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A landscape assessment study of the South Gozo Fault area

Mariella Xuereb
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**A Landscape Assessment Study of the South
Gozo Fault Area**

Mariella Xuereb

**Master of Science in Sustainable Environmental Resource
Management**

University of Malta

2010

A Landscape Assessment Study of the South Gozo Fault Area

**A dissertation presented in part fulfillment of the requirements for the
Degree of Master of Science in Sustainable Environmental Resource
Management**

Mariella Xuereb

November 2010

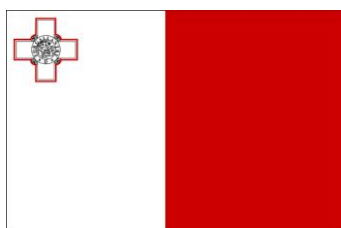
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ABSTRACT

Mariella Xuereb

A Landscape Assessment Study of the South Gozo Fault Area

The South Gozo Fault region features a heterogeneous landscape which extends from Ras il-Qala on the east, to ‘Mgarr ix-Xini’ on the south-eastern littoral. In recent decades, parts of this region have experienced substantial levels of development while others remain untouched. This study seeks to explore the impact of existing and proposed development projects on the character and value of the South Gozo Fault landscape. A landscape character assessment, together with an assessment of the value of the landscape will be conducted, with the aim of analyzing the present character and value of the landscape, and comparing this with the likely future character and value of the landscape with increased development. The landscape was divided into six character areas and a description for each unit is provided on the basis of the 9-S approach to landscape appraisal. Perceived landscape values of the South Gozo Fault area were measured by means of a survey distributed amongst residents and non-residents of the area. An assessment of changes in character and value which may accompany further development was based on interviews with 9 ‘key respondents’. In general, community perceptions of landscape value were inclined towards aesthetic, biodiversity, heritage and recreational values of the landscape. Natural landscape features were assigned the highest aesthetic, recreational, future, learning, and intrinsic and biodiversity values, but were not found to be revenue generators. There was a general agreement amongst interviewees that the area holds an adequate level of development and that further development would impair its character and value.

Dr.Louis.F.Cassar (Supervisor)

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‘MSc. SERM’ ‘MS. ISAT’

November, 2010

KEYWORDS: LANDSCAPE ASSESSMENT, LANDSCAPE CHARACTER, LANDSCAPE VALUE, DEVELOPMENT

STATEMENT OF AUTHENTICITY

I, the undersigned, declare that the work being presented is authentic and has been carried out under the supervision of Dr.Louis F. Cassar and Ms.Elisabeth Conrad.

Mariella Xuereb

*To my parents
Elisabeth and Charlie
For their endless support throughout my academic years*

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CHAPTER 1

INTRODUCTION

Chapter 1

Introduction

1.0. Conceptual Framework

The English term ‘landscape’ owes its origin to the Middle Dutch word ‘*lantscap*’ and the Modern Dutch term ‘*landschap*’. The latter is derived from the German term ‘*land*’ and its suffix ‘-*schap*’ signifying ‘constitution, condition’. Throughout the years, the concept of landscape has evolved to convey different meanings to different social groups, so that it is understood and experienced in different ways (Lockwood *et al*, 2006). The European Landscape Convention defines landscape as “*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*” (Council of Europe, 2000a). This definition highlights the idea of landscape as stemming from “*the interaction of people with their environment over time*” (ICOMOS-UK, 2002, as cited in Phillips, 2002).

Phillips (2005) defines landscape as a meeting ground between:

- ***Nature and people***- and how these have interacted to form a distinct place;
- ***Past and present***- and how landscape provides a record of our natural and cultural history;
- ***Tangible and intangible values*** – and how these come together in the landscape to give us a sense of identity.

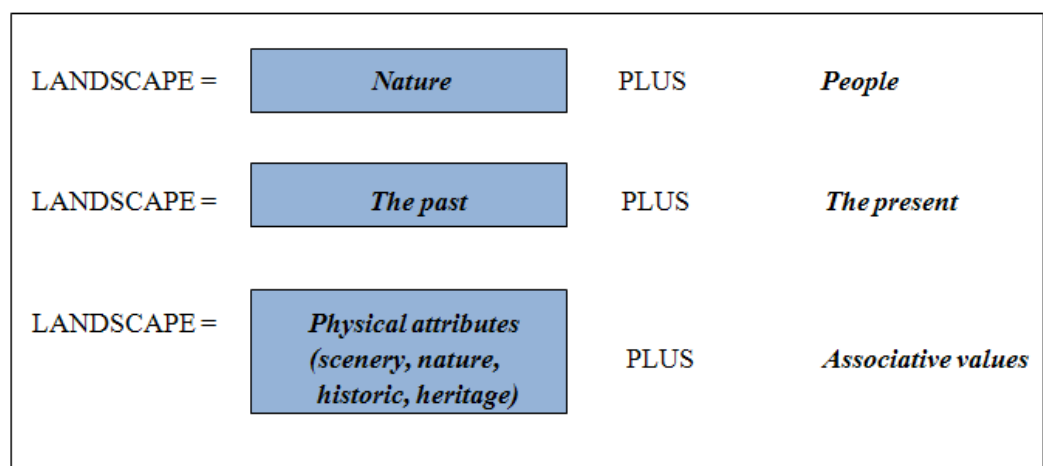


Figure 1.1: The Landscape Concept
Source: Phillips, 2002

Landscape is the product of the inter-relationships between humans and the environment (ICOMOS-UK, 2002; Brown *et al.*, 2005; Countryside Agency, 2006). It is an integrated part of our daily environment: people both influence and are influenced by their surrounding landscapes (Phillips, 2002; Swanwick, 2002a). Landscape links culture with nature and bridges past with present (Palang and Fry, 2003). It is a living representation of the amalgam between the natural world, human society and people's needs (Natural England, [n.d]).

Landscape is “*an important part of the quality of life for people everywhere*” and a “*key element of individual and social well-being*” (COE, 2000). Well-maintained and highly valued landscapes are critical to human well being and to an economically stable society (Natural England, [n.d.]). They are significantly valued for their aesthetic, economic recreational, heritage and intrinsic qualities, amongst others (Raymond and Brown, 2007). They contribute to a sense of identity and local distinctiveness (Council of Europe, 2006). In addition, they provide a wide variety of ecosystem services, including food, water, climate regulation, visual enjoyment and spiritual fulfillment. Throughout the years, landscapes have shaped town and city characters and have endowed them with a diverse character which can be utilized for a multitude of purposes.

Palang and Fry (2003) explore six different landscape interfaces and draw out the main links between the views of different disciplines:

- **Humanities / natural sciences interface:** The material landscape, supported by natural scientists, can be touched, smelled, seen and measured and incorporates the study of visible elements of the landscape. The mental landscape is a form of non-material, perceivable layer supported by social scientists and humanists.
- **Culture / culture interface:** Societies are not homogenous; different subcultures may have different understandings of a landscape. This boundary addresses the differences in landscape values stemming from different cultural perspectives. This interface is exceptionally important for an understanding of how landscapes evolved in the past and how conflicts may arise in the future.

- **Past / Future interface:** In the words of Vidal de la Blache, landscape is '*a medal struck in the image of civilization*' (cited in Buttimer, 2001), a palimpsest consisting of elements from different time periods.

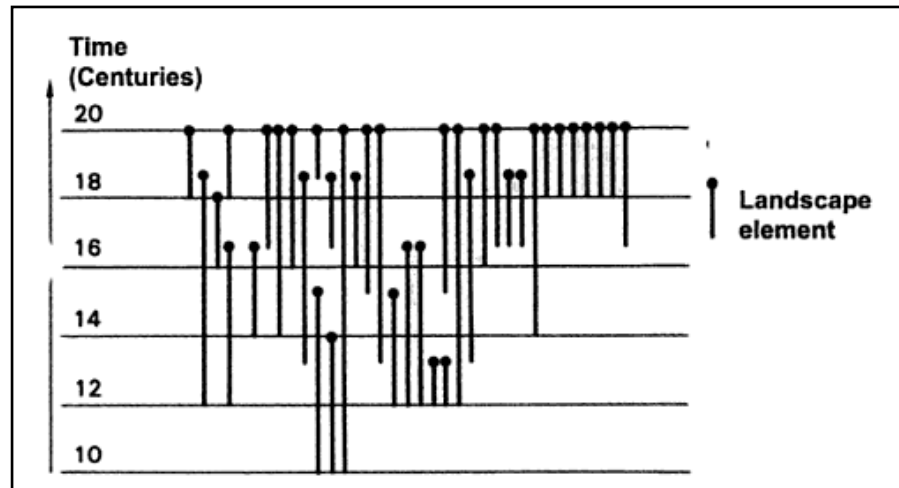


Figure 1.2: Landscape as a palimpsest of elements
Source: Cited in Palang and Fry, 2003 after Vervloet, 1986

- **Time / Space Interface:** These two variables are often treated separately, where spatial processes are studied via a snapshot in time and temporal processes at just one point in space. Landscapes are not static, but rather continuously changing.
- **Expert / Lay Interface:** This interface addresses stakeholder involvement in landscape planning and management and the debate on whether subjective local knowledge is as credible as objective scientific knowledge.
- **Preservation / Use Interface:** This deals with the question of opting for a museum landscape that preserves the appearance of a certain time or a landscape that lives the life it used to.

As emphasis on sustainable development has escalated in recent decades, so has the need to incorporate landscape considerations into decision-making processes (Morris and Therivel, 2009; Swanwick, 2002b). In this respect, the planning and management of development requires a thorough and systematic approach to landscape, allowing us to view landscape for its ability to accommodate developments, providing indicators as to

which developments might be most suited, and specifying conditions and design criteria (Dublin Department of the Environment and Local Government, 2000).

The European Landscape Convention is the first legal instrument dedicated exclusively to the protection, management and planning of landscapes (Council of Europe, 2002). The implementation of landscape assessments is crucial to all members of the European Landscape Convention, of which landscape character and value are central concepts. Landscape character assessments seek to identify the main environmental and cultural features of a landscape, observe changes in the environment, understand a location's sensitivity to development and change and inform the conditions for any development and change (Wascher 2006) - all these reflect specific measures of the European Landscape Convention.

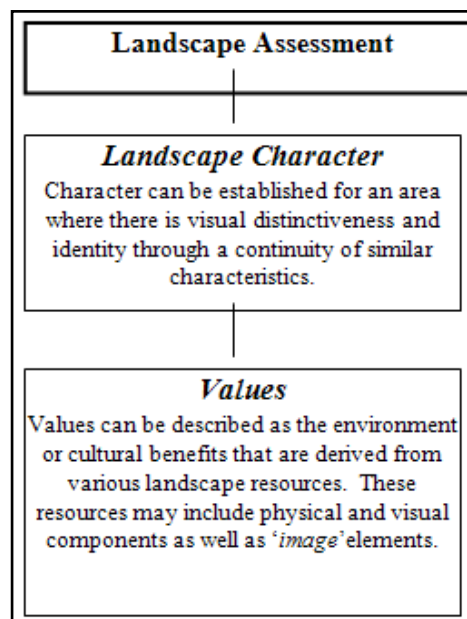


Figure 1.3: Landscape Assessment

Source: Dublin Department of the Environment and Local Government, 2000

Landscape value assessments involve an investigation of value judgments or preferences in a landscape (Unwin, 1975) and pose a constraining influence upon development which would trigger landscape change (Dublin Landscape and Landscape Assessment Guidelines, 2000). An identification of values is an important counter-balancing force in a proactive approach to development, indicating the need for careful planning and sensitive design (*Ibid*).

1.1. Case Study Area

The South Gozo Fault area provides a diverse coastal landscape which stretches from Ras il-Qala on the east coast of Gozo, to Mgarr x-Xini on the southeastern littoral. In general terms, the landscape enjoys spectacular open views of the Gozo-Comino Channel and is characterized by a variety of natural and human landscape features.

The area forms part of the NE-SW fault system and is endowed with a variety of geological, geomorphic, ecologic and hydrological features. The area features traces of all five tertiary rock formations of the Maltese Islands. The main geomorphologic features include a variety of bays and inlets, pockets of sand and pebble beaches, cliffs, shore platforms, and islets, amongst others. Valleys are the main components of its hydrological system, an example of which is the ‘Mgarr ix-Xini’ valley on the southeastern littoral. In addition, a variety of steppic, garigue and maquis communities characterize the region’s ecology.

Man has also played a crucial role in shaping the South Gozo Fault landscape. The area is characterized by a series of developments including:

- **Cultural heritage:** Fort Chambray is a prominent cultural heritage feature which occupies the clay slopes overlooking the Mgarr Harbour. After several attempts at revival and subsequent abandonment, the fort was eventually privatized and today serves as a luxurious holiday complex. The ‘Mgarr ix-Xini’ Tower and St. Anthony’s Battery constitute other important historical elements of the landscape.
- **Port facilities:** The Mgarr Harbour holds a ferry terminal which caters for all ferry services between Mgarr and Cirkewwa, a marina with 200 berths for yachts and motor boats and a fishing fleet of some 200 vessels.
- **Residential development:** The South Gozo Fault landscape has seen the development of two settlements: Ghajnsielem and Qala.

- **Infrastructural development:** This covers roads, power grids, telecommunications, water supply, sewers and the sewage treatment facility at Ras il-Hobz.
- **Tourist Accommodations and Recreational Amenities:** The area features one hotel establishment at the Mgarr Harbour, together with a variety of bars and restaurants scattered along the harbour and the villages of Ghajnsielem and Qala.

It becomes evident that the South Gozo Fault landscape is a heterogeneous one, characterized by a natural, unspoilt environment between Mgarr and Mgarr ix-Xini and from Zewwieqa eastwards and a heavily urbanized landscape at the Mgarr Harbour. The overwhelming amount of activities within the Mgarr Harbour region renders it susceptible to user conflict.

1.2. Aims and Objectives

The main aim of this dissertation is to investigate the impact of existing and proposed development projects on the character and value of the South Gozo Fault landscape. In this respect, a landscape character assessment, together with an assessment of the value of the landscape will be conducted, with the aim of analyzing the present character and value of the landscape, and comparing this with the likely future character and value of the landscape with increased development.

The overall objectives for this study included:

1. An assessment of the character of the landscape involving an identification of the main physical and cultural attributes of the landscape and a classification of the landscape into distinct areas of homogenous character.
2. An evaluation of perceived landscape values of the entire South Gozo Fault landscape and its distinctive components based on the Landscape Value typology developed by Raymond and Brown.

3. A place attachment analysis of the South Gozo Fault landscape which seeks to establish the differences between resident and non-resident place attachment, identify which independent variables are most predictive of place attachment and determine which landscape values are most predictive of place identity and place dependence.
4. An examination of resident and non-resident attitudes towards development and selected natural resource management issues.
5. An assessment of change in character and value given a scenario of increased development.
6. The development of recommendations which ensure that the distinctive character of the landscape is maintained or enhanced.

1.3. Dissertation Outline

Chapter 1: Introduction. This chapter seeks to introduce the topic of this study. It provides a brief overview of the landscape concept and the nature and importance of landscape assessments. It presents a general description of the area under study and lists the main aim and objectives of this study.

Chapter 2: Literature Review. This chapter reviews literature on the idea of landscape, Mediterranean coastal landscapes and their issues and constraints, island landscapes (including a detailed overview of the physical and anthropogenic determinants of Maltese landscapes), sustainable development and landscapes, landscape assessments with particular reference to landscape character and value assessments), and landscape policies (with special reference to the European Landscape Convention and Structure Plan policies).

Chapter 3: Case Study Area. This chapter provides a detailed overview of the main geographical characteristics of the area, its physical components and anthropogenic influences.

Chapter 4: Methodology. This chapter details the methodological approach for each distinct stage of this study: i) landscape characterization, (ii) an assessment of landscape value, and (iii) an assessment of likely changes in landscape character and value given a scenario of increased development. It highlights the main analytical techniques and refers to the main limitations of this study.

Chapter 5: Results and Analysis. The main outcomes for all three assessments are presented and analyzed with the aid of maps, statistical graphs and techniques.

Chapter 6: Conclusion and Recommendations. This chapter provides a summary of the key findings of this study and draws out a series of conclusions based on these findings. A number of recommendations are also presented.

CHAPTER 2

LITERATURE

REVIEW

Chapter 2

Literature Review

2.0. Chapter Outline

This chapter provides a detailed overview of the main issues related to this study. It is divided into four main sections: 1. An Introduction to Mediterranean Landscapes; 2. A Landscape Assessment Overview; 3. Landscape Values; 4. Landscape Policies.

Section 1: An Introduction to Mediterranean Landscapes

2.1. The Landscape Concept

The term ‘landscape’ is often perceived as complex one, as it conveys different meanings to different people (Phillips, 2002; Macpherson, 2005). The distinguished American geographer, Laurie Olin, has described the subject as a ‘vast, difficult, slippery and mercurial subject’ (as cited in Benson and Roe, 2007). In its simplest sense, landscape refers to *“the surface of the earth, or a part thereof”* (Cosgrove, 1984: 13), or *“all the visible features of an area of land”* (Soanes, 2008).

Different authors have attempted to define the concept of ‘landscape’ and their definitions vary according to the authors’ background and the given purpose of defining landscapes. Perhaps the earliest reference to ‘landscape’ is made in the book of Psalms (48.2), whereby the Hebrew term “noft” conveyed landscape perception, assigning significance to the visual aspect (Ingegnoli, 2002). From the beginning, one could detect the visual-aesthetic connotation of landscape (Ingegnoli, 2002; Naveh and Liebermann, 1994; Bastian and Steinhardt, 2002), as it is continuously linked to the *“perception, observation and view of the environment or living space of man”* (Bastian and Steinhardt, 2002:1). However, many argue that the landscape concept goes beyond ‘the view’ and is rather multifaceted (Benson and Roe, 2007; Sauer, 1925). In the words of Edward Relph (1976), *“landscape is not just an aesthetic background to life, it is rather a framework, scenery that at the same time expresses, sets conditions...”* (as cited in Ogrin, 2005:5). There are both physical and socio-psychological connotations attached to the concept of landscape. In fact, Carl Sauer (1925) defined landscape as a

“land shape in which the process of shaping is by no means thought of as simply physical... therefore [it is] an area made up of a distinct association of forms, both physical and cultural” (cited in Irby, 2009:250).

In the nineteenth century, the German geo-scientist Alexander von Humboldt defined landscape as the ‘total character’ of an Earth region (Nath, et al., 1999). Other geographers tended to adopt a much broader interpretation of the landscape, incorporating both biotic and abiotic components of a landscape (*Ibid*). The German biogeographer Carl Troll played a crucial role in bridging geography and ecology, and is known for introducing the concept of ‘landscape ecology’ (Wiens, et al., 2007). In doing so, he sought to develop a new science which would combine the spatial, horizontal approach of geographers with the functional vertical approach of ecologists (Farina, 2007; Naveh and Liebermann, 1984; Forman and Godron, 1986). He defines landscapes as *“the total natural and human living space”* which consist of *“concrete, space-time defined three dimensional entities of this total human ecosystem”* (cited in Dash, 2001: 29). Troll’s approach focused on ‘landscape units’, or rather *“the geographic region and the units that make up the earth’s surface”* (cited in Wiens, et al., 2007: 8). Landscape ecologists Forman and Godron (1986) provided a naturalistic interpretation of the landscape as a *“heterogeneous land area composed of a cluster of interacting ecosystems that are repeated in a similar form throughout”* (cited in Nath, et al., 1999: 231).

It is also worth discussing the geographers’ concern with the ‘cultural landscape’, or rather the *“patterns and forms produced by the interaction of people, that is culture, with the natural environment”* (Relph, 1981:48). In this respect, the roles of both people and environment are “conjoined and interacting” (*Ibid*). The notion of landscape within cultural geography is generally divided into three paradigmatic movements.

In the early twentieth century, landscape was recognized as a natural or cultural material artifact and was usually perceived as the product of the material expressions of the inhabitants of a region. (Anderson, et al., 2003). The renowned American geographer Carl Sauer, in his distinguished paper *“The Morphology of Landscape”*, highlighted the material aspects of culture and expressed landscape in terms of the *“manifestations of culture’s traffic with nature”* (Mitchell, 2000: 21). Sauer maintained that landscape was

a manifestation of the culture that made it (*Ibid*). In this respect, landscape reflected the culture of a particular region.

In the 1970's, Sauer's ideas were reinvented by humanistic geographers who supported the idea of a landscape which considered the human imagination. Edward Relph (1981:22) uses the term 'landscape' to express "*everything I see and sense when I am outdoors*" and argues that landscape "*is the necessary context and background both of my daily affairs and of the more exotic circumstances of my life*". Donald Meinig emphasizes the notion of landscape as comprising not "*only of what lies before our eyes but what lies within our heads*" (cited in Harvey and Fieldhouse, 2005: 5). Instead of simply providing a description of individual regional material landscapes, geographers shifted their views of landscape to one which is central to the minds and eyes of their beholders. This notion is rooted in Cosgrove's approach to landscape as "*a way of seeing the world*" (Cosgrove, 1984:13).

In the mid- 1980's geographers developed the notion of landscapes as material productions which reflect specific ideologies. Kenneth Olwig suggests that landscape is primarily the result of human labour (Atkinson *et al.*, 2005). In this respect, it is defined as "*an area carved out by axe and plough, which belongs to the people who have carved it. It carries suggestions of being an area of cultural identity based, however, loosely on tribal and/or blood ties*" (Olwig, 1996 as cited in Atkinson et al., 2005:29). Olwig (1996) argues that in Northern Europe, specifically during the transition from feudalism to capitalism, landscape was a legal designation that granted inhabitants greater political rights of self determination (as cited in Mitchell, 2000). Cosgrove and Daniels (1988) argue that the acceptance of written and verbal illustrations is crucial to an understanding of a built landscape. James and Nancy Duncan define landscapes as "*texts which are transformations of ideologies into concrete form*" (cited in Longstreth, 2008: 27). Daniels maintains that although landscape is always present and often overlooked, it still strengthens and conveys power relations. Thus, it is often linked to processes of cultural reproduction and change (*Ibid*). This is often triggers "landscape duplicity", whose role is to express ownership and authority.

2.2. An Overview of Mediterranean Coastal Landscapes

2.2.1. An Introduction to the Mediterranean and its Coastal Zone

The Mediterranean is a semi-enclosed sea surrounded by 22 riparian countries. As a region, the Mediterranean is difficult to define (Benoit and Comeau, 2005; Rubio et al., 2007; Heywood, n.d.) Fernand Braudel often describes the Mediterranean as “... *a thousand things at the same time. Not just a landscape, but countless landscapes. Not just a sea, but a string of seas. Not just a civilization, but many civilizations*” (cited in Consolo *et al.*, 2006:15). It is amongst the richest and most complex regions on Earth located midway between three distinct continents, occupying an area of tectonic instability between Europe and Africa (Conrad and Cassar, 2007). It covers an area of 2,542,000km², a coastline of 46,000km (Grenon and Batisse, 1989) and holds a total of 4million cubic kilometers of saltwater (Hinrichsen, 1997).

The Mediterranean region exhibits several distinctive geomorphologic characteristics. The complex folding and faulting linked to regional tectonic activity have given rise to an intricate network of mountain ranges and fault-bounded blocks and depression, producing a basin and range topography (Allen, 2001). The young relief and close contact and penetration of the sea and mountains have had substantial consequences: hardly any large plains, suitable agricultural lands and broad fluvial basins (Jeftic et al., 1990). Rocky shores are a predominant feature of Mediterranean coastlines, and these are often disturbed by sandy beach pockets, narrow valleys and small coastal plains surrounded by inland mountainous areas (EMEC, 2003). Since tidal activity is virtually absent from the Mediterranean, coastlines are somewhat limited in their coastal forms. In this respect, a combination of limited tidal activity and an inefficient longshore drift, have led to the formation of numerous deltaic regions within the Mediterranean (Schwartz, 2005).

As a region, the Mediterranean has a distinctive climate owing to its position between 30 and 45°N to the west of the Eurasian landmass. Bolle (2003:8) defines the Mediterranean climate as a “*temperate rainy, humid meso-thermal*” one with “*dry subtropical warm to hot summers*”. The western Mediterranean basin lies in close proximity to the Atlantic Ocean and tends to feature higher rainfall levels and milder

temperatures throughout the year; on the other hand, the Eastern Basin is influenced by the continental conditions of central Europe and Asia, and thus experiences higher temperatures and a drier climate (Woodward, 2009). The region is also characterized by extremes in summer heat, droughts and floods, which are both ‘common and spatially uneven’ in nature (Conrad and Cassar, 2007: 24).

Ecologically, the Mediterranean is relatively poor, not in variety but in the quantity of organisms produced (Jeftic et al., 1990). Nevertheless, the region is still recognized as an important ‘biodiversity hotspot’, home to some 15,000-25,000 species, 60% of which are endemic to the region (IUCN, 2008). The region’s complex climate, history, geology and topography contribute to the occurrence of thousands of ‘biological isolates’ with a high degree of endemism (Blondel et al., 2010). In this respect, the ecological importance of the Mediterranean Basin is “*disproportionate in relation to its size*” (Cassar and Conrad, 2007: 25). It hosts an overwhelming 25,000 flowering plant species in just 2.3 million Km², in contrast to the 6,000 plant species in non-Mediterranean Europe (Allen, 2001). In fact, species density in the Mediterranean is twelve times higher than that of Europe (Kratochwil, 1999). Moreover, about one third of the Mediterranean fauna is endemic (IUCN, 2008).

2.2.2. Issues and constraints within Mediterranean coastal landscapes

The Mediterranean is ‘an original and unique eco-region’ in that it signifies distinctive geographical and historical characteristics and provides an impressive natural and cultural heritage (Benoit and Comeau, 2005). Sadly the Mediterranean is under tremendous pressure from humans, which over the entire course of human habitation, have strongly influenced the region’s landscape resources (Franco, 2006). The coastal zone hosts a large population of residents and tourists, together with a wide variety of transport infrastructures and industrial sites. In recent years, development has enveloped entire portions of the coastal zone, leading to irreversible damage to landscapes, and losses in both habitats and biodiversity (Blue Plan, 2006). Mediterranean coasts signify an important source of revenue, particularly because of the value attributed to their “ecosystems and heritage, social functions and maritime identity” (Plan Bleu, 2006:17). In 2000, the Mediterranean was home to some 70 million urban inhabitants, 584 coastal

towns, 175 million tourists and 750 yacht harbours, amongst others (*Ibid*). In this respect, Mediterranean landscapes are a perfect illustration of the ongoing, complex interaction between man and nature.

Other factors have acted to transform Mediterranean coastal landscapes into the ones we know today. Agriculture is one major activity which utilizes a significant portion of Mediterranean landscapes. Throughout the years, vast tracts of natural habitat were converted to arable land; hill systems were stepped and terraced; major rivers were diverted and channeled; water supplies were exploited and large quantities of soil were moved around and altered (Franco, 2006; Vogiatzakis et al., 2005). As populations expanded, more land was needed for cultivation. Recent human intervention has modified Mediterranean coastal landscapes by means of agriculture intensification and abandonment. Crop monoculture is a system of agriculture intensification by which a considerable input of fertilizers allows farmers to maintain a high rate of harvests (Farina, 2007). Land abandonment in the Mediterranean region generally occurs on marginal terraced slopes where poor soils, difficult access and small land holdings inhibit agricultural activity (UNEP/MAP/PAP, 2005; Correia, n.d.). Moreover, the decreasing attractiveness of jobs in the agricultural sector has reinforced the phenomenon of land abandonment.

Grazing and herding, together with human-induced fires, have also influenced the character of Mediterranean coastal landscapes. Grazing and herding activities have significantly influenced several Mediterranean coastal landscapes, through their effect on vegetation distribution patterns and landscape characteristics in general (Vogiatzakis et al., 2005). Fires are a frequent occurrence within Mediterranean regions, and throughout the years, these are known to have significantly altered the character of Mediterranean landscapes. Evidence for human-induced fires dates back to the Neolithic and fire is still a key agent of the landscape (Allen, 2001). Fire is often used for land clearance and hunting purposes, and this often catalyzes hillslope erosion and triggers landslides.

Coastal areas tend to experience high population levels owing to their highly attractive nature and the rural-to-urban migration phenomenon. Rapid population growth is one of the most important forces in the human relationship to the natural environment.

Currently, there are around 160million inhabitants within the Mediterranean coastal region (Hughes, 2005), and this is expected to double by the year 2025 (Vogiatzakis et al., 2005). In view of the current dynamics observed, the Mediterranean coastal population will stretch to an unprecedented 150-170 million, while tourist numbers will rise to 260 million per annum (*Ibid*). Moreover, the urbanization rate is expected to grow from 64% in 2000, to 72% in 2025 (UNEP/MAP/PAP, 2007).

In addition, the Mediterranean shores remain the biggest large-scale tourist attraction in the world, and around 31% of all international tourists, visited the Mediterranean in 2005 (Blue Plan, 2008). International tourist arrivals increased 4-fold between 1970 and 2000 and are expected to reach a staggering 312 million by 2025 (Blue Plan, 2006). This will further increase the demand for holiday homes, facilities and services, which will drive up requirements for space, investment and operational costs (Benoit and Comeu, 2005). Consequently, Mediterranean coasts are often characterized by long and dense stretches of development, spontaneous coastal shanty towns, high-density tourist facilities and high-rise, oversized, voluminous buildings, coastal road and promenade construction along the coastline (Ogrin, 2005). Also, tourism has severe implications on the environment, ranging from coastal erosion and ecosystem degradation, to pollution and waste.

The ongoing modification and conversion of Mediterranean landscapes has severely impacted the biodiversity of the region. In fact, the *“richness and diversity of he flora and fauna, much dependent on the maintenance of stable and functioning marine and terrestrial ecosystems, has diminished”* (Cassar, 2010:3). In the course of time, man’s involvement with the natural environment has degraded biotopes, disrupted food chains and damaged entire ecosystems (*Ibid*). An integrated and holistic approach to planning and management is key to the protection and conservation of Mediterranean coastal zones.

2.3. Island Landscapes

Lockhart et al., (1993:14) define an island as “*the most enticing form of land, a symbol of the eternal contest between land and water. Islands are detached, self-contained entities whose boundaries are obvious*”. Mannion and Vogiatzakis (2007:1) define islands as “*self-contained microcosms and natural laboratories of quantifiable proportions*”. The Mediterranean is a world of islands par excellence. It holds an overwhelming 5,000 islands and islets and contains one of the largest groups of islands in the world (Temple and Cuttelod, 2009). Some of the large islands are considered “miniature continents”, whilst the smaller ones may merge with adjacent archipelagos to form island families (Braudel, 1949). Insularity is a common characteristic for all islands, the intensity of which varies with their proximity to the mainland. All islands are significant in terms of their biological diversity (Medail and Quezel, 1997; Davis et al., 1994, as cited in Vogiatzakis et al., 2008). However, there are noticeable differences in the islands’ topographies. Many islands, except Malta, tend to have a mountainous topography, complemented by some attractive cliffs, beaches and lagoons (Mannion and Vogiatzakis, 2007). Also, Mediterranean islands have their own distinct biogeography, prehistory, cultural and economic development and degrees of planning and conservation.

2.3.1. Maltese Landscapes: Physical Determinants and Anthropogenic Agents

2.3.1.1. An Overview of Physical Elements

The Maltese Islands are located within the central Mediterranean region, specifically between Italy and North Africa, at a latitude of 35° 48’ 28” to 36° 05’ 00” North and a longitude of 14° 11’ 04” to 14° 34’ 37” East (Schembri, 1993). The archipelago comprises three main islands- Gozo, Malta and Comino- and numerous uninhabited islets which encompass Cominotto, St. Paul’s Islands and Fungus Rock, amongst others. The islands are situated on a shallow shelf, the Malta Plateau, which is part of a submarine ridge that stretches from the south Sicilian headland to the Northern coast of Africa (Cassar, 2010). Geophysically, the islands are known to form part of the African plate. They rest some 96km away from Sicily, 290km from North Africa, 1836km from

Gibraltar and 1519km from Alexandria (Schembri, 1994). The islands have different land areas: Malta has an area of 245.7 km², while that of Gozo and Comino is 67.1 km² and 2.8 km², respectively (Schembri, 1993).

Geologically, the Maltese Islands are entirely composed of Tertiary limestones with subsidiary marls and clays (Magri, 2006). Quaternary deposits, namely cliff breccias, cave and valley loams, sands and gravels, are limited to a few areas (*Ibid*). The formation of these sedimentary rocks is attributed to either the deposition of dissolved substances through chemical precipitation and/or organic activity (chemical-biogenic sedimentation), or the process of clastic sedimentation, whereby the origin of rocks is the result of the erosion, transportation and red-deposition of pre-existing rocks (Cassar, 2010). The structure of Maltese sedimentary rocks consists of a basic layer-cake arrangement (Schembri, 1994) whereby the oldest rock formations are deposited at the bottom and the youngest strata are found at the very top. Lower Coralline Limestone is responsible for the numerous cliff formations which characterize the Islands especially in the west (Magri, 2006). Globigerina Limestone is the most widespread stratum on the islands, and tends to favor the development of a broad, rolling landscape. Blue Clay overlies Globigerina Limestone and is often responsible for the formation of slopes which slide over the underlying globigerina rock. Greensands, a rather friable rock layer, is often found on hillsides and is exposed to a maximum thickness of 16m at Ta' Gelmus in Gozo (Pedley et al., 1976, as cited in Magri, 2006). The youngest tertiary formation of the Maltese Islands is the Upper Coralline Limestone, a durable stratum which weathers to form steep cliffs and well-developed karst landscapes (Magri, 2006).

The Maltese Islands are divided by numerous fault systems, categorized under two principal groups based upon the strike of the fault line: those inclined towards the NE-SW and those trending NW-SE (Cassar, 2010). The Great Fault and the South Gozo Fault are both associated with the NE-SW system; the former runs from Fomm ir-Rih on the south western littoral, to Madliena on the northeastern coast, while the latter transverses from Ras il-Qala on the east to Mgarr ix-Xini on the southeast (Schembri, 1993). Block faulting has given rise to a series of horsts and graben between the two master faults (Schembri, 1997). The Maghlaq fault, located along the southern coast of Malta, is the principal member of the NW-SE system and shows a vertical throw of some 250m (*Ibid*).

Distinctive topographical features of ecological importance are the *rdum* and *wied*. The *rdum* system consists of ‘quasi-vertical rock faces’ which are formed by either erosion or tectonic activity. These are often accompanied by boulders scree and other debris eroded from the rock face surrounding the base (Cassar, 2010:35). *Rdum* sides are especially important because they provide shelter to numerous biological assemblages, including endemics (Schembri, 1997). Valley formation within the islands is attributed to either stream erosion during a much wetter climate, or tectonism, or to a combination of the two (Schembri, 1993). These are often recognized as one of the richest habitats on the islands, mainly due to their water supply and the shelter provided by their sides (Schembri, 1994). Fluctuations in sea level have inundated the mouths of numerous valleys around the islands, giving rise to a series of headlands, creeks and bays.

Climate plays an important role in determining the geomorphology of a landscape. The Maltese Islands enjoy a typical Mediterranean climate, with a rhythm of hot, dry summers and cold, wet winters. Emberger (1955) identifies the Mediterranean climate as a “non-tropical one with regular rainfall with summer as the dry season” (As cited in Zahran, 2010). Rainfall patterns within the islands are extremely variable; some years are exceptionally wet, while others are particularly dry. The average annual precipitation is 530mm (Schembri, 1993). This seasonal variation in rainfall marks out a wet period between October and March, and dry period between April and September. Air temperature conditions are rather stable, whereby the average maximum and minimum temperatures for the coldest month, January, are 15.2°C and 9.2°C, respectively (Azzopardi, 2002). Relative humidity is persistently high throughout the year and it usually ranges between 65% and 80% (Schembri, 1997). Moreover, the islands are relatively windy and the most predominant wind is the Northwesterly (*Ibid*).

In terms of ecology, the Maltese Islands are relatively rich despite their restricted space, limited number of habitats and the intense human pressures which characterize them. In actual fact, they are home to some 2000 species of plants and fungi, together with 4000 species of insects, numerous invertebrate species, and more than 200 terrestrial or freshwater vertebrates (Stevens et al., 1995). The three primary types of vegetation include maquis (or mattoral), garrigue (including phrygana) and steppe, while other minor communities include woodland, freshwater and rupestral, caves and coastal habitats.

It is worth mentioning that prior to human colonization, vast areas of Mediterranean sclerophyll forest, mainly species of Holm Oak (*Quercus ilex*) and Aleppo Pine (*Pinus halepensis*) dominated the Maltese Islands (Cassar, 2010). Once the islands were permanently inhabited by man, large areas of woodland were cleared in an attempt to make way for farmland and human habitation. Additionally, grazing practices and deforestation have severely impacted the natural forest all over the islands. Consequently, traces of this original forest are relatively scarce and can only be found in a few localities (*Ibid*). These appear in the form of small copses of Holm Oak, some of which are estimated to be between 500 and 900 years old (Schembri, 1993). The woodland at Buskett was initially planted by man and is now self-regenerating. In this respect, it has the character of a natural climax community and is often recognized as semi-natural woodland (Schembri, 1997). In Gozo, the presence of woodlands stems primarily from recent afforestation practices, and examples of these include ‘Gnien Migiarrro’ which rests on top of the clay slopes beneath Fort Chambray, Ta’Blankas within the vicinities of Xewkija and Ta’ Lambert and il-Buskett at the headwaters of Wied ir-Rihan (Cassar, 2010).

Another plant community which colonizes the Maltese Islands is the maquis, locally known as the *makkja*. This is often defined as “*a more or less dense, mostly evergreen shrub community where individual shrubs reach a height of between 1m and 3m*” (Schembri, 1994:10). It is widely predominant on valley sides and bottoms (Cassar, 2010) and is mainly of secondary origin (Stevens et al., 1995). This community comprises a variety of small to medium-sized trees and large shrubs (Cassar, 2010).

The most common vegetation type in the Maltese Islands is the garigue (Schembri, 1994; Cassar et al, 2008). This community, together with phrygana and steppe, are typical of karstic terrains which feature shallow soils and rough surfaces. Garigue is often described as a low scattered, spiny and aromatic shrub with a herbaceous undergrowth (*Ibid*). Some communities are natural, while others result from the degeneration of woodland and maquis assemblages. Steppic communities tend to colonize areas which are unable to support shrubby vegetation mainly because of the terrain’s exposure to strong winds and shallow soils or frequent man-induced fires, grazing or accelerated erosion (Cassar, 2010).

2.3.1.2. Human Influences and key environmental impacts

Human colonization within the Maltese Islands stretches back some 7,500 years to the Neolithic era (Cassar et al., 2008). There is a general consensus amongst scholars that the earliest inhabitants came from Sicily (Castillo, 2006) and that the first human settlement on the islands dates back to the end of the 6th millennium B.C (Bonanno, 2008). It is a known fact that the main reason behind the Neolithic settlers' migration to the islands is the need for more land to cultivate (Castillo, 2006). Moreover, the lack of primitive fertilizers available compelled farmers to move to new uncultivated lands. Throughout the years, large tracts of land were modified in an attempt to keep up with a steady demand for land. As the initial colonizers abandoned hunting and gathering for agriculture, the landscape was extensively modified. While different rulers governed our country, human activity diversified. As the islands enhanced their social and economic well-being, the population expanded, and this eventually brought about higher demands for food, shelter and mobility. Consequently, pressures on the natural environment intensified.

As a consequence of the islands' long exposure to human colonization and current population and economic tendencies, they demonstrate numerous environmental problems. These can be traced back to the first human colonizers who transformed the existing landscapes by cutting down vast areas of natural woodland and other vegetation. This eventually led to a serious loss of ecotopes and biotic communities, while at the same time created niche space for new species to settle in (Cassar, 2010).

Landscape modification continued well into the 20th century, as human pressures intensified with the advent of socio-cultural and technological advancement (Cassar, 2010). A large portion of the land area is occupied by agriculture, buildings and infrastructure. However, recent trends suggest that the built-up area is expanding at the expense of both cultivated land and the natural countryside (Schembri, 1997). A study of agricultural land use for the period between 1956 and 1991 reveals a 42% decrease in the total agricultural land area (Meli, 1993). The diminished importance of the agricultural sector is largely responsible for the phenomenon of land abandonment within the Maltese Islands.

The 20th century brought about considerable progress in both industrialization and urban growth (Cassar, 2010). The enhancement of the public transportation system catalyzed this growth, so that areas which were previously secluded became more accessible. In recent decades, the Maltese Islands have experienced rising standards of living, fueled by rapid economic growth. This, coupled by the absence of planning and environmental legislation, has stimulated haphazard development all over the islands (Cassar, 2010).

The post-independence period has seen rapid urban growth in the area occupied by various settlements around the islands. Urbanization figures rose steadily from 6% in 1910, to a significant 20% in 1990 (Role, n.d). Cassar (2010:48) points out that over a few decades, the urban area has increased by some 361% and the number of dwellings has increased by 121%. This has seriously impacted the overall balance between rural and built-up areas. Recent development projects have often been located and designed in a manner which does not respect the character of landscape features. (Camilleri, 1993). This growth has mainly occurred within the northeastern region of Malta through the coalescence of settlements, creating a conurbation based on Valletta, its ancient suburb Floriana, and the Three Cities on the southeastern side of the Grand Harbour (Cassar, 2005 in Van Kempen *et al.*, 2005). However, recent studies indicate that although the Northern Harbour district remains the most thickly inhabited region, other districts, especially the Northern district, have experienced significant population growths (NSO, 2007).

Demography has been a major influence on environmental change (MEPA, 2010). The population of the Maltese Islands, particularly that of the main island, is relatively high. Between the first census carried out in 1842 and the 2005 census, the Maltese population has grown 3.5 times, from 114,499 in 1842 inhabitants to 404,962 in 2005 (NSO, 2007). Nevertheless, Malta remains the most densely populated country within the European Union, with an average of 1,285 people per square kilometer (*Ibid*).

As expected, coastal environments are under tremendous pressure from human activities, owing primarily to their distinct geographical characteristics, limited area and intrinsic attractiveness (MEPA, 2010). In view of the fact that the islands are highly deficient of natural resources, the Maltese littoral has become “*the most hotly contested real estate in the nation*” (UNEP, MAP, PAP, 2005: 27). As the islands host around a

million tourists annually (NSO, 2009), the Maltese coastline is continuously struggling to keep up with new demands made by the tourist industry. Coastal localities such as Sliema, St.Julians, Qawra, Bugibba and Mellieha are literally flooded with high-rise, high cost properties on the coast. Over the last two decades, the Sliema - St.Julians foreshore has undergone an extensive transformation, through which single family terraced residences have been almost entirely replaced by multi-storey apartments (UNEP, MAP, PAP, 2005). The sudden development of Qawra and Bugibba is largely attributed to the large demand for summer residences for both Maltese families and tourists. In recent decades, Mellieha has become the prime northern tourist and residential location, and consequently, it has witnessed the development of an entire string of holiday apartments and exclusive villas which have somewhat influenced its coastal landscape (Lockhart et al, 1993). Other significant forces of landscape change include quarrying and dumping of domestic and building waste (Cassar et al., 2008).

2.4. Sustainable Development and Landscape

Landscape is a critical component of the environment, just like water, air and biological diversity (Council of Europe, 2006). It is a concept *par excellence* for thinking about sustainability (Benson and Roe, 2007; Phillips, 2005). In this respect, landscape policies must complement the objectives of sustainable development (Council of Europe, 2006).

It is often said that the Prime Minister Gro Harlem Brundtland and her United Nations Commission accomplished a great deal in defining the concept of sustainable development as, '*development that meets the needs of current generations without compromising the ability of future generations to meet their own needs*' (WCED, 1987). Sustainable development is frequently portrayed in terms of achieving a balance between society, economy and environment, where landscape provides 'an arena' in which this balance can be pursued (Selman, 2006). During the 1990's, the concept was an echoing 'clarion call' (Buttimer, 2001), which from the very beginning, signified the need to minimize the conflicts between the social, economic and environmental impacts of this generation's decisions and to resolve the needs of present and future generations (WCED, 1987; Lopez, 2008). The 1992 Rio de Janeiro Declaration on environment and development lists two main principles which fit this line of thought:

Principle 3: *“The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.”*

Principle 4: *“In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.”*

These two principles lie at the heart of the idea of sustainable development, as the right to development should be tempered by the integration of environmental protection into the development process.

The Preamble to the European Landscape Convention mentions that concern for sustainable development at the Rio de Janeiro Conference in 1992 identifies landscape as a crucial factor in striking a balance between the protection of Europe’s natural and cultural heritage and economic development (Council of Europe, 2000a). The importance of sustainable development is reinforced by one of the treaty’s main objectives:

“To achieve sustainable development based on a balanced and harmonious relationship between social needs, economic activity and the environment (Ibid).”

The Convention highlights the importance of landscapes as a *“key element of individual and social well-being”* (Council of Europe, 2000a). In this respect, landscape is viewed as a multi-dimensional concept in that it has *“a material dimension which links it to material and physical well-being, a non-material dimension which relates it to spiritual well-being”* and is also viewed *“individually but is at the same time the perceptible reflection of social practices”* (Council of Europe, 2006: 43).

Sustainable development is an integral part of all environmental policy and landscape action is continuously cited as an issue *“of no less significance than others”* in sustainable development (Council of Europe, 2006).

Section 2: A Landscape Assessment Overview

2.5. Nature and Evolution of Landscape Assessment

As emphasis on sustainable development has escalated in recent decades, so has the need to incorporate landscape considerations into environmental decision-making processes (Morris and Therivel, 2009). Prior to the ‘landscape assessment’ idea, the dominant trend was towards landscape evaluation, a method which sought to compare the value of one landscape with another using quantitative methods (Swanwick, 2002b). However, this objective, scientific and quantitative approach to landscape was soon deemed inappropriate as it sought to reduce something “*as complex, emotional and so intertwined in our culture, as landscape, to a series of numerical values and statistic formulae*” (Swanwick, 2002b:1).

The realization that all landscapes are equally important shifted the attention from the landscape evaluation method to one which determined what made a landscape unique (Jensen, 2006). This method became the landscape assessment method, and differed from other methods in that it distinguished between the classification and description of landscape character, rather than just focusing on relative value (Swanwick, 2002b). It was first adopted by a study in the Mid Wales Uplands, which was later extended to the lowlands of England in the Warwickshire Landscapes Project (*Ibid*). The technique developed from these initiatives during the late 1980s and early 1990s as practitioners and policymakers gained practical experience of its use (*Ibid*).

The Countryside Commission (1987) and the Landscape Research Group assume a general meaning of ‘landscape assessment’ and define it as “*an umbrella term used to encompass all the many different ways of looking at, describing, analyzing and evaluating the landscape*” (as cited in Makhzoumi and Pungetti, 1999). An assessment requires the existence of an interrelated subject and object, whereby the subject is needed to conduct the assessment, and the object is the landscape under evaluation (Krönert et al., 2001).

The landscape assessment process holds four distinct phases: landscape classification, description, evaluation and final analysis (Countryside Commission 1987a, as cited in Makhzoumi and Pungetti, 1999). The different stages have similar attributes and are independent of personal judgment (Makhzoumi and Pungetti, 1999).

The following definitions are given by the Countryside Commission (1987a):

Box 2.1. Definition of terms in Landscape Assessment

- *Landscape description* refers to a representation of the actual appearance of the landscape through an observation of specific components of a landscape.
- *Landscape classification* is a method of sorting the landscape into different types. It can be used as a tool for landscape description.
- *Landscape evaluation* is a way to attribute values to landscape based on pre-established criteria.
- *Landscape analysis* breaks a landscape down into component parts so as to understand its structure.

In general, the technique covers an array of landform and geological types, and seeks to combine “*the interaction of surface patterns of land use, enclosure, settlement and communication with persistent major influences to derive homogenous land character*” (Bell, 1999:296). Amongst the numerous tasks involved in landscape assessment, the most important would be to understand the underlying character and functionality of an area, and to identify elements which make a landscape special and distinctive (Selman, 2006).

2.6. Landscape Character Assessment

Over the past decade, emphasis has been placed on landscape character as a concept central to landscape assessment (Swanwick, 2002b). Mounting interest in character-based decision making is largely attributed to the development of “*a more structured and systematic approach to landscape assessment which separates the process of characterization and evaluation and gives equal weight to the natural, cultural and visual dimensions of the landscape*” (Diacono, 2008: 4). In this respect, the *Landscape*

Character Assessment Guidance for England and Scotland (2002:8) defines the approach as “a distinct, recognizable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.” The guidance divides the approach in two main stages: the *characterization stage* which identifies, maps, classifies and describes landscape character; and the *judgment stage* which formulates opinions based on landscape character to support a range of decisions (Swanwick, 2002a). As a tool, it seeks to identify the cultural and environmental features of a landscape, monitor environmental change, comprehend a location’s sensitivity to development and change and inform the conditions for any development and change (*Ibid*).

Also, the guidance emphasizes the assessment’s connection to sustainability, in that it contributes a great deal to ‘environmental protection’ and ‘prudent resource use’ which are the corner stones of sustainable development (Swanwick, 2002a). Its main role is to ensure that change and development do not take place at the expense of characteristic and valuable features of a landscape.

Box 2.2. National Approaches to landscape character assessment

LANDMAP: The Welsh Approach to Landscape Assessment

The Countryside Council for Wales defines LANDMAP as “an all-Wales GIS-based landscape resource where landscape characteristics, qualities and influences on the landscape are recorded and evaluated into a nationally consistent dataset” (CCW, 2008: 1). In its attempt to promote sustainable decision-making, LANDMAP records physical, ecological, visual, historic and cultural landscape features (CCW, 2008). Its methodology is a structured and consistent one which includes classification, mapping, and objective and subjective descriptive landscape information (CCW, 2010). It divides landscape into five spatial layers: geology (geology, geomorphology and hydrology); landscape habitats; visual; sensory; historic landscape and cultural landscape (CCW, 2008). Each dataset is divided into distinct geographical units referred to as aspect areas, whereby each mapped aspect area is characterized by its landscape characteristics and qualities (CCW, 2010).

Box 2.3. National Approaches to landscape character assessment

England: The Countryside Character Initiative

The early 1990's saw the movement towards a new approach to landscape assessment which considered the wider countryside rather than just specific designated landscapes. (Swanwick, 2002b). This new frame of mind instigated the need for a comprehensive and consistent analysis of the character of the English Landscape (CA, 1999). The 'Character of England Landscape, Wildlife, and Cultural Features Map' identifies 159 character areas, classified in terms of their landscape, sense of place, wildlife and natural features (Morris and Therivel, 2009). On a broad scale, the map illustrates the natural and cultural characteristics of the English countryside and focuses on distinguishing character rather than landscape quality (Landscape Institute, 2002). Complimenting this national mapping project, the countryside commission published a detailed guide to the approach and methods of landscape character assessment which enhances the understanding of landscape distinctiveness (Gallent et al., 2008).

2.7. Stakeholder involvement in Landscape Character Assessment

There is a rising global demand for more efficient community participation programmes in planning and management of the environment, since it is widely recognized that this is the only way people will attain their desired surroundings (Wates, 2000).

The European Landscape Convention establishes participation as an instrumental and substantive goal (Conrad et al., 2010). In its definition of landscape as "*an area as perceived by people*" (COE, 2000), it emphasizes the notion of landscapes as shaped by public perception. One can no longer view landscape as 'something objectively out there', as different individuals may interpret it differently (Jensen, 2006). In this respect, expert-driven approaches to landscape assessment are no longer feasible since landscape specialists and local individuals may have different views on landscape. The *Landscape Assessment Guidance for England and Scotland* (2002) emphasizes the need to

incorporate local knowledge through community participation in landscape assessment, as it contributes to a *“more informed assessment, greater ownership of applications and the establishment of valuable partnerships for future work”* (Swanwick *et al.*, 2002).

Before delving into the actual importance of community participation to landscape character assessment, it is worth providing individual definitions of the terms ‘community’, ‘participation’ and ‘community participation’.

The proponents of community participation tend to use the umbrella term ‘communities’ in their attempt to describe its participants. Though there is still much emphasis on ‘communities’ as the key focus of participation, the term is inadequately defined in literature. Williams (1988) affiliates the notion of a community to a “locality”, “actual social groups” and a “particular quality of relationship” (As cited in the Warburton, 1997). Wates (2000) defines the word ‘community’ as *“a group of people sharing common interests and living within a geographically defined area”*, while Jacobs (1995) links community with place in stating that:

“People belong in the world: it gives them a home. The attachment to place – not just natural places, but urban places too- is one of the most fundamental of human needs... The important thing about places, of course, is that they are shared. Each person’s home area is also other people’s. The sense of place is therefore tied to the idea of community” (Jacobs, 1995 as cited in Warburton, 1997).

The term participation is a buzz word which signifies different things to different people (NEF, 1996; IUCN, 2010; Hogan, 2002). At its simplest sense, the term ‘participation’ can be defined as the “act of being involved in something” (Wates, 2000). Oakley (1991) claims that participation *“is concerned with human development and increases people’s sense of control over issues which affect their lives”*. The United Nations Economic and Social Council resolution 1929 (LVIII) states that participation requires the voluntary and democratic involvement of people in: a) contributing to the development effort; b) sharing equitably in the benefits derived therefrom and c) decision-making in respect of setting goals, formulating policies and planning and implementing economic and social development programmes (cited in Midgley, 1986).

Collectively, the term ‘community participation’ concerns the creation of opportunities which enable the engagement of individuals and communities to actively contribute to decisions about things which affect their lives, thereby influencing the development process and sharing equally the fruits of development (Burns et al., 2004; Sarkissian, 2002; Oakley and Marsden, 1987). In other words, it is based on the notion that those influenced by the decision have a right to be involved in the decision-making process.

Recent participatory initiatives have moved beyond the 'what is a community' issue, concluding that defining 'community' is less important than identifying the people affected by the decisions under debate. In this respect the term ‘stakeholders’ became more appropriate as it signifies a practical personal interest.

The Landscape Assessment Guidance for England and Scotland defines the term ‘stakeholder’ as *“the whole range of individuals and groups who have an interest in landscape”* (Swanwick, 2002a:15). Given the wide range of stakeholders for landscape character assessments, these have been divided into two broad categories: communities of interest and communities of place. The former group is usually defined as *“a group of people who subscribe to common values or interests or belong to a well-defined category”* (Bell and Apostol, 2008:102; Swanwick *et al.*, 2002:1; Phillips and Pittman, 2009:5), while the latter comprise those *“individuals who live or work in a particular area, or visit it, who can be thought of as making up communities of place”* (Swanwick *et al.*, 2002; ECOP, 2002:3). These two communities are clearly denoted in the figure below:

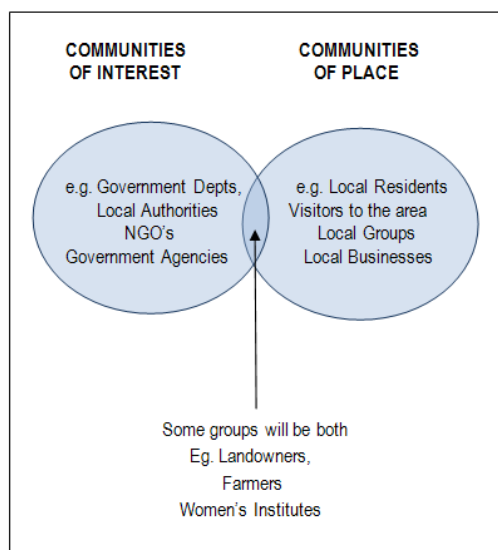


Figure 2.1: Communities of Interest and Communities of Place
Source: (Swanwick, 2002b)

Swanwick *et al.*, (2002) have identified several benefits of stakeholder involvement in landscape character assessment:

- The process can facilitate peoples' understanding and awareness of the landscape, to appreciate its character and diversity, and to build up confidence in community action;
- Stakeholders can contribute precious information which would not otherwise be evident;
- Stakeholder commitment to landscape is enhanced if the stakeholders themselves are involved in the process of reaching decisions about the landscape;
- Community participation supports the development of agreements which were previously nonexistent;
- Incorporating stakeholders in Landscape Character Assessment facilitates the delivery of resultant strategies (such as management plans for Areas of Outstanding Natural Beauty or National Scenic Areas), which require several people and organizations to implement them.

Section 3: Landscape Values

2.8. The Landscape Value Concept

Landscape values are a major component of several landscape assessment guidelines. The Dublin Landscape and Landscape Assessment Guidelines (2000) define values as *“those realities which satisfy human needs and desires”*. The guidelines state that societies tend to adhere to a specific set of values, which leads to the establishment of *“a generally accepted value system or code of practice”*. These guidelines go on to say that the process of judging a landscape on the basis of landscape character entails community or individual assignment of values to a landscape, often the result of national or local agreements.

Swanwick (2002a: 53) defines ‘landscape value’ as “*the relative value that is attached to different landscapes*”. Dublin’s Landscape and Landscape Assessment Guidelines for Planning Authorities (2000) describe the concept as “*environmental and cultural benefits, including services and functions, that are derived from various landscape attributes*.” Marchetti and Rivas (2001) argue that ‘landscape value’ is the product of two combining factors, namely visual landscape quality and the intrinsic quality of a landscape. The first is defined as the “*relative aesthetic excellence of a landscape*” (Daniel, 2001), while the latter refers to those qualities which are fundamental to landscapes. From a legal perspective, highly valued landscapes are officially recognized through national or local designations (Swanwick, 2002a).

The Landscape Institute (2002) identifies several reasons behind the importance of judging the value or importance of a landscape to society. In this respect, the process seeks to:

- Ascertain the importance of the affected landscape at different scales;
- Allow for the consideration of any losses of landscape features, characteristics, or functions in relation to the significance or value assigned to them;
- Facilitate the assessment of consequences on other, less tangible, perceptual landscape characteristics, including scenic quality, tranquility or wilderness;
- Support the identification of features which could be enhanced;
- Identify mitigation strategies through the introduction of compensatory measures which act to avoid and relocate, or balance any negative effects.

(Landscape Institute, 2002)

Landscapes are inherently dynamic and its values are continuously changing over time. Howard (2004: 430) argues that landscape perception has changed dramatically and that landscapes which were once considered “*beautiful and picturesque... [have] now been superseded by later tastes*”. He argues that the artist’s love for open moorlands has now been replaced by the ‘extreme vernacular’, which is the very opposite of “*a tidy*

hygienic, packaged and conserved cultural landscape” (Howard, 2004: 430). Phillips (2005) argues that eighteenth century travelers found Alpine landscapes repulsive. A few generations later, the landscape became “*the spiritual heartland of the romantic movement*” and was almost revered as a peaceful, spiritual place (Phillips, 2005: 20).

Since changes in the landscape can have serious implications on people’s surroundings, it is often necessary to identify those landscape components which are valued by the community or society as a whole (Landscape Institute, 2002). The establishment of landscape values can be rooted in specific features which contribute to a ‘sense of place’ or affect the way a landscape is experienced, and on special attractions such as cultural or literary associations, nature conservation or heritage interests (*Ibid*). The table below denotes the main landscape values used by different institutions and initiatives:

<i>Institutions / Classifications / Initiatives</i>						
<i>Landscape Values</i>		Council of Europe	Dublin's Landscape and Landscape Assessment Guidelines for Planning Authorities (2000)	Chugach National Forest Study (1998)	Kenai Peninsula Study	NSRE Wilderness Value Scale
	Aesthetic	✓	✓	✓	✓	✓
	Economic			✓	✓	✓
	Recreation	✓		✓	✓	✓
	Learning			✓	✓	✓
	Spiritual	✓	✓	✓	✓	✓
	Intrinsic	✓		✓	✓	✓
	Future			✓	✓	✓
	Life Sustaining			✓	✓	✓
	Biological Diversity		✓	✓	✓	✓
	Therapeutic			✓	✓	
	Cultural	✓	✓	✓	✓	
	Subsistence			✓	✓	
	Historic	✓	✓	✓	✓	
	Wilderness				✓	
	Mythological		✓			

Table 2.1: Landscape Value Typologies

It is evident that the Chugach and Kenai value typologies cover a wider array of values, in comparison to the classifications brought forward by the Council of Europe and the Dublin Landscape Assessment Guidelines.

2.8.1. Measuring Landscape Values

Several methods have been developed to measure and analyze the distribution of various landscape values. In the late 1990's social researchers designed a system which measures the spatial distribution of various landscape values using a variety of spatial techniques. This system is known as 'public participatory geographic information' (PPGIS) and acts to link community participation and GIS in a variety of social and environmental contexts (Abbot *et al.*, 1998; Harris and Weiner, 1998, as cited in Craig *et al.*, 2002). The act of comprehending and valuing public perception of places and landscapes has been recently identified as a significant factor in decision-making processes (Zhu *et al.*, 2010). The sustainable use and management of natural resources requires a thorough consideration of the inextricable links between humans and ecosystems (Alessa *et al.*, 2008). In recent years, emphasis has been placed on perceived spatial attributes of places and landscapes, in contrast to traditional landscape planning which focused on measuring and mapping objective landscape features (Brown, 2005).

During the past five years, significant effort has been made to incorporate spatial measures of perceived landscape values and other place attributes in public surveys with the aim of systematically combining local values and perceptions with biophysical landscape information (Brown and Raymond, 2006; Brown, 2005). One of the first applications was a landscape value typology developed by Brown and Reed (2000) as part of the Chugach National Forest planning process. Individuals were asked to rank and spatially identify landscape values on the basis of their perceived relative importance. The set of spatial attributes was based on the forest values typology adapted from Rolston and Coufal (1991), and consisted of aesthetic, recreational, economic and ecological values, in addition to more indirect and symbolic landscape values including spiritual and intrinsic values (Brown and Reed, 2009).

In another study termed '*[The] Assessment of Protected Area Allocations Using a Typology of Landscape Values*', Raymond and Brown (2007) use survey data from the Otways region of Victoria, Australia to distinguish between public and private lands through locally perceived landscape values. Another survey conducted by Brown and Alessa (2005) consisted of a GIS-Inductive approach to wilderness values in Alaska. This study presents landscapes as '*tabulae rasae*' so that individuals can spatially identify landscape values, including those associated with wilderness areas. It seeks to examine the variety of landscape values that the public assigns to wilderness areas, to determine which values best predict perceived wilderness values from the Kenai Peninsula study and to compare the results with previous survey results of wilderness values.

The incorporation of perceived landscape values in landscape value assessments is a subject of increasing importance to environmental and natural resource management (Brown, 2005). Humans are active participants in the landscape. They think, feel, act and thus contribute meaning and value to specific landscapes. In this respect, they play a crucial role in the process of measuring and analyzing the distribution of various landscape values.

Section 4: Landscape Policies

2.9. The European Landscape Convention

The European Landscape Convention (ELC) is the first instrument devoted exclusively to the protection, planning and management of all landscapes in Europe (Fairclough, 2002). It was adopted in 2000 and came into force in 2004. The treaty emerged in response to the growing concern about the nature and scale of landscape change, often resulting in a loss of local character (Phillips, 2000). It seeks to respond to the public's desire to enjoy high quality landscapes (Dejeant-Pons, 2009) and expresses the concern to "*achieve sustainable development based on a balanced and harmonious relationship between social needs, economic activity, and the environment*" (COE, 2000a). In this respect, the convention fills up the 'European legal lacuna', since no other treaty had previously dealt "*directly, specifically and fully with landscapes and their protection,*

development and sustainable management” (Buergi, 2002). Its aims and structure are designed to provide national policies and instruments that consider the quality of the European environment (COE, 2000b).

The Preamble to the ELC (COE, 2000a) highlights several key issues underlying the convention. It emphasizes the convention’s role in the Council of Europe’s efforts on natural and cultural heritage, spatial planning, environment and local self-government. In doing so, the convention makes an important contribution to the Council of Europe’s three main objectives: democracy, extension of human rights to take in the environment, and helping solve the main problems of contemporary European society (COE, 2006). Additionally, the preamble underlines the role of landscape in cultural, ecological, environmental and social fields and deems it an important resource for economic activity. Nevertheless, it highlights the importance of landscapes to the overall quality of life everywhere, its role in strengthening the European identity and its contribution to human welfare. In general, the ELC:

- Defines landscape as “*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*” (COE, 2000b).
- Highlights the importance of a multidisciplinary, rather than a reductionist, approach to landscape.
- Seeks to recognize landscape as a political concern, since it makes a significant contribution to the well-being of each individual European.
- Encourages public participation in decision-making processes in an attempt to reinforce local and regional identity, promote sustainable development and improve the quality of landscapes.
- Emphasizes the importance of developing policies at local, regional, national and international levels with the aim of protecting, managing and planning European landscapes. This way landscape quality is maintained and improved and individuals are lead to an understanding of the significant value and importance of landscapes.
- Deals with all forms of landscape, including natural, rural, urban and peri-urban landscapes, and its measures and policies should be adaptable to each particular landscape.

Explanatory Report to the European Landscape Convention, 2000

2.10. Landscape Policies in the Structure Plan for the Maltese Islands

In recent decades, the Maltese Islands have been developed extensively so that natural landscapes have been replaced by manmade ones, and significant habitats and wildlife populations have been lost to haphazard development projects (MEPA, 1990). In this respect, the Structure Plan for the Maltese Islands was the first significant planning instrument which ensured the planning of development and the protection of environmental resources (Ellul, 2008).

The plan seeks to control development and to resolve conflicts between competing landuses and the limits of a delicate ecosystem (Camilleri, 1993). Its three main objectives are:

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

(MEPA, 1990:13)

The Structure Plan recognizes the importance of landscape protection and comprises some 20 policies which address issues of ‘landscape’, ‘scenery’ or ‘views’ (Mallia and Delia, 2010).

- Designating Rural Conservation Areas, including Areas of High Landscape Value;
- Requiring developments to be blended into their surroundings, especially those occurring in the open countryside;
- Necessitating the use of sensitive landscaping as a major element of development projects. This is particularly relevant to rural areas;
- Encouraging the rehabilitation of abandoned quarries and degraded habitats, reactivation of agricultural land, reuse and conversion of rural buildings which are compatible with their scenic setting and incentives for the relocation of incompatible uses from rural areas;
- Promoting enhancement and restoration of the landscape;

(Mallia and Delia, 2010)

2.11. Landscape Policies in the Local Plans

Local Plans are policy documents that build upon Structure Plan policies and set out more detailed and site-specific guidelines (Mallia and Delia, 2010). Landscape policies within Local Plans seek to:

- Propose further Areas of High Landscape Values;
- Encourage soft landscaping schemes for major projects, afforestation and protection of trees;
- Protect Strategic Open Gaps. These comprise green spaces located between settlements;
- Identify degraded landscapes and priority areas for landscape restoration.

(Mallia and Delia, 2010)

CHAPTER 3

CASE STUDY

AREA

Chapter 3

Case Study Area

3.0. Chapter Outline

This chapter provides a detailed outline of the main physical, cultural and anthropic components of the South Gozo Fault Landscape.

Section 3.1. General Geographic Information

The South Gozo Fault area lies in the southeast region of the island of Gozo and stretches from Ras il-Qala on the east coast to ‘Mgarr ix-Xini’ on the southeast. The area is clearly denoted in Figure 6.1 (Refer to Appendix III). It extends inland to include the localities of Ghajnsielem to the southeast and Qala on the east. The area sits at an elevation of 60m -100m, and its approximate geographical coordinates span from 36°01’11.55”N to 36°02’02.02”N and from 14°16’18.36E to 14°20’08.20”E..

Section 3.2. An overview of physical aspects

3.2.1. Geology and Geomorphology

The area features traces of all five geological formations of the Maltese Islands. In general terms, the stratigraphy consists of exposures of the various members of Upper Coralline Limestone (‘Ghajn Melel’, ‘Tal-Pitkali’, ‘Marfa’ and ‘Gebel Imbark’ Members), Miocene Greensands, Upper, Middle and Lower layers of Globigerina Limestone, Miocene Blue Clay, and members of Oligocene Lower Coralline Limestone (‘Attard’ and ‘Xlendi’ Members). Generally speaking, some strata feature more extensively than others, and in fact Upper Coralline Limestone and Miocene Blue Clay are the two most predominant rock layers within the South Gozo Fault region. Upper Coralline Limestone features on hills overriding clay taluses, which together make up a typical rolling landscape extending throughout most of the region. The Greensands layer is poorly developed and its occurrence in this area is relatively insignificant. The broad slopes underlying these hills are largely covered by Blue Clay, which slumps out from

exposed faces to form taluses. Globigerina Limestone covers numerous shore platforms along the South Gozo Fault coast and is generally responsible for the broad rolling landscape characterizing the region. Oligocene Lower Coralline Limestone is largely prevalent in the ‘Mgarr ix-Xini’ valley on the south-eastern coast of Gozo, where two particular members of this layer, namely the ‘Xlendi’ and ‘Attard’ Members, outcrop within this gorge-type valley.

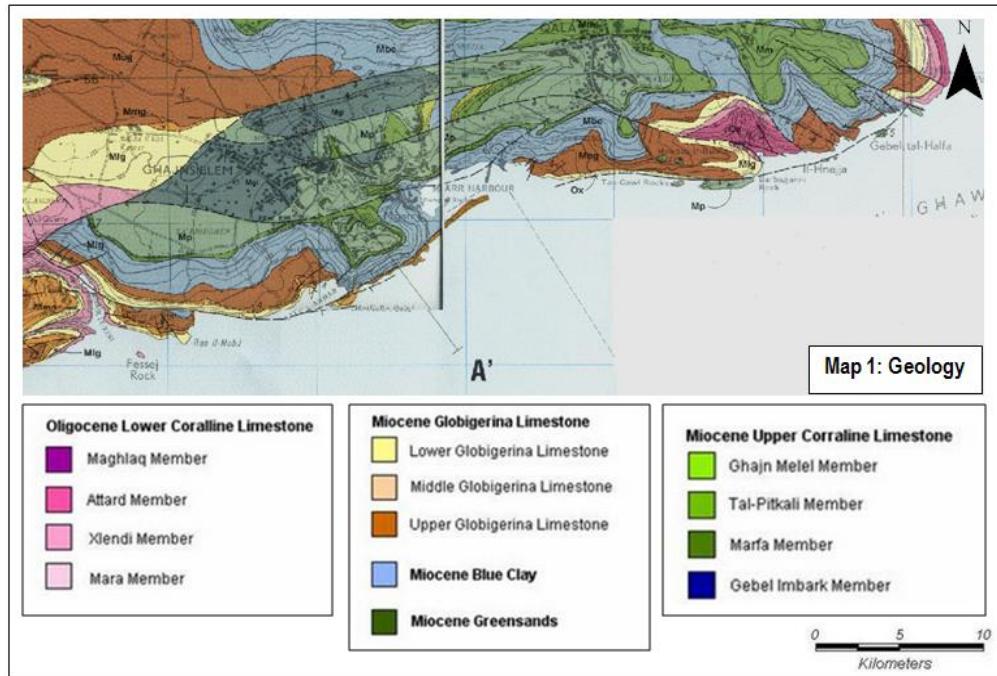


Figure 3.1: Geology of the South Gozo Fault region



Plates 3.1 & 3.2: Blue clay slopes on the W/SW side of Fort Chambray (Right); Lower Coralline Limestone valley sides of ‘Mgarr ix-Xini’ (Left).

Source: Photo taken by author on 9/04/09

The South Gozo Fault is one of the main members of the NE-SW fault system, along with the Great Fault of Malta which bisects the island from Fomm ir-Rih on the southwest coast, to Madliena on the northeast. The area is endowed with a spectacular variety of geomorphologic features, including bays and inlets, caves, cliffs, shore platforms and valleys. Faulting and erosion are the two major influential factors responsible for the present geomorphologic pattern of the South Gozo Fault landscape. Starting from ‘Mgarr ix-Xini’ on the south-eastern littoral, the origin of this gorge-type valley is attributed to the major fault system characterizing the area. It is a steep-sided valley, incised in Lower Coralline Limestone, which runs from the north-west to the south-east to the ‘Mgarr ix-Xini’ inlet.

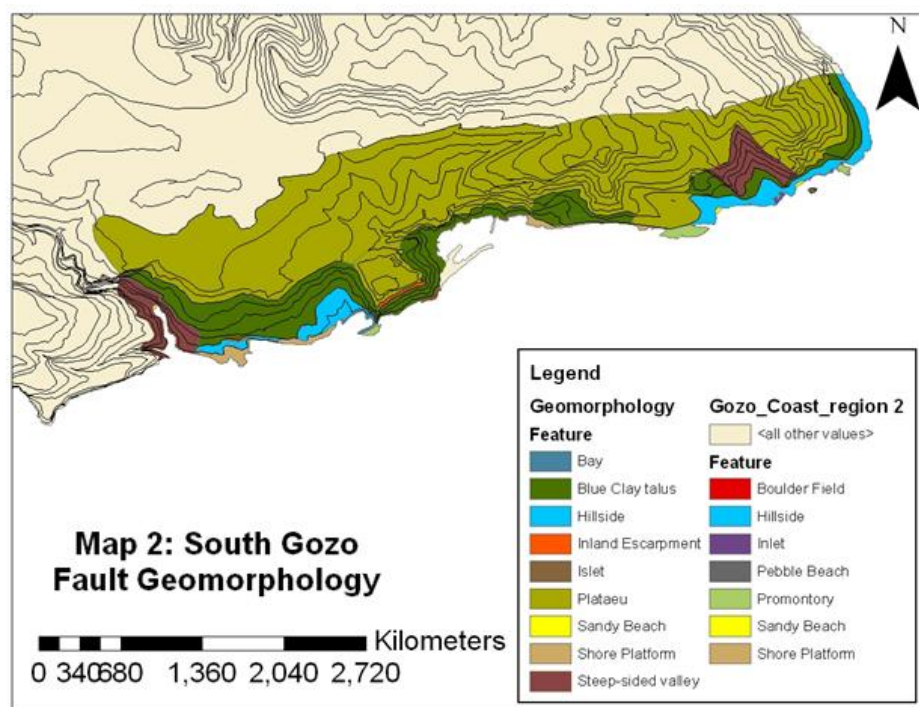


Figure 3.2: Geomorphology of the South Gozo Fault region

Stretching from ‘Mgarr ix-Xini’ to Xatt l-Ahmar Bay is the Ras il-Hobz coast, a low-lying shoreline with a gentle dip to the south. It features a linear rocky beach with a series of sand and pebble beaches at the head of the inlets. ‘Xatt l-Ahmar’ forms one of the main beaches along this shoreline. It is characterized by spectacular clay slopes overlying part of the limestone shore platform which features along the entire shore. A small sandy beach fills up the gap between the ‘tal-Fatma Point’ and the adjacent limestone shore platform. The shoreline linking ‘Xatt l-Ahmar’ to the Mgarr Harbour

consists of a globigerina limestone shore platform backed by a series of clay slopes. The size of the platform decreases as it approaches the harbor. The semi-artificial harbor is backed by an afforested clay slope which represents one of the few afforested areas in Gozo. The south-east Qala coast is predominantly rocky with step gradients and low escarpments. A number of islets lie in close proximity to the shoreline. Most of the coast in this area is relatively inaccessible and undeveloped, except for the pocket beach at 'Hondoq ir-Rummien'.

3.2.2. Hydrology

The South Gozo Fault landscape includes numerous drainage channels, the origin of which is attributed to either stream erosion or tectonism. One of the most prominent valleys within this area is the 'Mgarr ix-Xini' Valley' (*'Wied 'Mgarr ix-Xini'*) The source of this valley stretches further inland, where numerous tributaries combine to form one distinct valley channel. Located on the south-eastern littoral, the 'Mgarr ix-Xini' Valley owes its origin to one of the major fault systems in Gozo (Bianco, [n.d.]. It is a dry river valley (Jaccarini and Cauchi, 1999) which carries water along its water courses solely during the wet season. The source of the main tributary stretches back to Sannat and gives way to two minor tributaries, one of which progresses towards and terminates at the 'Mgarr ix-Xini' inlet.



Plate 3.3: The steep sided 'Mgarr ix-Xini' Valley

Source: Right:

http://www.unipg.it/COSTactionA27/parks-activities/mgarr_ix_xini/images/pages/4.htm; Left: <http://www.maltavista.net/en/list/photo/1252.html>

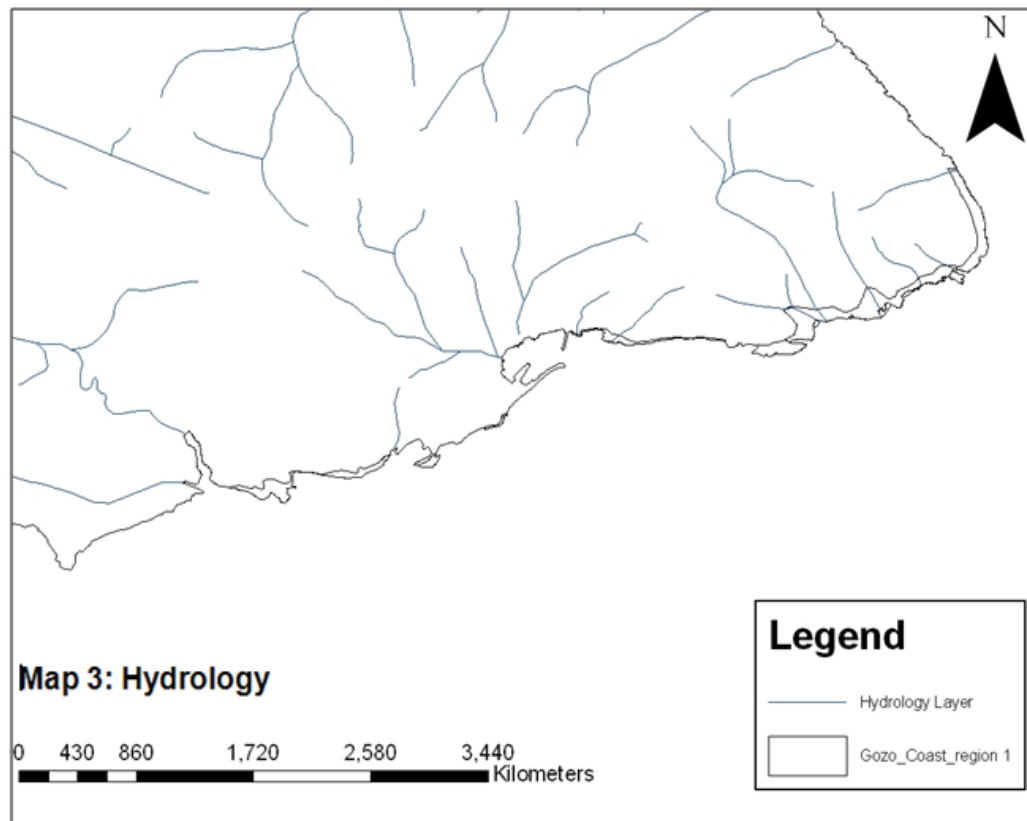


Figure 3.3: Hydrology of the South Gozo Fault region

3.2.3. Soil Cover

The soils of the Maltese Islands have been classified by Lang (1960) into three main groups: Terra Rossa, Xerorendzina and Carbonate Raw soils, and two minor groups: the Complexes and an Association soil. In general, they are all relatively young or immature soils of lithogenic origin. This section will provide a brief overview of the distribution of these soil types based on the map below. The South Gozo Fault landscape features all three main Maltese soil types, together with some traces of soil complexes. In view of the fact that the area is almost entirely covered by Upper Coralline Limestone and Blue Clay, terra rossa and carbonate raw soils feature extensively throughout the region. The map indicates that Terra rossa is predominantly found on plateaus and valley bottoms, while carbonate raw soil covers most of the clay slopes in the area. Outcrops of Xerorendzina soil are significant along the Ras il-Hobz coastline, and to a lesser extent along the south-eastern Qala coast. Its presence coincides with outcrops of Globigerina Limestone. The soil complexes cover along the South Gozo Fault landscape is less

pronounced and occurs along a linear stretch north of the Mgarr Harbour towards Qala, and in small patches elsewhere along the coast.

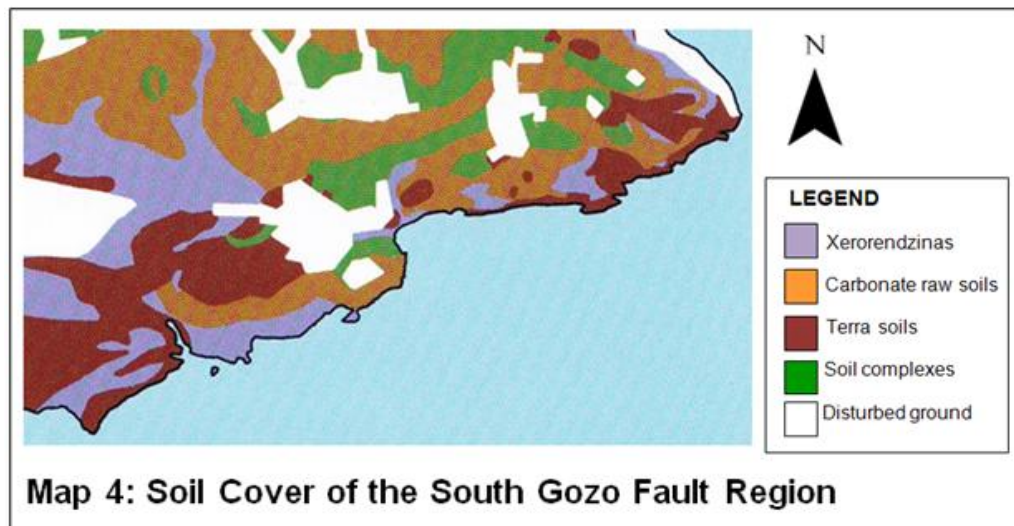


Figure 3.4: Soil Types at the South Gozo Fault region

3.2.4. Ecological Communities

The area features an interesting variety of plant communities, the most predominant of which include maquis, garrigue, steppe and valley communities. Maquis communities are spread along the surrounding clay slopes of Fort Chambray, the valley sides of ‘Mgarr ix-xini’ and patches of abandoned agricultural land on the eastern slopes of Qala (Cassar, 2006). Some its species include large carobs (*Ceratonia siliqua*), the Olive (*Olea europaea*) and the Lentisk (*Pistacia lentiscus*), amongst many others (Cassar, 2010). The top and upper slopes of water courses and significant parts of the foreshore are characterized by garrigue communities. Some its species include Shrubby Kidney Vetch (*Anthyllis hermanniae*), Tree Spurge (*Euphorbia dendroides*) and Mediterranean Heath (*Erica multiflora*) (Cassar, 2006). The region’s valley beds are characterized by steppic communities, components of which include Wild Artichoke (*Cynara cardunculus*), Cape Sorrel (*Oxalis pes-caprae*) and Prickly Pear stands (*Opuntia ficus-indica*).

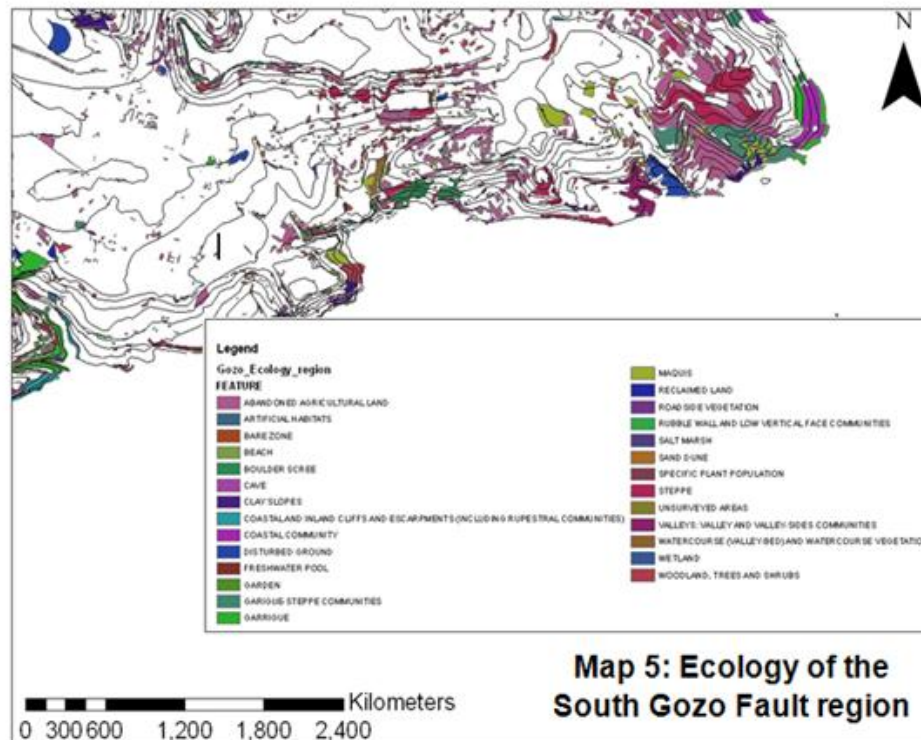


Figure 3.5: Ecology of the South Gozo Fault region

Section 3.3. An overview of anthropogenic influences

3.3.1. Existing structures

3.3.1.1. Settlement Patterns

Urbanization within the South Gozo Fault area is mainly concentrated around Mgarr Harbour and the two main villages of Ghajnsielem and Qala. There is a noticeable difference between past and present settlement patterns within the site under study. Back in 1910, the only settlement structures present within this area were some minor dwellings located along the closest main road network (Unknown, 2010). According to the *Census for Population and Housing* (2005), the populations of Ghajnsielem and Qala have grown between the period of 1901 and 2005, from 1,121 to 2,570 and from 1,219 to 1,616, respectively. As populations expanded, so did the demand for new dwellings, infrastructure and services.

Throughout the years, the South Gozo Fault area has witnessed the development of two villages and a hamlet, together with a marked increase in its number of inhabitants. These villages feature a combined linear and nucleated pattern, as they are both spread along main roads and /or clustered around a central point. It is worth mentioning that like any other place in Malta, this area has seen the gradual introduction of flats or self-contained housing units which have replaced a good portion of the traditional terraced houses. The region has also witnessed the emergence of a new urban genre: the so-called ‘gated community’ or privately governed urban territory. After several attempts of revival and abandonment, Fort Chambray, a fortress dating back to the time of the Order of Knight Hospitallers of St. John, was handed over to a sole shareholder and was transformed into a luxurious holiday complex. The fort serves as a temporary or permanent residence for numerous locals and foreigners residing in or visiting the island.



Plate 3.4 & 3.5: Phase One residential units at the newly developed Fort Chambray
Source: Photo taken by author on 12/05/09

3.3.1.2. Cultural Heritage

I. Fort Chambray

Fort Chambray crowns the ‘Ras it-Tafal’ promontory directly above the Mgarr Harbour. It was commissioned by the Knights of St. John, who had long been considering the idea of building of a new fortification on the island of Gozo which would replace that of the Citadel (Zerafa, n.d.). The site at ‘Ras it-Tafal’ was a good possibility particularly

because it had an abundant supply of water and held a port which housed many of the commercial activities between the islands (Spiteri, 2001). It was Bali' Jacques François de Chambray, a member of the Order's Commission Council of War, who personally offered to finance the entire project (Spiteri, 2001). The 4th of October 1749 marks the day when construction of the fort commenced.

Between 1800 and 1929, Fort Chambray was taken over by the British dominion (Zerafa, n.d.) By 1830, the barracks had integrated a small hospital which served well during the Crimean war (*Ibid*). In 1934 the fort was used as a lunatic asylum, accommodating a mere 200 chronic patients (Bezzina, 2002). The pre-1971 Government of Malta proposed plans to develop the fort into a tourist establishment which would then hold a 320-bed hotel (Unknown, 2010). In 1979 mental patients were transferred elsewhere and the fort was immediately dedicated for tourism purposes (*Ibid*). In 1987 it was passed on to Mr.Zammit Tabone who headed Fort Holidays, owning a capital of just 5,000 Maltese Liri and no employees (*Ibid*).

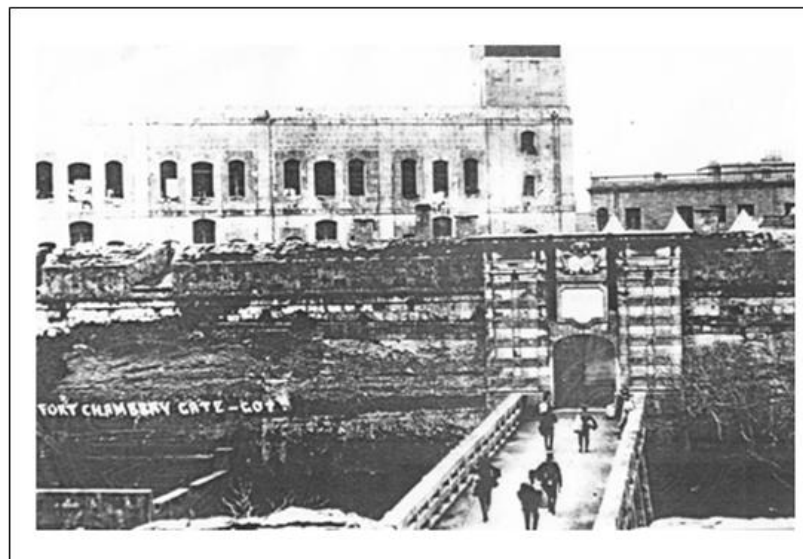


Plate 3.6: Fort Chambray main gateway during the 1920's
Source: Bonello, 2007

The year 1993 marks the new era of Fort Chambray, as permission to develop the fort was given to Fort Chambray Development Limited under a 99-year emphyteutical grant (Unknown, 2010). The company was headed by Robert Memmo, and owned a 51% share of development, the rest of which was owned by the government (*Ibid*). Several

plans were formulated, but due to numerous problems the project failed as it ran out of funds (*Ibid*).

Today Fort Chambray is owned by the Gozitan businessman Dr. Michael Caruana and his family. According to the new agreement, the family is the sole shareholder of the project. The project was divided into numerous phases: Phase 1 consisted of the construction of 80 apartments and villas facing South-east, and was completed in the beginning of 2007 (Fort Chambray Development Ltd, n.d). These units were immediately launched on the market. Phase 2 will consist of an additional number of villas and apartments overlooking the North-western area, while Phase 3 will seek to transform the Knights Barracks and polverista into commercial outlets and construct an additional 200 residential apartments, together with 100 bed boutique spa hotel (*Ibid*).

II. 'Mgarr ix-Xini' Tower

The 'Mgarr ix-Xini' tower guards the entrance of the bay from which it derives its name. The famous Turkish raid of 1551 instigated the building of the tower which would safeguard this inlet (Unknown, 2010). The Order's engineer, Mederico Blondel, proposed the erection of a tower at the mouth of the 'Mgarr ix-Xini' valley, which would render the best service to the inhabitants of the Xewkija hamlet and the entire south and southeastern littoral (Sammuto-Tagliaferro, 1993). The tower has two floors of one room each, measuring approximately 15.5 feet by 12 feet (*Ibid*). It was managed by a castellan and a professional bombardier, both supported by the 'Universita' (*Ibid*).

In 1950, the tower suffered extensive damages and soon after the defense system of this part of the island started to weaken (Sammuto-Tagliaferro, 1993). In 1978 the tower's seaward façade was renovated, but the overall structure of the tower was still deteriorating (*Ibid*). Minor repairs were carried out by 'Fondazzjoni Wirt Ghawdex', but the extent of the damage was beyond repair. Several years later 'Wirt Ghawdex', under the auspices of the Ministry for Gozo, embarked on a three-phase assignment to restore the 'Mgarr ix-Xini' tower (Wirt Ghawdex, 2009). Phase one consisted of the restoration of the south-east corner of the tower, together with the re-construction of the missing parapet walls and rooms at roof level and the replacement of the extensively eroded façades of the tower (*Ibid*). The second phase sought to reconstruct the tower's internal

floors, walls and missing spiral staircase (*Ibid*). However, this phase was interrupted by a vandal attack on the premises. The third phase was successfully completed in 2008 and this sought to repair damages from the vandal attack and to install apertures to secure access to the inside of the tower (*Ibid*). The final two phases saw the renovation of the drawbridge, which was effectively completed in 2009 (*Ibid*).



Plate 3.7: 'Mgarr ix-Xini' tower at the mouth of the 'Mgarr ix-Xini' valley

Source: Photo taken by author on 12/09/2010

III. St. Anthony's Battery

After years of absent defense work to safeguard the entrance to the North Comino Channel, the Grandmaster Antonio Manoel de Vilhena decided to build, at his own expense, a Battery at 'Ras il-Qala'(Sammut-Tagliaferro, 1993). It is one of the remaining three coastal Batteries of Gozo and Comino, though in poor condition. Construction of the battery was completed by the end of 1732, but soon after several parts of the battery had to be repaired (*Ibid*). The battery holds a ditch and main gate which features Grandmaster Manoel de Vilhena's coat-of-arms. Located at the very centre of the battery is a blockhouse structure. Back then, this probably served to store munitions. It is interesting to note that nearly all batteries were left unguarded for most of the year and were only fully-manned during a threat of an invasion (Spiteri, 2001).

3.3.1.3. Port Facilities

I. Mgarr Ferry Terminal

The port of Mgarr is the only port on Gozo and sees to all the ferries operating between Malta and Gozo, as well as providing berths for a fishing fleet of some 180 to 200 vessels and 200 berths for yachts and motor boats (MMA, 2007). The building of the Mgarr Ferry Terminal was assigned to the Malta Maritime Authority and work on the project commenced on September 2002. Its main aim was to provide support facilities for the Gozo Channel ferry service at the Mgarr Harbour (BCAC, 2007). The project was divided into three main phases: Phase A saw the construction of an underground car park with a capacity of 175 vehicles, the construction and finishing of a car marshalling area catering for 188 vehicles, new ramps, a switch room complex and an exit road which links the ferry vessel exit to the port entrance (Unknown, 2006); Phase B consisted of a gangway construction on Berths 1 and 2, the actual building of the terminal, and other roadworks (Ibid).



Plate 3.8: Mgarr Harbour Ferry Terminal Development
Source: [www.ghajnsielem.com /places/mgarr.html](http://www.ghajnsielem.com/places/mgarr.html)

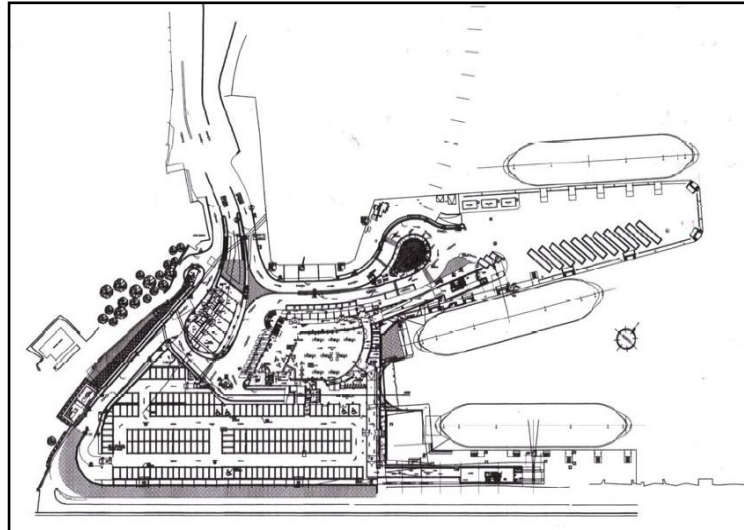


Figure 3.6: Mgarr Harbour Ferry Terminal Plan

Source: MMA, 2007

II. Mgarr Yacht Marina

Yachts and motorboats entering the Mgarr Harbour are moored in the eastern side of the port, where access is provided by pontoons. The Marina holds 208 berths, 30 of which are serviced upon request (MMA, 2009). Recently the Marina was handed over to Harbour Management Ltd, a private entity which currently operates part of Ta'Xbiex yacht marina and which has signed a 25-year agreement with the government for the management of the Mgarr Yacht Marina (Borg, 2010). The company will be responsible for the replacement of the existing pontoon and the upgrading of facilities (Ibid).

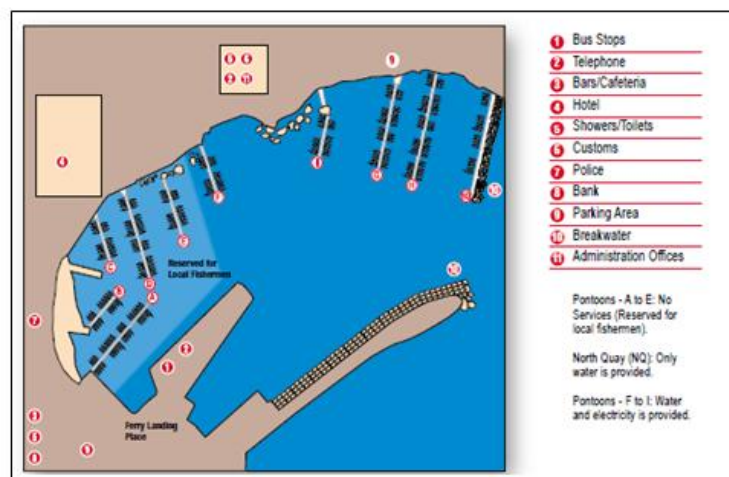


Figure 3.7: Mgarr Yacht Marina Plan

Source: MMA, 2009



Plate 3.9: The Mgarr Yacht Marina
Source: Photographs taken by author on 12/09/2010

3.3.1.4. Recreational Opportunities

The South Gozo Fault landscape features numerous outdoor recreational opportunities. It holds three of the most spectacular bays in Gozo, frequented by countless individuals every year. Each bay provides its own unique environment, with several pleasant swimming spots and ample space for sunbathing. Some even offer unique diving attractions which serve to draw a good number of enthusiasts to this region. The hilly terrain overlooking ‘Xatt l-Ahmar’ bay is ideal for hiking and off-roading activities, while numerous individuals have been spotted ‘down-sailing’ along the steep valley sides of ‘Mgarr ix-Xini’. Hondoq ir-Rummien is particularly known for its water sports activities, whereas activities like camping, picnicking and barbequing are common for all three bays. Mgarr Harbour offers a different sort of recreation. Some individuals visiting the island often choose to spend their nights at the 5-star hotel establishment overlooking the harbour. Others visit the area for its fine restaurants and rich Mediterranean cuisine. The area is also known for its nightlife, as numerous Gozitans crowd its local bars during the weekends. It is home to the ‘Imperial Yacht Club’ which seeks to attract all those interested in sailing and power yachting. Additionally, the area is still popular with fishing enthusiasts who often choose to spend their evenings fishing within the vicinity of quays and pontoons.

3.3.1.5. Infrastructure

I. Sewage Treatment Plant at Ras il-Hobz

For many years the Maltese Islands were served by five main sea outfalls, two in Malta and three in Gozo. During this time, a mere 10% of the total sewage production was treated (MRI, 2002). The treated effluent was used for irrigation purposes, while the remaining untreated effluent was dumped at sea with a detrimental impact on the marine environment (*Ibid*). As a party to the 1976 Barcelona Convention, Malta had to urgently implement the Sewerage Master Plan (*Ibid*). The plan was to build a sewerage treatment plant at Ras il-Hobz, which until then was the main outfall in Gozo. Located at the end of the sewerage system, Ras il-Hobz was an ideal location whereby pumping and installation costs would be kept to a minimum. The plant occupies an area of 0.9 hectares of agricultural land, with tanks and buildings stationed within a rectangular compound contained by a masonry wall (*Ibid*). The total expenditure of the project reached a staggering 7.2 million euro, half of which was co-financed by European Union (Gatt, 2008).



Plate 3.10: Sewage Treatment Plant at Ras il-Hobz

Source: Photo taken by author on 24/10/2010

3.3.2. Proposed Development Plans

3.3.2.1. Proposed Yacht Marina at Hondoq ir-Rummien

According to PA 3798/02, the development proposed at Hondoq ir-Rummien seeks to construct a destination port comprising a hotel, a yacht marina and a tourist village. The non-technical summary for the project's environmental impact statement (EMDP, 2009) provides a detailed description of the proposed marine development. The plan is to construct a 150-berth marina within a disused quarry, enabling the dry storage of boats in an enclosed area. This will be accompanied by a five-star 170 room hotel establishment, some 200 multi-ownership units, 60 self-catering facilities, 25 self-catering villas, an underground car parking facility with a capacity of 1200 cars, 10 commercial shops, 5 catering establishments and other supporting buildings.

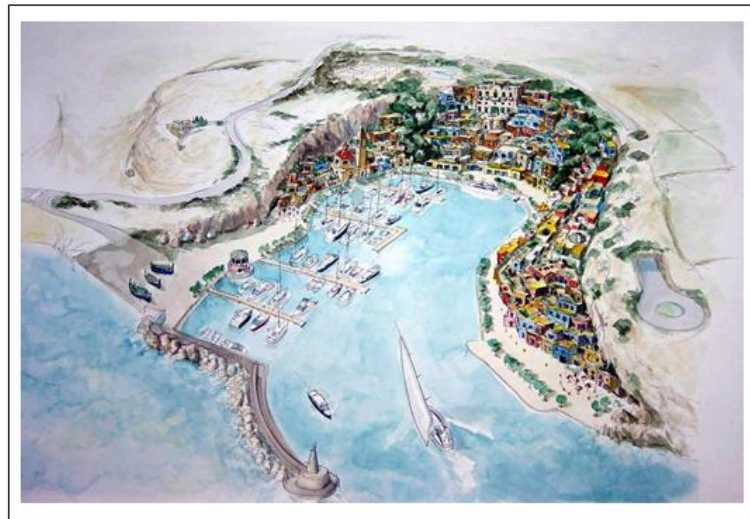


Figure 3.8: An artistic impression for Option B of the proposed marina development project at Hondoq ir-Rummien

Source: EMDP, 2009

The report presents several arguments in relation to the choice of Hondoq ir-Rummien as the most suitable location for the proposed marina development. Initially, three particular sites were considered: the Mgarr Harbour, Marsalforn and Hondoq ir-Rummien. The first location was immediately abandoned since the port is already overwhelmed with activities. In this respect, any additional commotion might impair the ferry operation. The site at Marsalforn could only accommodate a very small marina, and moreover, the area is one of ecological importance. In this respect, Marsalforn was not the ideal site for the development of a marina. The report states that the site at

Hondoq ir-Rummien is advantageous in that the proposed marina will be stationed within a disused quarry further inland and hence its impact on the marine environment will be kept to a minimum.

It is worth mentioning that this project is vehemently opposed by different environmental groups who claim that the project will eventually destroy the remaining few stretches of agriculture, while at the same time restricting access to land and coast (Cutajar, 2007). Local NGO's are strongly objecting to developers' plans to construct a hotel establishment in an Out of Development Zone (ODZ), claiming that such development violates Structure Plan policies (FAA, 2010; FAA and RA, 2010). They argue that instead of promoting public access around the coastline, the project will actually transform 'Hondoq' into a 'tourist ghetto', thereby reducing the area available to the general public (FAA, 2010). The environmental NGO's maintain that the project will obliterate the protected *Posidonia* meadows, and that the proposed National Park at Hondoq, together with activities such as organic farming, nature study and improved beach facilities will only lead to more development (FAA and RA, 2010). The decision still remains in abeyance.

CHAPTER 4

METHODOLOGY

Chapter 4

Methodology

4.0. Chapter Outline

The scope of this chapter is primarily to outline the methodological approach taken to investigate how both existing and proposed development projects have impacted, or will impact, the landscape's character and value. In general terms, this approach will comprise three distinct stages: (i) landscape characterization, (ii) an assessment of landscape value, and (iii) an assessment of likely changes in landscape character and value given a scenario of increased development.

This chapter will provide a detailed overview of the methods used for investigation, the rationale behind choosing these methods, the research design, the analytical procedure adopted for this study and finally the limitations of the study.

4.1. Landscape Characterization

One of the main approaches to this study is based on the Landscape Character Assessment Guidance for England and Scotland (Swanwick, 2002a). Landscape character is often considered as *“the land's physiognomic profile in terms of climate, geomorphology, topography, soils and the associated natural vegetation and land use”* (Wascher, 2006). Landscape Characterization, the process of obtaining a record of the character of a landscape, is concerned with an identification of the basic structures of its biophysical components and cultivation patterns (Wascher, 2003). It is a tool which allows landscape character to be understood, explained and described in a transparent and robust manner (CBA, 2008). The landscape character assessment for the South Gozo Fault landscape seeks to:

- Identify the main environmental and cultural features of the landscape.
- Divide the landscape into distinct, recognizable and common character.
- Understand the impact of development on the present and future character of the landscape.

In summary, the main stages involved in this study process are: (i) Desk study; (ii) Field survey; (iii) Classification and description. The following section will provide a brief description for each of the three stages of this study.

4.1.1. Stage 1: Desk Study

This stage involved a review of the relevant background reports and mapped information which were needed to identify areas of common character within the South Gozo Fault landscape. The first phase was the ‘information gathering phase’ and this consisted of a thorough examination of existing landscape designations, relevant policies, literature related to the landscape’s physical and human components, and also landscape character assessment methods of England and Wales.

The second phase was the ‘map analysis and preparation of map overlays phase’. Its main aim was to provide a good understanding of the main natural and human components of the landscape. In this respect, geospatial data covering both natural and cultural/social factors of the landscape were a major pre-requisite for this study. Data layers for geology, hydrology, soil cover and ecology were provided by the Malta Environment and Planning Authority, while data for land-use and geomorphology were directly surveyed from the field. The main outcome of this phase comprised a series of maps denoting each natural and human component of the South Gozo Fault landscape, together with another map which combined all the different layers and identified areas of common character.

4.1.2. Field Survey

This stage consisted of a ground-truthing exercise which verified and built upon the findings of the desk study. The rationale behind conducting this survey was to collect the information needed to describe the character of the landscape, facilitate the division into character areas and to update and expand the database of desk study information. The survey was undertaken at four key viewpoints using the 9-S approach to landscape appraisal.

Variable	Description
Spatial dimension	Topography
Stratigraphy	Exposures
Slope	Angle, orientation, contours
Soil cover	Type, texture, moisture, salinity and depth
Species	Biodiversity/ biotopes, communities / assemblages and status
Stakeholders	Interviews with key actors
Sustainability	Or lack of it – examine land-use practices; identify conflicts of use
Stress factors	Pressures, impacts and risks
Susceptibility	Vulnerability

Table 4.1: Field Survey: 9-S approach to landscape appraisal

Source: Cassar, 2010

This ‘comprehensive interdisciplinary scheme’ (Cassar, 2010: 69) was used to investigate the wide range of natural and anthropogenic features present and to identify pressing conservation issues within the South Gozo Fault landscape. The approach comprised a physiographic survey of the landscape, together with an assessment of current land-use practices and of the conflicts, impacts and risks associated with spatial utilization and resource use. The assessment was an integral part of the characterization process, as it contributed to a detailed description of the landscape and provided information on characteristics which are often hard to identify from a desk study. Photographs taken at each viewpoint were an essential part of this field survey. They provided an excellent record of the key attributes recorded during the survey and served as a good point of reference once the survey was complete.

4.1.3. Stage 3: Classification and Description

“Landscape classification is central to landscape character assessment and is concerned with the process of dividing landscape into areas of distinct, recognizable and consistent common character and grouping areas of similar character together” (Swanwick, 2002a).

The main purpose of this stage was to delineate landscapes with similar physical and cultural attributes (Conrad and Cassar, 2010). One of its main requirements was to establish landscape patterns, often the result of the interactions between natural and

human influences. Given that the results for the field survey were comparable to the outcomes of the Landscape Assessment Study (MEPA, 2006) conducted by the Malta Environment and Planning Authority, this study utilizes Landscape Character Map of Gozo drawn up by the same authority. The figure below illustrates the derivation of the landscape character map the combination of different map layers.

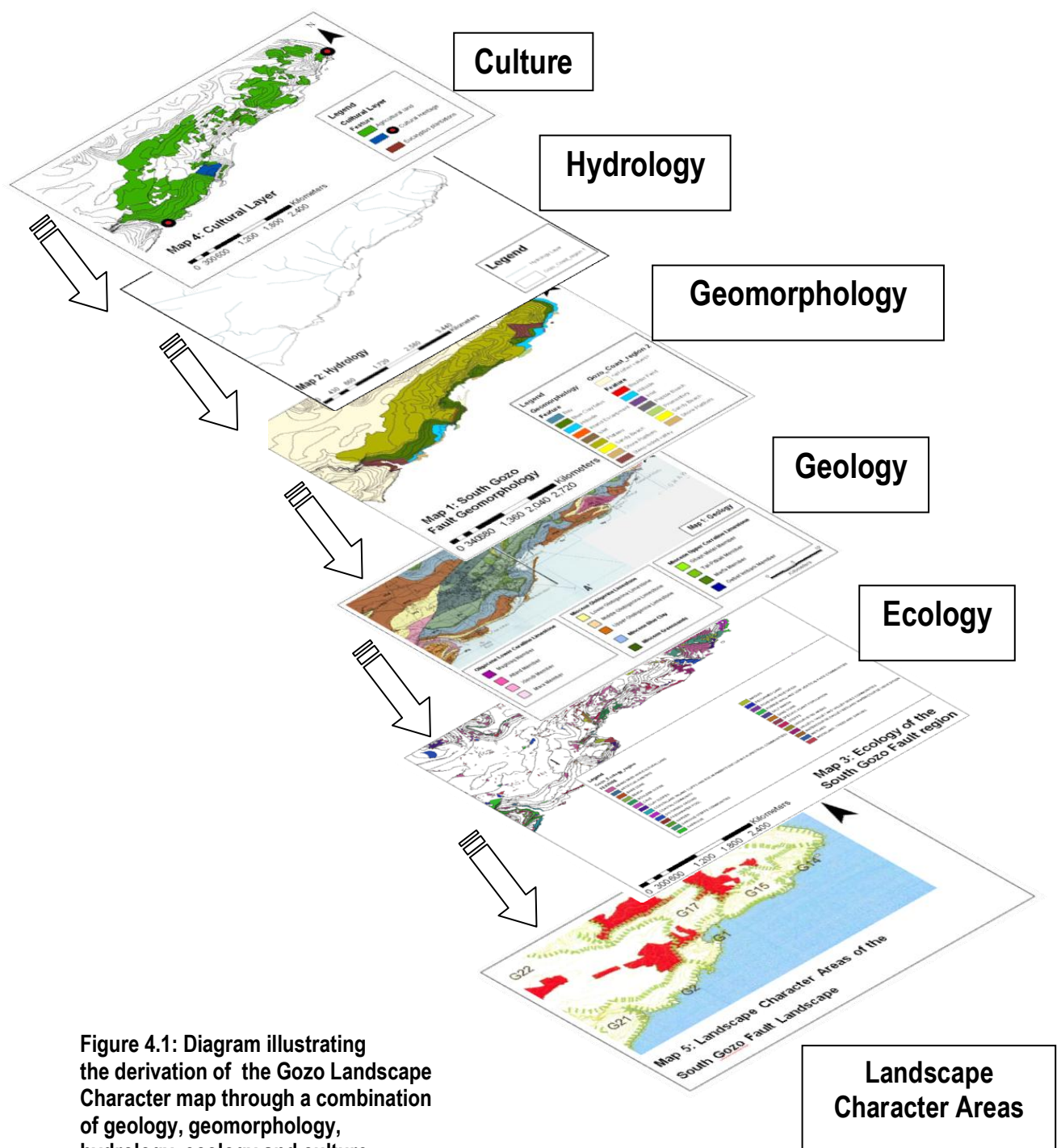


Figure 4.1: Diagram illustrating the derivation of the Gozo Landscape Character map through a combination of geology, geomorphology, hydrology, ecology and culture.

4.2. Landscape Value Assessment

The European Landscape Convention defines landscape as “*an area, as perceived by people*” (Council of Europe, 2000). In recent decades, much emphasis has been placed on public perception of landscape values in contrast to traditional methods based solely on expert assessment. Gregory Brown and Christopher Raymond are amongst the strongest advocates of stakeholder participation in judgments of value. During the past few years, Brown has included spatial measures of perceived landscape values and other place attributes in five different surveys of the Alaskan public, and another study on the Kangaroo Island of South Australia with the aim of combining local values and perception with biophysical land information (Brown and Raymond, 2006; Brown and Reed, 2003; Brown, 2006; Brown and Raymond, 2007b).

This Landscape Value Assessment study was modelled after Raymond and Brown’s work on Conservation and Tourism Planning in the Otways region of Victoria (Raymond and Brown, 2006). One of their main tasks was to map landscape values and development preferences among residents and non-residents of the Otways. They asked participants to rank features using mnemonically coded sticker dots representing 12 different landscape values. The results were eventually digitized using Arc GIS to generate a series of density maps which denote the spatial distribution of landscape values. The next section will seek to outline the methodological approach for this particular study, based on Raymond and Brown’s assessment of landscape values in the Otways region.

4.2.1. Methods

Perceived landscape values of the South Gozo Fault area were measured by means of a survey. Questionnaires and semi-structured interviews were used to gather perspectives on the value of the landscape. The rationale behind choosing the survey as the prime research method is that a substantial amount of information can be gathered from a considerable population size. Developing a sampling strategy involved a thorough consideration of the full range of people with local knowledge of the study area.

Questionnaires were distributed to residents and non-residents of the South Gozo Fault area. Resident respondents were those residing within the villages of Qala and

Ghajnsielem, while non-resident respondents were those inhabiting other Gozitan villages outside the South Gozo Fault. The two categories cover both Gozitan respondents, as well as Maltese individuals who are permanently residing within or outside the South Gozo Fault. A total of 400 questionnaires were distributed amongst the two categories using a snowball sampling strategy. This sampling method has several advantages (Kowald and Axhausen, 2010; Browne, 2005; Coleman) and provided several useful benefits for this research including effectiveness and low cost. The issue of bias is one of the main constraints associated with this sampling method (Magnani *et al.*, 2005; Wegner, 2007; Faran, [n.d.]; Katz, 2006), and thus such a sample risks being unrepresentative of the whole population (Gray *et al.*, 2007). Responses were received from 109 individuals. This gave an overall response rate of 27%.

The questionnaire contained an introductory letter highlighting the purpose of the research, together with a series of questions in four main sections (Refer to Appendix I): (1) Respondent familiarity and attachment to the South Gozo Fault landscape; (2) Value perception of the physical and anthropic components of the landscape; (3) The evolution of the landscape in 10-15 years time; (4) Respondent characteristics. The first section solicits information about the respondents' knowledge and connection to the South Gozo Fault landscape. The second one deals directly with public perception of landscape value. It is important to mention that this study adopts the landscape value typology developed by Raymond and Brown (2006) in their study of the Otways region of Victoria. The table below highlights the eight values used for this study:

Value	Definition
Aesthetic	Places with attractive scenery, sights, smells or sound.
Economic	Places with economic benefits such as agriculture, tourism or commercial activity.
Recreational	Places with outdoor recreation opportunities.
Learning	Places with opportunities to learn about the environment.
Biological diversity	Places with a variety of plants, wildlife, aquatic life or other living organisms.
Intrinsic	Places with special values for their own sake.
Heritage	Places with a natural and human history.
Future	Places which allow future generations to know and experience them as they are now.

Table 4.2: Landscape Value Typology

Source: Raymond and Brown, 2006

Respondents were asked to rate the overall value and that of the specific components of the South Gozo Fault landscape. Instead of using coded sticker dots for an identification of landscape values, respondents were given a matrix which listed different landscape components for each value. Respondents were asked to rank each element using a 1-5 ranking scheme for each of the eight landscape values, whereby a class one value signified a low value and a class five value denoted a relatively higher significance. Another question tackled their opinions regarding the extent to which the South Gozo Fault area is developed, or rather whether the area actually needs more port facilities, hotel establishments, dwellings, entertainment facilities, infrastructure and the like. The third section sought perspectives on resident and non-resident development or no development preferences. A matrix featuring a list of possible future development options for the South Gozo Fault area was drawn up, whereby each individual had to state his/her level of agreement vis-à-vis the different development options. Finally, respondents were asked to express their opinions regarding the evolution of the landscape in 10-15 years time, specifically whether landscape values will improve, worsen or be left unchanged.

Semi-structured interviews were conducted with 12 key respondents from seven different entities, including the Malta Environment Authority, the Ministry for Resources and Rural Affairs, the Malta Tourism Authority, the Ministry for Gozo, the Environment Institute, two Local Councils and two Non-Governmental Organizations, including Bird Life Malta and Nature Trust. The interview held questions in three main sections (Refer to Appendix II): (1) Landscape character and condition; (2) Landscape value; (3) Change in character and value given a scenario of increased development. The first part sought to gather perspectives on the landscape's character and condition, the extent to which the region is developed, the impact of further development on the landscape's character and condition and the evolution of the landscape's character during the past twenty years. The second section deals with the respondents' perceptions of the impact of development on landscape value and the overall value of the landscape in its current level of development. Finally, the last section inquires about the capacity of the landscape and the impact of further development on the landscape's character and value. In the end, respondents are asked to share their suggestions as to the ways and means by which the character and value of the landscape can be maintained.

4.2.2. Data Analysis

Three main statistical methods are used to generalize information obtained from the sample:

- The **Chi-Square test** is used to determine the existence of a significant association between two categorical variables in a two-way contingency table (Camilleri and Cefai, 2009). The null hypothesis specifies that there is no relationship between the two variables and is accepted when the P-value exceeds the 0.05 level of significance.
- **Multiple linear regression** is used to model the relationship between two or more categorical variables. This technique allows a researcher to make predictions of the dependent variable based on several independent variables (Kerr et al., 2002).
- The **One-way ANOVA** test is used to compare the mean values of a quantitative dependent variable across the categories of an independent variable (Camilleri and Cefai, 2009). The null hypothesis specifies that the actual mean values of the quantitative dependent variable are equal across the different levels of an independent variable. Using a 0.05 level of significance, the null hypothesis is accepted when the P-value exceeds the 0.05 criterion.

4.3. Assessing change in character and value given a scenario of increased development

This assessment was based solely on semi-structured interviews with numerous key respondents from different entities. The questions focused on the respondents' views of the impact of possible future development options on the character and value of the South Gozo Fault landscape.

4.4. Limitations of this study

- The snowball sampling strategy has many limitations. The method is not as reliable as probability sampling techniques in that respondents are chosen subjectively and the risk of sampling / selection bias is enhanced.
- Due to the intensive nature of the landscape values survey, the respondent population was inclined towards knowledgeable and educated individuals.
- The issue of precise and correct answers in surveys can be problematic, as results may risk being unrepresentative of the whole population.
- Church structures were not assessed for their perceived landscape value due to an oversight.

CHAPTER 5

RESULTS &

ANSLYSIS

Chapter 5

Results and Analysis

5.0. Introduction

This chapter presents the results for each of the three assessments of this study. It is divided into three main sections: (1) An overview of the key findings obtained from the Landscape Character Assessment, including a detailed description for each character area; (2) A graphical and statistical analysis of the results obtained from the landscape values questionnaires; (3) An examination of the changes in landscape character and value given a scenario of increased development, based on interviews with a number of key respondents.

5.1. Landscape Character Assessment

5.1.1. Introduction

The human and physical influences of the landscape have combined to create the distinctive character of the South Gozo Fault landscape. The region includes within it six distinctive character areas (Refer to Figure 5.1):

Landscape Character Areas	Description
G21. Mgarr ix-Xini Valley	Steep-sided valley featuring a variety of ecologically significant plant communities. Development is limited to a few residential units on its upper slopes.
G2. Ras il-Hobz Coast	Low-lying coast featuring extensive plains of agricultural land. Small structures are scattered along the area.
G1. Mgarr Harbour Area	An extensively development semi-artificial port and fishing hamlet characterized by a variety of uses and activities.
G14. South East Qala Coast	Gently sloping rocky coastline characterized by a variety of geomorphologic features. Development is absent from this area.
G15 & G17. Eastern Qala Slopes	Moderately sloping land with mixed patches of cultivated and abandoned land. Development is absent from this area.
G22. Xewkija Plains	Relatively flat area characterized by limited natural vegetation, high congestion and pollution levels and rural development.

Table 5.1: Landscape Character Areas of the South Gozo Fault region

Each discrete geographical unit contains similar physical and cultural attributes. It is important to mention that the outcomes of this Landscape Character Assessment are comparable to those of the Landscape Assessment Study conducted by Malta Environment and Planning Authority in 2004. In this respect, this study will utilize the Landscape Character Map of Gozo drawn up by the Environment and Planning Authority. The ecological description of each character area is adapted from the ‘Ecological Appraisal’ study conducted by Dr. Louis F. Cassar in his “Landscape Approach to Conservation: Integrating Ecological Sciences and Participatory Methods”, 2006. Descriptions for the remaining criteria are based on field surveys conducted by the author. The following section will provide a detailed overview for each of the six landscape character areas based on the 9-S approach to landscape appraisal (Cassar, 2010).

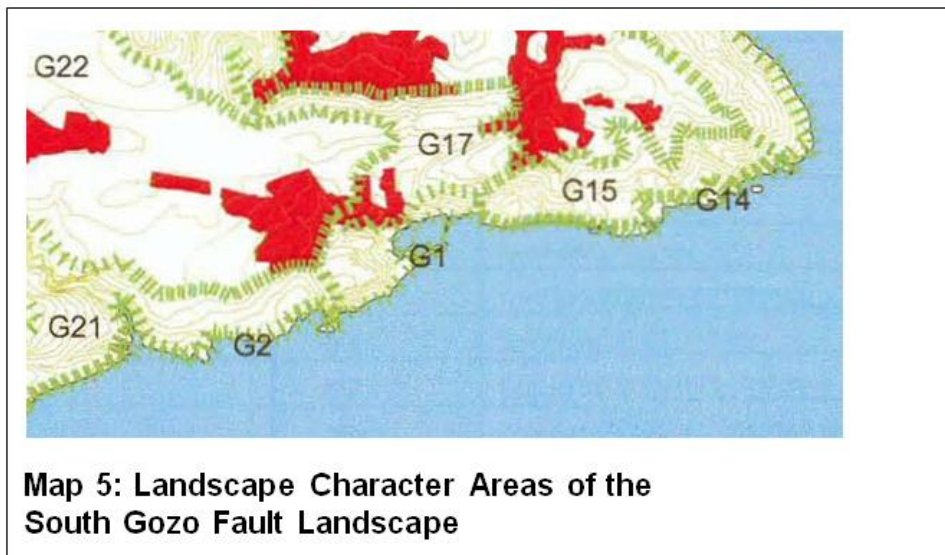


Figure 5.1: Landscape Character Map of the South Gozo Fault region
Source: (MEPA, 2006)

5.1.2. Landscape Character Areas of the South Gozo Fault landscape

5.1.2.1. Mgarr ix-Xini Valley (G21)

- *Spatial Dimension*

The ‘Mgarr ix-Xini’ Valley lies to the south-eastern coast of Gozo, the boundaries of which are characterized by the fault which gave rise to the existing valley system. The

steep-sided valley bisects the landscape from north-west to south-east, incising a deep gorge into the terrain (Cassar, 2006).

- *Stratigraphy*

The area features traces of Oligocene Lower Coralline Limestone ('Attard' and 'Xlendi' Members) and the Miocene Globigerina Limestone (Upper, Middle and Lower Globigerina). The former rock layer outcrops in the valley proper and on its slopes, while the latter one is mainly concentrated along the moderate slopes of the eastern sector.

- *Slope*

The 'Mgarr ix-Xini' Valley is characterized by steep slopes ranging from 10 to 70 meters above sea level. The area is generally inclined towards the direction of the valley.

- *Soil Cover*

Three main soil types are present in the Mgarr ix-Xini Valley. Terra Rossa soil features on Lower Coralline Limestone outcrops, namely on the valley sides and bottom and on the western part of the valley. Xerorendzina and Carbonate raw soils occur where Globigerina Limestone and Blue Clay surface. The former features in both western and eastern segments, while the latter is restricted to the north-eastern part of the valley.

- *Species*

The Mgarr ix-Xini Valley is colonized by a mosaic of Valley and valley-side communities, Garrigue, Steppe and Maquis communities. The first two communities thrive on its sides, while the latter one characterizes its bed. The upper sector of the valley proper is colonized by Great Reed (*Arundo donax*), Fennel (*Foeniculum vulgare*) and, to a lesser extent, Bramble thickets (*Rubus ulmifolius*), while the downstream sector hosts thickets of Bramble (*Rubus ulmifolius*), carobs (*Ceratonia siliqua*) and figs (*Ficus carica*). A garigue community occupies the top and upper slopes of this water-course. The vegetation comprises dense thickets of Tree Spurge (*Euphorbia dendroides*), Olive-leaved Buckthorn (*Rhamnus oleoides*), the wild olive (*Olea europaea*) and Yellow Germander (*Teucrium flavum*), amongst others (Cassar, 2006).

- *Sustainability*

In general, the ‘Mgarr ix-Xini’ Valley retains much of its original state and remains relatively untouched. Development is limited to the upper part of the valley which houses a small number of residential units. In this respect, local plan policies seek to:

“control development in the lower part of the plateau to protect the wealth of archaeological, scenic and ecological heritage at the top of the plateau and to sensitively merge the resultant development with the surrounding landscape” (MEPA, 2006).

The valley supports a rich variety of ecologically significant plant communities. In 2001, it was scheduled for its unique geological, ecological and landscape qualities, even though it was missing from the Natura 2000 network established by the Malta Environment and Planning Authority (MEPA, 2006). In 2005 a permit was issued to develop Mgarr ix-Xini into a regional park with the aim of protecting, safeguarding, sustaining and enhancing the natural and cultural attributes of the landscape (Bianco, [n.d]).

- *Stress Factors*

Mgarr ix-Xini is one of the most popular recreational spots on the island. Its distinctive rural character and close proximity to the sea attract numerous local and foreign individuals every year. Bathers, hikers and divers are amongst the most common users of this area. Seasonal increases in local and visitor populations can have serious implications for the area’s natural environment. Moreover, the eastern sides of the valley are occupied by numerous agricultural land holdings. Intensive agricultural practices , in particular the use of chemical fertilizers, can have a severe impact on both sea and ground water quality.

- *Susceptibility*

The area is particularly susceptible to soil erosion and land degradation. Pockets of abandoned land with damaged rubble wall structures are especially prone to erosion.

5.1.2.2. *Ras il-Hobz Coast (G2)*

- *Spatial Dimension*

This character area occupies the whole coastal stretch from ‘Mgarr ix-Xini’ to x-‘Xatt l-Ahmar’. In general terms, it is a low-lying coast with a gentle dip towards the South. A linear rocky beach dominates a good portion of the coastline, except for a few patches of sandy and pebble beaches at the head of its inlets.

- *Stratigraphy*

Upper, middle and lower Globigerina Limestone cover the entire ‘Ras il-Hobz’ coastline. All three layers cover the entire shore platform and lower parts of the hillside in this area. A Blue Clay talus outcrops immediately above the Upper Globigerina Limestone layer. It extends throughout most of the ‘Ras il-Hobz’ coastline and gives way to a series of Blue Clay slopes at the very end of this character area.

- *Slope*

The elevation of this character area varies from 10 to 60 meters and its slope generally faces southeast to south.

- *Soil Cover*

The pedological characteristics of this area are in line with its stratigraphy. Carbonate raw soil occurs in areas of Blue Clay, while Xerorendzina soil is found along the entire stretch of Globigerina Limestone.

- *Species*

This area is predominantly covered by agricultural land, but there are some patches of steppic, garrigue, wooded and ‘rdum’ communities. The coastline at ‘Tal-Fessej’ is colonized by a stretch of Golden Samphire (*Inula crithmoides*) and Sea Squill (*Urginea pancration*), while the globigerina limestone foreshore is colonized by a maritime garrigue / steppe community with species of the Maltese Salt-Tree (*Darniella melitensis*), Golden Samphire (*Inula crithmoides*), Seaside Sea-lavender (*Limonium virgatum*), Cliff Carrot (*Daucus rupestris*) and Caper bushes (*Capparis orientalis*). The

area between ‘Taht il-Belt’ and ‘Cens l-Gharus’ is mainly characterized by agricultural land holdings and the presence of natural vegetation is rather limited. Some of the species found in this area include Carob trees (*Ceratonia siliqua*), Prickly Pear (*Opuntia ficus-indica*), Olive-leaved Germander (*Teucrium fruticans*) and Branched Asphodel (*Asphodelus aestivus*). A large water hole in this area, locally known as ‘l-Ghadira tal-Papri’ provides an appropriate habitat for a variety of species, including ducks, Moorhens and several Passerines. The Castor Oil Tree (*Ricinus communis*) colonizes the outer bank of this water hole.

- *Sustainability*

The Ras il-Hobz coast is characterized by a relatively intact and unspoiled natural environment. Development is restricted to a few structures along the coast (including boathouses and ‘dura’ structures), the most dominating of which is the Sewage Treatment Plant at Ras il-Hobz. Given that a good portion of the area is cultivated, farmers are major users of the landscape. Most of the land is managed and a very small portion seems to be abandoned.

- *Stress Factors*

In general, a large percentage of the land in this area is occupied by agriculture, and hence, agricultural activity constitutes one of the main pressures on the area’s natural environment and resources. Intensive agricultural practices can lead to the chemical leaching of nutrients, with serious implications for groundwater quality. Moreover, poor agricultural techniques can lead to soil erosion.

Xatt l-Ahmar bay is a major component of the ‘Ras il-Hobz’ coastline. It is a popular recreational area for locals and tourists and hosts a variety of activities, including swimming, diving, camping, barbecuing and off-roading. These activities add to the pressures exerted on the area’s environment.

Another significant stress factor is sewage. Prior to the implementation of a sewage treatment plant, the main outfall for most of the sewage in Gozo was located at Ras il-Hobz. The entire coastal stretch used to be severely impacted by frequent discharges of sewage. Upon the establishment of a treatment facility at Ras il-Hobz, sewage is treated and recycled to produce second-class water suitable for irrigation purposes. However, field survey observations reveal that, on numerous occasions, a considerable amount of sewage was seen leaking from fields and progressing towards Xatt l-Ahmar bay. There is a good possibility that this leakage was triggered by a sewer blockage from nearby fields. If left uncontrolled, this can have deleterious effects on bathing water quality, human health and the marine environment.

- *Susceptibility*

This area is particularly vulnerable to changes in sea and groundwater quality due to the chemical leaching of nutrients and the leaking of sewage.

5.1.2.3. Mgarr Harbour Area (G1)

- *Spatial Dimension*

This character area comprises a combined semi-artificial port and fishing hamlet, which handles the ferry service between the two islands and houses a fishing fleet of some 180 to 200 vessels, together with another 200 berths for yachts and motor boats (MMA, 2007). The historic building of Fort Chambray crowns the clay slopes overlooking the harbour, beneath which lies the afforested area of 'Gnien Migiarro'. The port is backed by the elevated settlement of Ghajnsielem.

- *Stratigraphy*

The entire Mgarr Harbour character area sits on a layer of Blue Clay.

- *Slope*

The area lies at an elevation of 10 meters with a general south to southeast trending dip.

- *Soil Cover*

It holds a combination of carbonate raw soils, xerorendzinas, terra soils and soil complexes. The predominant soil type is carbonate raw soil, which is mainly concentrated along the eastern slopes of the harbour. Terra Rossa soil features in patches towards the northern and eastern segments, while Xerorendzina soil is unevenly distributed along the lower and upper parts of the harbour. Soil complexes are mainly restricted to the western slopes overlooking the harbour.

- *Species*

The ecological communities of this region are quite diverse and, in some cases, species rich. Gnien Migiarro is one of the most extensive plantations in Gozo. It is widely covered with species of Aleppo Pine (*Pinus halepensis*), Olive (*Olea europaea*) and Eucalyptus trees (*Eucalyptus sp.*). The Mgarr Valley is principally dominated by Great Reed (*Arundo donax*), which forms a thick cover throughout most the area. The northern valley sides are colonized by a secondary maquis community holding large carobs (*Ceratonia siliqua*), while the southern valley hold large concentrations of the Tree-of-heaven (*Ailanthus altissima*) and some mature Ombu trees (*Phytolacca dioica*). A number of carob trees, together with a band of Tree Spurge (*Euphorbia dendroides*), Olive-leaved Germander (*Teucrium fruticans*) are found on the cliff edge beneath the previous location of the Garzes Tower. Roadsides are covered in Tree-of-heaven (*Ailanthus altissima*), Judas Tree (*Cercis siliquastrum*), Olive (*Olea europaea*), Cypress (*Cupressus sp.*) and Ivy (*Hedera helix*) species.

- *Sustainability*

The Port of Mgarr is the only port in the island of Gozo and has been long exploited for a variety of uses. The key stakeholders of the area are the Gozo Channel Ferry Company, fishermen, farmers, leisure boaters, as well as those who organize visits by cruise ships and cargo vessels, and those visiting. One must also mention that the region is characterized by a variety of bars, restaurants, supermarkets, residential units and tourist accommodation. The overwhelming variety of features and activities, coupled by the limited availability of space and resources, has led to a series of conflicts between different users. Since inter-island traffic is solely focused on Mgarr Harbour, the area accommodates high levels of ferry activity. This leaves little room for other users of the

harbour. The fishing fleet currently occupies 30% of the port water area. The current size of the port cannot support a possible increase in the size of the fleet (MMA, 2007). The same constraints apply for the Mgarr Marina, where a “higher demand will be supply-constrained” (MMA, 2007). Bathers have been completely eliminated from the area, as the quality of the marine environment renders it unsuitable for swimming.

- *Stress Factors*

Pressures, impacts and risks are principally related to the region’s port activities and urbanization. Water pollution from ferry and other boating activities has significantly impacted the quality of the marine environment. Additionally, the ferry service is one of the major instigators of traffic, congestion and noise pollution in the region, as numerous commuters travel to and from the harbour on a daily basis. Modern development is another detracting feature of the harbour. The Fort Chambray development and the extended hotel establishment overlooking the harbour, have acted to diminish the aesthetic value of the landscape.

- *Susceptibility*

The urban fabric has dominated a good portion of the Mgarr Harbour area and has acted to degrade much of its natural environment. Based on current scenarios, the area’s green spaces will be susceptible to further development.

5.1.2.4. South East Qala Coast (G14)

- *Spatial Dimension*

This character area comprises a gently sloping rocky coastline characterized by an interesting variety of geomorphologic features, including bays, inlets, islets, watercourses, caves, promontories, sand and pebble pocket beaches and extensive shore platforms.

- *Stratigraphy*

The south eastern shoreline is characterized by a thick layer of Globigerina Limestone.

- *Slope*

The area is generally tilted towards the southeast and lies at 10 meters above sea level.

- *Soil Cover*

The entire south east Qala coast is covered by Terra Rossa soil.

- *Species*

The rocky shoreline is characterized by a community of halophytes and coastal garrigues. The promontory of Tal-Melh is colonized by Mediterranean heath (*Erica multiflora*), Shrubby Kidney Vetch (*Anthyllis hermanniae*), Sea Squill (*Urginea pancration*), Seaside Sea Lavender (*Limonium virgatum*) and Rock Crosswort (*Crucianella rupestris*) species, amongst others. The general rocky shoreline is largely colonized by Golden Samphire (*Inula crithmoides*), Wild Carrot (*Daucus carota*), Spiny Asparagus (*Asparagus aphyllus*), Silvery Ragwort (*Senecio bicolor*) and Caper (*Capparis orientalis*), amongst others.

- *Sustainability*

The entire south east Qala coast retains much of its original state and is practically undeveloped. However, there is a proposed development project which seeks to construct a destination port at Hondoq ir-Rummien Bay. This project is expected to have an impact on the environment, including noise and air emissions during the construction phase, impacts on terrestrial and marine ecology and reduced water quality, amongst others. Apart from the potential detrimental impacts on the environment, the project can generate economic benefits. In fact, it is expected to contribute 9.8 million euro to the country's GDP and create numerous job opportunities during both construction and operational phases (EMDP, 2009). The decision remains in abeyance and the future sustainability of this area will depend on the fate of this project.

- *Stress factors*

Hondoq ir-Rummien Bay is a major constituent of this coastal landscape. In summer, it is a popular bathing area for numerous local and tourist visitors. This area is frequently promoted for its extensive barbecue area and wide variety of sports activities. Deck

chairs and umbrellas placed by beach concession operators act to limit the beach space available to the public, so that visitors are often forced to trample upon vegetated areas further up. Moreover, off-roading tends to pose additional stress on the landscape and is frequently the major cause of soil erosion.

- *Susceptibility*

If a permit is granted for the development of a destination port at Hondoq ir-Rummien, the area will be particularly susceptible to the overall negative impacts which accompany the project.

5.1.2.5. Eastern Qala Slopes (G15 & G17)

- *Spatial Dimension*

This area is dominated by moderately sloping land due east of the Qala-Nadur plateau.

- *Stratigraphy*

Globigerina Limestone covers most of area's hillside, above which is a Blue Clay talus. Traces of this rock formation are also found on the area's foreshore. The steep-sided valley formation between Ta'Ruba' and Ta' Bumbarin is deeply incised in Blue Clay, which extends eastwards to form a clay talus.

- *Slope*

The area is generally inclined towards the southeast and sits at elevation of between 10 to 100 meters.

- *Soil Cover*

The principle types of soil constitute Xerorendiza and Carbonate raw soil, together with some uneven patches of Terra rossa and Soil complexes.

- *Species*

This area is covered by tracts of agricultural land, together with other areas of natural vegetation. The principal ecological communities of this area include arboreal assemblages, steppe, garrigue and valley communities, degraded coastal communities

and derelict agricultural areas. Arboreal assemblages colonize areas of Ta'Cassia, In-Nigrit and Il-Bajjad, and these comprise Carob (*Ceratonia siliqua*) assemblages, Figs (*Ficus carica*), Almonds (*Prunus dulcis*) and considerable undergrowth of Spiny Asparagus (*Asparagus aphyllus*). Steppic communities are dominated by Wild Artichoke (*Cynara cardunculus*), Cape Sorrel (*Oxalis pes-caprae*) and Prickly Pear stands (*Opuntia ficus-indica*), and are principally found on the Tat-Torri hillock and on a stretch of land south of Il-Bajjad. Esparto Grass (*Lygeum spartum*) and Golden Samphire (*Inula crithmoides*) species constitute the degraded coastal community between Taz-Zewwieqa and d-Dahla tac-Cawl. The Hondoq ir-Rummien valley is colonized by a variety of species, including Tree Spurge (*Euphorbia dendroides*), Mediterranean Heath (*Erica multiflora*), White Hedge-nettle (*Prasium majus*), Spiny Asparagus (*Asparagus aphyllus*) and Olive trees (*Olea europaea*), amongst others. Garrigue communities are noted at il-Qortin / Ta'Rdum, whereby Shrubby Kidney Vetch (*Anthyllis hermanniae*), Tree Spurge (*Euphorbia dendroides*) and Mediterranean Heath (*Erica multiflora*) are amongst the plants which colonize this area. A secondary succession dominates much of the abandoned agricultural land in the region. These areas are dominated by Cape Sorrel (*Oxalis pes-caprae*), French Daffodil (*Narcissus tazetta*), Rice Grass (*Piptatherum miliaceum*) and Sweet Alyssum (*Lobularia maritima*), amongst many others.

- *Sustainability*

This area contains vast tracts of terraced farmland, with significant patches of abandoned land. Some areas seem to be well-managed, while others are completely abandoned. Development is completely absent from this area.

- *Stress*

The main pressures in this area are primarily related to land abandonment and the lack of environmental management. Dry rubble wall structures seem to be collapsing. This can have serious consequences on the landscape, as periods of seasonal flooding and winds can lead to a loss of topsoil.

- *Susceptibility*

The area is primarily vulnerable to soil erosion and land degradation.

5.1.2.6.Xewkija Plain (G22)

- *Spatial Dimension*

This area constitutes a large flat area which incorporates the entire village of Xewkija and some small parts of Victoria and Ghajnsielem. It is important to mention that a small part of this area lies within the South Gozo Fault region and this constitutes the outers limit of Ghajnsielem and a very small portion of Xewkija. This description will only address this part of the area.

- *Stratigraphy*

The area features two main rock layers: Miocene Blue Clay and Upper Coralline Limestone. The former caps part of the area's plateau, while Blue Clay characterizes much of the region's flat plains.

- *Slope*

The area sits at an elevation of 60 – 90 meters.

- *Soil Cover*

Terra and Carbonate Raw soils feature extensively in this region. The former is found on layers of Upper Coralline Limestone, while the latter features on layers of Blue Clay.

- *Species*

The non built-up segment of this character area is largely dominated by cultivated land. In this respect, the region's natural vegetation is limited some patches of garrigue and steppe communities. Pockets of abandoned agricultural land are also evident in this region.

- *Sustainability*

The area is home to some of Gozo's most congested primary road networks which link the Mgarr Harbour with all the other villages in Gozo. In this respect, the area is frequently subject to high levels of traffic, noise and air pollution stemming from the overwhelming amount of vehicles commuting to and from this region. This has a negative impact on the inhabitants of the region. The area's rural environment houses a number of developments, including the Gozo Heliport within the limits of Xewkija, the

conglomeration of greenhouses which feature in numerous agricultural land holdings, sporadic residential units, cemeteries and infrastructural facilities. Substantial amounts of construction debris and littering constitute other detracting features of the landscape.

- *Stress*

Congestion and pollution are two major concerns in this region. They are a threat to the region's air quality and to the health of its community. Rural development is another major pressure, and if current trends persist, it can become a serious threat to the regions natural environment.

- *Susceptibility*

This area is particularly susceptible to the impacts arising from rural development and high traffic and congestion levels.

5.2. Landscape Value Assessment

5.2.1. Respondent characteristics

The sampling design was intended to cover both residents and non-residents of the South Gozo Fault region. In general, most of the survey participants are aged between 26 and 40 years (43%) and 25 years or less (38%), while a smaller sample is aged between 41-60 years (19%). Resident and non-resident samples contained approximately the same proportion of males and females. Participants were noted to have different levels of education. While the vast majority (98%) are in possession of a secondary education certificate, a mere 2% have gained no sort of formal education at all. Of the 98%, some 70% have also achieved a 'matriculation certificate', while 42% are in possession of a Bachelor's degree. Fewer respondents have achieved a Post-graduate diploma (12%), a Masters (8%) and a Doctorate (2%) degree. In general, respondent characteristics indicate some bias toward more knowledgeable and educated individuals.

Number of respondents	Respondent category	Gender distribution	Age distribution
109	Resident: 61	Males: 47	25 years or less: 41
	Non-resident: 47	Females: 60	26 - 40 years: 46
	Not specified: 1	Not specified: 2	41 - 60 years: 20
			Not specified: 2

Table 5.2: Breakdown of respondent sample

5.2.2. Evaluating perceived landscape values along the South Gozo Fault landscape

This section will seek to analyze the spatial distribution of landscape values along the South Gozo Fault landscape. The first part will address the value of the entire landscape, while the second part will deal with the value of the variety of natural and human components of the landscape. Both assessments are based on individual perception of landscape values. For each value, a scale of scores ranging from 1 to 5 was generated for each landscape feature by averaging the rating scores across all respondents. A mean scale score close to one indicates a low landscape value, while a mean score close to five signifies a high landscape value.

5.2.2.1. A Landscape Value Analysis of the entire South Gozo Fault Landscape

The table and graph below suggest that community perception of landscape values along the entire South Gozo Fault region is principally oriented towards aesthetic (3.73), biodiversity (3.64), heritage (3.56) and recreational (3.52) values of the landscape. In other words, both residents and non-residents of the South Gozo Fault show the greatest appreciation towards the above-mentioned values. Conversely, participants attributed the lowest scores to the economic (2.93), learning (3.03) and intrinsic (3.05) values of the South Gozo Fault landscape.

	N	Mean	Std. Deviation	95% Confidence Interval for Mean		P-value
				Lower Bound	Upper Bound	
Aesthetic	101	3.73	.989	3.54	3.93	0.00
Biodiversity	102	3.64	1.079	3.43	3.85	
Heritage	105	3.56	.999	3.37	3.76	
Recreational	105	3.52	1.018	2.83	3.22	
Future	103	3.19	.981	3.00	3.39	
Intrinsic	92	3.05	.894	2.87	3.24	
Learning	106	3.03	1.161	3.30	3.75	
Economic	103	2.93	.983	2.74	3.12	

Table 5.3: Public perception towards the value of the entire South Gozo Fault landscape

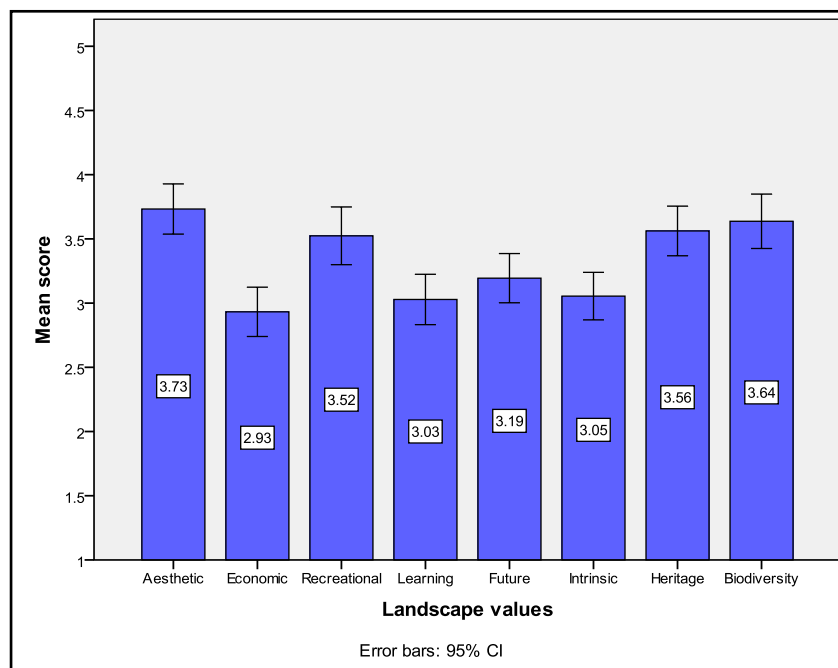


Figure 5.1: Displaying mean rating scores for each of the eight landscape values

5.2.2.2. Value perceptions towards the distinctive components of the South Gozo Fault Landscape

I. Aesthetic Value

The table and graph below display a series of mean rating scores for the aesthetic value of the key components of the South Gozo Fault landscape:

Descriptives (Aesthetic value)					
	Mean	Std. Deviation	95% Confidence Interval for Mean		P-value
			Lower Bound	Upper Bound	
Cliffs	3.87	1.042	3.67	4.07	0.00
Supermarkets	2.72	1.064	2.51	2.92	
Gently rolling landscapes	3.86	1.018	3.67	4.06	
Bays and inlets	3.79	1.141	3.57	4	
Steep slopes	3.76	1.065	3.56	3.97	
Caves	3.67	1.077	3.46	3.87	
Shore platforms	3.66	1.069	3.45	3.86	
Cultural heritage	3.44	0.979	3.25	3.62	
*Plantations	3.34	1.202	3.11	3.57	
Port facilities	3.24	1.049	3.04	3.44	
Utilities	2.86	0.941	2.68	3.04	
Residential units	3.06	1.121	2.84	3.27	
Restaurants	3.13	1.139	2.91	3.34	
Bars	3.06	1.116	2.85	3.28	
Hotels	2.77	1.051	2.57	2.97	
Yacht marinas	3.05	1.083	2.84	3.25	

*The variable 'Plantations' appears as 'Woodlands' on charts. Woodlands within the area of study are in fact plantations.

Table 5.4: Displaying mean rating scores for the aesthetic value of landscape features

It is evident from the error bar graph that the rating scores for 'Cliffs' (M= 3.8) and 'Gently rolling landscapes' (M= 3.8) record the highest aesthetic value, followed by 'Bays and inlets' (M= 3.7), 'Steep slopes' (M= 3.7), 'Shore platforms' (M= 3.6) and 'Caves' (M= 3.6). It is worth noting that all are key constituents of the region's natural environment. Conversely, the mean rating scores elicited for 'Supermarkets' (M= 2.6), 'Hotels' (M= 2.7), 'Utilities' (M= 2.8), 'Bars' (M= 3.0) and 'Yacht marinas' (M= 3.0) are significantly lower than the above mentioned natural features.

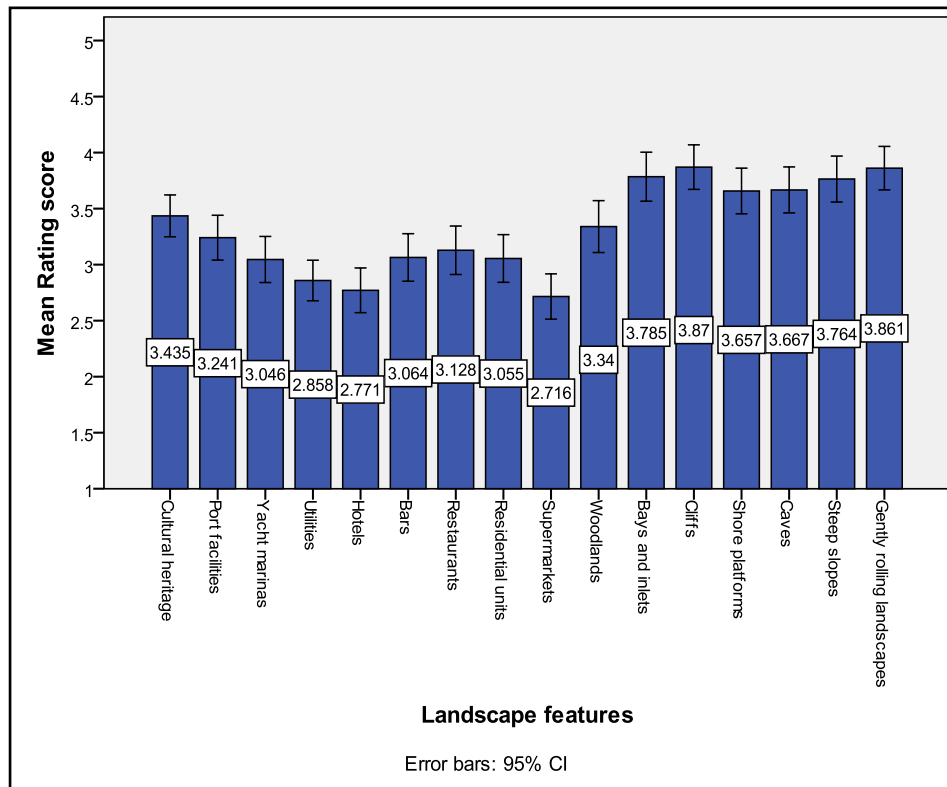


Figure 5.2: Attitudes towards the aesthetic value of the landscape

The 95% confidence interval provides a range of values for the actual mean rating scores if the entire Gozitan population had to be included in this study. The fact that the confidence intervals for most of the natural features are well-above and do not overlap with those of the anthropic elements of the landscape allows a generalization that Gozitans display a higher aesthetic appreciation for natural than human features.

II. Economic Value

When comparing the spatial distribution of the mean rating scores for the aesthetic and economic values of the South Gozo Fault landscape, one can notice a considerable difference. The error graph below suggests that ‘Port facilities’ (M=3.87) and ‘Restaurants’ (M= 3.86) are given the highest economic value, followed by the ‘Yacht Marina’ (M= 3.84), ‘Bars’ (M= 3.78), ‘Hotels’ (M= 3.78) and ‘Residential units’ (M= 3.73). On the other hand, ‘Steep slopes’ (M= 2.67), ‘Gently rolling landscapes’ (M= 2.76), ‘Shore platforms’ (M= 2.76) and ‘Cliffs’ (M= 2.79) were allotted the lowest

economic value. These trends suggest that the highest economic value of the landscape lies within most of its human components.

Descriptives (Economic Value)					
	Mean	Std. Deviation	95% Confidence Interval for Mean		P-value
			Lower Bound	Upper Bound	
Port facilities	3.87	1.001	3.68	4.06	0.00
Restaurants	3.86	1.077	3.65	4.07	
Yacht marinas	3.84	1.06	3.64	4.04	
Hotel	3.78	1.119	3.56	3.99	
Bars	3.78	1.062	3.58	3.98	
Residential units	3.74	1.102	3.53	3.95	
Supermarkets	3.51	1.084	3.3	3.72	
Utilities	3.36	1.021	3.16	3.55	
Cultural heritage	3.15	0.965	2.96	3.33	
Bays and inlets	3.12	1.187	2.89	3.35	
Caves	2.83	1.142	2.61	3.05	
Plantations	2.81	1.137	2.6	3.03	
Cliffs	2.79	1.131	2.58	3.01	
Shore platforms	2.76	1.172	2.53	2.98	
Gently Rolling landscapes	2.76	1.22	2.52	2.99	
Steep slopes	2.67	1.164	2.45	2.9	

Table 5.5: Attitudes towards the economic value of landscape features

It is also worth mentioning that the confidence intervals for most of the anthropic elements of the landscape are higher than those of the physical ones. In this respect, one can clearly assert that Gozitans perceive the human components of the landscape as having the greatest ability to generate income.

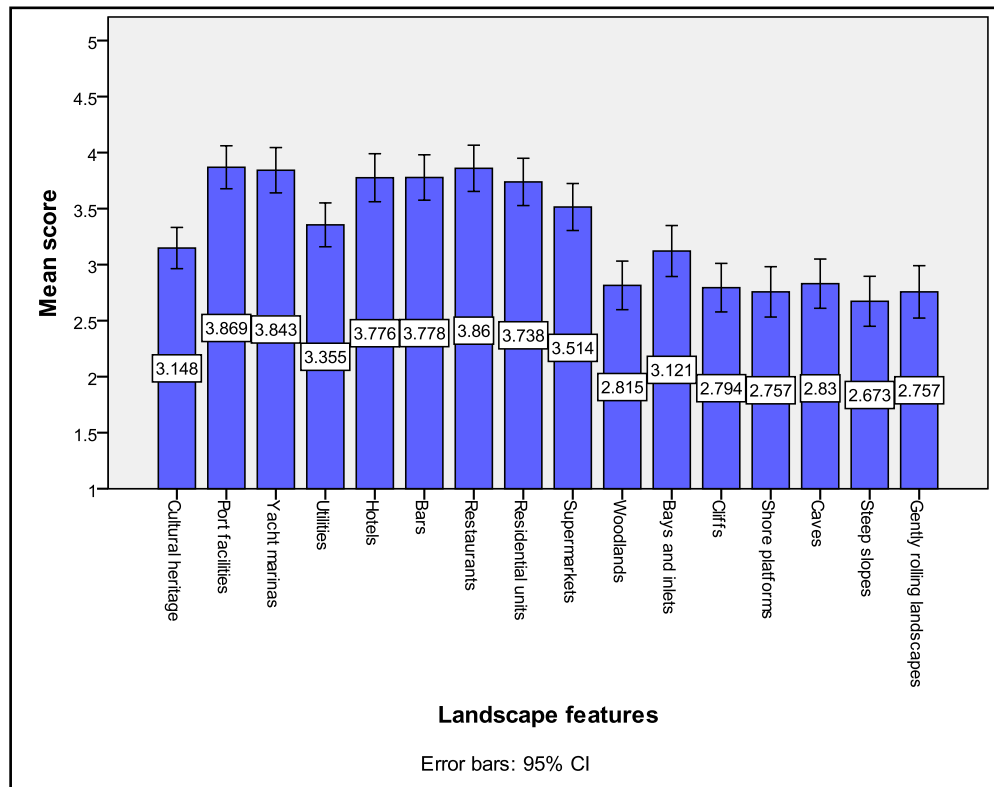


Figure 5.3: Mean rating score distribution for the economic value of landscape features

III. Recreational Value

The spatial distribution trend for the recreational value of the South Gozo Fault landscape is comparable to that noted for its aesthetic value. There is a noticeable tendency towards natural landscape components as the places with the highest recreational value. ‘Bays and inlets’ (M= 4.01), together with ‘Shore platforms’ (M= 3.7) hold the highest recreational value, followed by ‘Cliffs’ (M= 3.54), ‘Steep slopes’ (M= 3.50), ‘Restaurants’ (M= 3.53) and ‘Bars’ (M= 3.47). Conversely, the lowest recreational value was ascribed to the region’s single ‘Hotel Establishment’ (M= 3.178), ‘Cultural heritage’ features (M= 3.23) and the ‘Mgarr marina’ (M= 3.24).

Descriptives (Recreational value)					
	Mean	Std. Deviation	95% Confidence Interval for Mean		P-value
			Lower Bound	Upper Bound	
Bays and inlets	4.01	0.981	3.82	4.2	0.00
Shore platforms	3.7	1.126	3.49	3.92	
Cliffs	3.65	1.13	3.43	3.86	
Gently rolling landscapes	3.58	1.206	3.35	3.81	
Caves	3.54	1.184	3.32	3.77	
Restaurants	3.53	1.098	3.32	3.74	
Port facilities	3.5	3.062	2.92	4.08	
Steep slopes	3.5	1.165	3.28	3.72	
Plantations	3.48	1.127	3.26	3.69	
Bars	3.47	1.148	3.25	3.69	
Mgarr Marina	3.24	1.167	3.02	3.46	
Cultural heritage	3.23	1.047	3.03	3.43	
Hotels	3.18	1.131	2.96	3.39	

Table 5.6: Mean rating scores for the recreational value of the landscape

However, it is important to note that unlike in previous cases, one cannot extend these trends to the entire Gozitan population. As seen in the graph below, most of the confidence intervals overlap, except for the one representing ‘Bays and inlets’. Hence, one can only state with certainty that out of all the existent landscape features, ‘Bays and inlets’ are perceived to have the most significant recreational value.

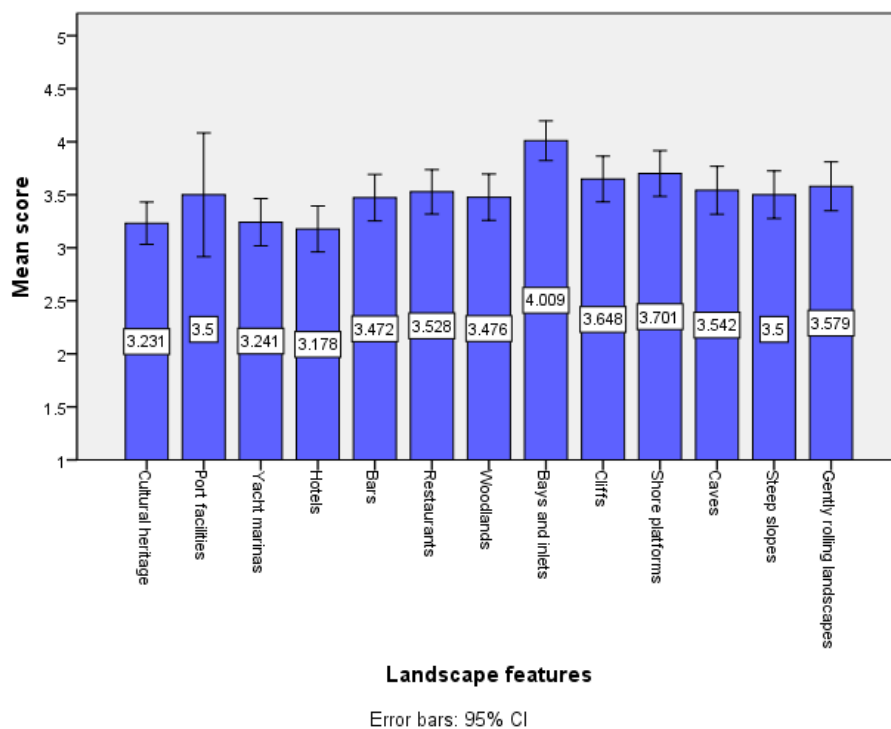


Figure 5.4: Attitudes towards the recreational value of landscape features

IV. Learning Value

It is evident from the table and graph below that participants have assigned the highest learning values to ‘Cultural heritage’ features (M= 3.81) and ‘Caves’ (M= 3.62). Other features including ‘Cliffs’ (M= 3.51), ‘Gently rolling landscapes’ (M= 3.49), ‘Bays and inlets’ (M= 3.48) and ‘Shore platforms’ (M= 3.43) are also considered to have a good learning potential. In contrast, ‘Restaurants’ (M= 2.24), ‘Hotels’ (M= 2.39) and ‘Bars’ (M= 2.28) are thought to offer the lowest opportunities for learning.

Descriptives (Learning value)					
	Mean	Std. Deviation	95% Confidence Interval for Mean		P-value
			Lower Bound	Upper Bound	
Cultural heritage	3.81	1.195	3.58	4.03	0.000
Caves	3.62	1.182	3.39	3.85	
Cliffs	3.5	1.067	3.3	3.71	
Gently rolling landscapes	3.49	1.063	3.29	3.69	
Bays and inlets	3.48	1.164	3.26	3.7	
Shore platforms	3.43	1.108	3.22	3.64	
Steep slopes	3.41	1.192	3.18	3.63	
Plantations	3.32	1.126	3.1	3.54	
Port facilities	2.98	1.228	2.75	3.22	
Yacht marinas	2.71	1.169	2.49	2.94	
Hotels	2.39	1.049	2.19	2.59	
Bars	2.28	0.965	2.09	2.46	
Restaurants	2.24	0.975	2.05	2.43	

Table 5.7: Displaying mean rating scores for the learning value of landscape features

The figure below indicates that the confidence intervals for the physical components of the landscape are significantly higher than those of its man-made counterparts, except for the cultural heritage feature. In this respect, one can generalize that Gozitans view cultural heritage, together with several other natural elements, as offering the greatest opportunities for learning.

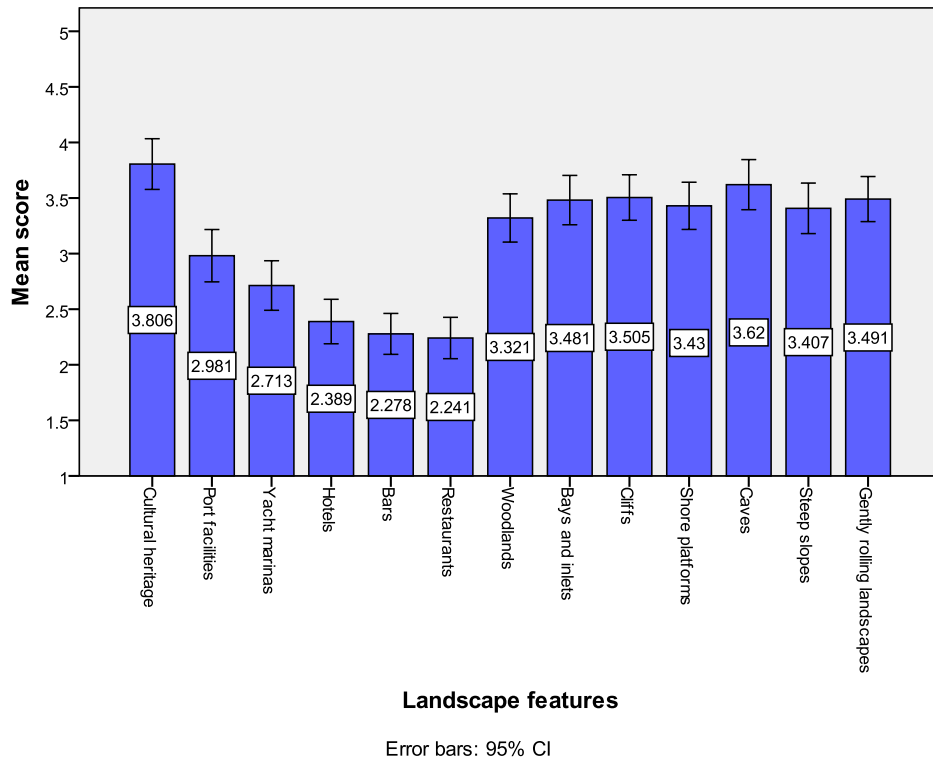


Figure 5.5: Mean rating score distribution for the learning value of landscape features

V. Future Value

Once again, the natural environment is perceived to have the highest future value, in contrast to other man-made components whose mean scores are substantially lower. The table and graph below signify mean score allocations across the sixteen landscape features. ‘Cultural heritage’ features (M= 3.92) were assigned the highest future value, followed by ‘Cliffs’ (M= 3.79), ‘Bays and inlets’ (M= 3.72), ‘Shore platforms’ (M= 3.68), ‘Caves’ (M= 3.65) and ‘Gently rolling landscapes’ (M= 3.65). The lowest mean score values were noted for ‘Supermarkets’ (M= 2.80), ‘Residential units’ (M= 2.90), ‘Bars’ (M= 2.94) and ‘Restaurants’ (M= 2.95).

Descriptives (Future value)					
	Mean	Std. Deviation	95% Confidence Interval for Mean		Maximum
			Lower Bound	Upper Bound	
Cultural heritage	3.92	1.125	3.7	4.13	0.00
Cliffs	3.79	1.097	3.58	4	
Bays and inlets	3.73	1.154	3.51	3.95	
Shore platforms	3.68	1.223	3.44	3.91	
Caves	3.65	1.26	3.41	3.9	
Steep slopes	3.58	1.213	3.35	3.81	
Plantations	3.53	1.244	3.29	3.77	
Port facilities	3.49	1.239	3.25	3.72	
Yacht marinas	3.34	1.181	3.11	3.56	
Utilities	3.14	1.046	2.94	3.34	
Hotels	3.11	1.208	2.88	3.34	
Restaurants	2.95	1.161	2.73	3.18	
Bars	2.93	1.176	2.71	3.16	
Residential units	2.9	1.09	2.69	3.11	
Supermarkets	2.8	1.118	2.58	3.02	
Gently rolling landscapes	3.65	1.211	3.42	3.88	

Table 5.8: Mean rating score allocations for the future value of each landscape component

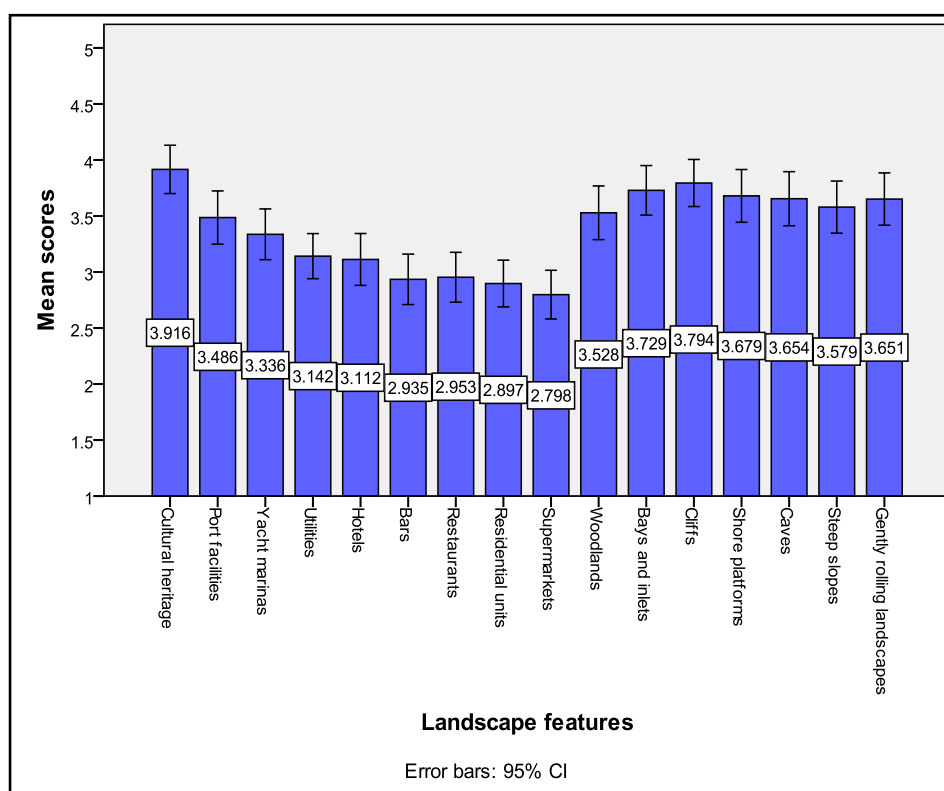


Figure 5.6: Displaying mean rating scores for the future value of landscape features

The confidence intervals for the natural features mentioned above are significantly higher than those of the anthropic components with the lowest future value. This proves that in the Gozitans' eyes, the natural environment has the greatest potential in allowing future generations to know and experience it as it is today.

VI. *Intrinsic value*

The prominent heritage sites stationed along the South Gozo Fault landscape, including Fort Chambray, the Mgarr ix-Xini tower and St. Anthony's battery, are recognized as having the highest intrinsic value (M= 4.02), followed by 'Cliffs' (M= 3.92), 'Caves' (M= 3.91), 'Bays and inlets' (M= 3.89) and 'Gently rolling landscapes' (M= 3.82). In contrast, the mean scores elicited for 'Supermarkets' (M= 2.52), 'Residential units' (M=2.61), 'Bars' (M= 2.74) and 'Restaurants' (M= 2.77) are considerably lower than the above mentioned features.

Descriptives (Intrinsic)					
	Mean	Std. Deviation	95% Confidence Interval for Mean		P-value
			Lower Bound	Upper Bound	
Cultural heritage	4.02	1.136	3.8	4.24	0.00
Cliffs	3.92	1.075	3.72	4.13	
Caves	3.91	1.186	3.68	4.13	
Bays and inlets	3.89	1.093	3.68	4.1	
Gently rolling landscapes	3.82	1.18	3.6	4.05	
Steep slopes	3.77	1.252	3.53	4.01	
Shore platforms	3.75	1.166	3.52	3.97	
Plantations	3.53	1.173	3.3	3.75	
Port facilities	3.19	1.072	2.99	3.4	
Yacht marinas	3.13	1.139	2.91	3.35	
Hotels	2.84	1.153	2.62	3.06	
Utilities	2.82	1.114	2.61	3.04	
Bars	2.77	1.121	2.55	2.98	
Restaurants	2.74	1.122	2.53	2.95	
Residential units	2.61	1.075	2.41	2.82	
Supermarkets	2.52	1.152	2.3	2.74	

Figure 5.9: Mean rating score distribution for the intrinsic value of landscape features

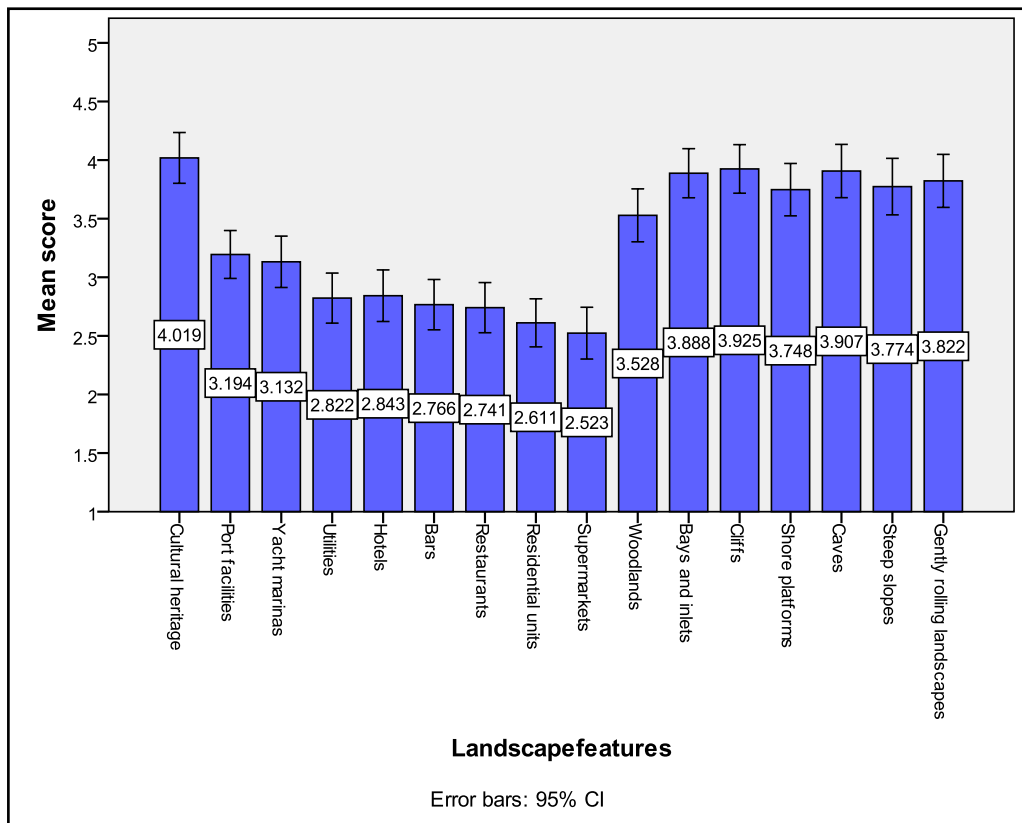


Figure 5.7: Public attitudes towards the intrinsic value of landscape features

Since the confidence intervals of the ‘Cultural heritage’ and all other natural landscape components are well above and do not overlap with those of other features, one can clearly state that Gozitans recognize the natural and historical landscape as the most special within the South Gozo Fault region.

VII. Heritage Value

The majority of the respondents have assigned the highest heritage value to ‘Cultural heritage’ sites (M= 4.14) along the South Gozo Fault landscape. All seven physical features were assigned a high heritage value, especially ‘Caves’ (M= 4.04), ‘Cliffs’ (M= 4.0), ‘Bays and inlets’ (M= 3.97) and ‘Gently rolling landscapes’ (M= 3.95). On the contrary, all other man-made structures obtained lower mean values, including ‘Supermarkets’ (M= 1.85), ‘Residential units’ (M= 2.04) ‘Hotels’ (M= 2.05) and ‘Bars’ (M= 2.07).

Descriptives (Heritage value)					
	Mean	Std. Deviation	95% Confidence Interval for Mean		P-value
			Lower Bound	Upper Bound	
Cultural heritage	4.14	1.063	3.94	4.34	0.00
Caves	4.04	1.135	3.82	4.25	
Cliffs	4	1.05	3.8	4.2	
Bays and inlets	3.97	1.077	3.77	4.18	
Gently rolling landscapes	3.95	1.072	3.75	4.16	
Steep slopes	3.88	1.147	3.66	4.1	
Shore platforms	3.82	1.156	3.6	4.04	
Plantations	3.74	1.097	3.53	3.95	
Port facilities	3.04	1.318	2.79	3.29	
Yacht marinas	2.43	1.206	2.2	2.66	
Utilities	2.26	1.122	2.05	2.47	
Restaurants	2.08	1.078	1.88	2.29	
Bars	2.07	1.07	1.87	2.28	
Hotels	2.05	1.071	1.84	2.25	
Residential units	2.04	1.032	1.84	2.23	
Supermarkets	1.85	0.975	1.67	2.04	

Table 5.10: Mean heritage value scores for landscape features across the South Gozo Fault landscape

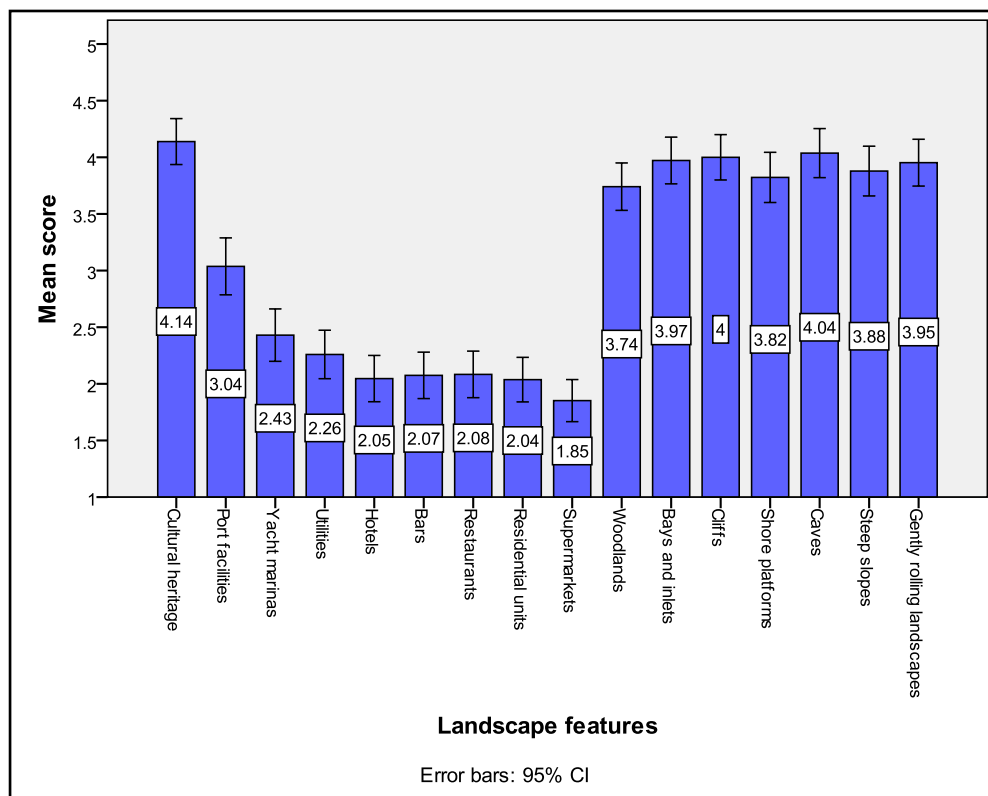


Figure 5.8: Heritage value perceptions across the South Gozo Fault landscape

Given the major difference in confidence interval elevations, one can generalize that Gozitans assign the highest heritage value to cultural heritage sites, as well as the natural environment.

VIII. Biodiversity Value

It is important to mention that ‘biodiversity value’ in this study is used to refer to the variety of plants present within the South Gozo Fault region. A similar pattern is noted for the spatial distribution of biodiversity value along the South Gozo Fault landscape. Again, the highest biodiversity value is ascribed to natural landscape components, whereby ‘Gently rolling landscapes’ (M= 4.25) and ‘Caves’ (M= 4.23) are perceived to have the highest biodiversity value. These are immediately followed by ‘Cliffs’ (M= 4.20), ‘Bays and inlets’ (M= 4.18), ‘Steep slopes’ (M= 4.17), ‘Shore platforms’ (M= 4.06) and ‘Plantations’(M= 4.04). On the contrary, the mean rating scores for the ‘Mgarr Marina’ (M= 1.94), ‘Port facilities’ (M= 2.33) and ‘Cultural heritage’ features (M= 3.19) were significantly lower than those of the above-mentioned features. Based on conclusions, we can generalize that the Gozitan public assigns the highest biodiversity value to the natural environment. This notion is reinforced by the significantly higher confidence intervals for the constituent elements of the natural environment.

Descriptives (Biodiversity value)					
	Mean	Std. Deviation	95% Confidence Interval for Mean		P-value
			Lower Bound	Upper Bound	
Gently rolling landscapes	4.25	1.024	4.05	4.45	0.00
Caves	4.23	1.01	4.04	4.42	
Cliffs	4.2	0.984	4.02	4.39	
Bays and inlets	4.18	1.04	3.98	4.37	
Steep slopes	4.17	0.991	3.98	4.36	
Shore platforms	4.06	1.049	3.86	4.26	
Plantations	4.04	1.154	3.82	4.26	
Cultural heritage	3.19	1.279	2.95	3.44	
Port facilities	2.33	1.238	2.1	2.57	
Yacht marinas	1.94	0.998	1.74	2.13	

Table 5.11: Biodiversity value allocation along the South Gozo Fault landscape

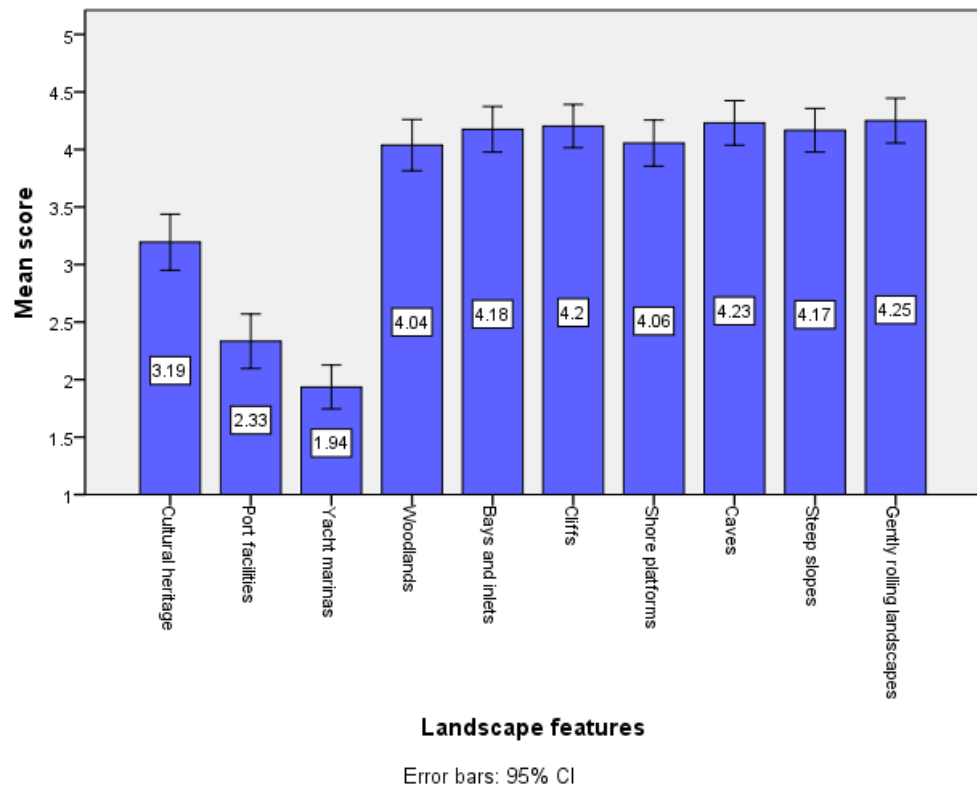


Figure 5.9: Spatial distribution of biodiversity value along the South Gozo Fault landscape

In conclusion one can say that:

- Natural features (cliffs, bays, etc.) were attributed the highest values for aesthetic, recreational, future, learning, intrinsic and biodiversity values.
- However, whilst there appears to be a significant appreciation of natural areas for these various purposes, they are not perceived to be revenue-generators. In other words, they were perceived to have the lowest economic value.
- Cultural heritage features were assigned the highest scores for their learning, future, intrinsic and heritage values.

5.2.3. Place Attachment Analysis

One of the main objectives of this dissertation is to study some of the dimensions of place attachment within the South Gozo Fault region. This assessment holds three main objectives:

1. To establish differences between resident and non-resident place attachment
2. To identify which independent variables are most predictive of place attachment
3. To determine which landscape values are most predictive of place identity and place dependence.

5.2.3.1. Resident vs. Non-resident knowledge of places within the South Gozo Fault landscape

Survey respondents were asked to describe their knowledge of places within the region. The majority of survey respondents claim to ‘know some places very well’ (83.49%), while fewer participants (9.17%) have ‘absolutely no knowledge of places’ or ‘know the entire area very well’ (7.34%).

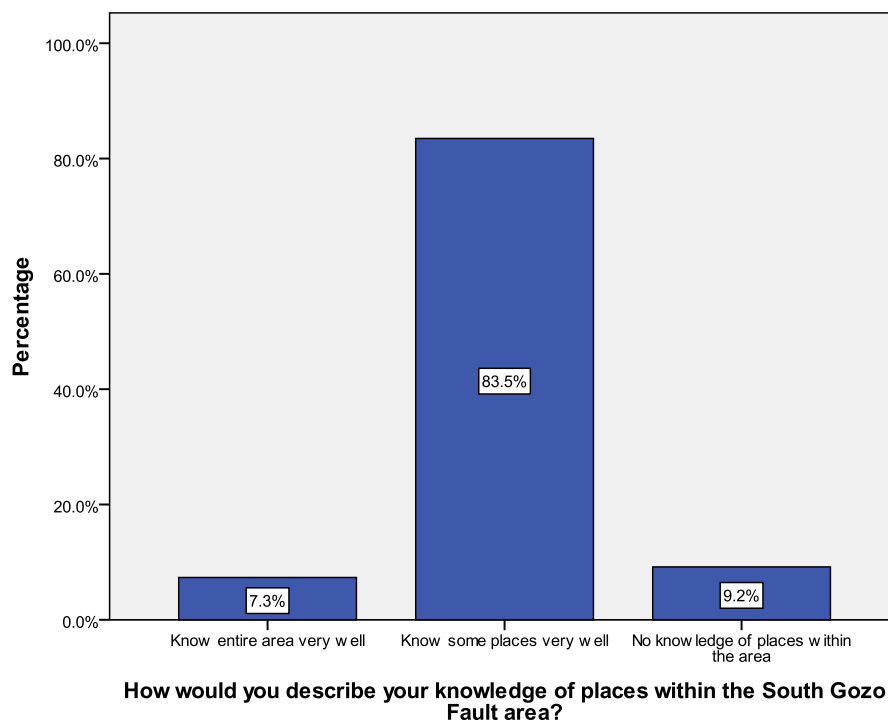


Figure 5.10:
Respondent
knowledge of
places within
the South Gozo
Fault region

There is a significant association ($P\text{-value} = 0.05$) between resident and non-resident participants and their knowledge of places within the area. In general, the majority of those who ‘know some places very well’ are residents (47.2%). The number of participants with ‘no knowledge of places within the area’ was higher for non-residents (6.5%) than residents (2.8%).

					Total
			Resident	Non-resident	
How would you describe your knowledge of places within the South Gozo Fault region?	Know entire area very well	Count	7	1	8
		Percentage	6.5%	.9%	7.4%
	Know some places very well	Count	51	39	90
		Percentage	47.2%	36.1%	83.3%
	No knowledge of places within the area	Count	3	7	10
		Percentage	2.8%	6.5%	9.3%
Total		Count	61	47	108
		Percentage	56.5%	43.5%	100.0%

Table 5.12: Resident vs. Non-resident knowledge of places within the South Gozo Fault landscape

The survey contained 15 place attachment statements which were adapted from Raymond and Brown’s work in the Otways region of Victoria. Six of these items represent place identity, while the remaining five signify place dependence. The items were presented on a 5-point Likert scale, where ‘1 = Strongly Disagree’, ‘2 = Disagree’, ‘3 = Neither Agree nor Disagree’, ‘4= Agree’ and ‘5 = Strongly Agree’.

The table and graph below display the results for resident and non-resident place attachment. In general, both categories seem to enjoy strong ties with the South Gozo Fault landscape. However, resident respondents seem to have a stronger place identity and are more dependent on the region. Their stronger place attachment is reinforced by the high confidence intervals in the error bar graph below.

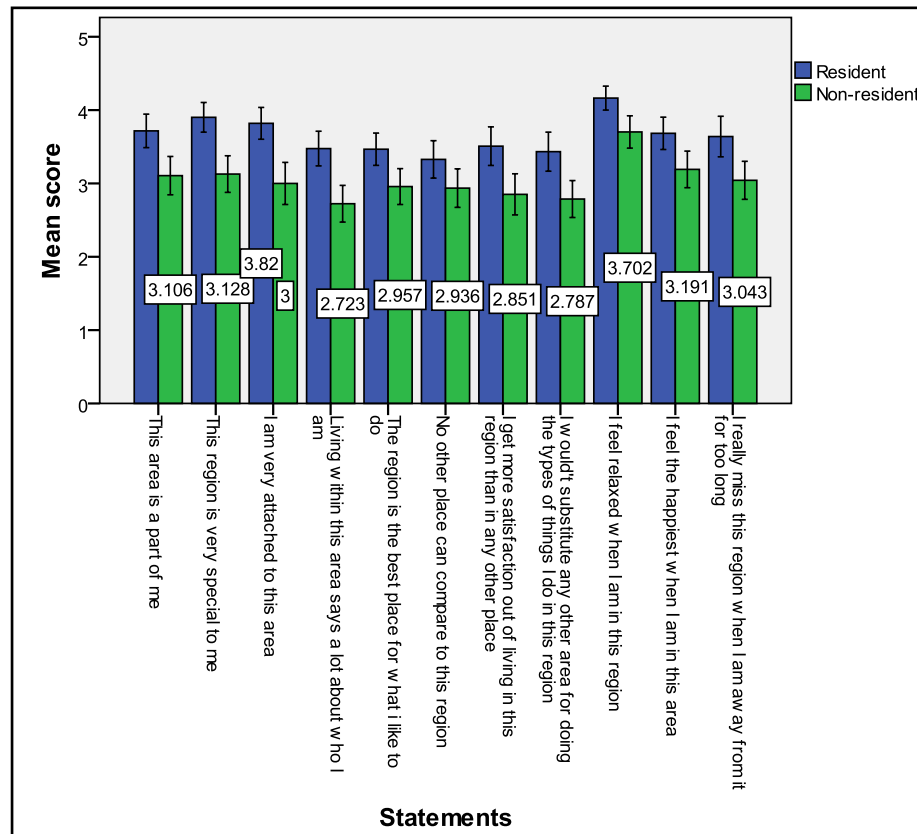


Figure 5.11: Resident vs. Non-resident knowledge of places within the South Gozo Fault landscape

5.2.3.2. Relationship between Place Attachment and Respondent Variables

This section seeks to analyze the relationship between place identity and place dependence and respondent variables of age, gender, locality and knowledge of places within the South Gozo Fault. The significance of the relationship between each respondent variable and place identity and dependence was measured using regression analysis. The resultant P- values are displayed in the table below

	Place Identity (P-value)	Place Dependence
	P-value	P-value
Age	0.546	0.329
Gender	0.372	0.198
Locality	0.000*	0.000*
Knowledge of Places	0.000*	0.000*

Table 5.13: Relationships between place identity and dependence and respondent variables

A significant relationship is noted between place identity and dependence and knowledge of places. Similarly, both place dependence and identity variables are significantly associated with locality. No significant relationship is noted between age and gender categories and place identity and dependence.

5.2.3.3. Associations between Place Attachment and Landscape Values

A linear regression analysis was generated for landscape values and place identity and dependence. The table below lists the resultant P-values:

Landscape value	P-value
Aesthetic value	.546
Economic value	.358
Recreational value	.434
Learning value	.129
Future value	.027*
Intrinsic value	.036*
Heritage value	.190

Table 5.14: Significance values for landscape values and place identity

Biodiversity value ($p = 0.00$) emerged as a significant predictor of place identity, followed by future ($p = 0.027$) and intrinsic values ($p = 0.027$). Biodiversity values are mainly concentrated within natural landscape features, including gently rolling landscapes, cliffs, plantations and bays, while both future and intrinsic value intensities lie within cultural heritage sites and the main nature components of the landscape. No significant value predictor was found for place dependence.

In summary, one can say that residents of the South Gozo Fault landscape experience a somewhat stronger tie to their region than non-residents. Apart from that, place identity and dependence are also influenced by knowledge of the South Gozo Fault region. Finally, biodiversity, future and intrinsic values are most closely associated with place identity.

5.2.4. Resident and non-resident attitudes towards development and selected natural resource management issues

5.2.4.1. Threats to the South Gozo Fault natural environment

Residents and non-residents of the South Gozo Fault area were asked to express their opinion on whether they think the region's natural and semi-natural environment is threatened. The majority of both residents (41.7%) and non-residents (28.7%) view the region's natural and semi-natural environment as a threatened one.

The chi-square test was used to determine the existence of a significant association between the differences in perception of threat between residents and non-residents. Since the P-value (0.378) is smaller than the 0.05 level of significance, one can say that there is no significant association between the two categorical variables. This implies that residents and non-residents share the same views about the region's natural environment.

Those who believed that the region is threatened were asked to respond to a list of potential threats to the South Gozo Fault landscape. The threats were listed in an inventory to which respondents could indicate their level of agreement or disagreement on a 5-point Likert scale from '1 = Strongly Agree' to '5 = Strongly Disagree'. The results are displayed in the table below:

					Total
			Resident	Non-resident	
Mean score	Rising coastal populations	Count	6	9	15
		Percentage	2.3%	3.4%	5.7%
	Increased number of visitors	Count	6	6	12
		Percentage	2.3%	2.3%	4.6%
	Visitor / tourist behavior	Count	12	9	21
		Percentage	4.6%	3.4%	8.0%
	Rapid tourism development	Count	19	15	34
		Percentage	7.2%	5.7%	12.9%
	Urbanization	Count	16	9	25
		Percentage	6.1%	3.4%	9.5%
	Changes in coastal scenery	Count	24	17	41
		Percentage	9.1%	6.5%	15.6%
	Vegetation clearing	Count	5	8	13
		Percentage	1.9%	3.0%	4.9%
	Intensive agriculture	Count	3	4	7
		Percentage	1.1%	1.5%	2.7%
	Lack of rubble wall maintenance	Count	16	17	33
		Percentage	6.1%	6.5%	12.5%
	Industrial / commercial installations	Count	14	7	21
		Percentage	5.3%	2.7%	8.0%
	Dumping of domestic and building waste	Count	26	15	41
		Percentage	9.9%	5.7%	15.6%
Total		Count	147	116	263
		Percentage	55.9%	44.1%	100.0%

Table 5.15: Potential threats to the South Gozo Fault's natural environment

Residents were primarily concerned about the 'Dumping domestic and building waste' (9.9%), 'Changes in coastal scenery' (9.1%), 'Rapid tourism development' (7.2%), 'Lack of rubble wall maintenance' (6.1%) and 'Urbanization' (6.1%). These were the most significant threats perceived by resident respondents. Non-resident participants share the same perceptions, with 'Changes in coastal scenery' (6.5%), 'Lack of rubble wall maintenance' (6.5%), 'Rapid tourism development' (5.7%) and the 'Dumping of domestic and building waste' (5.7%) chosen as the greatest potential threats to the region's natural environment.

Since the P-value (0.702) is greater than the 0.05 level of significance, it is clear that there is no significant relationship between resident and non-resident perceptions towards potential threats to the region's natural environment.

5.2.4.2. Resident and Non-Resident perception towards the region's economic prosperity and community well-being

Survey participants were asked to provide their views on whether the South Gozo Fault region features economic prosperity and community well-being or not. Again, both residents (38.10%) and non-residents (24.76%) agree that the region is economically thriving and socially secure. In general terms, the vast majority of respondents (62.9%) recognize the South Gozo Fault Region as one of economic prosperity and community well-being.

					Total
			Resident	Non-resident	
Do you think that the region features economic prosperity and community well-being?	Yes	Count	40	26	66
		Percentage	38.1%	24.8%	62.9%
	No	Count	20	19	39
		Percentage	19.0%	18.1%	37.1%
Total		Count	60	45	105
		Percentage	57.1%	42.9%	100.0%

Table 5.16: Resident and Non-resident attitudes towards the region's social and economic state

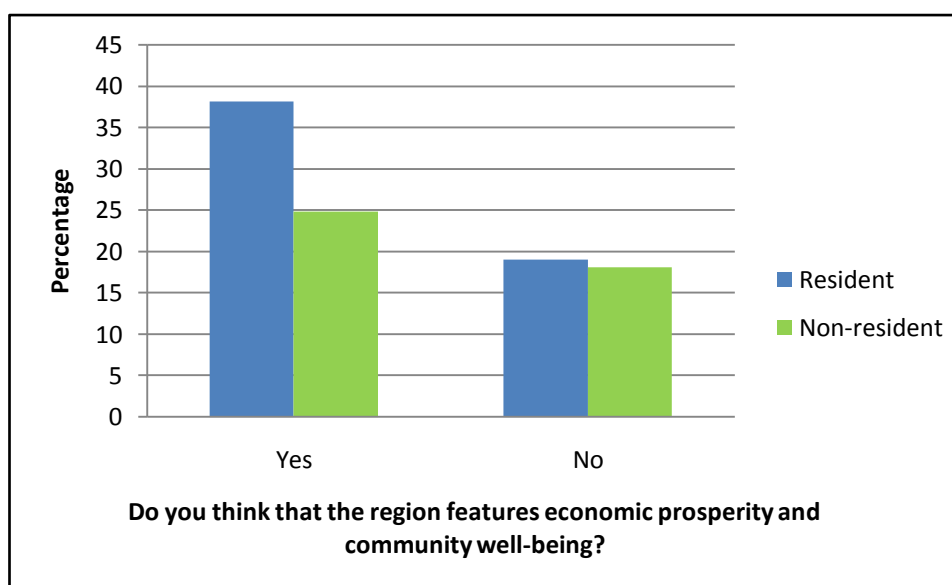


Figure 5.12: Attitudes towards economic prosperity and community well-being within the South Gozo Fault region

Those who believe in the region's economic and social stability were asked to choose amongst the types of developments which have led to the region's economic and social progression. Tourism (45.63%) was viewed as the largest impetus for economic and

social development among both residents (26.5%) and non-residents (18.6%) of the South Gozo Fault region. The next preferred sectors for both categories were residential development (15.71% and 6.9% for residents and non-residents, respectively) and agriculture (9.8% for residents and 6.9% for non-residents).

					Total
			Resident	Non-resident	
What type of development has contributed to the region's economic prosperity and community well-being?	Residential	Count	16	7	23
		Percentage	15.7%	6.9%	22.5%
	Retail/Commercial	Count	3	3	6
		Percentage	2.9%	2.9%	5.9%
	Infrastructural	Count	7	3	10
		Percentage	6.9%	2.9%	9.8%
	Tourism	Count	27	19	46
		Percentage	26.5%	18.6%	45.1%
	Agriculture	Count	10	7	17
		Percentage	9.8%	6.9%	16.7%
Total		Count	63	39	102
		Percentage	61.8%	38.2%	100.0%

Table 5.17: Resident and Non-resident attitudes towards the role of development in the region's economic and social development

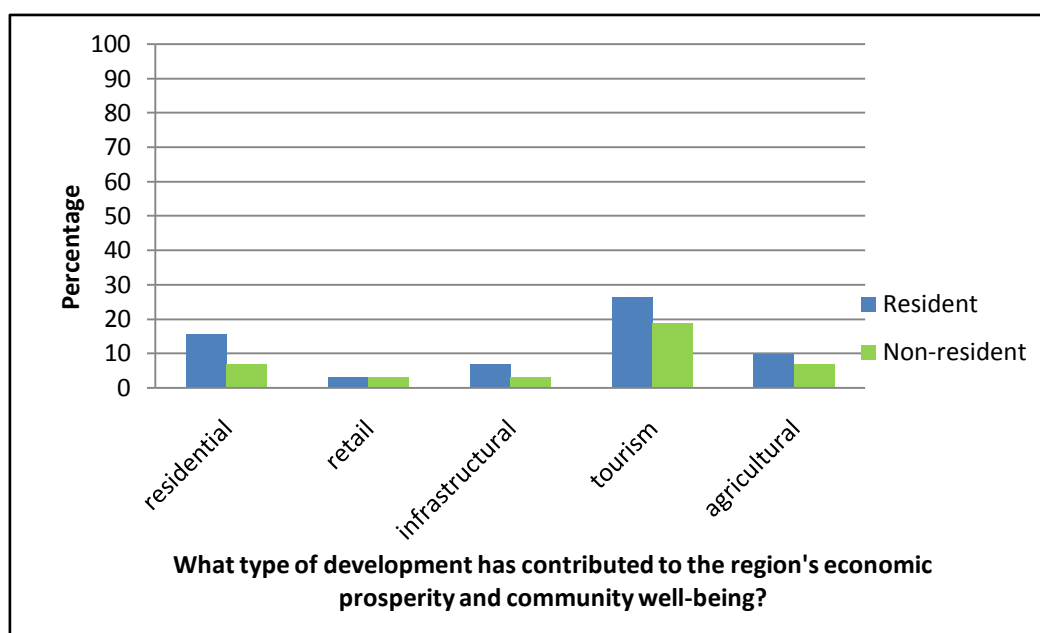


Figure 5.13: Resident and Non-resident attitudes towards the role of development in region's economic and social development

Similar results were obtained for the region's future economic prosperity and community well-being. Of the major economic sections, both residents (30.3%) and

non-residents (22.8%) believe that tourism development is most likely to contribute to the future economic prosperity and community well-being of the South Gozo Fault landscape.

					Total
			Resident	Non-resident	
What type of development is likely to contribute to the area's future economic prosperity and community well-being?	Residential	Count	14	7	21
		Percentage	9.7%	4.8%	14.5%
	Retail/Commercial	Count	9	8	17
		Percentage	6.2%	5.5%	11.7%
	Tourism	Count	44	33	77
		Percentage	30.3%	22.8%	53.1%
	Agriculture	Count	16	14	30
		Percentage	11.0%	9.7%	20.7%
Total		Count	83	62	145
		Percentage	57.2%	42.8%	100.0%

Table 5.18: Attitudes towards the region's future economic and social development

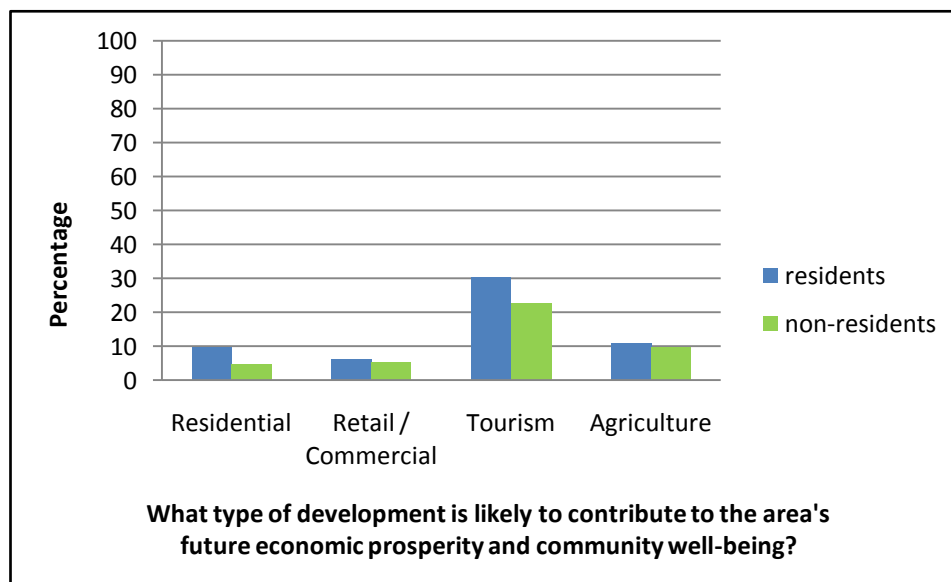


Figure 5.14: Attitudes towards the region's future economic and social development

The P-value (0.782) suggests that the differences in resident and non-resident perceptions towards the region's future economic prosperity and social development are not statistically significant given that there is a general agreement on the most important sectors.

5.2.4.3. Development Preferences amongst residents and non-residents of the South Gozo Fault

Attitudes towards possible development options were presented on a Likert-scale, ranging from '1=Strongly Oppose', '3 = Neither Agree nor Disagree' and '5 = Strongly Favour'. In general, residents and non-residents are mostly supportive of nature-based development options, including 'Nature Parks' (M= 4.10) and 'Designated Campgrounds' (M=3.69). On the whole, respondents are against the development of 'Industrial facilities' (M =2.08), 'Commercial and Retail outlets' (M =2.42), 'Apartments' (M = 2.46), 'Hotel Establishments' (M= 2.72) and 'Terraced Houses' (M =2.90).

Development Options	Residents and Non-resident Combined (Means)	Residents (Mean)	Non-Resident (Mean)
Hotel establishments	2.72	2.59	2.84
Apartments	2.45	2.36	2.54
Terraced houses	2.88	2.92	2.84
Designated campgrounds	3.68	3.66	3.70
Parking spaces	3.32	3.29	3.35
Cafes	3.32	3.44	3.20
Restaurants	3.04	3.10	2.98
Kiosks	3.06	3.00	3.11
Yacht marinas	3.48	2.85	4.11
Nature parks	6.56	4.12	2.44
Commercial / Retail outlets	2.29	2.42	2.15
Industrial facilities	2.63	2.02	3.24
Wind farms	3.28	3.51	3.05

Table 5.19: Attitudes toward development in the South Gozo Fault region

Both residents and non-residents oppose the development of 'Hotels', 'Apartments' and 'Terraced Houses' along the South Gozo Fault region. However, there are some conflicting attitudes towards the establishment of a nature park, yacht marina and industrial development facilities. While resident respondents strongly favour the establishment of a nature park (M =4.12), non-resident (M= 2.44) participants are not as keen about this type of development. On the contrary, non-residents are more supportive of yacht marina (M = 4.11) and industrial development facilities (M = 3.24).

5.3. Assessing change in character and value given a scenario of increased development

This assessment seeks to establish the main positive and negative impacts that further development would have on the character and value of the South Gozo Fault landscape.

A number of key respondents were asked to offer their perspectives on:

- The existing character, condition and value of the landscape;
- The presence of existing developments in the area;
- Whether further development is a threat to the character and quality of the landscape;
- The sensitivity of the landscape;
- The impact of possible future development projects on the landscape's character and value;

Respondents come from a variety of entities, including the two Local Councils of Qala and Ghajnsielem, the Malta Environment and Planning Authority, the Ministry for Gozo, the Faculty of Earth Systems and the Faculty for the Built Environment at the University of Malta, Nature Trust and Birdlife Malta (with the latter two being environmental NGOs). The outcomes from this study are presented in the two sections below.

5.3.1. Perspectives on the existing character, quality and value of the South Gozo Fault landscape

The table below displays respondents' views on the existing character of the South Gozo Fault landscape.

Entity	Landscape Character Description
Nature Trust	Interesting and diverse
Nature Trust	Diverse
Ministry for Gozo	Heterogeneous, containing large plains of agricultural land
Faculty of the Built Environment	Dramatic because of its diverse qualities
Faculty of Earth Systems	Predominantly rural with a dimension of the more 'urbanized' cultural fabric
Malta Environment and Planning Authority	Predominantly rural
Malta Environment and Planning Authority	Diverse
Bird Life Malta	Partly developed, partly untouched
Qala Local Council	
Ghajnsielem Local Council	Quite intact

Table 5.20: Respondents' opinions on the character of the landscape

In general, respondents from the Malta Environment and Planning Authority, Nature Trust, the Faculty of the Built Environment, the Ministry of Gozo and the Ghajnsielem Local Council seem to agree that the character of the South Gozo Fault landscape is a 'diverse' one, comprising two settlements, a port and a wide array of natural features. Those coming from the Faculty of Earth Systems and Bird Life Malta describe the landscape as 'predominantly rural' in character with a substantial degree of urbanization.

Respondents were also asked to comment about the quality of the South Gozo Fault landscape. Their views are displayed in the table below:

Key Respondents and their entities	Views on the Condition of the Landscape
Nature Trust	Quite good
Nature Trust	No comment
Ministry for Gozo	Some areas are significantly urbanized, while others remain unspoilt.
Faculty of the Built Environment	Some parts are in a relatively good state. Others have been undermined by development
Faculty of Earth Systems	Quite good
Malta Environment and Planning Authority	Generally good
Malta Environment and Planning Authority	No comment
Bird Life Malta	Mixed quality
Qala Local Council	Excluding Mgarr Harbour, the landscape is relatively intact
Ghajnsielem Local Council	Mixed quality

Table 5.21: Respondents opinion on the condition of the landscape

Representatives from Nature Trust, the Faculty of Earth Systems and the Malta Environment and Planning Authority maintain that the South Gozo Fault landscape is in a good condition. Their main argument in favour of this notion is that when compared to more severely degraded areas in the Maltese Islands, the South Gozo Fault landscape can be said to be quite intact. In general, respondents from the Ministry for Gozo, the Faculty of the Built Environment, Bird Life Malta and the Ghajnsielem and Qala Local Councils claim that the landscape is of a mixed quality. They argue that the western (between Mgarr and Mgarr ix-Xini) and eastern parts (from Zewwieqa eastwards) are in a relatively good state, unlike other urban character areas which have been undermined by development.

Respondents were also asked to rate the values of the entire South Gozo Fault landscape based on its current level of development. It is important to mention that a rating score of '1' signifies a low landscape value, while a score of '5' denotes a high landscape value. There were several respondents who provided no opinion on this matter. The outcomes are displayed in the figure below:

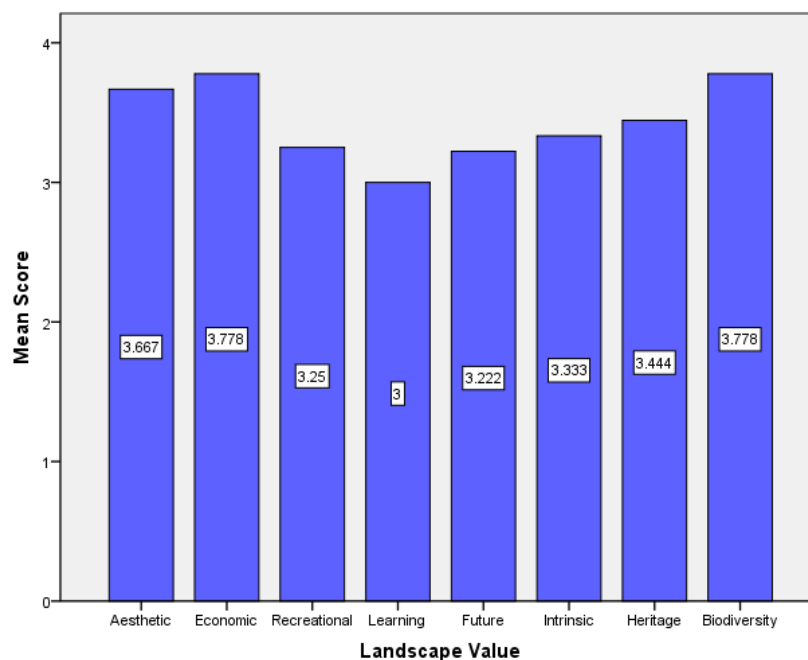


Figure 5.15: Respondents attitudes towards the value of the entire landscape

In general, the highest mean scores were attributed to the 'economic' (M=3.78) and 'biodiversity' (M=3.79) values of the landscape, followed by 'aesthetic' (M= 3.67) and

heritage (M= 3.44) values. Conversely, the lowest mean scores were given to the ‘learning’ (M= 3.0), ‘future’ (M= 3.22) and ‘recreational’ (M=3.25) values of the landscape.

5.3.2. Attitudes towards the presence of existing developments and the impact the further development would have on the character and value of the South Gozo Fault landscape

Respondents were asked to describe the current level of development along the South Gozo Fault landscape. The figure below illustrates the results:

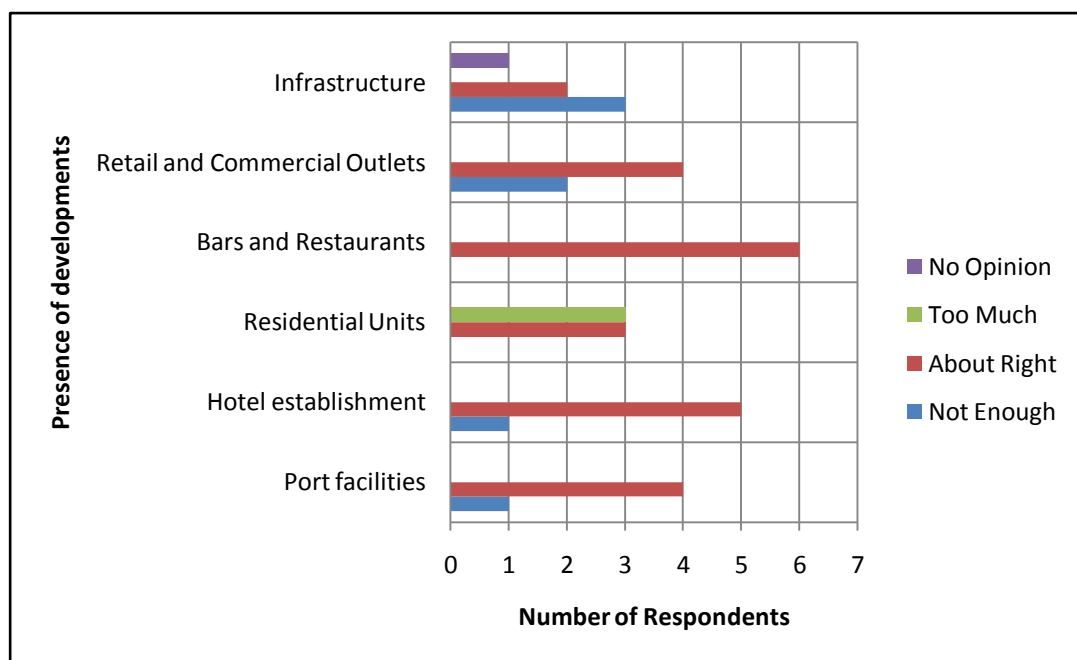


Figure 5.16: Respondent opinion on the presence of development

Generally speaking, respondents believe that the area contains an adequate level of developments. However, there are some respondents who believe that the area is lacking in ‘retail and commercial outlets’, ‘hotels’ and port facilities’. There are conflicting views on the presence of ‘residential units’. Half of the respondents believe that the area hosts too many dwellings, while the remaining half believe that the current level of residential development is about right. The same thing applies to infrastructural

development. Some respondents think that the region's infrastructure is satisfactory, while others believe it is lacking.

Subsequently, respondents were required to share their views on whether further development would threaten the character and value of the South Gozo Fault landscape. Many believe that the current level of development is already a threat to the existing character of the landscape and if urban development were to intensify, this would have serious repercussions on the character of the landscape. However, one of the representatives from the Malta Environment and Planning Authority provided no direct answer to this question, and argued that the effects of further development would depend on its location and design and that *“sensitively designed new development within the established built-up areas would not affect the character”*.

In general, those who believe that development would influence the character of the landscape refer to the following impacts:

- Visually dominate or disrupt the skyline
- Modify the landscape and increase habitat loss
- Degrade open green spaces
- Increase population density
- Amplify traffic, congestion and pollution levels
- Alter the distinctive character of Ghajnsielem and Qala
- Detract from landscape quality

Interviewees were also asked to comment on the influence of development on all values of the landscape. Their responses can be grouped into three main categories:

- **Development will threaten all values of the landscape.** This notion is supported by a representative from the Faculty of the Built Environment, whereby the individual claims that if current development trends persist, Gozo's potential as an “upmarket cultural, ecological and agri-touristic site” will be ruined.

- **Development will affect some values of the landscape, while others will be un-impacted.** This idea is favoured by members of Nature Trust and Birdlife Malta, the Qala and Ghajnsielem Local Councils, the Ministry for Gozo and the Malta Environment and Planning Authority. However, respondents seem to hold conflicting views on which values will most likely be impacted. In general, respondents believe that the ‘economic’ and ‘recreational’ values of the landscape will be least affected.
- **Development can potentially threaten all landscape values if not well-planned and managed.** Another respondent from the Malta Environment and Planning Authority, together with a representative of the Institute of Earth Systems argue that the impact of development on landscape values is subject to issues of scale, type, location and design of the development, and that if not properly planned and managed, development will threaten all values of the landscape.

5.3.3. Assessing the degree to which the South Gozo Fault landscape is sensitive to development

Perspectives on landscape sensitivity seem to vary amongst respondents of different entities. There seemed to be a general agreement amongst representatives of the Ministry for Gozo and the Faculty of Architecture that landscape sensitivity depends on *“the degree of change”* and *“that such decisions have to be made on the run and can be changed according to specific circumstances”*. A spokesperson for BirdLife Malta argued in favour of *“small-compatible development which can enhance the present character and value of the South Gozo Fault landscape”*. Further to this, the representative maintained that *“as long as Structure and Local Plan policies are enforced, there should be no detrimental impact on the character and value of the landscape”*. Contrarily, Nature Trust Malta argues that *“there is no such thing as finding a balance”* and that *“large-scale development in one area will have a detrimental effect on other areas along the landscape”*. However, the organization did mention that the area can accommodate changes related to *“dry stone wall repairs, small scale organic farming, ecological restoration of disturbed habitats and historic*

buildings restoration". On a similar note, respondents from the Malta Environment Planning Authority and the IES agree that the landscape is very sensitive to urbanization and has a limited ability to withstand **urban development** "*without deep-seated changes to its character*".

In this respect, one can group respondents' views into three main categories:

- Landscape sensitivity is much dependent on the extent to which landscape is modified. In other words, there is no clearly defined line between development and its impact on landscape character and value.
- Small-scale development which is in line with Structure and Local Plan policies poses no threat to the sensitivity of the landscape, but can rather enhance its character and value.
- Urban development is a key threat to the sensitivity of the landscape and will most likely impact its character and value.

Representatives from all nine entities were asked to share their views on whether the implementation of a series of natural and urban-based development projects will impact the character and value of the South Gozo Fault landscape.

Figure 10 below illustrates the respondents' opinions on the effect of development on the character of the landscape. The results point to a general consensus amongst all seven organizations that each development project will somehow influence the character of the South Gozo Fault landscape depending on its scale, siting and design. The general argument against the development of 'hotels', 'apartments' 'terraced houses', 'commercial and retail outlets' and 'Restaurants and cafeterias' is that these projects will trigger landscape modification and contribute to a higher resident and tourist population, a higher demand for resources, utilities and infrastructure, higher traffic and road congestion levels and excessive air and noise pollution in the region. There were other respondents who stated that the impact of these developments will depend on a multitude of factors, mainly on the scale and design of the projects and on their general compatibility with the surrounding environment.

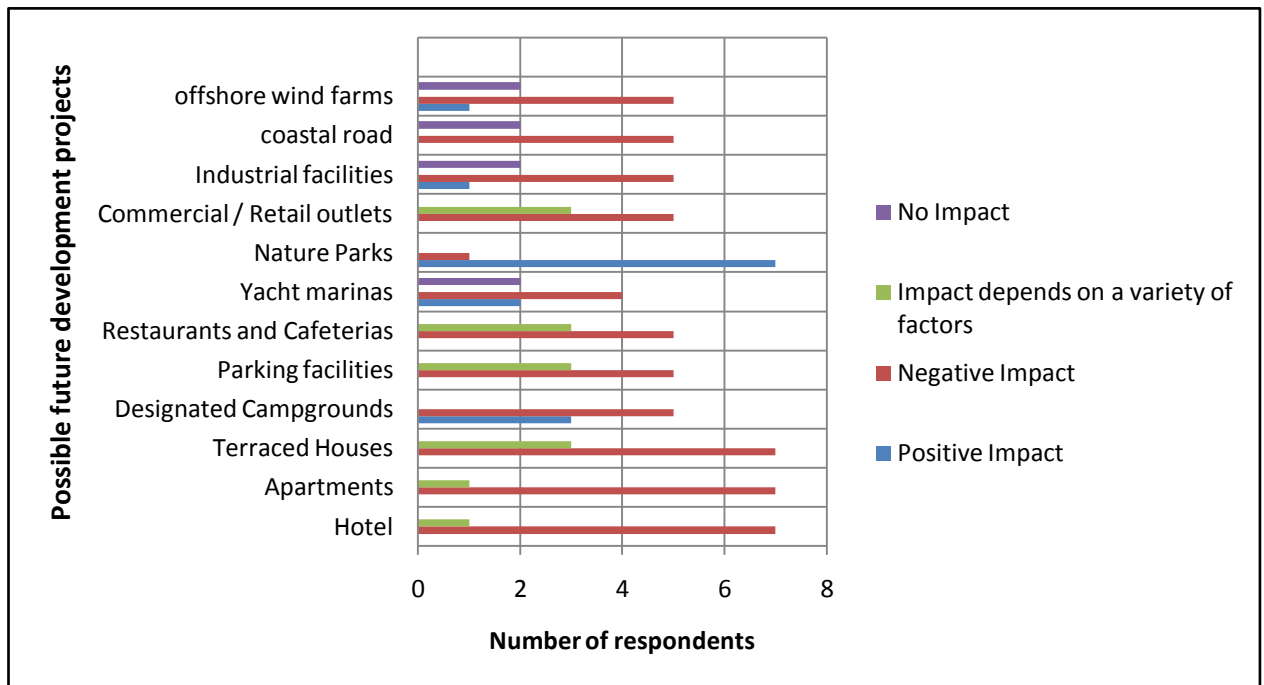


Figure 5.17: Respondents' attitudes towards the impact, or the lack of it, of possible future developments on the character of the landscape

All respondents seem to think that the development of a 'coastal road' and 'industrial facilities' will have an overall negative impact on the character of the South Gozo Fault landscape. In general, respondents argued that a coastal road will not only visually dominate the landscape, but will intensify traffic levels in the region. Moreover, the majority believe that the South Gozo Fault is not the ideal site for industrial development and that this would definitely alter the character of the landscape. However, there were conflicting views on the impact, or the lack of it, of the establishment of another 'yacht marina' and additional 'parking facilities' on the existing character of the landscape. The majority expect these developments to have a negative impact on the landscape, while a smaller number argue that as long as these developments are sensitively designed and well-integrated into the surrounding area, there should be no impact on the character of the landscape. In contrast, nature park and campground designations are perceived to have a positive impact on the character of the landscape, given that they are well-managed and well-blended into the surroundings.

Similar results were noted for perceptions of landscape value. In general all development options are deemed to have an overall negative influence on the value of the landscape, except for nature parks. On the whole, respondents argued that most urban-type development will have a negative impact on all values of the landscape. One

sub-group of respondents noted that the impact of most of the listed development projects will depend on factors of scale, size, location, planning, design and compatibility of the development with their surrounding environment.

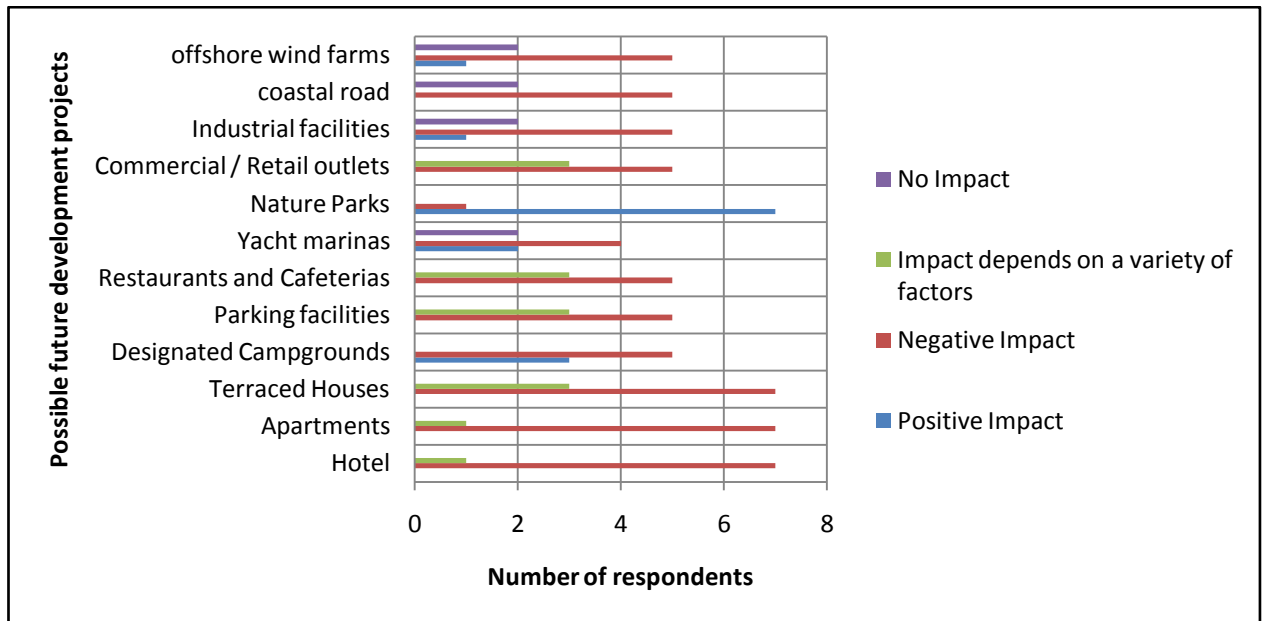


Figure 5.18: Respondents' attitudes towards the impact, or the lack of it, of possible future developments on the value of the landscape

Few developments are considered to have a positive impact on the value of the landscape. There was a general agreement amongst respondents about the positive influence of 'nature park designation/s' on all values of the landscape. Similarly, 'offshore wind farms', 'designated campgrounds' and 'yacht marinas' are likely to enhance the landscape's economic, recreational, and learning values, though to a lesser extent.

In summary one can state that:

- Urban-based development is likely to have a negative impact on both landscape character and value. However, this is subject to issues of scale, siting, design and general compatibility with the surrounding environment.
- Nature-based development, especially nature park designation/s, is expected to enhance the character and value of the landscape given that any development features are properly managed and well- integrated with their surroundings.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

Chapter 6

Conclusions and Recommendations

6.0. Chapter Outline

This section sets out the main conclusions of the study and provides recommendations on a number of issues.

6.1. Concluding Remarks

6.1.1. Summary of the key characteristics of the South Gozo Fault

Landscape

After an extensive desk study and field survey, the South Gozo Fault landscape was divided into six character areas. The table below highlights the main rock exposures, geomorphologic features, slope, soil cover, ecological communities, levels of sustainability, stress factors and susceptibility issues for each of the six character areas. Of all the different character areas, the Mgarr Harbour area hosts the largest amount of activities, most of which stem from the increased communication between the islands. It is subject to water pollution, traffic, congestion, noise and air pollution, and urbanization stresses, and is particularly susceptible to future development. In conclusion, one can state that this character area contains the highest level of development and that the harbour's multiple uses have overwhelmed its scale and traditional characteristics.

Table 6.1: Landscape Appraisal Approach

Character Areas	Spatial Dimension	Stratigraphy	Slope	Soil Cover	Species	Sustainability	Stress Factors	Susceptibility
Mgarr ix-Xini Valley	Steep-sided valley to the SE coast of Gozo	Oligocene Lower Coralline Limestone and Oligocene Globigerina Limestone	10-70 meters above sea level	Terra Rossa, Xerorendzina , Carbonate Raw Soil	Species of garrigue, steppic and maquis communities	Valley retains much of its original state; Relatively intact; Rich in ecologically significant plant communities; Limited Development	Recreation and Agriculture	Soil Erosion and Land Degradation
Ras il-Hobz Coast	Low-lying coast with a gentle dip towards the South	Oligocene Globigerina Limestone and Miocene Blue Clay	10 – 60 meters above sea level	Carbonate raw soil and Xerorendzina	Species of steppic, garrigue, wooded and 'rdum' communities	Intact and unspoiled environment; few structures dominate the coast (boathouses and 'dura' structures, sewage treatment plant)	Recreation, Agriculture and Sewage	Changes in groundwater quality
Mgarr Harbour Area	Semi-artificial port and fishing hamlet with a general S-SE trending dip	Miocene Blue Clay	10 meters above sea level	Carbonate raw soil, Xerorendzina , Terra Rossa and Soil Complexes	Plantation species and those of secondary maquis communities	Exploited for a variety of uses + limited space and resources = User Conflict	Water pollution, traffic and congestion, urbanization	Area's green spaces are susceptible to development
South East Qala Coast	Gently sloping rocky coastline with a general SE tilt	Oligocene Globigerina Limestone	10 meters above sea level	Terra Rossa soil	Halophyte species and those of coastal garrigues	Undeveloped and retains its original state. Proposed destination port at Hondoq ir-Rummien	Recreation and future impacts from Hondoq development	Future development
East Qala slopes	Moderately sloping land with a SE tilt	Oligocene Globigerina Limestone and Miocene Blue Clay	10 – 100 meters above sea level	Carbonate raw soil, Xerorendzina , Terra Rossa and Soil Complexes	Species of arboreal assemblages , steppe, maquis and garrigue communities	Development is absent from this area; Abandoned agricultural land predominates	Land abandonment and lack of management.	Soil Erosion and Land Degradation
Xewkija Plain	Relatively flat area	Upper Coralline Limestone and Miocene Blue Clay	60-90 meters above sea level	Terra Rossa and Carbonate Raw soils	Species of garrigue and stepic communities.	Characterized by rural development and high levels of congestion and pollution.	Development , congestion and pollution	The impact of rural development and pollution.

In contrast, other character areas are less affected by development. In fact, development is absent from the ‘Southeast Qala Coast’ and the ‘Eastern Qala slopes’ character areas. In the ‘Mgarr ix-Xini valley’, ‘Ras il-Hobz Coast’ character areas, development is restricted to a few structures along the coastline including residential units, boathouses and infrastructural facilities. In this respect, their character can be described as predominantly rural.

6.1.2. Perceived landscape values along the South Gozo Fault landscape

Based on the outcomes of the landscape values survey, one can conclude that community perceptions of landscape values along the entire South Gozo Fault landscape are generally inclined towards aesthetic, biodiversity, heritage and recreational values of the landscape. Natural landscape components were assigned the highest aesthetic, recreational, future, learning, and intrinsic and biodiversity values, but were, perhaps surprisingly, assigned the lowest economic values. One can conclude that these natural features are not considered to generate income. Cultural heritage sites featured highly for their learning, future, intrinsic and heritage values.

6.1.3. Place attachment

In general, one can conclude that both residents and non-residents of the South Gozo Fault region seemed to enjoy close ties with its landscape. Resident respondents and those with a greater knowledge of places within the landscape were found to have a stronger place dependence and identity. Moreover, biodiversity, future and intrinsic values emerged as significant predictors of place identity.

6.1.4. Development preferences and selected natural resource management issues

In general, both residents and non-residents favoured nature-based developments, including nature parks and designated campgrounds. The development of hotels, apartments and terraced houses was opposed by both residents and non-residents of the region.

6.1.5. Changes in character and value given a scenario of increased development

Based on the outcomes of an interview conducted with nine key respondents, one can conclude that the existing character of the South Gozo Fault landscape is a predominantly rural one with a substantial degree of urbanization in specific areas. One can also conclude that the condition of the South Gozo Fault landscape varies across urban and rural landscapes. The western and eastern segments of the South Gozo Fault landscape are of a higher quality than that of the Mgarr Harbour. Respondents also agreed that the landscape enjoys high aesthetic, economic and biodiversity values. There seems to be a general consensus amongst questionnaire and interview respondents about the relatively high aesthetic and biodiversity values of the landscape. However, it is worth mentioning that questionnaire respondents displayed a very low appreciation towards the economic value of the landscape.

Based on their views, one can conclude that the region holds an adequate level of port facilities, hotels, bars and restaurants, but is somewhat lacking in retail and commercial outlets and infrastructure. The majority believe that further development would be a threat to the character and value of the landscape and that the impacts would be various. There were different views on the extent to which development can impact the character and value of the landscape. In general, one can conclude that urban-based development is likely to have a negative impact on the character and value of the South Gozo Fault landscape, while nature-based developments will probably enhance the landscape's character and value given that they are well-planned and managed.

6.2. Recommendations

6.2.1. Recommendations for the protection and development of the South Gozo Fault Landscape

- **Urbanization**
 - Conduct a baseline study which identifies areas of ecological, cultural and historical significance and establish the best way in which such resources can be protected and conserved.

- Restrict new development to existing built-up areas.
- Ensure that development in previously undeveloped areas has a limited footprint and that negative environmental impacts are kept to a minimum.
- Sensitively integrate new development projects into their surrounding landscape.
- Strictly prohibit illegal development outside the development zone and in protected areas.
- Promote the view of land as a holistic entity which acts not only as an economic asset, but also as an essential contributor to the individual's quality of life and an attraction for locals and tourists. This can be achieved through environmental education programmes.

- **Agriculture**

- Promote organic forms of agriculture and discourage chemical fertilization due to severe impacts on hydrological and ecological systems and human health.
- Control and monitor groundwater abstraction in areas of agricultural intensification, since this can have severe impacts on the freshwater balance.
- Maintain agricultural land by:
 - Providing financial incentives which encourage more people to get involved in agriculture. Agriculture must be promoted as an economically fulfilling undertaking.
 - Ensuring that the “*Rubble Wall and Rural Structures Conservation and Maintenance Regulations (1997)*” are adequately enforced.
 - Encouraging the use of windbreakers.
 - Maintaining soil organic matter by using crop rotation methods.

- Protecting soil structure through the appropriate use of machinery.
 - Restrict agricultural activities on sloping areas or at the very least ensure contour ploughing.
 - Maintain vegetative cover.
 - Control off-roading activities which are key contributors to soil erosion.
- **Recreation**
 - Plan and manage recreation in a way which satisfies the needs of the community and respects the carrying capacity of the landscape.
 - Planning walking trails
- **Sewage Leakages**
 - Prevent sewage leakages by monitoring the sources of such leakages and by promoting a more integrated mitigation strategy of sewage leakages in the area.

6.2.2. Recommendations for maintaining and enhancing the character and value of the South Gozo Fault landscape

- Recognize landscape as a fundamental and valid criterion in planning decisions;
- Strengthen law enforcement in the development planning process;
- Encourage effective community participation at all stages of the development planning process;
- Maintain a spatial distinction between villages (through development control);
- Rehabilitate and conserve features of cultural and historical importance;

- Establish educational programmes which raise awareness of the special characteristics and value of the landscape;
- Rehabilitate all environmental ‘wounds’, including disused quarries and abandoned land by means of landscaping with indigenous species;
- Encourage the development of footpaths for coastal walkers which would enhance the recreational and economic values of the landscape;

6.2.3. Recommended Applications for Landscape Character and Value Assessments

It is recommended that this Landscape Assessment study be available to all those interested in landscape planning, design and management of the South Gozo Fault landscape (as well as other areas of the Maltese Islands).

This Landscape Character Assessment should be used to:

- Raise awareness of the importance of landscape character and its role in contributing to the region’s quality of life by identifying:
 - The differences and similarities between places;
 - What contributes to place identity and uniqueness;
 - The need to protect and enhance valued characteristics of the landscape;
 - Development which respects these valued qualities;
 - The need to improve landscape quality through good design;
- Inform the establishment of character-based policies in Local Plans;
- Advise development control decisions about proposals for development projects and other forms of land use change;

- Provide a framework for more comprehensive studies which seek to add to the evidence base, and for incorporating landscape enhancement with development schemes;
- Provide a baseline for monitoring the impact of new development along the South Gozo Fault landscape;

6.2.4. Policy Recommendations

It is recommended that more explicit landscape policies should be instituted within planning guidance documents. Such policies should address the following considerations:

- Landscape character and local distinctiveness should be protected, conserved, and enhanced. New development should respect those features which contribute to the region's distinctiveness, including its natural features, settlements and historical features, amongst others.
- Development proposals should consider key characteristics, local distinctiveness and sensitivity to change of relevant character areas identified by this landscape character assessment. Their location, scale and design should complement, rather than undermine, the character of the landscape. Moreover, new development must be sensitively integrated into surrounding environments.
- Development should only be permitted where it can protect, conserve and enhance the character and distinctiveness of the area, the distinctive setting of the settlements and buildings, the function of watercourses and vegetation and the topography of the area including sensitive skylines, hillsides and geological features.
- Landscape must be addressed strategically, so that it can accommodate complex and multi-dimensional relationships between the conservation of natural and cultural resources, good governance and sustainable

development. A strategic approach to landscape seeks to link local development needs with the sustainable utilization of resources. In the absence of such a strategic view, landscape will most likely be affected by cumulative and synergistic impacts.

- Landscape character policies should be incorporated with other Structure and Local Plan policies, including heritage, settlement, agriculture and design policies.
- Community perceptions and values must be recognized in landscape policies. These actions typically express the shared values and ideas which give particular communities their shape and character. An understanding of community values is an essential part of conservation management.

6.2.5. Recommendations for Further Work

- A study which explores the perceived role of the natural environment in tourism. One of the key findings of this study suggested that the Gozitan population attributed a very low economic value to the natural features of the South Gozo Fault landscape. Interestingly enough, tourism was found to be the major contributor of economic prosperity in the region. This implies that tourism is not perceived to be linked to the natural environment. Further studies should address this issue.
- A carrying-capacity study of the landscape which examines the effects of development – scale, type, location, quality – on natural and human environments with the aim of identifying critical thresholds beyond which landscape is severely threatened.
- Environmental Impact Assessments for large-scale development projects and their influence on the region's economic, social, environmental and cultural dimensions.

- Environmental monitoring studies, including air and water quality surveys, and systematic erosion / desertification studies.
- A Settlement Character Assessment would be ideal for the villages of Qala and Ghajnsielem. Such an assessment should address topography, settlement patterns, cultural, historical and archaeological sites and sense of place, amongst others.
- A Historical Landscape Assessment would complement and strengthen the LCA by acknowledging that the existing landscape is the product changes throughout the course of human habitation. In other words, it can be used to assess the historic time-depth of the landscape.
- A Landscape Design Guidance should be developed to promote sensitive and high quality landscape design through the use of guidelines which specify the ways in which development can be sensitively integrated into the surrounding landscape.

6.3. Overall Conclusion

In general, one can conclude that a number of important issues emerge from this study:

- The Landscape Character Assessment process is a fundamental tool for the planning, management and design of landscapes. It provides a clear understanding of the existing character of the landscape and how it may change in the future. It plays a fundamental role in ensuring that the character and value of a landscape are not undermined by development but may be enhanced by it.
- Development is, and will continue to be, a major threat to the landscape, particularly where this takes place in an inadequately regulated manner. In this respect, the development planning process of the Maltese Islands needs to be improved. The Malta Environment and Planning Authority should take a stronger stand against illegal development outside the development zone and in

protected areas. It needs to be more transparent and accountable and should adopt a stronger enforcement system.

- Public participation plays an important role in providing an understanding of landscape values and development preferences. Solutions to the numerous environmental management problems lie in the actions of people and in the way they value land. Public perception of places and landscape value is an important component of landscape planning and management.

CHAPTER 7

REFERENCE LIST

Chapter 7

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APPENDIX I

Questionnaire

A Landscape Assessment Study of the South Gozo Fault Area

I am a graduate student seeking my Master's degree in Sustainable Environmental Resource Management at the University of Malta, in part collaboration with James Madison University of the United States.

I am currently working on my Masters dissertation which comprises a Landscape Assessment Study of the South Gozo Fault Area. This covers the whole area from Ras il-Qala on the south of Gozo, to Mgarr ix-Xini on the southeast. The main aim of this dissertation is to investigate how both existing and proposed development projects have impacted, or will impact, the landscape's character and value.

I am inviting you to participate in this research project by completing a short questionnaire which asks a variety of questions relating to your familiarity and attachment to the South Gozo Fault area and to your opinions regarding the value of numerous physical and human components of the landscape and its future value.

The survey will take approximately 10 minutes to complete. Completion and return of this survey indicate voluntary consent to participate in this study. All your responses will be kept confidential.

If you have any questions or concerns about completing the questionnaire, please send me an email on mxue0009@gmail.com or contact me on 79284617.

Thank you for taking the time to assist me in this study. Your participation in this survey will be highly appreciated!

Yours sincerely,
Mariella Xuereb
Candidate for MSc. Sustainable Environmental
Resource Management
University of Malta / James Madison University '10

B.A. (Hons) Geography
University of Malta '09

Section 1: Your familiarity and attachment to the South Gozo Fault Area

The South Gozo Fault area provides an interesting, even picturesque, coastal landscape which stretches from Ras il-Qala on the east coast of Gozo, to Mgarr ix-Xini on the southeastern littoral. The region is characterized by a wide variety of landscape features, both natural and human. Natural features include steep terraced slopes, planted woodlands, cliffs, caves, shore platforms, pebble beaches, bays and inlets, while human features comprise both existing and proposed development projects, together with prominent cultural heritage sites.

1. How would you describe your knowledge of places within the South Gozo Fault Area?

- ☐ Know entire area very well
- ☐ Know some places very well
- ☐ Absolutely no knowledge of places within the area

2. Below is a list of statements about your attachment to the South Gozo Fault Region. Please indicate your level of agreement or disagreement with each statement.

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
I feel that this area is a part of me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This region is very special to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am very attached to this area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Living within this area says a lot about who I am.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This region is the best place for what I like to do	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No other place can compare to this region.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get more satisfaction out of living in this region than in any other place.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wouldn't substitute any other area for doing the types of things i do in this region.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel relaxed when I am in this region.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel the happiest when I am in this area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I really miss this region when i am away from it for too long.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 2: The physical and human components of the landscape

This section seeks your opinion on the value of numerous physical and human elements present within the South Gozo Fault landscape.

- 3. Do you think that the region features economic prosperity and community well-being? If No move on to Q5**

- ☐ Yes
☐ No

- 4. What type of development has widely contributed to the region's economic prosperity and community well-being?**

- ☐ Residential
☐ Retail/Commercial
☐ Infrastructural
☐ Tourism
☐ Agriculture
☐ Other (Please specify) _____

- 5. How would you describe the presence of the following developments:**

	Not Enough	About Right	Too Much	No Opinion
Port Facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hotel Establishments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Residential Units	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bars and Restaurants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Retail / Commercial Establishments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 6. Do you think that the South Gozo Fault Area is somewhat threatened?**

- ☐ Yes
☐ No
☐ Other (Please Specify) _____

7. In your opinion, which of the following threats are relevant to the South Gozo Fault Landscape?

- ☐ Rising coastal populations
- ☐ Increased number of visitors
- ☐ Visitor / tourist behavior
- ☐ Rapid tourism development
- ☐ Urbanization
- ☐ Loss of coastal scenery
- ☐ Vegetation clearing
- ☐ Intensive agriculture
- ☐ Lack of rubble wall maintenance
- ☐ Industrial / commercial / military installations
- ☐ Dumping of domestic and building waste
- ☐ Other (Please specify) _____

8. How would you rate the overall value of the entire South Gozo Fault landscape?

(1= low; 5=high)

	1	2	3	4	5
Aesthetic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Economic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recreational	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Future	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intrinsic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spiritual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cultural	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Historical	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Biodiversity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Below is a list of the major existing features of the South Gozo Fault Area.

Please rank each element in terms of its aesthetic value (Places with attractive scenery, sights, smells or sound)

(1= low aesthetic value; 5= high aesthetic value).

Repeat this task for different values from Q10-Q17.

	1	2	3	4	5
Cultural heritage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Port facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yacht Marinas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Utilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hotels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restaurants					
Residential Units	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supermarkets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Woodlands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bays and inlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sheer cliffs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shore platforms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Caves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steep slopes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gently rolling landscapes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. Please rank each element in terms of its economic value *(The value of an asset derived from its ability to generate income).*
(1= low economic value;5= high economic value).

	1	2	3	4	5
Cultural heritage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Port facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yacht Marinas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hotels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restaurants					
Residential Units	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supermarkets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Woodlands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bays and inlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sheer cliffs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shore platforms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Caves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steep slopes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gently rolling landscapes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. Please rank each element in terms of its recreational value **(Places with outdoor recreation opportunities).**
(1= low recreational value;5= high recreational value).

	1	2	3	4	5
Cultural heritage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Port facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yacht Marinas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hotels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restaurants					
Residential Units	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supermarkets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Woodlands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bays and inlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sheer cliffs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shore platforms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Caves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steep slopes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gently rolling landscapes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Please rank each element in terms of its learning value (Places with opportunities to learn about the environment).
*(1= low **learning** value; 5= high **learning** value).*

	1	2	3	4	5
Cultural heritage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Port facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yacht Marinas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hotels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restaurants					
Residential Units	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supermarkets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Woodlands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bays and inlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sheer cliffs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shore platforms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Caves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steep slopes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gently rolling landscapes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. Please rank each element in terms of its future value (Places which allow future generations to know and experience them as they are now).

(1= low **future** value;5= high future value).

	1	2	3	4	5
Cultural heritage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Port facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yacht Marinas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hotels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restaurants					
Residential Units	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supermarkets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Woodlands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bays and inlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sheer cliffs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shore platforms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Caves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steep slopes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gently rolling landscapes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. Please rank each element in terms of its intrinsic value (Places with special values for their own sake).

(1= low **intrinsic** value;5= high intrinsic value).

	1	2	3	4	5
Cultural heritage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Port facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yacht Marinas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hotels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restaurants					
Residential Units	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supermarkets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Woodlands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bays and inlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sheer cliffs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shore	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

platforms					
Caves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steep slopes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gently rolling landscapes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. Please rank each element in terms of its spiritual value (Places which are spiritually special).
(1= low spiritual value;5= high spiritual value).

	1	2	3	4	5
Cultural heritage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Port facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yacht Marinas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hotels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restaurants					
Residential Units	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supermarkets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Woodlands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bays and inlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sheer cliffs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shore platforms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Caves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steep slopes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gently rolling landscapes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. Please rank each element in terms of its cultural / historical value (Places which provide individuals with the opportunity to see and experience nature as our ancestors did).
(1= low cultural / historical value;5= high cultural / historical value).

	1	2	3	4	5
Cultural heritage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Port facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yacht Marinas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hotels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restaurants					
Residential	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Units					
Supermarkets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Woodlands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bays and inlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sheer cliffs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shore platforms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Caves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steep slopes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gently rolling landscapes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. Please rank each element in terms of its biodiversity (Places with a variety of plants, wildlife, aquatic life or other living organisms).
(1= low biodiversity value;5= high biodiversity value).

	1	2	3	4	5
Cultural heritage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Port facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yacht Marinas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hotels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restaurants					
Residential Units	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supermarkets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Woodlands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bays and inlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sheer cliffs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shore platforms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Caves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steep slopes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gently rolling landscapes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 3: The Future of the South Gozo Fault Area

This section requires your opinion about the value of the landscape in 10-15 years time.

18. What type of development is likely to contribute to the area's future economic prosperity and community well-being?

- ☐ **Residential**
- ☐ **Retail / Commercial**

- ☐ Tourism
☐ Agriculture
☐ Other (Please specify) _____

19. Which of the following development options would you deem suitable for the South Gozo Fault Area in the future?

	Strongly Favour	Favour	Neither Favour nor Oppose	Oppose	Strongly Oppose
5-star hotel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apartments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Terraced houses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Designated campgrounds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Parking facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cafes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restaurants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kiosks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yacht Marinas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nature parks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Commercial / Retail outlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Industrial / Manufacturing facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wind farms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. How do you think landscape values of the South Gozo Fault Area will change in the next 10-15 years?

	Improve	Remain the same	Worsen
Aesthetic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Economic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recreational	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Future	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intrinsic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spiritual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cultural	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Historical	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Biodiversity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 4: Personal Details

21. Age

- ☐ Under 18
- ☐ 19-25
- ☐ 26-40
- ☐ 41-60
- ☐ 60+

22. Gender

- ☐ Male
- ☐ Female

23. Locality: _____

24. Education Credentials

- ☐ Secondary Education Certificate
- ☐ Matriculation Certificate
- ☐ Bachelor's Degree
- ☐ Post-Graduate Diploma
- ☐ Master's Degree
- ☐ Doctor's Degree
- ☐ None of the Above

THANKYOU

APPENDIX II

Interview

Interviewee:
Professional Expertise:

The South Gozo Fault area provides a diverse coastal landscape which stretches from Ras il-Qala on the east coast of Gozo, to Mgarr ix-Xini on the southeastern littoral. The region is characterized by a wide variety of landscape features, both natural and human. Natural features include cliffs, caves, shore platforms, pebble beaches, bays and inlets, while human features comprise prominent cultural heritage sites, churches, residential units, port facilities, hotels, bars and restaurants, amongst others.



Section 1: Landscape character and condition

1. How would you describe the character of the South Gozo Fault landscape?

2. What are your views on the condition of the South Gozo Fault landscape?

3. How do you consider the presence of the following developments:

	Not Enough	About Right	Too Much	No Opinion
Port Facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hotel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Establishments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Residential Units	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bars and	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restaurants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Retail /	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Commercial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Establishments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

4. In general, do you think that further development is a threat to the character and quality of the South Gozo Fault landscape? If yes, how will this influence the overall quality and character of the landscape?

Section 2: Landscape Value

***Please refer to page 7 for definitions of the 8 different landscape values**

5. Do you think that development is a threat to the overall value of the South Gozo Fault landscape?

	Yes	No	How?
Aesthetic	<input type="checkbox"/>	<input type="checkbox"/>	
Economic	<input type="checkbox"/>	<input type="checkbox"/>	
Recreational	<input type="checkbox"/>	<input type="checkbox"/>	
Learning	<input type="checkbox"/>	<input type="checkbox"/>	
Future	<input type="checkbox"/>	<input type="checkbox"/>	
Intrinsic	<input type="checkbox"/>	<input type="checkbox"/>	
Heritage	<input type="checkbox"/>	<input type="checkbox"/>	
Biodiversity	<input type="checkbox"/>	<input type="checkbox"/>	

6. In general, how do you rate the overall value of the South Gozo Fault landscape in its current level of development?
(1= low; 5=high)

	1	2	3	4	5
Aesthetic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Economic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recreational	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Future	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intrinsic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spiritual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heritage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Biodiversity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

Section 3: Assessing change in character and value given a scenario of increased development

7. In your opinion, what is the degree to which the area can accommodate change without significant effects on its character and value?

8. If the following development projects were to be implemented within the South Gozo Fault area in the next 10 years, would these influence the character of the landscape? If yes, how?

	Yes	No	How?
Hotel establishments	<input type="checkbox"/>	<input type="checkbox"/>	
Apartments	<input type="checkbox"/>	<input type="checkbox"/>	
Terraced	<input type="checkbox"/>	<input type="checkbox"/>	

houses			
Designated campgrounds	<input type="checkbox"/>	<input type="checkbox"/>	
Parking facilities	<input type="checkbox"/>	<input type="checkbox"/>	
Restaurants & Cafeterias	<input type="checkbox"/>	<input type="checkbox"/>	
Yacht Marinas	<input type="checkbox"/>	<input type="checkbox"/>	
Nature parks	<input type="checkbox"/>	<input type="checkbox"/>	
Commercial / Retail outlets	<input type="checkbox"/>	<input type="checkbox"/>	
Industrial / Manufacturing facilities	<input type="checkbox"/>	<input type="checkbox"/>	
Coastal Road			
Offshore wind farms	<input type="checkbox"/>	<input type="checkbox"/>	

9. Would the same development projects influence the value of the South Gozo Fault landscape? If yes how?

	Yes	No	How?
5-star hotel	<input type="checkbox"/>	<input type="checkbox"/>	
Apartments	<input type="checkbox"/>	<input type="checkbox"/>	
Terraced houses	<input type="checkbox"/>	<input type="checkbox"/>	
Designated campgrounds	<input type="checkbox"/>	<input type="checkbox"/>	
Parking facilities	<input type="checkbox"/>	<input type="checkbox"/>	
Restaurants & Cafeterias	<input type="checkbox"/>	<input type="checkbox"/>	
Yacht Marinas	<input type="checkbox"/>	<input type="checkbox"/>	
Nature parks	<input type="checkbox"/>	<input type="checkbox"/>	
Commercial / Retail outlets	<input type="checkbox"/>	<input type="checkbox"/>	
Industrial / Manufacturing facilities	<input type="checkbox"/>	<input type="checkbox"/>	
Offshore wind farms	<input type="checkbox"/>	<input type="checkbox"/>	

10. What are your recommendations as to the ways and means by which the distinctive character and value of the South Gozo Fault landscape can be maintained?

*Landscape Value Typology (adapted from Raymond and Brown, 2006)	
Value	Definition
Aesthetic	Places with attractive scenery, sights, smells or sound.
Economic	Places with economic benefits such as agriculture, tourism or commercial activity.
Recreational	Places with outdoor recreation opportunities.
Learning	Places with opportunities to learn about the environment.
Biological diversity	Places with a variety of plants, wildlife, aquatic life or other living organisms.
Intrinsic	Places with special values for their own sake.
Heritage	Places with a natural and human history.
Future	Places which allow future generations to know and experience them as they are now.

THANKYOU

APPENDIX III

Map

Figure 6.1: South Gozo Fault Map

