
Fallow	6,664,000	9.93	Fruit orchards	1,598,000	2.38
Arid Summer Crops	1,158,000	1.73	Greenhouses	178,800	0.27
Floriculture	29,550	0.04	Silviculture	529,200	0.79
COMINO & islands					
Land cover	Area (m ²)	%	Land Cover	Area (m ²)	%
Abandoned	2,790,000	95.95	Silviculture	78,750	2.70
Fallow	29,560	1.02	Fruit orchards	6,415	0.22

Figure 3.19 – Agricultural Map for Gozo and Comino (1999)

Source: Agriculture Survey, Gozo Local Plan, Meli, 2000



3.8.3.3 Husbandry

Husbandry includes the rearing of cattle (beef and milk cows), swine, poultry, sheep, goats, rabbits and, lately, also emus. In Malta, most farms are located around Magtab, Rabat, Dingli, Zebbug (Malta), Qormi, Zejtun and Zabbar; in Gozo, most farms are located around Xewkija, Ghasri and Kerzem.

3.8.3.3.1 Cattle

In 2000, a total of 260 cattle farms existed on the Islands. Over half of these (143) reared both beef and milk cows, whereas 83 and 34 farms were engaged solely in beef and milk production, respectively. Between them these farms housed a total of 20,326 heads of cattle (NSO, 2001c). Most of the farms (138) were between 1,000 m² and 4,999 m² in size. Only 28 farms are over 10,000 m² in size, whereas 39 farms were less than 1,000 m² in size. Using size data generated through the NSO census (NSO, 2001c) and taking the average size for each size band category used, gives a ball-park figure of 1.1 km² of land occupied by cattle farms.

3.8.3.3.2 Swine

Pig farms in the Maltese Islands totalled 174 in 2000, 54% of which located in the north west of the Island. 80% of the farms are classified as being producers, 10% are fatteners, 9% are both fatteners and producers and 1% are involved in other activities in the sector. The total number of pigs reared on these farms in 2000 was 80,074 (NSO, 2001b). Again, using the data generated through the NSO census (NSO, 2001b) and taking the average size for each size band category used, gives an indicative figure of 0.4 km² of land occupied by pig farms.

3.8.3.3.3 Poultry

In the poultry sector, 427 farms and 3 hatcheries exist. The hatcheries have a hatching capacity of 9 million chicks annually, whereas the farms are split into boiler, layers or mixed farms as shown in

Table 3.38. 11 official slaughterhouses also exist (MIC, 2002a). The number of poultry animals in the Maltese Islands is estimated at 5.5 million (Jackson, 2001).

Table 3.38 – Number of poultry farms by type.

Type of farm/unit	Number of farm units
Hatcheries	3
Boiler farms	281
Layer farms	63
Mixed (boiler & layer) farms	83
Slaughterhouses	11

Source: MIC website 2002

3.8.3.3.4 Rabbits

Rabbits are also bred locally, producing around 2,600 tonnes of rabbit meat annually. It is largely a cottage-based industry, with each of the approximately 5,000 breeders (small units) having less than 20 does. Five large farms exist; rearing between 500 and 1,000 does each. 3 slaughterhouses are also in operation (MIC, 2002a). According to Jackson (2001), the number of rabbits on the islands totalled 2,400,000 in 2000. The agriculture authorities actively encourage this farming sector and a surge in the number of development applications for the construction of rabbit farms has been experienced over the past decade. A total of 10 applications for new rabbitries were approved between 1994 and 2000.

3.8.3.3.5 Sheep and Goats

The local herd of sheep and goats totals around 8,000 heads and 4,000 heads, respectively (MIC, 2002a). Around 1,100 breeders, mainly on small farms of essentially a cottage-type industry, rear these animals. The production in this case is largely milk-oriented. Goat and sheep meat production totals 200 tonnes annually, with a further 800 tonnes being imported for consumption each year.

3.8.3.3.6 Horses

Other livestock units, though not normally considered under husbandry since they are not geared towards the meat industry, include horse stables. The latter have increased in number over the past few years and a number of units (both legal and illegal), have been set up in various areas of the Maltese Islands. Although the keeping of horses has always been popular in the Maltese Islands, especially in particular localities (e.g. Marsa, Qormi, San Gwann, Zejtun, etc.), the review period has shown an increase in the popularity of these animals together with an increase in requests for development permission for stables and paddocks. A number of illegal units have also been erected, attracting enforcement action by the Planning Authority.

Between 1994 and 2000, a total of 33 applications for new horse stables were decided by the Planning Authority. Of these, 26 were refused, 4 were withdrawn from the planning process and 3 approved. Of the 26 refused, two were approved at appeals. **Table 3.39** summarises this information. The number of horses on the islands is estimated at 600 heads (Jackson, 2001).

Table 3.39 - Decided planning applications (from 1994 to 2000) for new horse stables

Type of Decision	1994	1995	1996	1997	1998	1999	2000	Total
Approved	0	1	0	0	2	0	0	3
Refused	0	2	6	4	8	2	4	26
Withdrawn	0	0	0	2	1	1	0	4
Total	0	3	6	6	11	3	4	33

Source: Environmental Management Unit, Planning Authority

3.8.3.4 Trends

The number of new farm buildings approved over the review period has been generally low (see **Table 3.40**), possibly indicating that the livestock industry is reaching a level of saturation. Even when taking a wider time span (1994 – 2000), the number of new farms approved was low (34). Most of the new farms were located in the Maghtab area, consolidating the farming nature of the area. Other farm locations included Rabat, Qormi, Zurrieq, Siggiewi, Nadur and Zejtun (see **Table 3.41**). Over the same period (1994 – 2000), a much larger number of requests for extensions and additions to existing farms (especially pig farms) were submitted to the Planning Authority. In fact, most of the efforts are currently being addressed at the restructuring and upgrading of the existing farm buildings to meet the requirements set by the EU directives. Out of the 162 requests, 45% were approved.

Table 3.40 – Number of approved development permit applications for new farm buildings in rural areas³¹ (1998-2000)

Local Plan Area	1998	1999	2000	Total
North West	1	2	3	6
Central Malta	2	1	0	3
South Malta	1	0	1	2
Marsaxlokk Bay	1	0	0	1
North Harbours	0	0	0	0
Grand Harbour	0	0	0	0
Gozo & Comino	1	2	0	3
Total	4	5	4	15

Source: Environmental Management Unit, PA

3.8.3.5 Environmental Implications

The main land use implications associated with animal farms include impacts on ecology and landscape, odour impacts (especially when in close proximity to residential areas) and issues related to the management and disposal of solid and liquid wastes.

The visual impact of a farm is the result of a number of factors, including its height, massing, materials, textures and colours used, its remoteness or proximity to other farm buildings, presence or absence of landscaping, degree of clutter and effectiveness of farm management.

Viable farm development requires a significant amount of large-scale structures located in rural areas. Since farms tend to be located in close proximity to one another (especially in areas allocated for farm development), the cumulative impact on the scenic quality of the countryside is significant, especially in or close to areas popular for informal recreation, environmentally sensitive areas or culturally important areas. Hence, it is important that suitable mitigation measures, especially those related to screening of the structures, are adopted. This is even more important when a cluster of such developments exist. In such circumstances, the possibility of providing a holistic mitigation approach is particularly attractive.

The extent of a farm's environmental impacts depend on the number of animals reared on the farm and therefore the amount of wastes produced, operational management techniques including waste management measures, the type of adjacent uses and distance from conflicting uses or environmentally sensitive sites, the farm's position in relation to the topography of the surrounding areas.

³¹ No new farm buildings were approved in the coastal zone during this period.

Table 3.41 – Distribution of approved new farms during the period 1994 to 2000 by type of farm and locality.

Local Council	Pig	Poultry	Rabbit	Sheep	Cattle	Total
Naxxar	2	3	4	-	1	10
Zurrieq	2	1	2	-	-	5
Rabat	1	-	-	2	-	3
Nadur	1	-	-	1	-	2
Qormi	-	2	-	-	-	2
Siggiewi	-	-	-	1	1	2
Zejtun	1	-	-	-	1	2
Birzebbuga	-	-	1	-	-	1
Dingli	-	-	1	-	-	1
Ghaxaq	-	1	-	-	-	1
Marsaxlokk	-	-	-	-	1	1
Munxar	-	1	-	-	-	1
Paola	-	-	1	-	-	1
Zebbug (Gozo)	-	-	1	-	-	1
Total	7	8	10	4	4	33

Source: Environmental Management Unit, PA

Current policies, regulations and management techniques influence the degree of impact generated by farm buildings, although considerable improvement in farm management techniques, in particular waste management, is required. Although by no means a common denominator, the waste management practices on a number of farms leave much to be desired, with the consequent increase in risks of pollution to groundwater, run-off during heavy rainfall, and soiling of adjacent properties and natural habitats.

Most farms are located close to valleys, in aquifer protection zones (especially the perched aquifer in the Rabat-Dingli uplands), or in the vicinity of various important natural habitats. This does not mean that the farms should not be located in these areas, but only that more effective management and enforcement of policies and regulations are required. Farming and nature conservation do not have to be in conflict but the farming community has to realise the importance of adopting suitable management practices that would improve the operational and environmental conditions on the farm and in adjacent areas

3.8.3.6 Organic Farming

Organic farming is not yet a significant part of the agricultural land use in the Maltese Islands. Only a handful of farmers have been encouraged to convert to organic farming, mainly due to the need for a change in mentality and in the way that agriculture is practised and the problems related to the marketing of such produce. In fact, the farmers complain that their produce is not in any way differentiated at the main vegetable market and is simply mixed with other produce not grown organically. No price differential exists either so that the extra efforts made by the farmers are not rewarded. In order to overcome this problem, an organic food club (Persephone Organic Food Club³²)

³² The Club was set up by the Gaia Foundation to show how produce can be grown organically in Malta and to get other farmers interested in the idea. The project also aims to generate awareness on the principles of organic farming as well as providing organically grown produce and re-establishing the link between producer and consumer. Through the club members can buy organically grown fruit and vegetables directly from the Foundation's field or that of other organic farmers affiliated with the project. The system is based on a box scheme whereby members sign up to receive a box of mixed fruit and vegetables, which is delivered to a predetermined pick-up point on a regular basis.

was set up by The Gaia Foundation in 2000. By 2001, organically-grown lettuce, endive, tomatoes, cabbage, beetroot, sweet corn, green pepper, marrow, beans, radish, eggplant, melon, watermelon, pumpkin, turnip, broccoli, artichokes, potatoes, onions, peas and carrots were being produced in the 6 tumoli of land at Ghajn Tuffieha under the Foundation's management. Other farmers located at Pwales Valley and Kalkara in Malta as well as at il-Wied tar-Ramla and in Xaghra (close to the Ggantija temples) in Gozo are also currently producing organically grown crops.

Organic farming needs to be encouraged and supported by appropriate incentives.

The conversion of agricultural land to organic farming methods is worth encouraging and supporting. However, the necessary structures need to be put in place so that the efforts of the individual farmer are not nullified as soon as the produce reaches the market. The introduction of price differentials for organically produced crops needs also to be considered. Obviously, due to the size of the holdings and of the island in general, it is often pretty useless if only one farmer in an area converts to organic farming, since winds and air currents may still bring pesticide aerosols to the land in question from nearby fields. Hence, organic farming promotion aimed at entire farming areas needs to be considered. The role of the Local Councils or the Department of Agriculture and Fisheries could be instrumental in this case. These entities should also consider introducing an Organic Aid Scheme (OAS), similar to that introduced in certain areas of the UK, to encourage organic methods of production. Through this scheme, grants would be given to farmers to convert to organic production. Participants receive aid for each parcel of land for a five-year period provided they are registered as organic producers and remain registered for the grant period.

3.8.3.7 Ancillary agricultural development

Apart from farm buildings, between 1998 and 2000, several applications for agriculture related developments were decided by the Planning Authority. These have included agricultural stores, farm buildings, pump rooms and reservoirs, greenhouses, and requests to convert land to agriculture

3.8.3.7.1 Agricultural Stores

Agricultural stores are small structures used to store agricultural implements and produce on site. Their development is accepted in rural areas, however, Structure Plan policy and other subsidiary guidelines on farmhouses and farm buildings restrict this type development so as not to excessively alter the rural landscape. These structures are meant to be small (not greater than 15 m²), they must be integrated within the rural context and adequately landscaped. They must also result from a genuine need and the applicant should be a bona fide full-time registered farmer.

Unfortunately, not all structures have been developed legally and also, the decision makers have not always adhered to this policy strictly so that a number of stores have been permitted even for development by part-time farmers. While this may have a valid reason (especially considering that local agriculture is predominantly characterised by part-timers), the sheer number of stores permitted coupled with the small size of the land holdings³³ is resulting in a not insignificant visual impact on the rural landscape.

Table 3.42 gives the number of development applications for agricultural stores approved between 1998 and 2000 in the rural areas (inland and within the coastal zone).

³³ *The vast majority of agricultural land holdings (> 85%) are smaller than 1 hectare.*

Table 3.42 Number of approved development permit applications for new agricultural stores in rural areas (1998-2000)

Local Plan Area	1998	1999	2000	Total
Gozo & Comino	0	3	5	8
North West	11	6	5	22
Central Malta	3	2	2	7
North Harbours	0	0	0	0
Grand Harbour	0	0	0	0
South Malta	13	8	6	27
Marsaxlokk Bay	2	1	0	3
Total	29	20	18	67

Source: Environmental Management Unit, PA

Applications for agricultural stores often seek permission for the development of more than one structure. In fact, the 67 applications for stores approved in this period, included no less than 95 structures. **Table 3.43** gives details on the number of stores approved or refused between 1994 and 2000.

Between 1998 and 2000, the Planning Authority approved 67 applications for 95 agricultural stores or related structures.

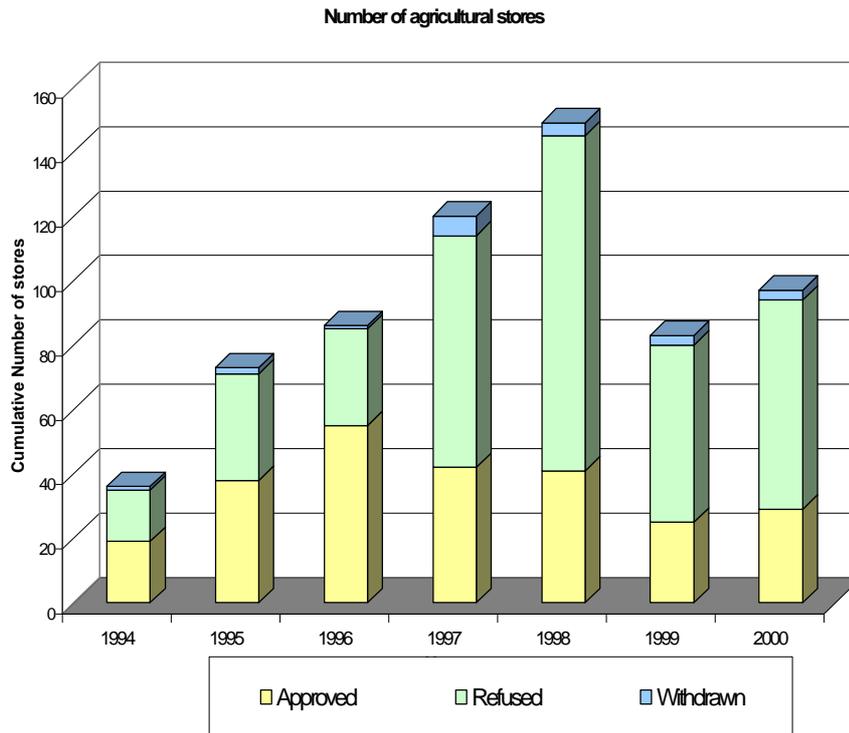
Table 3.43 Number of agricultural stores approved or refused within the rural areas for the period 1994 – 2000.

Decision	1994	1995	1996	1997	1998	1999	2000	Total
Approved	19	38	55	42	41	25	29	249
Refused	16	33	30	72	104	55	65	375
Other ³⁴	1	2	1	6	4	3	3	20
Total	36	73	86	120	149	83	97	644

Source: Environmental Management Unit, Planning Authority

This data is quite interesting, especially when considered against the development of local planning legislation. The number of stores applied for has been increasing since 1994, reaching a peak in 1998. In the first three years shown (1994 – 1996) the number of stores approved exceeded those refused. After 1996, the number of approved stores decreased sharply and the ratio of approved-to-refused was reversed, with the majority of structures applied for actually being refused. In 1997, the changes made to the Development Planning Act and the General Development Order, meant that most of these structures did not require a formal development application. This is reflected in the rapid increase in the number of stores applied for between 1997 and 1998. However, this increase was not met with an equal increase in the number of approved stores. In fact, most of the stores applied for were actually refused in this period. After this two-year increase, the number of stores applied for decreased again to pre-1997 levels but the trend of approved-to-refused applications registered since 1997 was maintained, with more structures being refused permission than approved. **Figure 3.20** summarises this information.

³⁴ The Category "Other" refers to applications that for some reason were not processed. These could have been withdrawn by the applicant, abandoned or withdrawn by the Planning Authority.

Figure 3.20 – Comparison of decisions on the number of agricultural stores requesting permission for the period 1994 to 2000.

As expected, these applications were not distributed randomly or equally across the islands but are related to the distribution of agricultural land. **Table 3.44** gives the distributional data for agricultural stores for those localities where at least 4 stores were approved development permission for the period 1994 to 2000.

Table 3.44 Distributional statistics of agricultural stores by Local Council and NSO District (minimum number of stores per locality = 4) for the period 1994 to 2000.

MALTA				GOZO (Gozo and Comino District)		
NSO District	Local Council	Requested Stores	Approved Stores	Local Council	Requested Stores	Approved Stores
Western	Siggiewi	80	27	Kercem	15	6
Western	Rabat	75	20	Ghasri	13	7
Western	Zebbug	49	20	Xaghra	14	7
Northern	St Paul's Bay	41	20	Nadur	10	6
Northern	Naxxar	40	8	Xewkija	8	6
Southeastern	Zurrieq	39	18	Gharb	5	2
Northern	Mgarr	20	5	Zebbug	6	3
Western	Dingli	18	5			
Southern Harbour	Zabbar	18	5			
Northern	Mosta	16	8			
Northern	Mellieha	14	6			
Southeastern	Qrendi	14	4			
Southeastern	Ghaxaq	13	10			

Southeastern	Zejtun	11	5			
Southeastern	Birzebbuga	11	4			
Northern Harbour	Qormi	10	3			
Southeastern	Mqabba	10	4			
Western	Attard	10	5			
Southeastern	Marsaskala	10	4			
Southeastern	Safi	9	3			
Southern Harbour	Luqa	6	1			
Southeastern	Gudja	5	3			

Source: National Statistics Office/ Planning Authority

3.8.3.7.2 Greenhouses

Greenhouses are structures used for intensive crop cultivation. Greenhouses are constructed over agricultural land and while not removing land from cultivation (unless the land itself is surfaced), they tend to have a negative visual impact on the surrounding rural environment, depending on their location, orientation, presence of landscaping or other visually mitigating features, and the extent of higher ground surrounding the site.

In 2000, 56 hectares of land were covered with greenhouses; 38 hectares on Malta (Department of Agriculture and Fisheries, 1999) and 18 hectares on Gozo (Malta University Services, 2000). This is a significant increase over the land area used for greenhouses in 1988 (as determined from the 1988 survey sheets), which totalled 17.2 hectares.

Between 1988 and 2000, the area of land covered by greenhouses increased by 225%

Table 3.45 gives the number of applications for greenhouse development approved between 1998 and 2000 in rural areas (inland and within the coastal zone).

Table 3.45 Number of approved development permit applications for new greenhouses in rural areas³⁵ (1998-2000).

Local Plan	1998	1999	2000	Total
North West	7	10	3	20
Central Malta	1	0	0	1
South Malta	1	2	1	4
Marsaxlokk Bay	0	1	0	1
North Harbours	0	0	1	1
Grand Harbour	0	0	0	0
Gozo and Comino	1	0	0	1
Total	10	13	5	28

Source: Environmental Management Unit, Planning Authority

As for the agricultural stores, applications for greenhouses normally request permission for a number of structures. **Table 3.46** gives the number of approved and refused greenhouses for the period 1994 to 2000 within the rural areas (inland and within the coastal zone).

³⁵ None were approved in the coastal zone during this period.

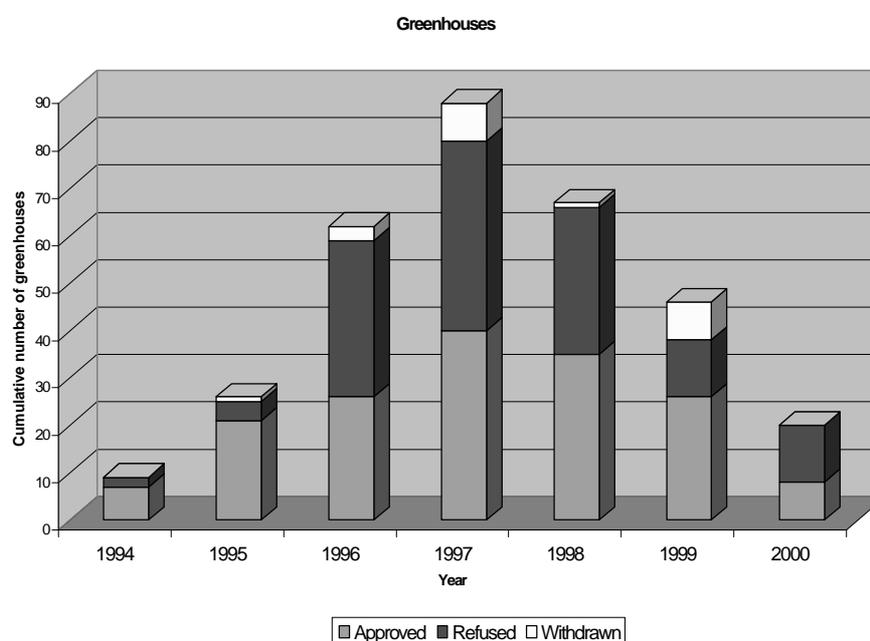
Table 3.46 Number of greenhouses approved, refused or withdrawn from the planning process for the period 1994 to 2000.

Decision	1994	1995	1996	1997	1998	1999	2000	Total
Approved	7	21	26	40	35	26	8	163
Refused	2	4	33	40	31	12	12	134
Withdrawn	0	1	3	8	1	8	0	21
Total	9	26	62	88	67	46	20	318

Source: Environmental Management Unit, Planning Authority

The number of greenhouses applied for and approved followed a similar trend to that of agricultural stores, with the number of units applied for increasing steeply towards the mid-nineties only to decrease post 1998 to the levels experienced in the early nineties.

Figure 3.21 gives a pictorial comparison of the above data.

Figure 3.21 – Comparison of decisions on the number of greenhouses requesting permission for the period 1994 to 2000.

3.8.3.7.3 Reservoirs and Pump Rooms

The dry climate of the Maltese Islands is a handicap to the development of agriculture, so that the availability of water for irrigation purposes is a valuable commodity in rural terms. Irrigation frequently depends on groundwater, which is pumped up through boreholes drilled into the perched or mean sea level aquifer. The water so pumped is either distributed through drip irrigation pipes around the cultivation area or stored in reservoirs. The latter is also used to store rainwater during the winter months.

The increased land fragmentation (largely resulting from inheritance rights) is increasing the demand for pump rooms, boreholes and reservoirs, adding to the clutter in the countryside.

Between 1994 and 2000, over 200 applications were submitted for 216 reservoirs and 47 pump rooms. Of these, 117 reservoirs and 27 pump rooms were approved. **Table 3.47** gives the number of structures approved, refused or withdrawn throughout this period.

117 reservoirs and 27 pump rooms were approved between 1994 and 2000.

Most developments of reservoirs and pump rooms for agricultural land do not require a full development permit but a notification. These were called General Development Orders (GDO) up to 2001 and Development Notification Orders (DNO) since 2001. The amendment in the GDO effected in 1997 and the new DNO issued in 2001 resulted in huge increase in notifications for reservoirs and pump rooms as shown in **Table 3.48**

Table 3.47 Number of reservoirs and pump rooms approved, refused or withdrawn from the planning process between 1994 and 2000

Reservoirs								
Type of Decision	1994	1995	1996	1997	1998	1999	2000	Total
Approved	6	19	26	23	10	12	17	113
Refused	3	5	6	7	23	21	14	79
Withdrawn	0	1	2	8	3	1	4	19
Total	9	25	34	38	36	34	35	211
Pump Rooms								
Type of Decision	1994	1995	1996	1997	1998	1999	2000	Total
Approved	3	2	3	3	2	5	8	26
Refused	0	0	2	2	6	2	5	17
Withdrawn	0	0	0	1	1	1	0	3
Total	3	2	5	6	9	8	13	46
Total Approved Structures	9	21	29	26	12	17	25	139

Source: Environmental Management Unit, Planning Authority

Table 3.48 Number of approved General Development Orders / Development Notification Orders for new reservoirs/pump rooms in rural areas³⁶ (1994-2001)

Notification	1997	1998	1999	2000	2001	Total
GDO	13	108	148	108	57	434
DNO	-	-	-	-	58	58
Total	13	108	148	108	115	492

Source: Environmental Management Unit, Planning Authority

3.8.3.7.4 Conversion of Land to Agriculture

“Land reclamation” or, more precisely the conversion of non-arable land (usually garigue) to agriculture also featured as an agricultural development for this period. While this activity introduces new land into arable production, it is often carried out at the expense of other rural areas, often valuable habitats such as garigue, rocky steppe and valley sides.

³⁶ Includes both inland areas and areas within the coastal zone.

Table 3.49 shows the number of applications for conversion of land to agriculture or for the deposition of more soil on existing agricultural land that were decided by the Planning Authority between 1994 and 2000. Out of a total of 27 applications, 17 were refused, 4 were withdrawn from the planning process and 6 approved. Of the 16 refused applications, 3 were granted permission at reconsideration/appeal level.

Eighteen out of the 27 decided applications were proposed on areas of ecological or other natural value³⁷. All of these were refused, however the three refused applications that were subsequently approved at reconsideration or appeals stage included the deposition of soil on natural habitats.

Table 3.49 Decided planning applications (from 1994 to 2000) for deposition of soil on land

Type of Decision	1994	1995	1996	1997	1998	1999	2000	Total
Approved	0	0	0	1	1	4	0	6
Refused	0	0	2	2	6	3	4	17
Withdrawn	0	0	2	0	0	1	1	4
Total	0	0	4	3	7	8	5	27

Source: Rural Strategy Topic Paper, Planning Authority, 2002

The approved applications were largely randomly distributed around the islands, with a somewhat higher percentage in the North West Local Plan area, as shown in **Table 3.50**.

Table 3.50 Approved³⁸ planning applications (from 1994 to 2000) for the deposition of soil on land for agricultural purposes in rural areas by Local Plan area

Type of Decision	1994	1995	1996	1997	1998	1999	2000	Total
North West	0	0	0	0	0	3	1	4
Gozo and Comino	0	0	0	1	0	0	0	1
Malta South	0	0	0	0	1	1	0	2
Malta Central	0	0	0	0	0	1	0	1
North Harbours	0	0	0	0	0	0	0	0
Grand Harbour	0	0	0	0	0	0	0	0
Marsaxlokk Bay	0	0	0	0	0	0	1	1
Total	0	0	0	1	1	5	2	9

Source: Rural Strategy Topic Paper, Planning Authority, 2002

Between 1996 and 2000, the Planning Authority issued 12 enforcement notices for the illegal deposition of soil on land, including deposition on natural habitats.

Further information on the local agriculture industries is available in other sections of this State of the Environment Report.

3.8.4 Forestry Land-use (U12)

Forestry is not practised in the Maltese Islands and therefore, for the purpose of this report this category is being taken to mean, "woodland and other areas having an appreciable tree cover", including areas used for afforestation purposes.

Tree cover in the Maltese Islands has remained low even through the period under review. As reported in the first State of the Environment Report, small pockets of "woodland" exist in only highly restricted

³⁷ Localities included Rabat (Malta) [5 request], Siggiewi [3], Ghaxaq [3] and Birzebbuga, Dingli, Naxxar, Mellieha Mgarr, Mosta and Qrendi [1 request each].

³⁸ Includes those refused at the first decision level but approved at reconsideration or appeals stage.

places. Most of the tree cover is artificial in that it has been planted by man over the years. Nonetheless, although not the result of a successional sequence, these wooded areas, such as Mizieb and I-Ahrax still contribute much to the Maltese landscape and, in some cases, also to biodiversity.

Such initiatives are therefore to be encouraged and promoted so long as the interventions are made in an ecologically relevant manner, utilising appropriate tree and shrub species and maintained in the right way.

It is calculated that the area of land covered by woodland or maquis communities totals around 13.4 km² or 4.2% of the Maltese Islands (NSO, 2002c).

Although a number of landscaping/afforestation schemes have been implemented over the review period, especially by NGOs, it is still early to assess the success or otherwise of these schemes and the trees planted are too small to contribute in any big way to the area covered by trees. However, if such initiatives are maintained, an appreciable increase in this statistic is expected to be registered in future editions of the State of the Environment Report.

None of the “woodland” areas are subject to forestry uses in the Maltese Islands, although a worrying trend has been registered with respect to the “pruning” of trees in public spaces. Most often than not this activity is resulting in heavily mutilated and misshapen trees, with the severed branches being cut up and sold as firewood for fireplaces. A number of outlets selling these logs have also sprung up in the review period.

Equally serious is another trend that has been registered of late where groups of people organise barbecues in the countryside during the winter months and, apart from lighting fires in inappropriate areas, such as under trees, instead of using charcoal, the barbecues are lit up using branches chopped off the trees themselves. Notorious places for such activities include Dwejra in Malta, Buskett (especially the il-Bosk area) and Mizieb. These activities result in huge damage inflicted to the trees, which, apart from being grossly disfigured are exposed to infections and disease. Wardening of these areas is therefore of utmost importance so as to deter such actions and to bring to book the perpetrators.

Further information on woodland and maquis habitats are available in other sections of this State of the Environment Report.

3.8.5 Fishing (U13)

Fishing in the Maltese Islands is mainly centred upon coastal or small-scale fisheries, which are largely seasonal and based on the swordfish, tuna and lampuki seasons³⁹.

By mid 1999 the total number of people registered as being engaged in fishing was 1707 of which 321 are deemed to be full timers whose main income is derived from fishing (Mallia & Geismann, 2001).

Since fishing is a seasonal activity most full time fishermen own more than one vessel, usually one small and one larger vessel to enable them to practice off-shore fishing during the milder seasons and coastal fishing during the winter months. The average number of fishermen employed on each full time boat is of three persons per boat during winter whilst extra hands are often hired during the summer trips, which are often in excess of two days (Mallia & Geismann, 2001).

The size of the fleet increased from 1792 in 1998 to 1839 in 1999, with the majority of fishermen still being part-timers.

Of these vessels, only 49 are considered to be industrial (>15 m length) and practice fishing on the high seas all year round. These are mainly trawlers, long-liners and netters. The rest are multi-purpose vessels and only fish in territorial waters.

³⁹ *Swordfish, tuna and dolphinfish (lampuki) catches account for 74% of the total annual fish catches by weight in Malta.*

A total of 310 fulltime vessels are registered in the Maltese Islands, 216 in Malta and 94 in Gozo. **Table 3.51** gives a breakdown of this data based on size and type.

Table 3.51 – Number of full-time vessels by size and type.

	0 – 8m	8.01 – 12m	12.01 – 15m	15.01 – 20m	> 20m	Total
Malta	124	35	27	16	14	216
Gozo	56	11	12	11	4	94
Total	180	46	39	27	18	310
	Trawlers	Multi-purpose	Luzzus	Kajjik	Others	Total
Malta	7	88	78	37	6	216
Gozo	4	41	34	11	4	94
Total	11	129	112	48	10	310

Source: Mallia & Geismann, 2001

The main fishing ports are Marsaxlokk, where 40% of the full time fishermen hail from (COS, 1998) and St Paul's Bay in Malta and Mgarr in Gozo but a number of vessels are moored within the main bays around the Maltese Islands. The fish market is currently located in Valletta, although there are plans to have it relocated to an area that is more accessible to fishermen (Planning Authority, 2002a). Most of the fishing takes place in territorial waters, since the vast majority of the fishing fleet is not equipped to fish in the high seas. Most fishing consequently is concentrated between 7 and 25 nautical miles, though professional fishermen also fish at much greater distances from shore.

The definition of fishing in the Land-use categories given above includes also the taking of crustaceans, molluscs and other aquatic animals, as well as fish hatcheries and fish farms.

Takings of crustaceans, molluscs and other animals (such as sea urchins), makes up a very small part of the total annual catch. In fact, there are no established specialised fisheries for these types of animals and, apart from the crustaceans⁴⁰ and some mollusc species (especially octopus, squid and cuttlefish), mollusc and sea urchin taking is largely an artisan/recreational pursuit.

Fish farming was first attempted in the Maltese Islands in 1989 following the setting up of the National Aquaculture Centre in 1988. In the first years, the industry developed rapidly and 6 farms were set up, operating from a total of 2 land areas and 7 marine sites. All of these farms reared sea bream (*Sparus aurata*), except for one that farmed both sea bream and sea bass (*Dicentrarchus labrax*). These farms had to be supported by hatcheries producing around 8 million fry annually, however, these projects, though approved, never materialised.

In 1999, interested started gathering in the penning of blue fin tuna (*Thunnus thynnus*) in Maltese waters. Tuna penning involves the capture of wild tuna and their "live storage" in large offshore pens for a number of months for conditioning, until their required fat-to-muscle ratio is established and market prices are right. The permit for the first tuna-penning farm was issued in May 2000. Following this first permit and a hugely successful first tuna-penning season, a spate of development applications were submitted for the development of new operations or for the conversion of existing sea bass/sea bream farms into tuna penning facilities. A veritable "gold rush" followed and by end 2001, permits for three tuna farms totalling 2000 tonnes and occupying 407,000 m² of sea surface were approved. At the time of writing, a further 6 development applications for a total sea surface area of 7,834,000 m² were pending at the Planning Authority.

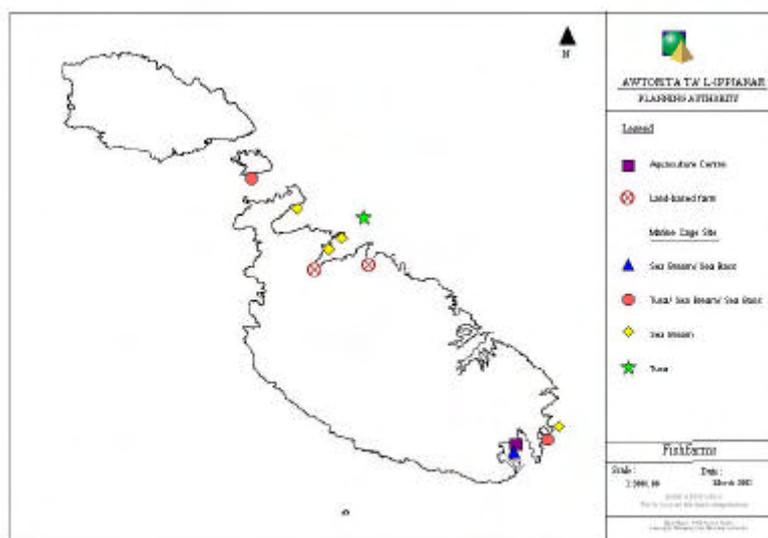
Tuna penning is an intensive form of aquaculture that occupies huge areas of sea surface and larger areas on the seabed. In 2001/2002, the Planning Authority had 6 pending applications for new farms for a total of 7.8 km² of sea surface.

⁴⁰ Crustaceans caught in local waters include shrimps, prawns and lobsters, which however are caught in small numbers compared to the numbers imported.

Figure 3.22 shows the location of fish farming establishments (including approved but not implemented operations and farms that have since wound up operations) in the Maltese Islands.

Figure 3.22 – Fish farming locations in the Maltese Islands (2002)

Source: Environmental Management Unit, Planning Authority



Further information on the local fisheries and aquaculture industries are available in other sections of this State of the Environment Report.

3.8.6 Quarrying (U14)

This land-use category is one of the most land-intensive outside the Development Zone. Mineral extraction areas mainly refer to hardstone and softstone quarries. The location of such minerals and the amounts extracted together with associated environmental impacts are all issues that generate debate. Hardstone quarries are scattered around the islands, often located in environmentally sensitive areas, such as on ridges, cliff edges, valley sides and coastal locations. Softstone quarries, on the other hand, are often grouped into quarry complexes and are mainly found in the eastern half of Malta, at Siggiewi, Mqabba and Qrendi and on the west coast of Gozo near the important Qawra/Dwejra geological complex.

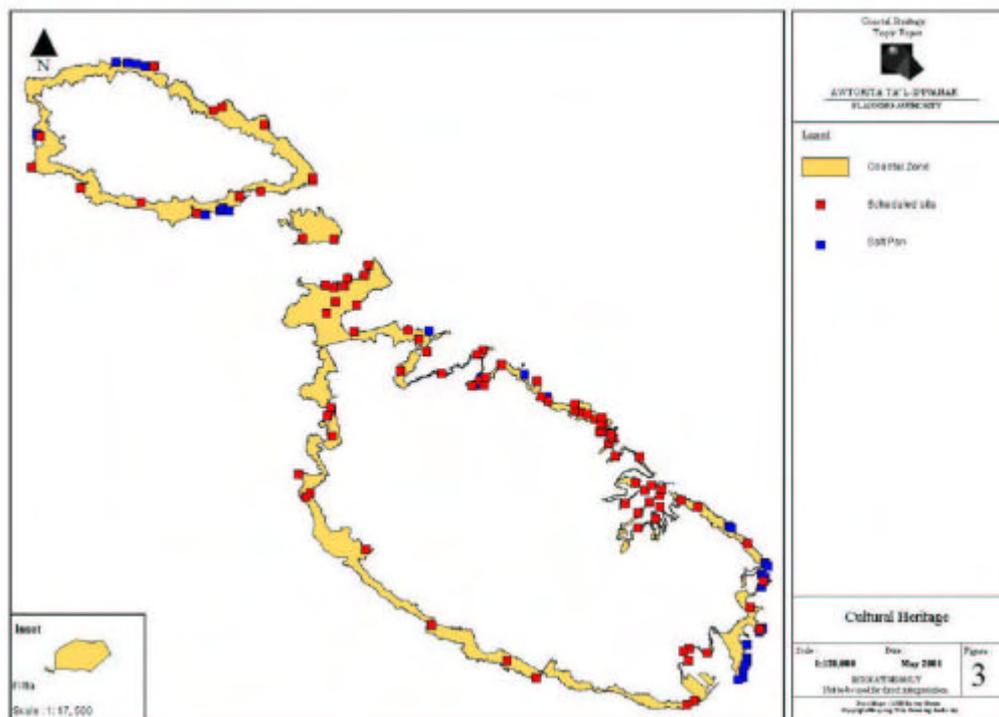
Other minerals found in the Maltese islands include salt, phosphate, clay and maerl. Of these, only salt is exploited, albeit only on a small artisan scale. The area of coast occupied by saltpan complexes amounts to 340,595 m² or 0.1% of the surface area of the Islands. **Figure 3.23** shows the locations of saltpan complexes in the Maltese islands. Although not all of these are in active use, they are all of cultural importance and should be protected.

Phosphate is found in localised phosphorite bearing strata in Globigerina limestone, known as Phosphate Nodule Beds. These strata are really accumulations of phosphate-containing nodules, which could contain up to 17% phosphorous by weight (Dr S. Xerri, pers. comm.), and cannot be considered as distinct mineral horizons. They are also very diffuse, with the densest known accumulations being those at Xlendi and Qawra in Gozo and their exploitation, apart from being environmentally damaging, is not economically feasible.

Clay is part of the stratigraphic sequence of the Maltese Islands, found sandwiched between the Upper Coralline Limestone and the Globigerina Limestone. Its thickness varies between 15m and 75m and it is only exposed in a few localities. Where it is exposed it forms geomorphologically and ecologically important clay slopes. The most spectacular are those found at Ghajn Tuffieha, in particular the stretch

linking Ras il-Karraba to the mainland. In view of its fragility and importance, especially with regards to its aquiclude properties, blue clay is protected locally and its exploitation is prohibited⁴¹.

Figure 3.23 – Map showing the cultural heritage resources in the coastal zone (scheduled historical sites and salt pan complexes)



Reproduced from the Coastal Strategy Topic Paper, Planning Authority, 2002a

Maerl consists of mixed coarse sand and shell gravel that becomes colonised by species of coralline algae, becoming a constituent of the sediment. In some parts of the world, maerl is exploited for its calcareous limestone but there is little scope for exploitation in the Maltese Islands, seeing that calcareous limestone is plentiful on land whereas maerl occurs at water depths ranging from 40 to 80m. Furthermore, in the Mediterranean, maerl communities have a limited geographical distribution and are considered a threatened habitat.

Between 1998 and 2001, very little change occurred in land-use terms with regards to the quarrying industry. The major development was related to administrative and enforcement issues, although much more still needs to be done to ensure greater compliance. In terms of land-use changes, we have seen an increase in the area of permitted quarries, specifically with approvals for new quarries in Qala, Gharb, Siggiewi and Mqabba and extensions to quarries in Mellieha, San Gwann, Zurrieq, San Lawrenz, Zejtun, Qrendi, Mgarr and Naxxar. In 2000, the Planning Authority undertook an orthophotographic 3D survey of quarry boundaries to establish on a 1998/9 base year the area and depth of quarrying at each licensed quarry site. This has shown that the vast majority of quarries are operating outside their quarry boundaries or have exceeded their permitted depths (Planning Authority, 2002d).

The total land area devoted to quarrying in 1998 (whether permitted or illegal) amounted to 2,909,073 m².

⁴¹ *Structure Plan policy RCO 27 states that “Developments which involve the excavation of significant quantities of Blue Clays will not be permitted”.*

Table 3.52 gives further details on this statistic.

Table 3.52 – Land area occupied by quarrying activity (1998/9 data)

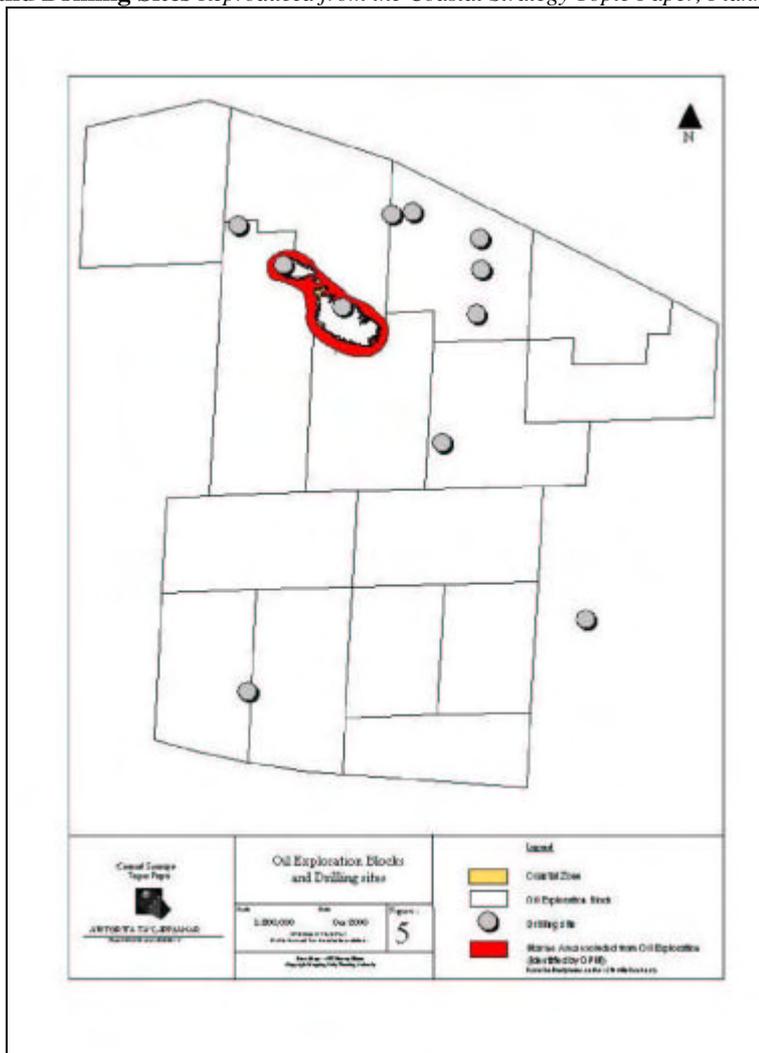
	Malta	Gozo	Total	Percentage of surface area
Softstone	969,063	178,871	1,147,934	0.36%
Hardstone	1,172,508	90,703	1,263,211	0.40%
Total	2,141,571	269,574	2,411,145	0.77%

Source: Environmental Management Unit, Planning Authority

Further details on quarrying are available in section 2.6.

Although being surrounded by oil-producing nations, the Maltese Islands have as yet not struck oil in commercially viable quantities. Exploration has been carried out intermittently for the past four decades, both on land and at sea. The territorial waters around the Maltese Islands have been split into 15 oil exploration blocks, within which, foreign companies between 1971 and 1992 drilled ten sites. Currently, exploration is being undertaken in three of these blocks (Oil Exploration Department, 2002). **Figure 3.24** illustrates the oil exploration blocks and sites in which drilling has taken place to date.

Figure 3.24 – Map of the territorial waters of the Maltese Islands showing the Oil Exploration Blocks and Drilling Sites *Reproduced from the Coastal Strategy Topic Paper, Planning Authority, 2002a*



3.9 Urban Land Uses

3.9.1 Introduction

Of the 315.4 km² making up the Maltese Islands, 71.4 km² are classified as urban. Urban areas are defined as those locations within areas schemed for development in the Temporary Provisions Schemes of 1988. This includes areas zoned for housing, retail, industry, community uses, etc, and also includes areas located within the coastal zone. This does not mean that urban-type uses and structures are not found outside these areas. In fact, a not insignificant percentage of the rural areas has been built up over the years to accommodate uses and activities that cannot be accommodated within urban areas due to their specific neighbour-unfriendly character (e.g. farms, landfills, quarries, etc.), as well as a number of developments that required appreciable land areas that could not be provided within the development zone⁴².

Table 3.53 below gives the amount of built up land in the inland rural area by use type as at 2000.

Table 3.53 – Built up areas in the inland rural areas by use type

Type of built-up area	Land Area (m ²)
Farm buildings	1.0
Settlements	1.5
Tourism development	0.2
Commercial/industrial development	1.9
Formal sports and recreation facilities	0.6
Social and community facilities	0.5
Public utilities and services	0.9
Total	6.6

Source: Draft Rural Strategy Topic Paper, Planning Authority, 2002b

The coastal zone is not entirely outside the development zone. In fact, a number of areas, such as Marsalforn, Xlendi, Xemxija, Ghajn Zejtuna, the Marsamxett and Grand Harbours and stretches of coast along Ricasoli and Hal Far are designated for specific uses ranging from residential to industrial to white areas.

Of the 61.9 km² of land within the area designated by the Planning Authority as “Coastal Zone”, 56.9 km² are designated as being Outside the Development Zone. This again does not mean that no development takes place here. In fact, as established in the Coastal Strategy Topic Paper (Planning Authority, 2002a), some uses are legitimate on the coast since they involve activities that require a coastal location (e.g. thermal power stations, ports, desalination plants, etc.). **Figure 3.25** gives the distribution of the different zoning of the Coastal area as established in the Temporary Provision Schemes of 1988.

Although the Temporary Provision Schemes established the boundaries as illustrated in **Figure 3.25**, allotting 4.8 km² to development, a further 2.5 km² of coastal land has been taken up for development between 1994 and 2000.

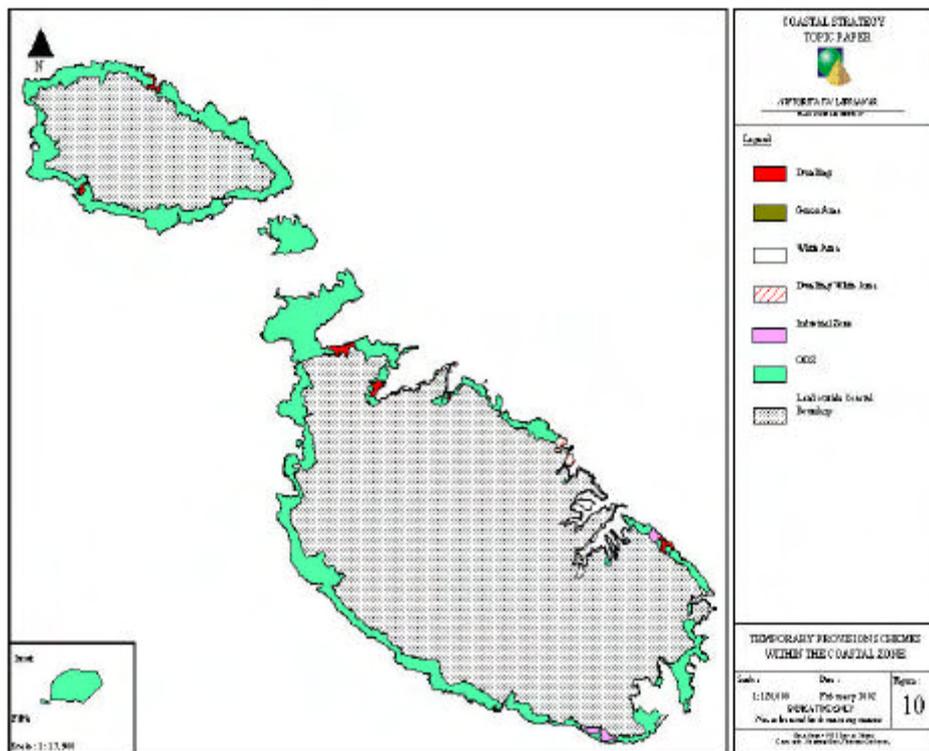
Apart from the 4.8 km² zoned for development in the coastal zone, a further 2.5 km² have been developed between 1994 and 2000.

Urbanisation in the Maltese Islands has been on the increase for the past half century. The rapid urbanisation that occurred between the 1960s and 1980s led to massive urban sprawl, which in cases,

⁴² *This has included developments such as schools, hospitals and hotels. A number of other applications for urban-type developments are still pending and include, among others, four golf courses, 2 schools, tourism-related developments and industrial sites*

resulted in the coalescence of adjacent villages and towns. The development of new roads leading to the various villages, especially on Gozo resulted in development along these main thoroughfares and a predominantly ribbon-type development that has greatly extended previously compact villages. The impact of this is both with regards to the take up of virgin land as well as the need to provide services and infrastructure away from the central areas, impacting also on the character and social cohesion of the villages. Other trends have included the development of new urban centres at the periphery of large towns, such as Naxxar, Birkirkara and Mosta, with the consequent problems associated with “out-of-town” localities. The lack of services in these new urban centres have resulted in increased commuting to the central town area for all manner of shopping, with the resulting problems associated with traffic, parking and air pollution.

Figure 3.25 – Temporary Provision Scheme zoning in the coastal zone.



Source: Coastal Strategy Topic Paper, Planning Authority, 2002a

The trend in the amount of built-up land in the Maltese Islands can be monitored through Indicator LU6.

Indicator LU6: Amount of built-up land
Aim: To demonstrate trends in the amount of land taken up for development, whether within the designated development zones or outside them.
Measure: Amount of built up land as a percentage of the total area of the Maltese Islands.

Urban land uses in the Maltese Islands can be divided into Productive Land Uses, Services Land Uses and Vacant Land Uses. Each of these can be further subdivided and will be further elaborated upon in the following sections.

3.9.2 Productive Land-Uses (U2)

This land-use category refers to those areas used for the generation of energy as well as areas used by the manufacturing industry.

Energy generation in the Maltese Islands is restricted to the largest island – Malta. No energy generation is present on Gozo or Comino, which rely on electricity generated on Malta for all of their needs. This is provided by means of submarine and terrestrial cables linking the three islands. Power stations are located at Marsa and Delimara and together have a generating capacity in excess of 400 MW of energy.

In 2000, the area of land dedicated to energy production stood at 261,830 m²

Manufacturing industry in the Maltese Islands is varied and is located both in MDC-owned estates and in privately owned industrial estates, as well as in urban areas, especially the micro-enterprises related to furniture-making, storage and construction.

In 2000, 5,067,587 m² of land was taken up or formally designated as industrial estates. Of these, 3,835,700 m² were located in MDC-owned industrial estates, whereas 1,231,887 m² were located within private industrial estates.

3.9.3 Energy Production Land-Uses (U21)

Energy on Malta is generated through the burning of fossil fuels at two power stations - one at Marsa generating in excess of 235MW and a fairly recent one generating some 190 MW, constructed at Delimara.

The Marsa Power Plant has 8 boilers rated as follows:

Boilers Nos: 1-2 at 12.5MW commissioned in 1966

Boilers Nos: 3-4 at 30MW commissioned in 1970

Boilers Nos: 5,6 and 7 at 30MW commissioned in 1982/3/4 respectively

Boiler No: 8 at 60 MW commissioned in 1987

Additionally there are newly installed gas turbines at 37MW installed from 1990 onwards.

The Delimara Power Station comprises the following:

Phase 1 built in 1992 and comprising two 60MW turbine units using heavy oil

Phase 2 built in 1995 and comprising two 37.5MW Open Cycle Gas Turbines

Phase 2B built in 1998 comprising three 37.5 MW Closed Cycle Gas Turbines

The area of land occupied by the two power stations (and their ancillary facilities) in 1998 is given in **Table 3.54**.

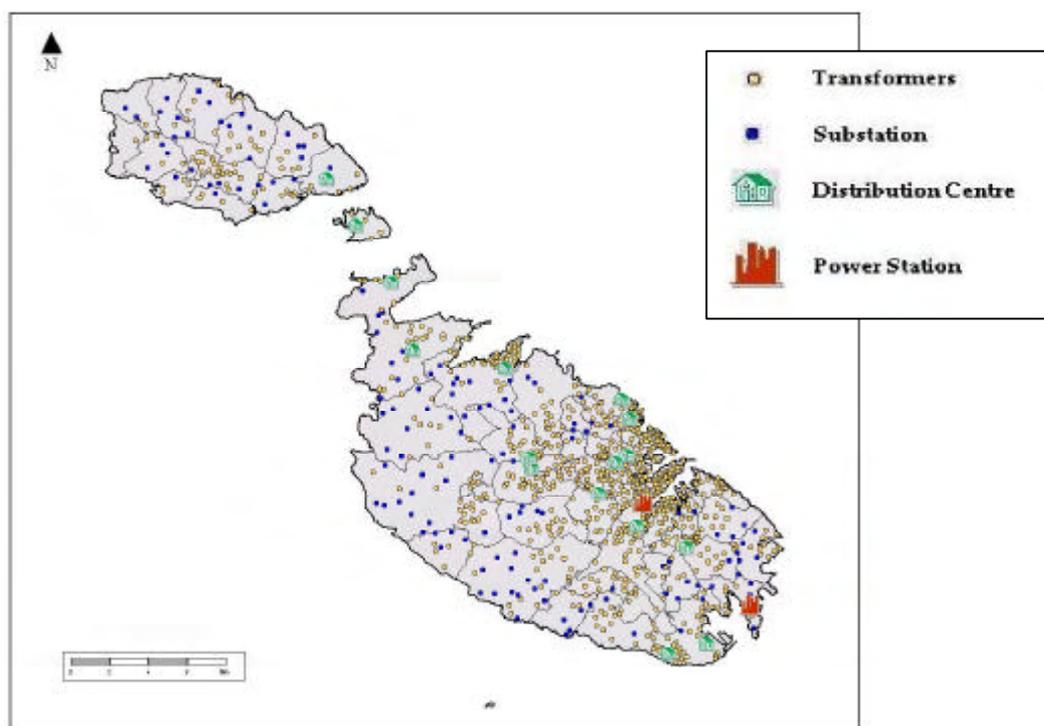
Table 3.54 – Area occupied by the thermal power stations at Marsa and Delimara

Power Station	Area (m ²)
Marsa	45,230
Delimara	216,600

Source: Planning Authority map data

The electricity generated at the power stations is distributed via a network of distribution centres, substations and transformers as shown in **Figure 3.26**.

Figure 3.26 – Distribution of electricity infrastructure



Source: *Draft Utilities Topic Paper, Planning Authority, 2002g*

Although there exist six waste combustion plants on Malta and Gozo, none of these are modern or generate energy from the waste burnt in them.

Renewable energy production too is non-existent, at least on a large scale. The climatic characteristics of the islands would indicate that commercial production using solar energy and wind energy would be viable propositions. However, despite the sporadic interest shown by private concerns and the setting up of an Institute for Renewable Energy by the University of Malta, no project has as yet been put forward⁴³.

Further information on energy is available in other sections of this State of the Environment Report.

3.9.4 Industry & Manufacturing Land-Uses (U22)

As in practically most other European countries, industry in the Maltese Islands is largely of the small- or medium-enterprise category⁴⁴. Over 90% of our enterprises in industry, commerce, the trades and the service sectors such as in tourism, the financial and the transport sectors, employ less than 250 people. Most industries employ less than 10 persons on a full-time basis, making them micro-enterprises. In fact, only 0.5% of local industries are considered to be large enterprises (i.e. employing over 250 employees). **Table 3.55** summarises this information.

⁴³ *In the first quarter of 2002, a private company installed a 40m wind mast at I-Ahrax tal-Mellieha so as to collect location-specific wind data, which can be used to determine the viability or otherwise of an eventual wind farm.*

⁴⁴ *Small and Medium Enterprises (SMEs) are those employing less than 250 people.*

Table 3.55 – Size composition of firms in Malta

	% enterprises	% employment	Average employment
Micro (less than 10)	91.30	22.04	2
Small (10-50)	6.58	19.32	23
Medium (51-250)	1.68	21.78	99
Large (more than 250)	0.43	36.87	651

Source: IPSE, 2000

Of the industries present, most are located on industrial estates, although a number of micro-enterprises (or garage industries) are located in urban/residential areas⁴⁵, often making them incompatible uses with the rest of the neighbourhood (especially those related to manufacturing, storage and construction).

The major manufacturing sectors of the micro-enterprise industries are those related to the manufacture of furniture and of fabricated metal products, motor vehicle repair and maintenance, and manufacture of food and beverages. In terms of location, most micro-enterprises are located in the conurbation centred on the grand harbour, with the Central Malta Local Plan and the South Malta Local Plan areas having the larger shares, as shown in **Table 3.56**.

Table 3.56 – Distribution of Micro-enterprise industries by Local Plan Area.

Local Plan	Number	%
Gozo & Comino	381	11.1
North West	227	6.6
Central Malta	1062	30.8
North Harbours	416	12.1
Grand Harbour	295	8.6
South Malta	991	28.8
Marsaxlokk Bay	74	2.1
TOTAL	3446	100.0

Source: Draft Employment Topic Paper, Planning Authority, 2001b

Industrial estates are located both within the built-up area as well as in areas outside the development zone. All MDC-owned estates (total area: 3,835,700 m²)⁴⁶ are located within the development zone as they were identified for industrial uses in the Temporary Provision Schemes in 1988. On the other hand, industrial land in private ownership is located equally within the TPS as outside scheme. Industrial areas outside scheme have mostly started off as ad hoc industrial developments, which, by time, mushroomed into small estates. A number of the latter are also illegal. **Table 3.57** and **Figure 3.27** give the location of the various industrial areas.

⁴⁵ 63% of all micro-enterprises are located within residential zones and 11% within village cores.

⁴⁶ This includes the current estate area and land still to be transferred for use by MDC, which totals 418,900m² (Source: Draft Employment Topic Paper, Planning Authority, 2001b)

Table 3.57 – Location of industrial areas owned by MDC or in private ownership, indicating location within or outside the Temporary Provision Scheme boundaries.

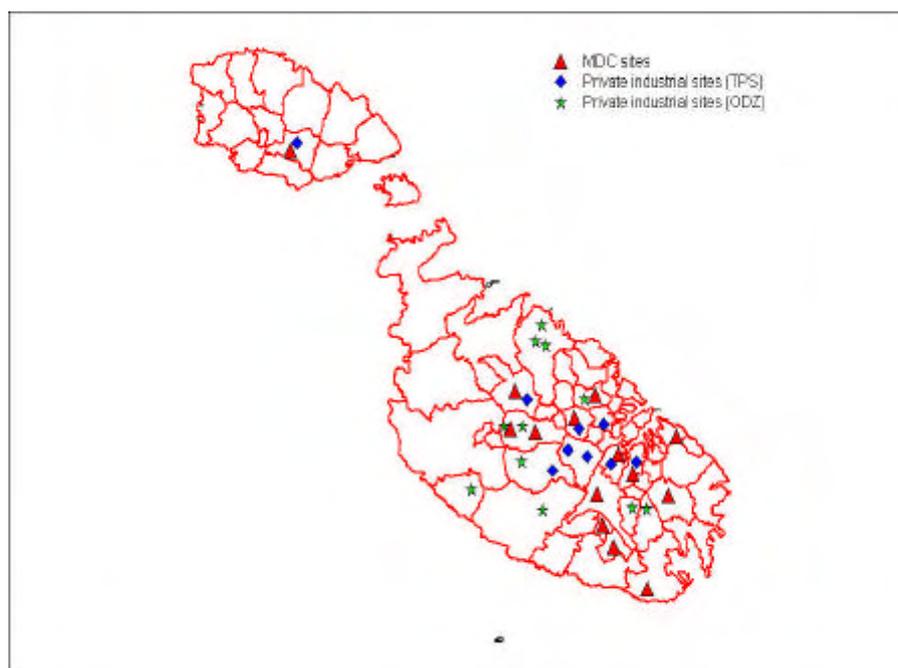
Malta Corporation Estates	Development Industrial	Private Industrial Areas	
		Within Provision Schemes	Outside Temporary Provision Schemes
Attard		Marsa	Naxxar (Maghtab)
Bulebel		Qormi (Handaq)	Naxxar (Wied il-Ghasel)
Hal-Far		Qormi (Marsa)	Zebbug (Mdina Road)
Kirkop		Mriehel	Qormi (Ta' Farzina)
Kordin		Mosta	Ghaxaq (Triq tal Barrani)
Marsa		Xewkija (Gozo)	Gudja
Mosta		Msida	Attard (Ta' Qali)
Mriehel		Zebbug	Burmarrad
Ricasoli		Paola	San Gwann
Safi			Siggiewi
Ta' Qali			Dingli
San Gwann			
Xewkija (Gozo)			
Luqa			

Source: Draft Employment Topic Paper, Planning Authority, 2001b

Although areas are schemed for industrial uses, it does not mean that the entire area is actually used currently. In fact, a significant proportion of the industrial estates are still vacant. A recent study undertaken by the Planning Authority has shown that of the 4,428,577 m² of industrial land within the Temporary Provision Schemes boundary, 1,626,643 m² (1,325,000 m² in MDC-owned estates and 301,643 m² in private estates⁴⁷), were still undeveloped in 2000. Obviously, the actual area available for industrial use would be somewhat less than this total area, in view of physical constraints operating against the conversion of some of the land into suitable industrial areas and the necessary support infrastructure. **Tables 3.58** and **3.59** provide further detail on an estate-basis.

Of the 4,428,577 m² of industrial land within the Temporary Provision Schemes boundary, 1,626,643 m² were still undeveloped in 2000.

⁴⁷ This makes up 51% of the total schemed industrial area in private ownership.

Figure 3.27 – Location of industrial sites

Source: Planning Authority Map Data

Table 3.58 – Land distribution within privately owned industrial areas located within the Temporary Provision Schemes boundary

Estate	Developed Land (m ²)	% of total land	Vacant land (m ²)	% of total land	Total land (m ²)
Grand Harbour Local Plan					
Marsa	11836	28	30892	72	42728
sub-total	11836	28	30892	72	42728
Central Local Plan					
Qormi (Handaq)	55850	68	26077	32	81927
Qormi (Marsa)	26772	49	27263	51	54035
Mriehel	133916	52	121729	48	255645
Mosta	7761	35	14254	65	22015
sub-total	224299	54	189323	46	413622
Gozo Local Plan					
Xewkija	3658	13	24631	87	28289
sub-total	3658	13	24631	87	28289
North Harbours Local Plan					
Msida	0	0	4950	100.0	4950
sub-total	0	0	4950	100.0	4950

South Local Plan					
Zebbug	50554	52	46604	48	97158
Paola	887	14	5243	86	6130
sub-total	51441	50	51847	50	103288
Total	291234	49	301643	51	592877

Source: Draft Employment Topic Paper, Planning Authority, 2001b

Of the industrial areas located outside the development zone, around half are located in the Mosta-Attard-Lija and the Zebbug-Qormi conurbations. **Table 3.60** gives a breakdown of the land take up in the different localities. A number of these industrial areas have been developed illegally and are subject to enforcement notices. Their permanence or otherwise, hence would depend on the outcomes of the legal process (planning appeals board or court decisions).

Table 3.59 – Estimated land availability at MDC-owned industrial estates

Estate	Total Estate Area + Land to be Transferred to MDC (m ²)	Total Vacant land (m ²)	Currently Committed (m ²)	Vacant & Available (m ²)	Potential Release (m ²)	Government Expansion / Land to be Transferred (m ²)
Attard	48400	1500	1500	0	0	0
Bulebel	591500	200000	0	13400	32200	154400
Hal Far	1391100	645200	55600	297300	102800	151700
Kirkop	70500	31700	31700	0	0	0
Kordin	261700	78600	0	53000	0	25600
Marsa	436100	72900	7900	3800	0	61300
Mosta	180900	22800	0	0	22800	0
Mriehel	96800	37000	0	7300	29700	0
Ricasoli	203100	50600	4900	45700	0	0
Safi	155900	120900	0	120900	0	0
San Gwann	264900	39100	4400	8800	0	25900
Xewkija	134800	24700	24700	0	0	0
TOTAL	3835700	1325000	130700	550100	187400	418900

Source: Draft Employment Topic Paper, Planning Authority, 2001b

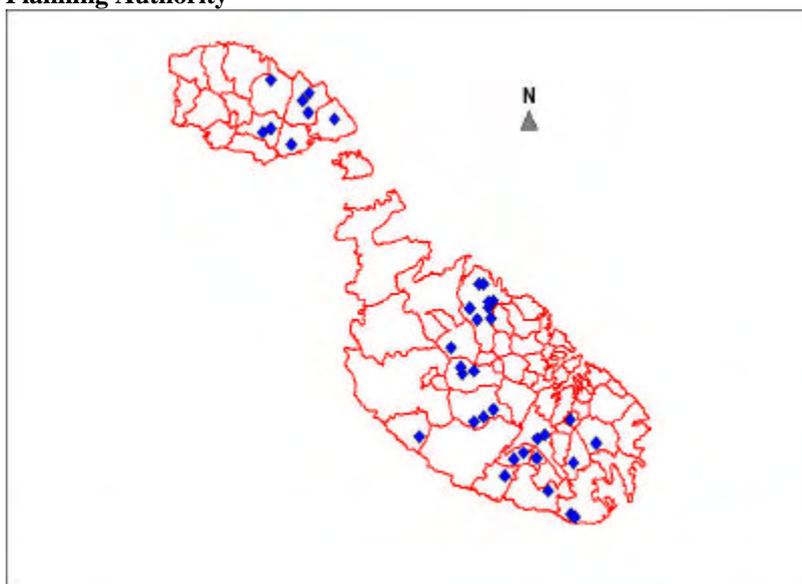
Table 3.60 – Land take up for private industrial uses outside the development boundary.

Location	Land Take Up (m ²)*
Burmarrad	14,480
Maghtab	36,700
Gharghur-Iklin-San Gwann	63,300
Mosta	7,230
Mosta-Attard-Lija	138,200
Zebbug-Qormi	160,900
Luqa	31,400
Gudja-Ghaxaq	100,200
Mqabba-Kirkop	74,300
Siggiewi-Mqabba	5,400
Dingli-Siggiewi	6,900
Total	639,010

*According to the indicated site boundaries on the decided planning applications and enforcement notices. *Source: Draft Rural Strategy Topic Paper, Planning Authority, 2002b*

One particular manufacturing use that is often located outside designated industrial areas and that has significant environmental impacts is that related to the construction industry – batching plants, asphalt plants, brick plants and limekilns. Most of these (though not all) are located in quarries, often forming a complex of industries supplied with raw material from the same quarry. By 2001, the Maltese Islands boasted no less than 36 concrete batching plants, 11 tarmac/asphalt batching plants, 9 concrete brick plants and 5 limekilns. These are surely unsustainable and constitute a gross oversupply with most plants operating for short periods of time, often linked to contracts won by the owners of the same quarry/company. A rationalisation of the industry leading to a reduction in the number of plant would be of great benefit to the environment and possibly to the industry itself. **Figure 3.28** shows the location of the various construction related.

Figure 3.28 – Location of construction related plants Source: Environmental Management Unit, Planning Authority



3.9.5 Services Land-Uses (U3)

Land-uses dedicated to services include categories such as transport, waste management, water, business and financial services, leisure and recreation, community services and residential areas.

3.9.6 Transport, Communication, Storage, Protective Works (U31)

This land-use category includes a number of support-type, accessibility & communication services. These include, transport infrastructure (road network, airport, heliport, ferry terminals), telecommunications infrastructure (fixed and mobile telephony, television networks, radio), protective works such as breakwaters, jetties, etc, as well as support infrastructure such as storage and warehousing.

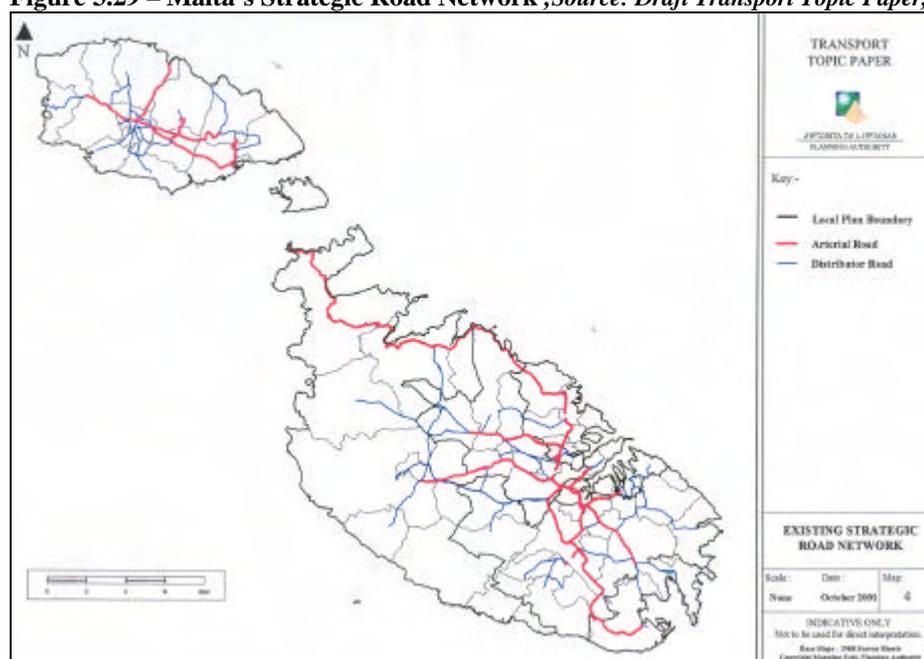
3.9.6.1 Transport

Over the review period, the road network underwent a number of improvements – both physically (re-surfacing, rebuilding and construction of new roads) and through better traffic management schemes, as well as administratively, through the establishment of a road hierarchy system, numbering of roads according to the hierarchy and the establishment of the Malta Transport Authority that will have responsibility for Roads, Public Transport, Licensing and Testing and Traffic Management.

The total length of the road network in the Maltese Islands stood at 2,183 km in 2001
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Malta has 2,183 km of roads, 396.2 km of which constitute the arterial and distributor road network. This strategic carriageway was assessed by German consultants (GTZ) in 1998. They reported that 78% of these carriageways required improvements and no less than 88% were “over-designed” (i.e. they were too wide for the traffic they carry). This “over-design” alone has resulted in the uptake of an additional 0.9 km² (800 tumoli) of land, most of which is in prime development areas (Planning Authority, 2001e). The road network is illustrated in **Figure 3.29**.

Traffic is known to cause air and noise pollution, reduction in physical activity, mental and health effects, as well as visual impact. This aspect will be discussed in another Chapter of the present report. The air quality monitoring results gathered by the Pollution Control Co-ordinating Unit (PCCU) of the Environment Protection Department between 199 and 2001 have shown that the particulate matter (PM10) levels in Maltese air regularly exceeded Population Information Levels or even Alarm thresholds. Although assessments in this area are still preliminary in Malta, it is acknowledged internationally that transport is a major contributor to air pollution, with the personal car being the single greatest polluter of air (Planning Authority 2001e). Apart from the official road network, the Maltese countryside includes also a number of country roads and footpaths. These are mainly used by farmers to gain access to their fields as well as by ramblers and hikers. In environmental terms, the major concern does not lie with the fact that they exist but rather with the interventions that are often carried out to them through which they are given an impermeable surface of concrete. This has a significant effect on water management in that the impermeable surface cuts down on the surface area available for aquifer recharge and increases the run-off rate. This leads to increased and accelerated soil erosion, apart from the actual loss of water.

Figure 3.29 – Malta's Strategic Road Network, Source: Draft Transport Topic Paper, P.A., 2001e

3.9.6.2 Air Transport

Air transport to and from the Maltese Islands is served by the Malta International Airport situated between Gudja and Luqa. The Airport occupies 3,701,000 m² of land and handles around 3 million international passengers and over 30,000 aircraft movements, through its connections to 33 different countries.

Inter-island transport is largely ferry-based, however an air link by means of a chartered helicopter service is also available. This service operates between Malta International Airport and the heliport at Ghajnsielem. The latter occupies an area of 18,650 m².

3.9.6.3 Sea Transport

Other transport services are sea-based. This includes both international as well as inter-island links. International sea passenger services are provided by both tourist cruise liners that call at the Grand Harbour on a regular basis (Works Division, 2002), as well as by ferry linking Malta with Sicily and with Libya.

Cruise passenger liners visit Malta in increasing numbers annually. In 2001, a total of 240,000 passengers in 312 ships visited Malta, an increase of 70,000 passengers and 60 ships over the previous year (Works Division, 2002). The port facilities available currently include 4 liner berths along Pinto Wharf. These facilities however are not adequately serviced by landside operations to date. Work on a new project aimed at establishing a Cruise Passenger Terminal (apart from retail outlets and other services) commenced in late 2001.

Inter-island traffic is focused at Cirkewwa Harbour in Malta and Mgarr Harbour in Gozo. Facilities within Marsamxett Harbour (Sa Maison wharf) are utilised in severe weather conditions when the Cirkewwa Harbour is rendered unoperational. The upgrading of the Cirkewwa Ferry Terminal and Harbour works that commenced in 2000, are aimed at providing a safer harbour and additional berths, while also providing more comfortable terminal buildings and a complete segregation of cars from passengers. The Sa Maison facilities are mainly focused on inter-island cargo transshipment.

Table 3.61 gives a breakdown of the areas occupied by the various ferry terminals.

Table 3.61 – Area occupied by the various passenger terminals

Terminal	Area (m ²)
Cirkewwa	35,480
Mgarr (Gozo)	34,000
Sa Maison	4,500
Valletta Cruise Liner/Ferry Terminal	23,490

Source: Planning Authority Map Data

Unfortunately very little use is made of sea transport as an alternative to the motor vehicle. A ferry service operates between Sliema and Valletta but it has only a very small share of the transport volume on the islands. In 2000 the Ministry for the Environment announced a new project aimed at facilitating communication between Marsamxett Harbour and Grand Harbour using the sea as a means of travel, while also providing vertical access from the harbours to the centre of Valletta. The project, known as Connections, aims to provide a sea ferry link between Sliema/Gzira waterfront and Cottonera and including a sea-level tunnel cutting right underneath the Valletta peninsula forming a direct connection underneath the capital city.

3.9.6.4 Yachting

Yachting is also very popular in the Maltese Islands. Around 1,350 berths are currently available in 4 formal yacht marinas⁴⁸, with a number of other locations (especially bays) providing a significant number of berths, though they are not managed as fully-fledged marinas. Apart from these berths a number of other marina developments have been permitted or are currently being processed by the Planning Authority. These include a new 500-berth marina at Birgu, a further 500 berths at Manoel Island and another marina at the former Excelsior Hotel in Floriana. Other proposals (which however have not materialised) have included excavation of a marina at Hondoq ir-Rummien, expansion of the marina at Mgarr Harbour and development of a marina at Xemxija Bay, St Paul's Bay.

3.9.6.5 Freeport

With transshipment turning out to be a major growth area, the Malta Freeport has been making a major contribution as the amount of containers it handles annually continued to increase year on year. By the year 200, the Freeport's market share of Mediterranean transshipment stood at 15%, an increase of over 10% from the 5.7% share it registered in 1990.

The Freeport is now one of the main transshipment centres in Europe, ranking third in the traffic league table of the Mediterranean, behind Gioia Tauro and Algericas. In 2000 The Freeport once again passed the one million TEU traffic level and with the development of Terminal Two in 1999, significant growth is expected in the years to come.

The Freeport is also home to the largest oil bunkering facility in the Mediterranean, with a storage capacity of 360,000 m³ of oil.

3.9.6.6 Telecommunications

Telecommunication networks include radio, television, cable TV and telephony (fixed line and mobile). By 2001, Malta had no less than 29 radio stations (13 national stations (3 state and 10 private) and 16 community radio stations), 4 terrestrial TV stations and 1 cable TV station, one cable TV network covering 98% of the households on the islands⁴⁹, one company providing fixed line telephony and two companies offering mobile phone services.

⁴⁸ *Three public marinas at Mgarr (Gozo), Msida and Ta' Xbiex (approximately 1200 berths) and a private marina at Portomaso (approximately 150 berths).*

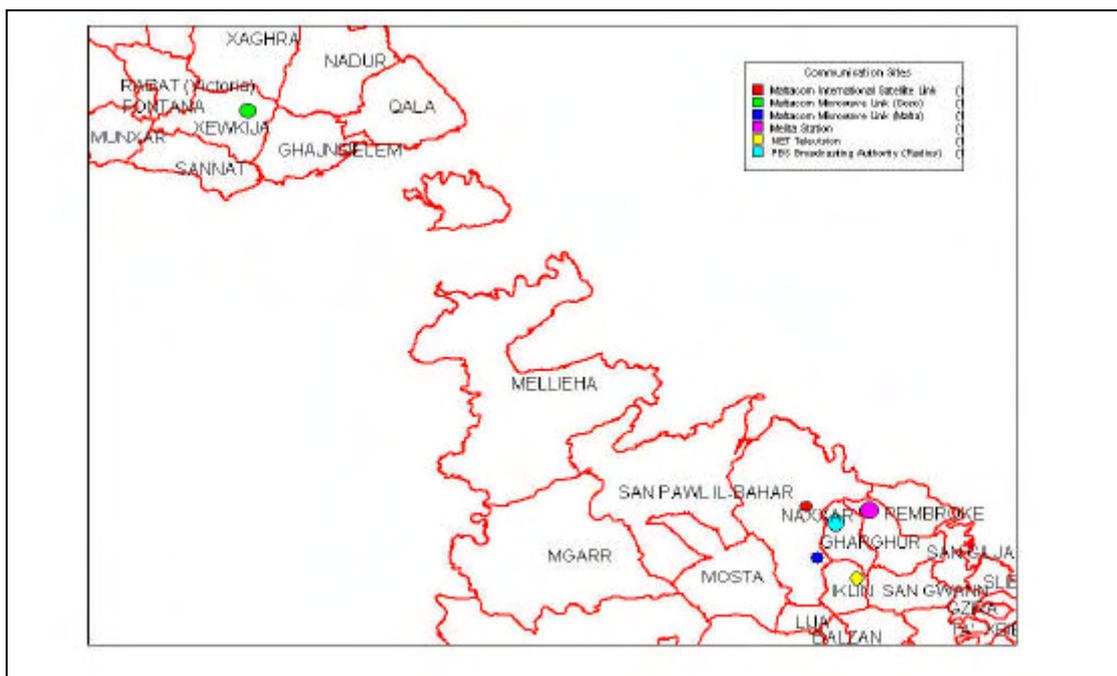
⁴⁹ *Melita Cable plc owns an aerial infrastructure consisting of approximately 1450 linear kilometres of cabling, ancillary electronic equipment and attachments, a number of distribution points and 150km of underground fibre optic cable network. The only locality not served by the cable television network is Bahrija, together with*

The various infrastructural networks provide also other services, especially in terms of internet access and other digital information and communication services.

TV and Radio broadcasting are transmitted through fixed radio links from two relay stations (the most important being located at Gharghur).

Figure 3.30 shows the distribution of major communication sites on the Islands. Apart from these, mobile phone service providers have approximately 150 antennas/base stations each arranged in a network around the islands.

Figure 3.30 – Distribution of major communication sites



Source: Planning Authority Map Data

3.9.6.7 Protective Works

Protective works are mainly located in coastal areas, where they act against waves and currents protecting the coastline and coastal infrastructure. In the countryside, rubble walls can be considered to fall this category as well, providing protection against soil erosion to fields. However, the latter is not considered in this category for the purpose of this report.

Protective works include breakwaters, jetties and wharfs. The vast number of bays, inlets and creeks around the Maltese Islands together with the use of the sea for fishing, sailing and other similar pursuits, has necessitated the development of a number of these protective works.

Perhaps the most significant change over the review period has been the works associated with the upgrading of the Cirkewwa and Mgarr ferry terminals. Marine works at Cirkewwa are not yet completed and a significant extension of the protective works is expected to be undertaken in 2002 and 2003.

other remote areas (e.g. Hal Far, Delimara, San Martin, Mizieb, Landrijiet, Kuncizzjoni, Fawwara, Cirkewwa, Marfa, Maghtab) and some industrial areas (e.g. Kordin Industrial Area, Marsa Industrial Area) (Formosa, J., pers. comm..)

Table 3.62 gives the area of land associated with the major protective works (including terminals/jetties and berthing facilities) on the islands.

Table 3.62 – Approximate area of coast taken up by protective works (breakwaters, jetties, wharves, berthing places, slipways, seawalls)

Location	Facility	Area (m ²)
Marsaflorn	Breakwater & Il-Menqa protective works	4,000
Xlendi	Jetties	450
Mgarr	Harbour works	39,900
Hondoq ir-Rummien	Jetty	1,000
Comino	Jetties	525
Cirkewwa (including South Quay)	Breakwater & berthing facilities	35,500
Mellieha	Jetties, slipways, breakwaters	2,500
St Paul's Bay (including Bugibba & Qawra)	Jetties, slipways, seawalls & breakwaters	21,240
Salina	Jetties, seawalls, slipways	8,500
Qalet Marku/Bahar ic-Caghaq	Jetties, slipways	300
St Julians	Breakwaters, slipways, jetties & seawalls	17,500
Sliema	Jetties, seawalls	3,000
Marsamxett Harbour	Seawalls, jetties	23,600
Manoel Island	Jetties, wharves, slipways, seawalls, berthing places	11,780
Grand Harbour	Breakwaters, jetties, wharves, seawalls, docks, slipways	220,600
Marsaskala	Jetties, seawalls	2,000
St Thomas Bay	Jetties, seawalls, slipways	2,300
Delimara	Breakwater, jetties, wharves	10,000
Marsaxlokk & Birzebbuga (including Freeport)	Breakwater, jetties, seawalls, wharves, berths, slipways	678,250
TOTAL		1,082,945

Source: Planning Authority Map Data

3.9.6.8 Storage & Warehousing

Warehousing, together with the distribution of the goods so stored, is an essential component of most of the economic activity that takes place on the Islands. The warehouse lies at the heart of the supply chain, providing a buffer between supply and demand – a crucial aspect in an island economy (Planning Authority, 2001).

Between 1993 and 2000, the Planning Authority has approved an average of 31,400 m² of storage space each year⁵⁰. **Table 3.63** gives an overview of the number of applications received, those approved and refused, and the floorspace approved in this period.

⁵⁰ The actual permitted floorspace shows a cyclical pattern, with a maximum of 58,000 m² in 1996 and a minimum of 14,000 m² in 1999. Table 9.6.8.1 and Figure 9.6.8.1 refer.

Table 3.63 – Warehouse development statistics

	1993	1994	1995	1996	1997	1998	1999	2000
Number of applications	65	72	100	198	231	151	84	144
Approvals	42	43	50	142	141	45	40	41
Refusals	23	29	50	56	90	106	44	103
Floor space Approved (m ²)	23742	20917	18035	58385	44672	27580	14658	43327

Source: Planning Authority Development Applications Database, (1993-2000)

As with other industry sectors, most warehousing is located in the Central Malta and South Malta Local Plan areas, as can be seen in **Table 3.64**. The localities with the highest percentage of warehousing are Qormi (21.8%), B'Kara and Marsa (9.2%), Birzebbuga (7.7%), and Zebbug and Mosta (6.2%) (Planning Authority, 2001b)

Table 3.64 – Approved warehouse floorspace by local plan

Local Plan	1993	1994	1995	1996	1997	1998	1999	2000	Total
GCLP	1498	4142	2085	3366	4659	1419	508	466	18143
NWLP	1350	479	1990	8866	2988	440	24	367	16504
CMLP	5847	7263	5314	27548	21110	7430	3520	15410	93442
NHLP	1313	838	696	1000	5449	1007	0	0	10303
GHLP	8393	3577	897	5370	2817	2080	4066	1578	28778
SMLP	5341	4378	6956	9117	7299	5525	6275	6877	51768
MBLP	0	240	97	3118	350	9679	225	18520	32229
Total	23742	20917	18035	58385	44672	27580	14618	43218	251167

Source: Planning Authority Development Applications Database, (1993-2000)

The vast majority of the warehousing space available is smaller than 200 m². There is also a difference between localities in terms of the quality of the warehousing, with that in Marsa being predominantly older than 100 years, whereas that in Qormi being of the newer type. The larger warehousing tends to be located in the Birzebbuga area, due to the location of the Freeport, which has a number of warehouses exceeding 1000 m² (Planning Authority, 2001b).

From the estimates established by the Planning Authority in the Employment Topic Paper, should the demand experienced over the past eight years (less the one-off constructions at the Freeport), be sustained over the next twenty years⁵¹, we will be faced with a total demand of 500,000 m² of warehousing floorspace.

3.9.7 Water, Waste Treatment (U32)

This land-use category includes those service uses related to water resource management and waste management, including both solid and liquid waste.

⁵¹ Twenty years is the time span of the new Structure Plan currently being formulated.

3.9.7.1 Water

Water resources on the islands are scarce and depend on rainfall, which is largely restricted to the October – March period which accounts for around 70-85% of the total annual precipitation (Axiak *et al.*, 1999b).

Rainwater helps replenish the aquifers, which are practically the only natural freshwater sources on the Islands. This water is utilised for a number of purposes, including public potable water supply, irrigation and industrial uses. In 2000, a total of 13 pumping stations, 113 registered boreholes⁵² and 18 springs provided approximately 20 million m³ of potable water, corresponding to around 50% of the total public potable water supply (WSC, 2000)

Approximately half of Malta's drinking water supply is produced through desalination at the four Reverse Osmosis Plants still operational⁵³ at Lapsi, l/o Siggiewi, Pembroke and Cirkewwa. These four RO plants are the major consumers of electricity on the islands so that their optimal performance and increased efficiency is of crucial importance. These four plants, together with their well fields, occupy significant stretches of coastline that are effectively sterilised in terms of their potential use.

Table 3.65 gives an overview of the areas occupied by the four plants.

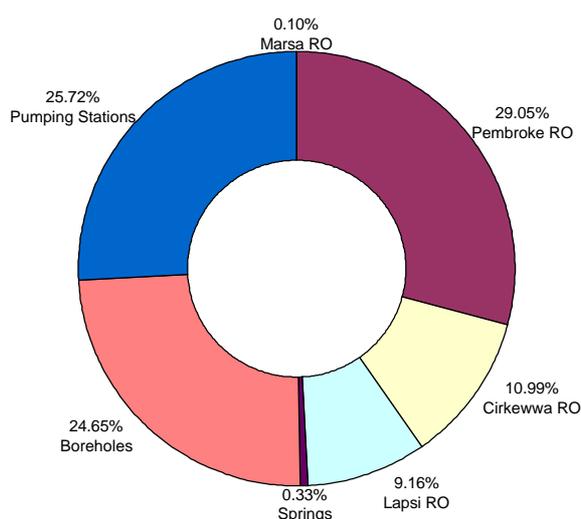
Table 33.65 – Location and areas occupied by the four operational reverse osmosis plants operated by Malta Desalination Services Ltd.

Location	Capacity of Plant	Area occupied (m ²) (plant + wellfield)
Pembroke	54,000 m ³ /day	35,150
Lapsi	24,000 m ³ /day	29,000
Cirkewwa	18,600 m ³ /day	42,000
Marsa	4,500 m ³ /day	1,800

Source: Planning Authority Map Data

Figure 3.31 gives the percentage contribution of the various desalination plants, boreholes, pumping stations and springs to the national supply of potable water.

Figure 3.31 – Percentage contribution of potable water by source.



⁵² Note that an unknown number of unregistered boreholes exist (estimated to run in the hundreds). This additional and unregulated tapping of the limited freshwater resource exposes the aquifers to over-extraction, saline intrusion and pollution risks.

⁵³ Apart from these four Reverse Osmosis Plants, another one existed at Tigne'. This was decommissioned in 1997.

First class water is stored in reservoirs totalling a capacity of 298,000 m³, equivalent to the nation's water supply for at least 3 days. Desalinated water and groundwater are blended together in these reservoirs. Apart from these, six second-class water reservoirs store water produced from sewage treatment at the Sant' Antnin plant in Marsaskala. This water is used by industry and for irrigation. More of these types of reservoirs are expected to be constructed once the new Sewage Treatment plants themselves are constructed.

3.9.7.2 Sewage

Malta's sewerage infrastructure consists of two main networks that collect both domestic and industrial wastewaters as well as some storm water runoff. The largest of the two networks, which services the southern part of the island, converges at the Marsa Sewage Pumping Station, from where it is pumped to one of two points – the Wied Ghammieq Submarine Sewage Outfall or the Sant' Antnin Sewage Treatment Plant at Marsaskala.

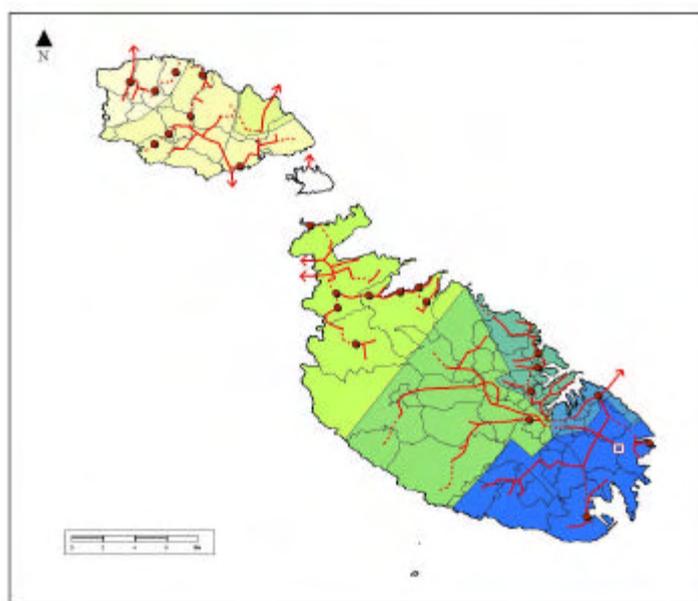
The plant at Sant' Antnin treats approximately 10% of the sewage produced on the islands. The rest is disposed untreated at Wied Ghammieq or the other sewage overflows located at ic-Cumnija (l/o Mellieha), at the north and south coasts of Comino or at Ras il-Hobz, San Blas or Wied il-Mielah on Gozo. Apart from these sewage outfalls, a number of sewage overflows linked to sewage pumping stations also exist. These only operate in emergency situations, however, most are located in inappropriate sites, discharging sewage into bays and harbours.

All the sewage discharged into the sea is currently discharged in an untreated state. Plans to build three further sewage treatment plants – one on Gozo and two on Malta will result in the treatment of all sewage generated on the islands, with the exception of that generated on Comino, for which plans seem to be inexistent. **Figure 3.32** shows the location of sewage related infrastructure, as well as the main catchment areas.

Although the sewerage network covers most of the Maltese Islands, there are still approximately 1000 properties that are not connected to the main network and are instead linked to cesspits that are emptied weekly in authorised discharge points (Planning Authority, 2002g). Over the past years, a number of commercial developments (especially hotels) have also elected to construct and run their own sewage treatment facilities. This trend is to be encouraged, especially is the water so treated is then also used for irrigation on the grounds of the same establishment or in surrounding areas.

Further information on water resources and sewage management are available in other sections of this State of the Environment Report.

Figure 3.32 – Main sewage catchment areas and sewerage infrastructure in 2001.



3.9.7.3 Solid Waste Management

Waste management (or the lack of it) has, over the past 5 to 7 years become Malta's most pressing environmental problem. The issue, epitomised by the Maghtab dump, has literally grown out of all proportion and has come to represent Malta's environmental ills in a way that no other campaign has managed to do. There are actually two worrying points in all of this. Firstly, the fact that most people do not realise that what Maghtab really signifies is our unsustainable way of life as a nation, rather than inaction by successive governments; each and every one of us and the tourists that visit our islands have a share in the growing "mountain" that is Maghtab (and Il-Qortin for that matter). Secondly, that "the environment" has come to mean waste and all its problems, which is a rather narrow and short-sighted way of looking at our biosphere. While a dedicated, radical and focused approach is required to tackle our waste management problems, it is important that an equally dedicated environmental education and awareness campaign is embarked upon in order to bring to the general public the real meaning of the term "environment". Further details on environmental awareness and education are available in other sections of this State of the Environment Report.

The number of dumps (often called landfills) in Malta and Gozo has remained the same over the review period, although the extent and volume of the dumps at Maghtab and Qortin have grown enormously. This physical mushrooming in the dumps has brought about a much-needed increase in environmental awareness at grassroots level and has pushed the waste management problem to centre stage. Unfortunately, this has not been coupled with an equal drive at government and institutional level. Arguably, much of the review period has been characterised by an assessment of the waste generation problem and attempts at characterising the waste stream and coming up with medium and long-term solutions. Between 1998 and 2001, the Ministry for the Environment and the Planning Authority have been very active in setting the policy framework for a modern waste management infrastructure for the islands. In 1997, the Planning Authority started preliminary work that would lead to the formulation of a Subject Plan⁵⁴ on Waste Management. Work on the Plan commenced in 1998 and by the beginning of 1999 a Preliminary document establishing the facts as they were at the time was compiled. This document formed the backbone of the eventual Subject Plan (Space for Waste), which was published in 2000 for public consultation and approved by the Planning Authority in 2001. It also informed much of the consultation document published by the Works Division in 2000, titled "A Solid Waste Management Plan for Malta, 2000 - 2009" (Works Division, 2000). In 2001, the MoE published Malta's first National Waste Management Strategy (Ministry for the Environment, 2001a & b).

The area of land occupied by the various authorised and unauthorised dumpsites has increased between 1993 and 1998, as shown in **Table 3.65** below:

Table 3.65 – Area of land occupied by the major official and unauthorised dumps on the islands and their increase between 1993 and 1998.

Dump	Area 1993 * (m ²)	Area 1998 * (m ²)	Percentage increase
Maghtab (official – operational)	233,900	355,300	52%
Il-Qortin ta' Ghajn Damma, Xaghra (official - operational)	46,000	50,700	10%
Wied Fulija (official - closed)	62,000	85,400	38%
Luqa (official - closed)	90,000	90,000	0%
Ic-Cumnija (unauthorised)	17,000	20,300	19%
Ahrax Point (unauthorised) §	10,000	13,000	30%
Anchor Bay (unauthorised)	20,000	30,000	50%

* Areas are as calculated from aerial photographs and base maps and rounded off.

§ This dump was cleared in 2001.

Source: Mapping Unit, Planning Authority

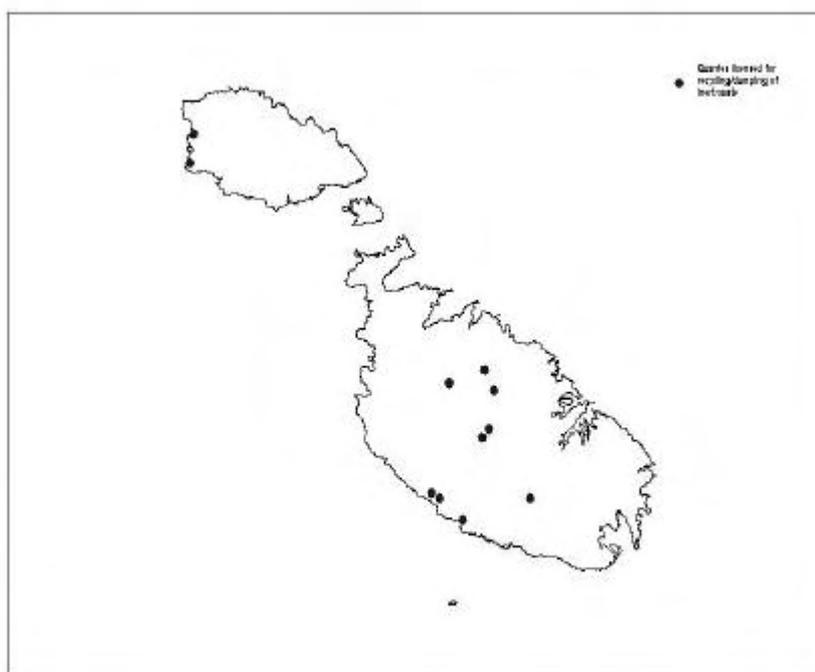
⁵⁴ *Subject Plans are land-use plans addressing on a national level issues related to a particular topic area. Subject Plans prepared to date include those on Yachting, Retail, Waste Management and Minerals.*

Apart from the major and official landfill sites, a number of disposal sites, mostly illegal, still exist around the Maltese Islands. A drive by the Ministry for the Environment to remove these illegal dumping areas has resulted in the removal of a number of these areas, although in some cases, fresh dumping was discovered a few days later.

The largest waste stream on the islands is by far Construction and Demolition waste. This accounts for approximately 80% of the entire waste stream and has contributed in no small way to the growth of the dumps at Maghtab and Il-Qortin. Unfortunately, this waste stream has also been responsible for the not insignificant number of rural areas affected by fly tipping. A drive towards the redirection of part of this waste stream to controlled sites other than the official dump sites and an encouragement of recycling and reusing of limestone material in 1996, resulted in the publication of the first in what was to become a string of waste management legislation and policy. LN 128 of 1997 also established, for the first time, a fee for the deposition of waste at the official dumpsites (whether public or private). This encouraged the owners of private quarries to register as dumping or recycling sites for inert demolition and excavation waste. By end 2001, 11 quarries had been licensed by the Environment Protection Department to accept inert waste for final disposal or for recycling. **Figure 3.33** gives the general location of the approved inert waste dump sites/recycling centres.

This activity generated an appreciable amount of revenue for the owners (while saving them the waste deposit fees operative at the Maghtab dump), so much so that following a halt in the issue of licenses in view of a lack of adequate environmental insurances that insure against contamination of the aquifer, a number of disused quarries (most in the Siggiewi/Mqabba area) still operated illegally as dump sites. Between 1998 and 2001, the Planning Authority issued no less than 11 enforcement notices against such sites.

Figure 3.33 – location of quarries approved as inert waste recycling centres or deposit sites
Source: Environmental Management Unit, Planning Authority



Further information on waste management is available in other sections of the State of the Environment Report.

3.9.8 Construction (U33)

This land-use category deals with sites utilised for construction at whatever degree of completion they currently are in. This is largely a transient statistic since any construction site would fall in this category. It nonetheless would be expected to be a significant statistic seeing the seemingly continual building activity happening all over the islands. However, the information required for this category is actually hard to come by, mainly due to the transient nature of the construction sites.

Between 1998 and 2001, a number of new major projects were commenced, including the Manoel Island & Tigne Point development, the Portomaso development, the Cottonera project, the Eden Beach Hotel and a number of others. In 1998 the area of land falling within this category⁵⁵, as extrapolated from aerial photographs, was of 0.9 km². As explained earlier, this information cannot be considered to be conclusive and hence should only be taken as an indicative value.

3.9.9 Commerce, Finance, Business (U34)

This land-use category comprises areas used for commercial, financial and general business activities. These include wholesale and retail distribution, maintenance and repair services, hotel and catering services, financial and insurance services and other business activities.

3.9.9.1 Retail & Commerce

Over the past decade, there has been a rapid growth in this sector largely in response to demand generated by the consumers. New retail floor space was constructed, including large supermarkets, showrooms and other shopping facilities.

The retail sector in the Maltese Islands is dominated by very small independent businesses, with 97% of the 8180 retail businesses operating in 1995 employing less than 10 people (Planning Authority, 2001f). The sector enjoyed a boom period, growing by over 45% in real terms between 1988 and 1997. This was coupled with an increase in the amount of floorspace, with development consents averaging 24,000 m² annually between 1993 and 1995, 50,000 m² annually between 1996 and 1997 and 60,000 m² annually between 1998 and 1999. By 2001, it was estimated that the amount of retail floorspace (convenience and comparison goods) existing in the Maltese Islands amounted to 274,000 m² (Planning Authority, 2001f). Coupled with retail services and motor vehicle showrooms, this figure is estimated to increase to 450,000 m².

Tables 3.65 and 3.66 give an overview of the distribution of this floor space area by Local Plan.

Table 3.65 – Retail Provision by Local Plan Area

Local Plan Area	Retail Floorspace (m2)	%
Gozo	20,071	7.3
Northwest	25,610	9.4
Central	78,154	28.5
North Harbours	59,749	21.8
Grand Harbour	27,247	9.9
South	59,244	21.6
Marsaxlokk Bay	3,804	1.4
Total	273,879	100.0

Source: Floor space Survey, Planning Authority, 1999

Malta has five times as many shops per person as the UK

Retail Subject Study, Planning Authority, 2001

⁵⁵ This refers only to the major development areas and does not include individual plots of land.

Table 3.66 – Retail Floor space Data by type of Retail Business by Local Plan Area

	No.	Total Maltese Islands Sales Area (m2)	MBLP	NWLP	GHLP	NHLP	GCLP	SMLP	CMLP
Food, beverages and Tobacco	1771	83,758	1772	12,049	6141	14299	8047	20504	20946
Books, newspapers and magazines	578	16,562	307	1622	2458	4098	559	3770	3748
Total Convenience	2349	100,320	2079	13671	8599	18397	8606	24274	24694
Clothing (not footwear)	865	34,517	308	2161	4777	9902	2337	6204	8828
Footwear and Leather goods	148	4,107	36	316	1062	1183	141	507	862
Furniture and lighting	334	20,271	60	160	1545	5781	1631	3878	7216
Household appliances, radio and TV	619	27,980	376	1476	2220	8731	1271	6083	7823
Pharmaceutical goods (including cosmetics and toiletries)	210	6,186	138	1187	845	1566	261	1144	1045
Textiles	76	3,967	60	20	639	150	18	489	2591
Other	1834	76,531	747	6619	7560	14039	5806	16665	25095
Total Comparison	4086	173,559	1725	11939	18648	41352	11465	34970	53460
All Shops	6435	273,879	3804	25610	27247	59749	20071	59244	78154

Source: Floor space Survey, Planning Authority, 1999

3.9.9.2 Hotels

Hotels in the Maltese Islands total 136⁵⁶ and together provide approximately 50,000 beds to the tourism industry.

Apart from hotels, 115 other tourist accommodation exist in the form of hostels, tourist villages, complexes, aparthotels and guesthouses (Malta Tourism Authority, 2002)

Further information on the Tourism industry is available in Section 2.5 of this report.

⁵⁶ Hotels are classified between 1-star and 5-star. Of the 136 hotels, 11 are 5-star, 38 are 4-star, 51 are classified as 3-star, 30 are 2-star and 6 are 1-star.

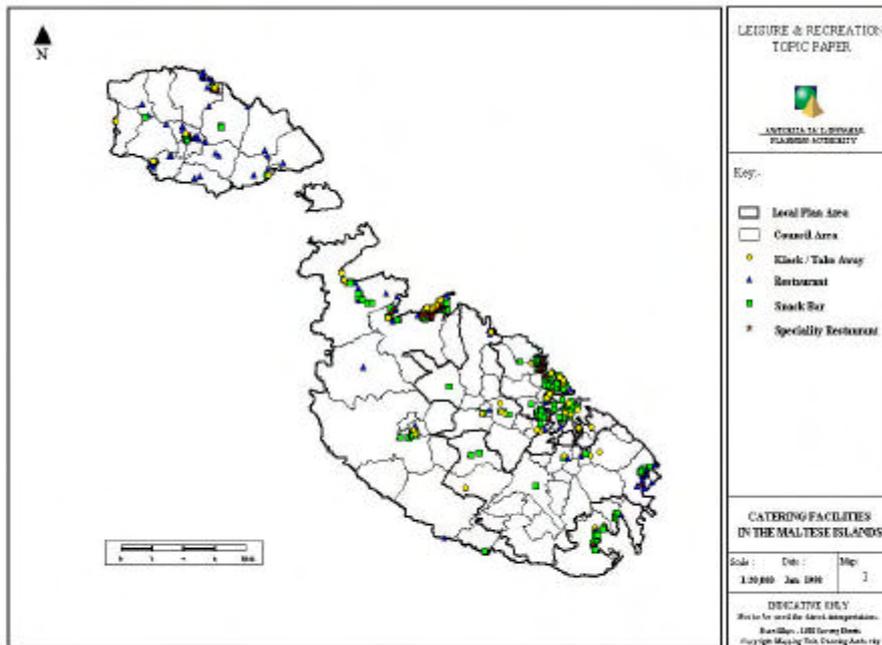
3.9.9.3 Catering establishments

On Malta, most of these types of facilities are concentrated around the coastal tourist resorts (St Paul's Bay, Bugibba, Mellieha and Marsaxlokk) and associated tourist sites (such as Rabat and Valletta).

In Gozo, the distribution patterns are different, with these facilities being located all over the island, although higher numbers are found in Xlendi, Marsalforn and Victoria.

Figure 3.33 shows the distribution pattern of catering facilities in Malta and Gozo.

Figure 3.33 – Distribution of catering establishments in the Maltese Islands



Source: Draft Leisure and Recreation Topic Paper, Planning Authority, 2001c

3.9.9.4 Banks and Other Financial Services

The Central Bank of Malta is a key player in the financial services sector of the Islands. It has two basic functions – the maintenance of monetary stability and the development of a sound, efficient financial sector, while advising government on banking and financial matters. 4 commercial banks operate in the Maltese Islands. The banks operate a total of 127 branches in 51 localities. The largest banks being Bank of Valletta and HSBC.

The Malta Financial Services Centre (MFSC), located in Mriehel, is an autonomous body that regulates the financial services sector.

No land-use information was available on the operations of these various financial institutions at the time of writing.

The closest information is that related to office development. Between 1993 and 2000, the Planning Authority approved an annual average of 22,600 m² of office space, with a peak of 30,129 m² in 1995 and a low of 14,311 m² in 1998. **Table 3.67** summarises this information.

Table 3.67 – Office development applications and floorspace approved between 1993 and 2000.

	1993	1994	1995	1996	1997	1998	1999	2000	Average
Projects Approved	20	40	46	83	69	95	91	114	70
Floor space Approved (m ²)	19881	30065	30129	27763	19776	14311	20663	16147	22300
Projects Refused	2	10	18	36	32	73	23	54	-

Source: Development Applications Database, (1993-2000), Planning Authority

Private sector offices are widely distributed around the Maltese Islands, although most of the floorspace is located in Valletta and Floriana, where most of the Government Ministries and Departments, parastatal organisations, public corporations and a significant number of private office-based companies are located (Planning Authority, 2001b). Other locations offering significant office space accommodation include ST Julians, B'Kara, Msida and Gzira.

Most of the office development is less than 150 m², with only 3% of the offices developed between 1993 and 2000 being larger than 1000 m².

Ta' Xbiex, with its stock of large scale villas, has emerged as a small-scale upmarket corporate office location, attracting a number of embassies and businesses, especially insurance firms.

This kind of development has been encouraged since it leads to conversions of existing stock rather than new developments.

3.9.10 Community Services (U35)

This land-use category includes areas used for public administration, by local authorities or for defence purposes, education, health, social work or religion. These therefore include several locations forming the central administration of the island (Ministries, Government Departments, Authorities and Corporations), Local Council offices, Military areas (such as ranges, barracks, forts, etc.) as well as hospitals, health centres, schools, churches, monasteries and convents

3.9.10.1 Government Ministries and Departments

The government operates through 14 Ministries located in Valletta, Floriana and Santa Venera (apart from the Ministry for Gozo which is located in Victoria). These Ministries act through 84 Divisions and Departments and are responsible for over 40 officially constituted Public entities (Authorities, Corporations and Agencies). The vast majority of the Government Departments too are located in Valletta and Floriana. The various public entities, on the other hand, are more widely distributed, with offices being located in Qormi, Luqa, Marsa, Floriana and Santa Venera, among other locations.

3.9.10.2 Local Councils

Each one of the 68 Local Councils (54 in Malta and 14 on Gozo) has its own offices. These vary from converted residences to purposely built office buildings. Through these offices, the Councils administer their localities and execute their responsibilities. No information is currently available on the aerial extent occupied by these offices but taking a minimum of 150 m², being a reasonably-sized office (and the most common size of office built – see Section 2.9.9.4), a guesstimate of 10,000 m² would be obtained.

3.9.10.3 The Police Force

The Police Force operates through its headquarters in Floriana and 72 police stations spread around the Maltese Islands. The Police force is organised into two regions (Region "A" and Region "B") and ten districts, each serviced by a District Police Station and a number of local stations and directed by a Commissioner (Malta Police Force, 2002).

3.9.10.4 The Civil Protection Department

The Civil Protection Department operates from its headquarters at Hal Far. It has its Operations Centre at Ta' Kandja and runs 4 fire stations (three in Malta and one on Gozo). A fifth fire station is to be built in Hal Far. It also has a marine station in Vittoriosa.

3.9.10.5 The Correctional Facilities

Correctional Services are under the responsibility of the Ministry for Home Affairs and the Environment. The main facilities are at Corradino (Corradino Correctional Facilities), however other places recognised by law as places of custody include: the Substance Abuse Therapeutic Unit (SATU) at Mtahleb, the Valletta Lock-Up, Ward 10 at Mount Carmel Hospital and St Michael's Ward at St Luke's Hospital, Gwardamanga.

3.9.10.6 The Armed Forces of Malta

The Armed Forces of Malta is made up of three separate units (1st Regiment, 2nd Regiment and 3rd Regiment) under the control of the Headquarters. The 1st Regiment is an infantry battalion having three rifle companies and a support company. The 2nd regiment is a composite unit providing air-defence artillery, air and maritime support for the infantry battalion. The 3rd regiment is the logistics unit for the whole force, providing specialist security duties and support to public sector infrastructural development projects (Clews, S.J.A., 1999). The AFM complement as at 2001 was of 1900 personnel.

The force operates from Ta' Kandja, Lyster Barracks in Hal Far, Luqa Barracks & Airport, Fort Madliena, Fort Mosta, Pembroke Rifle Ranges, Qortin Isopu compound on Gozo, Haywharf Maritime Squadron, Dingli Post and Delimara Post

3.9.10.7 Social Services

The Department of Social Security operates from its head office in Valletta as well as from 20 District Offices spread around Malta and 2 in Gozo⁵⁷. No information on the land use aspects of this category was available at the time of writing.

3.9.10.8 Health and Care Services

The Health service in 2001 included 5 state hospitals⁵⁸ (excluding the new Tal-Qroqq Hospital, which is still under construction), 8 Health Centres (in Floriana, Gzira, Qormi, Paola, Cospicua, Mosta, Rabat and Victoria) and 47 District Dispensaries (36 in Malta and 11 in Gozo).

Private hospitals and health centres also exist. In 2001, 5 hospitals and 9 clinics existed. Most were located in the North Harbours, North West and Central Malta Local Plan areas. None exist in Gozo and the Marsaxlokk Bay Local Plan area. A number of private pharmacies also exist, spread around the islands.

⁵⁷ *The District Offices are located in Balzan, B'Kara, Cospicua, Hamrun, Luqa, Marsa, Mosta, Msida, Naxxar, Paola, Qormi, Rabat, Sliema, St. Paul's Bay, San Gwann, Valletta, Zabbar, Zebbug, Zejtun and Zurrieq and two in Gozo viz. at Victoria and Nadur.*

⁵⁸ *These are St Luke's Hospital, Sir Paul Boffa Hospital, Mount Carmel Hospital, Zammit Clapp Hospital and the Gozo General Hospital.*

3.9.10.9 Old People's Homes, Children's Homes and Homes for the Care of the Disabled.

3.9.10.9.1 Old People's Homes

A number of set ups catering for the needs of the elderly are currently provided by government and the private sector. The government also provides several facilities aimed at supporting the elderly to continue to live in their homes, lessening the need for institutionalised care while keeping the elderly within the community they lived in for as long as possible. Of particular importance to land-use is the provision of day centres. Since 1993, 13 day centres have been set up by various local councils, providing indoor and outdoor facilities as well as organised activities for the elderly.

Table 3.68 gives an overview of the distribution of day centres by local plan and local council.

Table 3.68 – Distribution of day centres

Local Plan	Number of elderly (1995)	Number of day centres	Locality of day centre
GCLP	7265	2	Xaghra, Ghajnsielem
NWLP	5859	3	Dingli, Mtarfa, St Paul's Bay
CMLP	16324	3	Birkirkara, Hamrun, Qormi
NHLP	11359	1	Sliema
GHLP	7421	1	Cospicua
SMLP	16274	3	Luqa Zejtun, Zurrieq
MBLP	1398	0	-
Total	65900	13	

Source: Draft Social Facilities & Community Care Topic Paper, Planning Authority, 2001d

Apart from day centres, a number of homes exist, both state-run and private residences. 6 Government, 19 Church, 9 private and 2 jointly run Government/private homes existed in 2001, with a capacity of 3,023 beds. The largest proportion of residents in these homes is over 75 years of age and the female population by far exceeds the male population.

The largest homes are those provided by Government and although the residences run by the Church and the private sector do make a contribution to meet the needs of the elderly population, this does not replace the contribution that Government needs to make in this sector.

A number of the private residences have resulted from conversions of hotels. Six such conversions (totaling 565 beds) have taken place over the past years. These have been located in Rabat, Bugibba, Msida, Sliema, Pieta and Mosta (Planning Authority, 2001d).

3.9.10.9.2 Children's Homes

This sector is almost exclusively catered for by the Church. The Diocesan Commission for Children's Homes runs a total of 14 residences catering for different ages of children (from birth to 18 years of age). Apart from these homes, other institutional set ups include St Patrick's School (for Boys aged 11 to 18 years) in Sliema and Bugeja Home (for girls aged 14 to 18 years) in Sta Venera.

3.9.10.9.3 Homes for the Care of the Disabled

The National Commission Persons with Disability (NCPD) coordinates activities in this field. The Church is by far the most important player in this sector, running the largest residential home for the disabled (Dar tal-Providenza), offering its services free of charge to those in need of institutionalisation. Non-profit NGOs are also very active in this sphere, providing rehabilitative and respite services.

3.9.10.10 Schools

In 2000, 290 schools existed on the islands, catering for a population of approximately 79,000 school children. 68% of the children attended state schools, 22% attend church schools and 10% attend private schools.

13,265 students attend post-secondary and tertiary education institutions, of which only 720 attend non-state school. A further 4900 students attend evening classes and 745 persons follow adult education courses (Planning Authority, 2001d).

Over the past decade, the demand for non-state schools has increased leading to requests for development permission for the construction of new schools. A number of these were approved for development outside scheme, mainly due to the lack of adequately sized areas within scheme⁵⁹. Further information is available in Section 3.8.3.1.1.

A number of buildings used for state schooling (especially trade and secondary schools) were not originally built for that purpose so that alternative buildings are required to provide a better educational approach. The vacated buildings would then have potential for re-use.

Post-secondary education is mainly catered for by government through a number of set ups ranging from the Higher Secondary School at Naxxar, the Institute of Tourism Studies in Pembroke and Gozo, the Junior College (making part of the University of Malta) and the new vocational Malta College for Arts Science and Technology located at Kordin and having a number of satellite colleges around the island.

The University of Malta is located at Tal-Qroqq and currently caters for a student population of approximately 8,000. The University embarked upon an expansion programme in 1988, which is still ongoing. This programme has essentially doubled the footprint occupied by the University, which, together with the adjacent new Hospital has transformed this once agricultural valley side into a veritable town. The University also runs a small set up in Gozo, mainly catering for part-time education.

Another successful phenomenon in local education has been the development and marketing of the Islands as an English learning destination. In 2001, there were 16 licensed Schools of English. The vast majority of these schools are located in the North Harbours Local Plan area, most of which in Sliema.

3.9.10.11 Libraries

In 1999, the Maltese Islands had a total of 266 libraries. Most of these (105) were located within schools, 58 are public libraries and 49 are specialised libraries. Nine regional⁶⁰ and 41 branch libraries also exist, most of which are now located within Local Council buildings and are administered by the same councils through the process of local devolution.

3.9.10.12 Churches and Places of Worship

Churches in Malta are anything but rare. In 2001, a total of 368 churches or places of worship existed. The vast majority are Roman Catholic churches (358), however, 10 churches/temples/mosques/places of worship exist catering for a number of denominations, including Anglican, Protestant, Greek Orthodox, Moslem, Jewish, Zen and Bible Baptist (Clews, S.J.A., 1999).

⁵⁹ *Although the population is on the decline, the area of land required for modern educational establishments is on the increase due to changes in the curriculum and the need for more sports facilities and open space.*

⁶⁰ *These are located in Mosta, Rabat, Qormi, Luqa, B'kara, Paola, Vittoriosa, Floriana and Sliema.*

Land-use information for this category was not available at the time of writing, however, assuming an area between of 500 – 1000 m² per church/place of worship, a guesstimate would be in the range of 184,000 – 368,000 m² of land devoted to religious worship.

3.9.11 Recreation, Leisure, Sport (U36)

This land-use category includes those areas utilised for recreation, leisure and sports and include facilities such as libraries, museums, amenity, amusement activities, cinemas, sports, camping and the like.

Information on the land take-up by these facilities has been published in the Leisure and Recreation Topic Paper prepared as part of the studies supporting the Structure Plan Review (Planning Authority, 2001c). **Table 3.69** gives a summary of the land taken up by these various facilities as at 2000.

3.9.11.1 Camping

The main camping and caravanning sites (including beachrooms – whether legal or illegal) are located at Bahar ic -Caghaq, Mellieha, St Thomas Bay, Marfa and Armier, although a number of these sites have been constructed illegally. The total area occupied by these facilities in 1998 amounted to approximately 182,000 m². A considerable area of illegally constructed rooms at Armier has been demolished by the Lands Department in 2001 and the Government has issued a scheme aimed at sorting out the issue related to these illegal shantytowns. The proposal, however, has not been received well, either by the squatters or most of the general public who was expecting that all the illegal rooms are pulled down and the areas rehabilitated. No particular progress has been made on the issue at the time of writing.

Table 3.69 – Land take-up by recreation facilities.

Type of recreational facility	Area (m2)
Public Gardens	499,524
Playing Fields	133,068
Open Spaces	161,261
Beach Concessions	123,715
Public Sports Facilities	1,692,244
Indoor/Outdoor Sports Facilities in State Schools	334,865
Sports Facilities in Private/Church Schools	112,597
Gyms/Fitness Centres (excl. those in tourist accommodation)	2,900
/Indoor/Outdoor Sports Facilities in Tourist Accommodation (may include swimming pool and sun deck area)	108,555
TOTAL	3,168,729

Source: Draft Leisure & Recreation Topic Paper, Planning Authority, 2001c

In 2001, the Planning Authority approved a development application for the establishment of a professionally run camping site at Dahlet ix-Xmajjar, l/o Mellieha. Another permit was granted to the Scouts Association for the development of another camping site at the former Military camp at Golden Bay

3.9.11.2 Theatres

The main theatrical venues are located in Valletta and Floriana, although other productions are also regularly put up in village halls and other parish/civic centres. The foremost theatres are undoubtedly the Manoel Theatre and the Mediterranean Conference Centre in Valletta. Other noticeable theatres are those at the Catholic Institute in Floriana and the MITP Theatre in Valletta. On Gozo there are two

important theatres (La Stella and Leone) in Victoria where opera and theatrical productions are regularly put up. Newer theatre facilities include those at St James Cavalier in Valletta and the Bay Street Complex in Paceville.

3.9.11.3 Cinemas

Cinemas have undergone a resurgence in the past decade, following several years of decadence in the older cinema halls. The construction of the cinema complexes in Paceville reversed the declining trend in cinema attendances that had been experienced in the 1980s. Today, a number of cinema complexes have been developed, although Paceville has remained the trend setter (with the opening of an IMAX theatre) and the mecca for this kind of entertainment. Other cinema complexes have been opened in Fgura, Marsaskala, Valletta, Hamrun and St. Paul's Bay. Development permission for the construction of similar facilities in Mosta has also been approved.

3.9.11.4 Leisure Parks

Other forms of entertainment are provided by leisure parks, often located along the coast. Two such parks are of a permanent nature – Popeye Village and Film Set at Anchor Bay and the Splash and Fun Park at Bahar ic-Caghaq. Both of these set ups are geared towards entertainment rather than education and tend to supplement their income through the provision of often unrelated accretions, some of which have been developed without first seeking development permission.

3.9.11.5 Nightclubs

Most of the entertainment/nightclub establishments are concentrated in the established tourist zones, especially Bugibba, Paceville and Marsaskala. Others have been opened in localities such as Rabat (Malta) and Xlendi.

3.9.11.6 Sports Facilities

Current public sports facilities in Malta are focused around the North Harbours and Grand Harbour region, whilst facilities on Gozo are located in the central area near Xewkija and Victoria. The localities that are most dominated by sports facilities include Corradino, Pembroke and Marsa. Figure 9.11.6.1 shows the distribution of sports facilities in the Maltese Islands.

A number of sports facilities are also located in school grounds. Sports facilities in non-state schools are best established in the North Harbours and Central Malta Local Plan areas and hardly any similar provisions available on Gozo, South Malta and Marsaxlokk Bay Local Plan areas, reflecting also the distribution of non-state schools.

Sports facilities in State Schools, on the other hand, are more evenly distributed and the variety wider, mainly due to the distribution of the schools themselves, being located in most towns and villages, as opposed to commercial establishments, which are built in specific areas where demand is highest.

The total land area occupied by public sports facilities in the Maltese Islands is 1,692,244 m². Forty-six percent of this is located in the Grand Harbour Local Plan area (96% of the total 781,410 m² are located at the Marsa Sports Grounds and the Corradino Sports Complex). Sports facilities in the Malta South, North Harbours, Central Malta and Gozo Local Plan areas tend to be better distributed. ON the other hand, the distribution of sports facilities in Marsaxlokk Bay and the North West Local Plan areas reflects the concentration pattern observed in the grand Harbour Local Plan, with the major sports facilities being concentrated at Hal Far and Ta' Qali, respectively.

0.7% of the surface area of the Maltese Islands is devoted to Sports Facilities.

3.9.12 Residential (U37)

This land-use category refers to areas occupied by residences, but excluding hotels, old people's homes, children's' homes, prisons, monasteries and convents, which are included under the Community Services category (U35)

Housing is the major land use in the Temporary Provision Schemes (TPS) established in 1988. No less than 87% (800 ha) of the areas zoned for development in the TPS were allotted for development of housing areas. Between 1988 and 1998, 39% of the TPS was built up, with 66.5 ha developed between 1994 and 1998 compared to 247 ha developed between 1988 and 1994 (Planning Authority, 2002c). **Table 3.70** summarises this information.

At the last census carried out in 1995, 155,202 dwelling units existed in the Maltese Islands, 90% of which on Malta. As one would expect in view of the proportion of the population living there, over 60% of these dwellings are located in the South Malta, Central Malta and North Harbours Local Plan areas (Planning Authority, 2002c). **Table 3.71** summarises this information.

Table 3.70 – Comparison of areas schemed for housing development in 1988, areas developed between 1988 and 1998 and % vacant land by Local Plan area.

Local Plan	Area schemed for housing in 1988 (ha)	Area developed for housing 1988 - 1994 (ha)	Area developed for housing 1994-1998 (ha)	Area developed for housing during 1988-1998 (ha)	Area of land allocated for housing which is vacant (ha)	% of total area schemed for housing which is vacant (ha)
MBLP	22.3	9.11	2.97	12.08	10.22	46
GHLP	5.9	1.96	0.82	2.78	3.12	53
NHLP	102.6	36.99	4.98	41.97	60.63	59
GCLP	135.8	30.69	5.69	36.39	99.42	73
SMLP	237.2	74.35	24.35	98.7	138.50	58
NWLP	107.7	26.03	8.04	34.07	73.63	68
CMLP	186.6	68.20	19.66	87.86	98.74	53
Total	800.2	247.33	66.52	313.85	486.35	61

Source: Schemes Monitoring Database, 1998

Table 3.71 – Distribution of dwelling stock in 1995 by dwelling unit and Local Plan area

LOCAL PLAN AREA	Apartment	House	Maisonette	Others*	TOTAL
CMLP	7,551	17,468	6,155	5,108	36,282
GCLP	1,089	7,830	152	6,377	15,448
GHLP	5,151	4,025	1,400	2,741	13,317
MBLP	1,002	1,751	407	1,529	4,689
NHLP	9,083	9,052	2,529	5,903	26,567
NWLP	3,015	5,680	918	9,740	19,353
SMLP	7,662	19,939	5,034	6,911	39,546
TOTAL	34,553	65,745	16,595	38,309	155,202

*Converted farmhouses kerrejja, farmhouses, yachts, cellars, basement flats

Source: Census 1995, Planning Authority Datasets

A large amount of the extant dwellings are of recent construction, with 46% being built between 1971 and 1995. Only 31% of Maltese homes were built before 1946 (this includes all historic residences built before 1946) and the remaining 23% were built between 1946 and 1971 (Planning Authority, 2002c)

As regards housing type, the most common type of residence remains the house (terraced, semi-detached or fully-detached), followed by the apartment. The only local plan having a higher number of

apartments to houses is the Grand Harbour Local Plan, with Gozo having the lowest ratio of apartments to houses (Planning Authority, 2002c).

Nonetheless, between 1994 and 2000 a shift has been registered in the balance between apartments, houses and maisonettes permitted, with almost 50% more apartments being granted permission in 2000 than in 1994. Furthermore, the number of terraced houses being built fell from 23% of the market to 10% in this same period. This is a positive result in that there is a more efficient use of scarce land resources, which is also one of the Structure Plan's goals. **Table 3.72**

Table 3.72 – Number of approved dwellings by type (1994 – 2000)

Year	Apartments		Maisonettes		Terraced Houses		Villas		TOTAL Amount
	Amount	%	Amount	%	Amount	%	Amount	%	
1994	1,088	51	469	22	552	26	17	1	2,126
1995	1,849	45	1,038	25	1,110	27	76	2	4,073
1996	1,594	48	1,149	35	481	15	67	2	3,291
1997	1,606	47	1,129	33	575	17	96	3	3,406
1998	1,651	57	755	26	406	14	72	2	2,884
1999	1,453	65	468	21	301	13	19	1	2,241
2000	1,456	62	580	25	289	12	22	1	2,347
TOTAL	10,697	53	5,588	27	3,714	18	369	2	20,368

Source: Dwellings Database, Housing Topic Paper Final Draft, 2002

Table 3.73 and **Figure 3.34** give an overview of the total number of permissions granted by Local Plan area between 1994 and 2000.

Table 3.73 – Total approved dwellings per Local Plan Area and percentage increase in dwelling stock (1994 – 2000)

LPA	1994	1995	1996	1997	1998	1999	2000	Total 1994- 2000	Stock 1995	% Change 1995- 2000
CMLP	292	717	850	652	629	407	475	4,022	36,282	8
GCLP	201	560	516	529	428	185	357	2,776	15,448	13
GHLP	46	42	14	68	25	24	15	234	13,317	1
MBLP	50	137	91	91	117	72	160	718	4,689	11
NHLP	583	516	361	466	298	802	391	3,417	26,567	9
NWLP	224	942	501	516	483	327	386	3,379	19,353	11
SMLP	766	1159	922	1084	904	424	563	5,822	39,546	10
TOTAL	2,162	4,073	3,255	3,406	2,884	2,241	2,347	20,368	155,202	9

Source: Dwellings Database, Housing Topic Paper Final Draft, 2002

Despite policy guidance to the contrary, a small amount of residential development was granted outside the development scheme boundary⁶¹. This amounted to 3% of the granted residential development, or 627 dwelling units (average of 90 units annually). The trend however shows that these kinds of

⁶¹ Most of this development occurred in Gozo and the South Malta Local Plan areas.

approvals are decreasing, with the highest number of such approvals occurring in 1995 (Planning Authority, 2002c). **Table 3.74** summarises this information.

Figure 3.34 – Approved dwellings 1994 – 2000

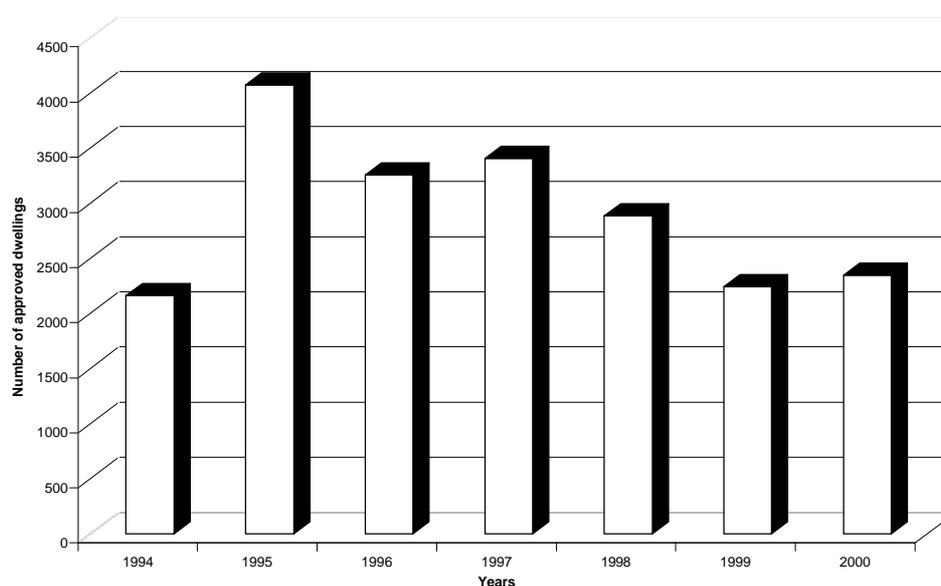


Table 3.74 – Number of residential units permitted outside the development zone boundary (1994 – 2000)

LOCAL PLAN AREA	1994	1995	1996	1997	1998	1999	2000	TOTAL
GCLP	5	24	29	19	3	11	19	110
NWLP	65	20	35	11	3	3	6	143
CMLP	3	4	0	8	2	6	2	25
NHLP	0	0	0	0	4	1	1	6
GHLP	0	0	0	0	0	0	0	0
SMLP	76	9	17	85	23	1	0	211
MBLP	0	0	0	0	0	0	0	0
TOTAL	149	57	81	123	35	22	28	495

Source: Dwellings Database, Housing Topic Paper Final Draft, 2002

Another environmentally significant trend is that related to redevelopment of previously developed land. According to the Housing Topic Paper published by the Planning Authority as part of the Structure Plan Review, redevelopment of previously committed land resulted in a net gain of 3,156 dwelling units between 1991 and 2000 (**Table 3.75**). More importantly, where redevelopment involved the replacement of dwellings by new ones, the new units have a smaller floor space area than the ones they replaced.

Table 3.75 – Dwelling units gained through re-development of existing built-up land (1991 – 2000)

YEAR	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	TOTAL
Original units	2	22	127	191	186	262	252	272	109	269	1,692
Redeveloped units	7	67	321	495	568	670	721	712	324	963	4,848
Net gain in housing units	5	45	194	304	382	408	469	440	215	694	3,156

Source: Conversions and Redevelopment Database, Planning Authority

Indicator LU7 describes the success or otherwise of policies aimed at the redevelopment of brownfield sites.

Indicator LU7: Development on brownfield sites
Aim: To demonstrate trends in the use of brownfield sites (previously developed sites).
Measure: Percentage of development area on brownfield sites (possibly averaged over a period of more than one year)

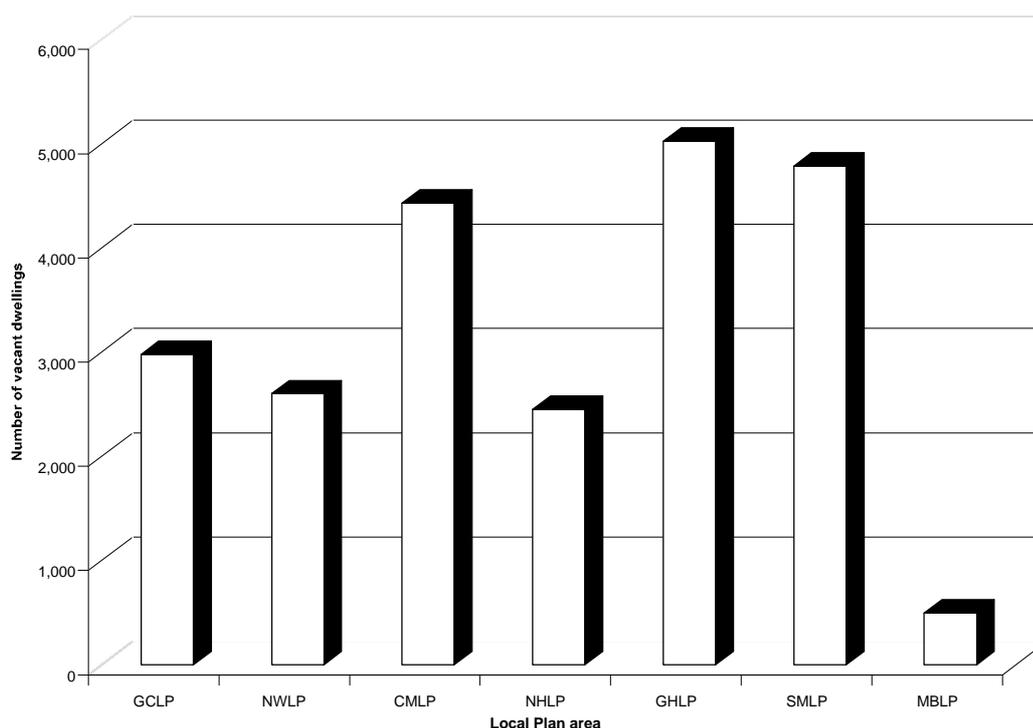
Nonetheless, a worrying trend that has plagued the housing sector for several years is the issue of the high percentage of vacant stock. In 1995, 23% of the total housing stock on the islands was vacant, an increase of 11,668 units over 1985. This vacant stock can be divided into that which is temporarily vacant (comprising approximately 13,000 units used as second homes and therefore used for only part of the year) and that which is permanently vacant. The latter amounts to 22,756 units, with the highest number being located in the Grand Harbour Local Plan area (Planning Authority, 2002c). Further information is available in **Table 3.76** and **Figure 3.35**.

Table 3.76 – Permanently vacant dwellings by type and Local Plan area

LPA	House	Apartment	Maisonette	Other	Total vacant	% vacant
GCLP	2,258	464	27	226	2,975	19.3
NWLP	768	1,557	149	126	2,600	13.4
CMLP	2,109	1,382	705	233	4,429	12.2
NHLP	878	958	404	210	2,450	9.2
GHLP	1,295	3,280	402	45	5,022	37.7
SMLP	2,338	1,522	705	224	4,786	12.1
MBLP	189	241	39	25	494	10.5
TOTAL	9,835	9,404	2,431	1,089	22,756	14.6

Source: Census 1995, Planning Authority Datasets

Figure 3.35– Distribution of permanently vacant dwellings by Local Plan area



Indicator LU8 aims to monitor this trend.

Indicator LU8: Permanently vacant dwelling stock
Aim: To demonstrate trends in the re-use use of vacant dwellings.
Measure: Permanently vacant dwellings as a percentage of total dwellings

Most of these vacant properties are new or in a good state of repair, with only 6% of the total being in a dilapidated state (Planning Authority, 2002c). This points to a serious problem highlighting gross inefficiency in the use of the housing resource.

3.9.13 Vacant Land-Uses (U4)

3.9.14 Unused Land (U40)

This land-use category refers to land that is largely undeveloped although its current use may be a temporary one. Three sub-categories are distinguished for this land use type, as follows:

- Vacant Land previously developed
- Derelict Land
- Urban Land not previously developed

3.9.14.1 Vacant Land Previously Developed

This includes land that has been previously developed or in any way cleared up to a point that no further treatment (including demolition, excavation, site preparation) is required for it to be further developed. This includes plots of land that have been prepared up to foundation level, temporary car parks or playgrounds, as long as no structures or buildings have been erected or interventions made to render them suitable for their current use.

At the time of writing no information on this category was available, although one must realise that this land use category is a temporary one.

3.9.14.2 Derelict Land

Derelict land is defined as “land damaged by industrial or other development to such an extent that it is incapable of being used beneficially without treatment”. Treatment, in this case, includes demolition and levelling. Examples of derelict land include abandoned quarries, and redundant industrial land. These areas may contain physical and chemical hazards that may present considerable risks to humans and wildlife. The definition of derelict land also includes abandoned and unoccupied buildings in an advanced state of disrepair but does not include shell or empty dwellings in a good state of repair or land that was previously damaged but has since been restored to agriculture or some other countryside use.

Indicator LU9 describes the amount of derelict land present in the country and the trend in its increase or restoration.

Indicator LU9: Amount of Derelict Land
Aim: To monitor the trends in the amount of derelict land in the country and the rate at which it is being restored.
Measure: Percentage of total surface area of the Maltese Islands classified as derelict and percentage of land restored since the previous survey.

At the time of writing, no specific information was available for this category, although an approximate figure for abandoned/disused quarries was given by the Planning Authority as 934,800 m².

3.9.14.3 Urban Land Not Previously Developed

This sub-category includes land zoned for development in the Temporary Provisions Scheme (1988) but which is still vacant. Most of this land is currently under cultivation but its eventual development has already been decided and hence is not included within the areas defined as rural. Significant areas of such land are found in Gozo.

According to the Schemes Monitoring Database developed by the Planning Authority, the area of land in this category stood at 488 ha in 1998. The Housing Topic Paper published by the Planning Authority as part of the Structure Plan review, adjusts this to 457 ha for the year 2000.

3.10. Indicators

3.10.1 Introduction

In order to make this data more easily comparable to other future State of the Environment Reports, a set of indicators is being proposed for the various major topics covered by this report. These indicators are elaborated upon in the following sections, giving the name of the indicator, the aims it tries to achieve, the method of measurement and any other comments relevant to the indicator in question. Where possible and relevant, indicators used in international initiatives have been used.

The Indicators are presented as individual tables, each giving the name of the indicator, its aim, units of measurement and a comment as to its computability. Trend indicators are also provided for each indicator as follows:

Symbol	Meaning
↑	Improvement registered
↓	Getting worse / Decreasing
≡	No identifiable trend
○	No data

3.10.2 Demography Indicators: Definitions, Aims and Units of Measurement.

Indicator DM1: Population Growth Rate	↓
Aim: To demonstrate the average annual rate of change of population size during a specified period.	
Measure: Usually expressed as a percentage change from one year to another.	
Comment: This indicator is readily available for Malta as population is monitored on an annual basis.	

VALUE:

1996 (1995 N/A)	2000
0.75	0.61

Indicator DM2: Net Migration Rate	↓
Aim: This indicator gives a ratio of the difference between the number of in-migrants and out-migrants from a particular area during a specified period to the average population of that area during the period considered.	
Measure: The indicator is usually expressed as per thousand population	
Comment: This indicator is available for the Maltese Islands, though record keeping of migrants is held by a number of organisations including embassies and information may not be forwarded to the Maltese Government in its entirety.	

VALUE:

1995	2000
3.04	2.31

Indicator DM3: Total Fertility Rate	≡
Aim: To demonstrate the average number of children that would be born to a woman in her lifetime, if she were to pass through her childbearing years experiencing the age specific fertility rates for a given period.	
Measure: The total fertility rate is usually expressed as per woman or per thousand women	
Comment: This indicator is readily available on an annual basis.	

VALUE:

1995	2000
1.81	1.82

Indicator DM4: Population Density	↓
Aim: To demonstrate the total population size of a country or area divided by its surface area.	
Measure: Usually expressed as population per square kilometer	
Comment: This indicator is readily available on an annual basis.	

VALUE:

1995	2000
1200 persons/km ²	1230 persons/km ²

Indicator DM5: Ageing Growth Rate	↓
Aim: To demonstrate the average annual rate of change of ageing (60+ years) population size during a specified period.	
Measure: Usually expressed as a percentage	
Comment: This indicator is not calculated in Malta but due to the rapidly increasing population structure changes in Malta, it is seen as a very vital component of demographic analysis.	

VALUE:

1995	2000
16%	17%

3.10.3 Tourism Indicators: Definitions, Aims and Units of Measurement.

Indicator TM1: No. of daily tourists per resident in the main tourist localities by month	○
Aim: To demonstrate the level of pressure on the main tourist localities and the residents as a result of the increase in the tourist population during the various seasons.	
Measure: No. of tourists each day divided by the resident population for each tourist locality	
Comment: This indicator can be computed provided data on where tourists are lodging during their stay is available for each month. Data on tourist arrivals figures and their length of stay and the level of the resident population are available	

VALUE: NOT COMPUTABLE AT THIS STAGE

Using provisional data in **Table 3.22**, values for the Winter, Shoulder and Summer months for the year 2000 for the following localities can be computed, as shown:

Locality	Winter months	Shoulder months	Summer months
St Paul's Bay	0.47	0.50	1.57
Mellieha	0.39	0.42	0.97
St Julians	0.44	0.73	0.99
Sliema	0.43	0.60	0.67
Marsaskala	0.14	0.18	0.27
Birzebbuga	0.02	0.01	0.06
Comino	0	21	108
Gozo	0.014	0.015	0.12
Valetta/Floriana	0.06	0.12	0.09

In the above table, a value of 1.0 means that the tourist population in the locality equals the resident population

Indicator TM2: Tourists at sandy beaches each day	○
Aim: To demonstrate the additional pressure on sandy beaches created as a result of tourism.	
Measure: Percentage of daily tourists making use of sandy beaches	
Comment: This indicator will require carrying out specific surveys with tourists during the summer season to estimate the % of daily tourists going to sandy beaches.	

VALUE: NOT COMPUTABLE AT THIS STAGE

Indicator TM3: No. of bus trips per tourist per day	●
Aim: To demonstrate the use of public transport by tourists.	
Measure: Average number of bus trips taken by each tourist each day	
Comment: There is currently no way of distinguishing tourist passengers from local passengers and therefore a survey would be required to collect this data.	

VALUE: NOT COMPUTABLE AT THIS STAGE

Indicator TM4: No. of tourists visiting historic sites each day by month	●
Aim: To demonstrate the level of visits by tourists to historic sites and peak visits to identify level of pressure.	
Measure: A count of tourist visitors to the main historic sites and museums each day	
Comment: This indicator can be available but requires a different approach to logging visitors at sites making a differentiating between local and foreign visitors.	

VALUE: NOT COMPUTABLE AT THIS STAGE

Indicator TM5: Average no. of daily divers at main diving sites by month	●
Aim: To demonstrate the level of pressure on marine diving sites as a result of diving activity	
Measure: Calculation of the daily number of divers at each main diving site	
Comment: This indicator can be measured through various methods – surveys to divers, information obtained from the diving schools or daily counts at the diving sites	

VALUE: NOT COMPUTABLE AT THIS STAGE

Indicator TM6: Daily no. of cars on the road used by tourists	●
Aim: To demonstrate the increase in road traffic as a result of tourism	
Measure: Number of tourists making use of a hired car and for how long in days	
Comment: This indicator may be obtained through specific surveys to tourists or through information submitted by the car rental agencies	

VALUE: NOT COMPUTABLE AT THIS STAGE

Preliminary information available in Table 2.20

Indicator TM7: Net tourism earnings (deducting imports for tourism)	●
Aim: To demonstrate the net contribution of tourism to the economy	
Measure: Deducting the level of imports in Lm resulting from tourism from tourism earnings.	
Comment: This indicator will not be readily available on an annual basis but will more likely be computable for longer periods of time since it would require proper input/output studies to determine the imports that result from tourism demands.	

VALUE: NOT COMPUTABLE AT THIS STAGE

3.10.4 Mineral Resources Indicators: Definitions, Aims and Units of Measurement.

Indicator MR1: Construction Activity	
Aim: To indicate demand for mineral resources. The indicator may also be used to indicate the indirect economic benefits of quarrying.	
Measure: Lm contribution to GDP and % Contribution to GDP	
Comment: This indicator will be readily available on an annual basis. However, it is not a precise determinant of demand for minerals in that it includes the value as well as the volume of construction activity.	

VALUE:

Year	1998	1999	2000
Indicator (%)	3.0	2.6	2.8
Indicator (Lm)	36,000	33,000	37,000

Indicator MR2: Production of hardstone and Softstone	
Aim: To indicate supply of hardstone and softstone	
Measure: Volumes of production in cubic meters	
Comment: This indicator will not be readily available on an annual basis. The way it is currently being estimated is through periodic aerial photography. Future action needs to be taken to obtain realistic estimates of production.	

VALUE:

Value computable on the basis of estimates calculated from data provided through remote sensing

Year	1998
Softstone	400,000 m ³
Hardstone	750,000 m ³

Indicator MR3: Permitted Reserves in Malta and Gozo years to depletion	
Aim: To show supply in terms of years of availability.	
Measure: Number of years computed as total volume of permitted reserves divided by volume produced per year.	
Comment: This indicator would effectively communicate the issue of sustainability. However it requires both volumes of permitted reserves and the previous indicator of average annual volumes. It will therefore not be accurately available annually.	

VALUE:

Values estimated for 2001 data based on average production values for the period 1994 – 1998.

Resource	Indicator value
Softstone	34
Hardstone	38

Indicator MR4: Potential Reserves in Malta and Gozo and years to depletion	
Aim: To show potential supply in terms of years of availability	
Measure: Number of years computed as total volume of potential reserves divided by volume produced per year.	
Comment: While the volume of potential reserves may be lifted from the Planning Authority's Minerals Resources Assessment and taken to be a constant (until revisions to the assessment are made), the denominator (volume produced per year) is unlikely to be accurately available every year.	

VALUE:

Values estimated on entire potential reserves (including areas that may not be quarried for environmental or planning reasons) and based on average production values for the period 1994 – 1998.

Resource	Indicator value
Softstone	600
Hardstone	233

Indicator MR5: Area of licensed and active quarries in Malta and Gozo		
Aim: To assess the area of impact of this activity		
Measure: Square meters		
Comment: This measure will be readily and annually available from the Planning Authority.		
VALUE:		
Values based on 1998/9 aerial survey.		
1999	2,411,145 m ²	

Indicator MR6: Construction and Demolition waste balance per annum		
Aim: To assess the extent of waste generation (and not reused/recycled) within the industry		
Measure: Tonnes		
Comment: This measure will be readily and annually available from the Ministry for Resources and Infrastructure. It computes the net waste arising from Construction and Demolition (i.e. less waste which is re-used or recycled).		
VALUE:		
Values based on data published by the Ministry of the Environment (2001)		
2000	1.2 million tonnes	

Indicator MR7: Employment in Quarrying				
Aim: To assess the direct economic impact of quarrying				
Measure: Number of persons				
Comment: This measure will be readily and annually available from the National Statistics Office. Current numbers underestimate the true position.				
VALUE:				
Year	1998	1999	2000	2001
Indicator	261	263	255	241

3.10.5 Land-Use Indicators: Definitions, Aims and Units of Measurement.

Indicator LU1: Non-arable Rural Land-Use		
Aim: To monitor trends in the amount of rural land set aside for nature conservation or informal recreation		
Measure: % of rural area not used for agriculture purposes or not taken up by urban-type land uses such as quarrying, industry and residential development.		
Comment: This indicator will not be readily available on an annual basis but will more likely be computable for larger periods of time and linked to availability of remote-sensed data (e.g. aerial photography). A five-year time scale is probably more realistic.		
VALUE:		
2001	51.1%	

Indicator LU2: Protected Coastal Zone	↑
Aim: To monitor trends in the extent of protected area within the Coastal Zone	
Measure: % of the total area within the Coastal Zone boundary as established by the Planning Authority in the Coastal Strategy Topic Paper that is legally protected through scheduling or other legal designations.	
Comment: This indicator should be readily updatable in synchronization with updates in the legal designations.	

VALUE:

1995	2001
0.83%	41.52%

Indicator LU3: Amount of agricultural land	↓
Aim: To demonstrate the changes in agricultural land in the country.	
Measure: Extent of agricultural holdings as a percentage of the total rural area (or of the surface area of the islands)	
Comment: This indicator will work in conjunction with indicator LU4 and will depend on regular agricultural censuses	

VALUE:

1991	2001
35.3%	34.1%

Indicator LU4: Loss of good quality agricultural land	○
Aim: To demonstrate the trend in loss of good quality agricultural land (whether to development or simply abandonment).	
Measure: To be devised since it depends on the establishment of a local agricultural land classification scheme. Probably will be a percentage loss.	
Comment: This indicator will not be readily available on an annual basis but will more likely be computable for larger periods of time and linked to availability of remote-sensed data (e.g. aerial photography). Furthermore, it will only be computable once an agricultural land classification system for the Maltese Islands is established and all agricultural land classified under the scheme	

VALUE: NOT COMPUTABLE AT THIS STAGE

Indicator LU5: Loss of Rural Land to Development	↓
Aim: To demonstrate the trend in loss of rural land.	
Measure: Percentage of total surface area of the Maltese Islands in rural land use (excluding urban-type uses in rural areas, such as quarries, residential developments, farms, etc.)	
Comment: This indicator will not be readily available on an annual basis but will more likely be computable for larger periods of time and linked to availability of remote-sensed data (e.g. aerial photography)	

VALUE:

2001	73.6%
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Indicator LU6: Amount of built-up land		↓
Aim: To demonstrate trends in the amount of land taken up for development, whether within the designated development zones or outside them.		
Measure: Amount of built up land as a percentage of the total area of the Maltese Islands.		
Comment: This indicator is readily updateable through yearly development applications statistics, although more accurate data would be obtained through a completions survey (to determine the real area built-up, as opposed to that approved). Hence, updating of the indicator every few years is probably more feasible.		
VALUE:		
2001	26.4%	

Indicator LU7: Development on brownfield sites		○
Aim: To demonstrate trends in the use of brownfield sites (previously developed sites).		
Measure: Percentage of development area on brownfield sites (possibly averaged over a period of more than one year)		
Comment: Data for this indicator is not readily available and its computation will depend on a greater understanding of brownfield development and better statistics (including a good baseline).		
VALUE: NOT COMPUTABLE AT THIS STAGE		

Indicator LU8: Permanently vacant dwelling stock		↓
Aim: To demonstrate trends in the re-use use of vacant dwellings.		
Measure: Permanently vacant dwellings as a percentage of total dwellings		
Comment: This indicator will be computable approximately every ten years, through the housing and population census. Inter-census updates may be available through other planning data related to Structure plan or Local Plan reviews.		
VALUE:		
1995	14.6%	

Indicator LU9: Amount of Derelict Land		○
Aim: To monitor the trends in the amount of derelict land in the country and the rate at which it is being restored.		
Measure: Percentage of total surface area of the Maltese Islands classified as derelict and percentage of land restored since the previous survey.		
Comment: This indicator will only be computable once a Derelict Land Survey is carried out. Trends will only be visible when second and subsequent surveys are undertaken. Remote-sensed data (e.g. aerial photography) and data from other surveys (e.g. Habitats surveys) can help in this regard.		
VALUE: NOT COMPUTABLE AT THIS STAGE		

3.11 Conclusion and Recommendations

3.11.1 Population

In summary, Maltese population trends are characterised by a rapidly growing elderly population, declining household size and rapid changes in the cohort structures, particularly through the improvement in living standards, and a more secularised context, amongst others. At a national level these changes are shifting the structure towards a situation where the elderly make up a quarter of the total population and have an immediate impact on the economic and social structures.

In spite of these imminent changes, little has been done to set up a framework for a population policy. However, this said, one major change that has occurred within the late years of the 1990s and early 2000s is the setting up of actions regarding the elderly impact on population structure. Though this is mainly geared at the socio-economic impacts on the welfare services, the road to deviate this trend of discussion towards the need to study the impact of this change on the working age-group component and the need for new workers is still on the backburner. A population policy should help to reduce these anomalies and attempt to analyse the real changes being wrought by the Maltese transition to an aged society.

In addition, a culture change is also needed to reflect the smaller households and alternate household structures. Internal migration could be altered through the movement of persons into abodes that fit their household size and needs.

Malta's last decade has indicated that population change and its direct implications on society is still a major factor that is impinging on most environmental and development issues.

3.11.2 Tourism

Over the review period, tourism continued to play an important role in the economic development of the Maltese Islands, generating, through the multiplier effect, an employment complement of 40,000. Nonetheless, there are signs that as a tourist destination, the Maltese Islands are nearing or have even reached the saturation stage in their tourist area life cycle, even though some growth is expected during certain periods of the year

One of the most important developments in the review period has been the setting up of the Malta Tourism Authority, which is entrusted with upgrading and promoting tourism in the islands.

Trends throughout the review period have included the further diversification amongst national markets; a further decrease in the share of tourist arrivals in the summer months and a corresponding increase in that of the winter months; and an upgrading of the tourism product, especially with regards to accommodation.

Further improvement is required in the upgrading of the product per se, especially with regards to facilities, attractions, historical sites and the natural environment. This, together with the promotion of new products, such as agri- eco- and rural tourism, cultural tourism and the like should help to set tourism on a more sustainable footing.

Tourism can contribute more to local heritage sites encouraging their better presentation and interpretation, apart from an upgrading or provision of visitor facilities. This should also help increase the number of tourists visiting such sites.

In terms of impacts, tourism places demands on water supply, electricity supply and the sewerage systems, as well as the road infrastructure and public transport, and contributes to the creation of waste. The impacts of tourism on the local community is also very high, so that it is important to monitor, through regular studies, the impacts of tourism as perceived by the locals with respect to their living environment.

3.11.3 Mineral Resources

The extraction, use and subsequent disposal of minerals generate considerable environmental impacts, not all of which can be effectively mitigated. Moreover, the fact that limestone is a non-renewable natural resource constitutes an important consideration in the futurity of the quarrying and construction industry as it stands.

Furthermore, the proportion of GDP generated by the quarrying sector is relatively low in comparison to other sectors in the economy (such as Manufacturing); however it has important linkages with other

domestic sub-sectors. Hence, there is a need to balance the economic benefits of the construction industry with environmental considerations, in the context of sustainable development.

The negative environmental impacts caused by quarrying can be significant and include resource depletion, impacts on landscape, ecology, water resources, archaeological sites and buildings, as well as generation of noise, air pollution and waste. In turn, these environmental problems generate secondary impacts on other economic activities such as agriculture and tourism.

One of the biggest problems plaguing the control and long-term planning of the quarrying industry is the lack of accurate data on production, demand and supply. There is an urgent need for a regular detailed survey of quarry sites and a systematic, detailed and regular collection of data on production levels.

An urgent need also exists to bring the entire quarrying industry to report to one permitting, monitoring and enforcement regime. However, the authorities should also try to instil a more sustainable approach to mineral exploitation within the industry itself. There seems to be much scope for closer partnership and discussion with the industry on matters such as environmental protection, restoration and reduction of nuisance on neighbours.

With regards to the softstone industry, there is a need for a concerted effort to minimise wastage from softstone quarries. One possibility could be the creation of new markets and new products, including a re-sizing of the standard stone block, production of reconstituted stone products and the grading of rock types and creation of a decent price structure to reflect the real value of the stone products.

There is a current need for importation of mineral resources for use in specific applications, such as road construction, for which local minerals of the required quality standard are either rare or inexistent.

Studies into the feasibility of alternative quarrying techniques (including mining) should be undertaken since a significant proportion of the available mineral resource is not workable due to other constraints, some of which could be overcome if techniques other than open pit mining are adopted. Other studies that are required include an assessment of the sustainability of the local mineral industry in the light of its severe environmental impacts and associated health effects. This should include a detailed assessment on the economics of importation of mineral resources from abroad.

Alternative building techniques and materials, including the possibility of introducing minimum thresholds for the use of recycled stone materials in all new developments, should be actively considered.

3.11.4 Land-Use

The rational use of land in such a small country as Malta is one of the most difficult of responsibilities.

Current land use is a product of historical, political, environmental, economic and social influences. Many of the uses are interchangeable, change being often brought about by environmental, economic and social pressures, while a specific use of land is largely limited by its "carrying capacity" that, if exceeded causes irreversible and often undesirable change.

Changes from one land use to another affect other environmental issues. The most important of these changes are those resulting in loss of rural land to urban uses as well as changes in the way that rural land is managed.

In order to effectively manage land resources, one needs to know what exists and understanding of how land is actually being used at any given time. The information must be readily understandable by all those that will be using it. It is therefore of utmost importance that one Land Use Classification for the Maltese Islands is adopted in the short-term.

The loss of rural land to urban land uses is considered to be one of the major environmental concerns

A serious effort aimed at halting the loss of good quality agriculture land to non-agricultural land-uses needs to be undertaken. The establishment of a locally relevant agricultural classification system by the Agriculture Department and the Planning Authority is urgently required, followed by the classification of all existing agricultural land.

The development of vineyards should be actively encouraged, especially on marginal and abandoned agricultural land. However, the development of wineries in rural areas should not be allowed (except if the development will involve the rehabilitation of abandoned rural structures and will not in itself cause change the character of the rural building).

The problem of land abandonment, especially along the coast needs urgent seeing to. Land that can be reactivated for agricultural use should be encouraged to do so. Alternatively, these sites should be allowed to regenerate their natural vegetation or afforested for public enjoyment, recreation and biodiversity protection.

The restructuring of the local farms should be further encouraged and supported through appropriate incentives and subsidies. At the same time, codes of practice aimed at improving farm management practices and reducing environmental impacts, need to be introduced.

Development of farms rearing exotic animals should be similarly controlled and regulated.

Organic farming needs to be encouraged and supported by appropriate incentives, including a different price structure and marketing regime.

Introduction of an Organic Aid Scheme should also be considered.

The problem of agricultural land fragmentation (mainly through inheritance) needs to be tackled seriously. Incentives and/or disincentives should be actively considered to encourage land consolidation and larger (and therefore more sustainable and profitable land holdings).

Conversion of rocky land into agriculture should be resisted. Instead, the reactivation of abandoned agricultural land should be promoted.

Afforestation projects should also be encouraged and promoted so long as the interventions are made in an ecologically relevant manner, utilising appropriate tree and shrub species and maintained in the right way.

A clamp down on the excessive “pruning” of trees in public spaces, leading to heavily mutilated and misshapen trees should be taken in hand as a matter of urgency. All contracts entered into for such work should ensure an adequate audit of the work and over-pruning should be penalised.

Regulations to control barbecue activities, especially in the countryside should be formulated and enforced as a matter of urgency so as to clamp down on the illegal lighting of fires in wooded areas and the cutting of branches from trees for use as firewood.

The establishment of countryside wardens, with a remit to enforce environmental and countryside planning legislation should be undertaken as a matter of priority.

Fish farming needs to be clearly and effectively regulated and environmental impacts curbed. Operations causing excessive environmental impacts should be closed down. The relocation of all existing farms to locations further off-shore should be considered and implemented if found feasible.

There is a need for re-assessment of the rural conservation areas seeing that a not insignificant amount of development is still being approved outside the development zones. A classification scheme and zoning plan identifying areas outside scheme that may be considered for development of specific urban-type development that may be considered ODZ (e.g. farms, industry, quarries, etc.), should be contemplated so as to tighten the control on the areas of special importance. As things stand, any rural area could be subjected to proposals for development and left to the opinion of the decision maker. A

classification system of rural areas (similar to the way that urban areas have been classified), could lead to a more stringent approach being applied in areas that require protection.

The approach to the Coastal Zone should follow that proposed in the Coastal Strategy Topic Paper published by the Planning Authority, allowing only development that inherently requires a coastal location (e.g. reverse osmosis plants, thermal power stations, etc.). All permissible developments are to be subject to an EIA. Access to the coast should be safeguarded and now that a coastal zone boundary has been established, a renewed attempt at implementing Structure Plan policy CZM 3 (possibly modified to include a classification for areas where the coastal zone is wide), should be made.

Data on land uses should continue to be collected on a regular and systematic basis. A gap analysis needs to be undertaken by the Planning Authority and the National Statistics Office and the missing information collected over a set period of time.

Information on the environment (especially data on environmental quality) should be made public and access to all records facilitated. Public entities should be encouraged to make use of the latest technology to facilitate public access to information and justice.

No new land for industrial development should be provided outside the designated areas, seeing that a considerable amount of industrial land is still vacant. Industrial development should be channelled into existing industrial estates (public or private). Measures to assist the Private sector to release land for industrial development should be instituted as a matter of priority.

Steps to rationalise the construction-related industry are required. No new permits for batching plants, brick plants and the like should be awarded seeing that the capacity of the existing number of plants is many times more than is required for local use. The industry should be encouraged to form consortia to bid for and execute specific work contracts.

The further development and upgrading programme of the road infrastructure should be continued as a matter of urgency. This should include a rationalisation of road sizes and introduction of bus lanes, bicycle corridors, etc.

Schemes aimed at the encouragement of more sustainable modes of transport, including water transport should be set up.

A detailed water resources management strategy and storm water management plan needs to be devised and implemented.

The development of sewage treatment plants needs to be progressed as fast as possible and serious thought given to the problem of sewage sludge disposal.

A serious drive to implement the waste management strategy within the timeframes as established needs to be made.

While a dedicated, radical and focused approach is required to tackle our waste management problems, it is important that an equally dedicated environmental education and awareness campaign is embarked upon in order to bring to the general public the real meaning of the term "environment".

A long-term and effective clean-up of the various dumpsites scattered around the islands needs to be set in motion and provided with all the required resources.

There is an urgent need to develop the appropriate waste management infrastructure (including the creation of bring centres and deposit sites).

Need to maintain policy stance of not extending the current building areas and to channel new development into existing built-up areas.

There is a need to further foster a more rational use of land through smaller housing units and denser development allowing creation of open spaces and greenery in urban areas.

Redevelopment of sites should be encouraged but conditioned to include open spaces and soft landscaping

Conversions of existing buildings rather than development on Greenfield sites are to be encouraged.

Re-use of historic buildings to accommodate appropriate activities (without negatively affecting the built fabric) should be encouraged. The activities should be conditioned to provide for the maintenance of the building.

Shared use of existing resources (especially school grounds and halls) should be encouraged.

The boathouses issue should be resolved once and for all. Redevelopment of parts of the areas could be considered but requests for extensions to the areas impacted should be resisted. Existing sites and features of natural, scientific and historic importance should be protected and restored. Areas containing sand dunes and watercourses should be left free of any form of development so that they are allowed to flourish.

A serious policy drive aimed at the re-use of vacant dwelling stock is required. This should be accompanied by a much-awaited updating of the rent laws and a decrease in the number of approved development applications.

Government, through the Planning Authority should seriously consider setting annual thresholds on the approved development applications for new housing units per local plan area. Encouraging, instead redevelopment of existing areas (especially depressed areas/areas requiring major investment and substitution of substandard housing units). Tax incentives could also be considered to encourage such development proposals.

A Derelict Land Survey for the entire Islands should be undertaken with a view to seek its rehabilitation. A Register of Contaminated Land should also be established, including a requirement for clean up by the owners of the land.

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