

**A Critical Evaluation of the Application of
Marine Citizenship in Sustainable Marine
Management in the UK**

EMMA MCKINLEY

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ABSTRACT

Traditionally, governance of the marine¹ environment has been state driven dominated by a top-down approach to management. Recently, however, management has evolved into a more participatory, bottom up regime in an aim to address the historical failures associated with traditional marine management. This study seeks to establish the potential role of citizenship specific to the marine environment. The founding rationale of the research is the suggestion that with a greater level of public involvement and responsibility, marine management could be developed at a more sustainable, long-term level.

Following an extensive systematic literature review examining the role of citizenship in environmental management, and its potential applicability for the marine environment, a theoretical conceptual model of marine citizenship was generated. Through telephone interviews, the potential role of marine citizenship in marine management and policy delivery in the UK was evaluated. Results identified numerous factors with the potential to influence public expression of marine citizenship and these were further categorised into the key themes of education and personal attachment to the marine environment. In order to examine these issues further, two thematic case studies were designed to further evaluate their role in the inculcation of marine citizenship. It was found that current levels of marine education are insufficient, while sense of public connection with the marine environment was found to be low. Both factors were observed to be in need of improvement in order to engender a societal sense of marine citizenship in the UK. Synthesis of the results furthered the generation of the first working model of marine citizenship and established the necessary enabling factors required for successful expression of marine citizenship. In addition, specific management measures and recommendations for successful promotion of marine citizenship were defined.

The research concluded given that a movement towards enhanced public engagement in the process has been identified as the ideal situation for marine management, encouraging a sense of marine citizenship could be an effective delivery mechanism. Further to this, it was determined that, central to successful inculcation of marine citizenship is the recognition that its promotion will require considerable effort on the part of marine managers and governance bodies to address the current capacity issues associated with public engagement.

¹ For this research, 'marine' encompasses coastal, inter-tidal and the undersea environments of the UK.

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Authors Declaration

I confirm that this thesis is my own work with the exception of the manuscripts below. As primary author on both papers, I was responsible for all aspects including idea development, data collection and analysis, interpretation and preparation of the manuscripts.

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List of Abbreviations

ABPmer	ABP Marine Environmental Research
AONB	Area of Outstanding Natural Beauty
CCW	Countryside Council for Wales
Cefas	Centre for Fisheries and Aquaculture Science
Defra	Department for environment, food and rural affairs
EF	Enabling factors
EMS	Environmental Management Systems
EU	European Union
GES	Good Environmental Status
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection
HLMO	High Level Marine Objectives
ICZM	Integrated coastal zone management
JNCC	Joint Nature Conservation Commission
LOC	Locus of control
KS	Key stage
MCAA	Marine and Coastal Access Act
MCS	Marine Conservation Society
MMO	Marine Management Organisation
MP	Marine practitioner
MSFD	Marine Strategy Framework Directive
MSP	Marine Spatial Planning
NAW	National Assembly for Wales
NEP	New Environment Paradigm
NOAA	National
OCB	Organisational citizenship behaviour
OSPAR	Administers of the Oslo and Paris Commissions
PA	Personal attachment
QDAS	Qualitative data analysis software
RAMSAR	RAMSAR Convention on Wetlands Sites
SEPA	Scottish Environmental Protection Agency
SPA	Special Protected Area
SSSI	Site of Special Scientific Interest
SSMEI	Scottish Sustainable Marine Environment Initiative
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization

CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

This chapter provides an overview of the research project, beginning with an introduction to the main academic and practical applications supporting the rationale for the research. The chapter outlines the aim and objectives of the research project followed by an overview of the structure of the thesis.

1.2 RATIONALE

With approximately 50% of the industrialised world residing within 50 kilometres of the coast, the marine² environment and its associated resources are of significant importance to the global community, providing a variety of ecosystem services and processes integral to everyday life (Boersma and Parrish, 1999; GESAMP, 2001; Rees *et al.*, 2010; Fletcher *et al.*, 2011). For example, within the UK alone, ecosystem services provided by the marine environment include regulation of pollution, provision of food, fuel and pharmaceuticals, physical and psychological wellbeing (Fletcher *et al.*, 2011). Despite this, and the range of international agreements established to conserve the marine environment, frameworks regarding the regulation of human activity in the marine environment are limited (Rogers *et al.*, 2007). Additionally, regardless of the evidence of social dependency on the marine environment, research suggests that there is a lack of public understanding of the strategic value of the marine environment (Costanza, 1999; Costanza *et al.*, 1999; UNEP, 2006). This lack of understanding of the relationship between society and the marine environment has resulted in a sense of societal disconnection from the marine environment. Finkl and Kruempel (2005) view this lack of public connection as

² Throughout this chapter and the remainder of the thesis, ‘marine’ refers to coastal, intertidal and all undersea marine environments.

the primary barrier to sustainable marine management and an area that urgently needs to be addressed.

Further to this, traditional governance of the marine environment has been primarily top down, driven by the state but is undergoing an evolution into a more participatory, community based system (Edwards *et al.*, 1997; McFadden, 2008; McKinley and Fletcher, 2010). As with other environmental policies, it is increasingly recognised that only partial responsibility for the marine environment lies with statutory government bodies (Hawthorne and Alabaster, 1999; Mamouni Limnios *et al.*, 2009). Additionally, although the legal framework for inculcating marine citizenship is currently lacking, efforts are being made to encourage this participatory approach to marine management which has been recommended by a number of international conventions. Most relevant to this research are the recommendations set out by Agenda 21 at the Earth Summit in 1992 (Hawthorne and Alabaster, 1999; Kuijper, 2003; French, 2004; Matti, 2006), the Aarhus Convention (UNECE, 1998) and the Tbilisi Intergovernmental Conference on Education (UNESCO, 1978). Specifically, Agenda 21 assessed the importance of the part each individual plays in the promotion and development of environmental sustainability, whilst still implying that governments must take an active role in encouraging and motivating the global public to participate (Kuijper, 2003; Matti, 2006). Internationally, there have been movements towards improving public involvement and responsibility for the marine environment, with successes most notably in the U.S.A. (Steel *et al.*, 2005; NOAA), Canada and Australia (Foster *et al.*, 2005). Within the UK there has been increasing emphasis on community involvement and responsibility is further perpetuated by the Marine and Coastal Access Act (2009), which promotes a more participatory approach to marine management.

Whilst evidence from literature suggests that public participation and education are vital to improving marine management, relatively little is known of how public behaviour could be engaged effectively (Ducrotoy *et al.*, 2000; Kuijper, 2003; Jedrzejczak, 2004; Osborn and Datta, 2006). As changes in overall environmental governance occur, it has become increasingly apparent that the long term stability of the marine environment would benefit from a new form of

citizenship being developed: one that highlights the need for a greater sense of personal responsibility within society towards the environment as a whole. Rapid development of global coastlines has put the marine environment under unprecedented pressure, resulting in degradation of resources that can be partially attributed to collective lifestyle and behavioural choices made by individuals (McKinley and Fletcher, 2010). Traditionally, citizenship theory has been broadly defined as involving the rights, duties and public involvement associated with membership of a political community (Correia, 2002; Purcell, 2003; Seyfang, 2005). As citizenship theory evolved, the realisation that sustainable environmental management requires cooperation between citizens and their governments prompted the evolution of environmental citizenship (Dobson and Valencia Saiz, 2005). Environmental citizenship is now recognised as a vital part of environmental management by governmental agencies and environmental management authorities (Strong, 1998). Environmental citizenship is based on the ideal that citizens should be more environmentally responsible with an awareness of human impacts on the environment (MacRory, 1996; Hawthorne and Alabaster, 1999; Fletcher and Potts, 2007). An environmental citizen may, therefore, be defined as one who recognizes environmental issues when they arise, and considers them before taking an action that may influence the environment in a meaningful way. Theoretically, environmental citizens put long term benefits to the environment before short term gain, attempting to prevent environmental issues prior to their occurrence, and are generally continually interested in the environment, its sustainable development, and issues related to it (Roth, 1992). Given the benefits associated with environmental citizenship, it can be inferred that similar advantages could be attributed to the inculcation of marine citizenship.

Although the inclusion of the public has been described as integral to successful marine management (Ducrotoy *et al*, 2000; Kuijper, 2003; Jedrzejczak, 2004; Osborn and Datta, 2004), there has been relatively little consideration given to the role and facilitation of public participation in contemporary marine management. Therefore, the underlying rationale for this research is the proposition that a form of marine governance that engages individuals as actors in marine management through altered behavioural and lifestyle choices would

benefit marine management practices in the UK. It is proposed that this would be inherently more sustainable than traditional state driven marine policy as it would recognise the public as having a key role in the development and implementation of marine policy. Examples of the benefits for marine management expected to be associated with marine citizenship include enhanced public participation, inclusion of local knowledge in management practices and easier implementation of management practices. In addition, this research proposes that with a greater level of public involvement and responsibility, marine management could be developed at a more sustainable, long-term level. Theoretically this would aid the development of sustainable management of valuable marine ecosystems and resources, whilst facilitating economic and social development and stability. Societal dependency and the increasing concern regarding the impacts of the overall degradation of the marine environment provide a strong rationale for research into the development of marine citizenship.

The research is undertaken using an inductive approach (explained in Chapter Three, Table 3.1) which traditionally would not work from an initial hypothesis (Kell and Oliver, 2003). However, given the potential for interdisciplinary application of the research a tentative hypothesis for the research is suggested: Can a conceptual model for marine citizenship be developed and applied to contemporary marine management in the UK? With this provisional hypothesis in mind, the research examines the potential role of marine citizenship in UK marine management, considering the factors required to facilitate its application to contemporary marine management in the UK. This investigation into the role of marine citizenship provides a unique contribution to the ongoing debate regarding public involvement in marine management and planning.

1.3 RESEARCH AIM AND OBJECTIVES

The aim of the project is to critically evaluate the potential role of marine citizenship in the sustainable management of the marine environment in the UK.

This will be achieved through the following objectives:

1. Development of a conceptual model of marine citizenship based on a systematic literature review.
2. The establishment of practitioner opinion on the applicability of marine citizenship to management of the marine environment in the UK.
3. Synthesis of a conceptual model for marine citizenship investigated through UK community thematic case studies.
4. Evaluation of the critical factors identified as having an impact on marine citizenship in the UK.
5. Establish a UK applicable definition and model of marine citizenship.
6. Generation of recommendations for the application of marine citizenship to contemporary sustainable marine management in the UK.

1.4 STRUCTURE OF THE THESIS

This thesis has three main parts, organised into eight chapters. A summary of these chapters and the resulting structure of the thesis are presented in Sections 1.4.1 – 1.4.3.

1.4.1. Part One: Context of the Research

Part One of the thesis provides an introduction to the research rationale and general methodological approach, discussing both its theoretical and practical applications. Chapter One outlines the underlying rationale behind this research and presents an overview of the structure of the thesis. Chapter Two provides an evaluation of current marine and coastal management, focusing in particular on the role of the public in management and decision-making processes. Relevant theories of citizenship in terms of the environment in general are then reviewed examining their relevance and application to the marine environment. The initial theoretical model for the concept of marine citizenship generated from observations made throughout the literature review is then discussed meeting the requirements of the first objective. Finally, the potential implications of marine citizenship for management of the marine environment are discussed and used to determine the main research areas forming the focus of Part Two of the thesis.

1.4.2. Part Two: Data Collection and Analysis

Part Two of the thesis begins by outlining the general methodology taken throughout the research, which follows a mixed methods approach. Chapters Three and Four focus on the data collection, analysis and brief interpretations of the first phase of data collection through a marine practitioner telephone interview schedule. Chapter Four concludes with a discussion of the key findings of the telephone interview schedule, in particular outlining how these findings would be used to guide the succeeding case study phase of data collection. Chapters Five and Six focus on the case study phase of data collection and analysis through thematic case studies. This phase of the research aimed to further examine the key relationships identified in the practitioner

survey, allowing a comprehensive evaluation of influential factors to be carried out. The case studies provide valuable insights into community perceptions regarding marine management, as well as indications of general public awareness and concern for the marine environment. Chapter Six follows on to further interpret the key relationships identified throughout the research, and to assess the implications of these on the future promotion of the concept of marine citizenship. Part Two of the thesis meets the requirements of Objectives Two, Three and Four. Along with the initial conceptual model produced and discussed in Chapter Two, the data collected and analysed in Part Two of the research is the foundation for the refined model and recommendations of marine citizenship presented in Part Three of the thesis.

1.4.3. Part Three: Interpretation, Synthesis and Conclusions

Part Three of this thesis forms the final element of the research project and relates to Objectives Five and Six. Chapter Seven presents a synthesis of the observations made in both the telephone interview schedule and the case study research. Specifically, Chapter Seven begins by examining the influences found to affect an individual's sense of marine citizenship. These findings are then used to refine the preliminary models produced throughout the research and to identify a number of enabling factors required for successful expression of marine citizenship. From the model and overall synthesis of the observations, the implications of marine citizenship are determined and evaluated. Chapter Seven also outlines recommendations for how the promotion of marine citizenship could be applied for the benefit of developing sustainable management plans for the marine environment. Chapter Eight defined marine citizenship and conceptualises the central conclusions of this research and further evaluates the recommendations for marine citizenship being applied to the management of the marine environment in the UK. Finally, Chapter Eight identifies the original contribution of this research to its field and proposes several areas for further development. The thesis concludes with the consideration of future applications of marine citizenship to global marine management.

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CHAPTER TWO

THE TURN TO MARINE CITIZENSHIP

2.1 INTRODUCTION

This chapter provides a review of the existing research literature related to marine citizenship. Given that marine citizenship is an original concept, the volume of directly related literature was found to be limited. However, the transition from traditional state driven governance to one that champions the application of citizenship to environmental management was reviewed, with particular emphasis on the marine environment. Therefore the chapter begins by identifying the social value of the marine environment, outlining traditional and current management strategies. The movement toward concepts of environmental citizenship in relation to the marine environment is then investigated. Finally, the literature review is used to generate a theoretical model of marine citizenship which is presented at the end of the literature review. This model will be used to guide the remainder of the research, initially determining the focus of the first phase of primary data collection.

2.2 GOVERNANCE OF THE MARINE ENVIRONMENT

2.2.1. Society and the marine environment

The marine environment offers a wide variety of coastal and deepwater habitats from which society derives a number of goods and services, including coastal tourism, fishing and aquaculture, petrochemical industries and food provision (GESAMP, 2001; Rees *et al.*, 2010). Despite high rates of social dependency on the marine environment, many studies note that the value of the marine environment is often significantly under appreciated and misunderstood by the wider public (Costanza, 1999; Costanza *et al.*, 1999; UNEP, 2006). More recently, however, there has been a shift in public perception and there appears to be an increasing recognition of the intrinsic value of marine environment derived

goods and services to society. In spite of this, a lack of public awareness of the societal impacts on the marine environment means there are a still a diverse range of issues that are not being addressed successfully. Table 2.1 illustrates that while many marine issues have natural drivers, the majority are strongly correlated with the demands placed on the marine environment by society.

Table 2.1: Common issues facing the marine environment and their association with society (Adapted from Antunes and Santos, 1999).

Marine Issue	Driving Forces	Impact
Over Fishing	Human population growth Food requirements	Decreased catch effort Catching 'down the food web'
Land derived contamination	Urban and industrial development Agriculture and aquaculture Resource requirements	Health effects in marine species Effects to Human health Damage to coastal ecosystems Economic losses for tourism and recreation
Pollution and Dumping	Urban and industrial development Port and shipping activities Accidental oil spills, ballast water derived pollution.	Health effects in marine species Effects to Human health Damage to coastal ecosystems Economic losses for tourism and recreation
Destruction of coastal ecosystems	Urban and industrial development Population Growth Resource Needs Coastal Defences Recreation and Tourism	Biodiversity losses Changes in productivity Increased vulnerability of systems Industrial losses e.g. fishing Coastal erosion Changes to sediment flows
Coastal dynamics	Urban and industrial development	Property losses due to erosion Increased vulnerability of coastal areas Flooding of low lying coastal areas
Climate change	Population Growth Urban and industrial development Transportation and Resource requirements	Changes in biological productivity Heightened populations at risk due to flooding Property risk

2.2.2. Governance and management of the global marine environment

Traditional ‘top-down’ marine management approaches to policy development and implementation have been increasingly complimented by more ‘bottom-up’, community directed processes (Chaniotis and Stead, 2007). ‘A Sea of Troubles’ reported a number of weaknesses in the management of the marine environment including: poor governance of international seas coupled, a lack of stakeholder and community engagement, a traditionally fragmented approach to management causing poor coordination between sectors, ineffective communication between science, policy and the public, and low levels of public awareness (GESAMP, 2001).

Traditional management of the marine environment has been deemed to be unsuccessful following a tendency of governance bodies to manage on a short-term basis through a fragmented regime where isolated departments deal with individual issues (Stojanovic *et al.*, 2009). Increasingly, however, attempts to integrate social, economic and environmental responsibilities are being made by international governing bodies (Beierle, 1998; Appelstrand, 2002; Humphrey *et al.*, 2000). As a result, the role of state bodies has evolved from direct ‘governing’ to a more collaborative style of ‘governance’ with the aim of including public, private and voluntary organisations across all scales of management (Peters and Pierre, 1998; Newman *et al.*, 2004). Application of this change in direction to environmental management is promoted by Lawrence (2005), who suggests that environmental governance should be based on democratic and efficient management aimed at public involvement and providing reliable environmental information. In addition, management of marine resources has evolved to recognise a variety of socio-economic factors, as well as environmental issues that must be addressed (Clark, 1997; Okey, 2003).

2.2.3. Contemporary marine management

The UN Convention on the Law of the Sea (UNCLOS) 1982, Agenda 21 at the Earth Summit in 1992 (Foster *et al.*, 2005) and the Global Programme of Action for the Protection of the Marine Environment from Land-Based Sources in 1995

(Johnston and Vanderzwaag, 2000) all imply a degree of social responsibility to manage the marine environment more holistically (GESAMP, 2001). The recommendations proposed by these political initiatives prompted an evolution of marine management.

Natural resource management of any kind involves a diverse range of stakeholders and interests and therefore requires an integrated, interdisciplinary approach including an evaluation of economic, social, cultural and ecological issues (Clark, 1997; Hegarty, 1997; Cooper *et al.*, 2007). In the context of the marine environment, management is experiencing an ongoing shift in strategy moving away from sectoral management to a more integrated regime. Evidence of this can be seen in the promotion of Integrated Coastal Zone Management (ICZM) which was most recently championed as a key mechanism to tackle observed management failures (Juda, 1999; 2002/413/EC; Chaniotis and Stead, 2007). ICZM can be defined as a continuous and coordinated approach to sustainable development and protection of marine resources that applied equal considerations to the environmental, socio-cultural and economic requirements of an area (Clark, 1997; Cicin-Sain and Belfiore, 2005; Skourtas *et al.*, 2005; Chaniotis and Stead, 2007).

Although ICZM had previously been promoted as the key to successful marine management, to date there has been little evidence of complete integration among stakeholders (Cheong, 2008). Other proposed approaches to marine management have included co-management (Juda, 1999), ecosystem-based management (Cheong, 2008) and adaptive management (Clark, 1997). The key similarity between these approaches is the call for a higher level of public involvement in marine management coupled with improved integration between traditional stakeholders. These forms of more collaborative management are expected to result in a situation in which responsibility for marine management is shared between governments and stakeholders through integrated management aimed at maintaining the ecological integrity of the marine environment (Juda, 1999). Collaborative approaches to management have been found to encourage a sharing of management responsibilities between authorities and local communities (Berkes and Turner, 2006) and are increasingly considered a

possibility for future marine management (Mikalsen and Jentoft, 2001), with co-managed schemes found to be successful in Oceania, Alaska and New Zealand (Berkes and Turner, 2006). Previous studies in Thailand (Nickerson-Tietze, 2000) and Mexico (Chuenpagdee *et al.*, 2002) have shown that these bottom-up approaches prompt enhanced levels of local participation, that take into account local requirements and encourage inclusion of local 'lay' knowledge to ensure efficient, easily implemented and well regulated management schemes.

Given that no one source or activity can be blamed for the deterioration of the marine environment, rather there is a collective societal responsibility to ensure sustainable marine management (GESAMP, 2001) the role of the public in integrated marine management is of increasing interest. This integrated approach is further supported through recommendations that a collaborative management approach to any environmental resource would serve as a mechanism to deliver efficient governance, meeting the multiple requirements of the users of these resources (Juda, 1999; Newman *et al.*, 2004; Cicin-Sain and Belfiore, 2005).

2.2.4. Marine Management and the UK

The UK, as an island, has the second longest coastline in Europe and as a result has a long-standing intimate relationship with the marine environment (Ducrotoy *et al.*, 2000). The UK coastline represents a diverse and varied environment in terms of physical features, natural resources and processes, and human settlement and usage (Ducrotoy *et al.*, 2000; French, 2004). This has given way to a complex system of management strategies with a variety of issues related to a myriad of ecosystem services and processes, ranging from heavy industry to fishing, tourism and recreation to shipping, and conservation (French, 2004). Historically, there has been no strategic framework guiding collective management of the UK marine environment; instead marine management has been dominated by a sectoral approach distributed between various departments within the central government (Defra, 2006). The UK marine environment is also subject to an extensive and diverse range of international, national and often regional legislation and designations. Table 2.2 presents a sample of these

further highlighting the complexities currently associated with UK marine management.

Table 2.2: A selection of the political initiatives requiring consideration in UK marine management

Major Political Initiatives impacting UK marine environments		
International Initiatives	European Initiatives	UK Initiatives
<ul style="list-style-type: none"> • Interpol Convention on Oil Pollution Preparedness, Response and Co-operation (1990) • The RAMSAR Convention on Wetlands (1971) • UNESCO Convention Concerning the Protection of the World Cultural and 	<ul style="list-style-type: none"> • Habitats Directive (92/43/EEC) • Water Framework Directive (2000/60/EC) • Birds Directive (79/409/EEC) • Bathing Waters Directive (79/409/EEC) • Dangerous Substances Directive (76/464/EEC) 	<ul style="list-style-type: none"> • Marine and Coastal Access Act (2009) • Shoreline Management Plans • Marine spatial planning • Marine Policy statements

<ul style="list-style-type: none"> • Natural Heritage (1972) • International Convention for the Prevention of Pollution from Ships (MARPOL) 1973/8 • London Convention on the Prevention of Marine Pollution by Dumping Water and Other Matter (1972 and 1996 protocols) • Earth Summit (UNCED) adoption of Agenda 21 in 1992 (Chapter 17) • Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal (1993) • Convention on Biological Diversity (1993) • UN Framework Convention on Climate Change (1993) • Implementation of United Nations Convention of the Law of the Sea (1994) • The Global Programme of Action for the Protection of the Marine Environment from Land Based Activities (1995) • Code of Conduct for Responsible Fisheries (1995) 	<ul style="list-style-type: none"> • Environmental Impacts Assessment Directives (85/337/EEC and 91/11/EEC) • Integrated Pollution Prevention and Control Directives (96/61/EEC) • Nitrates Directive (91/676/EEC) • Urban Waste Water Directive (91/271/EEC) • Strategic Environmental Assessment Directive (2001/42/EC) • Marine Strategy Framework Directive (2008/56/EC) • Integrated Coastal Zone Management COM/00/547 in 2000 • OSPAR Convention for the Protection of the Marine Environment of the Northeast Atlantic 	
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Although there has been increasing awareness of marine issues since the 1970s, marine management has remained traditional, only undergoing significant alterations following the publication of Agenda 21 (Selman and Parker, 1997). Chapter 17 of Agenda 21 (UNCED, 1992) called for more integrated management of the marine environment with improved conservation of resources, reduction of pollution and increased overall understanding of marine ecosystems, the services they provide and the managerial challenges these present (Boesch, 1999; Foster *et al.*, 2005). Since Agenda 21, the focus of UK marine management strategies has evolved to have greater emphasis on integrated management schemes allowing for ecological conservation as well as sustainable social and economic development in coastal areas (French, 2004). Calls for more holistic management in the UK have ultimately led to the ratification of the Marine and Coastal Access Act (MCAA) (2009) aiming to

eliminate some of the issues that have developed from the historically fragmented management approach to marine management in the UK (French, 2004; Fletcher, 2007) through the development of a unifying management body in the form of the Marine Management Organisation (MMO).

2.2.5. Challenges to public involvement in UK marine management

The need for public involvement in marine management in the UK is well established (Edwards *et al.*, 1997). However, research conducted by Defra (2006) identified a number of challenges as contributing factors to the failure to deliver effective, participatory management of the coast, including:

- Lack of long-term vision for the management of the coast coupled with a limited understanding of coastal processes.
- Inefficient inclusion of stakeholders and end-users in decision-making processes relating to the marine and coastal environment.
- Uncoordinated sectoral legislation and policy.
- Lack of political and financial support for local initiatives to develop sustainable coastal management.

In addition to poorly coordinated management strategies identified by Edwards *et al.*, (1997), Stojanovic *et al.* (2009) highlighted the challenges caused by perceived cultural rifts between scientists and policy makers as a result of traditional conflict between the long-term horizons of science and the shorter term planning of public decision makers. Further to this, there has been a historical perception that the marine environment is an alien entity to the wider public (Jones, 1999) which has resulted in a lack of public concern and empathy towards marine management and conservation and poor relationships between governance bodies and the wider public (Ananda, 2007). Efforts have been made to improve coordination between marine stakeholders and a broad range of stakeholders, although there is still limited guidance available regarding the inclusion of the wider public. Movements towards achieving widespread public engagement are increasingly evident in a UK context, for example, the European Recommendation on ICZM (2002/413/EC) focuses on the necessity to involve

all interested parties in order to achieve sustainable coastal management. Additionally, the use of Coastal Partnerships³ as a management approach is increasingly widespread in the UK and recognises the need for integrated management of the coast (Stojanovic and Barker, 2008). The following sections discuss the role of citizenship in promoting the role of the individual and collective society in the context of the marine environment, and how this can be applied to current marine management strategies.

2.3 TURN TO CITIZENSHIP

This section of the literature review presents an evaluation of the original concept of citizenship, its evolution and the movement towards more modern definitions of citizenship. More recently, concepts of citizenship have been expanded to include environmental behaviour and attitudes expected from members of society, primarily as a mechanism to encourage the adoption of citizenship to deliver environmental benefit presents a new governmental approach to environmental management. This is a phenomenon that has been described by Valencia Saiz (2005) as the ‘turn’ to citizenship and is viewed as a potentially effective mechanism of policy delivery. The following sections highlight the basic principles of citizenship theories that can be included in the conceptual model of marine citizenship.

2.3.1. Citizenship

Throughout its evolution, the overarching concept of citizenship has become an integral part of everyday life, founded on the theory that society should contribute to the achievement of collective social, economic and environmental goals (Fletcher and Potts, 2007). Citizenship is broadly defined as involving the democratic rights and responsibilities held by members of a community (Ton and Dietrich, 1998; Hilton, 2001; Ferreira, 2002; Purcell, 2003; Mason, 2004; Seyfang, 2005). The extent of this community involvement was commented on

³ Coastal partnerships can be defined as a forum through which interested bodies and sectors are brought together in a bid to achieve sustainable management of the marine environment.

in research by Chamberlain (1997, Online) who stated that “citizenship requires strong enough identification with broader communities to lead people to live their lives in ways that are socially, economically, politically and environmentally responsible”.

The definition of a citizen can depend on context, with the generic explanation referring to a citizen as a member of political community (Dfes, 2004). In this sense, it brings with it the responsibilities and rights that come with being a citizen and is often referred to as nationality. Alternatively, citizenship can be a reference to a person’s involvement in public affairs i.e. the behaviour of a citizen (Dfes, 2004) referring to a wide range of activities, from taking part in elections, to having a general interest in public affairs (Mason, 2004; Diner, 2003; Smith, 1995). As an evolving concept, citizenship has aimed to encourage individuals to consider themselves global citizens rather than solely as citizens of one nation (Corrie, 2002), with particular importance placed on achieving a ‘common good’ (Kearns, 1995).

The concept of citizenship has evolved to encompass many facets of modern life including social, political and civil aspects. More recently it has expanded to include economic, environmental and cultural aspects (Corrie, 2002). Traditionally examined in the public sphere (Seyfang, 2005), the concept of citizenship can be defined as participation in public life and involvement in public affairs and decision-making (Corrie, 2002). This participation can be of varying degrees resulting in what is most commonly described as either active or passive citizenship (Corrie, 2002). Passive citizenship has been primarily associated with public rights (Selman and Parker, 1997) while active citizenship is considered to encourage greater empowerment of the public, enhancing individuals’ awareness of their role in society, invoking a responsible and participatory citizenry (Diner, 2003). The concept of citizenship is being actively promoted by the current UK coalition government’s⁴ plans for a ‘Big Society’ which seeks to empower citizens, encouraging their involvement in

⁴UK Coalition government elected in 2010.

communities and enhance sense of responsibility (The Conservative Party, Online).

While the concept of citizenship has grown in popularity, a growing number of different forms of citizenship have been proposed including social citizenship (Valdivielso, 2005), scientific citizenship (Irwin, 2001), ecological citizenship (Dobson, 2003; Carter and Huby, 2005; Seyfang, 2005) and environmental citizenship (Berkowitz *et al*, 2005; Hawthorne and Alabaster, 1999). Each of these has its foundation in the basic principles of the modern definition of citizenship, namely participation, capacity for active involvement through education and an awareness of individual rights and responsibilities with regards to their participation in society.

2.4 ENVIRONMENTAL CITIZENSHIP

According to Hawthorne and Alabaster (1999, p.25) ‘Environmental citizenship is a...internationally stated objective’. For example, Environment Canada, one of the first organisations to actively encourage the general public to embrace the concept, define environmental citizenship as “a personal commitment to learning more about the environment and to taking more responsible environmental action” (cited in Fletcher and Potts, 2007). The emergence of environmental citizenship reflects the recognition that the traditional governance of the environment by statutory organisations has been unsuccessful in sustaining and managing the environment (Dobson and Valencia Saiz, 2005).

Coupled with this shift in traditional environmental management techniques is a documented change in public opinion and compassion towards the environment (Williams, 2008). This transition indicates an improvement in public perception of the environment. Earlier research by Agyeman and Evans (2004) suggested that environmental issues were conventionally considered to be ‘someone else’s problem’ resulting in a low sense of societal responsibility. More recent studies (Diner, 2003; Matti, 2006; Cruz, 2008) imply that the perception of environmental issues has evolved and it is now widely accepted that many of the issues facing the environment can be at least partially attributed to societal

behavioural choices, implicating an acknowledged level of individual and societal environmental responsibility. Given this change in perception, it has been asserted that a move to a more environmentally aware citizenry infers a willingness among the public to employ lifestyle changes and long-term alterations to societal behaviour (Smith, 2005; Matti, 2006). This is supported by research by Defra in 2007 and 2009, which highlighted an improvement in individual willingness to make behavioural adaptations for the benefit of the environment.

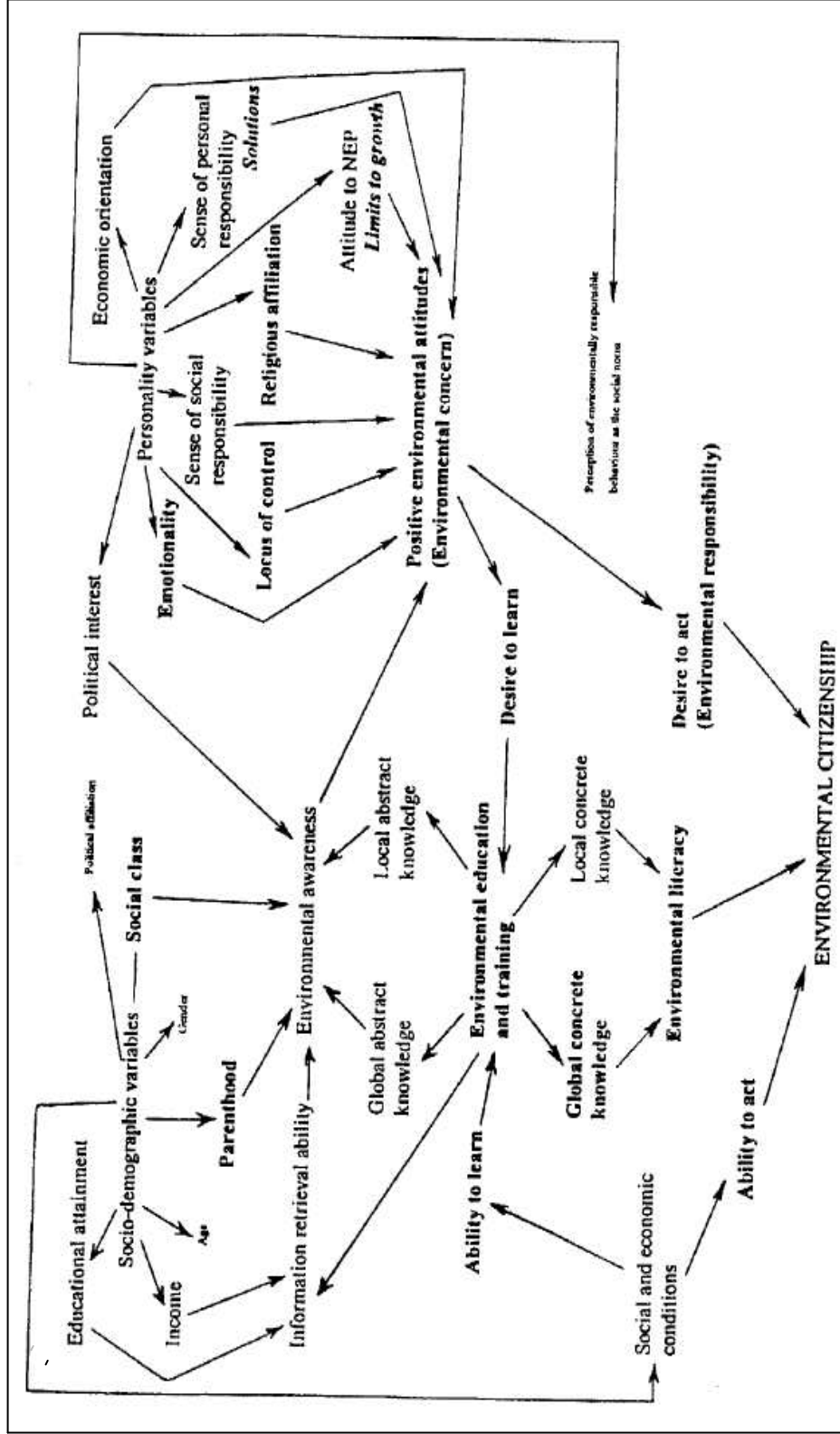
As mentioned in Section 2.3, as modern citizenship has evolved, so too has its application, giving rise to a growing number of type specific forms of citizenship. In each of these forms of citizenship, the focus is on a shift in the relationship between society and the state: that in return for the rights provided to individuals by the state, such as a right to security and medical care (Purcell, 2003; Chamberlin, 1997), the state expects certain behaviours and values from individuals that contribute to a 'common good' (Fletcher and Potts, 2007). Historically, this relationship was not specifically applied to the role of individuals in environmental management and impacts of societal behaviour on the environment. However, a movement to a more citizen led, bottom up form of management, termed the 'turn to citizenship' (Valencia Saiz, 2005) with regard to environmental management, is underway.

2.4.1. Identification of models of Environmental Citizenship

Environmental citizenship has been one of the more widely researched facets of the applications of modern day citizenship. A number of studies have generated detailed models of the influence and relationships between social, economic, cultural and other factors included in environmental citizenship (Hawthorne and Alabaster, 1999; Barnett *et al.*, 2005; Berkowitz *et al.*, 2005). Figures 2.1 and 2.2 depict two current models of environmental citizenship, illustrating the

complex web of relationships involved in an individuals' sense of citizenship towards the environment.

Figure 2.1: Model of Environmental Citizenship, (Hawthorne and Alabaster, 1999).



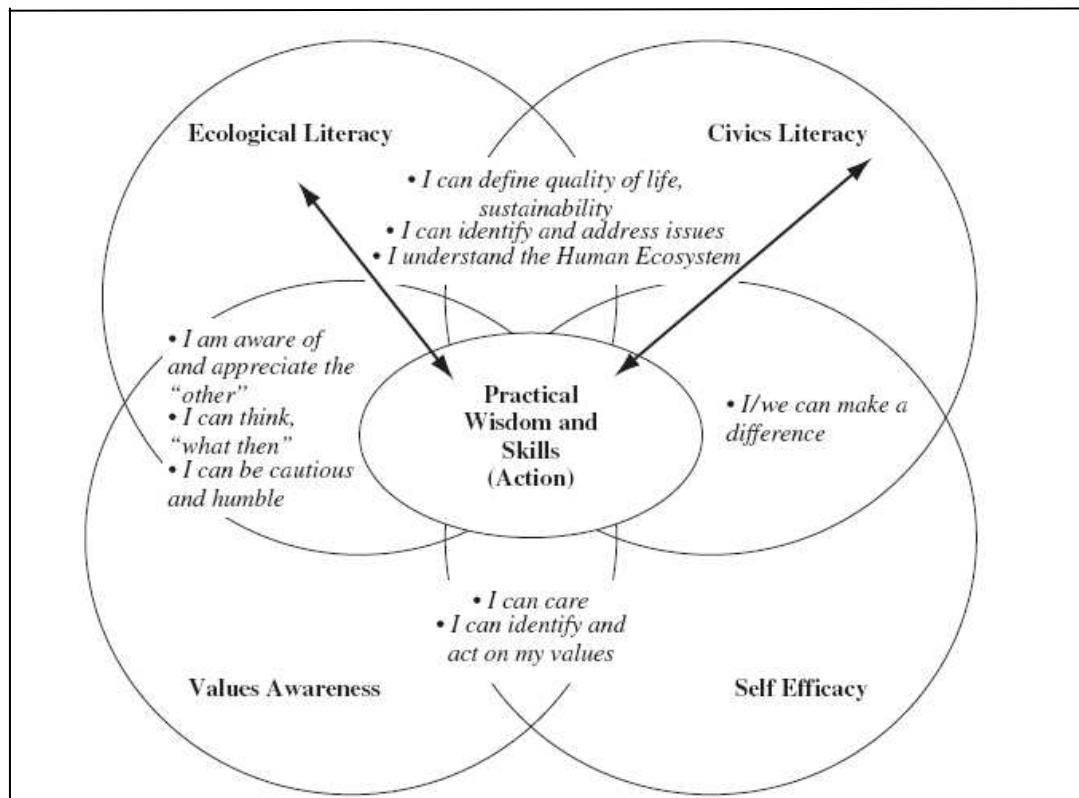


Figure 2.2: Model of environmental citizenship (Berkowitz *et al.*, 2005)

For the purpose of this study, the model of environmental citizenship proposed by Hawthorne and Alabaster (1999) is used as a basis for the identification of the theoretical components of marine citizenship as it was considered to be the more comprehensive model of environmental citizenship. The model identifies a wide range of factors involved in environmental citizenship. These interconnected components result in environmental citizenship being defined as having awareness and understanding of environmental issues, and how they relate to personal, social and environmental values, whilst having the motivation, and capacity to act accordingly, having adequate knowledge of choices and consequences (Hawthorne and Alabaster, 1999; Berkowitz *et al.*, 2005).

Given the benefits observed following promotion of environmental citizenship and heightened community inclusion in terrestrial environmental management, for example, more successful implementation of management strategies and conflict resolution (Appelstrand, 2002; Ananda, 2007; Cooper *et al.*, 2007), it seems pertinent that a similar management approach could be applied to the

marine environment. Taking these models and current thinking on environmental citizenship as the starting point, a number of elements were identified as potential components of marine citizenship. These elements and their interactions will now be discussed in terms of a proposed societal transition to a sense of marine citizenship and the generation of a conceptual model of marine citizenship.

2.5 EVOLUTION OF MARINE CITIZENSHIP

Like other specific forms of citizenship, environmental citizenship remains a relatively recent concept (Smith, 2003; Bell, 2004; Smith, 2005). Despite its youth, environmental citizenship is increasingly championed as a mechanism for overcoming the issues resulting from failed traditional, state driven environmental management models by enhancing public engagement in the process (Chaniotis and Stead, 2007; Young *et al.*, 2007). Given the youth of environmental citizenship the majority of research to date conducted in terrestrial based environments (Mrazek, 1996; Ananda, 2007). The movement to inclusive, citizen driven management in terrestrial ecosystem management (e.g. forestry management) has proven to be successful, primarily through developing more sustainable and efficient management plans than previously in place (Ananda, 2007). Indeed, the very definition of environmental citizenship emphasises the importance of individual relationships with the environment, requiring a heightened sense of concern in conjunction with personal and collective responsibility for the environment. It is anticipated that inclusive and integrated systems of marine governance will generate similar benefits. Encouragingly, there is evidence to suggest that governance organisations are already actively working to enhance individual and collective engagement in marine management, at all levels, aiming to prevent further unnecessary deterioration of the marine environment (UNEP, 2006; Chaniotis and Stead, 2007). Examples of this can be seen in the UK's newly ratified Marine and Coastal Access Act (2009) and the longer standing initiatives of Canada's Oceans Act in 1997 (Berkes *et al.*, 2001; Foster *et al.*, 2005; Kearney *et al.*, 2007) and Australia's Oceans Policy in 1998 (Foster *et al.*, 2005), each of which promotes inclusive marine management.

By ensuring individuals have access to accurate and well-disseminated information, a move towards active participation and increased responsibility for the both individual and collective impacts on the marine environment could potentially be facilitated (Hawthorne and Alabaster, 1999; Sharp, 2002; Barr, 2003; Chaniotis and Stead, 2007; Fletcher and Potts, 2007; Rodriguez and Cruz, 2007). It has not yet been determined how marine citizenship can be encouraged, but research conducted by the Countryside Council for Wales (CCW) (Williams, 2008) suggested there is scope for its development. Their study indicated a general sense of admiration for the marine environment among communities, although individuals rarely consider the implications of their actions on the marine environment or how they might contribute to management procedures (Williams, 2008). Observations in earlier studies have partially attributed this to a lack of information available to individuals, coupled with the perception that their input has no influence (Steel *et al.*, 2005; Williams, 2008). Stojanovic and Barker (2008) note that the relationship between communities and coastal managers appears to be showing evidence of positive change, with governing bodies now actively promoting stewardship of the marine environment. Research by Williams (2008) and Defra (2009) supports this, indicating that communities would like to take a more active role but do not currently feel they are provided with sufficient information to participate in marine management and decision-making processes.

Despite the lack of literature on marine citizenship, there are some basic concepts regarding general citizenship, which may be applied when exploring the concept. These include public awareness of rights and responsibilities, informed concern for the marine environment and the ability to articulate opinions and arguments for and against issues relating to the management of the marine environment (Fletcher and Potts, 2007). This emerging concept should be based on an individual's responsibility towards others, as well as for the protection and management of the global marine environment (Matti, 2006). Ideally, these should be influential in the development of marine management and citizens should be active in the preservation, management and development of the marine environment. Finally and most fundamentally, marine citizens should be

responsible in their actions and aware of the impact their actions and activities may have on the marine environment and its related resources (Dfes, 2004).

Building upon these ideas related to environmental citizenship (Berkowitz *et al.*, 2005; Hawthorne and Alabaster, 1999) and their potential role in a marine context, marine citizenship can therefore be tentatively defined as:

An awareness of individual rights and responsibilities related to the marine environment, coupled with the capacity to actively engage in marine decision making processes.

Taking this definition and current thinking on environmental citizenship as the starting point, there are a number of elements that require investigation in order to fully understand the potential elements that potentially constitute marine citizenship. These are discussed in the following sections.

2.6 FACTORS POTENTIALLY INFLUENCING MARINE CITIZENSHIP

In order to construct a working conceptual model of marine citizenship, it is necessary to clearly define the role of each of these factors in context of the marine environment. Sections 2.6.1 - 2.7 present an assessment of the identified factors, particularly focusing, where possible, on their relationship with the marine environment and the influence of this on the development and promotion of marine citizenship. The most closely related factors have been grouped into categories in order to highlight their potential connectivity when evaluating their role in marine citizenship. The results of the literature review are used in the composition of the conceptual model of marine citizenship presented in Section 2.8.

2.6.1 Information and its role in marine management

2.6.1.1 Education

Environmental education was first described in the 1970s by Stapp *et al.* (1970) who stated that in order for citizens to participate meaningfully in environmental management “it is vital that the citizenry be knowledgeable concerning their environment and associated problems” (p.14). As citizenship theory has evolved and become increasingly accepted as a key mechanism through which to promote societal responsibility, growing emphasis has been placed on the role of education (Correia, 2002). This is increasingly evident, not least by the inclusion of citizenship education as a mandatory component of the UK national curriculum (House of Commons, 2009). Given this, education is recognised as having a fundamental role in individual decision-making, providing humans with sufficient information (both environmental and otherwise) on which to base their decisions (Kuijper, 2003; Jenkin, 2003). Its role in enhancing environmental awareness and altering social perception is well recognised (UNESCO, 1977; Kuijper, 2003) and its importance as a component of an efficient and well functioning management system is significant (Beierle, 1998; Hay and Foley, 1998; Haklay, 2002).

Ferreira (2002) stated that ‘informed and responsible citizens can participate actively and give adequate reasons to the environmental problems and issues’. Participation of an informed public has been identified as a key element in facilitating improved public engagement (Stapp *et al.*, 1970; Sears and Hughes, 1996; Aarhus Convention, 1998; Hawthorne and Alabaster, 1999; Ducrotoy, 2001; Berkowitz *et al.*, 2005) and it can be inferred that education would play a similar role in the inculcation of marine citizenship. Further evidence in support of the relationship with marine management and education is provided by Fletcher (2008) who cites the EU recommendations for ICZM as explicitly supporting the requirement for enhanced education in order to increase capacity and public knowledge. This is supported by the view that enhanced public awareness and knowledge through better education would result in increased public support to tackle issues facing the marine environment (Hawthorne and

Alabaster, 1999; Kuijper, 2003; Steel *et al.*, 2005). Furthermore, Agenda 21 emphasised the need for improved marine and coastal education (Ducrotoy, 2001). In order to meet these recommendations, current levels of marine specific education need to be improved, providing accurate, science-based information regarding both the natural and human elements of the marine environment (Correia, 2002; Kuijper, 2003; Berkowitz *et al.*, 2005).

Equally important is a move away from the traditional classroom based education towards increased provision of marine community education outreach programmes, in collaboration with enhanced marine education in schools (Ducrotoy *et al.*, 2000; Potts, 2000; Fletcher and Potts, 2007). Examples of small community-based marine education programmes have found an increased understanding of community impacts on the marine environment (Unepetty *et al.*, 1998) and a more marine aware community (Edwards *et al.*, 1997; Unepetty *et al.*, 1998; Storrier and McGlashan, 2006). Success stories of this nature support the common assumption that higher levels of public awareness and understanding linked to enhancement of knowledge are fundamental to better marine environmental protection and management (Ducrotoy *et al.*, 2000; Steel *et al.*, 2005).

Internationally, there has been a move towards an acceptance that current levels of marine education included in the formal teaching need to be improved. For example, in 2007 in the United States, NOAA (National Oceanographic and Atmosphere Administration) generated an Education Strategic Plan 2009-2029, providing further evidence of the importance of education in marine management and conservation. In the context of marine education in the UK, a number of studies have emphasised the need for improvements to be made that will enhance current levels of marine education in a bid to increase public awareness and understanding of the marine environment (Fletcher *et al.*, 2009; Castle, *et al.*, 2010).

2.6.1.2. Knowledge

Environmental knowledge has been identified as a key predictor of individuals' behaviour towards the environment (Hawthorne and Alabaster, 1999). The importance of public knowledge and understanding of environmental concepts is further supported by Tytler *et al.* (2001) who stated that public understanding of environmental issues directly influences perception of management. Finkl and Kruempel (2005) view this societal lack of understanding as a psychological barrier to the implementation of mechanisms required for conservation and management of the marine environment. It is possible that this is compounded by damaging personal behavioural choices arising from a lack of awareness of the marine environmental impacts arising from those behaviours. Taking this into consideration, environmental managers have adopted strategies to encourage higher levels of environmental knowledge among the wider public in a bid to engender a change in social behaviour (Cottrell and Graefe, 1997; Berkowitz *et al.*, 2005; Defra, 2007).

In the context of the marine environment, a number of researchers have related high levels of public knowledge about the environment to successful management (Steel *et al.*, 2005; Storrier and McGlashan, 2006). For example, Steel *et al.* (2005, p. 98) stated that "knowledge is vital in developing an individual perception of the oceans and the resources they provide" and that it is the "key to accomplishing effective environmental policies." Steel *et al.* (2005) further suggest that knowledge and concern are positively related in that people with relatively high levels of knowledge tend to have higher levels of environmental concern, and a greater desire to protect the marine environment.

2.6.1.3 Literacy

In the model of environmental citizenship generated by Hawthorne and Alabaster (1999) environmental literacy is explained as being a combination of environmental awareness and basic environmental education. The concept is further defined as having the knowledge and capacity to take appropriate action to maintain environmental systems (Roth, 1992), providing "a basic functional

education for all people, which provides them with the necessary knowledge, skills and motives to cope with environmental needs and contribute to sustainable development” (UNESCO, 1989). Studies conducted by Tytler *et al.* (2001) support the suggestion that an element of scientific literacy in citizens coupled with local knowledge can benefit decision making processes, often proving to be a good basis for citizen-based questioning of an environmental issue.

Diner (2003) suggests that environmental literacy focuses on environmental sensitivity, knowledge, skills, attitudes, personal investment/ responsibility and involvement. With reference to marine environmental literacy, research has indicated that levels of literacy and awareness among the public are very low (Fletcher and Potts, 2007; Steel *et al.*, 2005). Despite this, NOAA recognises a marine literate citizenry as being vital to achieving international marine management goals (NOAA, 2007). It can be inferred from research by Haklay (2001) that individuals with higher levels of literacy would be more likely to behave in a favourable manner towards the environment, exhibiting a higher level of awareness of issues and the impacts of their behaviour on the marine environment. In a UK context, there have been recent attempts at establishing coastal literacy programmes in particular by CoastNET whose coastal literacy project aims to educate and inform local people in a bid to enhance public understanding and engagement in their coastal environments (CoastNET Online).

2.6.1.4. Information

As identified in the models of environmental citizenship produced by Hawthorne and Alabaster (1999) and Berkowitz *et al.* (2005), the availability of accurate environmental information is known to be a crucial factor in environmental citizenship. Currently environmental information exists in vast and numerous forms, which need to be utilised to benefit particular situations (Hawthorne and Alabaster, 1999). Availability of information is an integral component of environmental citizenship and can be directly linked to the other factors of environmental citizenship. Agenda 21 states “each individual shall have appropriate access to information concerning the environment”, researchers

suggest it is imperative that information regarding the environment be accurate and accessible to the public (Haklay, 2002). The importance of accessible and accurate information has been emphasised through the development of the European Directive “Freedom of access to information on the environment” (90/313/EEC) and Aarhus Convention (UNECE 1998). Indeed, Lee and Abbott (2003) go as far as to state that access to information is the primary objective of the Aarhus Convention and establish it as the key starting point for initiating any improvements to public participation in decision making.

The literature review suggested a lack of research conducted on the links between access to information, marine conservation and management. However, given the strong links between information availability, knowledge and education, it can be assumed that public access to marine information could play a prominent role in marine management in the UK. These assumptions are supported in part by Haklay (2002) who identified direct links between the levels of information available, public interest and public participation in environmental matters. As such, it is imperative that practitioners, governance organisations and managers work to enhance public capacity to engage with marine management through increased availability of clear and accurate information (Dobson and Valencia-Saiz, 2005). Given this, it can be hypothesised that information availability and accessibility to the wider public would be a necessary component of marine citizenship.

2.6.2 Awareness, concern and marine citizenship behaviour

2.6.2.1. Awareness

Environmental awareness is a prime example of the interconnected nature of each of the components included in Hawthorne and Alabaster (1999)’s model of environmental citizenship. Acceptance of the relationship between environmental awareness and education is long-standing, initially linked at the Tbilisi Conference (UNESCO, 1978) stating that it should “foster clear awareness of, and concern about...ecological interdependence”. This recommendation clearly highlights the connectivity between the factors of

awareness and concern (Hawthorne and Alabaster, 1999). In addition, the relationship between awareness and social behaviour towards the environment has been further cemented by Drevensek (2005, p.227) who stated that,

“it is only when people...know what is going on in the environment at the local, regional, national or even global level that they can play an active, responsible role in shaping policy-making in line with their own...needs”.

A growing sense of environmental awareness among governance bodies regarding the requirements of environmental management has led to an increase in participatory methods to manage environmental resources (Ananda, 2007). As with many of the components of environmental citizenship, awareness, literacy and concern are inextricably linked (Hawthorne and Alabaster, 1999; Steel *et al.*, 2005). This is supported by observations that people with a higher level of environmental knowledge exhibit a greater desire to learn about the environment and the potential threats it faces (Ananda, 2007). Current levels of public awareness of marine environmental issues in the UK evaluated by Fletcher *et al.* (2009) indicated that although there is an interest in the marine environment, marine awareness in the UK is considerably under developed. In addition to observed poor levels of public awareness in the UK, methods of raising public awareness of the marine environment are considered to be in need of some improvement as to date, they have proven largely ineffective (Fletcher and Potts, 2007; Fletcher *et al.*, 2009;). In spite of current observations regarding marine awareness, research into environmental citizenship firmly places public awareness as an integral component, thereby providing sufficient evidence for its inclusion in an evaluation of a marine specific concept.

2.6.2.2. Concern

As a component of environmental citizenship, environmental concern has proven a difficult concept to define and therefore has been loosely described as “an individual’s degree of emotional reaction to...reported damage to the environment” (Hawthorne and Alabaster, 1999 p.27). Like education, concern for the environment has been identified as a predictor for individual behaviour

towards the environment (Bamberg, 2003). Various factors have been acknowledged as contributing to environmental concern, including; an individual's personality, locus of control (the belief that external events can be influenced by personal activities), sense of social responsibility and future orientation (a desire to help others/ the environment without any direct personal gain), sense of personal responsibility for environmental issues, economic status, emotionality, religious affiliations, and whether or not environmentally favourable behaviour is seen as the social norm (Hawthorne and Alabaster, 1999; Bamberg, 2003). These factors are strongly linked to personality and have been presented in more detail in Table 2.3. Poortinga *et al.* (2004) suggest that levels of environmental concern are directly correlated with an individual's values i.e. important life goals or standards that people aspire to, which provide the basis for individual behaviour. These social influences on environmental concern are supported by Bamberg (2003), with levels of concern also attributed to perception, environmental knowledge and access to education.

2.6.2.3. Behaviour and responsibility

As discussed in Sections 2.6.1.1 and 2.6.1.3, strong links between environmental knowledge, education and responsible behaviour have been identified (Hawthorne and Alabaster, 1999; Haklay, 2002; Bamberg, 2003; Steel *et al.*, 2005; Defra, 2007). It is assumed that if an individual has a high awareness of environmental issues, their behaviour should, theoretically, reflect the relevant knowledge.

Hawthorne and Alabaster (1999) indicated strong correlations between environmental behaviour, both direct and indirect (Poortinga *et al.*, 2004), and environmental education. As well as influencing direct environmental behaviour, it has been shown that individual values can play an important role in indirect environmental behaviour such as consumerism, acceptance of policy and development of legislation (Poortinga *et al.*, 2004). In addition to the influence of education on behaviour towards the environment, Stern (2000) suggested that environmentally significant behaviour can be influenced by an individual's personal values and sense of responsibility. This is founded on early research on

environmental behaviour, producing the New Environmental Paradigm (NEP) model (Dunlap and Van Liere, 1978) which measured individual views on human-environment interaction, thereby determining the influence of individual values on pro-environmental behaviour.

In order to attempt to harness particular behaviours towards the environment, it is necessary to understand the motivational forces behind individual behavioural choices. Research has investigated attitudes toward the environment and the resulting behavioural choices, with negative attitudes towards poor environmental behaviour expected to engender pro-environment behavioural choices in the same individual (Cottrell and Graefe, 1997; Hartig *et al.*, 2001). In addition Hartig *et al.* (2001) propose that an individual's perception and interest in the environment can have an impact on an individual's behavioural choices. The model produced by Hawthorne and Alabaster (1999) does not specifically consider the potential influence of perception on environmental citizenship. However, given the level of importance attributed to it in other studies (Kaivola *et al.*, 2003; Finkl and Kruempel, 2005; Tran, 2006), perception will be discussed as potentially influential factor for marine citizenship in Section 2.7.1.

Links between knowledge, education and responsible behaviour have been highlighted by recommendations made by the UK strand of UNED (United Nations Environment and Development) recognised the importance of education and its connection to marine environmental behaviour. Cottrell and Graefe (1997) and Thapa *et al.* (2005) suggest that in order for an individual to act responsibly towards the marine environment, they require knowledge about the situation. CCW (Williams, 2008) identified a lack of public understanding and awareness observed among coastal communities within the UK. However, contrastingly, a willingness to expand marine specific awareness and related levels of concern was still evident amongst the public, subject to enhanced guidance (Williams, 2008) as indicated by studies carried out by Defra (2006; 2009). This juxtaposition suggests that progress is required providing the public with accurate information, highlighting the relationships between the marine environment and everyday life, to increase their understanding of the impacts their behavioural choices have on the marine environment. If the demand for

more information identified by CCW (Williams, 2008) is met, prompting a change in social behaviour towards the marine environment, it stands to reason that more successful marine management can be developed. However, it has been recognised that individual behavioural choices are made based on a number of factors, each of which is subject to complex processes prior to a decision being reached (Barr, 2003; Urama *et al.*, 2006; Young *et al.*, 2007).

2.6.3. Personality and socio-demographics

Hawthorne and Alabaster's (1999) research into environmental citizenship suggests that a range of personal and social variables could influence marine citizenship. These personality related variables are presented in Table 2.3 and it can be assumed that they would have a similar influence on marine citizenship as has been observed in studies on environmental citizenship.

Table 2.3: Range of personality variables thought to have an influence on environmental citizenship

Personality Variables	
Attitude to the New Environmental Paradigm (Dunlap and Van Liere, 1978)	<ul style="list-style-type: none"> Views humans as part of an integrated ecosystem with nature
Locus of Control	<ul style="list-style-type: none"> Locus of control (LOC) is strongly linked to the public and individual perception of environmental issues and ability to influence an event (Hawthorne and Alabaster, 1999). An individual with an internal LOC considers the results of certain situations to be directly linked to their own actions External LOC attributes events of this kind to higher power e.g. governmental bodies (Hawthorne and Alabaster, 1999).
Sense of social and personal responsibility	<ul style="list-style-type: none"> A sense of social responsibility suggests an individual's desire to help others even in the absence of any personal gain (Hawthorne and Alabaster, 1999). Frequently used as indicators of environmental concern (Hawthorne and Alabaster, 1999). Assumes partial personal responsibility for environmental problems, and should, as such, be responsible for developing the solutions (Hawthorne and Alabaster, 1999). Related to environmental behaviour (Hawthorne and Alabaster, 1999).
Adherence to Social norms	<ul style="list-style-type: none"> In cases when environmentally responsible behaviour is the perceived social norm, there may be an increased social pressure for individuals to behave in an environmentally favourable manner. This social pressure may cause people to behave with environmental issues taken into consideration, regardless of whether they were a personal concern or not (Hawthorne and Alabaster, 1999).
Emotionality	<ul style="list-style-type: none"> Relationship between how an individual feels towards the environment and behaviour Individuals are more likely to exhibit a higher level of concern when they feel the issue is of personal relevance and may affect their lives (Hawthorne and Alabaster, 1999).
Religious and cultural affiliations	<ul style="list-style-type: none"> Slight relationships established between an individual's level of concern and a low level of religious beliefs and culture (Hawthorne and Alabaster, 1999).
Economic Orientation	<ul style="list-style-type: none"> Hawthorne and Alabaster (1999) suggest economic orientation to be of high importance Impact environmental benefits before personal economic gain, favouring long term environmental protection over a less permanent state of economic gain.

In addition to personality attributes, a number of factors are included in socio-demographics, including age, gender, income and family background (Hawthorne and Alabaster, 1999; Barr, 2003; Dolnicar, 2006). These have been identified as having the potential to influence an individual's environmental decision-making process and should therefore be considered in the context of marine citizenship. In particular these factors have been related to education and concern for the environment (Hawthorne and Alabaster, 1999).

2.6.4. Socio-economic influences

Socio-economic factors directly link to numerous aspects of Hawthorne and Alabaster's model (1999), with Haklay (2002), for example, equating high levels of environmental education with 'middle class' society. Evidence of this is provided by Santos *et al.* (2005), who compared the socio-economic status of the visitors to two Brazilian beaches, examining the influence of this on the visitors' sense of environmental responsibility. It was found that litter generation on the two tourist beaches was found to be higher at the beach visited by individuals with a lower average annual income. This inferred a lower level of awareness than at the beach frequented by individuals of higher socio-economic status (Santos *et al.*, 2005). In addition, research has suggested that access to information and education can often be limited to those of higher socio-economic standing (Haklay, 2002; Santos *et al.*, 2005; Steel *et al.*, 2005). This is supported further by Steel *et al.* (2005) who suggested that there is a "knowledge gap", separating people of higher and lower socio-economic status, where people of a lower socio-economic standing tend to have a lower level of marine knowledge. These observations imply that efforts to address this social inequality are required if there is to be a successful expression of marine citizenship within UK society.

2.7 IDENTIFICATION OF FACTORS SPECIFIC TO MARINE CITIZENSHIP

Through the literature review, it is clear that existing models of environmental citizenship cannot be directly applied to the marine environment. A number of

other factors not included in Hawthorne and Alabaster's model (1999) were identified as potential additional factors requiring investigation with regard to the marine environment. These are discussed in Sections 2.7.1 -2.7.3.

2.7.1 Public Perception

Research has implicitly linked the efficacy of increased education and knowledge to public perception and understanding of available information (Hawthorne and Alabaster, 1999; Hartig *et al.*, 2001; Tytler *et al.*, 2001; Jenkins, 2003). The importance of this relationship is further emphasised by Barr (2003) who suggested that the efficacy of education projects could be dependent on public understanding of environmental issues. The potentially complex influence of public perception is explored by Jentoft (2007) who suggests that reality is a factor of what people perceive to be true, and is then confirmed as reality when individuals base their behaviour on these perceptions. This supports the necessity for widely accessible and accurate information regarding the marine environment.

It is becoming increasingly recognised that the most effective way of monitoring and protecting the marine environment is to modify the behaviour of the people that use it, to encourage users to adopt more environmentally friendly behaviour (Juda, 1999). The implementation of policy is dependent on citizen participation, and generally assumes that providing environmental education will encourage alterations in people's behaviour. However, it is acknowledged that an individual's perception of the importance of an issue and related solutions that will have the greatest influence on citizen behaviour (Eden, 1996). Behaviour depends on an individual's perception of the world; as understanding of the environment and its threats increases, behavioural changes within society can be expected (Juda, 1999).

Perception of issues can vary depending on socio-demographic factors as discussed in Section 2.6.4. Appelstrand (2002) shows evidence of this in the context of forestry management. For example, research has found rural residents to be more in favour of traditional uses of forest for production, whilst, in

contrast, urban residents were more supportive of new, innovative activities, recreational activities and preservation for future generations (Appelstrand, 2002). It is possible that similar would be true when comparing coastal and inland communities with coastal communities most concerned with issues relating to productivity and traditional livelihoods, while inland community concerns may focus on conservation issues.

It should be noted that in an environmental context, public perception could extend to justice issues often associated with environmental resources and management. The importance of public perception of a concept and associated justice issues has been found to influence the level of public participation (Rowe and Frewer, 2000). In the past, observations have shown public understanding and trust in scientific knowledge to be low. For example, in the early 1990s, 36% of the public were of the opinion that scientists were not informed as they professed, with 47% of the British public also stating that they did not trust the government to deal with environmental issues (Worcester, 1993). Although not included in Hawthorne and Alabaster's model (1999), environmental citizenship has been linked to the concept of environmental justice in later work (Agyeman and Evans, 2004). In the UK, attempts to encourage more inclusive marine management, and therefore engender a perception that the management has been developed in a just manner, have been successful on local scales through organisations such as Finding Sanctuary (Online).

2.7.2 Public Participation

The importance of public participation with the marine environment was first recognised in the 1970s, becoming increasingly important in modern coastal management (McNeil *et al.*, 2006; Kawabe, 2004; Appelstrand, 2002; Edwards *et al.*, 1997). This was reiterated in 1992 at the Earth Summit, where the development of Agenda 21 stated, "one of the fundamental prerequisites for the achievement of sustainable development is broad public participation in decision making" (cited in Fletcher, 2003). Numerous authors have identified connections between public participation and successful environmental management (Eden, 1996; Carnes *et al.*, 1998; Chopyak and Levesque, 2002).

Participation was initially related to environmental issues in the recommendations proposed by Agenda 21, followed by the Aarhus Convention, the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (UNECE, 1998). In spite of this, Hawthorne and Alabaster's model (1999) does not specifically mention participation as a factor of any significance in environmental citizenship. Given the potential influence of this factor, it is proposed that participation should be included in marine citizenship. In order to do so, there must be a thorough understanding of the role of public participation and how it can be applied to marine management.

Based on the suggestion that if a person has *the right* to participate in societal decision making, they also have *a responsibility* to be a 'good' citizen, public participation has been defined as the most effective method to enable the public in environmental decision-making (Smith, 2003). In the context of environmental policy development and management implementation, public participation has been identified as way of offering stakeholders the opportunity to share and exchange knowledge (Edwards *et al.*, 1997; Chess and Purcell, 1999; Kearney *et al.*, 2007). For example, Appelstrand (2002) observed increased participation in forestry management to result in the adoption of more efficient management regime. Failure to involve the public at the early stages of the decision-making process has been found to lead to a lack of trust, suspicion and dissent towards the management regime, reducing the possibility of future participation (Edwards *et al.*, 1997; Appelstrand, 2002). Therefore in order to encourage the highest degree of acceptance, inclusion in the process is paramount as individuals are more likely to accept plans if they believe their opinions and input are valued (Appelstrand, 2002).

The suggestion that public participation could aid marine and coastal management was first accepted and promoted by the U. K. government in 1992. The U.K responded to this by accepting the fact that coastal and marine management schemes required integration of all stakeholders and users, in order to develop efficient management plans (Edwards *et al.*, 1997). In the past, citizen involvement has meant that key interested parties have been consulted

and the information provided by them has been discussed and publicised. However, this method has been highly criticised by people who felt that they should have been consulted earlier in the decision making process, so as to have some kind of meaningful impact (Edwards, *et al.*, 1997). It has been suggested that failure to involve the local communities in coastal management planning at an early stage could undermine UK coastal environment initiatives (Edwards *et al.*, 1997). However, although research has shown that public participation can be beneficial to environmental management, it also necessary to consider the potential challenges associated with enhanced public involvement. Table 2.4 presents a variety of strengths and weaknesses currently associated with public participation in overall environmental management.

Table 2.4: Strengths and weaknesses associated with public participation in environmental management and decision-making.

Strengths	Weaknesses
<ul style="list-style-type: none"> • Widening the number of interests represented in the decision-making process (Appelstrand, 2002; Fletcher, 2003). • Early anticipation of conflicts (Appelstrand, 2002), • Improvement of local sense of ownership of resources (Appelstrand, 2002; Fletcher, 2003). • Inclusion of lay knowledge in planning and policy-making; (Tytler <i>et al.</i>, 2001) • More successful implementation of management and planning strategies (Dreverssek, 2005). • Comprehensive assessment of risks (Dreverssek, 2005). 	<ul style="list-style-type: none"> • Poor participation as a result of low capacity for involvement (Fletcher, 2003; Lee and Abbott, 2003; Rowe and Frewer, 2000). • Traditional over dependence on scientific and technological expertise (Rowe and Frewer, 2000). • Potential for the process to be costly in both time and money (Beierle, 1998). • Potential bias during management and decision-making as a result of over representation of certain stakeholders (Appelstrand, 2002; Rowe and Frewer, 2000).

2.7.3 Proximity to the coast and sense of place

An individual's sense of place and consequential sense of attachment to an area can be integral to their perception, understanding of issues and ultimately sense of responsibility towards the environment (Cantrill, 1998; Jorgensen and Stedman, 2001; Stedman, 2002; Cox *et al.*, 2008; Kusuma, 2001). Place

attachment is most commonly described as a positive relationship between individuals or communities and their environment, and has been related to knowledge, awareness, concern, emotional connections and sense of responsibility (Jorgensen and Stedman, 2001). Of particular importance to environmental management is an understanding of how sense of place can impact on public perception of natural ecosystems. For example, Cantrill (1998) presents evidence to suggest that different experiences will engender different reactions to different environments and any propositions of managing a particular resource.

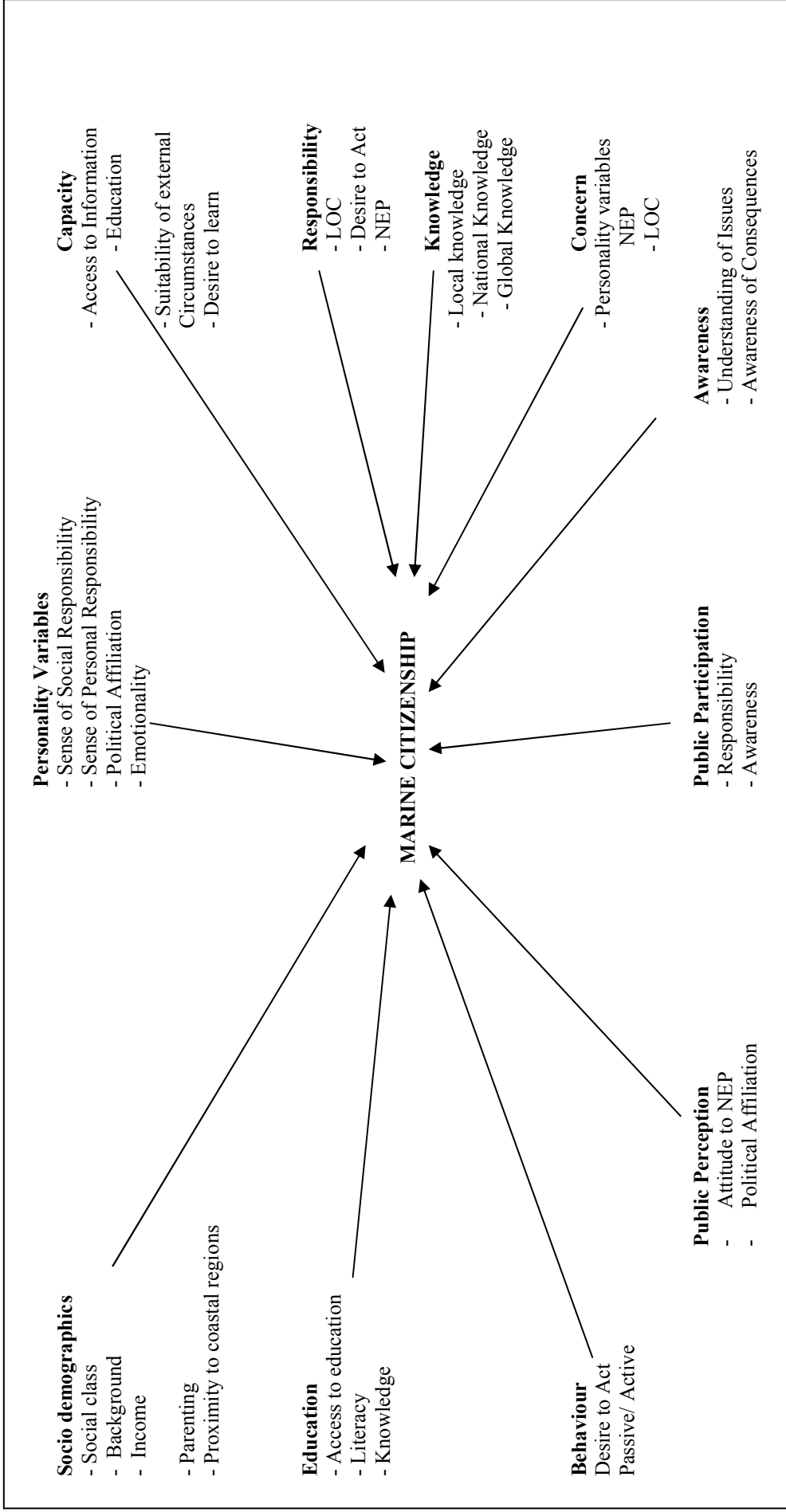
In spite of its apparent complexity and the marine specific research conducted, sense of place is clearly an important component of any model including environmental behaviour, awareness and citizenship. Although not directly included in the model created by Hawthorne and Alabaster (1999), sense of familiarity and ownership invoked through a positive sense of place or attachment to a particular environment is often reflected in a desire to manage and protect environmental resources (Berkowitz *et al.*, 2005; Jorgensen and Stedman, 2001). Therefore, in the context of environmental citizenship, attachment to place can already be strongly linked to developing an individual's overall sense of responsibility towards the environment (Kearns, 1995). With regards to its role in marine citizenship, the connection between attachment to the marine environment and levels of awareness was identified by Steel *et al.* (2005) with visits to the coast highlighted as one of two important situational variables influencing adult ocean literacy. Steel *et al.* (2005, p. 111) found that experience of the coast can influence an individual's level of concern for the marine environment and "brings people closer to the problems", encouraging them to behave in a more appropriate manner. However, supporting research has found that a sense of connection to the marine environment cannot be based solely on exposure and proximity to the coast. Williams (2008) identified a number of socio-demographic factors that superseded an individual's proximity to the marine environment, including age and life stage.

The next section of this chapter outlines the generation of a conceptual model relating on the observations made throughout the literature review.

2.8: CONCEPTUAL MODEL OF MARINE CITIZENSHIP

Having discussed the potential components of marine citizenship and the inter- and intra- relationships that could influence an individuals' sense of marine citizenship, a conceptual model of marine citizenship derived from the observations of the literature review can be generated as displayed in Figure 2.3. It is important to highlight that unlike the preceding models produced for environmental citizenship (see Figures 2.1 and 2.2); no hierarchy or pre-conceived relationships are indicated in this diagrammatic model. Although some of the information could have been inferred from the Hawthorne and Alabaster (1999) or Berkowitz *et al.* (2005) model, it was decided that the level of influence these factors and their connectivity might vary significantly in a marine specific model. The conceptual model of marine citizenship illustrated in Figure 2.3 reflects this complexity.

Figure 2.3: A conceptual model of marine citizenship based on the observations of the literature review.



2.9 CONCLUDING COMMENTS

A synthesis of the findings presented in Sections 2.2-2.8 is now presented through discussion of a number of key conclusions taken from the literature review.

The first finding is that there is a significant lack of research into the application of environmental citizenship in a marine context. This acted as a founding rationale for further research into a concept of marine citizenship. Evidence was found of other type specific forms of environmental citizenship but these were dominated by terrestrial ecosystems. One source proposed a concept of ‘ocean citizenship’ and provided an evaluation of the benefits that could potentially be associated with a concept of this nature.

Secondly, the literature review identified a number of additional factors that had not been included in the primary models of environmental citizenship. Following an assessment of the role of these factors in environmental citizenship, the exclusion of these factors in existing models renders current environmental citizenship models effectively inapplicable in a marine context. This provides a strong rationale for furthering the research into the generation of a concept of marine citizenship and how it could be applied for the benefit of marine management. Table 2.5 presents the factors common to both environmental and marine citizenship, highlighting a number of additional factors with the potential to influence a marine specific concept of citizenship.

Table 2.5: Comparison of the factors present in environmental citizenship (Hawthorne and Alabaster, 1999) and marine citizenship indicated by the ✓ symbol.

Potentially Affecting Factors	Environmental Citizenship	Marine Citizenship
Education	✓	✓
Responsibility	✓	✓
Capacity	✓	✓
Socio-economics	✓	✓
Awareness	✓	✓
Personality traits	✓	✓
Desire to Act	✓	✓
Literacy	✓	✓
Attitude	✓	✓
Concern	✓	✓
Perception		✓
Participation		✓
Livelihood dependency		✓
Proximity to the resource		✓

As Table 2.5 illustrates, a concept of environmental citizenship could not be directly transferred to the marine environment. There are significant gaps with regard to the influence of livelihood dependency and geographical location on an individual's sense of citizenship towards the marine environment. These gaps serve only to further support the need to investigate and promote marine citizenship.

In addition to this, there is increasing recognition that management objectives are in need of adaptation so that long-term environmental benefits are considered. It is the proposition of this research that marine citizenship would theoretically engender a change in societal attitude and behaviour towards the marine environment.

The third conclusion of the literature review was the acknowledgement that successful expression of marine citizenship requires the presence of the factors identified. When contemplating the concept of marine citizenship, it is necessary to consider all potential factors that may have an effect on the presence of marine

citizenship in today's society presented in Table 2.6 with each of these parameters and the level hypothetically required to promote marine citizenship.

Table 2.6: Factors potentially influencing Marine Citizenship deduced through the literature review.

Factors	Level likely to encourage Marine Citizenship	Level likely to discourage Marine Citizenship
Socio Demographics		
Position in Society	Developed Region, Stable Income (High position in Society)	Developing Region, Unstable Income (Low position in Society)
Background (parenting)	Pro-environmental background with high level of exposure to environmental issues	Background with low level of exposure to environmental issues
Heritage/ Culture	High – Medium Dependency on the Marine Environment	Low Dependency on the Marine Environment
Proximity to Coast	Strong association with the Marine Environment	Weak association with the Marine Environment
Income	Medium to high	Low
Personality Variables		
Sense of social responsibility	High Sense of Social Responsibility	Low Sense of Social Responsibility
Sense of personal responsibility	High Sense of Personal Responsibility	Low Sense of Social Responsibility
Political Affiliation	Affiliation with pro-environmental political parties (usually liberal)	Affiliation with political parties with low emphasis on environmental issues (usually conservative)
Emotionality	High Connection/ Attachment to the marine/coastal environment – can be dependent on locality	Low Connection/ Attachment to the marine/ coastal environment
Capacity		
Access to Information	High – Medium Access to Appropriate Information	Low Access to Appropriate Information
Desire to Learn	High	Low
Suitability of other circumstances	Cultural, Economic, Social and Political Circumstances Suitable for Development	Cultural, Economic, Social and Political Circumstances Unsuitable for Development
Education	Well Educated in Environmental Issues	Poorly Educated in Environmental Issues
Education		
Access to education	High Access to Appropriate Education	Low Access to Appropriate Education
Literacy	High – Medium environmental literacy levels	Low environmental Literacy levels
Knowledge	Good level of knowledge, ability to act appropriately.	Low level of knowledge
Knowledge		
Local, National, Global	Good level of knowledge of marine environmental issues at all scales	Low level of knowledge of marine environmental issues

Factors	Level likely to encourage Marine Citizenship	Level likely to discourage Marine Citizenship
Awareness		
Understanding of issues	High – Medium Understanding	Low Understanding
Awareness of Consequences	High – Medium Levels of awareness of consequences of Management plans and policies	Low Levels of Awareness of Consequences of Management Plans and Policies
Responsibility		
Locus of Control (LOC) Desire to Act Attitude to NEP	High (Internal) LOC High – Medium desire to improve situation Agreement with the NEP	Low (External) LOC Low desire to improve situation Disagreement with NEP, more accepting of the DSP
Concern		
Personality NEP LOC	Associated with high levels of pro-environmental personality variables Acceptance Internal	Associated with low levels of pro-environmental personality variables External
Behaviour		
Desire to Act Concern	High Desire to Act in a Pro-environmental manner High – Medium Level of Concern about the Condition of the marine environment	Low desire to act Low Level of Concern about the Condition of the Marine Environment
Public Participation		
Responsibility Awareness	High – Medium Sense of Responsibility High – Medium Level of Awareness	Low Level of Responsibility Low Level of Awareness
Public Perception		
Attitude to NEP Political Affiliation	Accept the NEP Liberal	Refute the NEP Conservative
Proximity to resource		
	Reside in a coastal region.	Reside in an inland region.
Livelihood Dependency		
	High levels of dependency on marine resources	Low levels of dependency on marine resources

The final conclusion to come out of the literature review is the recognition that as with the generation and examination of any new concept, it is necessary to consider the benefits and burdens it creates. Currently general public awareness and associated concern for the marine environment are relatively low, which has potential implications for the promotion of marine citizenship. It has become increasingly apparent that the condition of the marine environment is inherently linked to issues of social justice (Agyeman and Evans, 2002), financial dependency (Costanza, 1999) and cultural heritage (Costanza, 1999). With such diverse and complex relationships requiring attention, promotion of marine citizenship could be a potentially arduous task. The development of a marine

citizenship model must consider the lessons learned through environmental citizenship (Hawthorne and Alabaster, 1999).

Following completion of the literature review three areas were identified for further investigation in this project:

- The lack of definition or framework for a concept of marine citizenship;
- An identification of the factors influencing both individual and societal conceptions of marine citizenship;
- Evaluation of the application of marine citizenship for the benefit of sustainable management of the marine environment.

Given these areas of investigation the specific data requirements for the remainder of the research were therefore identified as:

- *The perception of marine practitioners regarding marine citizenship and its role in management of the marine environment.* This will provide an evaluation of current management strategies, the role available to individuals in marine management, identification of the factors thought to be directly related to marine citizenship, and the potential role for marine citizenship in future management.
- *Evaluation of the key factors identified by marine practitioners through thematic case studies.* This will allow identification of the gaps between management and community perspectives regarding the application of marine citizenship and the factors that are of most importance when promoting this emerging concept. In addition to this, collection of this data will allow identification of where effort would be required in order to further the concept of marine citizenship and how it could be applied to future sustainable marine management.

This research will seek to fill the gaps identified through the literature review and will contribute to the debate concerning the role of citizenship in management of the marine environment and associated resources. The general methodological

approach adopted through which this data will be collected and analysed is presented in Chapter Three.

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CHAPTER THREE

GENERAL METHODOLOGY AND TELEPHONE INTERVIEW SCHEDULE

3.1. INTRODUCTION

This chapter presents the two-stage methodological approach utilised to accomplish the aim and objectives of the research project. The project is firmly rooted in the discipline of social geography, with potential applications to the delivery of marine management and policy, and as such follows an appropriate research method in both phases of data collection. Any potential ethical and moral issues related to the research project will be considered, as will measures of quality assurance. The second part of this Chapter will discuss the specific methodology applied to the first phase of data collection; the practitioner interview survey, which will be discussed in more detail in Section 3.5-3.8.

3.2. GENERAL METHODOLOGICAL APPROACH

3.2.1. Overall Methodology

Research projects can utilize either an inductive or deductive progression depending on the requirements of the study (Kitchin and Tate, 2000). The differences between these two techniques are outlined in Table 3.1. For the purposes of this research project, the research will progress inductively with each phase guided by the preceding data collection. The premise of inductive research is that as the data collection and analysis progress, any conclusions or observations made regarding the raw data become narrower, eventually focusing on specific components of the research (Kitchin and Tate, 2000; Thomas, 2003).

Table 3.1: Differing approaches of inductive and deductive research in human geography.

Inductive Research	Deductive Research
<ul style="list-style-type: none"> • Research is conducted before theory is established (Kitchin and Tate, 2000). • Theory is established through the identification of themes and patterns in the data (Kitchin and Tate, 2000). • Research is not based on testing a hypothesis but on synthesis of the theory (Kell and Oliver, 2003). 	<ul style="list-style-type: none"> • Theory is established prior to the research (Kitchin and Tate, 2000). • Research is conducted to examine theories, providing validation of pre-existing concepts (Kitchin and Tate, 2000). • Most commonly driven by hypothesis testing (Kell and Oliver, 2003).

The concept of marine citizenship is complex and ultimately concerned with human society and behaviour towards the marine environment. Given this complexity, a mixed methods approach was identified as the most appropriate research framework to ensure a comprehensive investigation. The characteristics of qualitative, quantitative and mixed methods research are outlined in Table 3.2. Mixed methods research can be a combination of qualitative and quantitative methods, or a mix of just qualitative methods or a mix of purely quantitative methods (Brannen, 2005). Historically, these traditions have been kept distinct from each other but in recent years, there has been a movement towards using the strengths of both to benefit research (Johnson and Onwuegbuzie, 2004).

Mixed methods approaches are often used in social investigation where research is complex and qualitative or quantitative research methods are deemed inadequate on their own (Creswell, 2009). Mixed methods can formally be defined as when the researcher combines quantitative and qualitative research approaches and methods in a single study (Johnson and Onwuegbuzie, 2004). It is seen as a complementary technique using the strengths and limiting the weaknesses of the more traditional approaches to research (Pope and Mays,

1995; Creswell, 2009). In order to allow the project a high degree of flexibility and adaptation, an inductive mixed methods approach was adopted to ensure comprehensive understanding of applicability of marine citizenship to the management of the marine environment.

Table: 3.2. Main characteristics of qualitative, mixed methods and quantitative approaches to research (Adapted from Creswell, 2009)

Qualitative Research	Mixed Methods	Quantitative Research
<p>Takes a constructivist approach with participatory knowledge claims.</p> <p>Uses open ended approaches, generally uses text or image as data.</p> <p>Researchers have to consider their own position in the context of the data.</p> <p>Focus on a single phenomenon.</p> <p>Studies the participant's settings and aims to obtain insights into particular phenomena.</p> <p>Considers aspects of quality assurance of the data.</p> <p>Data tends to develop an agenda for reformation of a theory.</p> <p>Researchers bring personal values to the study.</p> <p>Uses strategies of phenomenology, grounded theory, ethnography, case studies and narratives.</p>	<p>Takes a pragmatic approach to the data.</p> <p>Can use both open and closed questions, emerging and predetermined approaches associated with both qualitative and quantitative data and analysis.</p> <p>Collects both quantitative and qualitative data.</p> <p>Integrates data at different stages.</p> <p>Employs both qualitative and quantitative research approaches.</p> <p>Tends to present visual pictures of methods in the study.</p> <p>Uses sequential, concurrent and transformative methods.</p>	<p>Takes a post-positivist approach</p> <p>Uses close ended questions and tends to use numeric data</p> <p>Tests theories and verifies explanations.</p> <p>Needs identification of variables for investigation.</p> <p>Uses validation standards.</p> <p>Observes and measures numeric information.</p> <p>Employs statistical procedures.</p> <p>Relates the data and questions to hypotheses.</p> <p>Uses surveys and experiments.</p>

As with other research approaches, there are various directions mixed methods research could take (Creswell, 2009). The research took a sequential mixed methods design with an initial qualitative phase, followed by a concurrent mixed methods phase including both qualitative and quantitative data collection (presented in more detail in Table 3.3 and Figure 3.1). This allowed identification of key elements and views required for further investigation in the second phase of the research, as is common in mixed methodologies (Creswell, 2009).

Table 3.3: The three main mixed methods strategies that could have been applied to the research (Adapted from Creswell, 2009)

Transformative	Sequential	Concurrent
<p>Can be both sequential and concurrent in nature.</p> <p>A theoretical aspect underpins the basis of the research providing a directional question for the research.</p> <p>Can follow a sequential pattern of two distinct phases.</p>	<p>Usually quantitative data collection and analysis, followed by a qualitative collection and analysis phase.</p> <p>Can be weighted the other way with a qualitative phase conducted initially, followed by a quantitative phase of data collection.</p> <p>Mixing of the data occurs prior to the qualitative phase which is informed by the initial quantitative phase of research.</p> <p>Typically used to investigate the quantitative phase further</p> <p>Can be either explanatory or exploratory in nature</p>	<p>Most familiar and well validated method</p> <p>Collection of both qualitative and quantitative data simultaneously making comparisons between the two.</p> <p>Used so that the research benefits from the strengths of both qualitative and quantitative research.</p> <p>Mixing of the data occurs through transformation or comparison of the data.</p> <p>Can be difficult to compare data in different formats</p> <p>Can be either triangulation (1 phase of data collection) or an embedded (2 phases of data collection) concurrent strategy</p>

Table 3.4 summarises both phases of the research project the research project consisted of two phases of data collection; the marine practitioner telephone interview schedule and thematic case studies which are explained further in Sections 3.2.2.1 and 3.2.2.2.

Table 3.4: Summary of research progression

Phase	Data Collection	Method
Pre-data collection Literature Review		
Phase One Chapter 3 and 4	Practitioner perception of role of marine citizenship	In-depth semi structured telephone interviews
Phase Two Chapter 5 and 6	Case Study Examination of key elements identified in Practitioner survey (Phase 1)	Personal attachment; examined through community based semi structured interviews Education; School based questionnaires

When conducting mixed method-based research, it is important to have a clear idea of how the research is going to progress and how the qualitative and quantitative components of data collection relate to each other. Figure 3.1 illustrates the overall progression of the research indicating an overarching sequential approach to the research including a concurrent mixed methods data collection phase.

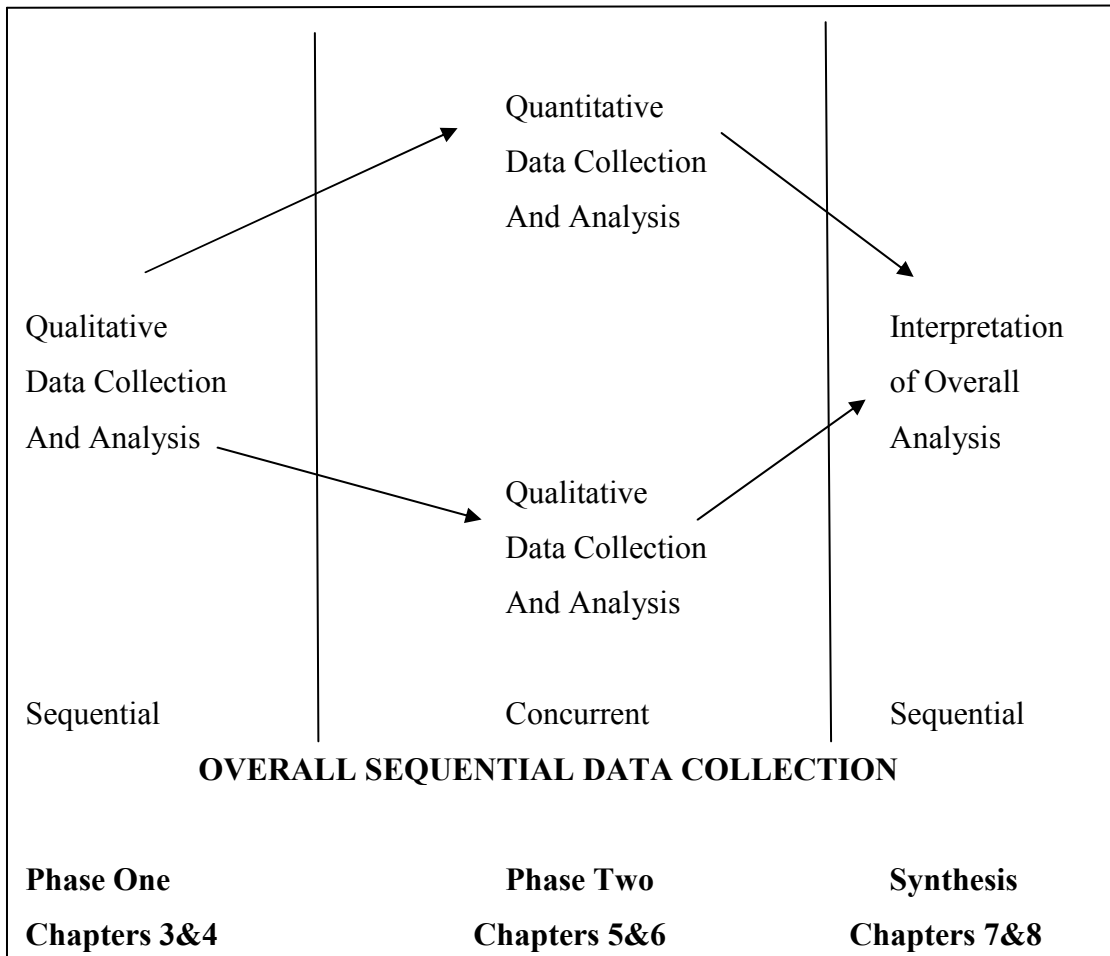


Figure 3.1 Mixed method design applied to the research

3.2.1.1 Telephone Interview Schedule

In order to ensure that the research established a representative view of UK marine practitioners, data was sought from a diverse range of marine practitioners across a wide geographic and professional scale. A total of 42 telephone interviews were conducted using a semi-structured interview technique. Interviews were hand scribed, immediately typed and returned to interviewees for clarification and confirmation. In conjunction with providing valuable insights into practitioner perceptions of the role of, and elements influencing, communities in management of the marine environment, the telephone interviews also allowed identification of the areas requiring further investigation. The specific methodology and justification of conducting the telephone interview schedule is presented in Chapter Three, Section 3.3.

3.2.1.2 Thematic Case Study Schedule

Two key themes, education and personal attachment, were identified for further investigation following the practitioner telephone interview schedule, forming the focus of the second phase of the data collection. Various approaches were used to investigate these themes. A school survey was used to investigate the theme of education within three schools at selected case study sites, while a community based semi-structured interview was administered to examine the theme of personal attachment at five case study sites. A variety of locations were selected to ensure a comprehensive and representative assessment of the factors was carried out. A full description and justification for the methodological approach and analysis in the case study phase of research is described in Chapter Five. Synthesis of the telephone interview schedule and the case study research provided the research with data from which a model of marine citizenship could be derived (as presented in Chapter Seven), and recommendations for the application of marine citizenship to the sustainable management of the marine environment (presented in Chapter Eight).

3.2.3 Quality Assurance of Data Collection Phases

Throughout the research project, the data collected was quality assured in a number of ways to ensure reliability of the data collection and during the data interpretation and analysis as presented in Table 3.5.

Table 3.5: Methods of assuring the quality of the data collected during both phases of the study.

Quality Assurance Method	Phase of Research
Pilot Interviews	Phases 1 and 2
Hand scribing of interviews	Phases 1 and 2
Immediate typing and data collection of school based questionnaires	Phase 2
Hand written notes to accompany hand scribed interviews	Phases 1 and 2
Immediate reflection following interview	Phases 1 and 2
Continual back up of data	Phases 1 and 2
Generation of typed transcript of interview	Phases 1 and 2
Transcript returned to candidate for clarification to allow them to make alterations and check meaning where needed	Phase 1
Retyping of interviews, application of any changes noted following clarification by interviewee. This was followed by an immediate review of the transcript to establish important alterations.	Phase 1
Checking of coding system	Phase 1 and 2

3.2.4. Overall Moral and Ethical Considerations

The research was conducted in accordance with Bournemouth University's Research Ethics Policy and Procedures. As a mixed methods approach was used for this study, moral and ethical issues pertaining to both qualitative and

quantitative approaches should be considered (Creswell, 2009). The need for informed consent from participants involved in academic research has been well documented (Mason, 2002; Denscombe, 2003; Creswell, 2009). In the case of this study, informed consent was obtained either verbally through telephone calls or written consent through emails in phase one, and through written or verbal consent from participating schools and interviewees at case study locations in phase two. Creswell (2009) identifies a number of ethical elements that were included when obtaining consent from participating interviewees:

- The right to anonymity of participants.
- The right to a mutually beneficial process for both the researcher and the participant.
- The right to participate freely in the research while retaining the right to withdraw from the process at any time.
- The right to ask questions throughout the interview process.
- The right to be fully informed about the research and the role of the participants in the study.

Participants were provided with a short project rationale and briefing to ensure full understanding of the requirements of the surveys and interviews in both phase one and two. During the case studies, a short introduction was given upon approaching potential participants and it was ensured that participants fully understood and had given full verbal consent to continue with the interview

3.2.5. Scope and Limitations of the general methodology

The scope of this research was restricted to marine practitioner and community perceptions of the marine environment during the timeframe of this research. It should be noted that during the time period of the research project, statutory

management of the marine environment in the UK underwent significant change with the ratification of the Marine and Coastal Access Act (2009), in addition to the EU Marine Strategy Framework Directive (2008/56/EC). This did not prove to be a significant issue for the selected research method, but it is a factor, which should be given consideration when discussing the general observations.

Although the general mixed methods approach allowed a comprehensive investigation into the emerging theme of marine citizenship, the length of time required to carry out sequential research of a project of this type could be perceived as a potential issue. However, it was determined that a distinct initial phase of data collection was integral to the success of the research as it allowed formation of a base model of marine citizenship and did not prove to be problematic for the progression of the research.

The concurrent second phase of mixed methods based data collection allowed investigation of the key elements identified in the initial phase of data collection. Creswell (2009) suggests that carrying out concurrent data collection may lead to difficulties as a result of requiring interpretation of data in both qualitative and quantitative formats. However, in the case of this study, it was decided that the qualitative element of the second phase of data collection provided necessary and detailed information for complete examination of the research question, supporting the use of concurrent mixed methods.

Creswell, 2009 suggests that any model derived from an inductive methodological approach will only be relevant to the context in which it was developed. In order to ensure wider applicability of the research, the telephone interviews carried out in Phase One of the data collection ensured that practitioners were selected from a wide geographical distribution. The research further acknowledges that the wider applicability, i.e. application outside the UK, of any model and recommendations concluded from this study will require further investigation. In spite of this, any observations made from this research are reported as an important contribution to the general debate surrounding the application of citizenship to the management of the marine environment.

Sections 3.3–3.7 outline the specific methodology applied to the first phase of data collection, the marine practitioner telephone interview schedule.

3.3 PHASE ONE DATA COLLECTION: MARINE PRACTITIONER SURVEY

Sections 3.3.1- 3.4 present the development and selection of methods used to collect data for the first phase of this project. This involved the generation of an interview for surveying individuals associated with organisations involved with the management, development and conservation of the marine and coastal environments.

3.3.1. Qualitative data collection

Gillham (2000) identifies a number of benefits that can be associated with a qualitative approach to data collection, which can be applied to the first phase of the research. These benefits include:

- An ability to conduct investigations that other methods may not allow due to practicality and ethics;
- Allow examination of under studied theories and concepts providing information for later research;
- The encouragement to explore complexities in greater detail in a manner that may not be possible through more controlled methods.

Qualitative research approaches are known to provide a more in depth, detailed level of content, which can then undergo various interpretations dependent on the requirements of the research project (Graneheim and Lundman, 2004; Kaplon and Duchan, 1988). This level of detail and interpretive flexibility lends itself well to investigation of emerging theories, as is the case in this research (Kaplon and Duchan, 1988). The flexible nature of this approach also allows adaptation of the data requirements as the project progressed, ensuring that the data formed the theory, rather than attempting to relate the data to existing theories.

Historically, qualitative research has moved away from numerical justification characteristic of quantitative research methods, and as a result, there are a number of issues that need to be addressed with regard to the validity of qualitative research (Morse *et al.*, 2002). The potential limitations of qualitative research have been identified as including the potential for the following: biased interpretation, incorrect transcription, unsubstantiated generalisation and unintentional focus on positive cases (Gibbs, 2002). The measures taken to overcome these challenges to ensure validity and accuracy of the data throughout the collection phases of this research are presented in Table 3.2.

3.4 TELEPHONE INTERVIEW SCHEDULE

3.4.1. Selection of interview method

The primary data collection for this part of the study involved conducting a survey, with the aim of gaining insight into the opinions held by individuals involved in the management of the UK marine environment on the role and influences of citizenship with respect to the marine environment. Various qualitative data collection methods were considered for this phase of data collection, including focus groups, interviews and questionnaires (Creswell, 1994; 2009). Based on criteria, including expense and logistical feasibility, it was decided that face-to-face interviews, telephone interviews and mail based surveys were the most appropriate potential data collection options for this study (Denscombe, 2003). These three methods are defined below with further explanation of related advantages and disadvantages outlined in Table 3.6.

- Face-to-face interviews are defined as the administration of a structured or partially structured questionnaire in the presence of a respondent (De Leeuw, 1992; Denscombe, 2003). It has been suggested that for research involving members of the public, face-to-face interviews are the most effective method of data collection (Denscombe, 2003).
- A telephone interview is based on the same premise as the face-to-face interviews and involves conducting interviews through a telephone, often

through a centralised centre with a team of interviewers (De Leeuw, 1992).

- In contrast, postal or email based, 'self completion' surveys (Denscombe, 2003) are often used in a case study environment, in which respondents receive a structured questionnaire and respond in their own time by returning the survey and following the instructions in the accompanying letter (De Leeuw, 1992). Postal surveys characteristically have low return rates with only an estimated 20% of potential participants typically returning surveys (Denscombe, 2003).

Table 3.6: Benefits and problems associated with each of data collection technique considered (Adapted from De Leeuw, 1992).

Data Collection Method	Advantage	Disadvantage
Face to Face Interviews	<ul style="list-style-type: none"> • Flexible and open method of interviewing, allowing the researcher maximum control. • Interviewer is available to answer questions and clarify any issues (Denscombe, 2003) • Allows utilisation of non-verbal responses and may produce more complete answers • Researcher has a high level of control over respondents selected • The researcher gets non-verbal signs as well as verbal answers from the interviewee with regard to how the interview should proceed • Verification of interviewees answers is easy due to the interviewee's presence 	<ul style="list-style-type: none"> • Can be time consuming as face to face interviews are generally conducted over a longer time period than telephone interviews • Face-to-Face interviews can often be expensive, as they generally involve either the researcher or the respondent travelling in order to facilitate the interview. With regard to this project's international theme, this would not be possible. • Can be intrusive on a respondents personal time and space, making high refusal levels a possibility
Telephone Interviews	<ul style="list-style-type: none"> • Interviewer is available to answer questions and clarify any issues • Less intrusive on a respondent's personal time and space • Increased sense of anonymity for the participant (Sturges and Hanrahan, 2004). • Researcher has a high level of control over respondents selected • Will allow an international selection of respondents to be approached for interview easily and with a lower financial impact • Verification of respondents answers can be carried out • Less costly than interviewing in a respondent's normal environment (Sturges and Hanrahan, 2004). 	<ul style="list-style-type: none"> • Have been shown to have higher refusal rates than face to face interviews • Previous comparisons of methods have shown that telephone interviews can result in acquiescence or extremity in answers, which can mean the results may not accurately represent public opinion on an issue

Data Collection Method	Advantage	Disadvantage
Mail Based Surveys/ Questionnaires	<ul style="list-style-type: none"> Respondent has full control on the time taken to return the survey Minimal intrusion on respondents' personal time and space 	<ul style="list-style-type: none"> Researcher has minimal control over the respondent completing and returning the survey (Denscombe, 2003) Can have low return rates as cannot guarantee potential respondents will return survey There can be no verification with regard to respondent's answers Respondent has little or no opportunity to have any queries dealt with as the respondent is absent.

Table 3.7: Various dimensions of interviews (Adapted from Gillham, 2000).

Unstructured Structured	Semi-structured					
Listening to and observing participants conversation	Using natural conversation to investigate research questions	'Open ended' interviews directed by a few key interview questions to guide the interviewee	Semi-structured interviews using both open and closed questions	Recording schedules i.e. verbally administered questionnaires	Semi-structured questionnaires: multiple choice and open ended questions	Structured questionnaires consisting of simple, direct and closed questions

Based on an assessment of the analysis in Table 3.6, telephone interviews were identified as the most efficient method of data collection in this phase of the research. Although, there is evidence to suggest that face-to-face interviews commonly result in higher response rates and can produce more complete answers as a result of their personal nature (De Leeuw, 1992), this method was deemed unsuitable due to time constraints and the greater expense associated with face-to-face interviews (Denscombe, 2003). Telephone interviews on the other hand provide many of the advantages exhibited by face-to-face interviews (Table 3.6), such as the interviewer being available for clarification whilst having the added advantage of being less intrusive than face-to-face interviews can be, as well as presenting other more logistical benefits, such as speed of administration and a lower financial burden (Denscombe, 2003; Bourque and Fielder, 2003). Previous research has indicated that interview participants often prefer telephone interviews as they preserve interviewee anonymity and are considered to be more convenient (Sturges and Hanrahan, 2004).

For the purpose of this research, telephone interviews also ensured that a wide geographical distribution of interviewees could be selected with minimal time and financial cost (Fenig *et al.*, 1993; Bourque and Fielder, 2003; Sturges and Hanrahan, 2004). When compared with self-completion postal or web-based questionnaires, telephone interviews allow greater opportunity for collection of more in depth information. This is made possible in telephone interviews through the inclusion of more questions than in a self-completion questionnaire (Bourque and Fielder, 2003). Many of the potential challenges of telephone interviews, such as high refusal rates (De Leeuw, 1992; Bonnel and Le Nir, 1998), dissatisfaction with interview length and poor cooperation from participants (Holbrook *et al.*, 2003), were mitigated for in this project from the outset by sending an introductory letter and short project rationale to each potential interviewee at least two to three weeks prior to the interview date, introducing the project and explaining for the proposed research. Examples of both documents are provided in Appendices 1 and 2.

3.4.2 Use of Semi-structured Interviews

Interviews are commonly used in social research as they can provide detailed information and allow deeper examination of information (Mason, 2002; Denscombe, 2003). Table 3.7 presents an illustration of the continuum of possible interview techniques available for use in data collection. Beneficial levels of flexibility and adaptability, as well as potential for clarification not possible in other methods of data collection, are characteristic of interviews (Denscombe, 2003; Bell, 2005). For the purposes of the practitioner survey, semi-structured interviews were deemed the most appropriate method of data collection (See Chapter Five, Table 5.8 for a comprehensive outline of the most common forms of interview used in research). Semi-structured interviews typically consist of a number of open-ended questions addressing a clear list of issues while encouraging researcher flexibility with regard to the order of the questions and potentially addressing new issues (Denscombe, 2003). This allows the participant to elaborate on areas of particular interest, providing additional detail for the research. The most common features of semi-structured interviews as identified by Mason (2002) are as follows:

- The dialogue of the interview should be an interactive exchange between interviewer and interviewee.
- The interviews should have an informal, conversational tone.
- Generally interviews are unlikely to consist of a complete, standard set of questions.
- Interviews should have a flexible structure to allow for movement away from the preconceived questions.
- Interviewee can elaborate on points most relevant to them and are given the freedom to guide the interview.
- Any information obtained should be considered in context of the interviewee.

These features were applied to the telephone interview schedule by generating a semi-structured interview template with the flexibility to cover topics thought to be important by the interviewee. The use of a conversational style of

interviewing ensured that the information obtained was detailed and could be used as an accurate representation of the topic being discussed by the interviewee.

3.4.3 Determination of Case Study Option

Before identifying organisations from which suitable candidates could be interviewed, it was necessary to determine the direction in which the research would progress in order to ensure that appropriate interviewees were selected. The aim of this phase of research was to generate a theoretical model of marine citizenship based on the opinions of marine practitioners, following which examination of the key elements of the model was carried out through case study research (Chapter Five). It was clear that there are numerous paths that the project could be taken, and each needed to be considered carefully as the choice of interview candidates for telephone interviews could determine potential case studies. These options were considered and are rationalised in Table 3.8. The challenges associated with conducting international case studies included the possibility of a less detailed, superficial investigation being conducted as a result of increased travelling times, language barriers and the need to alter questionnaires and interviews to suit the marine management context of each case study site. Given these concerns, the advantages and disadvantages of using both international and UK only case studies, outlined in Table 3.9, were considered in order to aid selection of the most appropriate case study option.

Table 3.8: Description of the five options considered for direction of research

Options	Description of Options
Option One – UK based model with UK case studies	Model developed from interviews from UK based marine and coastal organisations. Model tested in UK case studies.
Option Two – UK based model tested internationally	Model developed as in option one, but would be tested on an international basis.
Option Three – International Model and Case studies	Model developed through the same method as options one and two, but on an international scale. Model tested through international case studies.
Option Four – combination of UK and International model and case studies.	Model developed by interviewing UK case studies and individuals from similar organisations in the case study countries. Model tested in both the UK and countries where international interviewees were based.
Option Five – UK based model tested in both UK and International case studies	Model developed as in options one and two, but tested in both UK and international case studies.

Table 3.9: Comparison of the advantages and disadvantages associated with UK and International case studies and UK only case studies.

UK and International		UK only	
Advantages	Disadvantages	Advantages	Disadvantages
Assesses transferability of the concept.	Financial constraints.	Minimal language barriers expected.	No international transferability of the concept.
Relatively good access to finances due to research fund available.	Language barriers.	Minimal costs with regard to time and finances.	Government devolution could prove challenging to the research.
Marine environment is an international resource.	Potentially over-stretching the concept.	Variety of case study locations available.	
Variety of places that could be selected as case studies.	Could it really be considered international with only a sample of countries tested?	Similar political systems across the four home countries.	
Cultural variances.	Significant time demands through travel to case study sites and potential need for translation of data.	Devolution could lead to potentially interesting issues.	
		Allows detailed assessment of Marine Citizenship with depth and breadth of potential case studies.	
		Cultural variances in the UK.	

It was important that all five potential options available for this research were carefully considered so the most effective method for the generation of an accurate and efficient model could be chosen.

Option 1 suggested using a purely UK based model, tested only in UK case study areas. A benefit to this method was that there would be no question of the generated model's relevance to the case study areas. Although this method could potentially be considered restrictive due to its small geographical scope, the UK is a multicultural nation and given the 19,491 miles of coastline (British Cartographic Society, 2009 Online), its marine environment supports a diverse range of uses, stakeholders and communities. Studies have shown that culture and background can have a significant influence on the development of environmental citizenship, and it can be assumed that the same would be true of marine citizenship (Hawthorne and Alabaster, 1999). It was suggested that cultural differences could be considered within a UK only based case study, examining the differences that may be present as a result of devolution by having a case study site in each of the home countries (i.e. England, Scotland, Wales and Northern Ireland).

Option 2 proposed using a conceptual model generated solely using the results of UK based telephone interviews, and testing the model in an international arena. Although there have been calls for a globalisation of environmental management, it is imperative that the individuality of specific cases be considered in order for management regimes and development plans to succeed. Therefore, it was considered potentially beneficial to create a comprehensive working model in one region (UK) with the potential to evaluate its transferability in other areas. However, it was determined that this option would have been limited by an inability to carry out a completely international case study phase of research.

Given the time and financial constraints of this project, option 3 would not be feasible. It would have been impractical to attempt a completely international model in the time available. In order for it be accurate, representatives from the majority of, if not all, global nations would be required for interview, as well as requiring a high number of case studies with sufficient geographical spread to

ensure it could be considered an “international model”. Without this, it would be difficult to establish what exactly would constitute an international model and therefore it could not be treated as a comprehensive, working international model.

Option 4 proposed that case study areas would be selected prior to the interviews taking place. It is then suggested that some of the candidates selected for interview be from these international case study sites, in order to ensure that the model generated from the results of the interview can be related to these particular sites. Although this method would give the research an international element, it could be suggested that the model would be as geographically bound as option 1 would be, and that the research would not be applicable to anywhere but the nations in which the telephone interviewees were based. It is also important to consider difficulties that may be present as a result of language barriers; this could be particularly problematic whilst attempting to conduct telephone interviews.

Option 5 appeared to be the most effective method of introducing an international element into the research within the time and financial budget available. Option 5 proposed the generation of a model for marine citizenship based on interviews conducted within the UK, including UK offices of international organisations. As described, the model would then be tested in two phases; UK based case studies, as well as international cases. This would ensure that the research can be applied and tested globally, and would simultaneously examine the model’s transferability to varying locations.

Although Option 5 was identified as the best method of ultimately generating an international working definition and model of marine citizenship, it was decided that a comprehensive, detailed evaluation of a model for marine citizenship in the UK would be of more benefit. It was a concern that attempts to produce a model with a broader geographical distribution would be less detailed and would not generate the standard of model desired. As a result, it was decided that Option One (UK based model and case study phase) would take this research in the appropriate direction. It was acknowledged that it is important that consideration

be given to the influence of location dependent variations in social, economic and cultural factors when selecting the case study sites. As previously mentioned, it has been found that cultural heritage and background can have an influence on the development of the sense of environmental citizenship within a community (Hawthorne and Alabaster, 1999). Thus it can be inferred that similar factors will be influential components in generating a model for marine citizenship. Given the multicultural diversity of the UK and the vast range of users and uses of the marine environment, it was decided that the UK could provide the detail required to produce an all-inclusive, wide-ranging template for marine citizenship.

3.4.4. Method of telephone interviewee selection

One of the challenges facing social research is the inability to collect data from every individual within a research category and, as a result, researchers are reliant on information obtained from a representative portion of the sample population (Denscombe, 2003). Once the direction of the research was decided, a sample group for the interviews in Phase One had to be determined. In order to determine which organisations to approach for potential interview candidates, a number of stakeholders, their involvement and interest in sustainable management and thus, the development of the concept of marine citizenship, had to be considered. It was decided that organisations that could potentially benefit from marine citizenship and those involved in marine management would be the most appropriate interviewees. This included management authorities as well as policy makers, as successful implementation of management regimes and legislation will be influenced by acceptance and input from the public. Throughout the interview process there was an element of “snowballing”⁵ with many interviewees suggesting other potential interviewees. Unlike in quantitative based research, random sampling is often not the best method of investigating the complexities relating to human behaviour (Marshall, 1996; Denscombe, 2003). For this study, a combination of two commonly used sampling strategies was used; namely, judgemental and theoretical sampling (Table 3.10). By using a combination of these methods, it was possible to select

⁵ Snowballing applies to the identification of potential interviewees during interviews.

interviewees who could contribute meaningfully to the research (Denscombe, 2003) as well as allowing for ‘snowballing’ (Marshall, 1996; Fink, 2003a). Reaching theoretical saturation⁶ was used as a guideline as to how many interviewees were required for a comprehensive investigation.

Table 3.10: The most common qualitative research sampling techniques (Adapted from Marshall, 1996)

Qualitative Sampling Techniques		
Convenience	Judgement	Theoretical
Selection of most accessible candidate	Most common technique	Samples are done dependent on the requirements of the research
Has time, cost and effort benefits	Active selection of the most productive sample	Samples are selected based on emerging theories to encourage further elaboration
	Can lead to snowball sampling	
	Encourages selection of confirming and disconfirming subjects	

3.4.5. Telephone Interview Design

The preceding literature review was used to identify gaps in the current knowledge regarding citizenship and its application to the marine environment. In accordance with an inductive approach, the information from the literature review was used to develop the interview template for the second phase of the data collection, the telephone interviews. Table 3.11 illustrates the link between the literature gaps, data requirements for this project and the interview questions. The interview was designed in order to achieve the following objectives:

- To establish the understanding of citizenship, both general and in an environmental context, held by organisations involved in marine and coastal management, and involved in dealing with the general public;
- To determine the level of concern, awareness and sense of responsibility thought to be held by members of the public with regard to the marine environment;

⁶ Theoretical saturation is the point at which no new information is derived from the data collection.

- To identify the perceived requirements for increased public involvement in the marine environment and its management, as well as the benefits this would be considered as having for its long-term sustainability.

Table 3.11: The links between the knowledge gaps identified in the literature review, the data requirements of this project and the appropriate questions generated for the telephone interviews.

Gaps in the Literature Review	Data Requirements for Research	Telephone Interview Questions
<p>Poor understanding of citizenship in management, development and conservation of the marine environment – necessary for successful development of marine citizenship</p>	<p>General Understanding of Citizenship</p>	<p>In your opinion what is the role of the individual in the management and decision-making process with regard the marine and coastal environment?</p> <p>What is your understanding of Citizenship?</p> <p>And what do you understand it to mean in an environmental context?</p>
<p>No real understanding of the benefits industry would have from a greater sense of marine citizenship</p> <p>Currently there is no connection between the current meaning of citizenship applies to the marine environment.</p>	<p>Benefit of developing marine citizenship</p>	<p>How do you think the concept of citizenship relates to the sustainable management of the marine environment and its associated resources?</p> <p>In recent times, there has been a global promotion of the concept of citizenship in areas of political development. Should also apply to the marine and coastal environment? If so, to what extent?</p>
<p>There is a need to examine how effective increasing public involvement in marine environmental issues and management would be.</p> <p>There is a lack of knowledge regarding promotional methods for increasing environmental responsibility.</p>	<p>Benefit of increasing public involvement with marine management</p>	<p>What effect do you think increasing public involvement in the management of marine resources would have?</p> <p>How do you think public involvement in marine and coastal management would influence future policy implementation?</p> <p>How do you think the sense of environmental responsibility within today's society should or could be altered and promoted?</p>
<p>There is a lack understanding of the factors influencing citizenship in an environmental context, and little research has been conducted in a marine specific context</p>	<p>Factors that could be considered as having an influence on the development of marine citizenship</p>	<p>What factors do you think influence a sense of citizenship amongst the public towards the marine environment and its resources?</p>

Gaps in the Literature Review	Data Requirements for Research	Telephone Interview Questions
<p>There is no record of practitioner opinion on current management of the marine environment in the UK the role of the public and how it would benefit management of the marine environment.</p> <p>As above</p> <p>As above</p>	<p>Opinion of current marine and coastal management</p>	<p>How do you think the current management of the marine environment affects its long-term sustainability?</p> <p>Who do you consider responsible for the management of the marine environment and its resources? – for each answer, attempt to explain at what level and why?</p> <p>How active a role do you think communities and stakeholders should take in the management and decision making processes with regards to the marine environment?</p>
<p>There is no real understanding of the level of awareness and understanding of issues facing the marine environment. Practitioner perception of this could aid in promotional techniques and establishing the factors considered most important</p>	<p>Public knowledge of marine and coastal issues and legislation</p>	<p>How concerned do you think the general public are regarding the condition of the marine environment?</p> <p>How do you think public awareness can be encouraged?</p> <p>Who should be responsible for providing the resources for this?</p> <p>With regard to the previous question, what scale do you think people’s awareness of the marine environment and the issues facing it are? (I.e. local, regional, national, global?)</p>
<p>No suggestions of how to improve from those currently involved in marine management. This would aid in indicating potentially influential factors of marine citizenship.</p>	<p>Methods of encouraging a sense of stewardship within the general public as well as a sense of stakeholder responsibility</p>	<p>How do you think a sense of responsibility towards the marine environment can be promoted?</p> <p>Whose responsibility do you think it is to do this?</p>
<p>There are perceived gaps in public understanding of the interaction there is between the marine environment, social and economic systems.</p>	<p>Examine the level of awareness of the link between environmental, economic and social systems</p>	<p>To what degree do you think environmental issues, in this case mainly focusing on marine issues, relate to every day life in human society?</p> <p>Does the state of the environment and its management have an impact on social and economic issues? Explain answers</p>

Interviews and questionnaires lend themselves to different forms of questioning, namely open and closed questions (Denscombe, 2003). The advantages and disadvantages of both of these formats are explained in Table 3.12. For the purposes of the practitioner survey of the data collection, given the desired semi-structured nature of the interview, it was decided that relatively open questions would be most appropriate.

Table 3.12: Open Questions Vs Closed Questions (adapted from Denscombe, 2003).

Open Questions		Closed Questions	
Advantages	Disadvantages	Advantages	Disadvantages
Respondent can choose wording and length of answer depending on what they are comfortable with.	Require more effort from respondents which can reduce willingness to be involved.	Structured answers in categories pre-established by the researcher.	Less scope for answers that reflect the feelings of the respondents.
Data gathered is likely to be rich and complex, adding detail to the data being collected.	The data collected is often raw and requires intense analysis to reach conclusions.	Responses can be simple or complex, depending on the requirements of the data. Pre-coded data collected is easily quantified and analysed.	Respondents can get frustrated at the lack of opportunity to express their views without restriction.

3.5 TELEPHONE INTERVIEW STUDY

3.5.1. Pilot Study

Prior to the main study being conducted, a pilot interview survey was carried out in order to test the methodology. A pilot study refers to a small scale version of an intended full scale study, enhancing the likelihood of a successful main study (van Teijlingen and Hundley, 2002). Conducting a comprehensive pilot study also allows evaluation of participant understanding of the questions to limit any potential difficulties in the main study (Lancaster *et al.*, 2004). The pilot study interviews were carried out during August 2008 and consisted of interviewing five individuals who worked for organisations related to the marine management. The transcripts of these interviews were not included in the final analysis. Following completion of the interview, interviewees were asked to evaluate the interview questions and style of interview. Analysis of the pilot study prompted some minor changes to the interview questions, with some alterations to phrasing

made along with the addition of two questions. Both the original and altered versions of the interview are included in Appendices 3 and 4.

Although interviews are commonly audio-recorded, studies have shown that if detailed notes are taken during the interview and written up within 24 hours of conducting the interview, recording is not necessary (Darke *et al.*, 1998). Given this, it was decided to record the interview by hand and then type them to produce an electronic transcript. Following the pilot study, it was determined that in order to ensure recording had been accurate, in the actual study typed interview transcripts should be returned to the interviewee via email requesting confirmation that the transcript was an accurate record of what had been discussed. This opportunity to allow the interviewee to reflect on a researcher's interpretation of their responses has been recommended by other studies as a method of ensuring the collection of rich and accurate data (Travers, 2001).

3.5.2. Actual Study

The actual practitioner survey study took place between September 2008 and January 2009 with a total of 42 marine practitioners interviewed, representing a response rate of 49% of the individuals contacted⁷. A wide range of individuals were contacted with individuals from various sectors, organisations, both governmental and NGOs, as well as academics were interviewed to achieve as broad an evaluation as possible (presented in Table 3.13). The average length of the telephone interviews was approximately 30 minutes, with the shortest being 25 minutes and the maximum time taken for interview being 80 minutes. Each candidate was initially contacted by email and was provided with the information and rationale as produced for the pilot study (Appendix 1 and 2). As determined by the pilot study, interviews were recorded by hand, later word-processed and returned to the interviewee for confirmation of their accuracy. This proved to be a relatively successful method with 24% of interviewees returning their transcripts with changes. These were mainly of a clarification nature where the

⁷ None of the individuals contacted refused to participate in the study; however, during the interview period marine practitioners in the UK were producing the now Marine and Coastal Access Act, and it is most likely that potential interviewees did not have the time to participate meaningfully in the study.

interviewee wished to enhance the information given rather than correct misinterpretation or mistakes. In accordance with inductive research, the total number of interviews conducted was not pre-determined, instead it was determined that interviews should be conducted until theoretical saturation (Guest *et al.*, 2006), was reached.

Table 3.13: Table of the organisations interviewees were associated with.

Categories	Examples of Organisations
Local Governance Organisations	Bournemouth Beach Forum Scottish Sustainable Marine Environment Initiative (SSMEI) – Sound of Mull SSMEI – Berwickshire SSMEI – Shetland SSMEI – Firth of the Clyde Scottish Environmental Protection Agency (SEPA)
Regional Governance Organisations (Government and NGOs)	Dorset Coastal Forum Dorset County Council Forth Estuary Forum Solent Forum English Heritage Department of Environment N. Ireland Sea Fisheries Cornwall Ulster Wildlife Trust Devon Maritime Federation Sefton Coastal Partnership Severn Estuary partnership River Hamble Authority Durham County Council Association of British Ports
National Governance Organisations (Government and NGOs)	Countryside Council for Wales Natural England World Wildlife Foundation Defra (Department for Environment, Food and Rural Affairs) Cefas (Centre for Environment, Fisheries and Aquaculture Science) The Crown Estate Scottish Environmental Protection Agency Marine Conservation Society (MCS) Environment Agency JNCC (Joint Nature Conservation Committee) The National Trust The Environment Agency – Cymru The Wildlife Trust Earthwatch Marine Directorate Scottish Government National Assembly Wales (NAW)

Categories	Examples of Organisations
International Governance Organisations	UNEP (United Nations Environment Programme) OSPAR (Administrators of the Oslo and Paris Commissions)
Academics and Other Groups	University of Hull University of Glamorgan Other groups interviewed included: ABPMer Dialogue Matters

3.6 ANALYSIS OF INTERVIEWS

This section begins by outlining the advantages and disadvantages of conducting analysis on the data through both computer-based qualitative data analysis software (QDAS), as well as manual analysis. Having explained the choice made, it then goes onto to detail the process of analysis and the effect of the interviewer on both the collection of the data and its analysis and interpretation.

3.6.1. Method of Analysis

Initially there was uncertainty as to whether electronic or manual analysis would be applied to the data collected. Analysis of the data collected through the interviews in the first phase of data collection occurred concurrently with data collection in accordance with qualitative data analysis guidelines (Basit, 2003). It is important that this is not a separate phase of a research project and that observations can be made and applied to the remainder of the data collection if necessary. Analysis may not always be in a formal manner but the researcher should be considering codes and categories that can be used to describe the phenomenon observed (Basit, 2003). These rules are applicable to both manual and computer-based analysis and were therefore adhered to throughout analysis of the practitioner interview phase data.

Technological advances have altered the traditional format of qualitative research in both data collection and analysis (Gibbs, 2002). Initially, Qualitative Data

Analysis Software (QDAS) was considered an additional complication in an already complex research field (Kaczynski, 2004). Demand for user friendly programs has ensured development of more simplistic QDAS to mirror the almost guaranteed use of data analysis tools for quantitative data (Kaczynski, 2004). Researcher interaction with the data is of utmost importance when it comes to efficient analysis of qualitative data (Walsh, 2002; Basit, 2003). Given this, concerns have been expressed about the potential for use of computer aided data analysis to distance the researcher from the work, invoking a more quantitative, rather than qualitative, analysis of the data (Webb, 1999; Walsh, 2002; Gibbs, 2002). Although use of QDAS is undoubtedly a quick and simple way of reliably analysing large data sets (Walsh, 2002), the risk of losing information through use of software programs was considered to be too high at this point in the research. It was also decided that given the applicability of manual analysis to the smaller data sets characteristic of doctoral research (Webb, 1999), the time taken to comprehensively understand a QDAS and be able to use it competently would have proved redundant.

Although there are a number of benefits associated with the use of QDAS, there is the possibility that use of software in this way would result in a debilitating rigidity with regard to analysis of the data (Kaczynski, 2004). There was also the concern that the researcher would not be fully comfortable with the software being used, running the risk of losing some of the detail of the data through the analysis procedures. The primary benefit of computer analysis is of a clerical nature, with software providing a more efficient and less time consuming way of managing data and coding theories (Morrison and Moir, 1997). Previous studies have indicated that those with limited experience in qualitative data analysis would benefit most from completing manual data analysis as they would gain much needed insight into their data which are essential for any method of data analysis (Webb, 1999; Basit, 2003). Given this, it was decided that analysis of the data from Phase One would be carried out without software for the following reasons:

- To ensure in-depth familiarity and connection with the data,

- To prevent the data from becoming distanced and to maintain control and understanding of the data,
- As a result of the recognition that software can create distance between the data and the researcher.

3.6.2 Content Analysis and Coding

Although software programs have been shown to be an efficient method of analysing hundreds of pages of transcriptions, it was decided that working through the data in a comparative manner was most appropriate (Denscombe, 2003). Unlike statistical surveys, where the data is precoded, qualitative, open-ended based interviews are coded post interview completion (Fink, 2003b). Information collected in qualitative data research projects can take numerous forms, including transcripts of interviews or focus groups, field notes following personal observations, as well as transcripts of written, spoken or filmed material observed by the researcher (Fink, 2003b). For the purposes of this research, as outlined in Section 3.5.1 telephone interviews were selected as the most efficient method of data collection. As a result, the data produced were qualitative interview transcripts that required coding and interpretation following completion of the telephone schedule.

As recommended by Gillham (2000), transcription of the interviews was carried out as soon possible following the completion of each interview. Previous work has show verbatim transcription of interviewees to allow identification of repetitious and redundant information within the data collected (Gillham, 2000). Given the qualitative nature of the data, content analysis through coding was used to examine and interpret the data collected throughout the telephone interviews. Content analysis allows the identification of substantive statements and concepts within the data (Gillham, 2000).

The data analysis was based on a process of data reduction and interpretation as discussed in Creswell (1994) and Gillham (2000) so that patterns within the data could be identified. In the case of this research, the data from the first phase was

analysed through identification of substantive statements, creation of textual segments and coding them to allow comprehensive content analysis to be conducted on the data. The initial simple codes identified then underwent recontextualising to develop meaning from the broader categories as described in numerous studies (Darke *et al.*, 1998; Jones, 2007; Creswell, 2009). For the purposes of this study, the data analysis involved interpretive coding being assigned to the data in order to identify themes and categories (an example of a processed interview is provided in Appendix 5). Analysis of the interpretive coding was used to identify a number of relationships relating to the application of citizenship to marine management, with two broad themes encompassing a number of more specific components selected for further research.

3.6.3. Effect of the Interviewer

It has been suggested that participant responses vary according to their perception of the interviewer with gender, ethnicity and age commonly altering how a participant will answer questions (Denscombe, 2003). It is important to realise that most of these personal attributes cannot be changed although efforts can be made to put participants at ease by being punctual, polite and neutral (Denscombe, 2003; Bell, 2005). As the interviews in Phase 1 were carried out over the telephone most of these issues were avoided.

3.7 LIMITATIONS OF PHASE ONE METHODOLOGY

As with any qualitative research project, it is important to acknowledge temporal, spatial and situational influences when interviewing (Marshall, 1996). The limitations specific to telephone interviews were considered when determining the most appropriate method for conducting the initial data collection phase (See Table 3.6), including a low response rate associated with telephone interviews and a possibility that interviewees will provide the answers that they feel are required to end the telephone call. Both these limitations are associated with the fact that telephone interviews, particularly those involving home numbers, can be perceived as being intrusive and an invasion of the interviewees' privacy. In the

case of this research, this was mitigated for by contacting interviewees prior to the interview to arrange a suitable time in order to minimise the impact on the interviewee's personal and working time.

A second limitation of telephone interviews that has occurred with increasingly widespread use of mobile telephones as noted by Denscombe (2003) is that individuals may not always be available to talk despite answering the call, and that the network signal may experience interruption during the interview. In the case of this study, the contact numbers used throughout the telephone interview schedule were preferably work based telephone numbers or when necessary home telephone numbers provided by the interviewee.

A further potential limitation of the telephone interview methodology used in this research is the absence of audio recording equipment throughout the interviews. As mentioned, it has been shown that recording is not necessary for successful interviews to be conducted. In order to ensure that the interviews were recorded correctly and accurately, typed transcripts were returned to the interviewees who were asked to verify that the transcript was an accurate record of their interview.

3.8 SUMMARY

This chapter has outlined the general methodological approach of mixed methods with consideration given to the limitations and scope of the overall methodology as well as of that specific to the first phase of data collection. As well as the overarching research approach, this chapter detailed the selection of the methods for the initial phase of data collection (See Table 3.6). The final part of the chapter discussed the processes of data analysis and interpretation following the initial data collection phase.

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CHAPTER FOUR

RESULTS AND DISCUSSION OF MARINE PRACTITIONER TELEPHONE INTERVIEWS

4.1 INTRODUCTION

In this chapter the analysis and key observations of the practitioner telephone interviews are described. The chapter begins with general observations made following analysis of the data and examines how this data was used to guide the successive phase of data collection and analysis. All quotes⁸ are unattributed to the participants in order to maintain anonymity and assure confidentiality in the interview. The views expressed by the interview participants do not necessarily reflect the official view of the organisation they are associated with.

4.2 RESULTS OF PRACTITIONER TELEPHONE INTERVIEWS

This section will outline the results of the analysis of the telephone interviews. Although the headings are derived from the interview questions, the results have been grouped together for discussion when relevant. Table 4.1 presents a grid analysis of the data collected through the marine practitioner telephone interviews. This table illustrates how frequently interviewees mentioned the key elements identified through content analysis conducted on the data. In addition, the grid analysis was used to support the generation of the key themes investigated in the remainder of the research (discussed in Section 4.3). The main results of the marine practitioner phase will be briefly discussed in Section 4.3 with further interpretation in Chapter Seven. Sections 4.2.1 – 4.2.13 presents the key elements highlighted through the telephone interviews.

⁸ Throughout this chapter, quotes taken from the practitioner telephone interviews are included in italics in support of the observations made through comparative analysis of the data. The quotes also act as an illustration of the typical comments made during interviews.

Table 4.1: Content Grid Analysis for Marine Practitioners Telephone Schedule

Note: The interviewee codes are based on the date on which the interview was conducted and is prefixed with MP, an abbreviation for Marine Practitioner. The categorical coding was carried out using the methodology of content analysis and coding as outlined in Chapter 3. The ✓ symbols indicate the number of times an interviewee mentioned the theme in their interview.

Category coding	Disconnection with the marine environment	Need for more Sustainable Management and Governance	Personal & social responsibility	Socio-economics	Devolution	Social Background	Public participation & engagement	Ownership	Livelihood/Dependency	Proximity and Location	Environmental justice	Personal connection and Belonging
Interviewee code												
MP 1	✓	✓✓					✓			✓		✓
MP 2	✓	✓					✓✓					
MP 3	✓	✓	✓✓	✓			✓	✓✓				✓
MP 4	✓	✓					✓		✓✓			
MP 5	✓	✓			✓✓		✓		✓		✓	
MP 6	✓	✓✓	✓✓	✓			✓		✓✓	✓		✓
MP 7	✓	✓	✓		✓		✓	✓✓		✓✓		
MP 8	✓	✓	✓		✓		✓✓			✓		✓
MP 9	✓	✓✓✓	✓✓	✓			✓					
MP 10		✓					✓		✓	✓✓		
MP 11			✓	✓			✓✓		✓	✓		✓
MP 12	✓		✓				✓					
MP 13		✓✓	✓				✓		✓	✓		
MP 14		✓	✓				✓	✓✓	✓✓	✓✓		
MP 15			✓				✓	✓	✓			✓✓
MP 16			✓				✓	✓	✓	✓		✓
MP 17	✓✓	✓✓✓		✓		✓	✓					
MP 18	✓		✓		✓✓		✓✓					
MP 19	✓	✓	✓				✓		✓	✓		✓

Category coding	Disconnection with the marine environment	Need for more Sustainable Management and Governance	Personal & social responsibility	Socio-economics	Devolution	Social Background	Public participation & engagement	Ownership	Livelihood/Dependency	Proximity and Location	Environmental justice	Personal connection and Belonging
MP 20	✓	✓	✓✓✓				✓✓✓					
MP 21		✓						✓	✓	✓		✓
MP 22			✓✓✓				✓			✓		
MP 23				✓						✓		✓
MP 24			✓✓✓	✓		✓	✓	✓✓✓		✓✓		✓
MP 25	✓✓		✓✓				✓	✓		✓✓		✓
MP 26	✓✓✓			✓			✓✓✓	✓				✓
MP 27	✓✓		✓							✓		✓
MP 28	✓		✓			✓	✓	✓		✓		✓
MP 29	✓✓✓		✓	✓			✓					✓
MP 30	✓	✓	✓			✓	✓					✓
MP 31	✓	✓					✓✓			✓✓		✓
MP 32			✓					✓				
MP 33	✓✓		✓	✓			✓✓		✓	✓		✓
MP 34	✓		✓✓✓✓				✓		✓	✓		✓✓
MP 35	✓	✓✓	✓✓	✓			✓✓	✓	✓	✓✓		
MP 36	✓✓✓	✓	✓			✓	✓		✓	✓✓✓		
MP 37		✓	✓✓✓							✓✓		
MP 38	✓						✓			✓		✓
MP 39	✓	✓✓				✓	✓✓		✓	✓		
MP 40	✓✓		✓✓			✓	✓✓	✓✓✓				✓
MP 41	✓	✓	✓✓✓			✓	✓			✓		
MP 42	✓		✓						✓			✓

Category coding	Culture, Heritage and Ethnicity	Behaviour	Capacity to engage	Age/ Life stage	Role of the media	Education and Information availability	Role of Awareness	Understanding of links between marine environment and society	Role of the individual and communities	Value of marine resources	Public perception	Rights and responsibilities
Interviewee Code												
MP 1			✓	✓	✓	✓✓✓✓	✓✓					✓
MP 2							✓	✓				
MP 3	✓				✓✓✓✓ ✓	✓✓✓✓✓	✓✓					✓
MP 4						✓✓		✓				
MP 5		✓				✓	✓	✓✓	✓			
MP 6	✓			✓		✓✓✓	✓		✓			
MP 7	✓				✓	✓	✓✓				✓✓	
MP 8	✓					✓	✓✓	✓				
MP 9						✓	✓✓	✓✓	✓			
MP 10			✓✓	✓	✓		✓✓		✓			
MP 11		✓					✓✓		✓			
MP 12				✓		✓	✓✓		✓	✓		
MP 13		✓			✓	✓✓				✓		
MP 14		✓		✓	✓	✓✓✓✓	✓✓	✓✓		✓✓	✓	
MP 15					✓							✓✓✓✓✓ ✓
MP 16	✓		✓			✓✓	✓✓✓	✓✓		✓		
MP 17		✓			✓✓✓	✓✓	✓✓					
MP 18	✓	✓	✓			✓✓	✓✓	✓✓✓✓	✓			✓
MP 19				✓	✓	✓		✓	✓✓			
MP 20							✓	✓	✓			✓✓
MP 21				✓		✓✓	✓		✓✓✓			
MP 22				✓		✓✓✓	✓		✓✓			
MP 23		✓		✓✓ ✓	✓	✓✓✓	✓	✓	✓✓			✓

Category coding	Culture, Heritage and Ethnicity	Behaviour	Capacity to engage	Age/ Life stage	Role of the media	Education and Information availability	Role of Awareness	Understanding of links between marine environment and society	Role of the individual and communities	Value of marine resources	Public perception	Rights and responsibilities
MP 24	✓	✓✓			✓✓	✓✓	✓✓					
MP 25		✓			✓✓	✓✓	✓	✓				
MP 26		✓✓			✓		✓					
MP 27	✓	✓				✓	✓✓		✓	✓		✓✓
MP 28		✓			✓	✓		✓✓				
MP 29	✓	✓				✓		✓	✓			✓
MP 30				✓✓	✓✓	✓✓	✓	✓✓				
MP 31				✓	✓	✓	✓	✓✓	✓✓			✓
MP 32	✓	✓		✓	✓			✓✓			✓	✓
MP 33		✓		✓	✓✓✓	✓✓✓			✓✓			
MP 34					✓✓	✓✓✓✓	✓			✓		✓
MP 35		✓✓	✓		✓✓	✓						
MP 36				✓	✓✓	✓	✓✓	✓✓✓✓				
MP 37	✓					✓						
MP 38		✓	✓		✓		✓✓	✓	✓			
MP 39	✓				✓		✓	✓	✓			
MP 40				✓✓	✓		✓	✓				
MP 41	✓	✓✓		✓✓	✓✓	✓✓✓	✓✓	✓✓			✓	
MP 42				✓	✓	✓✓		✓	✓			

4.2.1. Practitioner perception of current marine management

The overall perception of current marine management by interviewees was that it is *'fragmented', 'ineffective', 'short-sighted'* and *'disconnected'* with one interviewee feeling that it is *"probably not promoting...a sustainable future for the marine environment"* with another emphasising the point further by saying that current management is having a *"disastrous effect on the long term sustainability"*. One interviewee linked sustainable, long-term management with an integrated system suggesting that *"current management is not capable of sustainable management. It will require a healthy dictatorship by some groups...guiding activity"*. Current management strategy was thought by the majority of interviewees to *"lack a holistic overview"* and generally interviewees felt that successful marine management required a more *"long term approach"* and should aim to *"develop win-win [situations] rather than compromises [between user groups]"*. The short-term nature of the current management of the marine environment was mentioned by another interviewee who suggested it could cause other social problems as *"[management] is all short term orientated rather than long term. There is a legacy...when it comes to the marine environment, along with...cultural issues that we don't understand"*. There was also a suggestion from interviewees that promotion of other approaches to management would be of benefit to the marine environment, for example *"the promotion of the ecosystem approach to management should bring benefits to the environment and [to] those who use it"*.

Practitioner consensus was that although current marine management was deemed ineffective, there was a sense that improvements are being made with *"sustainability becoming [an important] driver for policy and management"* although *'things are improving but not fast enough'*. Improvements were not considered sufficient with one interviewee saying marine management is *"changing but even then it's not sustainable until all sectors are engaged"*. Interviewees did highlight the promotion of increased efforts to achieve sustainability in international frameworks citing Agenda 21, the *"Jakarta Mandate, Marine Strategy Framework and the efforts of OSPAR"* as examples. Evidence provided by interviewees indicated that improvements are being made

on a more local scale in the UK, although it was acknowledged that the implementation of these improvements is subject to a number of constraints, such as lack of resources and time restraints. The importance of local involvement and the role of the individual in marine management were linked to citizenship with one interviewee stating that *'citizenship is likely to play an important role in resource management and development as if people are more conscious of their role they will be more empowered to make decisions'*.

4.2.2. Role of the individual in management of the marine environment

Interviewees were of the opinion that ideally the public would have a very active role in the development of marine management plans and decision-making with only six interviewees failing to mention public participation in their interview (Table 4.1). Currently, however, it was suggested by interviewees that *'there is virtually no role for the individual'* in marine management as there is *'no adequate mechanism [for public involvement]'*. General consensus suggested that early consultation and engagement would be the key to encouraging active public involvement in marine management, and ensuring that *'public requirements are considered and met'*. A moral and ethical obligation on the part of authoritative bodies to encourage public involvement as *"part of the democratic process"* was also recognised by interviewees. This was further supported by an interviewee who stated that the *'UK government is democratic and therefore everybody has a responsibility [to the marine environment]'*. This opinion was complemented by the suggestion that successful marine management would require effort from statutory management bodies to utilise the *"obligation [for individuals to participate], if they want to have an input into the future"*.

The role of the individual in the management processes appears to be seen as valuable but currently very limited. The majority of interviewees were of the opinion that although there is a public role, it needs improvement and is currently restricted with the need for a *"mechanism to enable the public to have an active role"* and *"allow them to contribute comfortably"*. Although it was generally accepted that the public should be involved in marine management at some level,

their involvement would require guidance from a more statutory level as “*everyone should take care of the environment but it is for people higher up to deliver policies, to feed them down [to the public] and enforce them*”. One interviewee differentiated between stakeholders and members of the general public and implied that, as a result of these differences, a variety of mechanisms would be required in order to facilitate effective public participation, stating that “*the general public have a different role and different levels of inclusion...need to make opportunities for the public to have involvement but think it would be at a superficial level...Stakeholder involvement would mean as much involvement as possible...whereas citizens do not need to be*”. Contrastingly, a minority of interviewees did not consider the public to have a useful role in management of the marine and coastal environment, with one stating that they were “*not entirely convinced by the argument that the general public are stakeholders...[the]contribution they make is often arbitrary*”. There appeared to be clear examples of local attempts at encouraging high levels of public involvement, thereby facilitating a public role in marine management with one local council interviewee stating that “*Bournemouth beach forum currently go for Blue Flag awards. One of the requirements for this it to engage with stakeholders...this has involved setting up forums to get stakeholder engagement across a section of people*”.

Finally, it was recognised that the role an individual plays can be dependent on a number of factors, for example, the “*nature of the individual*”, “*locality*”, both globally and “*within the UK*”, “*individual’s knowledge*” and the “*opportunities to be involved*”. One interviewee suggested that they imagined ‘*most people wouldn’t know where to begin*’ with regards to marine management. In spite of the general approval of enhanced public involvement, there was some disagreement as to the level of involvement that would be required, or indeed would be possible for the public, with one interviewee agreeing that everyone has a role in the management process while simultaneously questioning the extent of the role of the general public stating that “*everyone has their part to play, but how much?*”.

4.2.3. Understanding of citizenship

The primary theme underpinning interviewee understanding of citizenship was of “*belonging to a political group, such as a country*”, and about “[where] *you come from and where you live*”. In addition to this, a significant relationship between citizenship and “*having a sense of responsibility within the community*” and “*where people should think about their role in society rather than their own selfish requirements*” was apparent. One interviewee stated that citizenship is an awareness of “*personal responsibility and responsibility of one’s actions and impacts on other people*”, while another suggested that it is a “*sense of belonging to a particular nation or state to which an individual has various rights and responsibilities*”. The importance of this sense of responsibility was supported by a further link identified by one interviewee who stated that they “*believe that citizenship entails responsibility*” and the ‘*interactions between the individual and society*’, suggesting that citizenship is about a ‘*contract between the citizen and the state*’. Interviewees suggested that an enhanced sense of public “*ownership*” of and connection to the marine environment would lead to more successful implementation of sustainable management. Interviewees were of the opinion that if individuals exhibited a sense of attachment to the marine environment it would encourage them to work for ‘*the common good*’. Another factor thought to have the potential to influence citizenship was that of social and cultural differences within communities resulting in a need to be “*culturally aware in a human context*”.

4.2.4. Perception of citizenship for the environment

Environmental citizenship was not a concept that the majority of interviewees were familiar with, with one suggesting it was “*an emerging concept*”. The focus of environmental citizenship was not thought to be purely environmental with interviewees linking the concept to ‘*societal equality and economic well being*’. A number of the interviewees were unsure as to the relevance of citizenship with regard to the environment, with one interviewee directly questioning the level of influence attempts to develop environmental citizenship would actually have. Interviewees were aware that the public have other

concerns often more directly related to their every day life style choices and may not be receptive to efforts to generate societal environmental citizenship, let alone marine citizenship. This concern was addressed by another interviewee who suggested that given that “*there are many complexities to decision making and environmental costs are often not considered [a] priority. For example, [people] understand the environmental costs of flying but...still choose to fly* However strong environmental citizenship is, there are still other drivers to influence decisions”. Interviewees recognised that there are potential limitations to the development of marine, or indeed, environmental citizenship with one interviewee stating that they “*personally find it difficult to apply in an environmental context*”. In spite of some initial uncertainty regarding environmental citizenship, one interviewee defined an environmental citizen as someone who ‘*lives as sustainably as possible and does what they can in their own personal lives*’. However, interviewees felt that ‘*citizenship of the environment has to be encouraged by a sense of awareness and then caring – everyone lives in the environment but not everyone is an environmental citizen*’ suggesting that there are a number of challenges facing the promotion of environmental citizenship.

A number of factors were identified through the marine practitioner interviews as having a potential to influence the concept of environmental citizenship. These factors included ‘*awareness*’, ‘*concern*’, ‘*individual behaviour*’, ‘*responsibility for both current and future generations*’ and ‘*knowledge*’. As with general citizenship interviewees commonly linked individual and public sense of responsibility with the concept of environmental citizenship. One interviewee linked citizenship and responsibility directly by suggesting that environmental citizenship is connected to “*taking our environmental responsibilities seriously*”, and another stating it was related to having “*a personal responsibility for the environment*”. Environmental citizenship and associated responsibility were further linked to the sustainability of the environment; as one interviewee commented that environmental citizenship “*extends to being responsible for resources... [in] both current and future generations*”. Another interviewee suggested that the onus for enhanced responsibility is on both authoritative bodies and individuals alike, and stated that “*citizenship means that people*

responsible for the environment have a responsibility to those who live in it and as a citizen, there is a responsibility to protect the environment". Others suggested contributing factors included environmental awareness, *"being aware of rights and needs across a wide range of issues and acting with responsibility"*, and environmental concern, given that the *"quality of the environment is something that concerns everyone"*. Active involvement in environmental decision-making and management was also identified as a key component of environmental citizenship with one interviewee believing in *"active citizenship and participative democracy...through collaborative processes"*.

4.2.5. Citizenship and the marine environment

The general consensus reached by interviewees was that there is scope for a marine specific concept of citizenship, suggesting that citizenship has a potentially important role to play in the management of the marine environment. The majority of interviewees highlighted a need for a more integrated system for efficient management, conservation and development of all environments; for example, one interviewee stated that we *"should promote all concepts of citizenship in environmental issues"*. Others felt that although they agreed with an overarching concept of environmental citizenship *"marine issues may need extra attention"* and that there was a need to *"link land and sea in terms of management"*. However, it was the opinion of other interviewees that *"the coast is often ignored in comparison to the terrestrial environment"* and that given that *"the marine environment is a fluid and ever changing environment and [that] it is imperative that everyone works together to protect it"*, there was a very real need for a separate concept. This was further supported by acknowledgement of the *'different problems and lack of enforcement ability'* in the marine environment in comparison to its terrestrial counterparts. One interviewee championed the benefits of marine citizenship stating that it would *"increase people's understanding of environments and the connections between uses [of the marine environment]"* implying it would have some influence on individual behavioural choices.

In addition to supporting the need for a marine specific concept of citizenship, potential challenges were highlighted by a number of interviewees. Issues with regard to ownership and property rights related to the marine environment were identified as a potential problem as *“the marine environment cannot be owned [and] so connections and feelings of ownership can be very different [therefore]...the principles of terrestrial environmental citizenship will be difficult to translate [to the marine environment]”*. A common concern illustrated by Table 4.1 was that of public disconnection from the marine environment resulting in a lack of awareness of marine issues and societal impacts on the marine environment. A further issue raised with regard to the proposed concept of marine citizenship was the challenges posed by a perceived sense of public disconnection from the marine environment with *“a sense of coastal citizenship...easier to address, while subtidal issues would be rather more difficult [to engage the public with]”*.

4.2.6. Citizenship and management of the marine environment

In general, interviewees strongly associated the concept of citizenship to sustainable management of the marine environment and its resources, with most interviewees directly linking citizenship and marine management saying that *“they go hand in hand”* and that sustainable management *“needs to be based on citizen involvement”*. Interviewees also suggested that citizenship is required to ensure management of the marine environment is sustainable, successful and effective. A statement made by one interviewee directly associated citizenship with the marine environment stating that, *“[marine] citizenship is a wider understanding, appreciation and acceptance that the sea has an environmental, social and economic function”*. This holistic approach was further supported by another interviewee who suggested that, *“citizenship...needs to be holistic and recognise legitimate uses of the marine environment”*. These statements and others made by interviewees inferred that *“a feeling of ownership and responsibility for the maritime environment is fundamentally important in ensuring we can achieve sustainable management”*. Although interviewees felt that, ideally, sustainable management should be linked to citizenship, many were of the opinion that currently *“it doesn’t link well”* and that *“improving*

engagement of stakeholders in management would make management easier and would increase the desire to be engaged”.

The concept of marine citizenship was brought into question by one interviewee who believed that there might be *“difficulties when it comes to large open [bodies of] water”*. Another mentioned the possibility of conflicting priorities of development and conservation for sustainable management suggesting that *“in the near future there will be a drive for wave and tidal energy which will conflict with conservation; which has the higher environmental good?”* This potential conflict was also referred to by another interviewee, who said that *“citizenship refers to the individual role and sustainable management needs a consensus from government level so individual perceptions do not affect management”* suggesting that the public role in management of the marine environment is, and should remain, minimal.

4.2.6.1 Legislative implications of marine citizenship

There was a wide range of opinions on this subject, with some interviewees being of the opinion that legislation would be an important component of promoting marine citizenship. One interviewee suggested that marine citizenship and its potential influences on individual behaviour *“should be more statutory than voluntary”* as *“anything that translates policy and legislation into something that is more real for people and makes it clear to them what they should do, then it is a good thing”*. One interviewee felt that considering citizenship when developing marine specific legislation would *‘place a duty on all of us to try and achieve sustainable management of the marine environment’*. Contrastingly others were of the opinion that there was no mechanism through which marine citizenship could be legislated for and that including citizenship in legislation seemed against the very nature of citizenship stating, *“coercion doesn’t go hand in hand with citizenship”* and another negating the need for legislation as people can’t be forced *“to feel stewardship, it’s a way of life”*. Most frequently interviewees felt that considerations of citizenship should be made within the legislative process but it depended on a number of factors. One interviewee suggested that it depended on *“[the] definition of citizenship and the*

level of legislation being considered". In spite of this, it must be noted that another interviewee stated that they didn't "*know how it would be encapsulated*". Another interviewee felt that a potential issue would be "*[the] very real danger of social engineering through legislation which would put people off, it could potentially have a very negative impact*".

Acknowledgement of the Aarhus Convention implied some interviewees were of the opinion that citizenship was already being legislated for. For example, one interviewee suggested that "*there should be [best] practice legislation; which is already present in a way in the Aarhus convention*" although they were of the opinion that it wasn't clear how it was being implemented. It was also suggested that citizenship was considered during the development of the Marine and Coastal Access Act (2009). One interviewee clearly supported this sentiment saying that "*the Marine Bill⁹ promises to involve coastal communities in future decision making in the marine environment. This should instil a sense of stewardship, so in a sense it does exist in policy or as a goal of policy*". It was also suggested by one interviewee that "*governments have a responsibility to develop policy that citizens want*" while another felt that "*policy and legislation should outline the citizen's role*". Results suggested that there was a discrepancy in practitioner perception as to how policy and legislation could include citizenship and what the appropriate mechanisms for encouraging marine citizenship would be.

4.2.7. Potential Factors Influencing Marine Citizenship

A variety of demographic factors, including personal connections to the coast, socio-economics, age and occupation, were identified as impacting the development of a sense of citizenship amongst the general public towards the marine environment. Interviewees identified an individual's sense of personal connection to the marine environment as a key factor in generating a sense of marine citizenship. Importantly, a variety of forms of personal connection were

⁹ At the time of the telephone interview schedule, the Marine and Coastal Access Act was being promoted as the upcoming 'Marine Bill'. References to the 'Marine Bill' in this study therefore correspond to the newly ratified Marine and Coastal Access Act, December 2009.

identified ranging from “*historical connections*”, “*personal attachments such as memories and family connections*”, and “*holidays and recreation*”. Location and proximity to the coast were identified by interviewees as primary components of marine citizenship, as it was “*expected that coastal communities are more connected to the marine and coastal environments and would have a higher sense of marine citizenship*”.

Dependency on the marine environment, in terms of livelihood and income, was also commonly identified as a potential influencing factor with one interviewee directly linking dependency on the marine environment with marine citizenship suggesting for example, that “*fishermen...should theoretically be the main promoters of marine citizenship since their economic stability is based on the condition of the sea. They reap the benefits of the marine environment and therefore ought to be prime candidates*”. Personal wealth was also considered to be a potential factor in generation of marine citizenship as “*people involved in marine leisure activities [associated with personal wealth] are generally very aware with a genuine and inherent interest...about the marine environment*”. One interviewee thought that marine citizenship could be partially income related but it would “*depend on the demographic of people living in the area*”.

Interviewees highlighted culture as having an impact on an individual’s level of marine citizenship. This was considered on different levels, with one interviewee suggesting that there are clear “*social differences in perception*” towards the marine environment. This was supported by others who questioned the perception of minority groups within the UK, suggesting it was “*culturally not as engrained in their culture as ours*”. This statement in itself suggested that there is a cultural affiliation with the marine environment in the UK due to the “*historical implications of the UK being an island nation*”. Similarly another interviewee considered that the same would be true of other island nations, stating that “*island nations who have a long term, historical connection with the marine environment, such as the UK, would be expected to have a greater understanding than those from a land locked nation.*” A conflicting sentiment was expressed by another interviewee who suggested that, “*British people take the marine environment for granted*”. Cultural issues within the UK were also

questioned with one suggesting that marine citizenship is a “*middle class*” concept and another stating that “*people being well educated with a high level of environmental awareness often with a middle class background would be those with a higher sense of citizenship towards the marine environment*”.

Other factors identified by interviewees as having the potential to influence an individual’s sense of marine citizenship included “*aspects of school curricula could also play a factor [as] a high level of environmental education will encourage a greater sense of citizenship*”. It was, however, acknowledged that this approach would have significant limitations in that formal structured education is currently very much directed towards younger generations, and although the majority of interviewees did not connect age with a sense of citizenship, it is possible that it would have an impact. There were however conflicting views on this subject; for example one interviewee stated that “*age probably is a factor as children are being taught more about the marine environment and climate change at school*”, while contrastingly another suggested that “*as people get older, they understand more and potentially care more*”. Age was also implicated as being a factor when considering individuals access to marine and coastal environments with one interviewee commenting that many coastal communities comprise of retired communities who may have problems accessing these environments.

4.2.8. Responsibility for Management of the Marine Environment

The general consensus was that the responsibility for marine management and its associated resources currently falls to the government, albeit fragmented and at a number of different levels; “*Government makes the decisions, policy and drivers...down to the regulators, industries and everybody who has an interest in marine environment that it is managed sustainably*”. It was indicated that although the “*ultimate responsibility lies with the government*”, the “*current fragmented system means that there is a lack of transparency*”. A number of interviewees indicated what the ideal situation would be with regard to management responsibilities and suggesting a “*tiered system of development and implementation*”.

The numerous levels of responsibility were mentioned by several interviewees, for example, stating that there are ‘a whole range of people responsible’ as “*there are many levels of governance; global, regional, national; there has to be [public] engagement at each of these levels*”. Interviewees acknowledged that responsibilities fall at different levels with “*local levels having more engagement with the community...[and] national level is not really directly involved with management, more with setting out a strategic direction that should reflect stakeholder needs, putting legislation and frameworks in place to deliver policy*”. One interviewee suggested that ‘*partnerships*’ would be an efficient strategy of managing the marine environment, implying the need for a more collaborative approach to marine management. In support of this, one interviewee stressed the opinion that we “*all have a responsibility to work together and deliver management effectively, educating other people and getting input from other users*’.

Although marine management was considered to be currently predominantly government driven, interviewees felt there was a “*need to develop a finer grained bottom up approach and develop legislation*”. This perception was contested by another interviewee who argued that this would not be the most successful method and that we “*need a top-down framework from government to implement policy, with NGOs and interest organisations acting as advisors and lobbyists*”. Clearly there is a lack of consensus even among marine practitioners in the UK with regard to who is responsible for management of the marine environment: this observation is highlighted by one interviewee who suggested that “*perhaps the question should be who isn’t responsible [for the marine environment]?*” Interviewees also suggested that the significance of individuals in marine management has increased, implying links to citizenship for the marine environment and that ‘*people need to manage their own individual activities and understand the correct way to behave [towards the marine environment]*’.

4.2.9. Role of stakeholders and communities in marine management

There was a general consensus amongst interviewees that “*ideally there should be an active role*” for stakeholders and the wider community in marine

management, with one interviewee suggesting it is “*core to the decision making process*”. It was also noted that it is important to reach a balance between government-directed management and the general public with “*everyone having a right to participate should they wish to*” and that “*without them it would be an arbitrary management system*”. Although public involvement was accepted by most interviewees as being an important component of marine management it was suggested that the role of the public necessitates guidance as “*there is a requirement for strong governance to lead [public involvement] to ensure a balance is reached*”. Only one interviewee was of the opinion that there was ‘*no role*’ for the public in the management of the marine environment suggesting a general consensus that enhanced public involvement in marine management would be advantageous. The majority of interviewees suggested that there should be an active public role, particularly in coastal areas, where local authorities are often viewed as being driven by terrestrial issues ‘*often missing that...constituents of coastal local authorities are coastal workers and the impacts of the marine environment are relevant in these areas*’.

Overall, general consensus was that the public should have input but that an enhanced level of public involvement could potentially make managing the marine environment more complex. A number of difficulties with regard to the level of involvement possible for the general public were also remarked upon. These included a risk of “*stakeholder fatigue*” and “*consultation fatigue*”, in addition to restrictions on time and resources meaning it “*may be difficult to facilitate local [marine interest] groups continuously*”. However, in spite of challenges, the general consensus was that “*if you ignore stakeholder engagement, you ignore it at your peril*”. Interviewees recognised the difficulties of making involvement statutory suggesting that forced engagement would create a negative perception of marine management. The potential for increased complications in management as a result of public involvement was also recognised as a possible challenge. However, success stories regarding community driven management, such as that of Lamlash Bay¹⁰ in Scotland, which was considered a ‘*good example of a community led initiative*’ implied

¹⁰ Lamlash Bay is a Community Marine Conservation Zone encompassing the first Scottish No-Take Zone designated in September 2008 (C.O.A.S.T. Online).

that overall interviewees were in favour of community involvement and were of the opinion that *'citizens need to have a sense of ownership in order to increase the desire to engage'* in management of the marine environment.

4.2.9.1. Implications of Increased Public Involvement

Both advantages and disadvantages of increasing public involvement in management of marine resources were identified throughout the telephone interviews. Firstly it was observed that many of the interviewees expected increased involvement to result in an elevated sense of ownership towards the marine environment within society. Sense of ownership was linked to an increase in knowledge and awareness, with one interviewee stating that *"generally speaking the greater the number of people involved, the greater the knowledge, [better] evaluation of decisions made, [greater] sense of ownership and the greater chance of sound marine management plans being formulated, delivered and implemented"*. In order for public involvement to be effective, interviewees identified that the public need to be educated to ensure they have sufficient knowledge and capacity to engage meaningfully in marine management processes.

The majority of interviewees predicted that increased awareness and understanding within general society would encourage a greater demand for increased political support for marine and coastal issues, suggesting that marine issues would have a *"higher profile politically meaning it would be taken up by more of the electorate"*. According to another interviewee, this *"higher profile"* and *"higher publicity"* could theoretically be linked to an *"increased concern and awareness"*. Practitioners hypothesised that increased ownership and awareness would *"Lead to more sustainable decision making [process]...that can actually be delivered and achieved"*, encouraging a better result with regard to the development of management and policy. It was indicated by interviewees that enhanced public engagement would *"highlight other issues that had not been considered"*, encourage a reduction in conflict between interest groups and *"objections to plans"* and would encourage a *'greater appreciation of challenges facing the marine environment'*. A further potential advantage identified was

that of an increased knowledge base resulting in the use of both scientific and local knowledge. Interviewees also identified a number of disadvantages associated with an increase in public involvement suggesting it could make the management process “difficult”, “harder to manage and take everyone’s interests on board” whilst also having the potential to make the process more time consuming and expensive. There was also acknowledgement that public opinion can be affected by what is perceived as being fashionable and that “increased public involvement will mean decisions made are affected by changes in current trends...[there] needs to be a fair method that is resilient to changes in public moods”. However in spite of the disadvantages identified by interviewees, it was the general consensus that “the advantages [of increased public involvement] far outweigh the disadvantages if the process is facilitated well”. Further to this, it was suggested that there is a need to “increase public capacity to be involved” in order to make public engagement in marine management and decision making effective in the best possible manner.

4.2.10. Relationship between the marine environment and society

Awareness of marine issues was perceived by the interviewees, which they attributed to an overriding sense of disconnection between the public and the marine environment. The idea that “most people don’t see the impacts [of their behaviour] on their daily lives” was a common theme, with numerous interviewees suggesting that “links were not seen” as the marine environment is “difficult to access” and “an abstract concept” for the general public. Although there was a recognition by the interviewees that there are “impacts of marine environmental issues on daily lives; [for example] health issues, socio-economics and climate control”. They also thought that these impacts are not recognised by the public who “generally do not think about the relationship between their lifestyles and the environment”. One interviewee gave further evidence to this point stating that ‘people do not connect waste water with what ends up on the beach... [or] where goods have come from or the impacts of shipping...on the marine environment’. Interviewees compared society’s relationship with the marine environment and its terrestrial counterpart suggesting that as ‘terrestrial environments are very visual and issues facing the marine environment are not

very visible, it has led to a sense of disconnection [from the marine environment]’. This lack of connection was linked to a low level of awareness with one interviewee saying that they don’t “*think that a lot of people are aware of the impacts they have*” and another suggesting that “*beyond a basic awareness, there is very little understanding of the issue*”. One interviewee suggested that the recent lack of connection between society and the marine environment could be changing in response to increased media publication of these relationships. Levels of awareness and connection were, however, considered to be variable and dependent on other factors, for example, proximity to the coast, as suggested by one interviewee “*there is limited awareness, people who live by the coast may have awareness but not those who live further away*”. Another interviewee highlighted the possibility that “*personal connection or interest in the coast*” and those who are directly dependent on marine resources may have an influence on how aware an individual is.

Although public awareness was thought to be low, the suggestion was made by a small number of interviewees that the general public “*know about big issues like climate change and sea level rise*” and that there is “*awareness of what is perceived as being important*”. It was also suggested by some that there is a “*varied level of concern*”, supported clearly by one interviewee who stated that “*it varies: some people are very aware, certain sectors and individuals have strong ideas about issues and understand, while there are others that have no connection, perhaps due to lack of personal engagement and experience*”. There was a sense that the public have other concerns that need to be taken into consideration when examining their sense of citizenship and awareness towards the marine environment. The underlying complexity of decision making was identified as interviewees as a potential challenge to marine citizenship, which was clearly supported by one interviewee who explained the practitioner perception that there is a “*hierarchy of public concerns; Health and safety, economy and environment, in that order*”. The hierarchical perception of public concern suggests that environmental issues in general are in need of promotion in order to elevate them to a position of public priority.

4.2.11. Public awareness and concern for the marine environment

The general level of awareness of marine issues among the general public was considered to be very low by interviewees. It was suggested that this could be related to a number of factors, with one interviewee stating that environmental awareness could be *“dependent on where you live, profession, background, education”*, and another suggesting it related to *“locality, schooling and numerous other factors”*. It was also implied that awareness can be related to personal circumstances and is *“dependent on what each individual has to worry about in their personal lives”*. The results hypothesised that where people do have awareness it is of highly publicised issues such as an *“awareness of key issues like sea level rise and climate change, but not aware of sedimentary processes and marine pollution issues such as increasing ocean acidification, coral reef depletion and depleted fish stocks for example”*. Interviewees identified a lack of public connection to the marine environment as a limiting factor with regard to public awareness. One marine practitioner interviewed suspected that *“people are not aware unless they are actively involved or affected by it”*.

The interviews indicated that practitioner perception of public concern towards the marine environment ranged from very concerned to a generally low level of concern, the latter being the theme of the majority of the responses. This low level of concern was attributed to the fact that *“the public aren’t engaged enough with or informed enough about the marine environment and its condition, and their ability to appreciate it is very limited”*. It was suggested that *“the sea is too remote from most people’s experiences”* and that the public are *“as a whole, less concerned than they should be”*. Those who suggested a degree of public concern thought that there is a *“relationship between awareness and concern”* and that concern can be *“issue driven...by charismatic species like cetaceans and other marine mammals”*. Interviewees were of the opinion *“that people aren’t aware of their own effects but are concerned about the marine environment”*. Practitioners’ interviewed suggested that *“there is a general anxiety about [the marine environment] but there is a difference between general concern that the environment is in trouble, and individual choices and ability to make difficult*

decisions". Consensus was that *"if information level was increased then the level of concern would grow substantially"* supporting the need to improve the availability of information to the public in order to mobilise an enhanced level of public concern.

Importantly, as with levels of awareness, some interviewees linked public concern for the marine environment with personal attributes and circumstances, with one suggesting that *"it depends on how much you worry about it and the type of person that you are"* while another supported this statement with *"they're not concerned... people are concerned with their own lives and personal circumstances"*. Differentiation between the terrestrial and marine environment was identified in this question with one interviewee stating that *"there is not the same level of concern for marine habitat loss as there is when compared to loss of rainforests; there is no equivalent for the marine environment as a whole"*. Although general concern was considered to be low, interviewees were of the opinion that if there were an increase in information about marine issues, concern for the marine environment would be enhanced.

4.2.12. Methods of increasing public awareness of marine issues

The majority of interviewees indicated that in their opinion a significant amount of work is still required with regard to raising public awareness of marine issues, particularly on a local level, with one interviewee stating that there is a *"need for increased awareness of species in local waters"* and another affirming the need to *"empower local communities"* with regard to their role in the management of the marine environment. Interviewees were of the opinion that although it may be *"relatively easy to set up opportunities...it will really only interest people who already have a concern"* stressing the need for new initiatives regarding marine education.

Raising public awareness of marine issues was identified as being an *"uphill struggle"* with interviewees identifying a number of potential methods to increase public awareness. Media coverage of marine events was most commonly identified as the most effective method of increasing general public

awareness. The use of different forms of media was identified by one interviewee as being *“the best way to target a wide variety of people”* while another labelled it as *“the number one method, particularly television”*, and a number of interviewees championing the use of TV programmes such as Coast and Blue Planet. One interviewee commented on the importance of basing programmes of this type in the UK to ensure people have knowledge of their own environment with the aim of enhancing local interest and awareness. Interviewees emphasised the importance of using *“good science [in order] to make programmes exciting and factual”*. Although various forms of media were championed as a mechanism for increasing awareness amongst the public, interviewees highlighted the need for responsible journalism and the *“need for accurate portrayal [of marine issues] without sensationalisation”*.

Overall, interviewees identified education as a key mechanism of increasing public awareness of marine issues with one interviewee stressing that *“the importance of the country’s dependency on the marine environment needs to be central to education”*. Inclusion of marine issues in formal teaching would target younger generations, which was suggested to be one of the more important avenues for increasing awareness among the general public. It was recognised that *“[marine] education needs to start from a young age”* as *“kids teach their parents and make them act”* and that *“schools are [the] ideal way [to increase awareness] as kids are the next generation”*. Interviewees felt that if marine issues were to be included in formal education, it would be important that marine education *‘be taught in tandem and to the same depth of the terrestrial environment’*. Potential limitations of this method were recognised however by one interviewee who stated that *“it would be good to have an element in the national curriculum as it is important to teach younger generations, although there will be a time lapse before it filters into older society”*.

Marine practitioners interviewed felt that there is a sense of disconnection towards the marine environment among the public which be challenging given that *“the difficulty with the marine environment is that people do not encounter it in their normal everyday lives”*. An increase in information availability was recommended by a number of interviewees in a variety of different ways *“public*

events”, “*focusing education on local level to engage communities*”, “*public conferences*”, as well as “*general awareness raising - summer events, aquariums; having events to raise awareness with speakers and educational displays*”. The analysis also suggested that linking people’s everyday lives is an important factor, with the promotion of green consumerism suggested as a method to do this, in order to allow the public to make “*links between marine produce and their everyday lives, for example, through the Marine Conservation Society’s Good Fish Guide Campaign*” and other “*supermarket promotions*”. The current economic downturn was identified as a further challenge to raising public awareness with interviews of the opinion that it may have resulted in environmental issues ‘*slipping down the agenda*’.

Although interviewees acknowledged that responsibility for marine management falls at various levels including “*coastal partnerships*”, “*non governmental organisations*”, “*government departments*”, “*local authorities*”, “*commercial enterprises*” and “*educational bodies*”, interviewees also suggested that ‘*there is a responsibility for those who manage the marine environment to ensure there is an...awareness of impacts of society on the marine environment*’. Overall, a number of different bodies and organisations were identified by interviewees as being responsible for providing the resources for increasing public awareness. Interviewee perception varied with regard to the level of responsibility held by the government towards the marine environment with some interviewees feeling that the responsibility fell solely on the government, while others noted that “*it is easy to say government should fund it, but it is not that straight forward*”. The issue of devolution in the UK was mentioned by some of the interviewees, with one interviewee suggesting that resource provision should be allocated “*state by state...nation specific with UK level funding*”. Other interviewees felt that financial support had to come from the government although it was not purely their responsibility with a “*government based overarching campaign that local authorities and other organisations can link into*” is required. Although it was accepted that “*everyone has their part to play...where extra resources are needed, this should ideally come from [all marine organisations] with [guidance] from the government*” indicating the need for a collaborative relationship between the government, other organisations and individuals. There

was a suggestion that industry could also play a role with one interviewee stating that it may be *“interesting if marine industries took more of an active interest in this area, as it may take away some of the bias present in the information”*. Responsibility for public awareness was considered fragmented by one interviewee who thought this further reiterated the need for the Marine Management Organisation (MMO) proposed in the Marine and Coastal Access Act (2009). Finally, interviewees implied an inequality between terrestrial and marine environments with regard to public education and awareness, emphasising *“the a need to ensure that the marine environment is treated equally to the terrestrial environment when considering funding...the marine environment is often considered inaccessible and therefore less deserving of funding”*.

4.2.13. Promotion of responsible behaviour towards the marine environment

The general opinion of the interviewees was that there is *“always scope to do more”* but that there is the very real *“danger that we will turn people off by going on about the environment”*. As with many of the other questions, a comparison was made between terrestrial and marine environments by a few interviewees suggesting that although *“people are beginning to appreciate it more...the terrestrial environment has traditionally had more attention than the marine environment”*. The general consensus was that there is currently not enough promotion of marine issues to generate a sense of marine citizenship among the public, although there has *“been an increase in the volume of material but it is still low”*. It was suggested that the level of promotion varied with location and it was suggested that promotion of marine issues was *“not at a national level but certainly among some coastal communities”*.

Interviewees commonly linked an enhanced sense of responsibility to a number of other potential influencing factors, for example, increases in education and participation in marine issues. It was also recognised that links between the marine environment and lifestyle must be made more apparent to the general public. The importance of relevancy was promoted by one interviewee who felt that there was a need to make marine issues *“real for day to day life and [raise*

awareness of the] small actions that people can take”, with another suggesting that “links to educate and empower people” would heighten a sense of responsibility. A number of solutions were expressed by different interviewees; including methods that act to “[bridge] the gap between science and the public”, “increased realisation of the productivity of the sea” and encouraging “consumer choice” and “getting people to value the resource” although there was acknowledgement that it is “difficult to change people’s behaviour”. A personal sense of attachment was also strongly linked to development of a sense of responsibility as “the marine environment needs people to feel attachment and familiarity before they will take action to protect it”. The power of having a personal influence was commented on by one interviewee who felt that citizens “need to know that modifying their behaviour will have positive effects [on the marine environment]”. Potential for personal gain as a result of environmentally responsible behaviour towards the marine environment was directly linked to an enhanced sense of responsibility with one interviewee suggesting that “if there was money in it, [the public] would act more responsibly”. In direct contrast to the benefits associated with an enhanced sense of public responsibility, one interviewee questioned what effect raising a sense of responsibility would have, saying that “even if you increase a sense of responsibility, are you changing behaviour or are you just increasing people’s sense of guilt?...It may make people feel quite defeated.”

It was acknowledged that although interviewees did not consider there to be an optimum level of promotion of marine issues, it has “improved over recent years” and that in the UK particularly there was a “hope that the Marine Bill would improve it”. One interviewee was optimistic, saying that “there has been a gradual increase in appreciation for the marine environment” supporting the observation that promotion has increased public awareness and appreciation for the marine environment. Recognition of the importance of accurate information in promotional materials was highlighted by one interviewee who believed we “have to work out where people get their information from as there can be conflicting messages. For example, if people can see a fish and chip shop in their village, they are less likely to consider problems of over-fishing or see the issue as being real”. The influence of media portrayal on perception of marine

issues should also be considered with a minority of interviewees feeling that “*media attention has been negative*” potentially having a detrimental effect on levels of public awareness and concern towards the marine environment.

4.2.14 Summary of key points observed in marine practitioner interviews

The analysis of the marine practitioner telephone interviews (Sections 4.2.1-4.2.13) highlighted a number of key points summarised below and discussed in more detail in Section 4.3:

- Interviewees acknowledged that traditional marine management has failed and that a move towards a more participatory form of management would be widely beneficial,
- Results of the interviews suggest the need for more collaborative marine management through enhanced public involvement in the process,
- Interviewees identified the role of education in enabling an inculcation of a societal sense of marine citizenship,
- The importance of personal connection with the marine environment was identified in relation to a number of components of marine citizenship,
- Interviewees highlighted a potential relationship between location and an individual’s expression of marine citizenship,
- The influence of dependency on an individual’s awareness, concern and overall behaviour towards the marine environment.

4.3 DISCUSSION OF PHASE ONE RESULTS

This section provides a short discussion the main observations obtained from the first phase of the data collection. The implications of these results for the second phase of data collection are outlined in Section 4.4 – 4.5. Further discussion and synthesis with the second phase of data collection is presented in Chapter Seven.

4.3.1. Practitioner perception of education and marine citizenship

Observations from the literature review indicated levels of education, knowledge and awareness to be strongly associated with a sense of environmental citizenship (Sears and Hughes, 1996; Hawthorne and Alabaster, 1999; Berkowitz *et al.*, 2005). As outlined in Section 4.2.1 – 4.2.13, this sentiment was echoed in the analysis of the telephone interviews, with many interviewees implying that an increase in education and information availability about the marine environment would encourage higher levels of awareness, concern, responsibility and ultimately aid the generation of a societal sense of marine citizenship. Availability of accurate information coupled with an efficient education process was strongly linked by interviewees to the promotion of awareness and concern towards the marine environment by the interviewees. The relationship between education, awareness, concern and behaviour has been well researched (Haklay, 2002; Ananda, 2007) with general consensus being that individuals with higher levels of knowledge exhibit a higher sense of responsibility and concern towards the environment. With a specific focus on the marine environment, research has highlighted the importance of public education (Ducrotoy *et al.*, 2000; Correia, 2002; Steel *et al.*, 2005) in enhancing public understanding of the marine environment and its management (Ducrotoy, 2001). Links between education and delivery of effective marine management have been highlighted in previous research (Kuijper, 2003; Osborn and Datta, 2006; Williams, 2008; Castle *et al.*, 2010).

Previous studies support the proposal by UK marine practitioners that by enhancing education, long-term solutions to challenges facing the marine environment may become apparent, with the potential to alter community

attitude and behaviour towards the marine environment (Uneputty *et al.*, 1998; Hartig *et al.*, 2001; Tytler *et al.*, 2001). Steel *et al.* (2005) suggested that having a more in depth understanding of public knowledge of the marine environment could allow the development of more effective education methods. The importance of providing communities with accurate information was highlighted by interviewees, who raised concerns that irresponsible education could engender a “*blame culture*” as communities become overwhelmed by the magnitude of some of the challenges facing the marine environment and may feel unable to participate meaningfully. Interviewees championed the provision of accurate information and efficient education programmes as a mechanism of combating the perception that the marine environment is ‘*out of sight, out of mind*’ and ‘*someone else’s problem*’, working to promote the potential role of each individual and community can take. The results are supported by previous work conducted by Tytler *et al.* (2001) which proposed that addressing the perceived current deficit in public knowledge and awareness of the marine environment would lead to a better community understanding of research initiatives, legislation and management procedures. Interviewees were of the opinion that increasing the availability of various education programmes would encourage an individual’s sense of personal responsibility for their behaviour towards the marine environment. Earlier research by Cottrell and Graefe (1997) supports this proposal stating that the stronger an individual’s sense of responsibility as a result of heightened awareness and knowledge, the stronger their commitment to behaving in a particular manner. Given the observations made following the telephone interviews, and the available supporting research, it was inferred that in order to encourage a wider level of public involvement in marine management, efforts need to be made to increase public understanding of the marine environment and societal dependency on the numerous resources it provides.

Analysis of the telephone interviews suggested that increasing the level of marine education in schools would be the most effective method of promoting a societal move towards marine citizenship. Younger generations were considered the key audience for targeted marine education suggesting that age may be an indirect factor in the efficacy of education, an opinion observed in earlier

research conducted by CCW (Williams, 2008). The implications of socio-demographics for the future of marine citizenship are further investigated through the second phase of data collection.

A number of potential mechanisms through which marine awareness could be promoted were suggested by interviewees, ranging from traditional classroom based education, awareness days at marine attractions and through increased publicity through the media. Previous research supports these suggestions with the importance of the media in marine-education discussed by Steel *et al.* (2005). However, the potential for access to education to be limited by socio-economic circumstances and background has been suggested (Steel *et al.*, 2005). Given this, it can be implied that an individual's socio-economic status could influence facilitation and expression of marine citizenship.

4.3.2 Influence of location on marine citizenship

Throughout the practitioner interviews frequent references were made to the potential influence of location and proximity to the coast on an individual's sense of marine citizenship. Further to this, interviewees suggested that perception of the marine environments' condition could vary greatly across the UK, potentially influencing promotion of marine citizenship on a UK wide basis, with particular differences expected between inland and coastal communities. Inhabitants of coastal communities were expected to have a '*wider affinity [with the marine environment]*' than those in inland areas suggesting a perception that coastal communities should exhibit a comparatively superior level of personal connection to the marine environment.

Other factors, such as marine awareness and concern were associated with residency in close proximity to the marine environment, and the potential impact on marine citizenship was determined to need further investigation. It was expected that individuals living in close proximity would be likely to have a higher sense of citizenship towards the marine environment, although there has been research that contests this hypothesis. Steel *et al.* (2005) suggested that individuals living in close proximity to the coast would express a high level of

knowledge, and thus have an enhanced sense of concern and responsibility for the marine environment than inland communities. This hypothesis was used by CCW (Williams, 2008), whose work indicated that individuals in inland regions of Anglesey, North Wales had a stronger connection than individuals in coastal areas due to a higher sense of appreciation. Given these discrepancies within preceding research regarding the relationship between proximity to the marine environment and the components of marine citizenship (Figure 2.3), it was proposed that this relationship should be an area of further inquiry in the second phase of the research.

Interviewees were of the opinion that management of the marine environment was frequently given less consideration than its terrestrial counterpart, suggesting an inequality between the two. Rose *et al.* (2008) showed that there have been fewer studies investigating the public perception of the marine environment in comparison to the terrestrial environment, supporting the interviewee's perception that there has been a traditional lack of public and governmental interest in the marine environment. Sense of place and personal connection has been identified as precursors to individual behavioural choices with regards to the environment (Cantrill, 1998; Stedman, 2002). Given this, and the perceived lack of connection between the British public and the marine environment, interviewees suggested that an individual's connection to the marine environment would influence their expression of marine citizenship.

4.3.3 Livelihood and Marine Citizenship

It was suggested by interviewees that an enhanced sense of marine citizenship would be expected from individuals who are more dependent on the marine environment i.e. coastal communities whose livelihoods are intrinsically linked to the condition of the marine and coastal environment. Evidence to support this was provided by one interviewee who identified fishermen as the "*prime candidates for marine citizenship*" given their dependence on marine resources. However, although it was expressed that the fishing community should have an almost integral sense of marine citizenship, as a group they were generally considered to be irresponsible by interviewees with regard to the sustainable use

of the marine environment. The model of environmental citizenship proposed by Hawthorne and Alabaster (1999) did not consider livelihood to have a significant impact on the expression of environmental citizenship. In contrast, this relationship was perceived by interviewees as being vital to the development of marine citizenship with interviewees positively linking livelihood to the successful development of the concept of marine citizenship. This is further supported by previous research which indicated that dependence on an environment can be crucial to an individual's sense of connection (Cox *et al.*, 2008; Jorgensen and Stedman, 2001).

4.3.4 Participation, perception and culture relating to the Marine Citizenship

Overall, interviewees felt that the lack of public connection with the marine environment has been a challenge to meaningful public engagement. Although interviewees acknowledged that participation in isolation does not constitute citizenship, it was stressed that it is a crucial component as observed in previous research (Barnett *et al.*, 2005). Given the perceived importance of active participation, interviewees suggested that a balance between statutory and community governance, could aid deliverance of successful long-term marine management. This sentiment is directly connected to recommendations proposed in Agenda 21 which promotes citizen involvement in environmental management (Agyeman and Evans, 2004).

Interviewees also highlighted the possibility that culture could have an influence on a community sense of marine citizenship. It was suggested by one interviewee, for example, that many British communities have become disillusioned as the marine environment is “*out of sight, out of mind*” resulting in a diminished sense of personal and collective responsibility. In addition, interviewees implied that social standing may impact the inculcation of marine citizenship within the UK, suggesting that the marine environment is a resource predominantly used by ‘*white, middle class communities*’, with few ethnic minority communities utilizing it to the same degree. Given this, concerns were expressed by interviewees that, in some cases, promotion of marine citizenship

could be viewed by the public as being exclusive, and restricting participation from communities that are “*socially deprived*”. Interviewees identified personal perception of the marine environment as having the potential to significantly impact individual behavioural choice, a relationship that had been previously examined and identified as a precursor for individual engagement with the marine environment in a study conducted on the Menai Strait, North Wales (Williams, 2008). Between this and the observations during the practitioner interviews, it was inferred that the level of connection felt by individuals towards the marine environment could have a potentially important role in the development of marine citizenship. Interviewees expressed a concern that the perceived lack of public connection to the marine environment could be detrimental to the development of marine citizenship. In order to determine how best to promote marine citizenship, it may be necessary to determine what the public perceive as marine citizenship, and what forms of promotion they would best respond to.

The issue of long-term sustainability of the marine environment and how the public perceives its resources could also be inferred following analysis of the interview responses. As stated by Suarez de Vivero (2007) there is currently no governance regime that has ascertained how to facilitate all of the perceived uses of the marine environment. Both Suarez de Vivero’s research (2007) and the observations of this study suggest a system that would maintain maritime identity and culture for coastal communities while reducing efforts at traditional activities, such as fishing, and encouraging ongoing but sustainable development of coastal regions to ensure continued social and economic stability is required. Interviewees proposed that this collaborative approach cannot be achieved without a greater sense of public responsibility and desire for sustainable solutions to marine issues, which should, according to this research, accompany a higher level of marine citizenship.

4.3.5 Responsibility for Management of the Marine Environment

The general consensus from the telephone interviews was that increased knowledge from effective marine education induces an increased awareness of

marine issues, coupled with an enhanced sense of responsibility. However, a consensus was not reached with regards to who practitioners felt responsibility for the marine environment fell to. Interviewees suggested that a cooperative approach between government and society would benefit sustainable management of the marine environment. Potential limitations to this were highlighted in the analysis of interview responses. Recognition of the lack of property rights for most of the marine environment, coupled with perceived access difficulties highlighted limitations for a collaborative approach between the government and society to the management of the marine environment. It is also a question of whether the public feel they are sufficiently capable of contributing meaningfully to management and decision-making. In order to aid an advance in a sense of societal responsibility, it is imperative to understand whom society currently deems responsible for marine management. In order to evaluate this, it was decided that elements of responsibility for marine management required investigation in the case study phase of data collection.

When considering the relationship between responsible participation and marine citizenship, interviewees expressed concern as to how the inclusion of public opinion and requirements could be facilitated under current marine management. Interviewees were concerned that it would be challenging to encourage an enhanced level of public involvement, and thereby inculcate marine citizenship, without a transparent mechanism for including public opinion in the development of management and policy.

In addition to public involvement in policy development and management, practitioners addressed the potential for public involvement in policy and management implementation. Marine practitioners were of the opinion that there would be a clear value in enhancing public involvement in marine management with the public acting as a mechanism for the development of successful decision-making (McKinley and Fletcher, 2010). It was evident that practitioners were optimistic that through improved public education and awareness programmes, a societal willingness to change behaviour for the benefit of the marine environment would be encouraged.

4.4 REFINED MODEL OF MARINE CITIZENSHIP

The results observed through the practitioner survey have been used to refine the initial conceptual model of marine citizenship generated following the literature review. Figure 4.1 shows the refined model, which combines the findings of the literature review and the marine practitioner survey. Content analysis of the marine practitioner interviews highlighted a number of themes and factors potentially influencing the development of a marine specific concept of citizenship.

Figure 4.1 also illustrates the marine practitioner perception of marine citizenship and how it could be used to benefit the long-term management of the marine environment. Elements of marine citizenship identified by marine practitioners as having the most potential to have a positive impact on management of the marine environment are illustrated on the left column of the refined model (See Figure 4.1.). The refined model highlights the interconnected nature of a number of the factors influencing marine citizenship, with each impact on management affected by a number of components. This refined model illustrates the perception of marine practitioners that the generation of marine citizenship would not be a linear relationship; consideration would be required for the connections and cumulative impacts of each of these individual factors. The proposed final outcome of promoting marine citizenship was that of more efficient, more sustainable long-term management of the marine environment. The refined model required further investigation at a community level to examine how it could be applied to marine management. It was proposed that the model could be further examined through case study work discussed in further detail in Chapter Five.

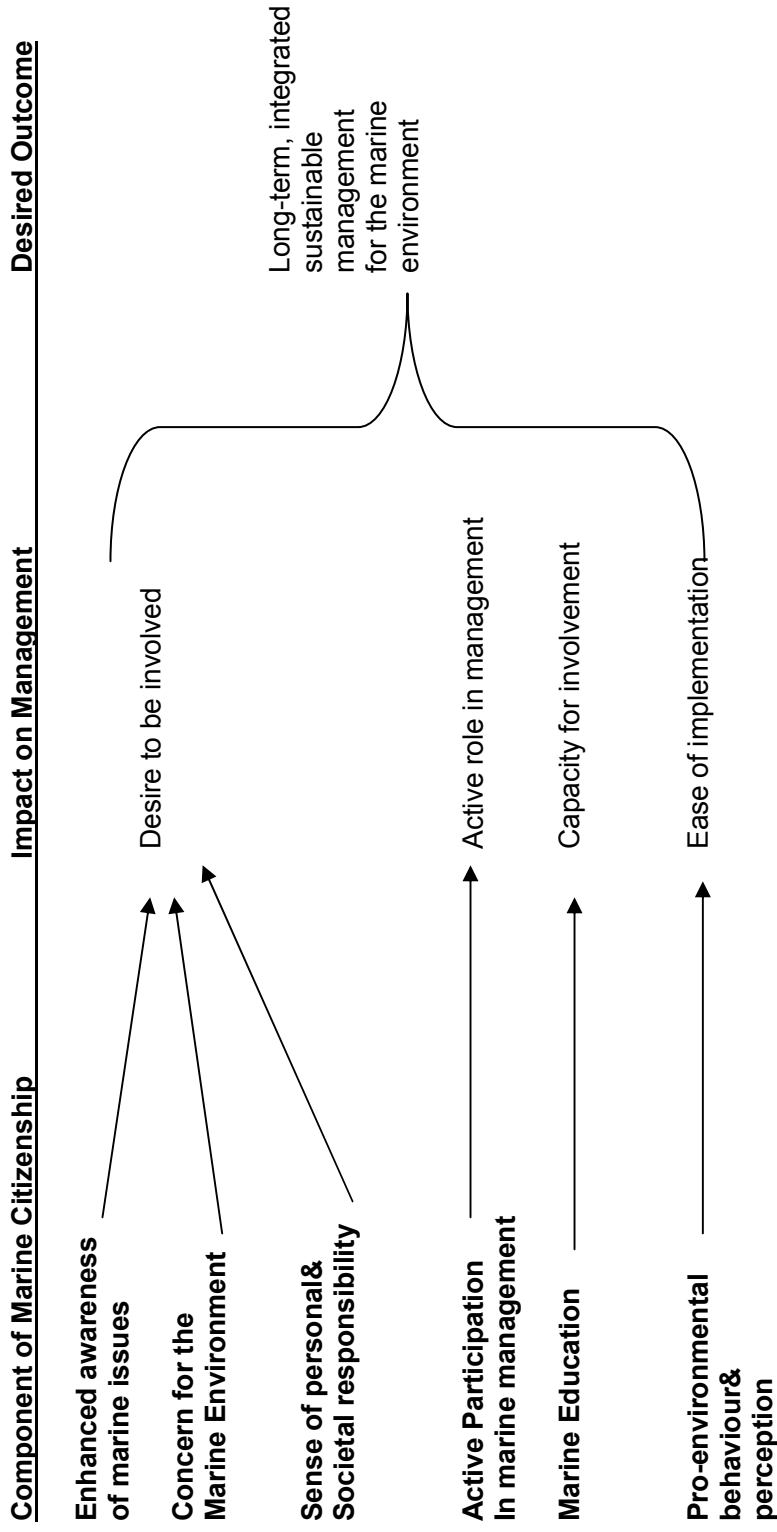


Figure 4.1: Refined model of marine citizenship (Adapted from McKinley and Fletcher, 2010)

4.5. IMPLICATIONS FOR PHASE TWO OF RESEARCH

Given the inductive approach used for this research, the observations and refined model generated following the telephone interviews were used to guide the second phase of data collection through case studies. The implications of the observations presented and discussed in Sections 4.1- 4.4 of this chapter are outlined below.

4.5.1. Identification of key themes for Phase Two

The telephone interview schedule allowed the identification of a number of potentially important relationships between the factors of marine citizenship. From these specific relationships, two broad key themes were identified as being the factors, which would have the most significant impact on the development of marine citizenship. Table 4.1 presented a grid analysis of the results following manual content analysis on the data collected through the telephone interviews. The grid analysis was used to guide the development of the surveys used throughout the case study phase of research (presented in Chapter Five).

Following the comprehensive content analysis of the telephone interviews displayed in Table 4.1, the broad themes of education and personal attachment were selected as the key areas for investigation in the subsequent phase of the research project. These broad themes encompass a number of specific components identified through both the literature review and the telephone interview schedule. By selecting broad themes, a number of more specific factors within the key themes could be evaluated through the case study phase of data collection (as displayed in Table 4.2). The broad themes were directly related to the main components of marine citizenship identified by the interviewees (Figure 4.1). The selection of these themes and their influence on the methodological approach of the second phase of data collection will be further explored and discussed in Chapter Five, Section 5.4.3.

Table 4.2: Components of the two primary themes proposed for further investigation in the second phase of data collection.

Broad Theme	Component of refined model of marine citizenship	Factors included in the broad themes investigated
Education	<ul style="list-style-type: none"> - High awareness of marine issues - Concern for the marine environment - Sense of personal and social responsibility - Marine education 	<ul style="list-style-type: none"> - Access to Information - Awareness - Knowledge - Literacy - Related Concern - Capacity to engage - Perception
Personal Attachment	<ul style="list-style-type: none"> - Social and personal responsibility - Participation in marine management - High awareness of marine issues - Concern for the marine environment - Pro-environment behaviour and perception of the marine environment 	<ul style="list-style-type: none"> - Participation - Recreational Involvement - Job Dependency and Livelihood - Cultural links and connections - Residence in close proximity to the coast - Holiday destination - Family connections

4.5.2 Case study selection

Table 4.1 indicates the recognition of UK devolution as a potential challenge to marine citizenship, given that differences in the management of marine resources across the UK may be apparent¹¹. Interviewees were of the opinion that there was a possibility that the devolution of governments could vary in their valuation of the marine environment which in turn, could be potentially be mirrored in the level of marine citizenship exhibited by the citizens of the four home countries (England, Scotland, Wales and Northern Ireland). It was proposed that the

¹¹ Recently, evidence of these differences has begun emerging with the development of separate marine legislation, namely through the Marine (Scotland) Act of April 2010 and the Marine and Coastal Access Act for England and Wales, given Royal Assent in December 2009.

variation in statutory governance and its relative impact on community sense of personal and social responsibility towards the marine environment could be investigated by selecting case studies across a wide UK geographical distribution. In spite of reference to devolution in the interview responses, there is little literature available on the potential impacts for marine management. This in itself identified the issue of devolution and its potential political influence on the promotion of marine citizenship within the UK as an area that requires further investigation. The geographic spread of the case studies ensured that the research could be considered representative of the UK as whole. In addition to this, interviewees had expressed clear differences between inland and coastal communities and their respective sense of awareness, concern and responsibility for the marine environment. Therefore, selection of the case study sites included both inland and coastal regions in order to allow the relationship between proximity to the coast and an individual's sense of marine citizenship to be fully investigated. The process of selecting case study locations and details of the case study phase are discussed in further detail in Chapter Five.

4.6 SUMMARY

This primary phase of data collection assessed practitioner understanding and perception of the potential role of marine citizenship on the management of the marine environment. The general areas for investigation identified in Chapter Three (See Table 3.8) were: the establishment of the level of general understanding of environmental citizenship and how it could be applied specifically to the marine environment; factors that could be considered to influence an individual's sense of marine citizenship and how these would impact on the efficacy of the concept; potential mechanisms for promotion of enhanced awareness and concern regarding the marine environment and finally, the perception of public awareness and knowledge of marine issues and the relationship between the marine environment and society. This summary provides an overview and synthesis of the key themes identified through the practitioner survey, establishing areas requiring further research.

Section 4.2.1 investigated marine practitioner perception of current management of the marine environment in the UK. Overall, practitioners considered marine management in the UK to be in need of improvement particularly with regard to the inclusion of the public in management and decision making. The perceived role of the individual in management of the marine environment was described in Section 4.2.2. General consensus among marine practitioners was that ideally there should be a higher level of public involvement in managing the marine and coastal environment.

Sections 4.2.3 - 4.2.7 provided an assessment of the level of practitioner understanding of the term 'citizenship' in an environmental context, with specific reference to the marine environment and how citizenship could be applied to marine management. The key relationship identified in this context was that of a strong association between general citizenship and individual and social rights and responsibilities. These sections also showed practitioner recognition of the complex nature of individual decision-making processes. There was an acceptance that environmental citizenship in general has a critical role to play in management of the environment. In spite of this, there was acknowledgement by practitioners that the diverse nature of the marine environment requires more specific attention. Potential challenges to marine citizenship were also highlighted in these questions with respondents alluding to issues caused by a lack of societal lack of connection and education regarding the marine environment. Although potential difficulties were discussed, the overall consensus was that marine citizenship, if directed at increasing public understanding and involvement in the decision-making and management processes, would prove beneficial to managers.

Section 4.2.7 outlined practitioner opinion regarding factors with the potential to influence promotion of a societal sense of marine citizenship in the UK. As expected a wide variety of factors were suggested by practitioners, supporting the observations made by Hawthorne and Alabaster (1999) investigating the component parts of their environmental citizenship model (displayed in Chapter 2, Figure 2.1). Personal connections of various natures were identified as having a particularly strong level of influence on marine citizenship, and how an

individual reacts to and treats the marine environment. Notably, practitioners felt that the traditional island history of the UK should theoretically result in a more marine aware citizenry.

Following this, Section 4.2.8 evaluated practitioner perceptions regarding the level of responsibility towards the marine environment and the role of stakeholders, including the general public, in management of the marine environment. Practitioners highlighted their concerns regarding the fragmentation of management of the marine environment at the time of the interview schedule. Respondents were of the opinion that responsibility needed to extend further than traditional statutory management organisations, incorporating more involvement from stakeholders and the general public. The possible implications of increasing the level of responsibility and involvement held by communities was discussed in Section 4.3.10 with the overall opinion that increased involvement would serve to benefit the long-term management of the marine environment.

Sections 4.2.9 to 4.2.13 evaluated practitioner perceptions of the relationship between the public and the marine environment, including elements of public concern and awareness of issues facing the marine environment. Questions of sufficient public promotion and availability of information regarding issues facing the marine environment were also considered in these sections. The key observation of this section was that practitioners felt that there is a debilitating lack of knowledge and awareness, coupled with a resulting lack of concern and sense of responsibility towards the marine environment. A number of suggestions regarding how this problem could be dealt with so as to improve overall public capacity for involvement were made. The impact of personal connection to the marine environment was once again emphasised, reiterating the importance of various elements of personal attachment to the marine environment to effective promotion of marine citizenship. Overall practitioners were of the opinion that publication of issues facing the marine environment requires improvement, although it was acknowledged that it been progressing positively over recent years. The final finding throughout these sections was the

commonly expressed suggestion that levels of knowledge, awareness and concern would differ between coastal and inland areas.

Section 4.4 presented a brief discussion of the main relationships identified through analysis of the practitioner telephone interview schedule. Of particular importance are the two key themes, displayed in Table 4.2, selected to undergo further investigation in the case study phase of the research. An improved and refined version of the initial conceptual model generated following completion of the systematic literature review was also produced and discussed. This refined model and the observations made regarding practitioner opinions of marine citizenship and its potential role in management of the marine environment were then used to guide the methodological approach and determination of the research questions for the second phase of research. The implications of this phase of research on the remainder of the research project are explored further in Chapters Five and Six.

Finally, Section 4.5 described the implications of the results obtained through the first phase of data collection on the case study phase, presented in further detail in Chapter Five. Key themes identified through comparative content analysis of the data collected through the telephone interviews were also presented.

The results of the telephone interview schedule highlighted the complexities associated with environmental decision-making. Interviewees particularly mentioned socio-economics as taking priority over environmental issues, with some interviewees focusing on the current global economic downturn. It was proposed by one interviewee that there is a '*hierarchy of concern*' within society, with environmental issues placed at the bottom of the rank. Taking this into consideration, it was proposed that in order for a comprehensive investigation into the emergent concept of marine citizenship, it would be necessary to ascertain the individual and collective impact of a variety of potentially influential factors.

Chapter Five outlines the methodological approach selected to further examine and interpret the relationships observed in the telephone interview survey and

their potential influence on marine citizenship in the UK. Chapters Six and Seven further discuss the specific observations of the case study phase of research and synthesise the observations made in both data collection phases respectively.

The next phase of data collection aims to examine the key themes and patterns identified through the practitioner surveys, investigating the level of influence each of these factors would have on the concept of marine citizenship. More specifically, the key points requiring further investigation arising from the next phase are:

- The relationship between education and individual sense of marine citizenship;
- The relationship between forms of personal attachment and inculcation of a concept of marine citizenship;
- The identification of the conditions required to enable expression of marine citizenship.

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CHAPTER FIVE

METHODOLOGY OF PHASE TWO: CASE STUDIES

5.1 INTRODUCTION

This chapter outlines the methodological approach employed in the second phase of data collection of this study. In accordance with the inductive mixed methods approach applied to the project, the methodology of the second phase of data collection was guided by observations made in the initial data collection phase (discussed in Chapters Three and Four). The chapter begins with a description of how the methodological approach to the research has evolved throughout the preceding phase of data collection. The chapter then discusses the use of case study based data collection and its suitability as a method for addressing the aim and objectives of the study. Finally the chapter presents a brief discussion of the key observations made following analysis of the data collected throughout the case study phase of research with further interpretation presented in Chapter Seven.

5.2 MIXED METHODS APPROACH

By applying an overall mixed methods approach to the research, described in Chapter Three, the strengths of both qualitative and quantitative data collection and analysis could be utilised (Gable, 1994; Johnson and Onwuegbuzie, 2004; Creswell, 2009). As outlined in Chapter Three, a sequential mixed methods approach¹² was applied to the research with the second phase of data collection directly guided by observations made in the practitioner telephone interview schedule (Chapters Three and Four).

¹² See Table 3.3 in Chapter Three for an explanation of commonly used mixed methods strategies.

As discussed by Gable (1994) the use of case studies in social research was traditionally based on a qualitative approach. However the use of qualitative case studies in conjunction with more quantitative data collection methods such as questionnaires and structured interviews is accepted as a common methodology (Gable, 1994). A mixed methods approach was applied to the case study phase of data collection. Quantitative data collection and analysis was employed to investigate the themes of education and personal attachment as identified through the marine practitioner interviews (Chapter Four). This approach allowed the researcher to establish the most significant relationships relating to the application of marine citizenship to marine management in a community setting. Simultaneous collection of qualitative data was used to further investigate these relationships, which allowed detailed and collaborative interpretation of both data types (Kaplan and Duchon, 1988; Gable, 1994; Gillham, 2007). For the purposes of this research, the use of quantitative and qualitative methods was found to be complimentary, with the interpretative qualitative data enhancing the observations through analysis of the quantitative data.

5.3 CASE STUDIES IN RESEARCH

Yin (2003a) defines case study research as “an empirical enquiry that investigates a phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (p.13). Gerring (2007) further explains the case study method as an intensive study of single or multiple cases in order to obtain wider understanding of similar events. Case study research is commonly used to investigate specific research questions and can comprise of an individual, a group or a community of any number of variants depending on the requirements of the research (Gillham, 2000). This approach is often used by social researchers due to the ability to investigate an event in natural settings (Stake, 1978 in Gomm *et al.*, 2000). Gillham (2007) identified a number of guidelines that should be observed for successful case study research including critically reading relevant literature and early determination of the research questions and aims of the case studies. Given that the use of case studies has been identified as an effective method of developing

emerging theories (Darke *et al.*, 1998; Curtis *et al.*, 2000), case study based research was considered an appropriate mechanism through which to investigate the potential role for marine citizenship in the management of the marine environment. The primary aim of the case study phase was to further investigate the key elements identified in the analysis of the practitioner interviews. The mechanisms for doing this are discussed further in Sections 5.6 to 5.9.

5.3.1. Types of Case Study Research

There are three main types of case study research commonly used including exploratory, descriptive and explanatory cases (Table 5.2). Importantly, each of these approaches to case studies can be conducted through the investigation of single or multiple cases depending on the requirements of the research project. Yin (2003b) recommends that the selection of the appropriate case study choice should be dependent on the phenomena being explored through the research. For the purposes of this research, a descriptive case study approach was applied to the investigation of marine citizenship factors. This allowed a thorough investigation of the two thematic factors identified in Chapter Four. The data was collected with the aim of describing the current situation regarding education and personal attachment to the marine environment in the context of marine citizenship.

**Table 5.1: Illustration of the various types of research case study types
(Adapted from Yin, 2003a; 2003b)**

Case Study Types			
	Exploratory	Descriptive	Explanatory
Single and multiple methods.	<p>Defines questions or areas of research for a subsequent study of any nature.</p> <p>Data collection takes place prior to final determination of questions.</p> <p>Often used as a prelude to social research.</p> <p>Research may take an intuitive direction, generating theory from the data.</p>	<p>Presents a complete description of event/phenomena within its context.</p>	<p>Examines how or why events happen and explains these phenomena.</p> <p>Often used to trace events over time.</p>

5.3.2 Use of multiple-case design case studies

As illustrated in Table 5.2 case study research can be comprised of single and multiple cases. Although, single case design studies are the most common format used in case study research; the use of multiple case studies has increased in frequency (Yin, 1994). Multiple cases are often used as comparative studies with the evidence produced from this type of study often considered more compelling than single case designs (Yin, 1994). The use of multiple cases can be complex, and as such Yin (1994) recommends the use of theoretical replication i.e. ensuring that each case has a distinctive purpose thereby producing predictably contrasting results. Using multiple cases in this way allows comparisons to be made promoting a more comprehensive and diverse investigation into the phenomenon being examined (Darke *et al.*, 1998). Figure 5.1 illustrates how multiple cases were used for this research showing distinct data collection and analysis phases for each case study followed by a cross-case synthesis of the results in order to further develop the theory of marine citizenship.

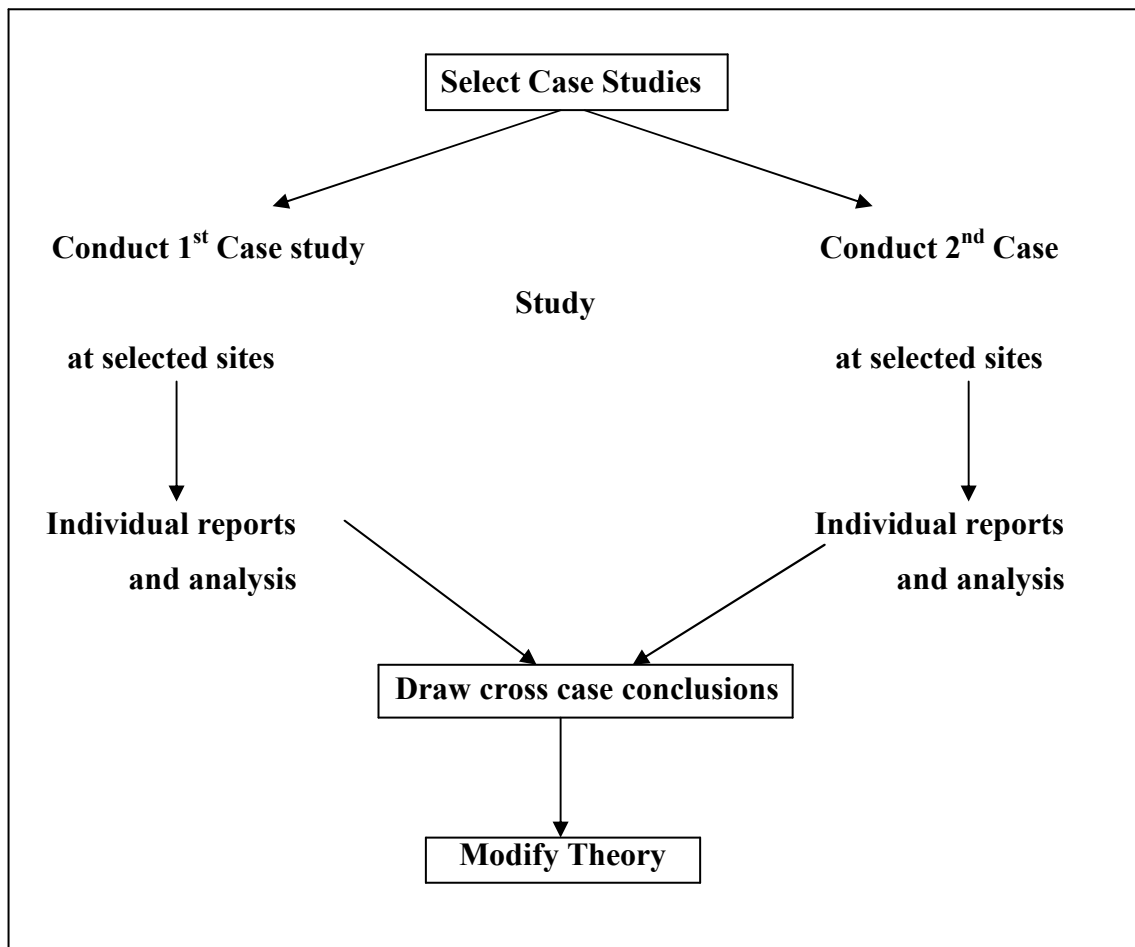


Figure 5.1: Process of conducting a multiple-case case study (Adapted from Yin, 1994).

As discussed in Section 4.5, the themes of education and personal attachment were identified as key themes in the context of marine citizenship through analysis of the practitioner interview survey. It was determined that the most appropriate method for assessing these themes would be through thematic case study research. Given the common assumption that public opinion and perception may vary depending on location, it was determined that case study sites should be selected across a wide geographic distribution. This also ensured that the study could be considered a viable representation of the UK. The case study sites proposed were initially based solely on geographical location in an attempt to locate sites that could be used to examine both key themes identified in Chapter Four. However, this had the potential to geographically limit the data, resulting in a poorly constructed evaluation of marine citizenship. Thematic case

studies¹³ were therefore determined to be the most efficient and effective method of thoroughly assessing the themes identified in the practitioner interviews. Using thematic case studies allowed investigation of each theme in a number of places, fundamentally acting as multiple cases of one study and allowing comparisons to be made.

5.3.3 Limitations of overall case study research methodology

Johnson and Onwuegbuzie (2004) suggest that qualitative researchers can often neglect to rationalise interpretation of the data they collect. A common challenge is the assumption that data collected through different means can be added together to generate a more rounded perception of the data (Brannen, 2005). In order to avoid this, the qualitative and quantitative data were analysed independently and were found to provide mutually supportive interpretations. Yin (1994) has identified a number of concerns traditionally associated with case study research:

- There is often a perceived lack of rigour in data collection when conducting case study research.
- There can be the potential for researcher bias to influence the direction of the findings or observations derived from the case studies.
- Single case studies can provide little basis for generalization of theories.
- Case studies can often result in lengthy data collection periods which can be a limiting factor for research.

Both the education and personal attachment themes were investigated using structured interviews with a clear set of predetermined questions minimising the potential for researcher bias during data collection. Thematic case studies using multiple locations allowed the results to be used as a representation of public consensus in the UK. As suggested by Yin (1994) case study research can often be time consuming and generate a high volume of data. For the purposes of this research, the time required was accounted for and the high volume of data was

¹³ Thematic case studies involved the investigation of one theme across multiple locations i.e. the theme is the case study not the location in which the data collection takes place

considered a benefit as it ensured a thorough investigation of the key themes. Each of these issues has been considered and is discussed in Sections 5.5 with specific reference to the relevant thematic case study.

5.4. GENERATION OF KEY THEMES

Analysis of the practitioner interviews highlighted a number of potentially significant themes within the data outlined in Sections 4.5. These provided the foundation for the community based investigation into the application of marine citizenship, establishing areas for further investigation. The factors proposed for investigation included the influence of education on an individual’s sense of marine citizenship, the influence of socio-economics, including livelihood and dependency, location, exposure to the marine environment and also culture, on the inculcation of marine citizenship within society, as well as examining societal perceptions of management responsibilities towards the marine environment. These individual factors were further categorised into two broad primary theme categories (Chapter Four) for use in the case study investigation phase of the research. The specific methodologies used to investigate these two broad themes, displayed in Table 5.2 will now be discussed.

Table 5.2: Key themes identified through the marine practitioner interviews.

Primary Theme	Includes the following factors:
Education	Awareness, Concern, Access to Efficient Information, Knowledge of Marine Issues, Capacity for Involvement, Location Responsibility.
Personal Attachment	Responsibility, Concern, Awareness, Dependency i.e. Livelihood, Culture i.e. traditions, family heritage, Socio-economics, Politics, Location, Proximity to the marine environment.

5.4.1. Education

Education was recognized as having a vital role in the evaluation and promotion of marine citizenship, with strong links made between marine environmental education in schools and society's sense of concern and awareness towards the marine environment. It was decided that the factors of concern, awareness, knowledge and information availability, although considered separate parameters in the Hawthorne and Alabaster model (1999), they are intrinsically linked to education and therefore can be considered collectively as a primary theme.

5.4.2. Personal attachment

The theme of personal attachment was determined as encompassing the more specific themes of location influencing an individual's sense of place, the power of cultural perception of the marine environment and how it links with an individual's everyday life, the impact of personal connections to a particular place and finally the importance of a person's dependency on the marine and coastal environment. In addition, this theme evaluated the influence of connection to the marine environment on their sense of responsibility, concern and awareness.

5.5. SELECTION OF CASE STUDY RESEARCH STRATEGY

A number of potential combinations for the progression of the case study phase of research were considered, discussed in Sections 5.5.1-5.5.4.

5.5.1. Case Study Option One: urban and rural coastal communities

It was proposed that an investigation into the potential differences between rural coastal communities and urban coastal communities would provide information for many of the research questions prompted by the practitioner interviews. This option would have allowed an examination of the cultural influences, socio-economic factors and education identified by practitioner survey as having a potential influence on the inculcation of a societal sense of marine citizenship. It

was also thought that this would allow an investigation into the influence of community dependency on the marine environment on the concept of marine citizenship. However, given the importance attributed to proximity to the coast by the majority of the marine practitioners, it was decided that this option was inappropriate. By focusing solely on coastal locations, an investigation based on these criteria would not allow a comprehensive investigation into the relative influence of proximity on an individual's perception of the marine environment, and thus their sense of marine citizenship.

5.5.2. Case Study Option Two: Presence or absence of a marine campaign

Option two proposed the selection of case studies based on the presence and absence of a marine campaign¹⁴. The rationale behind this option was that it would be expected that an area where there had been a successful marine campaign would exhibit a higher level of marine citizenship within its community. As in Option One, this option would allow the factors of education, socio-economics and societal perception of management responsibilities to be examined. However, concerns were raised that case study sites selected on this basis may not give a comprehensive view into the effects of culture. Again, as with option one, it was decided that this option would not necessarily provide the most appropriate case study sites for a thorough investigation into the themes to be conducted. In addition to this, similarly to option one, the implications of proximity to the coast could not be investigated.

5.5.3. Case Study Option Three: Sites based on marine environment type

The third option considered proposed the selection of case studies based on the presence of certain marine environments. This option would have allowed investigation into the influence of education and socio-economics in the areas selected, and would also encourage examination of public perception of various marine environments. Potential environments proposed included estuarine, sandy and beach environment and cliff based environments. As with the first

¹⁴ Marine campaigns were considered to include local and regional marine conservation or education initiatives.

two options, this option for selecting case studies would have prevented an examination of the influence of proximity to the coast on marine citizenship with site selection restricted to coastal areas.

5.5.4. Case Study Option Four: Combination

It was decided that a combination of Options One, Two and Three would permit the most comprehensive investigation into the proposed factors of marine citizenship, simultaneously examining the public perception of its role and application in the management of the marine environment. By combining the aforementioned options it was possible to evaluate the proximity to the coast, dependency on the marine environment and the influence of marine features while simultaneously investigating the themes of education and personal attachment. As discussed in Section 4.4.3, analysis of the practitioner interviews highlighted a common practitioner perception that there would be an assumed lack of attachment, responsibility and awareness of marine issues within communities' further inland in comparison to their coastal counterparts. Therefore, in order to fully examine the potential influences of proximity to the coast on marine citizenship, it was proposed that an inland community should be used as a case study site. By conducting the research in a variety of coastal locations supporting different industries and processes, the influence of these factors in the value placed on the marine environment by individuals could be assessed.

5.6. IDENTIFICATION OF CASE STUDY SITES

Given the vast coastline of the UK, and the diverse range of habitats and communities based around it, any number of locations could have been selected as sites to investigate the thematic case studies. In order to decide on the best option for this research, a number of logistical criteria as recommended by Curtis *et al.* (2000) were considered in conjunction with criteria identified through the research question. Table 5.3 illustrates the criteria used to determine the direction of progression for the case study phase of research. Table 5.4 illustrates the suitability of the proposed locations based on a number of selection criteria

recommended by Curtis *et al.* (2000) and the research requirements. Further explanation of how these criteria apply to the specific locations selected for case study research is presented in Section 5.6.

Table 5.3: Case study criteria as determined by Curtis *et al.* (2000) and the requirements of the research

Case study criteria	
Criteria based on research practicalities	Criteria based on research questions
Relevant sampling strategy. High generation of information. Enhanced theoretical generalizability. Provision of accurate information. Ethical sampling strategy. Feasible sampling plan.	Presence of marine campaign. Coastal area. Access to schools. Access to a variation in socio-economic situations.

Table 5.4: Criteria for assessing case study site suitability for the research with presence indicated by the ✓ symbols (Adapted from Curtis *et al.*, 2000)

Case study site						
Criteria	Poole Harbour	Lamlash Bay	Birmingham	North Antrim Coast	Milford Haven	Helsby, Cheshire
Relevant sampling strategy	✓	✓	✓	✓	✓	✓
High generation of information	✓	✓	✓	✓	✓	✓
Enhancement of theoretical generalizability	✓	✓	✓	✓	✓	✓
Provision of believable descriptions	✓	✓	✓	✓	✓	✓
Ethical sampling strategy	✓	✓	✓	✓	✓	✓
Feasible sampling plan	✓	✓	✓	✓	✓	✓
Presence of marine campaign	✓	✓	X	✓	✓	X
Coastal area	✓	✓	X	✓	✓	✓
Access to schools/ education system	✓	✓	✓	✓	✓	✓
Access to variation in socio-economics	✓	✓	✓	✓	✓	✓

Tables 5.4 and 5.5 indicate that each of the proposed case study sites has the potential to provide detailed information about the themes associated with marine citizenship being investigated in this research phase. The flexible and adaptive methodology allowed for a potential increase in the number of geographical locations during the case study phase of research to ensure that the themes were exhaustively examined. It was also decided that a diverse range of coastal types should be examined throughout the thematic case studies; a description of the proposed case study sites is displayed in Table 5.5.

Table 5.5: Description of thematic case study sites.

Case Study Site	Key Points
Poole Bay, Dorset, England.	Coastal region, Holder of a number of national and international designations. Main industries include tourism and recreation.
Isle of Arran, Scotland	Coastal region, Traditional fishing culture. Main industries are tourism and fishing.
Birmingham, West Midlands, England.	Inland region. Approximately 100 miles from the nearest coastal area. Main industries were traditionally manufacturing and engineering but are now dominated by the services and tourism sector.
Milford Haven, Pembrokeshire, Wales.	Coastal region. Pembrokeshire Coast. Main industries include heavy industry, petrochemicals and traditional fishing
Helsby, Cheshire, England.	Estuarine/ river basin environment, Historically dependent on agriculture now dominated by manufacturing and commuter professions.
North Antrim Coast, Antrim, Northern Ireland	Coastal region Site of the Giant's Causeway, UNESCO World Heritage Site of global cultural importance, Main industry is tourism.

In order to ensure the study could be considered a UK wide project, it was important to identify sites that would be representative of the variety of coastlines and socio-economic relationships between UK society and the marine environment. It is expected that people living near/on the coast will express higher levels of environmental concern and knowledge, regarding both environmental issues and management policies (Cicin-Sain and Knecht in Steel *et al.*, 2005). It has been argued that people inhabiting the coastal zone are likely

to view the marine environment and its resources in more immediate and more tangible terms than inland communities. Given this, it was decided that it was important to assess the influence of the hypothesised factors on a sense of marine citizenship among citizens residing in both coastal and inland communities. An introduction to each of the sites selected and their suitability as a case study site in this research project is outlined in Sections 5.6.1- 5.6.7.

5.6.1. Poole Bay

Poole Bay comprises of a 16Km stretch of coastline on the Southern coast of England extending from the Sandbanks Peninsula to Hengistbury Head (Poole and Christchurch Bay Management Group, Online). Poole Bay supports a wide variety of activities, both commercial and recreation. It is of local, national and international conservation importance and has been the subject of many conservation designations. Poole Harbour has been designated a wetland of international importance under the RAMSAR convention since 1971. The European Marine Site (EMS) Special Protected Area (SPA) was designated in 1999 while the harbour within Poole Bay falls within an area of outstanding Natural Beauty (AONB). In addition, there are two designated Sites of Special Scientific Interest (SSSI) including Poole Bay Cliffs SSSI, Christchurch Harbour SSSI and three local nature reserves at Branksome to Southbourne Overcliff, Branksome Dene Chine and Hengistbury Head (Poole and Christchurch Coastal Group, 2007).

Due to its diverse range of uses and community requirements Poole Bay was determined to be an excellent candidate for case study based investigation for this project. Its multiple uses will ensure a detailed examination of the influence of socio-economics on the marine environment and the potential for the development of marine citizenship in the surrounding community. Poole Bay is also a popular tourist region meaning that there is scope for investigating the level of marine citizenship and how this concept could be applied among the tourist population, as well as among local residents. Numerous factors made Poole Bay an appropriate case study site; logistically it was a sensible option

being that it is in close proximity to Bournemouth University and therefore incurred minimal travel or accommodation expenses.

5.6.2. Isle of Arran

Arran is the largest island situated in the estuary of the Firth of the Clyde on the west coast of Scotland inhabited by a population of approximately four thousand people (McLellan, 2008). Over time, the population has become increasingly concentrated around Brodick, the main pier on the island, and the nearby towns of Lamlash and Whiting Bay. A number of marine practitioners interviewed in phase one highlighted the efforts of the community in this area following the development of a community led campaign for a MPA in Lamlash Bay, off Arran, West Scotland. Given this, Lamlash Bay was identified as an area where marine practitioners expected there to be an inbuilt sense of marine citizenship. It is proposed that, given this recognition by marine management practitioners, Arran should be considered for the second case study site examined in this project.

5.6.3. Birmingham

Birmingham is commonly considered to be the central point of the United Kingdom with the nearest coastal area being almost 90 miles away from the city. Traditionally Birmingham has been dominated by manufacturing and production with the area traditionally acting as one of the key focal points for trade throughout history. Given that challenges posed by differences between inland and coastal communities were highlighted by marine practitioners, it was determined that an inland case study would allow this potential relationship to be examined. Interviewees frequently named Birmingham as the place furthest from the coast in the UK when drawing comparisons between inland and coastal regions, prompting the selection of Birmingham as a suitable case study site.

5.6.4. Helsby

Helsby is a rural village in the North West of England in Cheshire, situated on the Mersey estuary. Traditionally, the area has a strong agricultural history although more recently the area has become dependent on major manufacturing industries in the area, as well as being a commuter town for Liverpool, Warrington, Chester and Manchester. Given its location, Helsby is neither fully inland nor coastal and was thought to be a potentially interesting case study as a result of its estuarine nature.

5.6.5. North Antrim coast (Giants Causeway)

The area surrounding the Giants Causeway on the North Antrim coastline has been identified as a case study site as a result of its designation as a United Nations Education Scientific and Cultural Organisation (UNESCO) World Heritage Site (WHS) in 1986 (Watson, 2000). The area was recognised as a WHS site based on two main criteria: it is considered to be an important example of the earth's evolutionary history during the Tertiary period, whilst supporting rare natural phenomena, including rare bird species, the Chough. This was further followed up by its designation as a National Nature Reserve by the Department for Environment of Northern Ireland in 1987, with further designation as the Causeway Coast Area of Outstanding Natural Beauty in 1989 recognising the causeway and the surrounding area as being of national importance. These designations help develop the causeway in a manner that benefits both local communities and visitors to the area, whilst promoting education and research. It is inferred that an area with WHS status would face different issues than other coastal areas due its recognised international cultural and historical importance. The North Antrim coast also provided the research project with a Northern Ireland case site allowing investigation into the implications of the devolved Northern Irish Government on marine citizenship.

5.6.6. Milford Haven

Milford Haven is the largest town in Pembrokeshire, Wales, and expands the geographical spread of the study to encompass the whole United Kingdom. Milford Haven has experienced an industrial shift, traditionally dependent on a thriving fishing industry; its dependence on the coastal and marine environment is now based on heavier industry, with the construction of oil refineries in the area. The town itself is of particular interest to this project as the town is within the Pembrokeshire Coast National Park boundary. Milford Haven was identified as a suitable site for the thematic case study due its evolving industrial history, its coastal location and its role as the Welsh case study site. In addition, the presence of the Pembrokeshire Coast National Park suggests a certain level of awareness of marine issues in the area.

5.7 DATA COLLECTION

In a mixed method research project, case studies can typically involve a variety of data collection techniques (Darke *et al.*, 1998). The methods used in this phase of data collection are outlined in Sections 5.7.1– 5.7.2.

5.7.1. Education

5.7.1.1. School based questionnaires

The first theme identified through the practitioner interviews was the role of education in the development of marine citizenship. This was strongly linked with the feeling that younger generations would be the most productive demographic at which to aim environmental education. The decision to focus on schools was directed by both the literature and observations taken from the practitioner interviews. Primarily, the practitioner interviews suggested that attempts to improve societal responsibility and awareness towards the marine environment should be directed at school children, as they are the decision makers of the future. Furthermore, both the academic literature (Hawthorne and Alabaster, 1999; Steel *et al.*, 2005; McKinley and Fletcher, 2010) and the

interview results indicated that the level of awareness of environmental issues should theoretically increase with age. Therefore, it was proposed that a school questionnaire should be administered to identify the level of knowledge within school aged children regarding the marine environment and its management.

Devolution within the UK has resulted in the development of alternative education systems. Currently, the national curriculum in England, Wales and Northern Ireland is divided into four blocks called key-stages (KS) with KS3 and KS4 completed during secondary education. In Scotland, the national curriculum is divided into single year blocks with stages (S) 3 and 4 completed at secondary level. Table 5.6 presents an outline of the key stages and student ages in UK national.

Table 5.6: Current school system within the four UK countries (Adapted from the British Council, Online)

Age	England and Wales	Northern Ireland	Scotland
3	Nursery (non-compulsory)		
4-5	Primary Key stage 1 Reception class	Primary Key stage 1 Year 1	Nursery (non compulsory)
5-6	Year 1	Year 2	Primary (P) P 1
6-7	Year 2	Year 3	P 2
7-8	Key stage 2 Year 3	Key Stage 2 Year 4	P 3
8-9	Year 4	Year 5	P 4
9-10	Year 5	Year 6	P 5
10-11	Year 6	Year 7	P 6
11-12	Key Stage 3 Year 7	Key stage 3 Year 8	P 7
12-13	Year 8	Year 9	Secondary (S) S 1
13-14	Key Stage 4 Year 9	Key Stage 4 Year 10	S 2
14-15	Year 10	Year 11	S 3
15-16	Year 11	Year 12	S 4
END OF COMPULSORY EDUCATION			
16-17	Year 12 (lower sixth)	Year 13	S 5
17-18	Year 13 (upper sixth)	Year 14	S 6

At the end of KS4 and S4, students complete their compulsory schooling and are approaching fully active citizenship within society. In addition the national curriculum for England and Wales stipulates that citizenship education is compulsory for KS4 students and is included in Scottish education. Therefore students at this level of education (KS4 in England, Wales and Northern Ireland, and S4 in Scotland) were identified as the most appropriate age group through which to investigate the theme of education. As discussed by Castle *et al.* (2010), the national curriculum in the UK does not stipulate exactly what must be taught in schools meaning that although marine examples may be selected by teachers, this is not guaranteed. However, the national curriculum does provide teachers and schools with a structured framework from which to choose subject matter, identifying opportunities for marine education.

5.7.1.2. Use of Self administered Questionnaires

Questionnaires are a structured form of data collection and can be used in a variety of circumstances. Denscombe (2003) suggests that they are best suited to collecting data, if and when the following conditions are met:

- If a large number of respondents is required across a wide geographic area,
- If fairly straight forward information is required from the data collection,
- If standardized responses are necessary without the need for face-to-face interaction between the researcher and the respondent,
- If the research allows for time and cost issues related to the administration of the questionnaire, printing and data preparation,
- When the respondents are expected to be capable of reading and understanding the questionnaire without the need of clarification from the researcher.

Responses from self-completion questionnaires are most commonly based on fact or respondent opinion of the topic under investigation (Denscombe, 2003). Given the nature of the theme being investigated, and the age of the participants, it was decided that the majority of the questions would be worded in such a manner that both factual information and student perception of the marine environment could be examined. In addition to developing appropriately worded questionnaires, there are some routine elements that must be incorporated into the development of any questionnaire used in research. This additional information should include details about the sponsor of the project, the purpose of the research, assurances of interviewee confidentiality, return address and date (if required) and finally a note of thanks to the respondent for their participation (Denscombe, 2003). Each of these conditions was met in this study with the Bournemouth University logo included on all documentation and closing questionnaires by thanking the participants. In order to ensure the other information was read, the purpose of the research, assurances of confidentiality and other information included in the information supplied to the teacher. Copies of these documents can be found in Appendices 6 and 7.

Self-administered questionnaires are one of the more commonly used data collection techniques in research (Bourque and Fielder, 1995). There are a number of ways that questionnaires of this type can be delivered, as presented in Table 5.8 (Bourque and Fielder, 1995). For the purposes of this study, it was decided that group administration of the questionnaire would be most appropriate. Classroom based administration of questionnaires is a common method of collecting data of this type, coupling the benefit of targeting a larger group of people thereby obtaining a higher volume of data with the additional benefit of facilitating semi-supervision of the data collection process (Bourque and Fielder, 1995). This ensured that, within each location, all participants were in the same place and in addition the distributor (in this case, the teacher) could deal with questions and deliver instructions to the participating group. In addition, Bourque and Fielder (1995) suggest the use of close ended questions in self administered questionnaires as only the most self motivated of respondents will feel sufficiently confident and willing to respond to a questionnaire dominated by open ended questions. This recommendation was followed in the

construction of the questionnaire used at this stage of the research. The advantages and disadvantages of using self-administered questionnaires are presented in Table 5.8.

Table 5.7: Benefits and Weaknesses of the most common methods of self completion questionnaire administration (Adapted from Bourque and Fielder, 1995).

Type of Questionnaire Administration	Strengths	Weaknesses
One-to-One	<ul style="list-style-type: none"> - Interviewer present to answer questions; - Higher confidence levels with regard to results from face-to-face interviews; - Allows assessment of the answerability of questionnaire. 	<ul style="list-style-type: none"> - Expensive in time and money.
Group	<ul style="list-style-type: none"> - Consistency with regard to deliverance of questionnaires; - Some assessment of answerability of the questions (particularly useful in pilot stage); - allows completion to be monitored; - Administrator can provide instructions and answer queries. 	<ul style="list-style-type: none"> - Not appropriate when testing general populations.
Semi-supervised	<ul style="list-style-type: none"> - Administrator can provide instructions and answer queries; - Efficient; - Less costly financially; - Useful for pilot studies and pre-testing; - Some ability to monitor completion of questionnaires. 	<ul style="list-style-type: none"> - Frequently results in unrepresentative samples; - Can result in inconsistency in instructions.
Unsupervised	<ul style="list-style-type: none"> - Consistent stimulus for all respondents; - Potential generation of a more representative sample. 	<ul style="list-style-type: none"> - No control over who completes questionnaire; - No feedback regarding answerability of the questions; - Questionnaire must be developed so that it stands alone to minimise misunderstandings and queries.

Table 5.8: The potential advantages and disadvantages of using questionnaires as a data collection method (Adapted from Gillham, 2000).

Advantages	Disadvantages
<ul style="list-style-type: none"> • Low costs both in time and money; • Targets a large audience easily and quickly; • Analysis can be simple due to the common use of closed questions; • Not as much pressure for immediate response; • Allows generation of standardised questions and responses; • Reduction in interviewer bias; • Increased guarantee for respondent anonymity; • Results provide evidence suggesting areas for further investigation. 	<ul style="list-style-type: none"> • Issues with data quality; • Typically have a low response rate; • Can be difficult to motivate respondents; • Seeks information purely by asking questions; • Lack of control over order of completion of the questionnaire; • People often talk more easily than they write; • Generally no opportunity for clarification; • Wording of the questions must be carefully considered.

As with generation of the interviews in the previous data collection phase, the format of the questionnaire was an important consideration (Table 3.9). In interviews and questionnaires, it is possible to use both open and closed questions. The benefits of closed questions lend themselves best to this portion of the data research generating a structured questionnaire with minimal potential for misunderstanding. Given the high volume of students being approached, the use of closed questions also meant a standardisation of the responses, making data analysis less complex (Denscombe, 2003).

5.7.1.3. Generation of Questions

As described in Section 5.1, the questions generated for the self-administered school questionnaire were guided by the observations made regarding education in Chapter Four. It was important to assess the level of knowledge held regarding the marine environment by the next generation of ‘decision makers’. As such, the questionnaire aimed to collect primarily factual information with students required to answer a number of questions about common and well

publicised marine issues. These questions were partially directed by a questionnaire administered by Steel *et al.* (2005) to address public ocean literacy, in order to allow for some comparison between the studies. This will be highlighted and discussed further in Chapters Six and Seven.

In order to assess student knowledge and awareness of marine related issues, a number of indicators adapted from a study conducted by Steel *et al.* (2005) were used in a quantitative data based survey. As in Steel *et al.* (2005)'s study an indicator of both subjective knowledge (personal perception of knowledge) and objective knowledge (actual knowledge) was used. Students' subjective knowledge was investigated through survey participants' completion of a 'term familiarity' exercise, which required students to indicate their level of familiarity with a number of terms and phrases commonly encountered in relation to the marine environment. It was decided that not all terms used in Steel *et al.* (2005)'s study were applicable to the UK. Terms mentioned on a regular basis with regard to the issues facing the marine environment and the potential role of marine citizenship in the UK were used in place of those considered inappropriate to the study. Given that marine practitioners were commonly of the opinion that there is higher public awareness about global issues than local or regional issues, it was considered important to include terms that applied to both the national and international marine environments.

Levels of objective knowledge were investigated using a series of multiple-choice questions concerning well-documented issues facing the marine environment. All but one of the questions used in this section were taken from the work done by Steel *et al.* (2005) to allow for direct comparisons to be made between the two studies¹⁵. Students were then required to indicate their knowledge of marine designations, management organisations and indicate how they sourced marine information. Finally, students were asked to complete a series of questions based on self-assessment regarding their level of concern,

¹⁵ The 'marine quiz' used in this survey included the question: The transportation of sediment along the coast is known as: sediment drift; across coast drift or longshore drift. This question replaced a question on the El Nino phenomenon that was used in the survey in Steel *et al.*'s (2005) study. It was decided to include a question on coastal erosion and sedimentation given the severe impacts of sediment transport in numerous UK coastal areas e.g. Happisburgh.

knowledge and awareness of the marine environment and its inclusion in the national curriculum. An example of the student survey is presented in Appendix 9.

5.7.1.4. Limitations of the method

As with all methods, there are a number of limitations that must be considered and mitigated for when using questionnaires as a method of data collection. Some of the issues, such as low completion rates and lack of opportunity for clarification (Gillham, 2007) did not strictly apply to this research, as the questionnaires were administered by teachers who could provide clarification and would ensure that students completed the surveys to the best of their ability. Misunderstandings were considered to infer a lack of knowledge of the topic, which will be discussed further in Chapter 6. The brevity of the questions, which is often considered a disadvantage (Gillham, 2007) was helpful in this case as the target group was school students and it was important to ensure they did not lose interest before completing the entire questionnaire.

By using closed questions in the student questionnaire, it was a possible risk that the resulting data may be directed more towards the researcher's way of thinking (Denscombe, 2003). This was mitigated for by ensuring the wording of the questions could not lead the responses and by using the questions to obtain predominantly factual information. As described in Table 3.9, close-ended questions can be frustrating for respondents, as they tend to lack the opportunity to give a detailed response. However in this case, the questions were investigating level of knowledge and self assessed levels of awareness, calling for factual responses to the questions, rather than an investigation of opinion.

As with all self-completion surveys and questionnaires (Fink, 2003), the potential for missing data was high in the school questionnaire component of data collection. As missing information could have been a function of low awareness or knowledge regarding the subject matter, only questionnaires with more than three items of information missing were excluded. Two questionnaires were

returned with only the first page completed and as a result, were excluded from the final analysis. This gave an overall response rate of approximately 98%.

Finally, there was also the issue of ‘cleaning’ the collected data. Data, once entered into a database can be considered ‘dirty’ as a result of miscoding, inaccurate data entry and missing data (Fink, 2003). In order to mitigate for any of these potential issues, all data was entered by the primary researcher so as to maintain continuity with regards to data coding, entry of the data into the online database and the method of dealing with missing data and incomplete questionnaires.

5.7.1.5. Selection of Schools

Schools were selected based on the following criteria; that the schools provided secondary level education at the appropriate level for this study and that they were co-educational institutions.

5.7.1.6. Pilot Study for School Based Questionnaires

Pilot studies are a valued component of case study research and allow the researcher to ensure their selected methodology is appropriate for the circumstances of the study (Bourque and Fielder, 1995; Lancaster, 2004). In the case of this study it also allowed the wording of the questions and the accompanying instructions to be evaluated in a working environment. A pilot study was conducted at a Bournemouth secondary level school in June 2009 with 22 students taking part. The questionnaire was emailed to the relevant teacher along with instructions regarding the administration of the questionnaire. Students were given the opportunity to comment on the structure of the questionnaire in order to identify any areas requiring alterations. No comments were made from the students, however, when it was suggested that abbreviated names and acronyms be accompanied with the full name of an organisations or marine designation, the teacher agreed that this would be a beneficial change. The teacher involved in the pilot study reported no issues with the administration

of the study or understanding of the instructions so no changes were made in either area for the actual study.

5.7.1.7. Actual Study

The study was carried out in three secondary level schools between October 2009 and March 2010. The schools selected and that agreed to participate in this study were from the Isle of Arran, the Poole Bay and Helsby case study areas. It was hypothesised that awareness and knowledge may vary according to geographical location and proximity to the coast so it was important that schools from different areas participated. Initially, it was proposed that a school from Birmingham would be included in the study to ensure inclusion from an inland area. However, although a number of schools were approached and asked to participate, no school could facilitate the study in the time period. It was felt however, that this would not detract from the data collected as the schools included are located in a range of geographical areas and could therefore provide sufficient information regarding the potential relationship between location and the theme of education.

The target group for the questionnaire were the Key Stage 4 (England and Wales)/ Year 3 (Scotland) as described in Section 5. Questionnaires were emailed or posted to the relevant teacher, accompanied by a brief project rationale and simple instructions explaining the purpose of the questions, how the students were required to answer them and a return address and date (Appendices 7, 8 and 9). The teachers administered the questionnaires during one of their teaching sessions ensuring a high response rate. The questionnaires were then returned by post and the transcripts were typed. In total 126 surveys were completed by students at the three selected schools. Data entered into both Microsoft Excel spreadsheets and onto the online survey tool Survey Monkey.

5.7.1.8. Scope for Teachers capacity survey

Given the emphasis placed on the role of formal education for younger generations by the telephone interviewees, it was considered important to assess

the current capacity of the education system to deliver marine specific education. In order to investigate this, a short self-completion survey investigating teachers' capacity to deliver marine education effectively was provided to the schools participating in the student survey. It was requested that the survey was given to teachers of subjects most likely to involve marine education, namely biology and geography (as identified in research by Castle *et al.*, 2010). The survey consisted of 15 open-ended questions examining teachers' perception of marine specific education currently available in the UK national curriculum and the potential influences of this on their students' future decision making and behavioural choices regarding the marine environment. A copy of the teachers' capacity survey is presented in Appendix 11. Although the teachers' capacity questionnaire was provided to a number of teachers, only three completed teachers' capacity surveys were returned. This was a lower number than expected and means that the observations made regarding this data cannot be considered representative of the overall UK teaching community. However, following analysis of the data collected, it was decided that it would be valuable to include the results, as they could be discussed in relation to the student education questionnaire.

5.7.2 Personal attachment

The second theme identified by the practitioner survey phase of data collection was that of personal attachment¹⁶. As suggested earlier, the theme of personal attachment can encompass a number of very different aspects of an individual's life when applied to the marine environment. This phase involved generation of a structured short interview conducted within five case study site communities. The survey investigated how sense of place has the power to influence awareness, and desire to behave in a pro-environmental manner towards the marine environment.

¹⁶ Personal attachment was defined as including a variety of factors including but not limited to livelihood dependency, childhood memories, recreational ties, and historical or cultural ties to an area.

It was proposed that conducting street interviews within the case study site communities would be the most efficient way of collecting a wide range of data from people of a variety of socio-demographics. Conducting a survey in this way provided a better representation of society than focusing on groups, which may already have involvement with the marine and coastal environment.

5.7.2.1. Use of structured interviews

Interviews are most commonly used to allow the researcher to go into more depth than is usually associated with data collection. Among other reasons, they are often used to obtain data based on the participant's emotions and opinions regarding the subject matter (Denscombe, 2003). There are a variety of approaches that can be taken when conducting interviews as illustrated in Table 5.11.

Table 5.11: Various approaches to research interviews (adapted from Denscombe, 2003).

Types of Interviews used in Research					
Structured	Semi-structured	Unstructured	Group	One to One	Focus Groups
Questions tightly controlled by researcher;	Clear questions to be addressed;	Emphasis more firmly placed on interviewee opinions;	Allow generation of consensus views and richer responses than one-to-one interviews;	Most common form of any of structured, semi structured and unstructured interviews;	Sessions tend to revolve around a theme to focus the discussion;
Predetermined questions with limited responses;	Flexibility to allow respondent to move interview in another direction;	Researcher introduces a topic and is flexible regarding direction of the interview;	Number of challenges: Conversation can be dominated by stronger characters;	Relatively easy to arrange;	Interaction within the group is important to the outcome;
Use of pre-coded answers;	Allows respondent to develop on their ideas;	Lend themselves best to in depth investigations.	Views expressed may only be those viewed to be acceptable to the group.	Opinions only coming from one source so easier to control interview.	Collective views are obtained;
Used to collect large volumes of data;	Open ended questions.				Difficult to record;
Similar to questionnaires.					Participants may be reluctant to disclose certain information.

In contrast to the initial phase of data collection where semi-structured interviews were used to obtain practitioner opinions of the subject matter, structured interviews were found to be more appropriate. Structured interviews are often used in research where large volumes of data are required (Denscombe, 2003), as is the case in this study, and therefore lent themselves well to this data collection phase. In order to allow participants opportunity to express their opinions without complete restriction, a 'comments' area was made available after each question, allowing participants to expand on particular points. This qualitative data was collected to support the relationships identified through the quantitative data. A copy of the interview transcript can be found in Appendix 12.

5.7.2.2. Generation of Structured Interview Questions

The questions generated for investigation of the theme of personal attachment were guided by the practitioner interviews. In order to identify if there were discrepancies between practitioner and public perception of the role of the public in marine management and overall public awareness and concern, a number of the questions included in the personal attachment survey were taken directly from the practitioner survey. For example, interviewees commonly referred to consumerism as a potential mechanism through which to express marine citizenship and as a result two questions were included relating to individual's consumer behaviour.

The questions were structured to have a closed format to ensure that the interview could be conducted rapidly and accurately. This was an important consideration given the sampling technique used by the interviewer. Closed questions are generally only used when the answers required are factual (Gillham, 2007). However, in the case of this research the closed questions were used to identify general trends with an opportunity for the participants to make comments following each question should they want to elaborate on any point. Closed questions are rarely sufficient as a data collection on their own and often act as a component of mixed methodologies (Gillham, 2007) as was used in this research. The structured questions acted as the quantitative data collection,

whilst simultaneously providing an opportunity for interviewees to make comments about issues that were important to them.

5.7.2.3. Interviewee selection

Interviewee selection is commonly based on their capacity to provide information related to the research. There are a variety of sampling methods commonly used during administration of interviews; random, convenience and quota sampling (Gillham, 2007; 2000), as illustrated in Table 5.9. Given the nature of the data collection, and the desire to talk to members of the general community rather than people who are already involved in management of the marine environment at some level, convenience sampling was deemed the most appropriate method of selecting participants.

Table 5.9: Commonly used methods of selecting sample participants (Adapted from Gillham, 2007).

Sampling Techniques			
Random	Convenience	Quota	Systematic
When each person has an equal chance of being selected to participate through generating a random sequence of numbers. The smaller the sample, the less likely it is that it is representative.	Selection of the most convenient respondents e.g. selecting people at random on the street or at a particular location.	Selection based a representation of the characteristics of the whole sample.	Based on a systematic method of selection e.g. every fifth person.

5.7.2.4. Pilot study

A pilot study of the personal attachment thematic case study interviews were carried out, with the aid of two undergraduate students from Bournemouth University, in June 2008 on Bournemouth Seafront. The sixteen individuals interviewed were asked to make comments on the interview structure, format and delivery. However, no issues were raised regarding the structure of the interview

or the wording of the questions during the pilot study. It was noticed that people were often reluctant to participate, as it was not clear who was conducting the research. Individuals also appeared concerned that they would be required to make some form of financial donation or contribution despite interviewers carrying identification stating they were working on behalf of Bournemouth University. In order to mitigate for this, a Bournemouth University t-shirt was provided for the actual studies. This easily identified the interviewer as an academic researcher rather than working for a commercial organisation.

5.7.2.5. Actual Study

The actual study was carried out between July 2009 and February 2010. As a result of adverse weather conditions between November 2009 and January 2010, there was a considerable time lapse between the penultimate and final sites. The sites selected for investigation under the theme of personal attachment were Poole Bay, the North Antrim Coast (specifically the Giant's Causeway), Birmingham, the Isle of Arran and Milford Haven. During the Poole Bay and Isle of Arran case studies a team of trained interviewers aided the data collection.

In total, 275 interviews were conducted during this phase of data collection with the average time taken to complete each interview approximately 10 minutes. As in the practitioner survey, neither the number of interviews required from each location nor the number of sites chosen for interviews were predetermined. As suggested by Guest *et al.* (2006), the data requirements for this study were that data saturation¹⁷ regarding the theory was reached. Given the convenience sampling approach taken in the personal attachment case study, individuals were approached while they were conducting their business around the case study site. It is necessary to note that not all individuals were willing to take the time to complete the supplementary comments section of the interview but did complete the structured questions section. The potential limitations of this are considered

¹⁷ Saturation is the point at which no new information or themes are observed in the data. In order to ascertain when this has been reached, it was important to ensure that transcripts were read and analysed concurrently with the data collection.

in Section 5.8.2.6. The data collected through the interviews was entered into Microsoft Excel spreadsheets, and prepared for data analysis and interpretation.

Voice recorders were not used during these interviews as research has found that recording interviews can often make participants nervous and concerned about the anonymity of their responses (Darke *et al.*, 1998). The predominantly structured nature of the responses meant that this was not an issue as the interview could be recorded accurately by the interviewer at the time. Additional comments made by the interviewees were also noted by hand. Data collected from the interviews was recorded electronically at the end of each day to ensure responses remained clear and to minimise any confusion during transcription.

5.7.2.6. Limitations of the Methodology

As with other qualitative research methods, elements of personal identity, such as gender, ethnicity and age, can effect how an interviewee will respond to questions, depending on their perception of the researcher (Denscombe, 2003). In order to ensure these elements had a limited impact on the data collected it was important that the interviewer presented themselves in a neutral manner, in both courtesy and appearance and that they remained noncommittal throughout the interview.

The use of a convenience sampling strategy meant that there was no opportunity to pre-arrange interviews with potential interviewee candidates as had been the case in the telephone interview schedule. As a result, not all interviewees were prepared to take the time to complete both the quantitative and qualitative phases of the interview. Although the supplementary comments were useful, the quantitative data collected could be used to determine the most common behavioural patterns with regard to the public relationship with the marine environment. Therefore, interviews without the additional comments were considered to be very useful and to contain an extensive amount of information on which to base observations that could be supported by the qualitative comments. The convenience sampling approach also meant that individuals could not be approached later for clarification purposes. However, the

quantitative nature of the score based questions prevented this from becoming a concern as the overall trends and behavioural patterns could still be established.

In the case of this study, it was a concern that approaching potential candidates at random at the case study site could be detrimental to the data collection process, with potential participants unwilling to be included. In order to put participants at ease, interviewers wore Bournemouth University t-shirts. Interviewers were also provided with an introductory script in order to introduce themselves as researchers for the university and provide a brief explanation of the purpose of their participation. Participants were assured that the interviews would remain entirely anonymous, as no personal details were required.

The implication of poor weather conditions on outdoor convenience sampling should also be noted. It was the initial aim that the five individual sites selected for investigating the theme of personal attachment would be visited consecutively over a period of five months from June to November 2009. This time schedule went according to plan for the first four sites but the final case study site was postponed until February 2010 as a result of poor weather conditions (including a number of severe weather warnings announced by the MET office).

5.8 DATA ANALYSIS AND INTEPRETATION

As outlined in Section 5.3, both qualitative and quantitative data were collected concurrently throughout the case study phase of the research. The data interpretation techniques used to analyse the data collected during the thematic case studies will now be discussed, with the results further outlined in Chapter Six.

5.8.1. Education

As explained in Section 5.7.1, the main component of the education thematic case study was an evaluation of student perception of marine education through formal education practices. The data collected was primarily quantitative and

underwent analysis using two programmes. First the data was manually uploaded onto the online survey tool, Survey Monkey¹⁸ which allowed basic descriptive analysis for each exercise in the student questionnaire to be conducted. Further analysis was conducted on relationships identified through the initial analysis using Minitab statistical package Version 15. As with all questionnaire data, there was the issue of missing data. For the purposes of this research, any incomplete surveys i.e. surveys with missing answers were not included in the data analysis so as to avoid potential issues when assessing the relationships present between identified factors. It should be noted that a small number of students provided additional comments at the end of their surveys which, although they were not officially requested as part of the data collection, gave valuable insight into student perception of the marine environment and are therefore included in the discussion where relevant.

The teachers' capacity survey data underwent content analysis adhering to the same guidelines as presented in Chapter Three, Section 3.8.2. Due to the low number of respondents, the use of content analysis allowed the identification of the most common themes regarding teachers' perception of marine specific education currently included in formal teaching in UK schools.

5.8.2. Personal Attachment

As discussed in Section 5.7.2.1, the personal attachment thematic case study called for the simultaneous collection of both qualitative and quantitative data. Given this, various forms of analyses were carried out on the data collected in order to fully interpret both the qualitative and quantitative components of the data.

As with the student education surveys, the quantitative data collected was manually uploaded onto the online survey tool Survey Monkey. Given the high volume of data collected through the personal attachment street interviews, the

¹⁸ Survey monkey is an internet based survey tool, which allows the researcher to create and manage their research questionnaires online. The researcher can then manually upload collected data responses to the Survey monkey server and can conduct basic analysis in order to identify key trends in the data.

use of Survey Monkey ensured the data could be easily managed, stored securely and could undergo basic analysis. Through the basic analysis tools provided by Survey monkey, potentially significant relationships were identified within the data with the significance of these relationships further assessed through statistical analysis. Statistical analysis was carried out using Minitab V15 which is discussed in more detail in Chapter Six.

With regards to the qualitative data collected through the personal attachment interviews, a similar analytical methodology as described in Chapter Three, section 3.8.2, was used with the data subjected to manual content analysis. In brief, textual segments were identified from within the data and categorised to generate a list of common themes. The most common themes were categorised in order to establish evidence of social trends within the data which could then be used in support of the observations from the quantitative analysis. Detailed results of this analysis are presented in Chapter Six and are discussed further in relation to the preceding phases of research.

5.9 SUMMARY

This chapter discussed the methodological approach chosen to further investigate the observations made in the practitioner survey phase of data collection. It explained the choice of thematic case studies as the most appropriate mechanism to investigate such broad themes, the rationale behind the selection of case study sites and the specific methods applied to each of the themes identified. Finally, the chapter focused on the data analysis and interpretation processes of both the qualitative and quantitative data collection that occurred in this phase of the research. The results of the case study research are outlined and discussed in Chapters Six and Seven.

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CHAPTER SIX

RESULTS AND INTERPRETATION OF THEMATIC CASE STUDIES

6.1 INTRODUCTION

This chapter presents the analysis and interpretation of the data collected through the community based thematic case study phase of research. The chapter begins with a presentation of the results observed through the Education thematic case study, as described in Chapter Five. This was a quantitative phase of data collection aimed at establishing current levels of student knowledge of issues facing the marine environment, and their perception of the facilities available to them for marine education. In addition to the results obtained through the student survey, the results of a short teachers' capacity survey are presented.

Following this, the observations made through analysis of the data collected during the Personal Attachment thematic case study are outlined. Given the mixed methods approach applied to the research project (Chapter Three), both qualitative and quantitative data were collected simultaneously in order to exhaustively examine the theme of personal attachment. The personal attachment thematic case study investigated public perception of the marine environment, sense of public awareness, concern and responsibility and the factors potentially influencing marine citizenship in a community. Quotes made by interviewees during the personal attachment case study are included in the text in italics.

6.2 RESULTS OF EDUCATION THEMATIC CASE STUDY

The education thematic case study assessed two aspects of the delivery of marine specific education in UK schools. The first component investigated student perception of marine education currently included in the UK national curriculum, the students' self assessed levels of awareness and concern, and the relationship

between these factors and indicators of the students' subjective and objective knowledge of the marine environment. The results of this survey are presented in Sections 6.2.1.

The second component of the education theme case study was the Teachers' Capacity survey, which examined teachers' opinion of their current level of capacity to deliver effective marine education. The survey allowed observations to be made regarding teacher perception on the potential impact of marine education on student behaviour and marine awareness. The results of this survey are outlined in Section 6.2.2.

6.2.1 SCHOOL SURVEY

A total of 121 surveys were returned fully completed by students in attendance at secondary level education facilities located in three of the case study sites (Isle of Arran, Poole Bay and Helsby¹⁹) as described in Section 5.8.2.5. Any incomplete surveys were excluded from the data analysis.

6.2.1.1. Student knowledge of marine related issues

The first section of the student survey assessed both the subjective and objective knowledge of the marine environment respectively through a term familiarity exercise and a short marine environment based quiz. Table 6.1-6.3 present the results of the Term Familiarity exercise. As shown in Table 6.1, students in Helsby were found to know and understand more terms on average (5.8) than students from schools in Poole Bay and Arran (4.3 and 4.6 respectively). The results presented in Table 6.1 did not indicate any form of significant correlation between students' knowledge of the marine environment and the location of the case study sites.

¹⁹ It should be noted that for the education thematic case study, Helsby was considered the least coastal of the case study sites and is therefore the more inland of the examples throughout Section 6.2.1.

Table 6.1: Average number of terms in each category of the term familiarity exercise.

	Arran	Poole Bay	Helsby
Know Term and Understand	4.6	4.3	5.8
Heard of but don't understand	2.9	3.2	2.5
Have never heard term	4.5	4.6	3.7

Table 6.2 presents the average numbers of terms known and understood by students within the total sample and in each of the three case study sites, and shows that on average, students knew and understood 4.8 of the 12 terms. As indicated in Table 6.2, only 5 of the terms included in the term familiarity exercise were known and understood by over 50% of the participating students. The terms with which students were most familiar appeared to be climate change and sea level rise with 92.9% and 85.6%, respectively, of the total students' interviewed indicating that they 'knew and understood' these terms. The three terms students were least familiar with included two of the most commonly used terms currently related to marine and coastal management in the UK, namely Integrated Coastal Zone Management, Exclusive Economic Zone and the Marine Bill²⁰. These terms received a low level of familiarity with only 5.6%, 5.6% and 2.4% (respectively) of students indicating that they knew and understood these terms, with over 70% of students indicating that they had not heard of these terms as shown in Table 6.3.

In addition to marine related terms, students were required to indicate their familiarity with the term 'citizenship' given its inclusion at KS4/ S4 levels of education. A total of 51.3% of students indicated that they 'knew and understood' the term 'citizenship'. Considering this subject is a compulsory component of the national curriculum for this stage of the UK education programme, it was expected that the levels of student knowledge might have been higher in relation to this term. The potential implications of this observation on the development and further inculcation of marine citizenship will be explored further in Section 6.4.

²⁰ Now known as the Marine and Coastal Access Act, 2009

Variation between the school case study sites was evident in the results obtained through the education survey as shown in Table 6.2, further supporting the hypothesis that location and proximity to the marine environment influences levels of knowledge and other factors. For example, students from the Arran case site exhibited a higher level of familiarity with certain terms, including ‘no-take zone’, and ‘ecosystem’ with a 58.5% and 63.4% respectively.

Table 6.2: Indication of subjective knowledge based on students’ term familiarity

<i>Term Familiarity:</i> Please identify which of these terms you are familiar with i.e. indicate by ticking the correct box whether they are terms that you know and understand, terms that you have heard of but do not know what they mean or if you have never heard of them.				
Percent (%) that know and understand term				
	Total	School 1 %	School 2	School 3%
	%	Arran	%	Helsby
			Poole Bay	
Ecosystem	46.8	63.4	35.7	42.1
Biodiversity	24.0	9.8	2.4	68.4
Coral bleaching	9.6	4.9	7.1	13.2
Over fishing	55.6	63.4	38.1	73.7
Climate change	92.9	92.7	90.5	100
Sea level rise	85.6	82.9	83.3	94.7
Coastal erosion	66.7	39	78.6	81.1
Exclusive economic zone	5.6	7.3	7.1	2.6
Integrated coastal zone management	5.6	2.4	7.1	10.5
Marine Bill*	2.4	0	2.4	5.3
Citizenship	51.6	39	54.8	73.7
No-Take Zone	28.6	58.5	16.7	13.5
Average number of terms known	4.84			
Number of students =	121			

*Marine Bill was the original name proposed for the UK Marine and Coastal Access Act (2009)

Table 6.3: Overall levels of student familiarity with marine terms (% response)

Term Familiarity: Please identify which of these terms you are familiar with i.e. indicate by ticking the correct box whether they are terms that you know and understand, terms that you have heard of but do not know what they mean or if you have never heard of them.

	Know and understand term	Heard of but do not understand term	Have never heard of Term
Ecosystem	46.8	42.1	11.1
Biodiversity	24.0	32.8	43.2
Coral bleaching	9.6	39.2	52.8
Over fishing	55.6	16.7	27.8
Climate change	92.9	5.6	1.6
Sea level rise	85.6	12.8	1.6
Coastal erosion	66.7	15.1	18.3
Exclusive economic zone	5.6	22.2	72.2
Integrated coastal zone management	5.6	23.0	71.4
Marine Bill*	2.4	19.8	77.8
Citizenship	51.6	35.7	12.7
No-Take Zone	28.6	19.8	51.6
Average number of terms known	4.84		
Number of students = 121			

*Marine Bill was the original name proposed for the UK Marine and Coastal Access Act (2009)

Table 6.4: Percentage of correct answers provided in the student quiz

Marine Quiz: Please underline the correct answer in each of the following statements

	Percent (%) of correct answers			
	Total %	Arran	Poole Bay	Helsby
a. Ocean fisheries are affected by: climate change; red tides; over-fishing; all of the above	43.7	65.9	24.4	37.8
b. Most sea life: lives in the top 500ft of the oceans ; lives on the sea floor; lives in the great ocean basins; is evenly dispersed through the ocean depths	14.8	14.6	14.6	13.5
c. The movement of cold, nutrient rich water to the surface of the ocean is referred to as: upwelling ; southern oscillation; trade winds; reversal tide	62	70.7	24.5	69.4
d. The transportation of sediment along the coast is know as: sediment drift; across coast drift; longshore drift	46.6	19.5	41.5	70.3
e. By-catch refers to: regular fish caught by nets; over-fishing; fish that are harvested, but not sold or kept for personal use ; a climate phenomenon	28	39	12.2	21.6

N = 121

*correct answers are marked in **bold** text

As described in Chapter Five, the level of students' objective knowledge was assessed through the completion of a short marine quiz comprising of five statements pertaining to issues facing the marine environment. Table 6.3 presents the results of this quiz based on the percentage of students that provided the correct answer for each of the statements. Interpretation of results shows that less than half of the total student sample able to provide the correct answers to all five of the marine related statements. Only one question received over 50% of correct answers, with Question c in Table 6.3 answered correctly by the majority of the students (62%). The remaining four questions received 46% or less of participating students providing the correct answer, with only 14.8% able to correctly answer Question b.

A similar trend with regards to students' level of objective knowledge was observed in the individual case sites. Table 6.5 presents the average number of correct answers given by students overall in the marine quiz. The results gathered in this section of the survey indicate that, on average, the total student sample could provide a correct answer for 1.8 of the statements in Table 6.4. Participating students from the Arran case study school, on average, answered more questions correctly than those from the other two case study schools, with Arran students answering 2.2 of the questions. Examination of the results presented in Table 6.3 and 6.4 showed students' current level of objective knowledge of the marine environment to be low. As expected, differences were observed in the frequency of correct answers provided by students in each of the three schools, potentially adding weight to the hypothesis that location and proximity to the marine environment may have an influence on components of marine citizenship.

Table 6.5: Average number of correct answers (out of 5 questions) given by students in the marine quiz section of the student survey

	All Schools	Arran	Poole Bay	Helsby
Average number of correct answers in marine quiz	1.8	2.2	1.1	2.1

In addition to assessing students' familiarity and knowledge of common terms and issues related to the marine environment, students' knowledge of groups and

designations directly linked with the marine environment and its management in the UK was also established as an indicator of students' knowledge of the marine environment and its management. Table 6.5 shows that student knowledge of marine organisations was found to be quite low with participants in the survey, on average, indicating that they were familiar with less than half of the marine organisations listed in the survey. As shown in Table 6.6, students surveyed had, on average, heard of just 1.5 of the marine organisations listed in the school questionnaire (shown in Table 6.7). Examination of the differences in student knowledge of these organisations between the three case study schools, it was observed that students from Helsby averaged the highest level of knowledge with students knowing of 2.0 of the marine organisations named in the survey. Students based at the Poole Bay and Arran case sites exhibited a lower level of knowledge, indicating knowledge of just 1.2 and 1.4 of the named marine related organisations (respectively).

Table 6.6: Average number of marine related organisations known by students

	All Schools	Arran	Poole Bay	Helsby
Average number of marine related organisations known	1.5	1.4	1.2	2.0

Table 6.7: Student knowledge of organisations commonly associated with the marine environment (represented through percentage of students selecting each organisation)

Marine Group	% Total Students	Arran %	Poole Bay	Helsby
Marine Conservation Society (MCS)	41.3	48.5	44.8	58.3
Marine Stewardship Council (MSC)	5.8	6.1	6.9	8.3
Defra	6.6	9.1	3.4	11.1
Crown Estate	9.9	12.1	17.2	8.3
World Wildlife Fund (WWF)	65.3	84.8	62.1	91.7
UNESCO	17.4	15.2	31.0	19.4

Table 6.8 illustrates the level of students' knowledge of marine environmental designations common around the UK coastline and around the case study site locations. Given that at least one of these designations can be found in each of

the case study sites surveyed for this phase of the research, it was expected that participating students would have some knowledge of them. However, as shown in Table 6.9, on average students knew of just 1.6 designations out of a possible five options. Students attending the case study school on Arran exhibited the highest knowledge of these designations, with students indicating knowledge of 2 designations on average. In contrast, students from the Poole Bay based case site exhibited the lowest level of knowledge, knowing, on average, just 1.1 of the named designations.

Table 6.8: Average number of marine designations known by students

	All Schools	Arran	Poole Bay	Helsby
Average number of marine environment designations known	1.6	2.0	1.1	1.6

Table 6.9: Student knowledge of marine environmental designations (represented through percentage of students selecting each designation)

Marine Environmental Designations	% Total students	% Arran	% Poole Bay	% Helsby
Site of Special Scientific Interest (SSSI)	18.2	39.4	16.0	21.7
Marine Protected Areas (MPA)	28.9	39.4	44.0	47.8
No Take Zone	34.7	84.8	20.0	39.1
Area of Natural Beauty (AONB)	22.3	30.3	20.0	52.2
RAMSAR	3.3	9.1	4.0	0.0
World Heritage Site	38.0	48.5	80.0	87.0

In addition to assessing the level of student knowledge concerning the marine environment, students were also asked to specify how and where they obtained information about the marine environment and its management (Table 6.10). As expected, students indicated that television was the most common source of marine information with 71.4% of respondents selecting this option. A further 50.8% of students felt that they obtained marine related information through formal education at school. The discrepancies between this observation and the students' perception of whether they received sufficient marine information at school will be discussed further in Section 6.4. The third most common media (47.6%) source was the internet.

Table 6.10: Most common method through which marine information is sourced (represented through percentage of students selecting each source)

Most Common method of obtaining marine information	%Total students	Arran	Poole Bay	Helsby
School	50.8	36.6	45.2	73.0
Television Programmes	71.4	75.6	71.4	86.5
Internet	47.6	36.6	40.5	70.3
Peers	15.9	14.6	11.9	21.6
Radio	7.9	9.8	4.8	8.1
Newspapers or Magazines	31.7	41.5	21.4	35.1
Other	22.2	31.7	23.8	10.8

Following the marine practitioner interviews of phase one, it was expected that television would be identified as one of the more common source of marine information. Given this assumption, students were also requested to indicate which, if any, of the most frequently broadcast and popular marine related television programmes they had viewed. The selection of television programmes was guided by the marine practitioner telephone interview schedule and included “*Blue Planet*” and “*Planet Earth*”. 25 of the students did not provide an answer for this question which was taken to suggest that these students had not viewed any of the television programmes named in the survey. Taking this into consideration, it was calculated that 81% of the total number of participating students had viewed at least one of the television programmes named in the exercise.

Table 6.11: Television programmes related to the marine environment viewed by students (represented through percentage of students selecting each option)

Television Programmes Viewed	Total %	Arran	Poole Bay	Helsby
Planet Earth	69	77.4	84.8	90.6
Blue Planet	43.7	54.8	51.5	59.4
Oceans	11.9	16.1	12.1	18.8
South Pacific*	7.94	6.5	24.2	15.6
Spring Watch	38.9	51.6	33.3	53.1
25 students did not provide an answer to this question				

*South Pacific is a marine environment documentary series based in the South Pacific Ocean that was broadcast while the initial student survey was conducted.

Student perception of where responsibility for the marine environment should lie was also assessed. Table 6.12 presents the results of this assessment with 67% of students selected the option of ‘Everyone’ while only 38.3% of students who took part in the survey indicated that the government should be responsible for the marine environment and its management. The category of ‘Individuals’ was selected by 19.2% of the total student respondents as being responsible for the marine environment. Both these observations suggest that a proportion of the students have an awareness of the individual and public role in maintaining the sustainability of the marine environment.

Table 6.12: Percentage responsibility attributed to management groups (represented through percentage of students selecting each management group)

	% Total students	Arran	Poole Bay	Helsby
Individuals	19.2	19.5	13.2	27.0
Non-government agencies	13.3	7.3	7.9	24.3
Government	38.3	31.7	23.7	59.5
Coastal groups	46.7	46.3	34.2	56.8
Everyone	67.5	63.4	78.9	62.2

The level of students' direct involvement with the marine environment was examined through establishing the number of students who engaged in marine related hobbies. A majority of students (78%) did not take part in any hobby related to the marine environment. Of the 22% who confirmed their participation in hobbies linked to the marine environment, most frequently mentioned were fishing and swimming. Other activities mentioned by students included "*walking on the beach*", "*kayaking*", "*sailing*" and "*rowing*". Finally students were asked, based on their own experiences and in their opinion, if there was a threat to the marine environment. The majority (63.5%) of the total student sample indicated that, in their opinion, there was a threat to the marine environment. Twelve students refrained from answering this question, with one commenting that they did not "*know enough*" about the marine environment to comment on the matter.

6.2.2.2. Self Assessed Statements

The final section of the student education survey required students to complete a series of self-assessment based questions (presented in Table 6.13). Students were asked to rate their responses on a scale of 0 to 5 with 0 indicating the lowest level and 5 indicating the highest. Table 6.13 presents the results for each of these self assessed questions with the answers categorised as low (answers rated 0 and 1), moderate (answers rated 2 and 3) and high (answers rated 4 and 5). Given that the data collected in this component of the student survey was ordinal, certain guidelines had to be followed regarding student rating of their perceptions. For example, a student rating their awareness as 4 could not be said to have twice the awareness of a student who rated their awareness as 2. In this instance, it could only be said that the student had higher awareness than the student giving their awareness a lower rating. These observations are now discussed in brief in relation to Table 6.13, with further interpretation presented in Section 6.4.

In addition, the potential relationship between location and gender and the components of marine citizenship being investigated through the education survey was examined. This was done through non-parametric analysis of variance using Kruskal-Wallis tests, the results of which are presented in Table 6.13.

Table 6.13: Percentage of students rating the self assessed questions as low, moderate and high (% have been rounded up to one decimal place). P value denotes Kruskal-Wallis test probability values for differences between schools with significant relationships highlighted in bold.

	Total Students (%) N=121	Arran (%) N=41	Poole Bay (%) N=42	Helsby (%) N=38	Location DF = 2	Gender DF = 1
To what extent is marine education covered in school?	LOW	70.7	65.9	31.6	H=17.07	H = 8.78
	MODERATE	26.8	33.3	60.5	P < 0.001	P = 0.377
	HIGH	2.4	2.3	7.9		
To what extent do you think you are provided with enough information to make appropriate decisions about the marine environment?	LOW	65.9	65.9	36.9	H=14.95	H = 1.90
	MODERATE	29.2	33.3	55.2	p = 0.001	P = 0.168
	HIGH	4.9	2.3	7.9		
How informed do you think you are about the marine environment?	LOW	53.7	66.7	36.9	H = 10.05	H = 4.44
	MODERATE	39.0	31.0	57.9	P = 0.007	P = 0.035
	HIGH	7.3	5.5	5.2		
How much of an impact do you think your day-to-day activities have on the marine environment?	LOW	31.7	42.9	26.3	H = 1.86	H = 0.41
	MODERATE	48.8	47.6	57.9	P = 0.395	P = 0.521
	HIGH	19.5	9.5	15.8		
How would you rate your awareness of the marine environment?	LOW	29.2	54.8	21.0	H = 13.69	H = 3.29
	MODERATE	63.4	28.6	60.5	P = 0.001	P = 0.070
	HIGH	7.3	16.7	18.4		
To what extent is the conservation of the marine environment important to you?	LOW	46.3	52.4	28.9	H = 7.56	H = 0.14
	MODERATE	34.1	30.1	42.1	P = 0.023	P = 0.708
	HIGH	19.5	16.7	28.9		
To what extent do you care about the marine environment?	LOW	31.7	40.5	13.2	H = 5.90	H = 0.11
	MODERATE	68.3	35.7	44.7	P = 0.052	P = 0.745
	HIGH	0	23.8	34.2		

As shown by Table 6.13, gender was only found to have a statistically significant relationship with level of perceived informedness. Location was found to be significantly related to five out of the seven components investigated, further supporting the practitioner suggestion that location and proximity to the coast could influence expression of marine citizenship. The implications of these observations for the application of marine citizenship are discussed in Section 6.4 and Chapter Seven.

6.2.2.2.1. Marine education available in school

In order to ascertain student perception of marine education currently available through the national curriculum, student participants were requested to assess the level of marine specific education provided to them through school. Overall, slightly more than half (56.2%) of all the students interviewed rated the level of marine specific information available through formal education to be low. Given the importance attributed to location in marine citizenship, the relationship between student perception of school based marine education and location was examined and found to be statistically significant ($p < 0.001$). Although it was expected that location would be a significant factor, closer examination of the results indicated that the relationship was not as expected. For example, students from Arran most commonly gave low ratings to marine education in school with over 70% of students scoring marine education through formal teaching as between 0 and 1. In contrast, students from Helsby were of the opinion that marine specific education was moderate with 60.5% of students scoring between 2 and 3 for this question.

6.2.2.2.2. Capacity for decision making

In addition to assessing the level of marine information included in formal classroom based teaching, students also rated their perception of the efficacy of this information in guiding their decisions about the marine environment. Students were asked to assess their perception of information availability in an attempt to evaluate student capacity for involvement in the marine environment. As shown in Table 6.13, 48.2% all students interviewed scored the availability of

marine specific information and its impact on appropriate decision making as being low (between 0 and 1). As with the section 6.2.2.2.1, location was found to have a significant relationship with capacity for decision making ($H= 14.95$, $p= 0.001$). Again, the results were not as expected with 65.9% of students from both of the coastal locations i.e. Arran and Poole Bay scoring this as low. In contrast, students from Helsby most commonly scored the availability of marine information as average with 55.2% rating it between 2 and 3.

6.2.2.2.3. Student knowledge of the marine environment

Students were asked to rate their own perception of their personal knowledge of the marine environment and the complexities of its management and conservation. Only 5% of the total number interviewed perceived their knowledge of the marine environment as being high (Table 6.13). Overall, 53% of students perceived their personal knowledge of the marine environment as being low scoring it between 0 and 1, but the percentage was lower for Helsby students (36.9% than for Arran and Poole Bay students (65.9%). A further 42% of all students interviewed rated their knowledge as moderate (scores between 2 and 3). Such poor levels of knowledge were mirrored in each of the three case sites with only 7.3%, 5.5% and 5.2% of students at Arran, Poole Bay and Helsby (respectively) scoring their personal knowledge as high (4 and 5).

Discrepancies between individuals' perception of their own behaviour and awareness, and their observed behaviour and awareness are often expected, particularly when collecting data through questionnaires and surveys (Gillham, 2000). Unexpectedly students did not over-estimate their own personal knowledge of the marine environment when comparing the self-assessment questions with the subjective and objective knowledge indicators. As shown in Table 6.13, students perceived their knowledge of the marine environment was low; an observation mirrored in the results obtained through the Term familiarity and marine quiz exercises included in the survey.

6.2.2.2.4. Links between society and the marine environment

Given the level of societal dependence on the marine environment, students' perception of the impacts of their lifestyles and the choices they make (or those that are made on their behalf by parents or guardians) on the marine environment was evaluated. Table 6.13 shows that overall only 14.9% of students considered their impacts on the marine environment to be high while 51.2% of interviewed students rated the impact of everyday life as moderate (between 3 and 4). At each of the case study sites, less than 20% of students were found to consider the impact of their everyday lives on the marine environment to be high. Students from Helsby appeared to have most awareness of their potential impacts on the marine environment with only 26.3% of students rating their impact as low, in comparison to the low rating given by 31.7% and 42.9% of students at Arran and Poole Bay respectively. Unexpectedly, location was not found to have a statistically significant influence on students' awareness of their impacts on the marine environment ($p = 0.395$, Table 6.13). The implications of this lack of awareness of the links between the marine environment and society are further examined and discussed in Section 6.2.3.

6.2.2.2.5. Student awareness of marine issues

The majority of students interviewed perceived themselves as having a medium level of awareness of marine issues with 54% of interviewees rating their awareness between 3 and 4. However, collectively 35.5% of students rated their awareness of the marine environment as being low meaning that approximately 90% of students perceived their own awareness of the marine environment to be medium or lower. This trend was also observed in each of the three case sites with over 80% of students at each school indicating only a low to moderate level of awareness of the marine environment, but the percentage scoring low was lower at Helsby (21%) and highest at Poole Bay (54.8%), leading to significant differences between locations ($p = 0.001$). It was expected that students from Arran would exhibit higher levels of awareness given the proximity of the Lamlash marine conservation zone to their school, but the percentage of students

saying they had high awareness levels was lower at Arran (6.7%) than at Poole Bay (16.7%) and Helsby (18.4%).

6.2.2.2.6. Concern for the marine environment

Student concern and care for the marine environment was assessed through two questions; one focused on the perceived importance of marine conservation and the second addressed the level of personal concern for the marine environment by the students.

The marine practitioner telephone interviews conducted in the first phase of the research commonly referred to the younger generation of school goers as the key target audience at which to direct new initiatives aimed at improving societal behaviour towards the marine environment. However, this could only be achieved if the students themselves felt that the marine environment was worth being protected and conserved. Concern for the marine environment was assessed through students rating the importance of the conservation of the marine environment. Overall students rated the importance of the marine environment as being quite low with only 21.5% indicating that it was of 'high' importance to them. Conservation of the marine environment was least important to students from the Poole Bay case site with over 52% of students rating it between 0 and 1 compared to only 28.9% of student interviewees from the Helsby case site. The percentages of students rating their level of concern for the marine environment as high were lowest at Poole Bay (16.7%) and Arran (19.5%) and highest at Helsby (28.9%). Given the location of the study sites, the observed results are not as expected and indicate that the link between location and sense of concern towards the marine environment may not be as strong as previously implied by marine practitioners. The relationship between location and its potential influence on the factors of marine citizenship being investigated are explored further in Section 6.2.3.

Finally students were asked to personally assess their perception of their level of concern for the marine environment by asking them to rate how much they care about the marine environment. Overall students exhibited a moderate level of

concern for the marine environment with the majority of students rating their concern or level of care as either 2 or 3, although variations were evident between the different schools (Table 6.13).

6.2.2.3. Evaluation of the association between factors

Analysis of the data highlighted a number of potentially significant relationships. These included the potential influence of location on students' knowledge and awareness of the marine environment, the efficacy of the marine education currently included in the national curriculum and the relationship between students' actual knowledge and their perceived awareness and concern for the marine environment. Through statistical analysis, the significance of these potential relationships was investigated with regard to education and its potential role in the inculcation of marine citizenship. Table 6.14 presents a correlation matrix of the statistical analysis conducted on the student survey. Each of the correlations found to be statistically significant are highlighted in bold typeface. The relationships identified through this analysis are outlined below with the implications of these on the development of marine citizenship discussed further in Sections 6.4.

Each response factor was found to have at least one statistically significant correlation with another factor although some factors exhibited more frequent correlations than others. The frequency of statistically significant correlations between factors further emphasises the connectivity between the factors of marine citizenship highlighted throughout the research. For example, as shown in Table 6.14, awareness (Factor M) had statistically significant correlations with ten of the additional factors, location (Factor A) was found to have a significant relationship with eight of the other factors while students' knowledge and understanding of terms (Factor B) was found to have eleven significant correlations exhibiting p values of less than 0.05. The implications of Table 6.14 will be discussed in more detail in Section 6.4 and Chapter Seven.

Table 6.14: Spearman correlation matrix of the relationships observed through the student education survey (N = 121 respondents) (statistically significant p values given below each correlation highlighted in bold)

A	B	C	D	E	F	G	H	I	J	K	L	M
Term Familiarity												
B	Quiz results											
C	Groups known	0.109										
D	Designations known	0.269	0.471									
E	Perception of marine education in schools	0.003	<0.001	0.064								
F	Availability of marine education	0.652	0.097	0.490	0.220	0.099	0.724					
G	Student perception of marine information	0.524	0.0016	0.282	0.001	0.724	<0.001					
H	Perception of impacts	0.036	0.190	0.269	0.450	0.502	0.502					
I	Consumer behaviour	0.698	0.038	0.003	<0.001	<0.001	<0.001					
J	Marine hobbies	0.048	-0.017	0.098	0.175	0.155	0.355					
K	Perception of threats to the marine environment	0.602	0.854	0.287	0.057	0.091	<0.001					
L	Marine awareness	0.019	0.182	0.175	0.260	0.364	0.393	0.303				
M	Importance of marine conservation	0.839	0.047	0.057	0.004	<0.001	<0.001	0.001				
N	Concern for the marine environment	-0.277	-0.245	-0.472	0.122	-0.019	-0.203	-0.043	-0.115			
		0.002	0.007	<0.001	0.185	0.837	0.026	0.640	0.209	0.136		
		-0.350	-0.197	-0.233	-0.175	-0.179	-0.185	-0.109	-0.158	0.139		
		<0.001	0.031	0.014	0.057	0.105	0.043	0.237	0.085			
		0.085	0.210	0.312	0.306	0.304	0.549	0.251	0.268	-0.213	-0.379	
		<0.001	0.021	0.001	0.001	0.001	<0.001	0.006	0.003	0.019	<0.001	
		0.109	0.319	0.356	0.120	0.215	0.277	0.312	0.475	-0.291	-0.339	0.495
		0.236	<0.001	<0.001	0.195	0.018	0.002	0.001	<0.001	0.001	<0.001	<0.001
		0.172	0.241	0.362	0.147	0.231	0.297	0.306	0.420	-0.271	-0.313	0.569
		0.061	0.008	<0.001	0.110	0.011	0.001	0.001	<0.001	0.003	0.001	<0.001

6.2.2.4. Additional student comments

Following the completion of the survey, students were given the opportunity to make comments. Although the majority of students refrained from doing so, a small number wrote short statements at the end of the survey, which are now discussed in brief. The lack of student awareness of marine issues as observed through the survey (see Table 6.13) was clearly recognised by one student and was partially attributed to the fact that “*marine problems are underreported, especially [considering] the pressing concern of global fish stock depletion*” possibly implying a need for improved information availability. Comments like this suggested a desire among some students for an increase in marine specific education with one student stating that in their opinion “*more education in this area would be beneficial and help to save the coasts*” with another commenting that they “*want to help but I don’t know how*”.

6.2.3. TEACHERS CAPACITY SURVEY

Comments from participants in the teachers’ capacity survey suggested that the current level of marine education in the national curriculum is considered to be ‘*very basic*’ with ‘*very little*’ included at KS4 and S4 level. One participant commented that the level of marine specific education improved at higher stages of education, giving examples of teaching students through visits to the coastal environment at A Level stage of education. In addition participants expressed a concern that ‘*there does not seem to be any focused work in the current curriculum*’ related to the marine environment and that ‘*more would be welcome*’. As a result of this lack of inclusion of marine education in the national curriculum, teachers perceived student level of awareness to be ‘*low*’. One teacher suggested that student awareness is ‘*about the same as other environmental issues*’ suggesting that overall environmental awareness among students is relatively low. A potential explanation for this was provided by the suggestion that marine education would not be perceived as being overly relevant to students unless ‘*[they] felt that it would have an impact on their wider life*’. Teachers perceived the currently ‘*very controlled curriculum*’ as being challenging to the successful delivery of marine education. Other examples of

issues that the delivery of formal classroom based marine education included the concern that there is a *'lack of time and resources'* to allow teachers to include marine related topics in their teaching. Teachers suggested that enhancing the provision of marine specific education would be beneficial to students' future involvement with the marine environment, as it would improve *'their awareness and how they respond when presented with marine issues in the media'* although this was deemed to be dependent on if students *'felt it as relevant to their everyday lives'*.

Primarily, the teachers' capacity survey indicated that there is scope for further research in to the current capacity of teachers to deliver marine specific education within national curriculum guidelines at KS4/S4²¹. In order to improve student awareness of marine issues, participants recommended the expansion of the national curriculum to include marine based examples within the subjects taught currently. Participating teachers emphasised the need for more active involvement from students' parents coupled with better utilisation of materials and information provided through more informal education channels, for example, museums, television programmes and other media sources. The potential implications of the observations made through the teachers' capacity survey for the future delivery of marine specific education are addressed further in Sections 6.4 and in Chapter Seven.

6.2.4. Education thematic case study concluding comments

Throughout analysis of both phases of the education case study, a number of key areas were identified for discussion in the context of marine citizenship. The key areas are outlined below and will be discussed in Section 6.4 and in relation to the first phase of data collection in Chapter Seven.

- The observation that current levels of marine education included in the national curriculum are lacking.
- An observation that current levels of marine education in the UK are ineffective.

²¹ Explained in Chapter Five

- An identification of low levels of student knowledge and awareness of the marine environment and the issues facing it.
- An identification of informal education methods as the most common avenue through which students obtain their information about the marine environment.
- The identification of location as a significant factor in the context of marine education.

6.3 RESULTS OF PERSONAL ATTACHMENT THEMATIC CASE STUDY

The second thematic case study investigated the theme of personal attachment as identified through the marine practitioner interview (Chapter Four). As a broad category it was found to encompass numerous specific themes hypothesised to influence an individuals' sense of personal attachment to a location or environment. Through the theme of personal attachment, the influence of an individual's sense of place, cultural perception of the marine environment, links with everyday life, and finally the importance of a person's dependency on the marine environment on societal marine citizenship was examined.

As outlined in Chapter Five, an individual's sense of personal attachment was examined through community interviews at five locations in the UK. The interview was comprised of both quantitative and qualitative components, with the qualitative comments made by interviewees used to further examine and support the relationships identified through analysis of the quantitative data.

6.3.1. Analysis of Personal Attachment Case Study

As discussed in Section 5.3, given that both qualitative and quantitative data were collected through the personal attachment interviews, it was necessary to conduct different forms of analysis appropriate to the data in order to ensure complete analysis and interpretation.

Each of the interview questions included in this phase of data collection required the interviewee to assess their personal perception of a particular hypothesised component of marine citizenship, rating their answers on an ordinal scale of between 0 and 5, in the same manner as the final section of the education theme student survey. As described in relation to the student survey, during analysis of the data the ratings were grouped into low (0 and 1), medium (2 and 3) and high (4 and 5). Table 6.15 presents the collated data from both the total interviewee sample and the results of the individual case sites, represented through the percentage frequency of ratings given as an answer to each interview question. The initial observations provided by this data are outlined in Sections 6.3.2.-6.3.7 with further analysis of associations outlined in Section 6.3.8. Quotes obtained through the analysis of the qualitative data collected are included in italics throughout this section in support of observations made through the quantitative data analysis.

As discussed in Chapter Four, it was hypothesised that there would be potential relationship between location and the proposed factors of marine citizenship (Section 4.3.3). In order to establish the significance of these relationships, analysis of variance was conducted using a non-parametric Kruskal-Wallis test to examine the influence of case site location, socio-demographics and gender on the other factors assessed through the personal attachment interviews. The results of this analysis are presented alongside the data collected through the community interviews in Table 6.15 with significant relationships highlighted in bold type face.

Table 6.15: Results of the self-assessed personal attachment interviews. P value denotes Kruskal-Wallis test probability values for differences between schools with significant relationships highlighted in bold.

Personal Attachment Interview Questions	Total %	Poole Bay %	North Antrim Coast (Giants' Causeway) %	Birmingham (Inland) %	Arran (Lamlash Bay) %	Pembroke Coast (Milford Haven) %	KW * DF=4 Location	KW DF=6 Age group	KW DF=1 Gender
a) How would you rate your awareness of problems facing the marine environment?	Low	19.4	28.2	14.9	13.4	6.9	H=12.16	H=28.28	H= 4.43,
	Moderate	63	46.2	59.6	57.7	38.2	p= 0.011	p <0.001	p =0.109
	High	25	17.6	25.6	28.8	43.8			
b) How much do problems facing the marine environment worry you?	Low	15.7	12.9	2.1	5.7	0.0	H=8.36	H=10.72	H= 1.99
	Moderate	45.1	36.0	57.5	44.3	48.3	p=0.079	p =0.097	p =0.369
	High	45.5	48.1	40.4	50	51.7			
c) How important is the conservation of the marine environment to you?	Low	2.2	1.9	2.1	1.9	0.0	H=30.00	H=12.64	H = 2.97
	Moderate	31.6	47.2	21.2	17.3	10.3	P<0.001	p =0.049	P=0.227
	High	66.2	50.9	76.6	80.7	89.7			
d) To what extent do you think your lifestyle impacts the marine environment?	Low	37.1	54.7	19.2	30.7	44.8	H=36.96	H =4.56	H = 0.05
	Moderate	53.8	41.7	61.7	59.6	48.2	P=0.001	p =0.602	p =0.977
	High	9.09	3.7	19.4	9.6	6.9			
e) To what extent do you consider the marine environment when you buy food?	Low	36.4	56.5	27.7	13.5	24.1	H=50.04	H=9.93	H=4.84
	Moderate	41.8	34.3	57.5	48.1	31.0	P<0.001	P=0.128	P=0.089
	High	21.8	9.3	14.9	38.5	43.8			
f) To what extent do you consider the marine environment when you buy other products e.g. washing detergents etc?	Low	51.6	78.7	34	30.8	37.9	H=72.14	H=3.93	H=12.16
	Moderate	30.9	14.8	47.9	38.5	20.6	P<0.001	P=0.686	P<0.002
	High	17.5	6.5	17.0	30.8	41.3			

Personal Attachment Interview Questions		Total %	Poole Bay %	North Antrim Coast (Giants' Causeway) %	Birmingham (Inland) %	Arran (Lamlash Bay) %	Pembrokehire (Milford Haven) %	KW * DF=4 Location	KW DF=6 Age group	KW DF=1 Gender
g) To what extent would you be prepared to change your behaviour if it would benefit the marine environment?	Low	17.5	33.3	2.6	6.4	11.5	6.9	H=19.02	H=4.56	H=0.23
	Moderate	45.8	36.2	71.8	48.9	44.3	44.8	p< 0.001	P=0.602	P=0.890
	High	36.7	30.6	25.6	44.7	44.2	48.2			
h) To what extent would you say you care about the marine environment?	Low	0.4	0	2.6	0.0	0.0	0.0	H=18.24	H=8.79	H=1.96
	Moderate	25.8	36.1	33.3	21.2	13.4	6.9	p< 0.001	p =0.186	p =0.376
	High	73.8	63.9	64.1	78.7	86.6	93.1			
i) How responsible do you feel for the condition of the marine environment?	Low	19.6	38.9	25.7	12.7	11.5	0.0	H=18.24	H =5.48	H=0.73
	Moderate	45.8	45.4	43.6	57.4	46.2	31.0	p< 0.001	p =0.484	p =0.694
	High	30.9	15.8	30.7	29.8	42.3	69.0			
j) To what extent do you think the government should be responsible for the marine environment?	Low	2.5	2.8	5.1	2.1	1.9	0.0	H = 5.12	H = 4.60	H= 1.17
	Moderate	9.8	9.3	12.8	6.4	3.6	6.9	p = 0.275	p =0.595	p =0.558
	High	88.4	88	82	91.5	88.4	93.1			
k) To what extent do you think the public should be responsible for the marine environment?	Low	1.1	1.8	0.0	2.1	0.0	0.0	H=14.28	H = 4.52	H= 3.85
	Moderate	28	42.6	25.7	21.2	17.3	6.9	p = 0.006	p =0.606	p =0.146
	High	70.9	55.6	74.3	76.6	82.7	93.1			
l) How effective do you think current management of the marine environment is?	Low	24	10.2	33.3	46.8	27.4	20.7	H=55.29	H =9.77	H =0.65
	Moderate	53.1	47.3	61.5	48.9	54.9	68.9	p< 0.001	p =0.135	p =0.724
	High	23.6	43.5	5.1	4.3	17.6	10.3			
m) To what extent would you say you have a personal connection with the marine environment?	Low	11.6	13.9	18	8.5	9.6	3.4	H=32.47	H=4.68	H=3.22,
	Moderate	34.5	59.3	23.4	48.9	38.5	17.2	p< 0.001	P= 0.586	p= 0.200
	High	42.9	26.9	48.7	42.6	57.9	79.3			

From Table 6.15, the following factors are shown to have a significant relationship with location: perceived awareness of the marine environment (p value = 0.011), perceived importance of marine conservation ($p < 0.001$), perception of the impact of lifestyle on the marine environment ($p < 0.001$), public willingness to change behaviour towards the marine environment ($p = 0.001$), public sense of care towards the marine environment ($p = 0.001$), sense of personal responsibility for the marine environment ($p < 0.001$), interviewee sense of collective public responsibility ($p = 0.006$), perception of the efficacy of current management strategies for the marine environment ($p < 0.001$) and finally interviewees sense of personal attachment to the marine environment ($p < 0.001$). The results further support the hypothesis proposed in the first phase of data collection that location has a significant influence on an individual's sense of marine citizenship and how it could be promoted in the future management of the marine environment. The implications of these relationships will be explored in more detail in Section 6.4 and in relation to overall research in Chapter Seven.

Given that age and gender are two of the major socio-demographic factors (Ruchter *et al.*, 2010; Ewert *et al.*, 2005), it was expected that there would be a relationship between these factors and the components of marine citizenship. As indicated by Table 6.15 gender was only seen to be significantly related to Question f, inferring that gender would not strongly influence marine citizenship. In contrast, age group was found to be significantly related to the factors of awareness (a) and concern (b and c). The implications of these observations in the facilitation of marine citizenship will be explored further in Section 6.4.

6.3.2. Public Perception of Marine Management and Governance

In order to establish how marine citizenship could be applied to marine management at a community level, it was necessary to evaluate public perception on the efficacy of current marine management strategies. As shown in Table 6.15, the majority of interviewees rated current management between 2 and 3, suggesting that management is satisfactory but is in need of improvement. As the thematic case study was investigated at different locations, there was the possibility that public perception of management would vary based on the

regional management approach at each site. The data presented in Table 6.15 indicates a potential relationship between public perception of management and location with 43.5% of Poole Bay case study interviewees rating the efficacy of marine management between 4 and 5. In comparison to this, the percentage of interviewees rating the efficacy of current marine management as high was less than 20% in each of the other case study sites. Content analysis of the qualitative data further implied the presence of these regional variations with one interviewee suggesting that managers are “*working quite hard at it in some areas, for example, Cornwall*”. However, there was the perception that although there are attempts at “*good management*” of the marine environment “*people don’t understand certain impacts of their behaviour*”.

6.3.3. Public awareness of the marine environment

As seen in Table 6.15, only 17.5% of the total public interviewee sample rated their awareness of the marine environment as low (indicated through a rating of 0 or 1), with the majority (57.5%) of interviewees considering their level of awareness to be moderate, rating it as between 2 and 3. This trend was mirrored in each of the case study sites with most interviewees perceiving their own awareness as being approximately average (Poole Bay = 63%, North Ulster Coast = 46.2%, Birmingham = 59.6%, Arran = 57.7%, and Milford Haven = 38.2). Milford Haven was the only one of the sites where more interviewees rated their awareness as high with 43.8% scoring their personal awareness of marine issues as between 4 and 5.

Although the figures in Table 6.15 do not suggest a significant variation in levels of awareness based on location, qualitative analysis showed the potential influence of location and proximity to the marine environment to be frequently suggested by interviewees. A grid analysis of the qualitative data collected is presented in Appendix 13 and shows that 18% of interviewees commented on the issue of location in relation to individual and public awareness of the marine environment. As outlined in the literature review and through the marine practitioner interviews, location of the case studies was expected to result in variation in individuals’ level of awareness of the marine environment. This

expected level of awareness appeared to be present among the interviewees, with one interviewee from Poole Bay stating that their level of awareness was “*not as high as it should be considering where I live*”. The potential influence of proximity to the marine environment on individuals’ sense of awareness towards the marine environment was furthered by a Birmingham interviewee who stated that “*there is a perception that what happens in Birmingham doesn’t affect the marine environment because [the sea] is far away*”.

A second perceived influence on individuals’ awareness of the marine environment was that of an employment based or recreational dependency on the marine environment. For example, interviewees who indicated that their livelihood was dependent on the marine environment, for example individuals in the position of ‘*Marina Coordinate*’, ‘*fishermen*’, or those involved in ‘*yachting*’ were seen to rate their awareness of marine issues as high (between 4 and 5). One individual linked their involvement with the marine environment directly to their awareness stating that in their own opinion they had “*fairly [high awareness] because [I] do salt water, fly fishing and surfing*”.

Although public knowledge and education were not directly assessed in the personal attachment case study, a potential link between education, knowledge and awareness was highlighted through the analysis of interviewee comments. Table 6.15 indicates that overall participants assessed their awareness of the marine environment as between moderate and high. Interviewees indicated that although they perceived themselves to be aware, they were “*aware but relatively ignorant*” and another saying that they “*hear things on the news but they wouldn’t be overly aware*”. The implications of links between marine education and knowledge on an individuals’ level of awareness, and therefore their sense of marine citizenship, are explored further in Chapter 7 in relation to the results obtained in both Phase One (practitioner telephone interviews) and the education thematic case study.

6.3.4. Public Concern for the Marine Environment

Public concern for the marine environment was assessed through Questions b, c and f, each of which evaluated how worried interviewees were about marine issues they were aware of, how much importance they placed on the conservation of the marine environment and finally how much they personally cared about the marine environment and the issues facing it respectively.

As shown in Table 6.15 (Question b), over 90% of the total interviewees assessed their level of concern for the marine environment as either medium (45.1%) or high (45.5%). Less than 10% of interviewees perceived their levels of concern as low and although the qualitative data supported relatively high levels of concern, content analysis suggested that the actual level of concern may be considerably lower than the level perceived by the individuals themselves. As shown in the grid analysis (Appendix 13), varying levels of concern for the marine environment were expressed with interviewees stating that they “*had never really thought about it*” and that they “*were not overly concerned*”. Others expressed varying levels of concern, acknowledging, “*It’s a big problem...it’s not a little concern...everything can suffer*” but as another pointed out society “*[has] other things to think about*”. From the results presented in Table 6.15, there does not seem to be any significant variation in interviewees’ level of concern for the marine environment.

The degree of importance interviewees placed on the conservation of the marine environment was also examined through Question c) with over 65% of the total interviewee sample indicating that marine conservation was of high importance to them with one interviewee stating that as “*so much is [related] to the oceans, it seems to be that you ignore them at your peril*”. Despite most interviewees indicating that the conservation of the marine environment was highly important, analysis of the qualitative data suggested that to some people “*[the marine environment] is something you don’t think about*”. Interviewees’ highlighted links between the marine and wider environment with one individual stating that conservation of the marine environment is “*important as [the oceans] are the lungs of the earth*”. Although the majority of the overall sample rated marine

conservation as highly important, the percentage of interviewees giving it this rating was seen to vary between the case study sites. For example, 50.9% of interviewees from Poole Bay rated the conservation of the marine environment as highly important to them in comparison to 89.7% of the interviewees in Milford Haven.

Finally, Question f) asked interviewees to assess how much they personally cared about the marine environment and the issues facing it. As shown in Table 6.15 the majority of interviewees (73.8%) rated their level of care (or concern) for the marine environment to be high, between 4 and 5. Content analysis on the qualitative data showed that levels of public knowledge were referred to as an important factor when considering public concern for the marine environment. One interviewee stressed that although the marine environment “*[is] important but [I] don’t know too much about it*”. A lack of public capacity for involvement and a tendency to transfer responsibility for marine management elsewhere was commented upon by one interviewee who stated that “*[the marine environment is] important but other people can deal with it*”.

6.3.5. Lifestyle choices, public behaviour and the marine environment

The marine practitioner telephone interviews conducted in Phase One highlighted the perception that the public are relatively unaware of the links between the marine environment and their everyday decision-making. Given this initial finding, the personal attachment interviews sought to establish general public perception of the impacts of their personal behavioural and lifestyle choices on the marine environment through Questions d, e and f. In addition to this, Question g required interviewees to evaluate how willing they would be to make changes to their lifestyle for the benefit of the marine environment. Overall, participants found it difficult to identify links between their lifestyles and the marine environment. Interviewees exhibited a lack of awareness of both the direct and indirect links between everyday living and the marine environment, with only 9% of interviewees suggesting that the impacts of their lifestyle on the marine environment would be high. Most frequently, interviewees considered themselves to have a moderate impact (rated between 2

and 3) on the marine environment. In contrast to the results presented in Table 6.15 regarding public awareness, concern and perception of current management strategies, the results of the self-assessment component of the interview do not show any clear variation based on location.

6.3.5.1 Awareness of everyday behavioural choices

The overall trend of interviewees rating their impact on the marine environment as relatively low was mirrored in each of the case study site locations. Although the data presented in Table 6.15 suggested interviewees were unaware of their impacts on the marine environment with between 30 and 54% of interviewees perceiving their impact as moderate, the fact that “*society has a high impact on the environment. [For example], most of our sewage will end up in the sea*” was acknowledged by one interviewee in Arran. It seemed that although a proportion of interviewees could see that they had an impact, they were not always clear on what these impacts were and how it was caused. This was particularly evident in a comment made by one interviewee who stated that their personal impact on the marine environment was low but as an afterthought added that “*I eat seafood and have holidays there so there must be some impact*”. Interestingly some of the interviewees who indicated a perception that their impacts on the marine environment would be relatively low still acknowledged that everything has an impact “*every time you flush the toilet, detergents, washing powder...I definitely have an impact but I am aware and conscious of it...it all has an impact*”.

Direct links between interviewees own behaviour and the condition of the marine environment seemed difficult to establish. Despite the expectation that coastal communities would exhibit a higher level of awareness or responsibility for their behaviour, interviewees in general were unaware of the impacts of their behaviour regardless of case study site location. Therefore, it is important to note that this inability to link everyday behaviour to the marine environment was not particular to Birmingham (the inland case study site) and was a trend that continued in the other case study sites. Some participants did realise that the impacts were “*higher than I think*” and that their lifestyle choices could potentially impact the marine environment “*without even knowing it*”. It was

common for people to immediately link the consumption of fish and seafood to this question and it seemed difficult for them to visualise the wider implications, although encouragingly, one who felt she had a low impact identified that it can be linked to other factors such as “*importation from ships*”. Qualitative analysis showed that a minority of interviewees expressed an awareness of more indirect impacts of society on the environment in general with one interviewee stating that they “*don't like food being flown in [as it causes] pollution*” implying a concern regarding the sourcing of goods being purchased.

6.3.5.2 Food based consumer behaviour

In order to assess actual behaviour in conjunction with perception of individual impact on the marine environment, interviewees’ consumer behaviour was evaluated through Questions e and f. The first of the two questions addressed the potential implications for the marine environment related to the purchase of food. Based on the total results, only 21.8% of interviewees rated their consideration of these implications as high. When examining the individual case sites, there was a similar trend with the majority of interviewees claiming to give a moderate level of consideration to these issues when purchasing food (See Table 6.15 for further details). Milford Haven was the only case site in which a majority of interviewees (43.8%) rated their concern for this issue as being high (either 4 or 5). Content analysis conducted on the qualitative data collected for this question showed interviewees to most commonly relate consumer behaviour and the marine environment to the consumption of fish products as a food source. As a result, interviewees who did not eat fish were of the opinion that their lifestyle had a minimal, if any, impact on the marine environment, for example, stating that implications for the marine environment “*generally wouldn't cross my mind*”.

In contrast, some interviewees indicated a level of behavioural awareness in the context of consumer choice with one interviewee commenting that they were “*quite conscious of what I buy.... [I am] aware enough to check source, [for example] that Tuna is dolphin friendly*” although there was a lack of trust in the information currently available as one interviewee commented “*[you] don't*

know how much is true on packaging and labels.” Overall, participants felt that they would at least consider the implications, although this was considerably lower where people did not eat fish. The wider implications of food on the marine environment were only really considered by a minority of people with one clearly linking other factors stating that they “[*didn’t*] *eat fish but ships bringing food to the UK have an impact and I do eat imported food*”. The importance of ensuring the availability of information regarding these issues was commented upon by one interviewee who suggested that they “*try [to] buy sustainable tuna but imagine still [I] buy fish that are at risk*” implying a lack of knowledge regarding even something as widely reported as sustainable fisheries. Lack of knowledge was remarked upon by another interviewee who commented that “*people don’t consider it and should know more about it, [there] needs to be more awareness*”.

6.3.5.3. General consumer behaviour

The impact of lifestyle choices on the marine environment was investigated further with an assessment of the participating individuals’ consumption of other goods, such as cleaning products. In general, the level of consideration interviewees gave to the consumption of other products was low with over 50% of interviewees giving scoring it between 0 and 1 on the self-assessment component of the interview. Interviewees who indicated a high concern indicated that the implications for the marine environment when purchasing household products for example were “*something they thought of more often than the implications of food*”, while in contrast others admitted it was “*not connected in my head...don’t always think of the considerations...*” The influence of education and awareness on individuals’ behaviour was highlighted with a number of participants stating that the wider public would behave more responsibly “*if they knew more*”. These comments implied a sense of public willingness to become more education about the marine environment and to behave in a marine environmentally friendly manner if they were felt sufficiently informed about the best choices to make.

Section 6.3.5.4 Public willingness to change

As well as perception of public behavioural choices, the personal attachment interview aimed to assess the level of public willingness to make behavioural changes to benefit the marine environment. As shown in Table 6.15, based on the self assessed component for this question, the majority of the total interviewee group rated their willingness to engage in behavioural change between 2 and 3. Only 17.5% indicated that their level of willingness to adapt for the benefit of marine conservation was low meaning that over 80% of the total sample was prepared to make changes to their current behaviour. This trend was further emphasised in the analysis of the qualitative data collected through which it was apparent that, overall, interviewees expressed a degree of willingness to make lifestyle changes for the benefit of the marine environment. Firstly, content analysis indicated a general consensus among interviewees across all of the locations was a desire to become more aware of the links between their behaviour and the impacts on marine environment. Interviewees' willingness to adapt their behaviour for the benefit of the marine environment was often dependent on a level of convenience, with one interviewee commenting that "*if it greatly inconvenienced me then [I] wouldn't [change behaviour] but if it was reasonable then yes*". A minority of interviewees indicated that they would not be willing to change their own behaviour, in spite of self proclaimed concern for the marine environment, with one interviewee stating that "*it is down to the people who care and have nothing better to do with their lives, if that's how they choose to live their lives then that's their choice*". Other interviewees, unsurprisingly, indicated a lack of willingness to make behavioural adaptations for the benefit of the marine environment. This was highlighted by one who commented that they "*eat fish regularly and you can't change your diet because of the environment*". Individuals interviewed were often of the opinion that changes to their own behaviour would be futile, with one interviewee stating that "*what we do won't affect anything*".

In addition to a lack of willingness to change, there was a sense that pro-marine environmental behaviour was perceived as being expensive and impractical if, for example, "*you're feeding a family of five in Glasgow on £200... It's not fair*".

to expect someone in that situation to care as much". This interviewee expressed a valuable insight into the complexities associated with everyday life, particularly when socioeconomics are taken into consideration by commenting that *"everyone has different pressures"*. The implications of socio-economics on marine citizenship are presented in Section 6.4 and Chapter Seven.

6.3.6. Public perception of responsibility for the Marine Environment

Questions i, j and k in Table 6.15 addressed public perception of responsibility as a factor of marine citizenship on different scales: individual responsibility, general public responsibility and governmental responsibility for the marine environment.

As presented in Table 6.15, over 75% of interviewees rated their sense of personal responsibility for the marine environment as being moderate or high. Overall, interviewees were of the opinion that they, as individuals, behaved in a highly responsible manner towards the marine environment and perceived themselves as having a level of responsibility for its sustainable management. However, given the comments made regarding other factors such as awareness and concern, it is possible that although individuals perceived themselves as being responsible, the results regarding public awareness and behaviour would suggest that currently the wider public do not possess the capacity to be actively and wholly responsible. This possibility is explored further in Section 6.4 and discussed in relation to the overall development and application of marine citizenship in Chapter Seven. In the individual case studies, similar observations were made with the exception of Milford Haven where 100% of the interviewees indicated a medium to high level of personal responsibility. This was in direct contrast with the results from the Poole Bay site where almost 39% of interviewees rated their personal responsibility for the marine environment as low.

The second responsibility themed question addressed the issue of governmental responsibility for the management and the conservation of the marine environment. The quantitative data allowed an insight into public perception of

the efficacy of current statutory governance of the marine environment and the role that the government should play in marine management. The data presented in Table 6.15 indicates that the majority of interviewees were of the opinion that government bodies should take on considerable responsibility for the marine environment, with over 80% of interviewees in both the total interviewee sample and each of the case sites rating government responsibility as between 4 and 5. In contrast to the other questions, as seen in Table 6.15, there was little if any variation in public perception at the locations of the case study sites. The data suggested an overall consensus that the government should play an active role in the management of the marine environment as *“they are the ones that are supposed to be looking after the future environment”*, while also working to improve engagement of the wider public with marine management. The idea that the government *“need to make people more aware so that they can take more responsibility [for the marine environment]”* was strongly promoted by community interviewees. In addition to this, analysis of the qualitative data collected highlighted a public lack of trust in the government. The implications of this for marine citizenship and how it could be incorporated into current management strategies are addressed in Section 6.4.

With regards to the level of responsibility that should be attributed to the government for the marine environment, the interviewees were generally of the opinion that the government should be *“more responsible than they are”* and *“should be more responsible for what they do [and the decisions they make]”*. This was based on the rationale that the government *“are the custodians of the marine environment”* and that they are *“our representatives”*. Participants in the community interviews also expressed the opinion that the government has an obligation to raise public awareness through *“more media awareness [and] education”* as *“the public need to be educated as to the consequences of actions and how the resource is used”*. This was further emphasised by an interviewee who suggested that there *“is a need [for government] to educate people... they need to provide information...so that people can make the choice”*. Interviewees were of the opinion that the government should take more of an active role to inform the public about the marine environment and should *“be able to say to people about... links to the marine environment”*.

The data collected through the supplementary comments made by interviewees suggested that the government is perceived with a lack of trust, with one interviewee directly stating that they “*don’t trust the government*” which was supported by another’s comment that they “*don’t think that the government respond to what peoples’ thoughts are*”. This was manifested in the perception that although in public opinion government bodies should take more responsibility for marine management; politicians tend to work to “*their own agenda*”, rather than for the good of the environment. One interviewee suggested that “*[political] parties push what they think will get them into power and do not always base their information on accurate science*”. The lack of trust was further emphasised by an interviewee who stated that in their opinion, the government is “*more interested in their profit... rather than conservation*” and another stating that “*instead of lining their own pockets they should be taking care of the environment*”. With respect to the efficacy of current marine management, interviewees felt that “*[managers] have a far greater responsibility to educate the population with regard to our responsibility*”. One interviewee commented that “*there is definitely a management issue*” when it comes to the marine environment implying a sense of dissatisfaction with current management and governance.

As with the results for government responsibility, the results indicated that public responsibility should also be high with over 70% of the entire interview sample rating it between 4 and 5 (high). Variation in the results observed at different locations was observed with only 55% of Poole Bay interviewees rating public responsibility as high, while over 70% of interviewees at each of the other sites rated the level of responsibility the public should have as high. Over 90% of interviewees were of this opinion at the Milford Haven case site. Qualitative analysis of the data indicated that in general, the public were of the opinion that a collaborative relationship between government and the public would be beneficial to the management of the marine environment, as “*government can only do so much*”. The grid analysis conducted for this question in Appendix 13 shows that the theme of cooperation between the public and government was mentioned 160 times throughout the personal attachment interviews. This

relationship and its potential role in the application of marine citizenship to marine management are discussed further in Section 6.4.

Content analysis conducted on the qualitative data indicated a relationship between education and responsibility for the marine environment. This was highlighted by interviewees, with one directly relating the two factors, commenting that *“if everyone had an education about [the] importance [of the marine environment] they would behave responsibly”*. Since education was not an assessed component of the personal attachment interviews, the relationship between interviewees’ perception of their own awareness of the marine environment and the responsibility factors was further analysed. The results of this analysis are presented and explained in Section 6.4.

6.3.7. Personal attachment and marine citizenship

The final interview question aimed to directly evaluate individuals’ sense of personal attachment and connection to the marine environment. As this is a relatively abstract concept, the qualitative data was used to establish how and why interviewees perceived themselves to be connected to the marine environment and why. In total, 42.9% of interviewees rated their personal attachment to the marine environment as high. Again more Milford Haven interviewees (79.3%) were found to perceive themselves as having a high level of personal attachment in comparison to the other case study sites (See Table 6.15).

As discussed in Chapter Five, the theme of personal attachment encompassed a wide variety of components including livelihood, dependency and cultural links to the marine environment. Qualitative analysis of the data collected through the personal attachment interviews provided further evidence for this, with a variety of reasons given by interviewees to explain their connection to the marine environment. In the case of Milford Haven, an area where a significant proportion of the community is dependent on the marine environment and its resources, interviewees were more aware of current management plans and legislation. For example, one interviewee directly commented on UK fisheries

policy stating that the “*Common fisheries policy needs to be a lot stronger, government needs to be a lot less willing to compromise on marine policy*”.

These observations further suggested a relationship between the location of the case study sites and the level of connection to the marine environment perceived by the general public. Interviewees acknowledged that public knowledge and awareness of the marine environment has deteriorated with one interviewee commenting that the UK as a nation has “*lost the island culture*”. The responsibility of retaining the island traditions of the UK was highlighted by interviewees that statutory governance bodies “*are the custodians of the marine environment [and] it is their responsibility to manage our heritage*”.

6.3.8. Associations between personal attachment factors

Following the initial analysis conducted on the data, the data was further analysed to establish whether these observations were significant and which of the factors examined were likely to have the greatest impact on marine citizenship. The data collected were in ordered categories of responses, which could be coded as numerical levels (0-5).

Given the number of potential relationships expected within the data, correlation between the factors was analysed using Spearman’s’ correlations and the results of these tests are presented in Table 6.16. Table 6.16 presents a correlation matrix of the data with the statistically significant (p values less than 0.05) marked by bold typeface. Through the matrix in Table 6.16 a number of significant relationships are evident within the data. Questions 1-9 were found to exhibit statistically significant correlations. For the remainder of the questions, the level of correlations varied. For example, government responsibility (Q10 in Table 6.16) exhibits the least correlation with other factors, exhibiting significant relationships with only two factors, namely public awareness and sense of public responsibility. The factor of personal connection was found to exhibit significant correlations with nine of the other factors examined in the personal attachment interviews. The high proportion of statistically significant correlations identified throughout the data indicates the complex relationships between each of the

components of marine citizenship. The implications of this connectivity and interdependence will be discussed further in Chapter Seven.

Table 6.16: Spearman's correlation matrix indicating the relationships between the factors investigated through the personal attachment thematic case study. Q1-13 corresponds to the interview questions as presented in Table 6.15.

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Awareness of marine environment												
Q2 Concern for the marine environment	0.586*											
Q3 Importance of marine conservation	0.533*	0.536*										
Q4 Lifestyle impacts	0.250*	0.255*	0.284*									
Q5 Food implications	0.273*	0.268*	0.366*	0.359*								
Q6 Other product implications	0.311*	0.220*	0.346*	0.390*	0.652*							
Q7 Willingness to change behaviour	0.207**	0.301*	0.379*	0.343*	0.392*	0.360*						
Q8 Care about the marine environment	0.464*	0.540*	0.536*	0.226**	0.375*	0.333*	0.494*					
Q9 Personal responsibility	0.299*	0.375*	0.421*	0.352*	0.444*	0.461*	0.468*	0.422*				
Q10 Government responsibility	-0.045	0.039	0.005	-0.252**	-0.124	-0.028	-0.032	0.065	-0.128			
Q11 Public responsibility	0.263*	0.227*	0.294*	0.051	0.234*	0.289*	0.179	0.354*	0.334*	0.245*		
Q12 Efficacy of marine management	0.043	0.126	-0.063	0.194	-0.247*	-	-0.118	0.007	-0.192	0.142	0.004	
Q13 Sense of personal attachment	0.482	0.039	0.468	0.004	0.276*	0.276*	0.052	0.915	0.002	0.019	0.948	-0.045
	0.476*	0.510*	0.539*	0.365*	0.371*	0.418*	0.415*	0.622*	0.482*	0.052	0.391*	0.460

*represents relationships with p values of <0.001

**represents relationships with p values of 0.001

Following the analysis presented in Sections 6.3.1-6.3.7, the correlations identified in Table 6.15 were summarised into key components through Principal Component Analysis (PCA). Although the data were only ordered categorical and not strictly quantitative variables, it was considered useful to conduct a PCA on the data to establish how the variables group into explanatory components (i.e. the hypothesised factors of marine citizenship), to most effectively define the inter-relationships between the variables and factors (Henderson and Seaby, 2008). Given that the variables were all of the same kind of data and of the same scales (i.e. 0-5) and potential variance, the PCA was undertaken using a covariance matrix. PCA is a method of summarising how variables are correlated and how they can be combined as one or more principal components. Variables given similar weightings in determining a particular component are positively correlated. In Figure 6.1, the PCA plots of two components, respondents with more similar responses will be plotted closer together. In addition, the relationship between responses and the two components illustrated by the plot presented in Figure 6.1 are shown by the length and direction of arrows of each response on the PCA plot. The placing of the response factor points in Figure 6.1 highlights the presence of four clear groups of response factors within the data which can be taken to represent (i) those aspects affecting individual behaviour, (ii) those regarding the general public and separately, the role of (iii) the government and (iv) managers. The identification of the clear groups seen in Figure 6.1 could potentially be applied to marine management, using the PCA to identify similar components that could be managed simultaneously through the development of holistic management strategies.

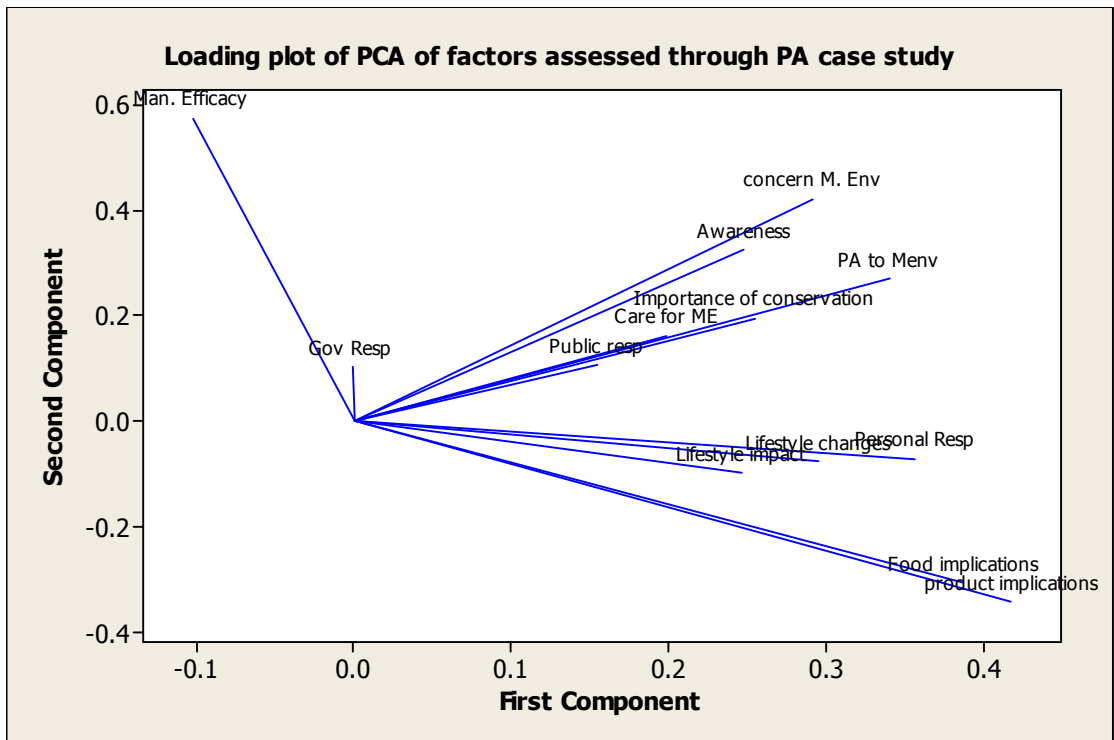


Figure 6.1: PCA plot of the relationships between factors investigated in the personal attachment thematic case study. The names of the spectral lines on the plot correspond to the questions asked in the Personal Attachment (PA) interview.

The closeness of the spectral lines in Figure 6.1 indicates a correlation between the factors in the components; for example, from Figure 6.1 scoring on marine awareness is strongly correlated with level of concern for the marine environment. Table 6.17 presents an example of the relationships presented by the PCA by examining the association between community responses regarding awareness and concern, indicating that individuals who expressed high levels of awareness also rated their level of concern as high.

Table 6.17: Association between community responses for awareness and concern which further explains the relationships identified by PCA (Fig 6.1)

		Awareness					
Score		0	1	2	3	4	5
		Number of individuals giving each score					
Concern	0	0	0	1	3	0	0
	1	3	9	15	10	2	1
	2	2	1	17	24	15	2
	3	2	4	11	28	32	17
	4	0	0	3	8	28	13
	5	0	0	0	3	4	10

The results of the PCA are presented in Table 6.18. This shows the interview responses to questions assessing individuals' personal sense of awareness, concern and impacts for the marine environment (Question variables (a)-(i) and (m) in Table 6.15) are correlated and formed the first and dominant principal component and accounted for 39.2% of the total variance observed in the data. The implications of this observation will be discussed further in Section 6.4 and in Chapter Seven.

Table 6.18: Weights given to each response variable following PCA conducted on the data variables (a)-(m) in Table 6.15.

Variable	PC1	PC2	PC3	PC4	PC5
(a) Awareness	0.247	0.324	-0.025	0.387	0.352
(b) Concern for marine environment	0.292	0.420	0.129	0.107	0.183
(c) Importance of marine conservation	0.255	0.195	0.075	0.220	0.059
(d) Lifestyle impacts	0.246	-0.099	0.256	-0.271	0.577
(e) Food implications	0.387	-0.306	-0.361	-0.104	0.117
(f) Product implications	0.418	-0.343	-0.546	0.091	0.045
(g) Lifestyle changes	0.295	-0.075	0.325	-0.463	-0.163
(h) Care for the marine environment	0.199	0.162	0.069	0.022	-0.117
(i) Personal responsibility	0.356	-0.071	0.230	-0.238	-0.371
(j) Government responsibility	-0.001	0.102	-0.163	0.190	-0.303
(k) Public responsibility	0.155	0.106	-0.131	0.164	-0.378
(l) Management efficacy	-0.103	0.573	-0.519	-0.602	0.055
(m) Personal attachment to marine environment	0.340	0.269	0.088	0.046	-0.275
Variance explained by PC (Eigenvalue)	7.971	2.881	1.615	1.357	1.206
% of total Variance	39.2	14.3	8	6.7	4.9
Cumulative % of total variance	39.2	53.4	61.4	68.1	74.1

6.3.9 Personal attachment thematic case study concluding comments

As sections 6.3.1-6.3.8 illustrate, a number of relationships have been identified through analysis of the personal attachment thematic case study interviews. These relationships have been grouped into a number of key categories and will be discussed further in Section 6.4.

- The potential influence of location on the expression of marine citizenship.

- The correlation between education, knowledge, awareness and concern and its implications for marine citizenship.
- The perception that there is a lack of public capacity for effective participation in a meaningful manner.
- An observed lack of public awareness of marine issues and the implications for marine citizenship.
- The need for collaborative management between the public and traditional marine management bodies expressed by interviewees.
- The role of socio-economic conditions as an enabler of marine citizenship.

6.4. DISCUSSION OF THEMATIC CASE STUDY RESULTS

Analysis of the data collected through the two thematic case studies highlighted a number of potentially important elements for discussion in the context of marine citizenship and the factors influencing its inculcation in UK society. The key elements of these observations are discussed briefly in Sections 6.4.1-6.4.6 and will be interpreted in relation to the first phase of data collection and the future application of marine citizenship in Chapter Seven.

The community interviews conducted through the personal attachment case study indicated a significant lack of confidence in current marine management strategies, particularly with regard to the ability of the government to generate effective management plans. There is a discrepancy between the perception of marine management held by marine practitioners (established in Phase One of data collection) and public perception (determined through the personal attachment and education case studies). The relationship between the two phases of research and the potential implications of this on the inculcation of marine citizenship and its role in marine management are discussed further in Chapter Seven.

6.4.1. Role of education in marine citizenship

Although only one of the thematic case studies directly investigated education as a theme, analysis of data collected on both themes further indicated education as a key element of marine citizenship. As discussed in earlier chapters, the relationship between education and an individuals' sense of awareness, concern, sensitivity and responsibility towards the environment has been long established (Barbas *et al.*, 2009; Steel *et al.*, 2005; Berkowitz *et al.*, 2005; Hawthorne and Alabaster, 1999; Strong, 1998; Kearns, 1995; Chawla, 1998; Tbilisi Convention, 1978).

Both the student and teacher components of the education thematic case study indicated that currently the UK national curriculum does not allow sufficient emphasis to be placed on these theories in relation to the marine environment and the challenges facing its conservation and management. Although earlier studies suggested that students generally exhibit a high level of environmental awareness (Goodwin *et al.*, 2009) this was not the observation of the investigation in marine education. Jenkins (2003) suggests that the traditional formula of the natural world and its conservation as the basis for environmental education has undergone an evolution and has been expanded to encapsulate the emerging theories of sustainable development, environmental stewardship, environmental literacy and citizenship. The results obtained through the education thematic case study indicated a significant lack of knowledge about the marine environment and its resources among school leaving aged students. Although marine examples can be included in formal teaching, there is no mandatory inclusion of marine specific information in the current UK national curriculum (Castle *et al.*, 2010). As a result, it was expected that, overall, participating students would be found to have a relatively low level of knowledge and awareness regarding the marine environment. With regards to marine environmental issues, students at KS4 level were observed to have a low level of both subjective and objective knowledge. In addition to this, in general, students did not perceive themselves to be sufficiently informed or aware of the marine environment and the issues facing it to make appropriate decisions regarding their behaviour towards the marine environment. The potential for younger

generations to impact societal behaviour has been well documented (Goodwin *et al.*, 2009; Strong, 1998) on the basis that increased environmental education will encourage higher rates of intergenerational discussion of environmental issues. However, the results from this survey, and earlier research, suggest that currently the younger generation in the UK are not currently equipped with the knowledge or capacity on which to base any behavioural adjustments (Castle *et al.*, 2010).

Although interviewees perceived themselves to be relatively aware of and concerned for the marine environment, and were of the opinion that overall their lifestyle and behavioural choices had minimal impact on the marine environment, observations made through content analysis of the qualitative data contradicted this. It was evident from the data that in general, the public are not fully aware of the societal impacts on the marine environment. Earlier research has suggested that a lack of awareness can often be due to a lack of connection and dependency on the marine environment, and a tendency for the public to neglect the lesser-known components of the marine environment (Novacek, 2008). The implications of this lack of awareness were seen to resonate through perceptions of public concern, responsibility and appropriate behaviour throughout the personal attachment thematic case study.

6.4.1.1. Potential education strategies

Various studies have recommended that enhancing public knowledge and awareness about the marine environment would increase public support for and involvement with the marine environment, its conservation and management (Castle *et al.*, 2010; McKinley and Fletcher, 2010; Fletcher and Potts, 2007; Steel *et al.*, 2005). Although research has shown children to rely heavily on formal school-based education, these are increasingly being enhanced through informal methods of educating and raising public awareness of environmental issues as a mechanism of supplementing formal education (Ruchter *et al.*, 2010; Fletcher *et al.*, 2009; Goodwin *et al.*, 2009; Haklay, 2002; Potts, 2000; Fortner, 1985). With regards to the marine environment, this has been championed as a key avenue through which to address public education and capacity issues related to the marine environment.

The role of various methods of informal education in order to provide marine specific information was emphasised in the observations of both of thematic case studies and is supported by earlier research (Ruchter *et al.*, 2010; Barbas *et al.*, 2009; Fortner, 1985). The results supported this; given observations that the majority of students did not feel their knowledge of the marine environment was primarily obtained through their formal education. As expected, the majority of students attributed their marine knowledge to alternative sources, most commonly citing television or the internet as the method in which they obtain information. This was indicated further throughout the student education survey in which the majority of students had watched at least one of the marine environment based television programmes listed in the survey. Although Steel *et al.* (2005) expressed concerns that inclusion of marine information in the wider media gave only an illusion of higher levels of public awareness, interviewees in the personal attachment case study stressed the importance of the media as a mechanism of delivering marine education, given that, as one interviewee suggesting, the public are “*only aware of what’s in the media [about the marine environment]*”.

Overall, the results of both thematic case studies supported and recommended further use of alternative methods, such as newspaper articles, internet based promotion of campaigns and broadcasting of marine based television programmes, to increase public knowledge and awareness of the marine environment. Previous research has also identified these methods as a key avenue through which to address the issues of public awareness raising (Novacek, 2008; Ruchter *et al.*, 2010). However, interviewees expressed concerns, that in the past, the material produced through these avenues has been poorly informed. Although in general the results from both case studies championed the use of alternative approaches to providing education on a wide scale, some concerns were raised about the manner in which various media report on marine environmental issues. Interviewees in the personal attachment case study suggested that negative publicity about the marine environment appeared to be a “*scare mongering [tactic] from the media and government*” in a bid to engender certain changes to societal behaviour. Evidence from Novacek

(2008) further supports the concerns expressed by the public regarding the media's treatment of marine citizenship, and the potential for conflicting messages may serve only to confuse the target audience. However, although the analysis of the data suggested a certain level of cynicism among the interviewees regarding current media coverage of the marine environment, it was predominantly seen as an effective method of delivering marine based information. Further to this, analysis of the interviews suggested that the use of television programmes, news bulletins, newspapers and the internet, have already aided in encouraging behavioural change among society. A number of interviewees commented that they ensure they only purchase "*things like dolphin friendly tuna, and don't buy cod*" suggesting that the media reporting of these particular issues has resonated with these individuals and caused them to make particular consumer choices.

Chapter Seven will further explore the potential role of both formal and informal education in the development of a more participatory form of marine governance through the promotion of marine citizenship. Common themes identified in both the first and second phase of data collection and the resulting conclusions regarding the place of enhanced public marine education will also be discussed in Chapter Seven.

6.4.2. Responsibility and management of the marine environment

Responsibility for the marine environment and its management was identified as an integral factor of marine citizenship through previous research on environmental citizenship (McKinley and Fletcher, 2010), with more specific evidence found through the marine practitioner interviews resulting in its inclusion in the personal attachment interviews.

6.4.2.1. Behaviour and the marine environment

One of the more common themes arising from the analysis of the personal attachment survey is that the general public are not aware of the impacts their decisions may have on the marine environment. Pro-environmental

consumerism has been referred to by earlier research (Smith, 2005), as well as through the marine practitioner interviews as potentially the most realistic avenue through which the wider public can currently participate in the conservation of the marine environment. The results obtained through the personal attachment interviews suggested overall the public are increasingly conscious of the environmental implications of their purchases. However, the general consensus was that the public would be willing to make more marine environmentally favourable choices if they were more aware of the alternatives. The implications of this sense of willingness to alter societal behaviour in a manner that would benefit the marine environment have an important role to play in the inculcation and promotion of an effective concept of marine citizenship. This is explored in relation to the results from Phase One and discussed in further detail in Chapter Seven.

6.4.2.2. Collaborative management between government and the public

One of the more common themes arising from the analysis of the personal attachment interviews was that of an improved relationship between government bodies and the wider public with greater cooperation between the two. One interviewee commented that responsibility should lie with “*both the government and the public*” and that it “*should be a compromise*” although members of the public seemed to be of the opinion that “*major policies need to come from the top*”. This collaborative relationship was commented on further with one interviewee commenting that the government “*should pass legislation but it has to be made law for the public to listen*” given that “*they are the ones that tell us what to do*”. This emphasises a general observation that although the wider public appear to be willing to behave in a more marine environmentally favourable manner, its initiation would require a significant level of guidance through statutory governance (McKinley and Fletcher, 2010). The concept of collaborative management of the environment is becoming increasingly popular in environmental management with numerous studies advocating its success (Carnes *et al.*, 1998; Juda, 1999; Kawabe, 2004). Research has shown that by improving the relationship between governments and wider society, public involvement in decision-making with regards to environmental resources and

acceptance rates of management strategies and implementation is higher (Juda, 1999; Chopyak and Levesque, 2002; Irvin and Stansbury, 2004; Newman *et al.*, 2004).

In addition to the results obtained regarding public perception of the components of marine citizenship, the PCA plot presented in Figure 6.1 highlighted commonalities between the various factors. Interpretation of the similarities between the factors could potentially be used to aid development of appropriate mechanisms that management could undertake to promote marine citizenship. By identifying the similar components of marine citizenship, management strategies could be developed to address a particular group of factors simultaneously. For example, public perception of government responsibility and the efficacy of current management were found to be similar. It could be proposed that projects promoting public engagement in marine management would address the challenges posed by low public opinion of government and management efficacy in current marine management. The implications of how this could be utilised in marine management are explored further in Chapter Seven.

6.4.3. Socio-economics and marine citizenship

Although socio-economics were not directly examined through either of the case studies, data collected through the personal attachment case study prompted an evaluation of the role socio-economics in marine citizenship. Previous studies have found that socio-economic status can significantly impact an individual's level of environmental literacy (Santos *et al.*, 2005; Steel *et al.*, 2005; Ruchter *et al.*, 2010) and in addition is considered an integral component of the Hawthorne and Alabaster (1999) model. In addition to the financial concerns associated with enhanced environmental behaviour, community interviewees acknowledged that although they perceive the conservation of the marine environment as an important issue, people often have other issues they need to consider, such as raising a family. Through analysis of the evidence socio-economic status was found to have a potentially significant impact on the inculcation of marine citizenship, predominantly in relation to behavioural changes and the perceived

cost associated with these changes. The role of socio-economics in, and as a potential barrier to the facilitation of marine citizenship is outlined in more detail in Chapter Seven.

6.4.4. Influence of location on factors of marine citizenship

The relationship between location and related proximity to the marine environment and an individuals' sense of concern and ultimately, marine citizenship, was a recurring theme throughout the data analysis. One interviewee explained that movement away from the coast could result in a reduction in sense of care stating that they "*always used to be at the coast...but live inland here so [I have] no real connection*". There did not seem to be a definitive relationship between proximity to the coast and a sense of awareness and concern for the marine environment. Although literature suggested that an individual living in a coastal region would have a higher sense of awareness and concern, resulting in environmentally favourable behaviour (Steel *et. al.*, 2005), CCWs research into public perception of the marine environment contradicted this common assumption (Williams, 2008). The implications of this for the future of marine citizenship are discussed in Chapter Seven.

6.4.5. Socio-demographic factors

The current capacity of younger generations to participate in the future sustainable management of the marine environment was investigated through the education thematic case study. As discussed in Section 6.2.1, current levels of marine specific education are quite low with students exhibiting a low level of knowledge and awareness of marine terms and issues. However, in addition to these observations, analysis of the qualitative data collected through the personal attachment interviews emphasised the role of the younger generation in future marine management. One interviewee commented that "*the up and coming generation should be more passionate [about the marine environment]*". With regard to the public perception and concern for the wider environment, there is existing research to suggest that life-stage should be considered a contributing factor when assessing environmental behaviour (Williams, 2008). The results of

this research indicated that, statistically, age group is positively correlated with the three factors of awareness, concern and perception of individual impacts on the marine environment, as shown in Table 6.15. This relationship could have potential implication in the selection of target audiences for the promotion of marine citizenship and the direction approaches to enhance awareness should take. This will be explored further in the context of the wider research objectives in Chapter Seven.

In addition to life-stage, previous studies have suggested gender to have a significant influence on an individuals' perception of environmental issues in general (Hawthorne and Alabaster, 1999), inferring this factor could have an influence on future promotion of marine citizenship. This is further supported by Steel *et al.* (2005) who identify gender as being one of the most important variables throughout research on ocean literacy. These earlier studies provide sufficient rationale for examining the relationship between gender, levels of awareness and concern. A direct comparison can be made between two studies regarding whether males or females are considered to be more marine environmentally aware and concerned – whether they are more likely to have a sense of marine citizenship. However, in the case of this research, gender was not found to have a significant relationship with any of the other components evaluated through the personal attachment interviews.

6.4.6. Personal connection to the marine environment

As presented in Table 6.15, less than 50% of personal attachment interviewees indicated a high sense of personal connection with the marine environment. Earlier research has commonly linked enhanced public engagement with natural environments to a personal connection with a particular environment (Novacek, 2008). In addition, research has indicated that exposure to a natural environment should result in a higher level of knowledge and therefore, concern for the natural environment (Hawthorne and Alabaster, 1999; Ruchter *et al.*, 2010). Through content analysis, interviewees highlighted poor accessibility to the marine environment as a significant challenge for marine educators and managers.

The concept of cultural heritage influencing an individuals' sense of concern, awareness and responsibility towards the marine environment was a common theme throughout the data analysis. Firstly interviewees frequently commented on the importance of the UK's traditional heritage as "*an island*", implying that this inherited culture should theoretically breed an inherent sense of concern and responsibility for the marine environment. The theme of the UK as a community of island dwellers was a common reasoning for the need for enhanced public education and awareness-raising. This link to a traditional heritage could be viewed as a rationale on which to base the mandatory provision of marine information in formal education. The implications of the relationship between personal connection and the other components of marine citizenship are outlined in Chapter Seven.

In order to fully assess the potential role for marine citizenship in management of the marine environment, the observations made through the education and personal attachment thematic case studies are synthesised with the key observations of the telephone interview schedule. The implications of the synthesised results from both research phases are further interpreted and discussed in Chapter Seven.

6.5 SUMMARY

This second phase of data collection aimed to further investigate the two key themes identified through the telephone interview evaluation of marine practitioner perception of the potential role for marine citizenship. As discussed in Chapters Four and Five, these themes were identified as education and personal attachment. This chapter provided a detailed account of the results obtained through these thematic case studies and concluded with a brief discussion of the potential implications of these findings in relation to current literature.

Sections 6.2 outlined the results of the education based thematic case study which was aimed at assessing both student and teacher perception of current

marine specific education included in formal teaching in the UK. Sections 6.2.1 and 6.2.2 presented the results of the school based student education survey conducted at three case study sites in different locations around the UK. Through a variety of exercises students' level of knowledge of the marine environment was assessed in a self-completion questionnaire. Overall, students were found to have a low level of knowledge and awareness of the marine environment, and it was observed that there was a heavy dependency on informal education methods, such as television and the internet, rather than formal education. In general, students were concerned for the marine environment, with the majority indicating that the marine environment is under threat. However, there was a clear lack of awareness and students were generally of the opinion that school-based marine education was not sufficiently informative. Section 6.2.3 presents the results of the teacher capacity survey which indicated that currently marine specific education is not effectively included in the delivery of the national curriculum. Participating teachers were of the opinion that there is a need for improved formal marine education in the UK and that an enhancement in education would serve to improve students' behaviour towards the marine environment, both while attending school and in the future.

Section 6.3 presented the results of the personal attachment thematic case study. This comprised of a survey at a variety of locations around the UK. Sections 6.3.3 - 6.3.7 outlines the observations made through the self-assessed component of the personal attachment community interviews. Overall, it was clear that there is a high degree of public concern for the marine environment, but interviewees did not perceive themselves to be significantly aware of issues facing the marine environment to know what the impact of their lifestyle might be, and how they could alter their behaviour to the benefit of the marine environment. Section 6.3.8 presented the results of statistical analysis of the data indicating a significant relationship between location and a number of the other factors being investigated through the personal attachment interviews. It was also found that life stage could potentially be an important component with regards to the mechanisms through which marine citizenship could be promoted. Following this, the overall observations made through the personal attachment thematic case study are then outlined in Section 6.3.9.

Section 6.4 presented a brief discussion of the main findings observed through the thematic case studies. Analysis of the data collected through the education and personal attachment case studies highlighted a number of key elements for discussion in the context of marine citizenship in communities.

Chapter Seven illustrates a synthesis of the results observed in both the marine practitioner and the thematic case study phases of research, discussing the key observations of both phases in relation to the inculcation of the concept of marine citizenship. The implications of the research findings for future marine management and the application of marine citizenship in this context are also explored in Chapter Seven.

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CHAPTER SEVEN

SYNTHESIS AND DISCUSSION

7.1 INTRODUCTION

The review of the existing relevant literature, presented in Chapter Two, outlined the recent transition of marine management from a predominantly top-down, state driven process to the current attempts at bottom-up, holistic and participatory management approaches. Further to this, the literature established the increasingly integral role of citizenship in the context of environmental management. In addition, the literature review identified the components of environmental citizenship that could be applied to the marine environment, and highlighted gaps in additional factors expected to be included in a marine specific concept of citizenship.

The literature review identified a number of factors with the potential to influence the inculcation of a marine specific concept of citizenship and its application to the management of the marine environment. In order to ensure a comprehensive evaluation of these factors, two phases of data collection and analysis were undertaken to establish both practitioner and public perceptions of the concept of marine citizenship. Chapters Three and Four outlined the telephone interview investigation into marine practitioner perception of the role of the public in marine management and the potential application of marine citizenship in this context. The key observations of this first phase of data collection were further investigated through education and personal attachment thematic case studies, reported in Chapters Five and Six.

This chapter is structured into three main sections. First, it presents a synthesis of the results and observations made in Chapters Two, Four and Six, identifying the key influencing factors that affect marine citizenship in the UK (Section 7.2). The synthesis of these results identifies the key elements of marine citizenship

and examines its role in engaging the wider public in contemporary marine management.

The second part of the chapter (Section 7.3) builds on the synthesis of the results of the telephone interview and case study phases of research to guide the establishment of the first working definition and model of marine citizenship. Through the generation of this model, the gaps in current understanding regarding the role of the wider public and how a concept of marine citizenship could be applied to UK marine management are assessed.

Thirdly, it examines how the emergent concept of marine citizenship can be applied to the sustainable management of the marine environment in the UK (Section 7.4). The evaluation of the model's application to marine management will then allow a number of recommendations to be generated that will enable marine practitioners to identify the approach required to ensure an enhanced level of public awareness and concern for the marine environment, and a more involved citizenry. These recommendations are presented in Chapter Eight.

7.2 MARINE CITIZENSHIP: A SYNTHESIS OF PRACTITIONER AND PUBLIC PERCEPTIONS

As discussed in Chapters Two, Four and Six the research has identified a diverse range of components expected to have a varying level of influence on marine citizenship and its wider application in marine management. Sections 7.2.1-7.2.9 present a synthesis of the results identifying the key elements of marine citizenship. Although the results did not suggest any form of hierarchical order for the factors of marine citizenship, the order of the sections is set out so as to highlight the natural progression of the factors' inclusion in marine citizenship.

7.2.1. Role of the public in marine management

Central to the success of marine citizenship is the role of the public in marine management. Recent moves towards more participatory forms of environmental management (Section 2.2) suggest that the traditional concept of 'stakeholders' is

undergoing an evolution, encompassing not only end-users and direct stakeholders, but members of the public (UNECE, 1998; Rowe and Frewer, 2000; Berkes, 2004). In addition to this, earlier research indicates that the involvement of the public increases the success rate of marine management (Van Dyke, 1996; Dalton, 2005; Storrier and McGlashan, 2006). In this context, one of the key objectives of the research was to establish how marine citizenship could be applied to the role of the public in marine management. Although, currently there are no guidelines for the inclusion of the wider public in marine management (Salthouse *et al.*, 2010), practitioner perceptions suggested that an enhanced public presence is desirable.

In spite of the desire for enhanced public engagement, concerns were expressed that the wider public lack the capacity to be meaningfully involved in management processes (See Chapter Four, Section 4.2.2). Practitioner concerns regarding public capacity for involvement were justified through the case studies with public knowledge and awareness of the marine environment to be relatively low (Chapter Six). Despite community interviewees expressing a lack of capacity for involvement relating to low levels of knowledge and awareness, individuals expressed a desire for enhanced engagement and a willingness to adjust their behaviour if appropriate measures were taken to make it possible. These observations suggested that the promotion of marine citizenship would first need to address the currently low levels of public knowledge and awareness of the marine environment in order to affect the societal behavioural changes promoted by marine citizenship. The implications tied to lack of capacity and the symptomatically low levels of public awareness, knowledge, concern and sense of public and societal responsibility (Section 6.4) are discussed further in Section 7.3.

7.2.2. Role of education in marine citizenship

Correlations between the main components of environmental citizenship models, including education and public awareness, concern, sense of responsibility and behavioural choices have been well documented (Tbilisi convention, 1978; Sear and Hughes, 1996; Hawthorne and Alabaster, 1999; Haklay, 2002; Alessa *et al.*,

2003; Berkowitz *et al.*, 2005; Steel *et al.*, 2005; Ananda. 2007; Teisl *et al.*, 2008; Castle *et al.*, 2010; McKinley and Fletcher, 2010). Given that education was identified as an integral component of both environmental citizenship (Section 2.6.1) and marine citizenship (Chapters Four and Six), the multiple roles of education in marine citizenship were apparent.

Observations through both phases of data collection highlighted an overall consensus that improved marine education for the public is integral to the success of future marine management. This is supported by earlier research, which indicated that there has been a need for improved marine education in the UK for some time (Castle *et al.*, 2010; McKinley and Fletcher, 2010). Marine practitioners identified younger generations as the key target audience at which efforts to encourage marine citizenship should be directed. The primary challenge to this approach, expressed by practitioners, was the concern that current marine-education included in UK formal teaching is not sufficient to engender an informed, responsible behaviour. This was further supported by the results of the education thematic case study (Chapter Six, Section 6.2.1) which illustrated a lack of knowledge and awareness among school-leaving age students at a variety of UK locations. Considering the relationship between environmental education and concern, awareness and behaviour are well documented, the low levels of these factors exhibited by students and teachers in the education thematic case study (Section 6.4) suggested that current marine education is not adequate. However, it was commented that no more could be facilitated due to a somewhat restricted curriculum and a lack of resources. This observation was supported by earlier research suggesting that levels of marine specific education in the UK are insufficient and in need of improvement in order to engender effective levels of awareness and responsibility among students (Castle *et al.*, 2010).

As discussed in Section 4.4.1, and suggested by earlier research (Hay and Foley, 1998; Steel *et al.* 2005; McKinley and Fletcher, 2010) both formal and informal education techniques have an important role to play with regard to individuals' sense of responsibility for the marine environment. Given that school children were identified as the target audience for promoting a sense of marine

citizenship, gaps in current school based marine education need to be addressed. In order for formal marine education to have the desired effect of producing future generations with the capacity to be fully involved in the management of the marine environment, improvements need to be made to the level of mandatory marine specific information included in formal teaching. There are three core areas within the current national curriculum through which marine education could be taught at a higher level – geography, citizenship and science (Fletcher and Potts, 2007; Castle *et al.*, 2010). Inclusion of more marine specific information within these three subject areas would allow all aspects of the marine environment to be covered including the ecological, social and economic issues. There have already been attempts to improve the level of marine specific education included in formal teaching; for example, the National Maritime Museum developed a classroom based pack which was aimed at developing students' levels of marine awareness (Fletcher *et al.*, 2006). Delivery of this form of education would ensure students were provided with the information required to produce a marine aware society, capable of making appropriate decisions regarding the marine environment.

Although research has shown a heavy reliance on formal school-based education, these are increasingly being enhanced through informal methods of educating and raising public awareness of environmental issues as a mechanism of supplementing formal education (Fortner, 1985; Potts, 2000; Haklay, 2002; Fletcher *et al.*, 2009; Goodwin *et al.*, 2009; Ruchter *et al.*, 2010). In addition to formal techniques, the role of informal education techniques has been identified as an increasing presence in the delivery of environmental education to the wider public through environmental television programmes, museum displays, community awareness projects and the internet (Barbas *et al.*, 2009; Fletcher and Potts, 2007; Steel *et al.*, 2005). A number of marine environmental documentaries are widely available and could be utilised as an informal teaching method in either a home or classroom based setting, as suggested by Barbas *et al.* (2009).

Both practitioner and community interviewees indicated and supported theories that enhanced marine education would engender more favourable individual and

collective behaviour towards the marine environment (as suggested by Tytler *et al.* 2001). Practitioners' perception that enhanced education would induce more favourable societal behaviour towards the marine environment (discussed in Section 4.4.1) was further supported by observations made through the personal attachment case study (Chapter Six). One clear discrepancy between practitioner and public perceptions related to the perception of information available to the wider public regarding the marine environment. Practitioners were generally of the opinion that the information required to guide appropriate decision-making was widely available and accessible; an opinion widely disputed by comments made by members of the public in the personal attachment interviews. Results of the personal attachment survey suggested that, in general, the public are not aware of how or where to access information pertaining to marine issues and feel incapable of making environmentally favourable decisions. This was further supported by observations, discussed in Section 6.3.3, public concern for the marine environment limited by a lack of public knowledge and awareness regarding issues and potential solutions.

7.2.3. Influence of location

Although location was often found to have a statistically significant influence on individuals' knowledge, awareness and concern for the marine environment, content analysis of the qualitative data showed the relationship was not as explicit as expected. This suggested that education and awareness-raising should not focus solely on coastal communities. Further to this, taking the traditional island culture of the UK into consideration, promotion of marine education programmes should not, therefore, be focused solely in coastal areas, but should be disseminated nationwide. One of the key observations of this research was a lack of public knowledge and awareness of social dependence on marine derived goods and services, and the importance of marine ecosystem services to both coastal and inland areas. This suggests that the potential for marine citizenship extends beyond coastal communities and therefore efforts should be made to engender nationwide citizenship towards the marine environment. The observations made in this study are supported by earlier research by Williams (2008) who indicated that inland communities frequently, somewhat

unexpectedly, exhibit a higher sense of awareness and concern towards the marine environment than their coastal counterparts who often take it for granted.

7.2.4. Personal connection to the marine environment

Individual's sense of care and responsibility towards the marine environment was identified as a contributing factor in relation to individual behaviour towards the marine environment. Sense of connection to a particular environment has been well established as having a role in invoking responsible behaviour towards an environment (Burley *et al.*, 2007). Lack of connection to the marine environment was observed through both phases of interviews in this research. In particular, practitioners expressed concerns that the UK appeared to have lost its island culture and that this has engendered a lack of societal respect and responsibility towards the marine environment. Practitioners identified an expectation that cultural links could engender a degree of individual and/ or collective social consideration for the marine environment. Given this, practitioners were of the opinion that members of coastal communities would exhibit a greater personal connection with the marine environment than those from inland regions, due to an expected higher level of dependency on marine derived goods and services. This connection between coastal communities and their environments has also been documented in earlier research (Williams, 2008; Davis and Wagner, 2006).

In spite of the traditional island culture of the UK commented upon by both practitioner and a small proportion of the case study interviewees, the majority of interviewees (58.1%) in the case study phase did not express high levels²² of personal attachment to the marine environment. A small number of individuals indicated a generational connection to their local marine environment due to a familial history in fishing, but this was not a common theme. A connection of this type was mentioned most frequently at the Milford Haven case study site, an area where marine derived industries are directly responsible for a high proportion of employment in the area. Previous research has indicated that

²² Levels of factors were identified through interviewees scoring each factor between 0 and 5. Low = 0 and 1, moderate = 2 and 3, and high = 4 and 5. (See Chapters Five and Six)

individuals lacking in attachment to an environment will perceive it in a different manner to those with a degree of connection (Twigger-Ross and Uzzell, 1996; Stedman, 2002; Williams, 2008; Ruchter *et al.*, 2010). This sentiment was echoed in the personal attachment case study, where sense of connection was most commonly linked to exposure to the marine environment through residence in coastal areas, holidays and/or recreational experiences. This was particularly the case when evaluating public perception of the level of societal impact on the marine environment where responses suggested that perceived degree of impact was significantly related to whether the individual lived by the coast.

The case study surveys did suggest a differentiation between those dependent on the coast for their livelihood, such as the fishing community, and those who view it as purely recreational. Participants felt that their awareness would be higher if they were directly impacted by the condition of the marine environment. As this study has shown, UK society has difficulties making links between their lifestyles on the condition of the marine environment. However, there was a recognition that this could potentially be different for communities who have a higher dependency on the marine environment.

7.2.5. Behaviour

One of the primary challenges to marine citizenship identified through synthesis of the data was a clear lack of public understanding regarding the impacts of their individual, and cumulative, behaviour on the marine environment. In general, practitioner interviewees were of the consensus that the majority of the UK public are unaware of the impacts of everyday life on the marine environment (Chapter Five). In addition to this, a lack of understanding and awareness of pro-marine environmental behavioural choices was also expected from the public rendering the availability of marine environmentally friendly products ineffective. This lack of public understanding and awareness of behavioural impacts expected by practitioner interviewees was predominantly mirrored by the observations made through the thematic case studies (Section 6.3). For example, results indicated that less than 10% of interviewees felt that their lifestyle had an impact on the marine environment, and most commonly related

impacts to the consumption of seafood products. As stated by Gillham (2000), there are often discrepancies between what people say and how they actually behave on a day to day basis. In this study this was evident in the discrepancies between the level of personal concern individuals assigned to themselves and their behaviour. In general, interviewees considered themselves to be quite well informed about issues facing the marine environment (only 17.5% indicated low levels²³ of awareness), but when pressed felt their lifestyle had no impact on the marine environment. The level of public willingness to adopt behaviour modifications into their everyday lives was considered key to the success of marine citizenship by practitioners (section 4.3.13).

Although the personal attachment interviews inferred a degree of willingness to change (Section 6.3.5), it was indicated that this would be subject to the level of convenience associated with the change. Earlier research supports this observation finding public perception of convenience relating to a particular behavioural choice to be implicated as an integral component of an individual's decision-making process (Teisl *et al.*, 2008; Hume, 2010). Although analysis of the practitioner interviews identified consumer behaviour as a relatively minor theme, it was identified as the most probable mechanism through which individuals could express a sense of marine citizenship. This assumption was further supported by observations made through the thematic case studies with interviewees most commonly linking their impact on the marine environment with their purchasing habits, in particular the consumption of fish (Section 6.3.5.2).

Given the level of importance attributed to consumer behaviour by both groups of interviewees, it can be assumed that it is an area that should be addressed by efforts to promote marine citizenship. Ecolabelling²⁴ and provision of sourcing information has been implicated in improving the levels of consumption of sustainable marine products (Jaffry *et al.*, 2004). Evidence of this approach is visible through campaigns by organisations such as the Marine Stewardship

²³ Levels of factors were identified through interviewees scoring each factor between 0 and 5. Low = 0 and 1, moderate = 2 and 3, and high = 4 and 5. (See Chapters Five and Six)

²⁴ Ecolabelling is a mechanism of providing product information to the consumer including where their seafood was sourced, how it was caught and the species.

Council (MSC)²⁵ whose eco-labelling scheme has been adopted by a number of large supermarket chains within the UK and the U.S.A (Wessells *et al.*, 1999; Jaffry *et al.*, 2004) to facilitate sustainable consumer choice. The efficacy of media campaigns and ecolabelling marine derived products was recognised through the personal attachment interviews with a number of interviewees commenting that their consumption of ‘dolphin friendly tuna’ had increased in response to media reports and labelling campaigns (Section 6.3.5.2).

In addition to the factors contributing to public sense of willingness regarding behavioural changes, it was suggested that a proportion of society will always lack concern for the marine environment. Therefore resistance to suggested lifestyle modifications will remain a challenge to marine management. However, analysis of the personal attachment survey expressed public willingness to change behaviour. In order to facilitate these behavioural changes, it was suggested by both groups of interviewees that more marine information is required. The connection between education and behaviour is supported by earlier research suggesting that accurate information is central to the challenge of altering societal behaviour towards the marine environment (Steel *et al.*, 2005; Mamouni Limnios *et. al.*, 2009; McKinley and Fletcher, 2010). Considering this research and supporting studies, it can be inferred that in order to enable an expression of marine citizenship; a concerted effort to make marine favourable choices through accessible to a wider audience is required.

7.2.6. Public participation in marine management

Practitioner consensus that the majority of society would not be sufficiently equipped to participate meaningfully in current marine management strategies was mirrored in the observations made through case study interviews. Personal attachment interviewees stressed the importance of statutory governance bodies in the delivery of guidance and recommendations to encourage appropriate

²⁵ Marine Stewardship Council (MSC) was founded in 1996 with the aim of providing a coherent international labelling system for seafood products on the global market. Only accredited sustainable fisheries can place the MSC ecolabel on their products and a number of major supermarkets stock only certified seafood products. Other ecolabelling schemes for marine products are employed by Marine Conservation Society (MCS), World Wildlife Fund (WWF) and others.

behavioural choices. As stated by Rees *et al.* (2010) a long term commitment is required from the government in order to work towards the objectives set out by sustainable marine management.

One of the key benefits expected to be associated with the inculcation of marine citizenship is the successful implementation of more collaborative management of the marine environment. Both phases of data collection highlighted a desire among practitioners and the public for a more inclusive form of UK marine management. Practitioners were of the opinion that enhanced levels of public participation would engender a greater sense of responsibility towards the marine environment. Although the majority of interviewees promoted collaborative management between governments and society, it was acknowledged that this could be difficult to achieve owing to the current lack of public capacity for involvement in marine management. As a means of addressing this, research has found that learning through participation has been well documented as having positive impacts on individuals' behavioural choices (Hawthorne and Alabaster, 1999; UNECE, 1998). Participation is expected to encourage a higher level of public responsibility and involvement and as such is a key feature of Agenda 21 (Delgado and Strand, 2010). From the results obtained through both phases of data collection, it can be inferred that the heightened sense of public responsibility and awareness expected to coincide with educational promotion could encourage a level of marine citizenship among UK society.

7.2.7. Socio-economic factors

Research conducted on general environmental behaviour has indicated that socio-economic status and, in particular, financial constraints, can have an influence on the behavioural choices an individual makes (Hawthorne and Alabaster, 1999; Santos *et al.*, 2005; Steel *et al.*, 2005; Teisl *et al.*, 2008). The role of socio-economic status as an enabling factor in the expression of marine citizenship will be outlined in Section 7.3.

Although the relationship between socio-economic status and marine citizenship was not directly investigated, its importance was implicated throughout the

research. Content analysis on both phases of the research suggested that socio-economic status can have an influence on the priority given to the marine environment by an individual. In addition, results suggested that socio-economic status could have an influence on an individuals' capacity to engage in marine management and to express marine citizenship behaviours. Further to this, as both groups of interviewees were of the opinion that individuals could have the most impact through their consumer choices, the cost of sustainable and 'environmentally friendly' products were of particular concern, particularly in light of the current economic crisis²⁶ (Section 6.4). Early research had shown that consumers are less likely to select an environmentally friendly product over another version of the same product if they are required to pay a premium on price (Wessells *et al.*, 1999) although this has been found not to be the case in later work (Loureiro *et al.*, 2002; Brecard *et al.*, 2009).

The relationship between education and socio-economic factors was alluded to during the practitioner telephone interviews. Practitioner interviewees expressed an assumption that those individuals with a higher socio-economic status would be likely to be better educated, and therefore more aware of the marine environment than those of a lower economic status. This correlation has been observed in earlier research (Santos *et al.*, 2005; Steel *et al.*, 2005; Teisl *et al.*, 2008) and supports the suggestion that socio-economics would have an influence on the facilitation of marine citizenship.

7.2.8. Socio-demographic factors

The role of socio-demographics was considered a potential factor by practitioners (Section 4.1) who identified the younger generation as the demographic at which efforts to encourage marine citizenship should be directed. Current levels of knowledge among this generation were found to be low (identified through the education survey) and considered by teachers to be insufficient for the development of marine citizenship (Section 6.2.3).

²⁶ The personal attachment thematic case study research was conducted during the UK economic recession between July 2009 and January 2010.

Results from the personal attachment study showed a statistically significant relationship between interviewee age group and their level of personal concern for the marine environment, marine awareness and perception of the impacts of their lifestyle choices on the marine environment. Earlier research has suggested that individual perception of citizenship may vary with age, linked to an individuals' progressing maturity (Chamberlin, 1997; Teisl *et al.*, 2008; Williams, 2008). Behavioural analysis has suggested that people become increasingly sensitive to the needs of others as they get older (Chamberlin, 1997). However, in contrast to this research, practitioners identified the young generation as the key to modifying societal behaviour, a consensus supported by work done by CCW (Williams, 2008).

Hume (2010) further suggests that although for the most part younger generations exhibit low levels of awareness and concern for the marine environment (as discussed in Section 6.4), this demographic group should be considered the catalysts through which society can change. Research implies that the avenue through which the younger generations would be most able to alter behaviour is through their consumption of products (Hume, 2010). However, the results of the education thematic case study suggest that currently younger generations do not actively consider the impacts of their consumer behaviour on the marine environment, most likely due to their lack of input into household purchasing. In spite of these observations, the concept of the younger generation representing societies of the future has been expressed in previous research (Hume, 2010; Williams, 2008). This suggests that by targeting younger generations and encouraging them to behave in a certain manner, overall societal behaviour towards the marine environment could be altered and further supports their position as the initial targets for encouraging marine citizenship.

In contrast to previous studies (Hawthorne and Alabaster, 1999; Steel *et al.*, 2005; Teisl *et al.*, 2008) neither case study found gender to be an influencing factor in behavioural choices in the context of public responses to marine citizenship components. Research suggests that women are characteristically more aware and concerned about environmental issues in general than men (Wessells, *et al.*, 1999; Teisl *et al.*, 2008). However a lack of correlation

between these factors in this study (Chapter Six) suggests that education and awareness-raising efforts should be targeted at the entire population. In addition, it is suggested that it would be wise to employ a range of approaches in order to access the widest possible audience.

7.2.9. Summary of influences on marine citizenship

From the synthesis presented in Sections 7.2.1 – 7.2.8, a number of factors with the potential to influence marine citizenship have been identified and further investigated throughout this research presented in Table 7.1. A detailed analysis of the frequency of factors is presented in the grid analyses (practitioner interviews in Table 4.1 and personal attachment interviews in Appendix 13).

Table 7.1: Influencing factors of marine citizenship derived from synthesis of the results with ✓ representing presence of factors.

Influencing factor	Summary of factor	Phase One	Phase Two
Behaviour	<p>Related to education and associated awareness and concern for the marine environment. Well educated, aware individuals are expected to be more concerned for the marine environment engendering more favourable and responsible behaviour. A sense of willingness to change behaviour for the benefit of sustainable management and conservation of the marine environment. Consumer behaviour expected to be most common expression of marine citizenship.</p>	✓	✓
Education	<p>Availability of marine specific information accessible to a wide audience through informal and formal education strategies with the aim of improving awareness, concern, sense of responsibility and other related factors.</p>	✓	✓
Awareness	<p>Awareness of the marine environment, its management and of the impacts of individual and collective behaviour on the condition of the marine environment and its resources. Strongly linked to education, concern and behaviour and proximity to the marine environment.</p>	✓	✓
Concern	<p>A sense of concern for the condition and management of the marine environment. Strong links to awareness, education, willingness to participation, proximity to the marine environment and related behaviour.</p>	✓	✓
Location	<p>Location and proximity to marine environments has been shown to have an influence on the factors of marine citizenship through personal experience of the marine environment. Expect marine awareness and concern to be higher in communities where there is a direct dependency on the marine environment. Concern and awareness cannot be strictly associated with coastal areas and exceptions are possible.</p>	✓	✓

Influencing factor	Summary of factor	Phase One	Phase Two
Participation & Collaboration	The role of a collaborative management and planning strategy for the marine environment with comprehensive guidance provided to enhance public engagement in the process. An individual and collective societal desire for participation in the processes that affect the marine environment, its resources and users. Expect participation through recreational activities to engender a sense of concern and responsibility.	✓	✓
Socio-economics	Most strongly related to access to education and opportunities for involvement. Also potential influence on the behavioural choices available to an individual e.g. consumption of sustainable 'green' products.	✓	✓
Socio-demographics	Gender not expected to be a significantly influencing component of marine citizenship. Lifestage and age expected to have a degree of impact. Younger generation viewed as the target audience for promotion of improved social behaviour towards the marine environment	✓	✓

7.3 MARINE CITIZENSHIP: DEVELOPMENT OF CONCEPTUAL MODEL AND DEFINITION

7.3.1. The need for a conceptual model

One of the key objectives of the research was the development of a conceptual model of marine citizenship that could be effectively applied to the management of the marine environment. Throughout the research, an inductive mixed methods approach has been used to develop a conceptual model to describe the situations observed in the context of marine citizenship. Conceptual models are commonly used to aid in development, implementation, and standardisation of emerging concepts (Moody, 2005). In addition, they can act as a representation of a situation that enhances understanding and produces recommendations regarding a concept (Greca and Moreira, 2000). In the case of this research, the development of a conceptual model of marine citizenship serves to potentially benefit marine management in the UK through:

- Producing the first working definition and model for a marine specific form of citizenship;
- The model will provide an evaluation of the key elements specific to marine citizenship and their role in promoting the concept of marine citizenship;
- The model will identify the integral components of marine citizenship with the potential to encourage enhanced public responsibility and involvement through promotion of marine citizenship.

Through these developments, it is expected that marine citizenship will benefit marine management in the following ways:

- Through enhanced levels of public engagement in marine management and decision-making processes will result in the development of more effective and holistic management plans and policy.
- Through more easily implemented marine management strategies as a result of higher levels of public inclusion.

- Through improved individual and collective behaviour towards the marine environment which will result in easier implementation of management.

7.3.2 What is marine citizenship?

A central focus of the research is the generation of a working definition of marine citizenship that can be applied to contemporary marine management strategies in a bid to address the challenges currently facing marine environmental sustainability. Based on the available relevant literature, Table 2.4 (Chapter Two) highlighted the initial assumptions surrounding the successful promotion of marine citizenship, and examined the conditions under which an individual would be expected to exhibit a sense of marine citizenship. Taking the results of the research into consideration a refined version of this table is presented in Table 7.2 indicating the optimum levels of the key factors required to engender a sense of marine citizenship.

Table 7.2: Personal factors of marine citizenship and the optimum level of these factors at which a sense of marine citizenship would be encouraged

Component of marine citizenship	Optimum levels of personal factors for marine citizenship
Access to education	<ul style="list-style-type: none"> - Exposure to enhanced formal and informal mechanisms for marine specific education. - Good level of knowledge derived from appropriate education source. - High levels of education in environmental issues. - High levels of marine environmental literacy. - Sense of knowledge on a local, national and international scale.
Participation	<ul style="list-style-type: none"> - High sense of individual and cumulative societal responsibility for the marine environment. - Sense of willingness to be actively involved in management and decision making process. - Opportunities for involvement in marine planning and management.
Location	<ul style="list-style-type: none"> - Strongest when at close proximity to the marine environment.
Socio-economics	<ul style="list-style-type: none"> - Financially able to make marine environmentally conscientious consumer decisions.
Socio-demographics	<ul style="list-style-type: none"> - Families with children exposed to marine information through formal education at school. - Expect sense of awareness to increase with age and maturity implying sense of marine citizenship will become stronger with age.
Awareness	<ul style="list-style-type: none"> - Awareness of marine environmental issues. - Awareness and understanding of behavioural impacts.
Concern	<ul style="list-style-type: none"> - Sense of responsibility for the marine environment. - Awareness and understanding of the issues facing the marine environment.
Behaviour	<ul style="list-style-type: none"> - Sense of willingness to change behaviour for the benefit of the marine environment. - Understanding of the impacts of behaviour. - High sense of personal and societal responsibility for the marine environment. - High levels of awareness and concern for the marine environment.

Component of marine citizenship	Optimum levels of personal factors for marine citizenship
Personal connection	<ul style="list-style-type: none"> - High levels of exposure and personal experience of the marine environment through holidays and recreational activities; - Living within a coastal community - Moderate to high levels of dependency on the marine environment for livelihood (currently or historically) - Strong association with the marine environment

Based on the findings of the research outlined in Chapters Two, Four and Six a fully refined definition of marine citizenship can be established:

Marine citizenship can be defined as having understanding of the individual rights and responsibilities towards the marine environment, having an awareness and concern for the marine environment and the impacts of individual and collective behaviour, and having a desire to have a role in ensuring on-going sustainable management of the marine environment.

Given this definition, a conceptual model based on the personal factors identified as influencing components of marine citizenship was generated and is discussed in Section 7.3.3.

7.3.3. Conceptualisation of marine citizenship

In accordance with the inductive approach (detailed in Chapter Three), evolving models of marine citizenship were generated throughout the data collection. The first model (Figure 2.3) was produced based on the observations made throughout the literature review using pre-existing models of overall environmental citizenship to guide the development of an initial conceptual model of marine citizenship. This model was used to establish the direction of the research and guided the practitioner interviews (Chapters Three and Four).

Following the completion of the practitioner telephone interviews (Chapters Three and Four) a refined model for marine citizenship and its application to

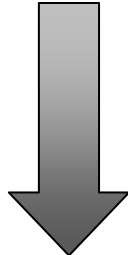
marine management was generated based on practitioner perception of the concept of marine citizenship (Figure 4.1). Early models of marine citizenship guided the final evaluations conducted through the thematic case studies (Chapters Five and Six) and resulted the generation of a final working model of marine citizenship, presented in Figure 7.2.

As presented in Tables 7.1 and 7.2, the conceptualisation of marine citizenship is based on a range of factors being present at optimum levels to encourage expression of marine citizenship. However, in practice, the influences on marine citizenship will be subject to variation, which will in turn be reflected in the degree of marine citizenship that an individual can be expected to exhibit. Given this, marine citizenship could be modelled as a simple linear continuum with ‘successful marine citizenship’ at one end and ‘unsuccessful marine citizenship’ represented at the other. At the ‘unsuccessful’ marine citizenship’ end of the continuum, the elements of marine citizenship outlined in Tables 7.1 and 7.2 would not be achieved and the management measures to aid development of societal marine citizenship would be ineffectively managed or absent. In contrast, at the ‘successful marine citizenship’ end of the continuum, all management measures would be set in place to engender a sense of marine citizenship resulting in the presence of the factors presented in Tables 7.1 and 7.2. Position along the continuum and thus the achievable sense of marine citizenship would be determined by the presence or absence of the management measures recommended to ensure successful application of marine citizenship in a contemporary marine management context.

Whilst the continuum based model of marine citizenship provides a good illustration of the development of a conceptual model, the linear relationship does not provide a comprehensive representation of the complexities associated with the marine citizenship factors. The linear relationship between successful and unsuccessful marine citizenship can be further divided based on the presence or absence of the key elements (education and personal attachment) identified through the practitioner interviews as illustrated in Table 7.3. As discussed in Chapter 5, these broad factors were considered to encompass a wider variety of more specific components (See Table 4.1). The four potential combinations,

identified as Scenarios 1-3, represent the complexities associated with marine citizenship showing progression through the scenarios that indicates an increase in marine citizenship. Table 7.3 indicates a progression from Scenario 1 which illustrates the lowest sense of marine citizenship to Scenario 3 having the strongest sense of marine citizenship, with Scenario 3 representing a stronger sense of marine citizenship than Scenario 2. It should be noted that although the conditions of each scenario are static, it is possible for an individual to move across the boundaries of each scenario subject to changes in their own circumstances.

Table 7.3: Conceptualisation of marine citizenship based on the presence of the key themes of education and personal attachment.

	Education	Personal attachment
Low marine citizenship	Scenario1 X	X
	Scenario 2a ✓	X
	Scenario 2b X	✓
	Scenario 3 ✓	✓
High Marine Citizenship		

7.3.3.1. Scenario 1

In Scenario 1, evidence of the factors relating to the broad themes of education and personal attachment is poor. In general, there are poor levels of marine knowledge and understanding due to a lack of access to either formal or informal education tools. As a result of a low sense of personal connection to the marine environment coupled with lack of information, this scenario exhibits low levels of concern or awareness and little or no desire to modify behaviour towards the marine environment. Under these circumstances there is little evidence to suggest a sense of marine citizenship would be evident. In addition, it is unlikely that

individuals would be willing to engage in attempts to promote and improve their sense of marine citizenship. Individuals falling within Scenario 1 exhibit the weakest sense of marine citizenship, as none of the factors considered to be integral components are included.

7.3.3.2. Scenario 2a

In Scenario 2a, the factors relating to the theme of education are evident with high levels of knowledge and awareness of the marine environment derived through either formal or informal education strategies. A lack of personal connection with the marine environment reduces the likelihood of an individual exhibiting marine citizenship. In Scenario 2a, an individual would be expected to exhibit some degree of marine citizenship due to moderate to high levels of awareness and knowledge. In addition, a sense of concern and responsibility towards the marine environment would be expected. However, this would be based predominantly on an awareness derived through education strategies rather than inherent awareness related to personal connection to the marine environment. Low sense of willingness for behavioural change related to personal connection is characteristic of this scenario, however, due to high levels of education it would be expected that individuals would behave in a responsible manner. Lack of connection results in a limited sense of marine citizenship, although it is likely that based on information availability and accessibility of education, individuals in this scenario exhibit some degree of marine citizenship.

7.3.3.3. Scenario 2b

In Scenario 2b, a sense of marine citizenship is predominantly based on individuals' personal connection to the marine environment, which is expected to range from moderate to high in this scenario. As such, sense of concern and responsibility linked to personal associations with the marine environment, such as livelihood dependency or proximity to the coastal are the influencing factors in Scenario 2b. In contrast with Scenario 2a, levels of knowledge and understanding associated with education would be low. In this scenario individuals would be inclined to be aware of the impacts of their behaviour and

express a willingness to modify their behaviour if necessary. Poor access to education tools and a lack of capacity for involvement may hinder the level of marine citizenship in this scenario, but it would be present in higher levels than in Scenario 2a as a result of a stronger sense of personal attachment to the marine environment.

7.3.3.4 Scenario 3

In Scenario 3, all of the integral components of marine citizenship are evident. Individuals have access to marine specific information through a variety of education tools exhibit a high level of understanding and awareness of the marine environment, its management and the role of their individual and cumulative behaviour in marine management and conservation. In addition to education based factors, individuals in this scenario would also characteristically exhibit a high sense of connection with the marine environment. This is the optimum combination of factors through which an individual could be considered to have a high sense of marine citizenship.

7.3.4. A conceptual model for marine citizenship

In addition to the conceptualisation and modelling of marine citizenship, it became apparent that the expression of marine citizenship and its application to marine management could be influenced by external circumstances. In order to conceptualise the relationship between marine citizenship and these circumstances, the idea of '**enabling factors**' is now introduced. This term has been developed to describe the circumstances in which marine citizenship could be successfully applied to contemporary marine management. The concept of enabling factors suggests that in order for successful expression of marine citizenship to be enabled, presence of the appropriate factors is required as illustrated in Figure 7.1.

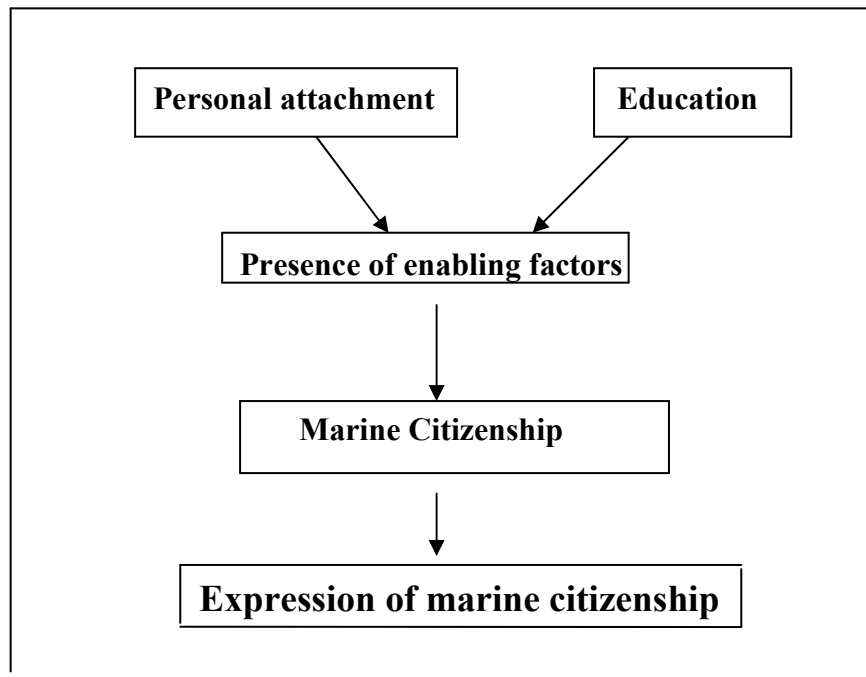


Figure 7.1: Progression of marine citizenship in the presence of key elements and appropriate enabling factors.

In the context of this research, synthesis of the results indicated that there are three key enabling factors required for the successful expression of marine citizenship. These are outlined below:

- **Appropriate marine policy:** Analysis of the practitioner interviews indicated an aspiration for more effective policy and legislation enabling public involvement in marine management and decision-making. It is therefore suggested that having marine policy of this nature in place would serve as an enabling factor for the expression of marine citizenship, through the implementation of marine management strategies guided by appropriate policies.
- **Effective marine management:** Synthesis of the results highlighted the need for a collaborative relationship between marine governance bodies and the public, particularly focusing on the role of marine managers as guides for improved public behaviour towards the marine environment. In the presence of suitable marine policy, it can be assumed that

appropriate management strategies (such as those highlighted in Table 7.4) would be applied to the marine environment. As such, these management strategies would act as enabling factors for the expression of marine citizenship through the provision of enhanced education and awareness-raising programmes and improved opportunities for public engagement in marine management.

- Favourable socio-economics: Throughout the research, it was apparent that although there is a sense of public willingness to change societal behaviour and perception of the marine environment, efforts to do so could be influenced by both individual and public socio-economic circumstances. Given the financial implications associated with favourable environmental behaviours, a synthesis of interviewee responses emphasised the power of socio-economics to both limit and facilitate the expression of marine citizenship. Based on these observations, it is therefore suggested that the presence or absence of suitable socio-economic circumstances acts as enabling factor for marine citizenship as it is assumed that in favourable socio-economic conditions expressions of marine citizenship would be higher.

Table 7.4 further illustrates the relationship between the factors of marine citizenship and the presence of suitable enabling factors outlined above.

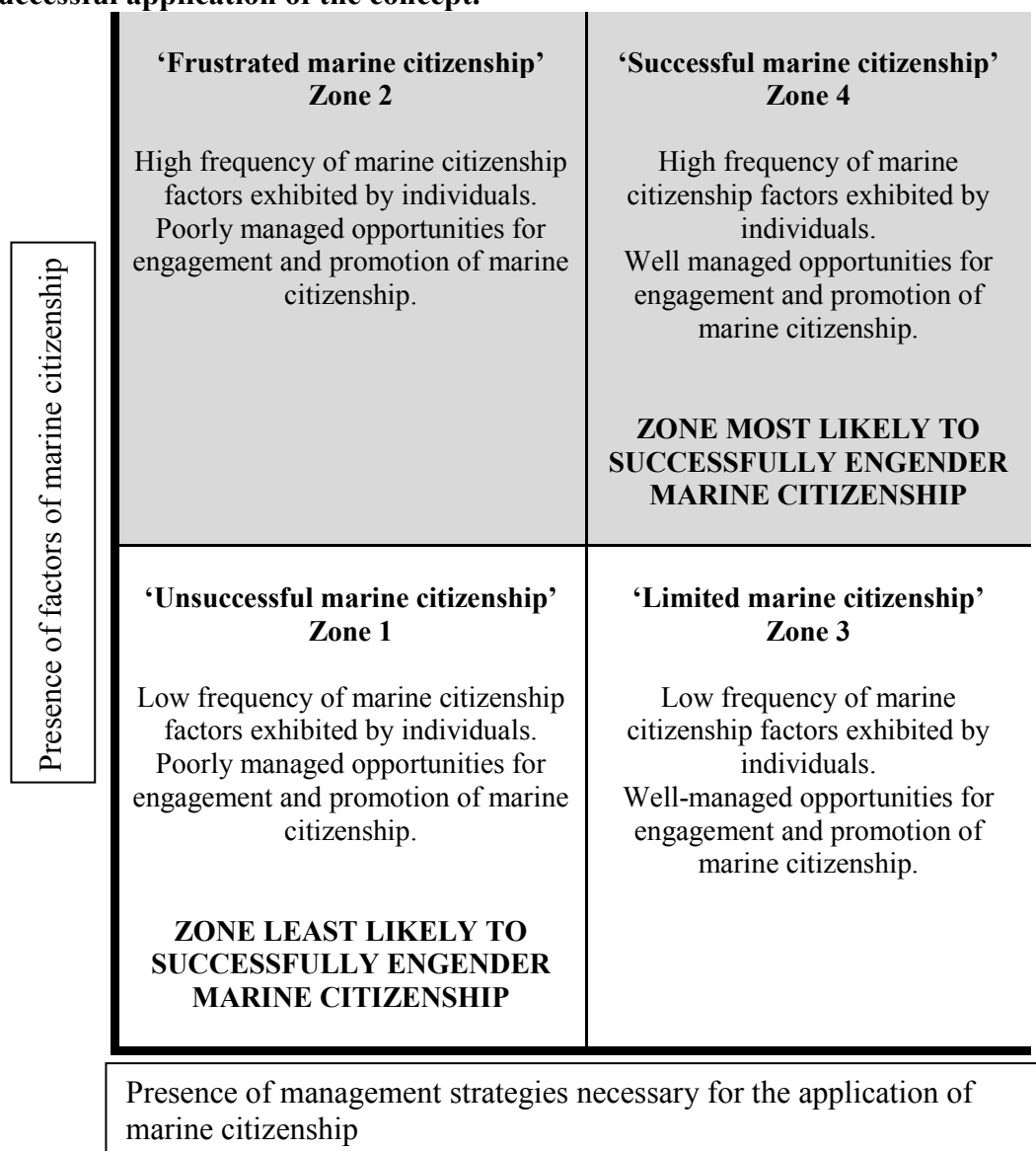
Table 7.4: Optimum conditions for successful expression of marine citizenship.

Key personal factors of marine citizenship		Enabling Factors for marine citizenship				Expressions of marine citizenship	
		Education	Personal attachment	Favourable socio-economic conditions	Favourable marine policy		Management Strategies
						<p>Participation in management processes and decision-making will increase understanding of the process.</p> <p>Improve on current statutory consultation requirements by including the wider public.</p> <p>Ensure consideration of all community needs.</p> <p>Encourage the process of social learning in the context of the marine environment.</p> <p>Engender more</p>	<p>Participation and collaboration in marine management</p> <p>Increased awareness and understanding of the marine environment</p> <p>Improved public desire for involvement and willingness to change behaviour.</p>
<p>Favourable conditions of both personal factors and the enabling factors of marine citizenship are required in order for successful expression of marine citizenship</p>				<p>Increased opportunities for wider public engagement in the process.</p> <p>Open processes with regards to marine management and decision making</p> <p>Inclusion of the wider public, in addition to the direct stakeholders, to aid the implementation of plans and management projects.</p> <p>Provision of information regarding marine management and widespread opportunities for engagement with the management and decision making processes.</p>			

			<p>Ensure marine citizenship is not restricted to coastal communities,</p> <p>Wider awareness of the impacts of societal behaviour on the marine environment, including the impacts of both inland and coastal communities.</p> <p>Encourage a more inherent sense of awareness, concern and responsibility towards the marine environment.</p> <p>Provision of marine specific education on a national basis through both formal and informal methods.</p> <p>National awareness raising campaigns with regards to the impacts of everyday behaviour, including identification of impacts of inland communities on the marine environment.</p> <p>Promote the notion of the UK being an island and the cultural heritage associated with this.</p> <p>Provision of financially viable products and subsidised opportunities for education and engagement</p>	<p>responsible individual and societal behaviour.</p> <p>Encourage greater awareness of the impacts of behavioural choices.</p> <p>Improved conflict resolution.</p> <p>To empower citizens to have more involvement in marine management.</p> <p>Ensure transparency and accountability throughout the process.</p> <p>Enhance understanding and public capacity for involvement in marine management.</p> <p>Easier implementation of management and planning through more widespread inclusion.</p>	<p>Improved understanding and awareness of behavioural impacts on the marine environment.</p>
<p>Favourable conditions of both personal factors and the enabling factors are required in order for successful expression of marine citizenship</p>					

Given the recognised need for collaboration between the wider public and marine management authorities (Table 7.3), a model illustrating the relationship between marine citizenship and marine management was generated and is presented in Figure 7.2. This final conceptual model of marine citizenship recognises the need for effective management strategies in order to facilitate wider public engagement and the generation of a society of ‘marine citizens’. In order to facilitate the description of each of the potential relationships between the personal marine citizenship factors and the enabling factors, the outcome space of the model has been divided into four zones. The role of enabling factors in the progression and facilitation of marine citizenship is further outlined in Section 7.3.5.

Figure 7.2: Model of marine citizenship comprising the identified components and recommended management strategies to engender successful application of the concept.



7.3.4.1 Unsuccessful marine citizenship: Zone 1

In Zone 1, the personal factors required to engender an active sense of marine citizenship within an individual are poor or entirely absent. In addition, the recommended management strategies required to aid development of marine citizenship are poorly managed and do not facilitate public engagement or capacity building to encourage a wider level of public understanding of the marine environment. As a result, the conditions exhibited by Zone 1 represent the situation least likely to inculcate a sense of marine citizenship, as none of the factors considered to influence the concept are present.

7.3.4.2 Frustrated marine citizenship: Zone 2

In Zone 2, there is a high representation of the components of marine citizenship exhibited by individuals. Under the circumstances of Zone 2, the public willingness to adopt a sense of marine citizenship is high but is limited by a lack of facilitation and opportunity through poor management strategies. For example, within this zone, it is expected that individuals would exhibit a high level of personal connection with the marine environment resulting in an inherent sense of awareness, concern and responsibility for its condition and ongoing sustainability. The personal association with the marine environment is coupled with a high level of marine specific knowledge, access to both informal and formal education techniques, sense of willingness to change behaviour for the benefit of the marine environment and a desire to be involved in the process. However, Zone 2 is further characterised by poor management resulting in a lack of facilitation of marine citizenship. Decision-making processes would therefore be flawed due to a lack of inclusivity and poorly managed public engagement procedures. Given the recent work aimed at improving public engagement with marine management in the UK, Zone 2 represents a minority of circumstances within the UK.

7.3.4.3. Limited marine citizenship: Zone 3

Zone 3 is characterised by a low representation of factors identified as influencing an individuals' sense of marine citizenship. As such, within this zone, it is expected that there would be low levels of public connection to the marine environment, minimal concern and awareness of marine management and a lack of understanding of the role of the individual and collective society on the marine environment and its management. In addition, Zone 3 would exhibit low levels of marine specific knowledge further hindered by lack of access to effective marine education techniques. The absence of the personal factors of marine citizenship results in a lack of public willingness to engage in the marine management process and a lack of willingness to modify individual and cumulative societal behaviour for the benefit of the marine environment. In contrast to Zone 2, Zone 3 exhibits concerted efforts from management to engage with the wider public and to promote a societal sense of marine citizenship through awareness raising campaigns. In this zone, the opportunities for marine citizenship are high but are not utilised by the community due to a lack of public awareness and understanding of the role of the public in marine management.

7.3.4.4. 'Successful marine citizenship': Zone 4

In Zone 4, the expression of marine citizenship is high. Both the personal components of marine citizenship and the managerial strategies recommended for the inculcation of societal marine citizenship are present. In such circumstances, it is expected that a sense of marine citizenship would be exhibited by communities and would result in more inclusive, effective marine management. The combination of individual willingness and capacity for involvement, appropriate management strategies and the facilitation of public involvement in marine management necessary for marine citizenship is well represented in Zone 4.

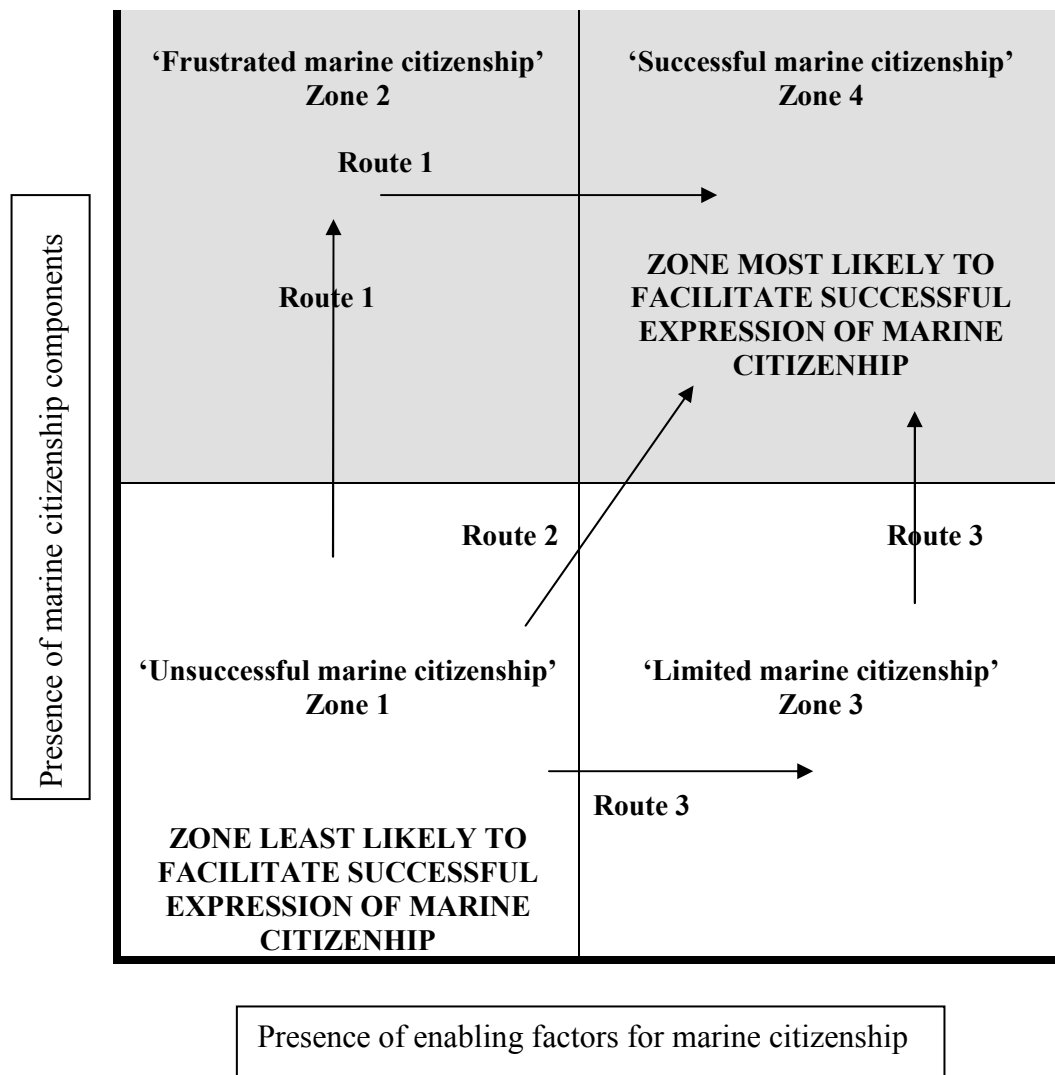
7.3.4.5. Comments

Each of the four zones represented by the model in Figure 7.2 exhibits a different potential for the inculcation of a society wide sense of marine citizenship. The progression moves from zone 1 exhibiting characteristics least likely encourage a sense of marine citizenship to zone 4 representing the characteristics most likely to encourage a sense of marine citizenship among society. Zones 2 and 3 represent circumstances through which a degree of marine citizenship could be expected but it is likely that marine citizenship of this level would not engender the social change in perception and behaviour associated with successful application of marine citizenship to marine management in the UK. This model highlights the need for significant collaboration between the wider public, stakeholders, private sector and statutory governance bodies in order to reach the level of marine citizenship required to engender the level of change required to achieve the objectives set out by sustainable marine management plans.

7.3.5. Progression of marine citizenship

As outlined in Section 7.3.4 the expression of marine citizenship is dependent on the presence of the appropriate enabling factors. The presence or absence of the identified enabling factors will theoretically influence both the expression of marine citizenship and the progression between the zones illustrated in Figure 7.3. Taking this into consideration, it should be noted that an individual can be located at any position in the model of marine citizenship i.e. an individual or community would not be required to start within zone 1 ('unsuccessful marine citizenship') and gradually progress towards successful expression of marine citizenship in the presence of appropriate personal components and enabling factors. It is assumed, however, that in the presence of the appropriate enabling factors i.e. favourable policies, management strategies and socio-economic conditions an individual or community would aspire towards expression of marine citizenship behaviours and would aim to progress towards Zone 4 of the model in Figure 7.3. For an individual or community in Zone 1 (unsuccessful marine citizenship), three potential routes have been identified that would facilitate a progression towards Zone 4.

Figure 7.3: Routes towards successful expression of marine citizenship.



7.3.5.1 Route 1

The first route is to initially implement the necessary management strategies to raise public awareness, concern and sense of responsibility for the marine environment. These management strategies would be implemented to promote the personal components of marine citizenship (Figure 7.2) through awareness-raising and public capacity building. Following this, marine management strategies that provide more opportunities for public engagement would be implemented. This approach would facilitate the expression of marine citizenship by increasing information availability and opportunities for engagement in marine management.

7.3.5.2 Route 2

Route 2 is to implement management strategies that enhance both personal components of marine citizenship and the opportunities for public engagement together. By providing opportunities for public engagement in marine management, the personal components of marine citizenship are promoted and more successful expression of marine citizenship behaviours is facilitated. Under these circumstances, as with Route 1, the provision of financially accessible opportunities for engagements is integral to the successful facilitation of marine citizenship. This is the most direct route to successful expression of marine citizenship from Zone 1.

7.3.5.3 Route 3

The third route is to implement management strategies aimed at promoting the personal components of marine citizenship through awareness-raising, marine education programmes and wide-scale advertisement of opportunities for public engagement in marine management. As with the other potential routes, progression of marine citizenship through this route requires favourable socio-environmental conditions through the provision of financially accessible opportunities for expression.

7.4 APPLICATION TO CONTEMPORARY MANAGEMENT STRATEGIES

7.4.1. Implications of marine citizenship for current marine management and policy

Since the beginning of this research, marine management in the UK has undergone significant changes following the ratification of the Marine and Coastal Access Act (2009) and the resultant establishment of the Marine Management Organisation (MMO). In addition to new UK legislation, the UK is a signatory of the EU Marine Strategy Framework Directive, which aims to achieve ‘Good Environmental Status’ (GES) for all European seas and associated

resources by 2020. Central to the UKs signing of the Marine Strategy Framework Directive are five UK High Level Marine Objectives²⁷ that aim to guide statutory governance, stakeholders and the wider public in the sustainable use of the marine environment within the UK and wider European waters (Defra, 2009). There has been a concerted move towards more inclusive and holistic marine management within the UK with the promotion of marine spatial planning (MSP), development of a network of marine conservation zones (MCZ) and the generation of a national and regional marine policy statement (MPS).

This movement towards more holistic and integrated management through the MMO and the application of overarching policies is evidence of the increasing recognition that marine management in the UK has been in need of considerable reorientation. The application and promotion of marine citizenship on a national scale would aid the UK in achieving each of the five HLMOs prompted by the EU Marine Strategy Framework Directive (MSFD) and obtaining GES for our marine ecosystems. In addition to this, it would aid in the implementation of holistic and inclusive marine management strategy which are becoming increasingly common due to the rising popularity of ecosystem based management approaches to marine management (Defra, 2009). In particular the application of marine citizenship to marine management would engender a more marine educated citizenry, aware of their impacts on the marine environment and would hone the sense of individual and societal responsibility for the marine environment desired by the objectives of the MSFD.

It is a proposition of this research that the emerging concept of marine citizenship could serve as a mechanism through which societal behaviour towards the marine environment could undergo the substantial modifications required to meet the international, European and national marine management

²⁷ The UK high level objectives outlined by the Marine Strategy Framework Directive include:

- The achievement of a sustainable marine based economy;
- Assurance of a responsible and aware society with access to a healthy and safe marine environment;
- Establish a society living within the limits of the marine environment;
- Promotion of good and effective governance of the marine environment;
- The widespread use of responsible and sound science to support marine management and policy delivery.

objectives regarding sustainability. How and where marine citizenship could be applied to contemporary marine management and policy are outlined through a number of recommendations in Chapter Eight.

7.4.2. Limitations of the conceptual model

There are certain issues that need to be taken into consideration when evaluating the applicability of the model.

Firstly, as with any model developed through an inductive methodology and so grounded in the data collected, the model should be considered to be temporally, spatially and contextually specific to the conditions of the data collection. Through the thematic case studies, the model can be applied to the UK but not in an international context. Further research would be required to evaluate the applicability of the model in a different context.

Second, the generation of the model was grounded in data collection methodologies that did not have the capacity to incorporate all potential respondents. However, both phases of data collection obtained high response rates considered sufficient for this research. In addition, both the marine practitioner interviewees and the locations of the thematic case study sites were selected explicitly to reflect the complexities of UK marine management and the range of environments and communities represented by the UK coastline. Given these measures to ensure the incorporation of a diverse range of respondents, it can be assumed that the research is representative of UK public perceptions and can therefore be applied in a UK wide context.

Finally, since the data collected was predominantly sourced through a variety of interview techniques, it must be assumed that the participating interviewees expressed their true opinions. Data quality assurance methods were employed throughout the research in order to ensure the highest quality of data; however, this is still a relevant consideration. The high response rates obtained through the telephone interviews and both phases of the thematic case studies limited the potential for a particular interview or result to skew the observations.

The limitations of the model outlined above are characteristic of this methodological approach. Therefore, although there are some potential limitations associated with the research, the model can be viewed with confidence and considered to be applicable to marine management at all scales within the UK.

7.4.3. Strengths and weaknesses of marine citizenship

As with any emerging concept, there are a number of strengths and weaknesses that can be associated with the generated model of marine citizenship. Table 7.5 presents a SWOT (Strength, Weakness, Opportunities, and Threats) analysis conducted on the concept of marine citizenship and its implications for the wider management of the marine environment. This analysis is based on the observations resulting from a synthesis of all results. The benefits expected to be associated with marine citizenship are represented by the strengths and opportunities identified in the left column of Table 7.5, while the potential challenges resulting from and to marine citizenship are illustrated by the weaknesses and threats presented in the right column of the table.

Table 7.5: SWOT analysis of marine citizenship and its potential role in marine management in the UK (Adapted from Petts and Leach (2000))

<p>Strengths</p> <p>The application of marine citizenship could be strengthened by:</p> <ul style="list-style-type: none"> • Encouraging public participation in marine management and decision making processes; • Improving the use of local knowledge in marine planning and management; • Enhancing public understanding of the marine environment; • Ensuring better evaluation of issues facing users of the marine environment as a result of more inclusive consultation and participation approaches; • Encouraging better public knowledge of the marine management system; • Encouraging an enhanced public sense of responsibility for their individual/ societal behaviour towards the marine environment. 	<p>Weaknesses</p> <p>The application of marine citizenship could be weakened by:</p> <ul style="list-style-type: none"> • A lack of guidelines for the inclusion of the wider public in marine management; • Currently low levels of public awareness and knowledge of the marine environment; • A lack of accessibility of marine specific information; • Currently low levels of public capacity for involvement in marine management and decision-making; • Resulting enhanced public involvement could cause tensions; • A lack of support for effective public inclusion in marine management.
<p>Opportunities</p> <p>The application of marine citizenship will encourage opportunities to:</p> <ul style="list-style-type: none"> • Improve public trust in marine governance and management bodies; • Enhance public acceptance of marine management strategies; • Empower the public by encouraging transparency and wider consultation in marine planning and management; • Allow consideration of the public as stakeholders of the marine environment; • Prevent conflicts or protests by increasing the capacity for greater inclusion; • Expand of public understanding of local, regional, national and international marine issues; • Improve public responsibility for behaviour towards the marine environment. 	<p>Threats</p> <p>The application of marine citizenship could be threatened if:</p> <ul style="list-style-type: none"> • The public feel pressured by approaches to engender marine citizenship; • It is not efficiently promoted by marine governance bodies and end users. • There is a lack of acceptance among traditional stakeholders that the wider public should be included in the marine management process. • Formal and informal mechanisms for providing marine education are not improved. • More effort is not made to improve public awareness, responsibility and concern for the marine environment. • Strategies for promoting marine citizenship are not made available and accessible in all areas, regardless of proximity to coast and socio-economic factors.

7.5 SUMMARY

This chapter has presented a synthesis of the main findings of this research and has provided an examination of the emergent concept of marine citizenship. Section 7.2 outlined the elements identified as being key to the successful conceptualisation of marine citizenship, and furthermore to its successful promotion as a mechanism of addressing the challenges facing contemporary management of the marine environment. Section 7.2.1 began with an identification of the role of the individual and the wider public in marine management in the UK. Throughout the Phase One interviews it became clear that marine practitioners were generally of the opinion that there is a need for further involvement of the wider public in marine management, in order to develop and implement successful sustainable marine management. The thematic case studies indicated a significant level of concern and care for the marine environment within UK society suggesting a public willingness to be involved in the process, subject to adequate guidance from governing bodies and legislators. The factors of marine citizenship were then outlined based on a synthesis of the observations made through Chapters Two, Four and Six. The main influences are summarised in Table 7.1 and were found to relate to seven main themes presented in Sections 7.2.2.-7.2.8. These themes included the role of education, the influence of location on marine citizenship, personal connections to the marine environment, behaviour and its role in marine citizenship, participation and collaboration in the context of marine management and the impacts of socio-economics and socio-demographics on an individual's sense of marine citizenship.

Section 7.3 presented an original conceptualisation of marine citizenship generated based on the synthesised results of the two phases of data collection. It mapped the factors of marine citizenship based on the two primary themes of education and personal attachment that had been investigated through the case study interviews. Following this, Section 7.3 outlined the generation of an original conceptual model for marine citizenship which mapped the influence of the personal factors identified as influencing marine citizenship against the management strategies available to facilitate development of marine citizenship.

It was apparent from the model that in order for marine citizenship to have a significant impact on marine management, certain conditions, i.e. enabling factors, must be in place to nurture the inherent levels of marine citizenship that an individual may have towards the marine environment. It was clear that in order for marine citizenship to be successfully established among society, marine management strategies must facilitate public engagement and awareness-raising on a national scale. Efficient management was identified as being integral to the elucidation of the potential held by marine citizenship to engender more responsible behaviour towards the marine environment and sustainable marine management. Sections 7.3.3 and 7.3.4 are of particular importance to the research as they identify the practical measures required to operationalise the concept of marine citizenship, examining the role of enabling factors in the facilitation of marine citizenship.

Finally, Section 7.4 outlined the role of marine citizenship in contemporary marine management by evaluating its applicability to current marine policies. It went on to examine the limitations of the conceptual model and presented a SWOT analysis of the original concept of marine citizenship.

Overall, Chapter Seven presented the first working conceptual framework of marine citizenship. It presented an evaluation of the ongoing transition from state-driven management to a successful collaboration between the wider public and traditional management bodies in the context of sustainable marine management. Chapter Eight further places these observations in the context of current marine management and legislation and considers the implications of this research for future marine management in the UK.

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CHAPTER EIGHT

CONCLUSION

8.1 INTRODUCTION

The aim of this research, as outlined in Section 1.3, was to ‘critically evaluate of the potential role of marine citizenship in the sustainable management of the marine environment in the UK’. Through the discussion provided in this chapter, the aim will be revisited in order to draw conclusions from the research in relation to the objectives set out to achieve this aim. This chapter then highlights the contribution of this research to environment specific citizenship theories, specifically marine citizenship, and the application of this emergent concept in contemporary marine management. In addition, areas of future investigation inspired by this research will be outlined.

8.2 CONCLUDING COMMENTS

8.2.1. Evolution of marine citizenship

The first part of the thesis presented the underlying rationale for marine citizenship and its application in contemporary marine management in the UK. It was identified through the literature review that the application of traditional citizenship theories and more specifically, the evolution of environmental citizenship has been successful in developing sustainable and inclusive environmental management. However, it became clear that preceding models of environmental citizenship could not be applied to the marine environment. In addition, it was evident that traditional state-driven governance of the marine environment has been subject to a number of failures. A call for collaborative marine management was evident through the synthesis of the results, furthering acknowledging the role of the public in marine management. The research

suggested that a movement towards collaboration will require an improvement in current levels of public capacity for involvement.

Throughout the first phase of data collection, the current and future role of the individual and the wider public in marine management was ascertained. It was apparent that traditionally members of the public are not perceived as stakeholders of the marine environment meaning their involvement in management process has been minimal. However, a clear need to improve public capacity to deliver meaningful impact on marine management was identified.

Although there was some uncertainty over how marine citizenship could be promoted on a national scale, it was recognised that its development would benefit marine management in the UK. Benefits include a more marine aware and responsible society with the capacity for involvement in marine decision-making and planning processes, improved individual and collective behaviour resulting in easier implementation of management and plans as a result of enhanced public understanding. It is expected that the inculcation of marine citizenship would encourage development of more inclusive and efficient management plans resulting from higher levels of public engagement in the decision-making process. Further to this, it is suggested that marine citizenship could address the turn to citizenship experienced by wider environmental management and could act as an effective mechanism to deliver marine policy.

8.2.2. Composition of marine citizenship

A number of key influences were identified as being central to the engenderment of marine citizenship on an individual, community and national scale. The observations of the research largely confirmed that, as with environmental citizenship, marine citizenship is comprised of a complex network of interconnected components; therefore the variables with the potential to affect its expression are numerous. Taking this into consideration, two dominant categories of personal factors were identified: education and personal attachment.

The first component identified as being key to the inculcation of marine citizenship among wider society was education. The application of education as a method of addressing societal behaviour towards the environment has been well documented and it can therefore be assumed that the same techniques could be applied to marine education. Improvement in the availability and accessibility of information through enhanced marine education programmes was a recurring theme, firmly placing education as one of the key components of marine citizenship. It was found that adequate education is required to prompt any sense of citizenship towards the marine environment through awareness, concern and sense of responsibility. In addition, it was recognised that improvements to the current formal and informal education systems in the UK are necessary.

In addition to education, personal attachment was found to be a contributing factor to the level of citizenship an individual could express towards the marine environment. It was found that personal attachment to the marine environment could be stimulated by a number of circumstances, including livelihood dependency, familial links to the coast and recreational involvement. Given the links between personal attachment and sense of responsibility identified, it can be concluded that concerted efforts to improve the sense of connection with the marine environment held by UK communities are required to engender the successful expression of marine citizenship.

The overall goal of engendering a societal sense of marine citizenship is to create a mechanism through which societal behaviour can undergo the necessary modifications to ensure successful implementation of sustainable marine management. By addressing other integral components of marine citizenship, such as education and personal attachment, the challenge posed by current societal behaviour towards the marine environment should be addressed with behavioural changes a natural progression. It is expected that these alterations in social behaviour would lead to an improvement in the level of public involvement in marine management allowing the development of more inclusive management plans.

8.2.3. A conceptual model of marine citizenship

Chapter Seven introduced the final working definition and conceptual model of 'Marine Citizenship'. This is an evolution of the overarching concept of environmental citizenship specifically designed to take into consideration the complexities and diversity traditionally associated with the marine environment and its management. In addition to the conceptual model and definition, the application of marine citizenship in the context of contemporary marine management was evaluated, particularly in light of the goals set out by the recent Marine Strategy Framework Directive (2008) and the Marine and Coastal Access Act (2009).

The final components of marine citizenship identified through a synthesis were mapped against specific enabling factors required to encourage the expression of marine citizenship. Of particular importance was the identification of a necessary collaboration between marine management organisations and the public in order to fully engage marine citizenship at a level that will impact the efficacy of marine management and planning. In the context of marine citizenship, three main enabling factors were identified: the presence of appropriate policy, the implementation of effective management strategies and finally, favourable socio-economic circumstances. It was concluded that in order to aid the collaboration between current marine governance arrangements and the public, appropriate marine policies and management strategies that facilitate the expression of marine citizenship are required.

It was concluded that in order for marine citizenship to be engendered, both the appropriate personal attributes and the enabling factors need to be in place. Contrasting perspectives from practitioners and the general public regarding the accessibility of information and opportunities for public involvement emphasised the need for an improved understanding of the potential role of individuals and cumulatively of the general public in establishing sustainable, long-term and effective marine management and conservation strategies. It can therefore be concluded that marine practitioners need to engage with the public and facilitate involvement through policy and management strategies that enhance public

capacity and awareness in order for the benefits of marine citizenship to be realised.

8.2.4. Key Conclusions

Based on the comments above, a number of key conclusions regarding the future application of marine citizenship to contemporary marine management can be made.

- Marine citizenship is comprised of a complex network of interconnected factors and its application to management can therefore be influenced by a range of variables.
- Based on this research, marine citizenship can be defined as a level of awareness and concern for the marine environment, the rights and responsibilities of the individual, the impacts of individual and collective behaviour, and a desire to have a role in ensuring on-going sustainable management of the marine environment and its resources.
- The evolution of marine management to a more participatory management strategy would benefit from the promotion of marine citizenship.
- Successful expression of marine citizenship requires the presence of a combination of factors, namely the presence of two key groups of personal factors and enabling factors.
- In order for marine citizenship to be facilitated, appropriate marine policies and management strategies that promote mechanisms for public engagement and capacity building are required.

8.3. RECOMMENDATIONS

The final objective of this research was to determine recommendations that would allow the emergent concept of marine citizenship to be applied to contemporary marine management strategies. The recommendations are split into two main categories: 1) recommendations concerning the presence of the enabling factors required for successful expression of marine citizenship; and 2) recommendations relating to personal components of marine citizenship identified through the research.

8.3.1. Recommendations concerning enabling factors

As discussed in Chapter Seven, three enabling factors were identified for the successful expression of marine citizenship. The first recommendation applies to the overall role of the public in marine management, while the remainder are recommended in the context of the enabling factors identified in Chapter Seven:

- It is recommended that standardised ‘best practice’ guidelines for the inclusion of the wider public in the management of the marine environment are generated. The provision of a framework formalising the role of the public in marine management and how this can be facilitated through current marine management would enable successful expression of marine citizenship
- It is recommended that an assessment of the current capacity of contemporary governance and management bodies to facilitate marine citizenship be conducted. Both this research and previous work, for example, by Smith (2005) and Kearney *et al.* (2007), highlight the need for support from governing bodies in order for successful expression of marine citizenship to be realised. Given this, an evaluation of how governance and management bodies could currently facilitate marine citizenship is necessary. In addition, this would formalise the management strategies required to promote expression of marine

citizenship in order to establish potential areas for improvement on all scales.

- The outcomes of this research highlighted a need for greater marine practitioner acceptance of the general public in the role of stakeholders and stewards of the marine environment. As highlighted by Edwards *et al.* (1997) the role of the public in UK marine management has been acknowledged for some time, although to date the potential for this has not been realised. Therefore it is recommended that improved inclusion of the wider public as stakeholders of the marine environment through wider access to the process should be a key objective of marine managers and governance bodies. This will serve to aid public understanding of the complexities associated with marine management. Given the objectives of on-going marine planning projects, the facilitation of public participation in marine management and governance will ensure that all requirements of coastal communities are considered.
- It is the recommendation of this research that more favourable consumer behaviour be facilitated so as to enable expression of marine citizenship. This would most likely be achieved through incentives for further market innovations and campaigns to raise awareness of more sustainable options and to ensure that they are financially viable and accessible to a broad audience. By increasing accessibility with a minimal level of inconvenience to the consumer, the potential that individuals and society will make decisions that favour the sustainable management of the marine environment will be increased. Given the importance attributed to consumer behaviour, significant re-education of consumers is required if consumer behaviour is going to remain the most common method of expressing marine citizenship among the wider public. Evidence to support this can be found in work by Loureiro *et al.* (2002) and Teisl *et al.* (2008) who found that in order to facilitate pro-environmental behavioural choices, individuals must be provided with accurate and accessible product information.

- It is recommended that a cost-benefit analysis be conducted with regards to the promotion of an improved sense of responsibility towards the marine environment. Previous work indicated that individuals would be prepared to pay a premium for environmentally products (Loureiro *et al.*, 2002). However, the level of public willingness to pay more is likely to have changed in recent times as a result of the global economic recession. Given the current economic climate, it will be necessary to reassure the public that any costs and inconvenience associated with marine citizenship will be minor. In addition, it should be highlighted the fact that adopting these changes will bring long-term benefits on a local, regional and national scale.

8.3.2. Recommendations concerning personal components of marine citizenship

The conceptualisation of marine citizenship identified the broad themes of education and personal attachment as the key personal components of the model. Given this, there are a number of recommendations regarding these personal factors. There are four recommendations applicable to the role of education in marine citizenship, with the first relating to formal education strategies and the second concerning informal education techniques. Further to this there are recommendations regarding raising public awareness, understanding and sense of connection with the marine environment:

- Firstly, it is recommended that there should be an increased availability of formal marine education. This would be best delivered by adapting the current National Curriculum to increase the level of mandatory teaching of marine environmental topics. As indicated by this research and by Castle *et al.* (2010) the level of marine education in UK schools is currently limited. Enhancing it would ensure that future generations will be provided with sufficient information to allow them to make informed decisions regarding the marine environment in the future. It is also recommended that improving the level of marine content in school will

encourage dissemination of marine information through families as parents become involved with their children's education.

- It is recommended that informal education techniques are proactively employed to supplement traditional classroom delivery of marine education; methods include marine environmental documentaries, the internet, the promotion of marine environment based field trips within school and increased accessibility to marine specific information at a variety of public places e.g. aquariums, museums and coastal walks. Research by Potts (2000), Storrier and McGlashan (2006) and Williams (2008) present early evidence to suggest that an approach of this nature could be effective in altering societal perception, awareness and behaviour towards the marine environment in the UK.
- One of the primary challenges to marine citizenship identified was a lack of understanding concerning the impacts of everyday life and the marine environment. As indicated by Hawthorne and Alabaster (1999)'s review of environmental citizenship, in order for environmental education to be effective, educators need to be aware of the wider context in which they operate. In the case of marine citizenship, marine education encompassing a wider societal context may further individual and collective understanding of impacts on the marine environment. In order for this to be successful, it is recommended that marine citizenship requires an integrated campaign between all sectors to emphasise the connections between society and the wider marine environment in order to promote public understanding of this relationship.
- Lack of personal attachment with the marine environment was seen to be a significant potential challenge to successful inculcation of marine citizenship. Given the importance attributed to sense of connection in the context of marine citizenship, it is the recommendation of this research that public connection with the marine environment be addressed. However, it is currently unknown as to how this could be facilitated.

Previous work has suggested that exposure to an environment can prompt an individual's sense of connection and concern (Novacek, 2008; Barbas *et al.*, 2009; Goodwin *et al.*, 2009). Therefore, it is recommended that community projects that encourage wider public engagement in marine management be made available in a bid to enhance public connection with the marine environment.

8.4 CONTRIBUTION OF THIS RESEARCH

Research into a marine specific concept of citizenship has not been undertaken on any scale with previous work dominated by terrestrial examples of environmental citizenship; therefore this research is an original contribution to the debate concerning the application of citizenship to marine management and conservation. Through effective delivery of the research objectives (stated in Section 1.3), several specific areas of contribution can be identified. These areas of contribution relate to the conceptualisation of marine citizenship, its application in marine governance and the implications of this on a national scale:

- The research has for the first time identified the key elements influencing a marine specific concept of citizenship.
- The research presents a unique insight into the perspectives of both marine practitioners and of the wider public regarding marine management and current public capacity for effective engagement in contemporary marine governance and management.
- The conceptual model of 'marine citizenship' provides an original contribution to the debate concerning the current and future role of the wider public in marine governance and management. It provides a theoretical ideal to which both marine practitioners and the wider public can aspire in the bid to develop sustainable marine management.

- Specific management measures necessary to apply marine citizenship to contemporary marine governance on a national scale have been identified. Identification of these measures aids the translation of the findings of this research from theoretical observations to being of practical benefit to the development of sustainable and effective marine governance.
- The timing of the research coincides with the publication of the High Level Marine Objectives set out by the EU Marine Strategy Framework Directive and the ongoing implementation of the UK Marine and Coastal Access Act making it possible for the research to contribute to achieving the goals set out by this legislation.

8.5 AREAS FOR FUTURE RESEARCH

As is characteristic of inductive research, several areas for further investigation were identified. These areas present a variety of potential developments of the research discussed in the thesis. The first area requiring further investigation is particularly related to the inductive nature of the research:

- In order to further assess the transferability of the research outside its developmental context (as conducted in Hawthorne and Alabaster's model (1999)), it is necessary to test the research outcomes in other locations, in areas of varying dependency on the marine environment, varying proximity to the marine environment, and of various levels of economic development and stability.
- Given the increasingly multi-national approach to marine management, the applicability and transferability of the research outside the UK requires further investigation. It would be useful to assess how the model and management recommendations can be applied to the cultural and managerial context of other countries.

- Although it was acknowledged throughout the research that socio-economics has an integral role in the development of an individuals' sense of citizenship towards the marine environment, the evaluation conducted in this research was not sufficient to derive any significant conclusions. More comprehensive research is required in order to establish the level of impact socio-economics has on the behavioural choices made by individuals.

The following areas of investigation relate to the promotion of the influential factors of marine citizenship. In addition the relationship between efforts to enhance these components and engendering a sense of marine citizenship should be further investigated.

- Education was found to play an integral role in enhancing a sense of awareness, concern and responsibility and is therefore key to the successful delivery of marine citizenship. The content and most appropriate mechanism of delivering marine specific education to the wider public on a national scale requires further evaluation.
- Further research into the relationship between personal connection to the marine environment and individuals' sense of marine citizenship is required in order to identify strategies that could be employed to enhance a sense of connection to the marine environment.
- Given that a change in individual and collective societal behaviour towards the marine environment would be the ultimate goal of promoting marine citizenship, research is required to ascertain how this can be brought about through awareness raising and educational campaigns.

The remaining areas for further examination are focused on the facilitation of marine citizenship through the recommended management strategies and the benefits for managers, stakeholders as well as the general public:

- The ability of marine management and governance to facilitate the promotion of marine citizenship, as an aid to sustainable marine management requires further assessment. Although there is a practitioner willingness to include communities in marine management, this is commonly restricted to the involvement of traditional stakeholders and the general public have minimal opportunity for input. Methods of encouraging marine managers and governance bodies to extend their facilitation of wider engagement need to be established in order for marine citizenship to be applied successfully.
- The relationship between marine managers and governance bodies would benefit from further investigation. As outlined by the research, state driven decision making is often viewed with a lack of trust, and this perception may have a role to play in the level of public willingness to participate in the marine management process. An evaluation of this relationship would identify potential issues and challenges to management strategies aiming to promote public awareness and engagement with the marine environment and its management.
- The development of marine management to address public capacity issues on all scales was a recommendation of this research. Further work is necessary to establish the requirements of specific locations and how marine citizenship can be applied to management on all scales and in all locations.
- Given the current absence of guidelines regarding the inclusion of communities in marine management, the inclusion of recommendations of management measures (as outlined in Chapter Seven) aimed at enhancing opportunity for and efficacy of public engagement requires further investigation. In particular, the generation of specific guidelines regarding the facilitation of marine citizenship that could be adapted according to the requirements of management on a variety of scales would be benefit long term marine management.

8.6 FUTURE OF MARINE CITIZENSHIP IN UK MARINE MANAGEMENT

Traditional management of the marine environment and its associated resources has been subject to criticism as a result of fragmentation, sectorally based management and a lack of public engagement in the process. This has put into question the credibility of marine legislation and management strategies and has highlighted the need for a re-evaluation of the marine management process and how it can be improved to benefit the marine environment. Marine citizenship mirrors an international evolution in environmental management from a predominantly state-directed governance system to a more participatory, community-inclusive management regime. Although this research has found that marine citizenship would benefit marine management, the future of marine citizenship remains unclear. Based on the observations of the research, there are two dominant possibilities which are outlined below.

The first future is dependent upon the recognition of the role of the wider public in marine management and the advantages this would lend to on-going sustainable marine management. A potentially significant unknown at this time is the capacity for current marine governance to lend itself to the level of public inclusion proposed as the outcome of efforts to promote marine citizenship in the UK. One of the key goals of the UK High Level Marine Objectives is to ensure the wider public are supplied with the appropriate information to enable them to make sound decisions with regard to the marine environment. In order to achieve this goal, formal recognition of the public role in marine management is required at all levels of governance. The future efficacy of marine citizenship is dependent on the provision of facilities that will allow marine managers and planners to utilise it to develop more sustainable management. In addition, the future of marine citizenship will be dependent on marine practitioners recognising the need to facilitate the presence of appropriate enabling factors in order to encourage the expression of marine citizenship.

The second potential future is one in which there is little or no recognition of the role of marine citizenship in marine management. In this situation there would

be minimal effort to encourage public involvement in marine management with no promotion of the personal components or enabling factors of marine citizenship. In such circumstances, the likelihood of achieving the goals set out by the High Level Marine Objectives would be limited due to a continuing lack of public knowledge, understanding, and concern and ultimately a sense of willingness to be involved in the management process.

8.7. FINAL REMARKS

In conclusion, however the concept of marine citizenship is applied to existing UK marine management, it is clear that a movement towards enhanced public engagement in the process is the ideal situation. In order to facilitate this transition, capacity building measures are necessary to allow meaningful public engagement on any scale. Marine citizenship could provide a solution to a variety of capacity issues that are associated with public involvement in the management of the marine environment. While the promotion of marine citizenship will require considerable effort on the part of marine managers and governance bodies, and could carry risks, the benefits of promoting efforts to engender marine citizenship on a UK scale are likely to be significant.

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Appendix 1: Email sent to marine practitioners prior to interviews

Dear.....

My name is Emma McKinley. I'm currently undertaking a PhD at Bournemouth University, examining the definition and development of an international concept of marine citizenship. The initial phase of data collection is comprised of a number of telephone interviews with members of organisations currently involved in the management of the marine and coastal environments, and was wondering if you would be willing to participate. The interview should only take 25-20mins.

I would be very grateful for your participation, and look forward to hearing from you soon. If there is someone within your organisation that you feel would be more appropriate for me to speak to, I would be very grateful if you would forward them this email and ask them to contact me

Many thanks

Emma

Emma McKinley, PhD Research Student
School of Conservation Sciences
Bournemouth University
Talbot Campus
Dorset
UK
email: emckinley@bournemouth.ac.uk



Before you print think about the **ENVIRONMENT**

Appendix 2: Marine practitioner introduction and rationale letters used in Phase one.



Dear

Marine Citizenship

I am writing to you to invite you to participate in a doctoral research project to examine the role of and the factors influencing marine citizenship.

The aim of this survey is:

- To develop a working definition for marine citizenship, and to examine the factors that may potentially influence its promotion and development

This phase of the project will endeavour to obtain information from individuals who are already involved in the management of the marine environment and who may be involved in the promotion of a concept of marine citizenship. Your participation in this survey would therefore be greatly appreciated.

I am hoping to conduct telephone interviews throughout late September into October and November, which will follow a semi-structured interview format. It is important for me to stress that any personal opinions expressed or information given will remain completely confidential. An overview of the results will be made available to all participants following completion of research. Please find enclosed an overview of the research project, as well as an outline of the areas which will be covered during the interview.

I will telephone you within the next few days in order to arrange suitable time to conduct the interview. However, should you have any questions regarding the project or wish to discuss the research further, please do not hesitate to contact me (Tel: 07817794191 email: emckinley@bournemouth.ac.uk).

I look forward to speaking with you soon

Yours Sincerely

Emma McKinley
Postgraduate Researcher, Bournemouth University

Practitioner Rationale information



Evaluation of the application of marine citizenship in the management of marine environment

Emma McKinley

Citizenship and the Environment

The concept of environmental citizenship is based on the ideology that a higher level of environmental concern and responsibility is required within modern society, and that individuals need to be aware of the impacts they have on the environment. Following the Earth Summit, 1992, and the development of Agenda 21, it has become increasingly apparent that sustainable management and conservation of global natural resources requires cooperation between international governments, stakeholders and society as a whole.

Project Rationale and application of research

Coastal and marine environments are of massive importance globally with coastal zones exhibiting the highest level of biodiversity, whilst supporting the majority of human population with approximately 50% of the industrialised world living within 50Km of the coast. As changes in terrestrial governance occur, it has become increasingly apparent that the long term stability of the marine environment is dependent on a new form of citizenship being developed, one that highlights the need for greater sense of personal responsibility within society towards the environment as a whole.

Aim and Methodology

The general aim of this project is to examine the application of marine citizenship in the management of the marine environment, ultimately generating a working definition, whilst investigating the social, economic and environmental factors that may influence its development. This is being carried out through a series of practitioner interviews to obtain management consensus on the application of marine citizenship, followed by further analysis in case study locations in the UK.

Consensus View Telephone Survey

This initial phase of the project aims to determine the perceived role of citizenship and the factors influencing it based on the opinions of representatives

from a number of international organisations concerned with the sustainable management and development of the marine environment and its resources. Data was collected through telephone interviews, with the discussion based primarily on current marine and coastal management, the role of the public in decision making systems, and the factors that influence citizenship.

Case study work

Case study areas have been selected to allow examination of key themes identified in the initial practitioner phase of data collection, and is guided by the practitioner interviews carried out earlier in the project. This phase of research aims to examine discrepancies between practitioner and societal perception regarding the role of the public in the management of the marine and coastal environment. This phase will also allow examination of the social, economic and cultural factors influencing the engenderment of a sense of marine citizenship in the UK and the benefits it could have for the sustainable management of the marine and coastal environment.

Contact Details

Emma McKinley email: emckinley@bournemouth.ac.uk
School of Conservation Sciences
Bournemouth University
Talbot Campus, Fern Barrow
Bournemouth

Appendix 3: Marine practitioner pilot interview

Name:

Date of Interview:

Time start:

Time End:

Organisation:

Position:

Interview Questions

- What is your understanding of citizenship?
- What is your understanding of citizenship in an environmental context?
- In recent times, there has been a global promotion of the concept of citizenship in areas of political development. Do you think that this should also apply to the marine and coastal environment?
 - If so, to what extent?
- How do you think the concept of citizenship relates to the sustainable management of the marine environment and its associated resources?
- What factors do you think influence a sense of citizenship amongst the public towards the marine environment and its resources?
- Who do you consider responsible for the management of the marine environment and its resources - for each answer, ask candidate to explain at what level and why?

- How active a role do you think communities and stakeholders should take in the management and decision-making processes with regards to the marine environment?

- What effect do you think increasing public involvement in the management of marine resources would have?

- To what degree do you think environmental issues, in this case focusing on marine issues, relate to every day life in human society?

- Does the state of the environment and its management have an impact on social and economic issues? Explain answers

- How concerned do you think the general public are regarding the condition of the marine environment?

- How do you think public awareness can be encouraged?

- Who should be responsible for providing the resources for this?

- With regard to the previous question, what scale do you think people's awareness of the marine environment and the issues facing it are? (Local, regional, global?)
- How do you think a sense of responsibility towards the marine environment can be promoted? – Whose responsibility do you think it is to do this?
- How do you think the current management of the marine environment affects its long-term sustainability?
- How do you think the sense of environmental responsibility within today's society should or could be altered and promoted
- What factors do you think influence a sense of citizenship amongst the public towards the marine environment and its resources?

Appendix 4: Actual marine practitioner interview

Name:

Date of Interview:

Time start:

Time End:

Organisation:

Position:

Interview Questions

- In your opinion, what is the role of the individual in the development of management plans and policies with regard to the marine and coastal environment?

- What is your understanding of citizenship?

- What is your understanding of citizenship in an environmental context?

- In recent times, there has been a global promotion of the concept of citizenship in areas of political development. Do you think that that this should also apply to the marine and coastal environment? If so, to what extent?

- How do you think the concept of citizenship relates to the sustainable management of the marine environment and its associated resources?
- Should citizenship be included in legislation and policy development?
- What **demographic** factors do you think influence a sense of citizenship amongst the public towards the marine environment and its resources?
- Who do you consider responsible for the management of the marine environment and its resources - for each answer, ask candidate to explain at what level and why?
- How active a role do you think communities and stakeholders should take in the management and decision making processes with regards to the marine environment?

- What effect do you think increasing public involvement in the management of marine resources would have?
- To what degree do you think environmental issues, in this case focusing on marine issues, relate to every day life in human society? **For example**, does the state of the environment and its management have an impact on social and economic issues? Explain answers
- How concerned do you think the general public are regarding the condition of the marine environment?
- How do you think public awareness can be encouraged?
- Who should be responsible for providing the resources for this?

- With regard to the previous question, what scale do you think people's awareness of the marine environment and the issues facing it are? (local, regional, global?)

- How do you think a sense of responsibility towards the marine environment can be promoted? Whose responsibility do you think it is to do this?

- Do you think there is enough promotion of marine and coastal issues to result in a sense of marine citizenship being developed?

- How do you think the current management of the marine environment affects its long term sustainability?

Appendix 5: Sample marine practitioner interview transcript (including highlighted segments used to determine themes and patterns during content analysis).

Name: MP
Date of Interview:
Time start: Time End:
Organisation:.....
Position:

Interview Questions

- In your opinion, what is the role of the individual in the development of management plans and policies with regard to the marine and coastal environment?

It is tricky in the sense that the general public (out with the coastal zone) would probably feel like they have a very small role – generally they may not feel an affinity towards the marine environment and its resources. In coastal communities with a strong relationship and sense of place, I think it would be completely different and their input would be significantly stronger as often their livelihoods and incomes are dependent on the condition of the sea. The role and enthusiasm to get involved would be varied, as there are always going to be some members of society who have no interest. I'm sure in Weymouth (as an example) a significant proportion of the public don't really have an interest or an understanding of the marine environment. Generally think that it would vary across the population.

- What is your understanding of citizenship?

That there is a holistic, global dimension to belonging to something.

- What is your understanding of citizenship in an environmental context?

That things are put in holistic terms with a global dimension – in terms of Marine citizenship, it would show that the seas and oceans are connected regardless of where they are. Holistic view of stewardship of the seas and oceans, balancing management at a larger scale. People tend to have a parochial views – MC involves a wider view, a holistic understanding and management of the seas.

- In recent times, there has been a global promotion of the concept of citizenship in areas of political development. Do you think that that this should also apply to the marine and coastal environment? If so, to what extent?

Yes – don't see why not, the environment cannot be a closed system, regardless of differences between the marine and terrestrial environments. There needs to

be an increased understanding by all users as there is currently a lack of understanding with regard to interconnectedness of the systems, and of the fact that often the impacts of one use can have devastating impacts on another (shipping, fishing, recreation). Marine citizenship would increase people's understanding of environments and of the connections between uses and also the ecology. There is often a tendency for people to dwell on statutory rights from out of date legislation which doesn't reflect current uses of the sea. Uses of the sea have changed and will continue to do so. There will need to be more flexibility in peoples views and use of the sea. Citizenship could also relate to ICZM which attempts to take all uses into account and balance them.

- How do you think the concept of citizenship relates to the sustainable management of the marine environment and its associated resources?

If taking citizenship as being a kind of mass stewardship then there would be an increased understanding which can only lead to better management decisions. Care needs to be taken as there can be entrenched views in everything for example within the commercial fisheries and environmental lobby groups. The balance for management is in the middle ground. Citizenship is a wider understanding, appreciation and acceptance that the sea has an environmental social and economic function.. It should however play a strong role in sustainable management of the coast – if people feel close to an issue there will be greater understanding of both economic and environmental issues, and there will be more balanced views which is very important. E.g. In Lyme Bay –

- Should citizenship be included in legislation and policy development?

Not necessarily – don't think that it would be an easy thing to make statutory, we can't force people to feel a sense of stewardship, its almost a way of life or something that needs to evolve. The Marine Bill promises to involve coastal communities in future decision making in the marine environment. This should instil a sense of stewardship, so in a sense it does exist in policy or as a goal of policy. However I think it may be difficult to work into legislation – the European Marine Strategy Framework Directive will have policy e.g. will encourage education to promote citizenship but this will build a sense of citizenship rather than legislating for it.

- What demographic factors do you think influence a sense of citizenship amongst the public towards the marine environment and its resources?

Proximity to the coast – people away from the coast will be less likely to have a sense off marine citizenship.

Coastal users/ employees of the maritime sector

Social background – although it may be difficult to pinpoint, not sure if there would be a reasonable argument to link to social conditions.

Age groups – may vary depending on experiences; dependent on exposure in school curriculum (particularly in coastal communities).

Feel that a lot is down to people's individual experiences and professions as opposed to social standing.

- Who do you consider responsible for the management of the marine environment and its resources - for each answer, ask candidate to explain at what level and why?

Ideally everybody – although at a legislative level all tiers of government. However if policies and laws are going to be developed then they need to be managed – the MMO will play this role. Implementation will come from sea fisheries committees (IFCAs) and other environmental agencies. With regard to citizenship, people need to manage their own individual activities, need to understand the correct way to behave; there will always be some who do not care. Stewardship can cause increased awareness – need management by the general population to ensure they understand the general marine environment. Someone has to take responsibility for the marine environment – perhaps the proposed steering group linked to the MMO will bring all of the main sectors of the coast together; each have a responsibility to ensure that they are being responsible and not conflicting with other sectors. – national sense. International sense – IMO and other legislation. There are obviously layers local, regional, national, EU and global levels. Not sure what the best structure would be but ideally there needs to be enforcement of legislation and people need to manage their own activities.

- How active a role do you think communities and stakeholders should take in the management and decision making processes with regards to the marine environment?

Particularly active role – needs to be a mechanism to set this up. How are the local authorities going to feed it into marine planning? There seems to be disconnectedness and people often view the local authorities as a terrestrial body, often missing the notion that the constituents of coastal LAs are fishermen and other coastal workers, and the impacts of the marine environment to people in these areas are relevant and are potentially an issue. The mechanism for involvement would be through local government and it's absolutely necessary that there be input from local communities as they often know the area better than anyone else. Compliance will only be as strong as peoples input into the process, people need to feel they had a role to play and had a say in coastal and marine management initiatives.

- What effect do you think increasing public involvement in the management of marine resources would have?

More expensive, time consuming but think that the product would be better in the long run. Top down management is better for speed of development but the former bottom up approach with input will result in a building of citizenship, where people feel involved and included having obvious benefits. The advantages far outweigh the disadvantages if the process is facilitated well.

- To what degree do you think environmental issues, in this case focusing on marine issues, relate to every day life in human society? For example, does the state of the environment and its management have an impact on social and economic issues? Explain answers

Dependent on where they live – coastal communities should have higher awareness e.g. coastal regeneration; UK Government select committee looked at issues in coastal towns compared to inland towns, and it was found that coastal communities have different problems as a result of seasonality, retired populations etc. There are very specific issues that coastal communities have, and often they are very dependent on the marine and coastal environment – as a result coastal communities are more likely to be attuned to potential impacts on the marine environment. In contrast, people away from the coast, may not have a similar perspective and may not understand the link between the marine environment and economic well-being.

- How concerned do you think the general public are regarding the condition of the marine environment?

Varies with where people live, their background and interests. It is difficult to speculate but I think that people will have a general interest, particularly in the more charismatic marine species. Opinion will vary significantly.

- How do you think public awareness can be encouraged?

Inclusion on marine planning in coastal communities should encourage involvement, people need to be physically involved in things.

Media (documentaries) encourage expansion of understanding; BBC; Blue Planet I'm sure spiked an increase in public interest in marine issues.

Need to think about how people get their information these days – usually TV, internet and other media. Should also consider what the best marketing campaigns would be? There is a slow seepage of information anyway but it can depend on whatever is fashionable at the time.

Decision makers need to be seen as listening to communities as well.

- Who should be responsible for providing the resources for this?

Central government has a role to play – marine Bill, there will be a certain level of responsibility

Media – licensing fees

Everyone has to take some kind of responsibility – done through local interest groups and community level.

Maritime industry and sectors have a role to play – and should give something back to the environment they use on a day to day basis. Many coastal and marine users should take on some responsibility for educating the public about what they do, explaining their use, possible impacts and any mitigation they have in place.

- With regard to the previous question, what scale do you think people's awareness of the marine environment and the issues facing it are? (local, regional, global?)

Dependent on where you live, profession, background, education – coastal communities may generally be more aware.

- How do you think a sense of responsibility towards the marine environment can be promoted? Whose responsibility do you think it is to do this?

Comes through understanding the connections between land and sea, within the sea and connections between economic and environmental matters.

- Do you think there is enough promotion of marine and coastal issues to result in a sense of marine citizenship being developed?

Comes in peaks and troughs – at the moment, the marine bill is increasing it. Globally it varies from country to country. Would imagine that people promoting citizenship are in the minority but the groups involved are good at getting messages across – some countries have much bigger problems than the marine environment. It generally varies, can't answer in a global sense, although national level there has been more promotion with the marine bill as it has become very topical.

- How do you think the current management of the marine environment affects its long term sustainability?

Think that there are pockets of the marine environment that are well managed, although certain European policies need to be reconsidered such as the Common Fisheries Policy. Nationally, long-term sustainability will be addressed through the marine bill – the picture is looking better than it was a few years ago. New legislation will be put in place that will allow for MPAs and reserves, better fisheries management, more informed licensing and more strategic planning. Globally the credit crunch will be affecting how marine environmental issues are perceived.

Appendix 6: Education thematic case study rationale letter



C232, Christchurch House
School of Conservation Sciences
Bournemouth University
Fern Barrow,
Poole
Dorset

Dear XXXXXXXX

I contacted you earlier this week to enquire about the possibility of your school participating in my PhD research project. As I mentioned the project aim is to examine the application of the concept of marine citizenship in the sustainable management of the marine environment, and hopes to look at the role of education in this process.

I conducted a number of interviews with individuals currently involved in the management of the marine and coastal environment in the UK. Analysis of the information collected indicated that education is considered one of the primary influencing factors for marine citizenship. It was also suggested by a number of participants that school students would be the best audience to promote marine education about responsibility and awareness to. Taking this into consideration I propose to conduct structured interviews with students approaching the end of their compulsory school career – Stages 3 – 4 in the case of your students.

Finally, I would like to thank you and your colleagues very much for allowing me to carry this research out.

Many thanks again,

Yours truly,

Emma McKinley
emckinley@bournemouth.ac.uk

Appendix 7: Rationale for school involvement sent to participating schools.



Project Rationale

Coastal and marine environments are of significant global importance with coastal zones exhibiting the highest level of biodiversity, whilst supporting the majority of human population with approximately 50% of the industrialised world living within 50Km of the coast. As changes in terrestrial governance occur, it has become increasingly apparent that the long term stability of the marine environment is dependent on a new form of citizenship being developed, one that highlights the need for greater sense of personal responsibility within society towards the environment as a whole.

The general aim of this project is to examine the application of marine citizenship and how it will impact future sustainable management of the marine and coastal environment. The first phase of research consisted of an extensive literature review which identified the key components of environmental citizenship and how they could be related to the marine environment. Following this telephone interviews were carried out with marine environmental managers and professionals in order to establish the consensus view of marine practitioners on marine citizenship, and its role in managing the marine environment. Analysis of the interviews was used to categorise three key themes. These themes encompass a variety of factors previously isolated by Hawthorne and Alabaster (1999) as having an influence on environmental citizenship. It therefore stands to reason that they will have some level of influence on the generation of marine citizenship within society,

Proposed Method of Investigation

One of the primary themes identified as having a high influence on engendering a sense of citizenship towards the marine environment is education. It was proposed that school going individuals would prove the most captive audience for the promotion of marine citizenship and are an obvious target group in which to examine the influence of education on this concept. It is proposed that students will be provided with a short questionnaire that will assess level of knowledge, awareness and sense of responsibility towards the marine environment. The questionnaires will remain anonymous with no personal information required aside from gender.

It is also proposed that the influence of teaching capacity should also be evaluated i.e. how capable teachers feel of providing accurate and correct information to students that would encourage them to become “marine citizens”. Previous work has identified a number of subjects in which the marine and coastal environment is either directly or indirectly referred to. These include Geography, History, Sciences, Art and Design and Citizenship. Short, informal interviews with teachers of these subjects would be very valuable to this research and it is proposed that these are

carried out in the same schools as the student surveys. These interviews will again be anonymous and will not require personal information from participants.

Appendix 8: Instructions for student questionnaire



Instructions for Student Questionnaire:

Section one:

This section is designed to examine student's knowledge about certain marine issues that are considered the biggest problems or most well known terms. For the term familiarity section, please ask students to tick the box relevant to them – i.e. whether they have heard of a term and understand it, heard of but do not understand or finally if they have never heard of term. For the short marine quiz please ask them to underline the answer that they think is correct.

Section 2:

This section is to investigate the level of marine education in school and how students think it currently influences their decision making. It is also looking at where students feel they get their information about the marine environment from and how informed they think they are. Just ask them to tick the boxes they feel are relevant to them – it's based on a sliding scale, 1 being not at all and 5 being extremely.

Section 3:

This section is intended to evaluate the students concern – again it is a case of ticking the boxes that are relevant to them, based on the same sliding scale as the previous section. There is no right or wrong answer.

Appendix 9: Student questionnaire



Student Questionnaire

Gender: Male Female

Section 1: Marine Knowledge

Term Familiarity

Please identify which of these terms you are familiar with i.e. indicate by ticking the correct box whether they are terms you know and understand, terms you have heard of but do not know what they mean or if you have never heard of them.

	Know and Understand	Heard of but do not understand	Have never Heard term
1. Ecosystem	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Biodiversity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Coral Bleaching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Over fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Climate change	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Sea Level Rise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Coastal erosion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Exclusive Economic Zone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Integrated Coastal Zone Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Marine Bill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Citizenship	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. No-Take Zone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Short Marine Quiz

Underline the correct answer in each sentence

a) Ocean fisheries are affected by:

climate change red tides over-fishing all of the above

b) Most sea life:

lives in the top 500ft of the ocean lives on the sea floor lives
in the great ocean basins is evenly dispersed through the ocean
depths

c) The movement of cold, nutrient rich water to the surface of the ocean is
referred to as:

upwelling southern oscillation trade winds
reversal tide

d) The transportation of sediment along the coast is known as:

sediment drift across coast drift longshore drift

e) By catch refers to:

regular fish caught by nets over fishing fish that are
harvested, but not sold or kept for personal use a climate
phenomenon

Have you heard of the following groups?

Marine Conservation Society Marine Stewardship Council
DEFRA Crowne Estate WWF UNESCO

Indicate which of the following designations you have heard of:

SSSI (Site of Special Scientific Interest) MPA (Marine
Protected Area) No-take Zone AONB
(Area of Outstanding Natural Beauty) RAMSAR World
Heritage Site

Section 2: Marine Education

1. How would you say you get your information about the marine environment?

School TV Internet Peers Radio
Newspaper or Magazines Other

2. Have you watched the following programmes?

Planet Earth Blue Planet Oceans South Pacific

Spring watch

3. To what extent are marine and coastal issues covered in school?

0 1 2 3 4 5
Not at all
Extremely

4. To what extent do you think you are provided with enough information to help you make appropriate decisions with regard to the marine environment?

0 1 2 3 4 5
Not at all
Extremely

5. How informed do you think you are about issues currently facing the marine and coastal environment?

0 1 2 3 4 5

Not at all

Extremely

6. How much impact do you think your day to day activities have on the marine and coastal environment?

0 1 2 3 4 5

Not at all

Extremely

7. Do you consider the marine and coastal environment when shopping for food, ordering food or buying other goods?

0 1 2 3 4 5

Not at all

Extremely

8. Do you take part in any hobbies linked to the marine and coastal environment?

Yes No

If yes, please specify?

9. From your own experiences, do you think that there is a threat to the marine and coastal environment?

Yes No

Section 3: Concern

1. How would you rate your awareness of problems facing the marine environment?

0 1 2 3 4 5

Not at all
Extremely

2. To what extent is the conservation of the marine environment important to you?

0 1 2 3 4 5

Not at all
Extremely

3. To what extent would you say that you care about the marine environment?

0 1 2 3 4 5

Not at all
Extremely

4. Who do you think is responsible for the management of the marine and coastal environment? Tick all that apply

Individuals Everyone Non-government agencies
Government Coastal groups

That is the end of the survey. If you have any additional comments you would like to make about any of your answers or the questions, please add them here.

Thank you very much for your participation.

Appendix 10: Instructions for Teachers' capacity survey



Instructions for Teachers Survey

The survey consists of semi-structured questions – the idea is for teachers to answer the questions in as much details as they have time to do. If possible please give to teachers who cover marine and coastal topics in their teaching; for example, geography, science, history, citizenship, and any others that you think would be relevant.

If participants feel that other questions could be useful, please feel free to add them in at the bottom of the survey.

Thank you very much – your participation is incredibly valuable to my research.

Appendix 11: Teachers' capacity questionnaire (Chapter Five)



Teacher's Capacity Questionnaire

1. To what level is the marine/ coastal environment covered in your teaching?

2. How relevant is the marine and coastal environment to your subject?

3. To what degree is the local environment incorporated into your teaching?

4. What is your opinion on the current level of marine or coastal environment focused education in the curriculum?

5. How do you think that marine focused education could be changed to increase awareness and concern?

6. What impact do you think these alterations would have on how students awareness of marine issues? (i.e. the effect it would have on them after they have left school?)

7. How able do you think you are when it comes to delivering appropriate and coherent marine focused education?

8. What problems do you come up against when including marine related topics in your teaching?

9. How could these problems be mitigated for?

10. What would make teaching your subject easier?

11. How do you think this would affect the end result i.e. do they think better education would result in students being more marine environmentally aware adults?

12. How responsive are students to marine issues in your teaching?

13. How aware do you think your students are about marine and coastal issues?

14. What do you think would improve their awareness?

15. How concerned do you think your students are about the marine and coastal environment?

Thank you very much for your time - if you have any additional comments, or think that other questions could be included, please feel free to add them underneath.

2. How much do the problems facing the marine environment, that you know about, worry you?

0 1 2 3 4 5
Not at all Extremely
Comments:

3. To what extent is the conservation of the marine environment important to you?

0 1 2 3 4 5
Not at all Extremely
Comments:

4: To what extent do you feel your lifestyle has an impact on the marine environment?

0 1 2 3 4 5
Not at all Extremely
Comments:

5. To what extent do you consider the potential implications for the marine environment when you buy food?

0 1 2 3 4 5
Not at all Extremely
Comments:

6. To what extent do you consider the potential implications for the marine environment when you buy any other products for your home? (if a prompt is needed offer 'cleaning products and shampoo')

0 1 2 3 4 5
Not at all Extremely
Comments:

7. To what extent would you be prepared to change your lifestyle if it would benefit the marine environment?

0 1 2 3 4 5
Not at all Extremely
Comments:

8. To what extent would you say that you care about the marine environment?

0 1 2 3 4 5
Not at all Extremely
Comments:

9. To what extent would policy towards the marine environment affect how you vote at an election?

0 1 2 3 4 5
Not at all Extremely
Comments:

10. How responsible do you feel for the condition of the marine environment?

0 1 2 3 4 5
Not at all Extremely
Comments:

11. To what extent do you think responsibility for the marine and coastal environment should fall to the government?

0 1 2 3 4 5
 Not at all Extremely

Comments:

12. To what extent do you think responsibility for the marine and coastal environment should fall to the public?

0 1 2 3 4 5
 Not at all Extremely

Comments:

13. How effective do you think current management of the marine and coastal environment is?

0 1 2 3 4 5
 Not at all Extremely

Comments:

14. To what extent do you feel that you have a personal connection to the marine environment?

0 1 2 3 4 5
 Not at all Extremely

Comments:

PART 2. ABOUT YOU

15. Gender (by observation)
 postcode?: _____

Male
 is to compare local/visitor
 Female

16. What is your home
 first 2 letters only: explain this

17. In which of the following age brackets are you? by observation if possible, if not give options

- under 18
- 18-29
- 30-39
- 40-49
- 50-59
- 60-69
- 70-79
- 80-89
- over 90

18. What is the make up of

Adults: _____

Children: _____

CLOSURE

19. That is the end of the survey. Is there anything you would like to add to any of your earlier answers or make any additional points?

Thank you for your time and enjoy your day.

Appendix 13: Grid analysis conducted on the data collected throughout the personal attachment thematic case study

Interviewee code	Role of the media	Concern for the marine environment	Convenience of changing behaviour	Unaware of impacts on marine environment	Impact of location	Other concerns	Financial implications	Role of younger generations	Need for public involvement
P1-P18									
P19	✓	✓	✓	✓	✓				
P20		✓		✓					
P21	✓	✓					✓	✓	✓
P22							✓		
P23									
P24	✓	✓		✓					
P25				✓					
P26-41									
P42							✓		
P43-P50									
P51									
P52									
P53		✓		✓					
P54									
P55		✓			✓				
P56									
P57									
P58	✓	✓				✓			
P59									
P60									
P61					✓				
P62					✓				
P63-p69		✓							
P70			✓						
P71-p75									

Interviewee code	Role of the media	Concern for the marine environment	Convenience of changing behaviour	Unaware of impacts on marine environment	Impact of location	Other concerns	Financial implications	Role of younger generations	Need for public involvement
P76			✓						
P77									
P78				✓					
P79									
P80									
P81									
P82		✓	✓						
P83									
P84									
P85									
P86									
P86									
P87		✓	✓	✓	✓				✓
P88									
P89									
P90									
P91									
P92									
P93		✓	✓						
P94									
P95									
P97									
P97									
P98									
P99									
P100									
P101									
P102									
P103									
P104									

Interviewee code	Role of the media	Concern for the marine environment	Convenience of changing behaviour	Unaware of impacts on marine environment	Impact of location	Other concerns	Financial implications	Role of younger generations	Need for public involvement
P105		✓	✓	✓					
P106									
P107									
G1		✓✓		✓			✓		
G2		✓		✓					
G3									
G4			✓		✓				✓
G5									
G6									
G7		✓			✓				✓
G8						✓			
G9									
G10				✓					
G11									
G12									
G13	✓	✓							✓✓
G14									
G15					✓				
G16		✓✓			✓				✓
G17		✓	✓	✓					
G18									✓
G19		✓		✓					
G20		✓	✓	✓	✓				✓
G21					✓✓				✓
G22				✓	✓✓				✓
G23		✓	✓						
G24									
G25		✓							

Interviewee code	Role of the media	Concern for the marine environment	Convenience of changing behaviour	Unaware of impacts on marine environment	Impact of location	Other concerns	Financial implications	Role of younger generations	Need for public involvement
G26									✓
G27		✓					✓✓		
G28		✓							✓
G29				✓	✓		✓✓		✓
G30		✓✓		✓					✓
G31									
G32			✓						
G33					✓				✓
G34	✓		✓						✓✓
G35									
G36									
G37		✓		✓	✓				
G38									
G39									
G40									
G41				✓✓					
G42		✓	✓		✓				✓
B1				✓✓	✓				✓✓
B2									
B3				✓	✓				
B4									
B5									
B5									
B6									
B7	✓			✓					
B8								✓✓	
B9				✓	✓				✓
B10		✓							

Interviewee code	Role of the media	Concern for the marine environment	Convenience of changing behaviour	Unaware of impacts on marine environment	Impact of location	Other concerns	Financial implications	Role of younger generations	Need for public involvement
B11					✓				
B12	✓✓	✓						✓	✓
B13		✓✓							
B14									
B15		✓			✓				
B16					✓✓				
B17				✓		✓			
B18									
B19							✓		
B20									
B21									
B22									
B23						✓✓	✓	✓	
B24	✓				✓✓				✓
B25									
B26									
B27					✓				
B28									
B29									
B30					✓				✓
B31									
B32									
B33			✓				✓		
B34		✓✓		✓					✓
B35									
B36					✓				
B37		✓		✓✓			✓		✓
B38									

Interviewee code	Role of the media	Concern for the marine environment	Convenience of changing behaviour	Unaware of impacts on marine environment	Impact of location	Other concerns	Financial implications	Role of younger generations	Need for public involvement
B39				✓✓		✓			✓
B40		✓							✓
B41	✓	✓							✓
B42									
B43									
B44									
B45									
A1		✓		✓					
A2									
A3					✓✓				
A4				✓			✓		
A5					✓				
A6		✓							
A7					✓				
A8									
A9									
A10									
A11					✓				
A12									
A13		✓✓			✓✓✓		✓		
A14									
A15					✓				
A16				✓					
A17	✓						✓		
A18									
A19	✓	✓							✓✓
A20		✓✓		✓	✓✓				
A21									

Interviewee code	Role of the media	Concern for the marine environment	Convenience of changing behaviour	Unaware of impacts on marine environment	Impact of location	Other concerns	Financial implications	Role of younger generations	Need for public involvement
A22									
A23					✓✓				✓
A24		✓			✓✓				✓
A25		✓			✓		✓✓		
A26		✓		✓	✓				✓
A27				✓		✓			
A28		✓			✓✓		✓		✓
A29		✓					✓		✓
A30				✓					
A31			✓	✓✓					
A32		✓	✓	✓					✓
A33				✓		✓			
A34			✓	✓✓					
A35		✓		✓					
A36									
A37			✓						
A38	✓	✓		✓					✓
A39				✓		✓			✓
A40		✓		✓	✓				
A41			✓	✓✓✓	✓	✓✓✓			
A42				✓✓		✓			
A43									
A44									
A45									
A46									
A47						✓			✓
A48				✓	✓				
A49									

Interviewee code	Role of the media	Concern for the marine environment	Convenience of changing behaviour	Unaware of impacts on marine environment	Impact of location	Other concerns	Financial implications	Role of younger generations	Need for public involvement
A50				✓					
M1				✓✓					
M2		✓		✓		✓			✓
M3									
M4	✓✓	✓	✓	✓	✓✓✓				✓✓
M5		✓		✓✓			✓		✓
M6		✓		✓					
M7									
M8									
M9									
M10	✓✓			✓					
M11				✓					
M12		✓✓✓	✓	✓				✓	
M13			✓	✓✓					
M14		✓	✓						
M15		✓✓	✓	✓					
M16		✓							
M17		✓		✓					
M18				✓✓✓✓	✓				
M19					✓				
M20			✓		✓				
M21					✓				
M22									
M23		✓							✓
M24		✓		✓	✓				✓
M25		✓							✓
M26	✓	✓✓		✓					

Interviewee code	Role of the media	Concern for the marine environment	Convenience of changing behaviour	Unaware of impacts on marine environment	Impact of location	Other concerns	Financial implications	Role of younger generations	Need for public involvement
M27									
M28		✓✓							✓
M29									
M30									

Table (b) Grid analysis of the categories established through the personal attachment thematic case study.

Interviewee code	Need for enhanced awareness	Public willing to change	Lack of trust in government	Need for more responsibility	Education and information	Personal attachment to coast	Consumer behaviour	Island culture	Improved and collaborative management
P1-P18									
P19									
P20									
P21	✓	✓	✓	✓	✓	✓			
P22							✓		
P23	✓			✓		✓	✓	✓	✓
P24							✓		✓
P25				✓		✓	✓		✓
P26-41									
P42									
P43-P50									
P51				✓			✓		
P52									
P53					✓		✓		✓
P54									
P55							✓		
P56			✓				✓		
P57							✓		
P58									
P59									
P60									
P61									
P62									
P63-p69									
P70									
P71-p75									
P76	✓						✓		

Interviewee code	Need for enhanced awareness	Public willing to change	Lack of trust in government	Need for more responsibility	Education and information	Personal attachment to coast	Consumer behaviour	Island culture	Improved and collaborative management
P77									
P78				✓	✓✓				✓
P79									
P80									
P81									
P82					✓				
P83									✓
P84									
P85									
P86									
P87		✓		✓					✓
P88									
P89									
P90									
P91									
P92									
P93									
P94									
P95									
P97									
P97									
P98									
P99									
P100									
P101									
P102									
P103									
P104									
P105			✓	✓					✓
P106									
P107									
G1	✓			✓✓	✓				
G2		✓					✓✓		✓

Interviewee code	Need for enhanced awareness	Public willing to change	Lack of trust in government	Need for more responsibility	Education and information	Personal attachment to coast	Consumer behaviour	Island/ heritage culture	Improved and collaborative management
G3				✓			✓		
G4		✓							✓
G5									
G6									
G7	✓								✓
G8		✓		✓✓✓					
G8									
G9									
G10	✓						✓		✓
G11									
G12				✓			✓✓		✓
G13				✓					
G14									
G15									
G16									
G17						✓	✓✓		✓
G18				✓					✓
G19									
G20	✓								✓
G21	✓					✓	✓		
G22							✓		
G23	✓	✓		✓✓✓			✓	✓	
G24						✓	✓		
G25	✓						✓		
G26	✓✓		✓		✓		✓✓	✓	✓✓
G27									
G28				✓					
G29	✓	✓					✓✓		
G30									
G31									
G32									
G33	✓			✓					

Interviewee code	Need for enhanced awareness	Public willing to change	Lack of trust in government	Need for more responsibility	Education and information	Personal attachment to coast	Consumer behaviour	Island/ heritage culture	Improved and collaborative management
G34									✓
G35									
G36									
G37							✓		
G38							✓		
G39									
G40									
G41	✓				✓				
G42									✓✓✓
B1	✓					✓	✓✓✓		✓✓
B2							✓		
B3							✓✓		
B4							✓		
B5	✓			✓✓		✓			✓
B6		✓		✓		✓	✓✓		
B7	✓				✓				✓
B8									✓
B9									
B10									
B11	✓✓✓✓		✓		✓✓		✓		
B12				✓					✓
B13	✓✓			✓	✓	✓	✓✓	✓✓	✓✓
B14									
B15	✓			✓			✓✓		✓✓
B16				✓			✓✓✓		✓
B17	✓	✓		✓			✓✓		✓
B18						✓	✓		✓✓✓
B19							✓✓✓	✓✓	✓
B20								✓	
B21									
B22				✓				✓	✓

Interviewee code	Need for enhanced awareness	Public willing to change	Lack of trust in government	Need for more responsibility	Education and information	Personal attachment to coast	Consumer behaviour	Island culture	Improved and collaborative management
B23				✓✓		✓	✓✓		
B24						✓		✓	
B25									
B26									
B27								✓	
B28	✓✓					✓	✓✓		✓
B29									
B30									
B31									
B32									
B33				✓			✓✓✓		
B34									✓
B35			✓	✓		✓	✓		✓✓
B36									
B37					✓✓	✓			
B38	✓								✓
B39				✓			✓		✓
B40									✓✓
B41	✓✓			✓	✓✓				✓✓
B42							✓		
B43							✓✓✓		
B44		✓		✓✓✓	✓✓	✓	✓✓✓		✓
B45	✓								✓✓
A1	✓✓✓	✓		✓				✓	✓
A2									
A3	✓✓			✓✓	✓		✓		
A4									
A5									
A6									
A7				✓			✓		✓
A8						✓	✓✓	✓	
A9									

Interviewee code	Need for enhanced awareness	Public willing to change	Lack of trust in government	Need for more responsibility	Education and information	Personal attachment to coast	Consumer behaviour	Island culture	Improved and collaborative management
A10				✓					✓
A11				✓			✓		✓✓
A12									
A13	✓	✓		✓✓	✓		✓		✓✓
A14	✓				✓	✓✓			
A15	✓				✓				✓
A16	✓				✓				
A17		✓					✓		
A18				✓			✓		
A19	✓	✓✓	✓	✓			✓		✓
A20		✓		✓✓		✓	✓		✓
A21				✓		✓	✓✓		✓
A22			✓				✓		✓
A23						✓		✓	
A24				✓					✓
A25				✓				✓	
A26									
A27		✓					✓		
A28				✓✓					✓
A29				✓					
A30	✓	✓		✓		✓	✓		✓
A31	✓			✓✓		✓	✓		✓✓
A32		✓		✓		✓	✓✓		✓✓
A33	✓			✓					
A34									
A35	✓					✓			
A36									
A37		✓					✓		
A38		✓		✓		✓	✓		✓✓
A39							✓✓		✓
A40	✓✓			✓✓✓				✓✓	✓

Interviewee code	Need for enhanced awareness	Public willing to change	Lack of trust in government	Need for more responsibility	Education and information	Personal attachment to coast	Consumer behaviour	Island culture	Improved and collaborative management
A41	✓		✓			✓			✓✓
A42	✓	✓			✓				
A43									
A44	✓✓		✓	✓✓	✓		✓✓		✓
A45									
A46	✓			✓✓		✓	✓✓		✓✓
A47									
A48		✓	✓	✓				✓	✓
A49									
A50	✓			✓			✓		✓
M1	✓	✓		✓			✓✓		✓
M2	✓✓✓				✓				✓
M3	✓✓	✓	✓✓✓	✓	✓				✓
M4				✓					✓
M5				✓✓		✓		✓	✓✓
M6			✓✓	✓					✓
M7		✓✓				✓	✓		
M8	✓								✓✓✓
M9									
M10				✓			✓		
M11				✓		✓✓	✓		✓✓
M12	✓	✓		✓✓	✓	✓		✓✓	✓✓
M13				✓✓					✓
M14									
M15	✓	✓✓		✓✓		✓			✓✓
M16				✓		✓		✓	✓
M17				✓					✓
M18		✓	✓	✓✓		✓			✓
M19						✓			✓✓
M20		✓		✓✓			✓	✓	✓
M21	✓	✓		✓	✓	✓✓		✓	✓

Interviewee code	Need for enhanced awareness	Public willing to change	Lack of trust in government	Need for more responsibility	Education and information	Personal attachment to coast	Consumer behaviour	Island culture/ heritage	Need for improved and collaborative management
M22						✓			
M23							✓		
M24	✓		✓	✓✓		✓			✓
M25									✓✓
M26		✓		✓✓	✓✓	✓	✓		✓
M27						✓			
M28		✓		✓✓				✓	
M29	✓	✓			✓	✓			✓

