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Assessment of Coastal Recreational Activity and Capacity for Increased Boating in Cork Harbour.

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Executive Summary

The Coastal Research and Policy Integration (Corepoint - <http://corepoint.ucc.ie>) project aimed to demonstrate the benefits of taking an integrated approach to the management of coastal resources, while highlighting the important role of science in informing policy. In bridging the science-policy gap, Corepoint facilitated closer links between local authorities and research centres through the formation of Expert Couplets. In Cork Harbour the Expert Couplet comprised the Coastal and Marine Resources Centre and the Planning Policy Unit of Cork County Council working in partnership to examine coastal issues.

In Ireland, the coastal and marine based leisure sector is experiencing growth in terms of levels of participation and investment. Cork Harbour, situated on the southern coast of Ireland, is one of the largest coastal water bodies in Ireland. Cork Harbour is analogous with many other coastal locations in that it's a multi-resource and multi-use environment. Coastal and marine based recreation is one of the primary human uses of Cork Harbour. This study aimed to provide baseline information on coastal recreational activities in Cork Harbour, providing insights on the potential issues, interactions and relationships concerning the use of Cork Harbour as a recreational resource. Due to the importance of boating as a key recreational activity in Cork Harbour this study also investigated the capacity of the harbour to accommodate increased levels of boating activity.

Considering the complex environment that is Cork Harbour, the recreation assessment combined both quantitative and qualitative survey methods. A literature review was conducted to identify elements of good practice in marine and coastal recreation management including tools that could be applied to the situation in Cork Harbour. An inventory of recreational users, activities and facilities was compiled. A user perception survey was conducted in 2005 and 2006 in seven locations within Cork Harbour to establish the attitudes and perceptions of recreation users in terms of: management and facilities; criteria that influence the recreational experience; and interactions with other users (recreation and non-recreation) of the harbour. Information from the inventory was incorporated into a Geographical Information System (GIS) which facilitated visualisation of the spatial distribution of recreation features. Finally, using the good practice guidelines to emerge from the literature review an assessment of boating capacity for Cork Harbour was undertaken.

Results showed that people utilise Cork Harbour for an array of recreational activities ranging from the more popular pursuits such as walking, swimming and boating to smaller interest groups participating in more specialised activities such as windsurfing. Issues highlighted include: demand for further amenities and facilities; limited capacity in terms of remaining moorings and berths; and, in certain circumstances the need to better enforce regulations governing activities on the water. The user perception survey revealed a harbour wide demand for facilities which improve access to the water and accommodate water based recreation. Issues such as overcrowding and conflict with other recreational users did not emerge as key concerns. However, this situation may change should Cork Harbour experience higher levels of recreation use, and competition for space and access becomes more acute. An appropriate management framework should be developed for Cork Harbour, which is capable of responding to changes in user interactions under different scenarios.

Emerging from this study is an improved understanding of the current coastal recreational situation in Cork Harbour. The baseline data established in this study are an important first step in understanding the recreation and leisure sector in Cork Harbour, and can contribute to the development of an integrated management strategy for Cork Harbour. Indeed, the gathering of baseline data on recreation in Cork Harbour had the added value of helping to identify key stakeholders who would provide input to any integrated management plan developed for the harbour.

1. Introduction

1.1 Objectives

The objectives of the study were:

- To provide baseline information on coastal recreational activities in Cork Harbour, providing insights on the potential issues, interactions and relationships concerning the use of Cork Harbour as a recreational resource.
- To investigate the capacity of the harbour to accommodate increased boating activity, in recognition of the importance of boating as a key recreational activity in Cork Harbour.

For the purpose of this study 'coastal recreation' is interpreted as participation in recreational activities within the coastal environment. These activities can be land or water-based but are associated with and/or depend on a coastal location.

1.2 Introduction to COREPOINT Project

Coastal Research and Policy Integration (COREPOINT) is an Interreg IIIB project, which commenced in November 2004 and is scheduled to run until mid-2008. The project addresses concerns related to mutual coastal problems across North West Europe (NWE) and aims to connect science and policy for advancing support for Integrated Coastal Zone Management (ICZM).

The COREPOINT partners comprise research centres, local authorities and coastal networks from Ireland, UK, France, Holland and Belgium. Within COREPOINT working couplets were established between local authorities and research groups; research undertaken is dictated by the coastal management needs as identified by the local authority. These pairings (five in total) of local authorities with research centres at various geographic locations within each partner country are termed the COREPOINT Expert Couplet Nodes (Cummins et al., 2006).

In Cork Harbour the local Expert Couplet Node consists of the Planning Policy Unit of Cork County Council and the Coastal and Marine Resources Centre (CMRC), University College Cork. This Expert Couplet builds links between Cork County Council and the CMRC by engaging in research that is tailored to address the planning and management issues in Cork Harbour, in the context of the ICZM principles of best practice. More information on ICZM principles, related policies and legislation can be found on the ICZM-Ireland website at <http://iczm.ucc.ie> and on the COREPOINT project website <http://corepoint.ucc.ie>.

1.3 Introduction to Cork Harbour

Cork Harbour (51° 53.94' N, 8° 27.68' W) is one of the largest coastal water bodies in Ireland and the most industrialised estuary in the State (Johnson et al. 2002). Cork Harbour extends from the quays of Cork City to the harbour mouth at Roches Point. The harbour is bordered by the towns of Passage West, Cobh, Crosshaven and Monkstown (Figure 1). The towns of Carrigtwohill, Middleton and Carrigaline are situated in the immediate hinterland. Smaller settlements along the harbour's shores include Whitegate, Aghada, East Ferry and Ringaskiddy.

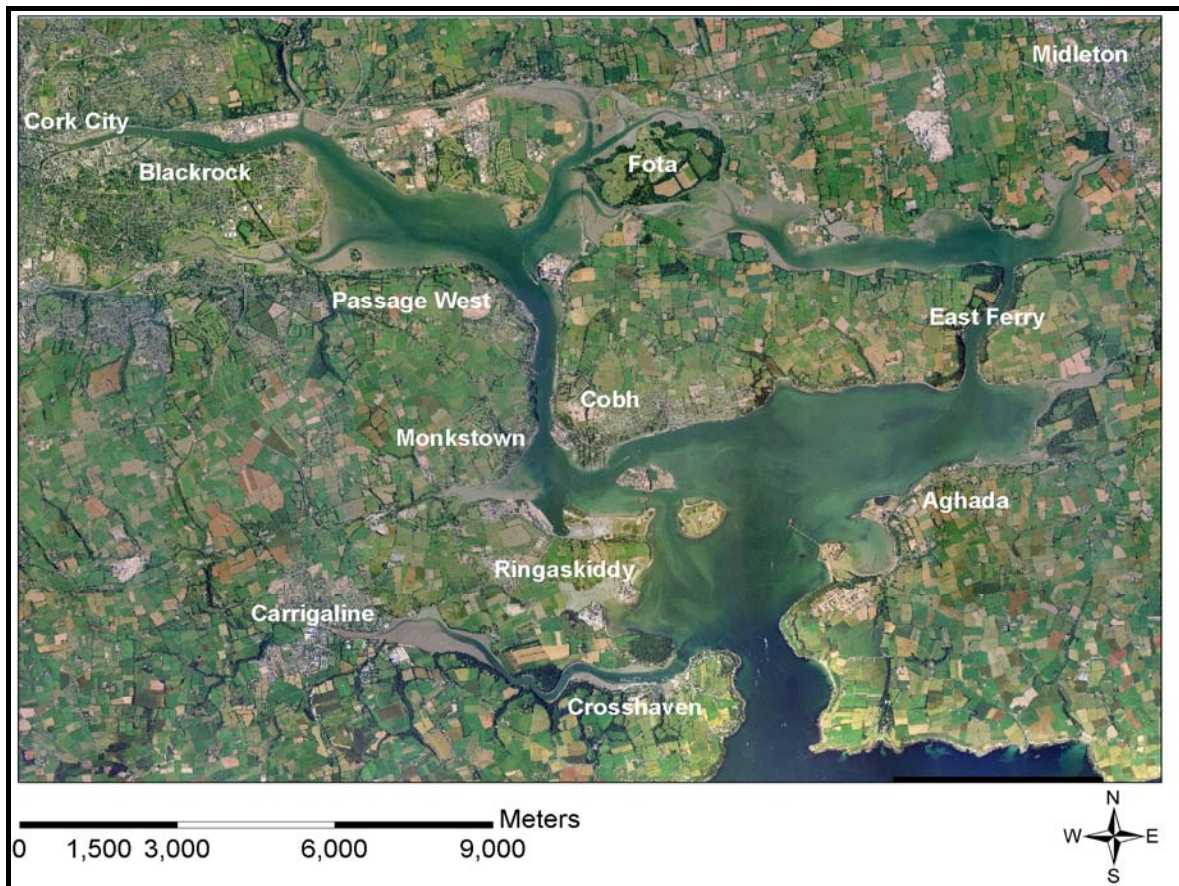


Figure 1: Aerial view of Cork Harbour showing key residential settlements.

The harbour area, studied in this report, falls into three main landscape character types described by Mosart Consultants as; the 'City Harbour and Estuary', the 'Indented Estuary Coast' and a small part including the 'Broad Fertile Lowland Valleys' (Cork County Council, 2003). A pilot study investigating coastal landscape characterisation of Cork Harbour in more detail is currently being undertaken as part of the COREPOINT project (Morrissey et al., 2007). Cork Harbour includes mixed rural and urban settings, as well as mixed land uses, e.g. industrial, residential, recreational and agricultural. Additionally, the harbour region contains a variety of habitats, e.g. shallow cliffs, intertidal mudflats, reed beds, shingle, rocky foreshores, and islands. This natural harbour provides a sheltered environment with deep-water channels capable of accommodating shipping and boating activities. The area contains many man-made and natural features that give the harbour its unique and historic character (Cummins & O'Donnell 2005). The large expansive harbour can be divided into the City Harbour and the Lower Harbour area.

Cork Harbour is analogous with many other coastal locations in that it is a multi-resource and multi-use environment. The level and diversity of activities operating within the confines of the harbour is exemplified by the presence of numerous sectors (of regional and national importance) and their associated infrastructure, including:

- **Defence** – Haulbowline Island, situated in the heart of the Lower Harbour, is the operational headquarters of the Irish Naval Service.
- **Education** – The National Maritime College of Ireland is sited on the shores of Cork Harbour.
- **Industry** - The Harbour's coastal zone and immediate hinterland is heavily industrialised, primarily by the pharmaceutical sector.
- **Commerce** - The Port of Cork provides lo/lo and ro/ro shipping services in the harbour. There is also a cruise liner berth at the Cobh and Ringaskiddy quays.

- **Ecology** – In addition to being a Ramsar wetlands site of international importance, Cork Harbour is also designated as a Special Protected Area (SPA) and a Special Area of Conservation (SAC) under the EU Birds and Habitats Directives respectively.
- **Heritage** – Cobh was a port of departure for emigrants in the period 1848-1950. The harbour also has a rich boat building and military history (e.g. artillery barracks at Spike Island). Two landmark historical hilltop forts, Camden and Carlisle, are situated at the harbour mouth (Lyons & O’Suilleabhain 2004).
- **Recreation** – Cork Harbour supports numerous water-based activities and contains a number of boating, angling charters, harbour cruise companies and yacht clubs.

1.3.1 Recreation and Boating in Cork Harbour

The waters in Cork Harbour provide opportunity for recreational boating and racing events giving shelter from unfavourable weather conditions. Cork Harbour has a long tradition of recreational boating, being home to the oldest yacht club in the world (St. Leger 2005). The harbour hosts the bi-annual Cork Week, an important European sailing regatta (Shields et al. 1997) as well as the annual International Deep Sea Angling Festival. The number of cruise liners berthing in the harbour has risen from 18 in 2000 to 36 in 2006, bringing approximately 35,000 passengers into the area per year (C. Dineen, Port of Cork, *pers. comm*). Recreation in and around Cork Harbour is not only water-based; many locals and visitors alike enjoy the atmosphere of the towns and villages around the harbour. Furthermore, the natural assets of the harbour entice people to walk and cycle along the shore.

2. Literature Review

2.1 Sustainable Tourism and Recreation

Tourism is now one of the global engines of economic development (WTO 2004) and a fundamental component of many nations Gross National Product (GNP) (McCool et al. 1998). Although the industry is not dissimilar to any other in that it is susceptible to the vagaries of the global economy, it has experienced continued growth over the last decade (Christ et al. 2003; McCool & Lime 2001; Dunne & Leslie 2000). Every year, more people are in motion than ever before in history (WTO 2004).

With good planning and management, tourism can be a positive force, bringing benefits to destinations and communities. However, if poorly planned and managed, tourism can be a catalyst for environmental degradation and deterioration in the quality of life of coastal communities (Tzatzanis et al. 2003; Dunne & Leslie 2000). It is clearly in the interest of the tourism sector to maintain and sustain the basis for its prosperity, the destinations for tourism.

Although the terms 'tourism' and 'recreation' are often used synonymously within the literature, they do represent different concepts. Recreation is an activity that entertains, amuses or stimulates and is as such an important aspect of tourism. Recreation can also be the main driving force for people to travel to a specific location to take part in certain activities associated with that location. However, for any given locality residents can participate in the same recreational activities as tourists. In this case, both groups engage in activities that potentially impact the natural, social and cultural environment.

Literature sources provide a considerable amount of definitions for *sustainable* tourism but not for sustainable recreation. The term 'sustainable tourism' is derived from the more general concept of 'sustainable development', the former being a specific term used to denote the application of the latter in the context of tourism (Garrod & Fyall 1998). Sustainability principles refer to the three pillars of sustainable development, namely environmental, economic and socio-cultural aspects. For any activity, a suitable balance must be established between these three categories to guarantee long-term sustainability. Sustainable tourism has been defined as:

.....tourism that is dependent upon a given stock of natural, constructed and socio-cultural attributes...if sustainable development of these resources is to occur they must be managed in a way that allows the economic needs of industry and the experiential needs of tourists to be met while at the same time maintaining cultural integrity, preserving or enhancing biological diversity, and maintaining life support systems (Harris & Leiper 1995).

.....tourism which is developed and maintained in an area (community, environment) in such a manner and at such a scale that it remains viable over an indefinite period and does not degrade or alter the environment (human and physical) in which it exists to such a degree that it prohibits the successful development and well being of other activities and processes (Butler 1993).

Both tourism and recreation are human activities with potential to impact their surrounding environments. For that reason, **the principles of sustainable tourism are equally applicable to recreation.** Following the Johannesburg Summit on Sustainable Development, the World Tourism Organisation (WTO) clarified that sustainable tourism should:

- Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity;
- Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance;
- Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-

earning opportunities and social services to host communities, and contributing to poverty alleviation (WTO 2004).

Sustainable tourism requires the informed participation of all relevant stakeholders, as well as strong political leadership to ensure wide participation and consensus building (Dalal-Clayton & Bass 2002, WTO 2004). Achieving sustainable tourism is a continuous process and it requires constant monitoring of impacts, introducing the necessary preventive and/or corrective measures whenever necessary. Sustainable tourism should also maintain a high level of tourist satisfaction and ensure a meaningful experience to the tourists, raising their awareness of sustainability issues and promoting sustainable tourism practices (WTO 2004; O'Mahony et al. 2006).

2.1.1 Coastal Tourism and Recreation

Coastal tourism and recreation involves travelling to the coastal environment primarily for leisure purposes. It is influenced by the proximity to the coast and the attraction and availability of coastal resources. Coastal recreation encompasses activities in the coastal environment that are undertaken by visitor and resident recreational user groups. Both activities are closely interlinked and are associated with and/or dependent on the coastal locality.

Coastal tourism as an industry and pastime began in the 19th century, and has since escalated in terms of growth and impact in a non-linear manner (Davenport & Davenport 2006). The continued attraction of the coast to tourists has seen a concurrent continuation of investment into coastal areas as tourism locations (JHCS 2000). Coastal areas were identified as the preferred holiday destination for 63% of European tourists (EC 1998, EC 2006).

The growing popularity of coastal tourism and recreation is a result of a combination of factors, including the original attractions of coastal areas like clean physical environment, seafood, beaches and scenic views, as well as the development of affordable and faster transport to the desired destinations. Furthermore, as a consequence of technological progress more adventurous coastal and marine recreational activities are available and increasing in demand such as scuba diving (Davenport & Davenport 2006). In the UK, water-based recreation has expanded in previous decades because new recreational activities such as kite boarding, waterskiing and the use of 'Personal Watercraft' have developed (Whitfield & Roche 2006). As mentioned earlier coastal recreational activities are available to both the tourist as well as the local resident, however studies have shown that the participation time in these activities can be different for these two recreational user groups. Poloméa et al. (2005) showed that tourists travelling to Lido di Dante in Italy value the local beach recreational activities highly in the spring and summer season during their holidays, while residents of the area placed greater value in undertaking coastal recreational activities during the autumn and winter season, principally because of less congestion (Poloméa et al. 2005).

In general, coastal tourism and recreation is thought to promote economic development and considered to have less negative impacts compared to other activities in many coastal areas such as fishing, logging or farming (Thielea et al. 2005). However, this assumption is challenged when reflecting on the impacts that this industry can have on the natural resources of the coastal and marine environment. Growing infrastructure, such as the construction of seaside resorts, roads, marinas and jetties, has resulted in habitat fragmentation and the loss of biodiversity in many coastal and marine areas (Davenport & Davenport 2006). At local and regional scales, a growth in coastal tourism can exacerbate problems such as the erosion of local beaches (Phillips & Jones 2006) through the increase of coastal recreation at those locations. Frihya et al. (2006) showed that the Red Sea coastal ecosystem suffers from the impacts of both the creation of resort facilities for tourists and unsuitable design of coastal recreational facilities such as hard structures and earth embankment jetties. These facilities can block littoral currents and consequently change the depositional-hydrodynamic regime, which in turn can set off down-drift erosion to the adjacent beaches, deteriorating water quality and changes of the marine biota (Frihya et al. 2006).

The range and scale of impacts associated with the rapid growth of the coastal tourism and recreation sector highlight the need to apply the principles of sustainable development to protect the resources that attracted recreational users in such high numbers in the first place. From a tourism and recreation perspective, coastal degradation is not appealing. The sustainable use of coastal areas for tourism and recreation can incorporate nature conservation (Van der Meulen & Salman 1996) local land use planning, monitoring of activity levels, regulation and provision of guidelines.

2.1.2 Measuring Sustainable Tourism and Recreation

A number of tools can be employed in developing a strategy and/or action plan for sustainable coastal tourism and recreation, e.g. environmental auditing (Ding & Pigram 1995), provision of guidelines (O' Mahony & Cummins, 2005), eco-labelling and assessment of carrying capacity (Eucc 2005), indicators (WTO 2004) and concepts such as Limits of Acceptable Change (LAC) and Recreation Opportunity Spectrum (ROS) (Devlin & Meredith 2001; Stynes & Peterson 1995). In reality, a combination of the aforementioned methods and tools can be more effective than using any one in isolation. For example the ROS methodology allows the manager/planner to obtain a comprehensive understanding of the recreational sector within his jurisdiction, and the information extracted from this inventory can be used to drive indicator development and assess carrying capacity. The next section outlines some of the above-mentioned methods and tools in greater detail.

2.2 Recreation Opportunity Spectrum

An inventory of what activities currently exist and what information is available on these activities is required in order to develop a comprehensive understanding of the coastal recreation system. According to More et al. (2003), the Recreation Opportunity Spectrum (ROS) is one of the most powerful recreation inventory tools available. ROS was originally formulated in the late 1970s for use on public lands in the United States, but has since been utilised in other countries (New Zealand, Department of Conservation 1993; Japan, Yamaki & Shoji 2004) and adapted for use in aquatic environments (WROS – Water Recreation Opportunity Spectrum) (Haas et al. 2004; Department of Conservation 1993).

2.2.1 ROS Concept

Recreation opportunity is "the availability of a real choice for a user to participate in a preferred activity within a preferred setting, in order to realise those satisfying experiences which are desired" (US Department of Agriculture, Forest Service 1982). ROS offers a framework for managing recreation opportunities based on a combination of physical, biological, social, and managerial factors that, when combined, provide the basis for improved decision-making by planners and managers (Clark & Stankey 1979; Haas et al. 2004).

The recreation spectrum comprises a classification defined with respect to the combination of the activity, setting, and experience criteria. Implementing the ROS will produce a series of inventory maps based on multiple criteria, which are contained within the categories of settings (physical, social and management), activities (e.g. boating, coastal walks, surfing) and experiences (e.g. tranquillity, enjoyment, training, interact with natural environment) (Clark & Stankey 1979; More et al. 2003; Haas et al. 2004).

The information gleaned from the inventory process, can amongst other things, identify data gaps as well as data availability upon which any carrying capacity and indicator development is based. Indicators are dependent on data availability (van Buuren et al. 2002) thus it is essential that managers and planners know what information is currently at their disposal and where they should allocate resources in terms of data collection. In terms of recreationists (i.e. users), the creation of user-friendly water-based tourism resource maps and databases can help address current information deficits that hinder the sustainable growth of the sector (Shields & Wilkinson 2003).

2.3 Limits of Acceptable Change

The Limits of Acceptable Change (LAC) approach is used to manage visitors in protected areas. The concept was developed in the early 1980s for the purpose of dealing with growing visitor impacts in the U.S. National Wilderness Preservation System (McCool 1989). LAC is a result of the challenges associated with implementing the recreation carrying capacity concept in the management of U.S. national parks and protected areas (McCool 1996). The recreation carrying capacity model did not transfer easily into visitor management for protected areas because it mainly focused on impacts associated with visitor numbers and did not account for the different types of recreational uses in these areas. The LAC approach recognises that impact is not only dependent on visitor numbers but also on the type of human uses of an area (McCool 1996).

2.3.1 LAC Concept

The LAC planning system allows changes in the ecosystem to happen based on the principle that changes are a part of every natural system. The planning system determines how much change is acceptable for the protection of the natural system. Management actions regarding visitor numbers and activities for an area are based on the monitoring results (McCool 1996). The LAC planning system includes four major components (Stankey et al. 1985):

- The specification of acceptable and achievable resource and social conditions, defined by a series of measurable parameters;
- An analysis of the relationship between existing conditions and those judged acceptable;
- Identification of management actions necessary to achieve these conditions; and
- A program of monitoring and evaluation of management effectiveness.

These components are extended into nine steps to achieve a comprehensive implementation of the LAC principle in protected area management. In most protected areas these nine steps fit into existing planning systems because the concept was designed for this purpose, however this might not be the case in other areas and planning processes. The main goal for planners is to understand the principle of each step and how it fits into the overall planning process so that steps can be modified if it is necessary (McCool 1996).

2.4 Carrying Capacity

The carrying capacity concept has been in use in recreational planning in coastal areas since the early 1960s (ESCAP 1995). The concept of recreational carrying capacity evolved from a need to better understand the relationship between population and the natural environment in a recreation context (McCool & Lime 2001). Effective formulation and implementation of realistic strategies to avoid tourism pressure on the environment in a locality are often based on the estimation of carrying capacity, though this does come with problems (see 2.4.2). As a region experiences increased levels of recreation use it will undergo subsequent environmental and social changes. Increases in use levels are often accompanied by proposals and pressure for further infrastructure to cater for the development. Coastal planners and managers must make decisions on the capacity planning requirements for a particular area and on the capacity of environment and society to accommodate such changes (Chilman et al. 2000).

2.4.1 Definitions

The notion of carrying capacity has evolved and many definitions have been put forward to capture and convey the concept.

- ... *the number of individuals who can be supported in a given area within natural resource limits, and without degrading the natural social, cultural and economic environment for present and future generations (Carrying Capacity Network 2001).*
- ...*the number of user unit use periods that a recreation/tourist area can provide each year without permanent natural/physical deterioration of the area's ability to support recreation and without appreciable impairment of the visitors recreational experience (Coccosis & Parpairis 1992).*
- *the growth limits an area can accommodate without violating environmental capacity goals (Ortolano 1984).*

2.4.2 Conceptual and Implementation Issues

Although carrying capacity is widely acknowledged and accepted amongst planners and decision-makers, there is little evidence of practical application (EU 2001; Clivaz et al. 2004) and examples of best practice are not widely established. To make carrying capacity effective as a tool it is necessary to translate the concept into action and not as a scientific concept (Buckley 1999). Of equal importance is the ability to express the concept in terms of an unambiguous standard measure in order to facilitate tourism planning (Simón et al. 2004).

Certainly in Europe, there is limited experience with the successful application of carrying capacity in the management of tourist destinations. This probably reflects the ambiguities involved with the concept and/or the difficulties in operational application. Furthermore, unlike in the United States, in many European countries there is no policy in place requiring the establishment of recreational carrying capacities. Another reason could be that overall, there is little experience on the ground with managing tourist destinations and therefore with the use of tools and methods for that purpose (EU 2001).

Early definitions of carrying capacity had a one-dimensional perspective (i.e. biology or sociology) and focused on the identification of a threshold or limit expressed as a numerical value (EU 2001; Farrell & Twining – Ward 2004). Coastal systems are spatially and temporally dynamic and the identification of a static numerical value will not always adequately reflect the changing nature of coastal processes, populations, societies and economies (Simón et al. 2004). However, very few examples exist for establishing recreational carrying capacity on multiple-use environments, e.g. coastal areas (Jackson & Leavers 2000).

Recent interpretations underline the need for a multi-dimensional approach combining quantitative and qualitative aspects. Thus the objective has shifted from a uni-dimensional and purely numerical focus (e.g. how many) to incorporate environmental, social and political components. The realisation that different components of a coastal system are to be considered when attempting to assess carrying capacity implies that for any one area, there can be multiple carrying capacities; no single capacity can be assigned to an entire area (McCool & Lime 2001). Additionally, for any region or system the carrying capacity will develop over time and with the growth of tourism (Saveriades 2000).

2.5 Recreational Boating Carrying Capacity

In terms of practice and case study material, the trends and issues described above also apply to recreational boating capacity. In the U.S. there are examples where recreational boating carrying capacity has been estimated for lakes; however this practice is not as widespread in Europe. Furthermore, the U.S. studies seem to be largely restricted to lakes and do not include other water bodies. Progressive AE (2005) point out that the numbers of boats on lakes are not conclusive because every lake is different and crowding perceptions of users from different areas vary. So far, no single boating density standard has been established for the United States. However, research has shown that negative impacts from recreational boating are more likely with a growing density of boats on a water body (Progressive AE 2005). Many recreational boaters recognise that in relation to public safety matters, boating capacities of water bodies can be limited, but there are often issues regarding the willingness of users to confine or alter their activities (Nielson 2002). Recreational boating carrying capacity is one tool that can help to make decisions in terms of multi-use conflict, environmental and overcrowding issues. However, this tool should not be the only determining factor to evaluate management options for an area (Progressive AE 2005).

2.5.1 Estimating Boating Carrying Capacity

Progressive AE (2005) define recreational boating carrying capacity by the number of boats operating on a lake without adversely affecting public safety, visual satisfaction as well as environmental quality. Criteria including: lake use characteristics; usable lake area; boating density; lake use rate; and perceptions of crowding can be incorporated into the estimation of recreational boating carrying capacity (Bosley 2005).

Bosley (2005) suggests calculating the usable lake area for boating by determining the difference between the total lake area and safety/environmental protection zones; however this can be adjusted to local requirements for the water body in question. Estimates of recommended boating densities (see Table 1) differ across environments but can be used as guidelines. The lake use rate is defined after Bosley (2005) as the proportion of moored boats on a lake and signifies the estimate of boats on the water body at peak use period. To calculate the actual carrying capacity the optimal number of boats is determined by dividing usable lake area (usable water body area) with the optimum boat density. The carrying capacity is then calculated by dividing the number of boats at peak use time (lake use rate) with the optimum number of boats on that water body. If the percentage at peak use is >100 the recreational boating carrying capacity for this area is exceeded (Bosley 2005).

Table 1: Recommended densities for boats and other watercraft to emerge from different studies.

Source	Suggested Density	Boating Uses
Ashton (1971)	5 to 9 acres/boat	All uses
	4 to 9 acres/boat	All uses
	6 to 11 acres/boat	All uses
Kusler (1972)	40 acres/boat	Waterskiing – all uses combined
	20 acres/boat	Waterskiing
	15 acres/boat	Coordinated waterskiing
Jaakson et al. (1989)	20 acres/boat	Waterskiing and motorboat cruising
	10 acres/boat	Fishing
	8 acres/boat	Canoeing, kayaking and sailing
	10 acres/boat	All uses combined
Wagner (1991)	25 acres/boat	All recreational activities
Warbach et al. (1994)	30 acres/boat	All motorised uses
Nielson (2002)	10 acres/boat	General - depending on speed and size
Radomski & Schultz (2005)	20 acres/boat	High-speed watercraft
	9 acres/boat	Low-powered watercraft

2.6 Summary

From the literature a number of key factors emerge, which influence both the assessment of coastal recreation and tourism, and measures to plan and manage the sector in a sustainable fashion:

- The coastal recreation and marine leisure sector is currently undergoing indigenous and international growth, this trend will pose challenges for the sustainable management of water-based activities in coastal locations.
- Participation in coastal recreation involves residents and visitors / tourists; planning and management for coastal recreation will need to incorporate the impacts, needs and activity demands of both user groups.
- The coastal environment is what primarily attracts recreationists, thus measures to ensure the quality of the environment is maintained or improved are an essential component of planning and management for sustainable recreation in any given location.
- In planning and managing for sustainable tourism and/or recreation a combination of tools and methods is often more effective than using a uni-dimensional approach.
- In multi-use and complex environments such as coastal regions the use of quantitative and qualitative data within a multi-dimensional approach will provide the coastal manager and planner with a more holistic impression of the capacity levels for a particular coastal area.
- Of the tools available to coastal planners and managers, all rely on the availability of rigorous and reliable information, e.g. inventory, physical data sets, economic trends, for a particular setting or location.

- Coastal environments are spatially and temporally dynamic, and in this instance carrying capacity may be represented best as a scale rather than a static numerical value, which may not adequately reflect the dynamism of the environment.
- Carrying capacity for an area or activity is one component that can contribute to an overall planning and management framework for sustainable recreation; it should not be the only decisive factor in management and planning.

3. Methodology

Following the review of research methodologies for assessment of recreation in the coastal environment, a multi-faceted approach was developed for Cork Harbour; using both quantitative (e.g. inventory) and qualitative (e.g. questionnaire survey) data sources. The combined methodology comprised three main components: (i) an inventory of available baseline data on recreational activities in Cork Harbour; (ii) a questionnaire survey on recreational activities, facilities and associated user perceptions and attitudes in the study area; and (iii) an estimation of the recreational boating carrying capacity. Throughout the study, Geographical Information System (GIS) was used to collate, analyse, map, and visualise data for Cork Harbour.

3.1 Inventory

The inventory was compiled to establish baseline data on recreation in Cork Harbour with a focus on marine activity. The inventory incorporated information on all the access points to the water. This information was generated by the CMRC in 2004 using a handheld GPS (Geographical Positioning System) and data logging technology. Information on marina and boatyard storage, estimated ratio of sailing to motor boats, and estimated average boat size was collected through personal communication with senior staff members or owners of the marinas and boat yards (see Appendix 2).

Information on the location of moorings, numbers of boats on moorings, boat sizes and types of boats was acquired through analysis of the Port of Cork (POC) database on moorings and boats in Cork Harbour. For each mooring, data on boat type and size are only available if the boat has a length of 6m or above, and from the period from 1998 to 2006. The number of boats below 6m was estimated by subtracting the number of boats at or above 6m from the total number of moorings. This calculation works on the assumption that all the moorings hold a boat, which is likely to be the case for Cork Harbour where moorings are left unused in only exceptional situations (N. Fitzgerald, Port of Cork, *pers. comm.*).

An investigation into the location and types of recreational clubs in the study area was undertaken to generate an overview of recreational activities including an indication of spatial distribution and/or concentration of these activities within the study area and the extent of membership. This information was obtained through e-mail and telephone contact with the individual club secretaries and/or key staff. Individuals involved in specific recreational activities, which do not operate on a club basis in Cork Harbour, such as windsurfing, were also contacted.

3.2 User Perception Survey

The User Perception Survey comprised a questionnaire and was undertaken in 2005 and 2006 to provide baseline data concerning the recreational use, the recreational facilities and associated user perceptions in Cork Harbour.

3.2.1 Questionnaire Development and Sampling

Trial questionnaires were conducted in Kinsale, Co. Cork (Brosnan, 2005). Kinsale was selected for the trial questionnaires, as it has a similar setting to Cork Harbour and provided a similar sample to that expected from the study area. The final version of the questionnaire comprised closed and open-ended questions, using a scaled format in certain instances. Minor amendment was made to the questionnaire in 2006 to introduce a scaled response for satisfaction with recreational facilities. Data gathered as a consequence of these amendments will be specifically indicated in the results section. A copy of the questionnaire is included in Appendix 1. Seven areas within the harbour region were chosen as sampling points to cover the spatial extent of Cork Harbour (Figure 2). The sites chosen were: Blackrock; Passage West; Monkstown; Crosshaven; Lower Aghada; East Ferry; and Cobh.

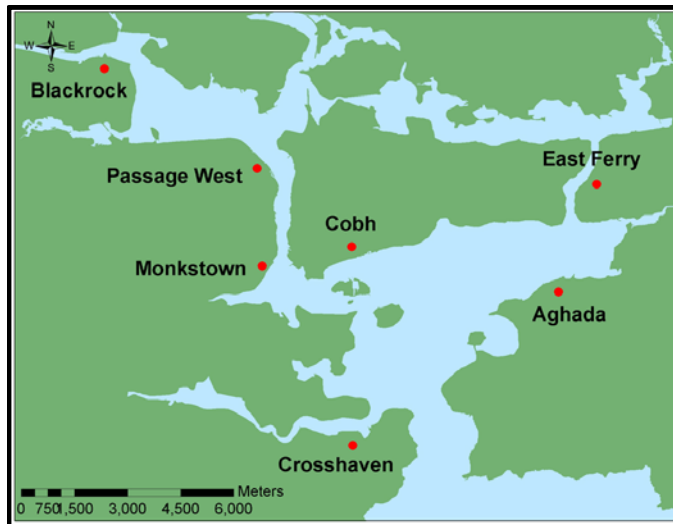


Figure 2: Map showing the distribution of the questionnaire sampling locations within Cork Harbour.

Sampling took place in 2005 and 2006 using random sampling methods targeting people indiscriminately at each of the sampling locations at different times. The survey was conducted to complete a minimum of 20 questionnaires at each sampling location in the summer of 2005. In 2006 the sampling methodology was adjusted to be more representative of the varying population sizes and densities of the survey locations. As a result, in 2006 each site was visited on a weekday morning and afternoon as well as a weekend morning and afternoon.

3.3 Recreational Boating Carrying Capacity

The recreational boating carrying capacity for Cork Harbour is estimated through an adjusted calculation used by Bosley (2005) (see Section 2.5.1).

3.3.1 The Usable Harbour Area

The usable boating area (Bosley 2005) was determined by substantiating an indicative pattern of use in order to establish a 'spill out area' for boating in Cork Harbour. The extent of the spill out area was established by calculating the potential distance a boat can travel from the harbour mouth during a day return under optimum conditions. In the absence of scientific studies on this subject, expert opinion, through consultation with the Irish Marine Federation, was used to ascertain a value for this distance. This usable boating area for Cork Harbour was established by mapping the spill out area and the area within Cork Harbour that is at least 5m deep in ArcGIS 9. The final area was then calculated utilising Arc toolbox 'calculating areas'.

3.3.2 Peak Use Rate Cork Harbour

The peak use rate (Bosley 2005) was estimated by determining the number of boats 'parked' on moorings, or in marinas and boatyards in the harbour. The scenario allows for the exceptional situation that all boats stored in Cork Harbour are operating on the water at the same time.

3.3.3 Boating Density Cork Harbour

The Cork Harbour boating density was calculated by dividing the usable boating area with the peak use rate ('number of boats parked').

3.3.4 Optimal Number of Boats

The optimal number of boats is calculated after Bosley (2005) by dividing the usable boating area with the optimum boating densities (suggested from the literature, see Section 2.5.1).

3.3.5 Carrying Capacity

The carrying capacity is determined by dividing the estimated number of boats at peak use with the optimal number of boats. The carrying capacity is exceeded when the percentage at peak use is greater than 100%.

4. Results

The results to emerge from the inventory, questionnaire survey of recreation user needs, perceptions and attitudes, and the boating carrying capacity for Cork Harbour are presented in the following sections.

4.1 Inventory

4.1.1 Access Points to the Water

Within Cork Harbour, access to the water is provided by slips, jetties, piers, pontoons, ladders and steps (Table 2). The distribution of each type of access point can be displayed using a GIS, e.g. slipways in Cork Harbour, (Figure 3).



Figure 3: Distribution of slipways in Cork Harbour (source; CMRC 2004).

Table 2: Access points to the water in Cork Harbour; source CMRC (2004).

Type of Access Point	Number
Slipways	86
Jetties (non-solid)	25
Pier (solid)	15
Pontoon	10
Ladder	53
Steps	95
Total	284

4.1.2. Location and Number of Boats, Boat Sizes and Types

4.1.2.1 Location and Capacity of Marinas and Boatyards

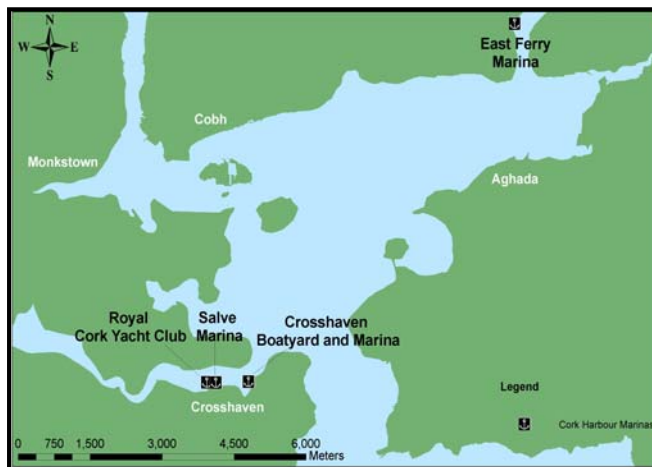


Figure 4: Map showing the locations of marinas in Cork Harbour.

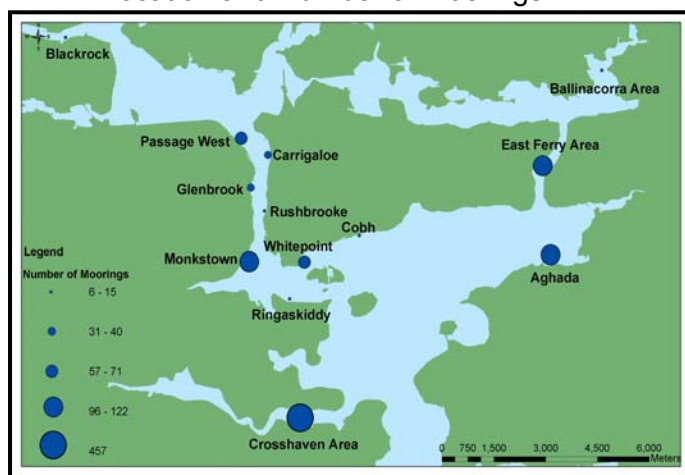
Marinas in Cork Harbour are concentrated in the Crosshaven area (Figure 4). Boat yards can be found in Monkstown, East Ferry and Aghada.

The capacity of each marina and boat yard in Cork Harbour is shown in Table 3. The maximum number of marina berths currently available in Cork Harbour is 515 and the maximum number of boats that can be stored in boat yards is 555.

Table 3. Details on capacity and storage space of marinas and boatyards in Cork Harbour.

Location	Marina / Boatyard	Boat Storage Capacity	Status
Crosshaven	Royal Cork Yacht Club Marina	Variable berth for 200-240	Full
	Salve Marina	Variable berth for 40-60	Full
	Salve Boat Yard	Space for ~45	Full
	Crosshaven Marina	Variable berth for 80-110	Full (in Summer)
	Crosshaven Boat Yard	Space for ~250	Full (in Winter)
	Castlepoint Boat Yard	Space for ~ 70	Full
East Ferry	East Ferry Marina	Variable berth for 80-105	Full
Aghada	Aghada Boat Yard	Space for ~ 90	45 available
Monkstown	Monkstown Boat Yard	Space for ~100	Full (in Winter)

4.1.2.2 Location and Number of Moorings



The Crosshaven area is the main centre of concentration for moorings in Cork Harbour (Figure 5). The waters adjacent to Aghada, East Ferry and Monkstown also contain a considerable quantity of moorings (Table 4) but densities are noticeably less in comparison to Crosshaven. Other areas that are important in terms of the number of moorings available to recreationists are Passage West, Whitepoint, Carrigaloe and Glenbrook (Table 4).

Figure 5: Map indicating the centres of mooring locations in Cork Harbour

Table 4: Number and location of moorings in Cork Harbour as of January 2007 (source; Port of Cork).

Location of Moorings	Number
Crosshaven Area [†]	457
Monkstown	122
East Ferry Area [*]	107
Aghada	96
Passage	71
Whitepoint	57
Glenbrook	40
Carrigaloe	31
Blackrock	15
Cobh	12
Rushbrooke	11
Ballinacorra Area [#]	10
Ringaskiddy	6
Total	1035

[†]Includes moorings at: Crosshaven (169); Drakes Pool (79); Currabinny (28); Lime Key East (13); Lime Key West (90); The Point (77); Owenboy River (1)

^{*}Includes moorings at: East Ferry North (47); East Ferry South (28); Rathcoursey (32)

[#]Includes moorings at: Ahanisk (1); Ballinacorra (2); Ballynoe (7)

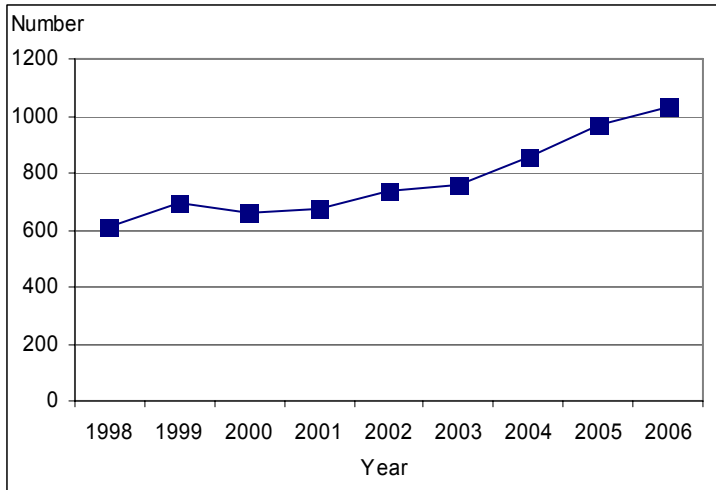


Figure 6: No. of moorings in Cork Harbour from 1998-2006.

With the exception of the year 2000, the number of registered moorings in Cork Harbour increased every year from 1998 to 2006. Figure 6 shows a gradual increase in the number of registered moorings in Cork Harbour from 1998 to January 2006. The average increase in the number of registered moorings per year has been 50. At present the harbour cannot accommodate a further increase in moorings (N. Fitzgerald, Port of Cork, *pers. comm.*)

4.1.2.3 Boat Sizes and Types

The Port of Cork registers details of boat size and type for all boats 6m or greater in length that are moored. The number of boats below 6m is determined from the remaining numbers of registered moorings (Section 3.1). The categories of boat include: motor boat; sailing boat; sailing boat with motor; and unpowered vessel (Table 5).

Table 5: Estimated average boat sizes and boat types from boats on moorings ≥ 6m in 2006.

Boat Type	Average Boat Size for boats ≥ 6m	Number of boats ≥ 6m
Motor Boat	8 m	71
Sailing Boat	8.32 m	34
Sailing Boat with Motor	8.62 m	232
Unpowered Vessel	8.5 m	2
Total	8.46 m	339

In 2006, 339 boats were above 6m in length. The number of boats below 6m = Number of boats on moorings – Number of boats ≥ 6m, = 1035 – 339 = 696. This equates to approximately 67% of boats on moorings.

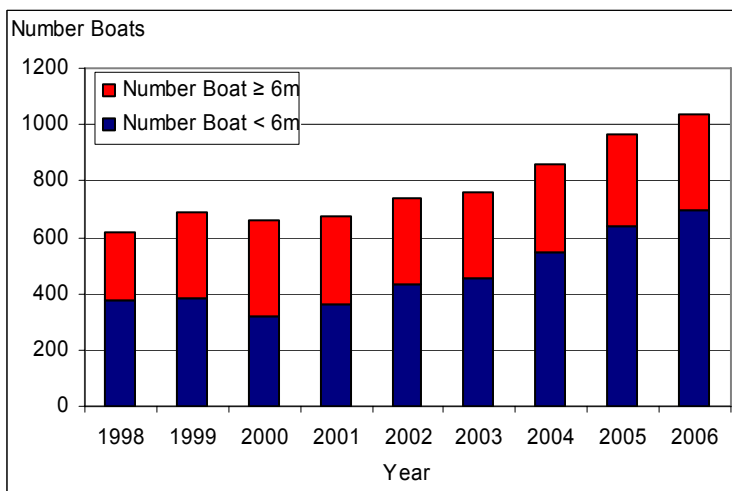


Figure 7: The proportion of boat size and numbers on registered moorings in Cork Harbour from 1998-2006.

Figure 7 illustrates the overall number of boats below 6m in length on registered moorings has increased since 2000, while the number of larger boats has not changed dramatically with the exception of 2000.

In 2000 the number of smaller boats decreased compared to the year before and the number of large boats increased, while the overall number of registered moorings decreased.

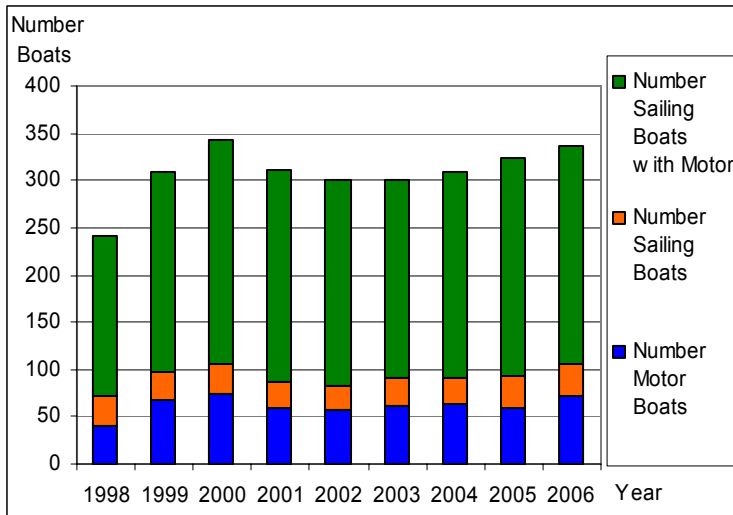


Figure 8: Changes in proportion of boat categories in Cork Harbour from 1998-2006.

From 1998-2006 sailing boats with a motor consistently outnumber all other boat types (Figure 8). For 2006, in the large boat category, sailing boats (motorised and non-motorised) outnumbered motorboats by nearly 4:1. This indicates a predominance of sailing over other types of boating activity in Cork Harbour, including recreational angling.

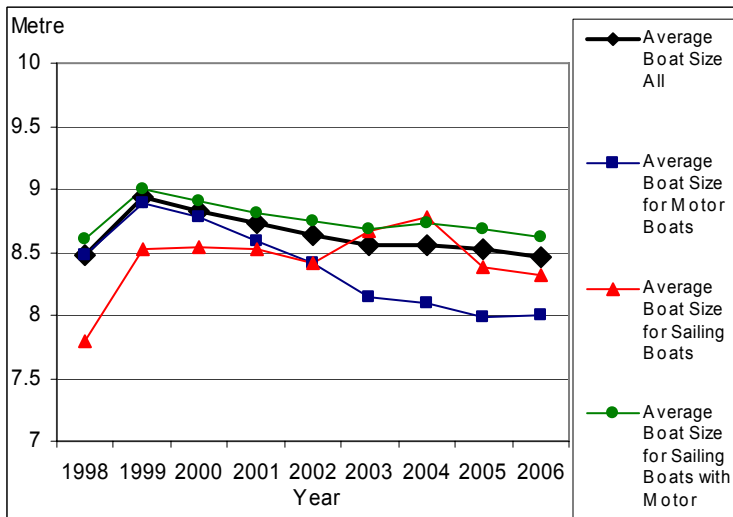


Figure 9: Average boat size per boat type in Cork Harbour from 1998-2006.

Figure 9 demonstrates that the average boat size of large boats lies between 8.4m and 9m.

The average boat size of large boats (>6m) has been decreasing slightly from 1999 to 2006. This is also reflected for the average boat size of large motor and sailing boats with motor.

Table 6: Estimated average boat sizes and ratio of boat types of boat yards and marinas.

Name	Estimated Average Boat Size (m)	% Ratio of Sailing to Motor Boats
Royal Cork Yacht Club	11-12	60:40
Salve Marina and Boat Yard	10	50:50
Crosshaven Boat Yard and Marina	9	80:20
Castlepoint Boat Yard	10	60:40
East Ferry Marina	9	50:50
Aghada Boat Yard Company	11	50:50
Monkstown Boat Yard	7-8	50:50
All	9.71	57:43

4.1.3 Recreational Activities and Clubs

Angling:

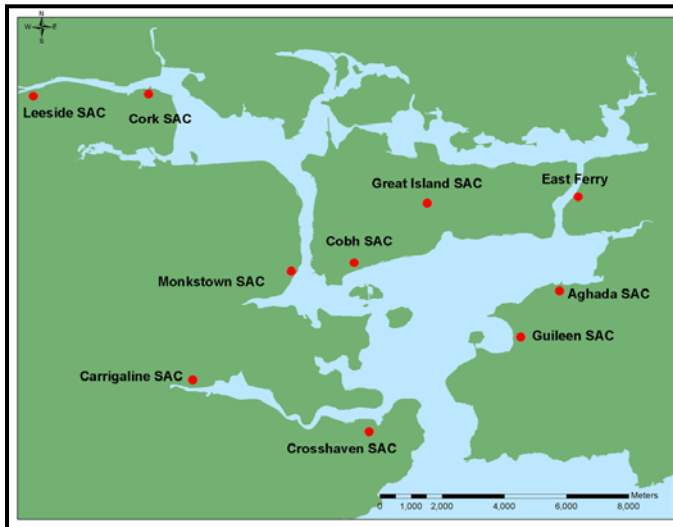


Figure 10: Map indicating locations of the angling clubs.

Ten angling clubs associated with the Irish Federation of Sea Anglers (Table 7) were identified and placed in the inventory of recreational activities for the Cork Harbour area. These clubs use areas in County Cork, including Cork Harbour, for their shore and/or boat-based competitions.

In general club members supplied their own equipment and if needed registered boats were rented. Many of the clubs met in local pubs or clubs associated with other sports, except for the Crosshaven Sea Angling Club (SAC), who have the use of their own clubhouse.

Table 7: Angling clubs indicating type of angling and number of members.

Sea Angling Club	Type of Angling	Number of Members
Leaside	Shore	14
Cork	Shore	27
Monkstown	Shore and boat	23
Carrigaline	<i>No information</i>	
Crosshaven	Shore and boat	55
Great Island	Shore	21
Cobh	Boat	25
East Ferry	Boat	10
Aghada	Shore and boat	25
Guileen	<i>No information</i>	

Sailing:

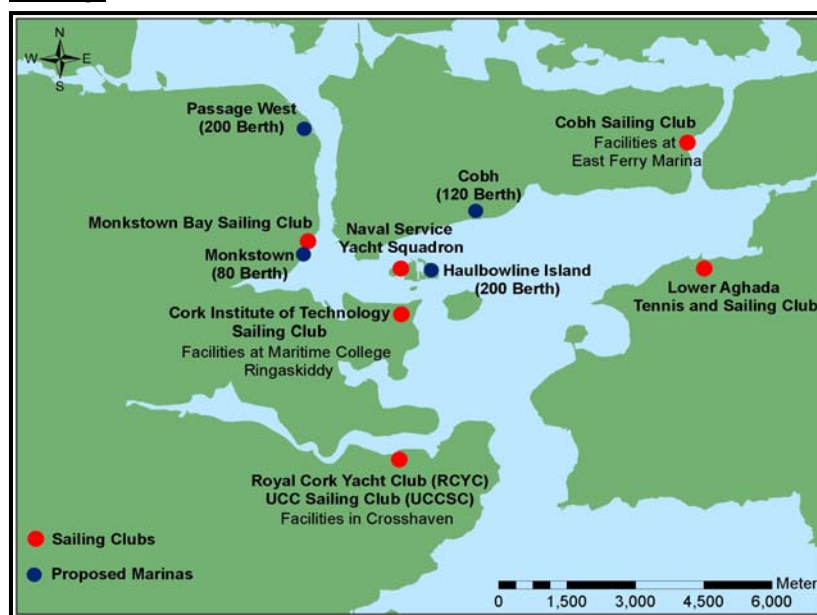


Figure 11: Locations of sailing clubs and proposed marina developments in Cork Harbour.

There are seven sailing clubs situated in Cork Harbour, the clubs vary in terms of member numbers and available facilities (Table 8).

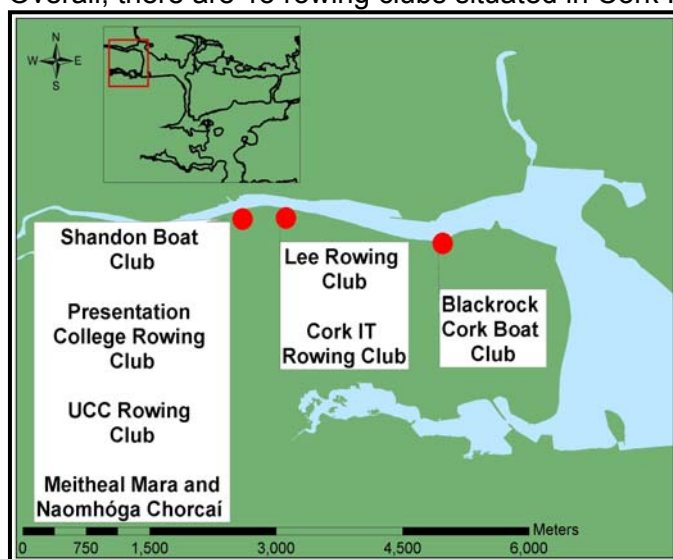
At the time of writing four locations within the harbour have been the subjects of planning proposals for marinas (Monkstown, Cobh, Haulbowline and Passage West). In certain cases marina proposals contained plans for accompanying developments, e.g. parking areas and apartments (Figure 11).

Table 8: Details on the facilities and member numbers for sailing clubs in Cork Harbour.

Club Name	Facilities	Members
Monkstown Bay Sailing Club	<ul style="list-style-type: none"> • Clubhouse including changing rooms, showers, games room and members' bar, a training room and a committee room with an office attached • Dinghy park 	250
Cork Institute of Technology Sailing Club	<ul style="list-style-type: none"> • Rent facilities of the RCYC • Boats stored at NMCI 	15
Royal Cork Yacht Club (RCYC)	<ul style="list-style-type: none"> • Clubhouse including bar • Marina 200 - 240 berth • Dinghy park 	1600 (including oversees members)
UCC Sailing Club	<ul style="list-style-type: none"> • Utilise the facilities of the RCYC 	30 - 40
Naval Service Yacht Squadron	<ul style="list-style-type: none"> • Utilise Navy Base on Haulbowline Island for meetings, training and launching the boats • Winter storage space at the Navy Base • Summer storage of boats at private moorings in the harbour 	15
Lower Aghada Tennis and Sailing Club	<ul style="list-style-type: none"> • Clubhouse including changing and shower facilities • 6 floodlit tennis courts • Slipway • Boat storage space for maximum 25 boats • Dinghy park 	122 (13 boat owners)
Cove Sailing Club	<ul style="list-style-type: none"> • Changing facilities and berthage used at East Ferry Marina (ca.40 boats of club members) • Use Marlogue Inn for meetings and social events 	80

Rowing:

Overall, there are 15 rowing clubs situated in Cork Harbour (Figures 12 and 13), details on the facilities and membership of each rowing club are contained in Table 9. Figure 12 shows the location of six contemporary rowing clubs in Cork City



Both Shandon Boat Club and the Lee Rowing Club rent out their waterfront facilities, e.g. clubhouse, to other rowing clubs (Table 9). In the upper harbour area rowing activity is concentrated within close proximity to the city, i.e. waters adjacent to the marina walkway and Blackrock village (Figure 12).

Also included in Figure 12 are Meitheal Mara and Naomhóga Chorcaí, who promote traditional currach rowing.

Figure 12: Map showing locations of rowing clubs in upper Cork Harbour.

Meitheal Mara is not a conventional rowing club but offers a youth rowing programme with traditional currachs which aims to promote social and personal development in young people through activities related to maritime heritage. The project mainly specialises in developing traditional boatbuilding skills, and training in the building currachs - traditional Irish boats. Naomhóga Chorcaí is the Cork currach-rowing club, closely connected to Meitheal Mara through utilisation of the Meitheal Mara currachs.

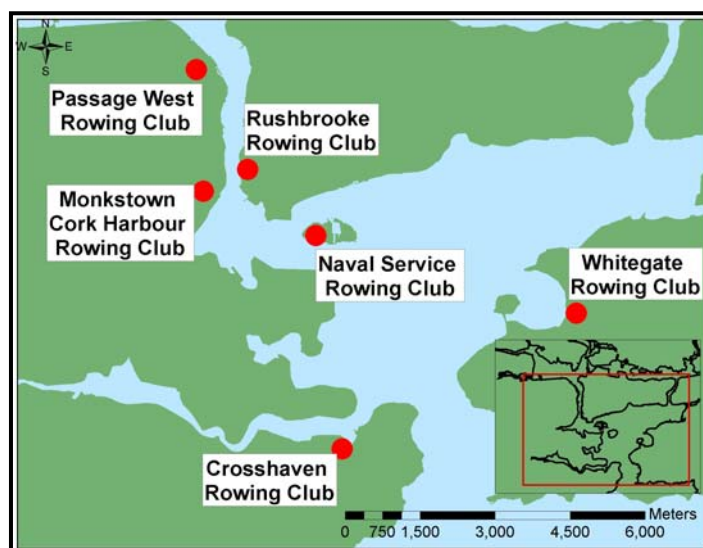


Figure 13: Map showing locations of rowing clubs (6) in lower Cork Harbour.

Table 9: Information on facilities and membership of rowing clubs active in Cork Harbour.

Club Name	Facilities	Members
Lee Rowing	<ul style="list-style-type: none"> Clubhouse including gym and changing facilities Club provides boats Slip 	100
Cork IT Rowing	<ul style="list-style-type: none"> Renting the Lee Rowing Club facilities Indoor facilities e.g. gym at CIT 	10
Shandon Boat Club	<ul style="list-style-type: none"> River front site including two launching slips Boat house with storing capacity for 40 - 50 boats plus ancillary equipment oars and spare parts Clubhouse including changing rooms, shower, storage for safety launches and training boats, training room/gym and meeting room Open air storage space for trailers and up to 20 currachs 15 racing boats and gym equipment Arrangements for annual fee with other rowing clubs (Meitheal Mara, UCC and PBC) for storage space, use of slip, clubhouse and changing facilities 	76
Presentation College	<ul style="list-style-type: none"> Possess their own boat but use facilities of Shandon Boat Club 	50
UCC Rowing Club	<ul style="list-style-type: none"> Possess their own boat but use facilities of Shandon Boat Club Land based training in Mardyke 	65
Meitheal Mara	<ul style="list-style-type: none"> Utilise the facilities at the Shandon Boat Club for the storage of currachs (and replicas) and to run a youth rowing programme 	Varies
Naomhóga Chorcaí	<ul style="list-style-type: none"> Use Shandon Boat Club Facilities and Meitheal Mara boats for traditional currach rowing 	55
Old Bones Boat Club	<ul style="list-style-type: none"> No information available 	
Blackrock Cork Boat Club	<ul style="list-style-type: none"> Clubhouse including gym and leisure room with bar Boat house All rowing equipment is provided Slip at Blackrock 	150
Christian Brothers College Boat Club	<ul style="list-style-type: none"> School participate once a year in a race against other schools on St Patrick's Day; participants are school members and drawn from other rowing clubs 	10
Monkstown Cork	<ul style="list-style-type: none"> Access to water via slipway at Monkstown pier 	30

Harbour Rowing Club	<ul style="list-style-type: none"> • Two eights, three fours, a double scull, single scull and a training boat • Equipment for indoor training includes rowing machines, treadmill and weights benches 	
Naval Service Rowing Club	<ul style="list-style-type: none"> • Provide rowing equipment, changing rooms and meeting room on Naval Base 	10
Passage West Rowing Club	<ul style="list-style-type: none"> • Provide the following facilities - supply of boats, oars, lifejackets, coxes, and some clubs provide training facilities such as a gym 	Combined members = 250 approx.
Crosshaven Rowing Club		
Whitegate Rowing Club		
Rushbrooke Rowing Club	<ul style="list-style-type: none"> • Clubhouse including meeting room and gym • Provide all rowing equipment • Slipway 	85

Power Boating and Water/Jet Skiing, Swimming and Scuba diving

Activities such as power boating, swimming, scuba diving and water/jet skiing are represented by a lesser amount of clubs than activities such as rowing and sailing. Table 10 contains details of clubs associated with these recreational activities.

Table 10: Details on clubs for power boating and water/jet skiing, swimming and scuba diving in Cork Harbour.

Name	Facilities	Members
<i>Power Boating and Water/Jet Skiing</i>		
Monkstown Bay Power Boat and Water Ski Club	<ul style="list-style-type: none"> • 6 boats at the moment and use the facilities of Monkstown Bay Sailing Club 	15
<i>Swimming</i>		
Cork Masters Swimming Club	<ul style="list-style-type: none"> • Gus Healy pool in Douglas on Saturday morning training • Leisure-world in Bishopstown on Monday and Wednesday nights 	200 active open water swimmers
<i>Scuba Diving</i>		
Cork Sub Aqua Club	<ul style="list-style-type: none"> • Rent out storage space for boats in Oysterhaven • Rent rooms if needed to give lectures to the club or to organise regional courses • Rent the NMCI pool in Ringaskiddy for club training • Slipways for Cork Harbour are not ideal but the club occasionally utilise Monkstown and Crosshaven slipways • Usually launch from Oysterhaven slipway 	60
UCC Sub Aqua Club	<ul style="list-style-type: none"> • Meeting to organise weekend outings are held at the distillery • 6m RIB, 10 sets of scuba gear, 10cf compressor, about 20 semi-dry suits • Training up to CMAS instructor level in conjunction with CFT • Equipment storage, boat storage area on the distillery part of the campus • Access to the Mardyke complex for winter training and lectures • The club does utilise mainly areas outside Cork Harbour 	50
NMCI Sub Aqua Club	<ul style="list-style-type: none"> • Utilise facilities in NMCI: survival pool; lecture rooms; and slipway 	40

Wind Surfing:

Windsurfing in Cork Harbour is not organised by on a club basis, however, at any one time there could be 10 - 12 windsurfers on the waters of Cork Harbour, activity is mainly concentrated on the east side of the harbour - Aghada Pier, East Ferry, and Cobh Island (P Gallagher, Irish Windsurfing Association, *pers. comm.*).

Bird Watching, Coastal Walking and Visiting Nature Reserves:

Bird watching, coastal walking and visiting nature reserves are activities that are mainly undertaken by individual recreational users. However, organisations such as BirdWatch Ireland engage in regular bird counts in Cork Harbour, which includes bird watching in the Cuskinny Marsh reserve. Furthermore, some of the Cork walking clubs utilise Cork Harbour for their easier grade walking, which can include visits to the Cuskinny Marsh reserve.

Bird Watching - Cork Harbour gives shelter to the largest number of wintering birds on the east and southeast Irish coast and is of international importance for approximately 20,000 waders and 5,000 wildfowl.

Owing to its importance for birds, an area of 1,436 ha is designated as a Special Protection Area (SPA) and Ramsar Site for wetland protection.

Although there are no registered recreational bird watching clubs operating in the harbour, dedicated bird counts have been ongoing in Cork Harbour since 1978. Figure 14 shows the main count locations.

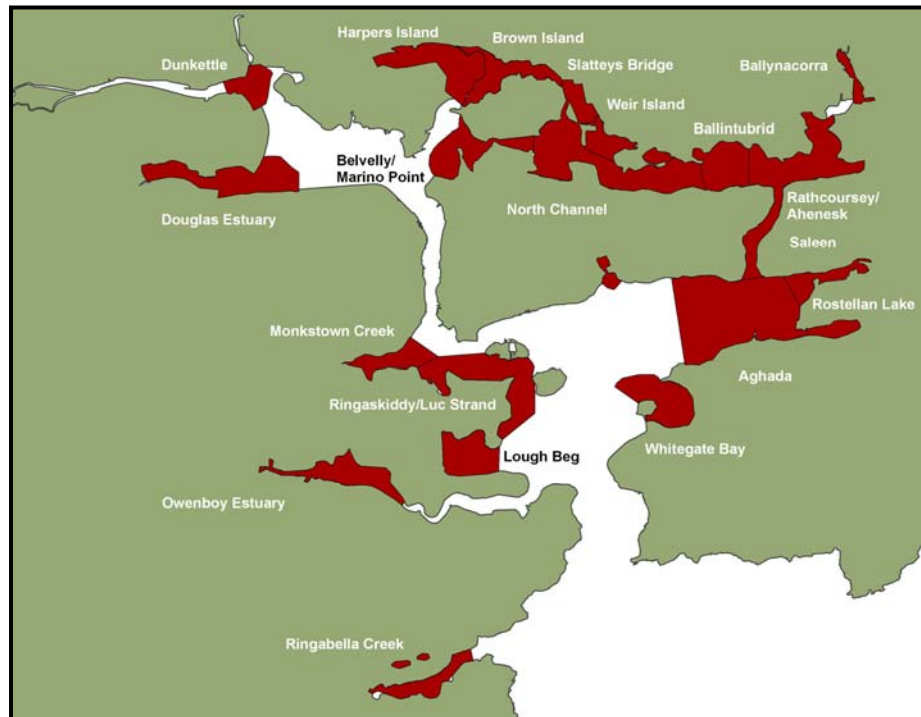


Figure 14: The main locations for counting and sighting birds in Cork Harbour.

Coastal Walking – Six walking clubs with several hundred members are based in the vicinity of Cork Harbour. These clubs mainly go hill walking and climbing but also walk in coastal areas such as Cork Harbour. The walking clubs that utilise Cork Harbour on a more regular basis are mentioned below:

- The Bishopstown Hillwalking Club has approximately 500 members and utilises Cork Harbour in their easy walking grade category up to two times a month.
- The Midleton Hillwalking Club has approximately 130 members and utilises Cork Harbour for their low-level walk routes up to three times a year.
- The Glanmire Walkers with 32 members utilise Cork Harbour up to ten times a year.
- The Mayfield Fun Walkers, Leaside Walkers and Ballincollig Walking Group do not utilise Cork Harbour on a regular basis but occasionally walk in the Douglas area.

Visiting Nature Reserves - Cork Harbour contains many protected areas such as the Special Protection Areas, Special Areas of Conservation and Natural Heritage Areas but does not include an area designated as a Statutory Nature Reserve protected under the Wildlife Act 1976. However, Cuskinny Marsh belongs to a network of bird reserves maintained by BirdWatch Ireland. The area is located ca. 2km east of Cobh on Great Island in Cork Harbour and can be viewed from the adjoining road, where three display boards illustrate the birds of the lake, seashore and woodland. Access to the adjoining woods will be extended after the completion of a track.

4.2 User Perception Survey

4.2.1 Cork Harbour – Key Trends

Overall 345 people were surveyed in the area of Cork Harbour, including 239 residents and 106 visitors.

Recreational Activities:

The most popular activities in Cork Harbour (Figure 15):

- **WALKING** (~ 57%),
- **SWIMMING** (~ 20%)
- **SAILING** (~ 18%)

Recreational activities that recorded lower rates of participation were Water/Jet - skiing, Wind-Surfing and Boating (Inboard) (Figure 15).

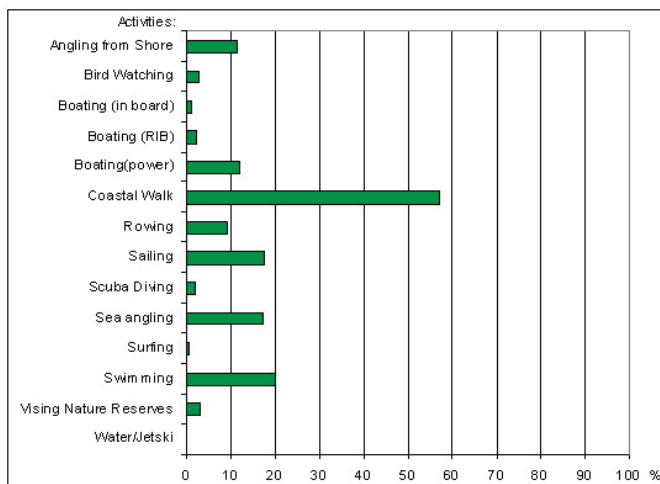


Figure 15: Graph showing range of recreational activities chosen by people surveyed (n=345) and percentage distribution of participation in Cork Harbour.

Management of Recreation:

• Safety

in Cork Harbour during recreational activities achieved the highest satisfaction rating out of the four management categories and scored an above average rating on a scale where poor = 1 to excellent = 7 (Figure 16).

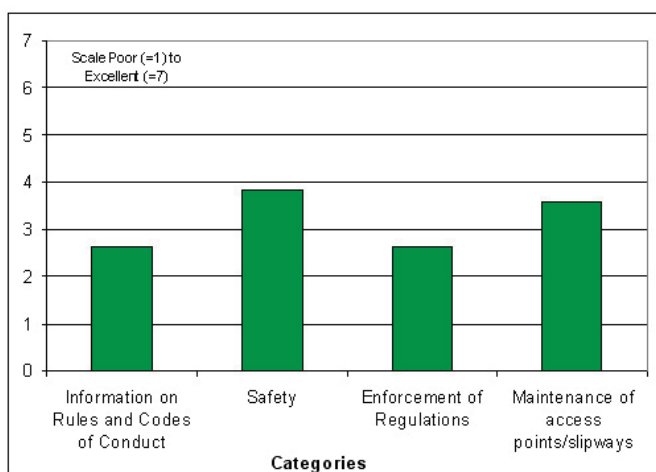


Figure 16: Graph showing the prioritisation of issues relating to management of recreational activities in Cork Harbour, as offered to survey participants (n= 345).

• **Maintenance of Access Points and Slipways** rated above average in terms of management (Figure 16).

• **Information on Rules and Codes of Conduct** received a below average rating of under 3 (Figure 16).

• Enforcement of Regulations

was rated at less than 3, below average (Figure 16).

Perceptions During Recreational Activities:

• Unlawful Behaviour

during recreational activities was *never* experienced by over 50% of survey participants, however approximately 34% encountered it occasionally and around 9% frequently (Figure 17).

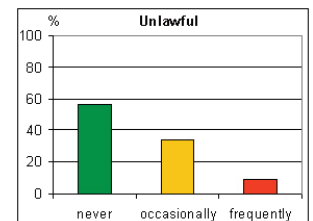


Figure 17: Perception of participants regarding the experience of unlawful behaviour during recreational activities.

• Nuisance Behaviour

during recreational activities was *occasionally* or *never* experienced by most people surveyed, however 10% encountered it frequently (Figure 18).

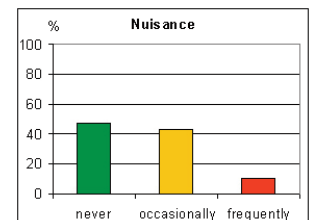


Figure 18: Perception of participants regarding the experience of nuisance behaviour during recreational activities.

• Pollution

during recreational activities was noted *occasionally* by most survey participants, while ca 26% never observed any evidence of pollution and approximately 18% noticed pollution frequently (Figure 19).

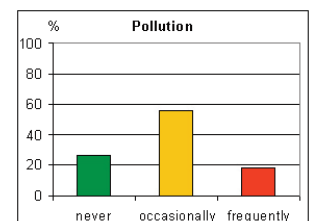


Figure 19: Perception of participants regarding the experience of pollution during recreational activities.

• Overcrowding

during recreational activities *never* occurred for the majority of survey participants (~ 74%), however 20% experienced overcrowding occasionally and only 6% on a frequent basis (Figure 20).

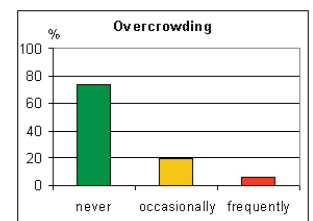


Figure 20: Perception of participants regarding the experience of overcrowding during recreational activities.

• Conflict Between Recreational Users

was *never* experienced by the majority of people surveyed (~74%), 20% witnessed it occasionally and 6% felt it was evident on a frequent basis (Figure 21).

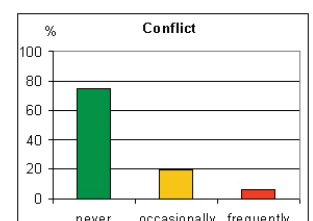


Figure 21: Perception of participants regarding the experience of conflict between recreational users during recreational activities.

4.2.2 Blackrock - Key Trends

Special Features:

- Blackrock Village, situated on the banks of the River Lee 2 km from Cork City centre
- Marina walk leading onto the old 1850 Blackrock-Passage railway line
- Blackrock Castle built 1828/29 is now restored as an observatory

Survey Participants:

- 62 people (45 residents and 17 visitors)



Figure 22: Map indicating location of Blackrock.

Recreational Activities:

The most popular activities in Blackrock (Figure 23):

- **WALKING**
- **ROWING**
- **SWIMMING**

82% of people surveyed would take part in more recreational activities, if recreational facilities were better.

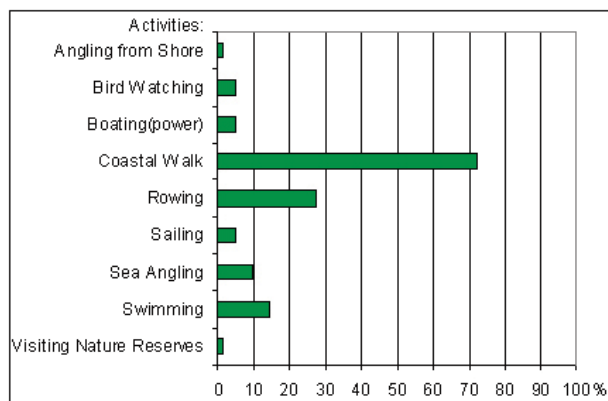


Figure 23: Graph showing range of recreational activities chosen by people surveyed (n=62) and percentage distribution of participation in Blackrock.

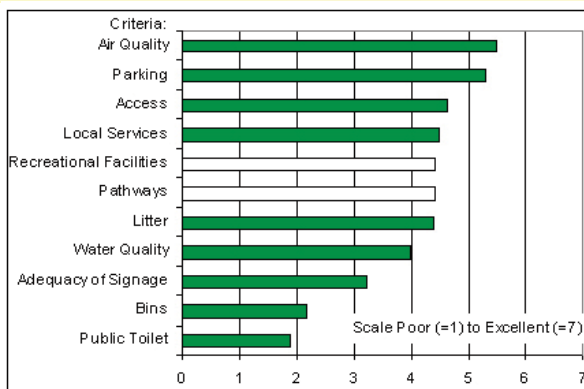


Figure 24: Graph showing rating and range of facilities and criteria in Blackrock. Green bars represent data collected in 2005 and 2006 respectively (n=62) and white bars represent data collected in 2006 only (n=38).

Quality of Criteria Influencing Recreation:

- **Air Quality** and **Parking** received the highest satisfaction ratings of criteria and facilities (Figure 24).
- **Public Toilets, Bins** and **Signage** received the lowest ratings in terms of satisfaction, not reaching an average on a scale poor = 1 to excellent = 7 (Figure 24).

95% of participants like to see more recreational facilities in Blackrock.

Perceptions During Recreational Activities:

- **Unlawful Behaviour** was encountered *never* (~ 53%) or *occasionally* (~ 40%) by most survey participants during their chosen recreational activity (Figure 26).
- **Nuisance Behaviour** was *occasionally* experienced by most people surveyed during their chosen recreational activity (Figure 27).
- **Pollution** was witnessed on an *occasional* basis by a majority of survey participants during their chosen recreational activity (Figure 28).
- **Overcrowding** during recreational activity was *never* experienced by **over 80%** of people surveyed (Figure 29).
- **Conflict Between Recreational Users** during recreational activity was *never* encountered by most survey participants (69%) (Figure 30).



Figure 25: Blackrock Castle.

Types of facilities desired in Blackrock:

- **Facilities for Water Activities**
- **Coffee Places and Restaurants**
- **Playgrounds**
- **Public Toilets**
- **Marina**
- **Moorings and Slips**
- **Safety Facilities**
- **Facilities for Young People**
- **Bins**

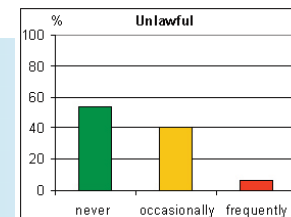


Figure 26: Perception of participants regarding unlawful behaviour.

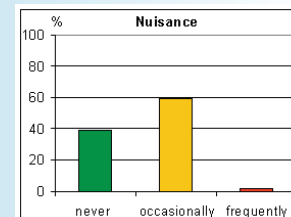


Figure 27: Perception of participants regarding nuisance behaviour.

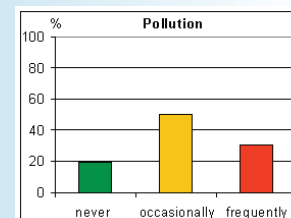


Figure 28: Perception of participants regarding pollution.

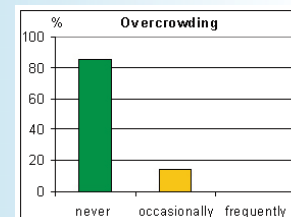


Figure 29: Perception of participants regarding overcrowding.

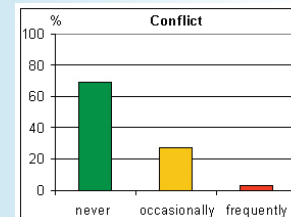


Figure 30: Perception of participants regarding conflict between recreational users.

4.2.3 Passage West - Key Trends

Special Features:

- Passage West is an historic seafaring town
- The old, 1850 Blackrock-Passage railway line links Passage West to Cork City via a walkway

Survey Participants:

- 49 people (43 residents and 6 visitors)

Recreational Activities:

The most popular activities in Passage West (Figure 32):

- **WALKING**
- **ANGLING FROM SHORE**
- **POWER BOATING**

65% of people surveyed would take part in more recreational activities, if recreational facilities were better.



Figure 31: Map indicating location of Passage West.

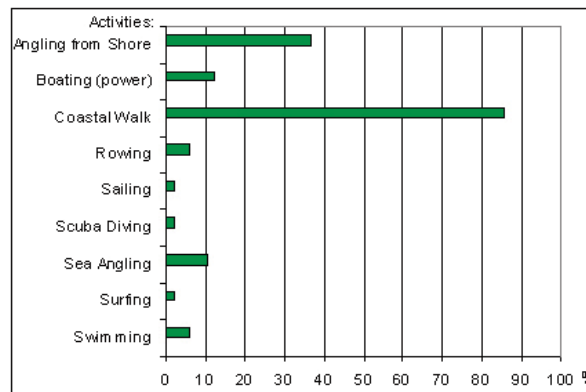


Figure 32: Graph showing range of recreational activities chosen by people surveyed (n=56) and percentage distribution of participation in Passage West.

Perceptions During Recreational Activities:

- **Unlawful Behaviour** was *never* experienced during recreational activities by ~ 45% of survey participants, however 33% experienced unlawful behaviour occasionally and 22% frequently (Figure 35).

- **Nuisance Behaviour** was *occasionally* encountered during recreational activities by 45% of survey participants, while 31% never encountered nuisance behaviour and 24% on a frequent basis (Figure 36).



Figure 34: Passage West view from the water.

- **Pollution** was *occasionally* witnessed by most people surveyed during their chosen recreational activity (Figure 37).

- **Overcrowding** and **Conflict Between Recreational Users** were *never* encountered by most people surveyed (Figures 38 and 39).

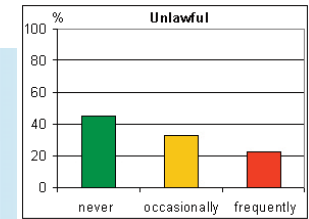


Figure 35: Perception of participants regarding unlawful behaviour.

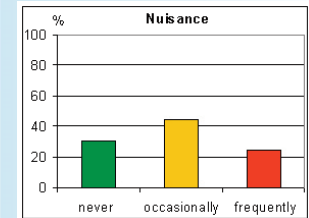


Figure 36: Perception of participants regarding nuisance behaviour.

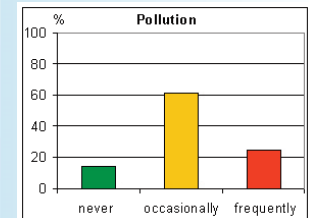


Figure 37: Perception of participants regarding pollution.

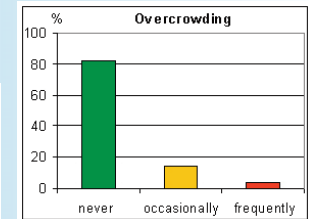


Figure 38: Perception of participants regarding overcrowding.

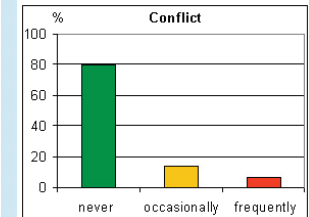


Figure 39: Perception of participants regarding conflict between recreational users.

Quality of Criteria Influencing Recreation:

- **Pathways** and **Air Quality** received the highest satisfaction ratings of criteria and facilities (Figure 33).

- **Public Toilets, Bins, Parking, Adequacy of Signage** and **Litter** received ratings below average on a scale from poor = 1 to excellent = 7 (Figure 33).

88% of participants like to see more recreational facilities in Passage West.

Types of Facilities desired in Passage West:

- **Youth Club**
- **Slipways**
- **Coffee Places**
- **Swimming Pool**
- **Bins**
- **Open Snooker Hall**
- **Wider Roads**
- **Pontoons**
- **Boat Tours**
- **Marina**

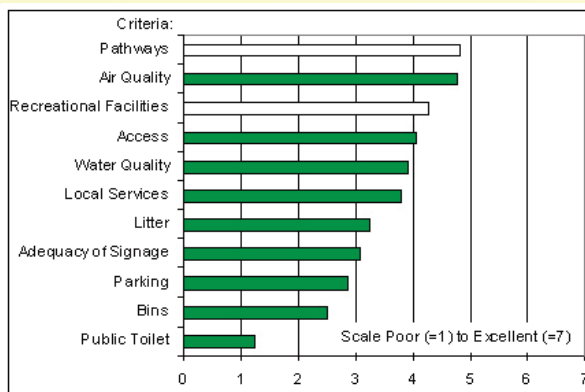


Figure 33: Graph showing rating and range of facilities and criteria in Passage West. Green bars represent data collected in 2005 and 2006 respectively (n=49) and white bars represent data collected in 2006 only (n=29).

4.2.4 Monkstown - Key Trends

Special Features:

- Monkstown is built on the side of a deep glen
- Monkstown contains an excellent 18 - hole golf course, deep sea fishing, a sailing club and opportunities for restaurants and pubs

Survey Participants:

- 49 people (36 residents and 13 visitors)



Figure 40: Map indicating location of Monkstown.

Recreational Activities:

The most popular activities in Monkstown (Figure 41):

- **WALKING**
- **SAILING**
- **SEA-ANGLING**

63% of people surveyed would take part in more recreational activities, if recreational facilities were better.

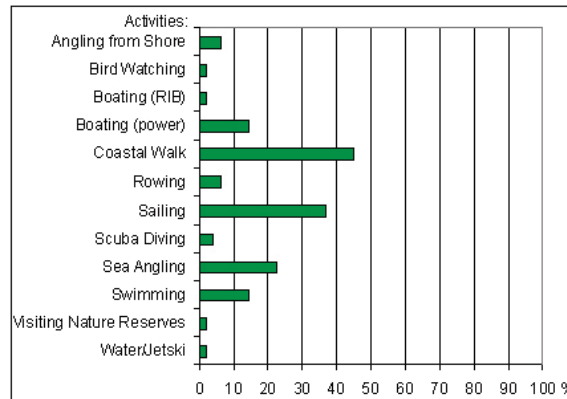


Figure 41: Graph showing range of recreational activities chosen by people surveyed (n=49) and percentage distribution of participation in Monkstown.

Perceptions During Recreational Activities:

• **Unlawful and Nuisance Behaviour** during recreational activities were *occasionally* (51%) or *never* (40%) experienced by most survey participants (Figure 44 and 45).

• **Pollution** was *never* (46%) or *occasionally* (42%) witnessed during recreational activities by most people surveyed (Figure 46).

• **Overcrowding** was *never* encountered during recreational activities by **over 95%** of people surveyed (Figure 47).



Figure 43: Sailing during Cork Week 2006.

• **Conflict Between Recreational Users** was *never* experienced by ~ 51% of participants during their chosen recreational activity, however conflict was experienced *occasionally* by ~ 24% and *frequently* by ~ 24% (Figure 48).

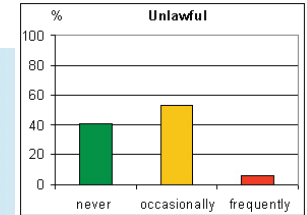


Figure 44: Perception of participants regarding unlawful behaviour.

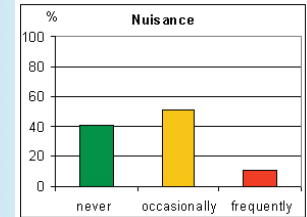


Figure 45: Perception of participants regarding nuisance behaviour.

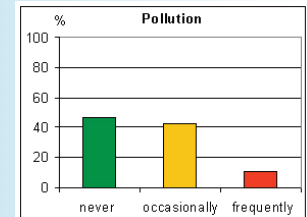


Figure 46: Perception of participants regarding pollution.

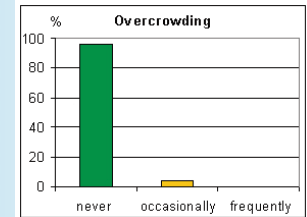


Figure 47: Perception of participants regarding overcrowding.

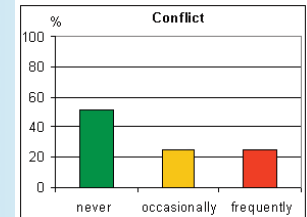


Figure 48: Perception of participants regarding conflict between recreational users.

Quality of Criteria Influencing Recreation:

• **Pathways and Recreational Facilities** received the highest satisfaction ratings of criteria and facilities (Figure 42).

• **Bins** received a below average rating on a scale from poor = 1 to excellent = 7 (Figure 42).

96% of participants like to see more recreational facilities in Monkstown.

Types of facilities desired in Monkstown:

- **Marina**
- **Youth Club**
- **Coffee Place**
- **Soccer Club**
- **Angling Bait Shop**
- **Access to the Water**
- **Bins**
- **Picnic Area**
- **Water Tap at Sailing Club**
- **Visitor Moorings**

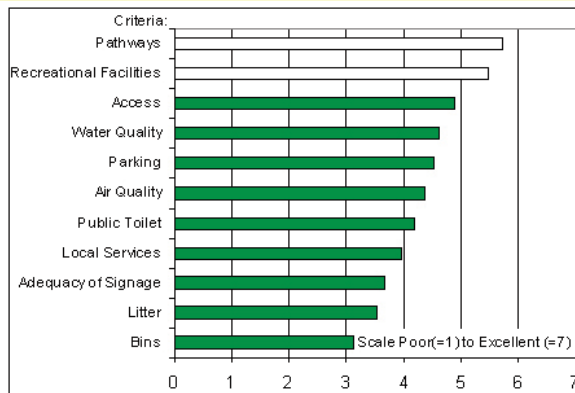


Figure 42: Graph showing rating and range of facilities and criteria in Monkstown. Green bars represent data collected in 2005 and 2006 respectively (n=49) and white bars represent data collected in 2006 only (n=28).

4.2.5 Crosshaven - Key Trends

Special Features:

- Crosshaven is a nationally important yachting centre
- Home to the world's oldest yacht club the 'Royal Cork Yacht Club' (RCYC), founded in 1720
- Host to the biannual regatta of 'Cork Week' organised by the RCYC

Survey Participants:

- 56 people (33 residents and 23 visitors)

Recreational Activities:

The most popular activities in Crosshaven (Figure 50):

- **WALKING**
- **SAILING**
- **SWIMMING**

66% of people surveyed would take part in more recreational activities, if recreational facilities were better.

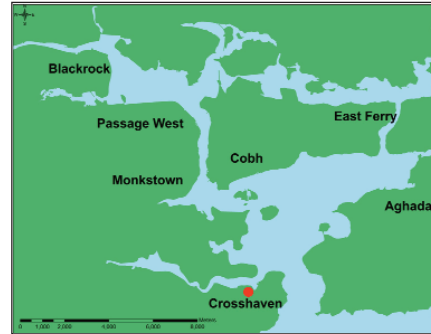


Figure 49: Map indicating location of Crosshaven.

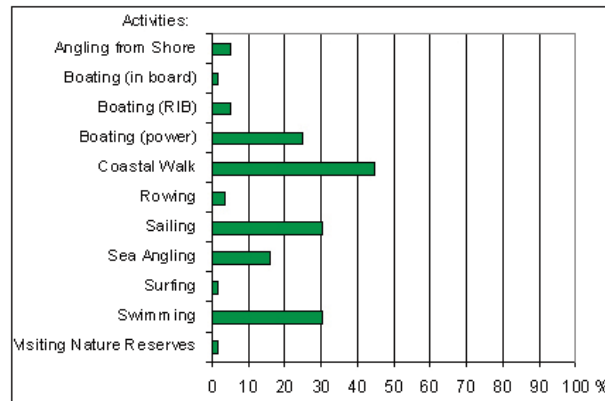


Figure 50: Graph showing range of recreational activities chosen by people surveyed (n=56) and percentage distribution of participation in Crosshaven.

Perceptions During Recreational Activities:

• **Unlawful Behaviour** was *never* encountered by most people surveyed during their chosen recreational activity (Figure 53).

• **Nuisance Behaviour** during recreational activities was *occasionally* (51%) or *never* (40%) experienced by most survey participants (Figure 54).

• **Pollution** was mostly witnessed on an *occasional* basis (57%) by participants during their chosen recreational activity (Figure 55).



Figure 52: Boats in Crosshaven during Cork Week 2006.

• **Overcrowding and Conflict Between Recreational Users** during recreational activities were *never* experienced by ~ 80% of people surveyed (Figures 56 and 57).

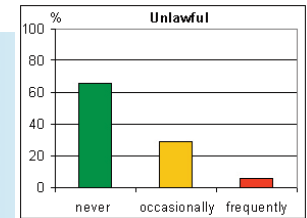


Figure 53: Perception of participants regarding unlawful behaviour.

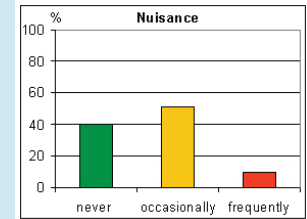


Figure 54: Perception of participants regarding nuisance behaviour.

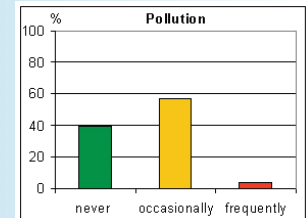


Figure 55: Perception of participants regarding pollution.

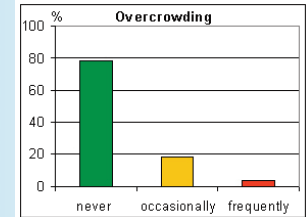


Figure 56: Perception of participants regarding overcrowding.

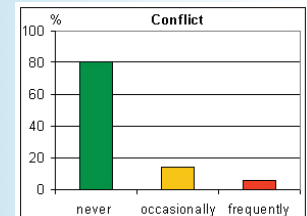


Figure 57: Perception of participants regarding conflict between recreational user.

Quality of Criteria Influencing Recreation:

• **Air Quality and Access** received the highest satisfaction ratings of criteria and facilities (Figure 51).

• **Public Toilets and Parking** received below average ratings on a scale from poor = 1 to excellent = 7 (Figure 51).

86% of participants like to see more recreational facilities in Crosshaven.

Types of facilities desired in Crosshaven:

- **Youth Club**
- **Petrol Station**
- **Marinas**
- **Free Facilities for Children**
- **Pontoons and Slipways**
- **Coffee Places**
- **Sports Facilities**
- **Playgrounds**
- **Swimming Pool**

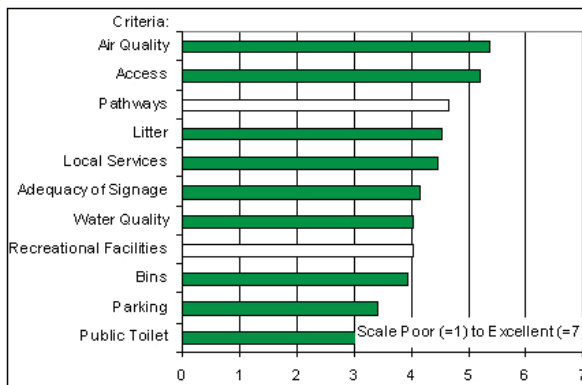


Figure 51: Graph showing rating and range of facilities and criteria in Crosshaven. Green bars represent data collected in 2005 and 2006 respectively (n=56) and white bars represent data collected in 2006 only (n=31).

4.2.6 Aghada - Key Trends

Special Features:

- Picturesque, rural setting in Cork Harbour
- Contains a pier and boat slip
- A good sea fishing spot all year around, although the best time is between May and September

Survey Participants:

- 37 people (22 residents and 15 visitors)

Recreational Activities:

The most popular activities in Lower Aghada (Figure 59):

- **WALKING**
- **SEA - ANGLING and SWIMMING**
- **POWER BOATING**

84% of people surveyed would take part in more recreational activities, if recreational facilities were better.



Figure 58: Map indicating location of Lower Aghada.

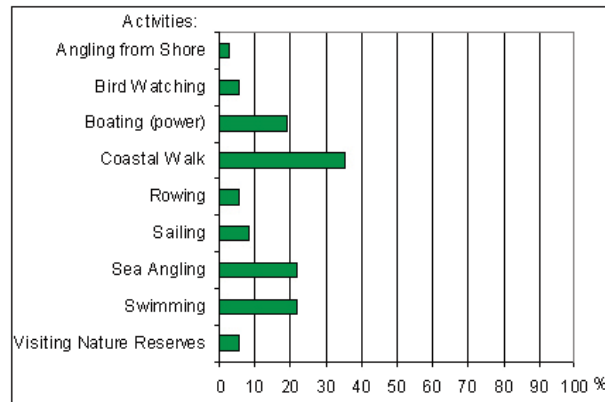


Figure 59: Graph showing range of recreational activities chosen by people surveyed (n=37) and percentage distribution of participation in Lower Aghada.

Perceptions During Recreational Activities:

• **Unlawful and Nuisance Behaviour** were *never* experienced by most people surveyed, during their chosen recreational activity (Figures 62 and 63).

• **Pollution** was witnessed by a majority of participants on an *occasional* basis during their chosen recreational activity (Figure 64).



Figure 61: Coastal walk from Rostellan to Lower Aghada.

• **Overcrowding** during recreational activities was *never* encountered by **80%** of people surveyed (Figure 65).

• **Conflict Between Recreational Users** during recreational activities was *never* experienced by **~ 89%** of people surveyed (Figure 66).

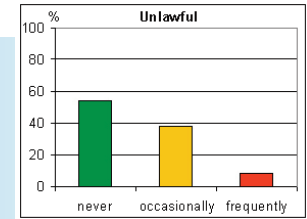


Figure 62: Perception of participants regarding unlawful behaviour.

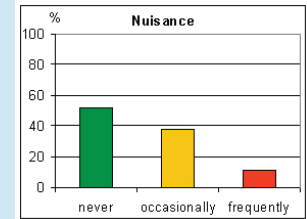


Figure 63: Perception of participants regarding nuisance behaviour.

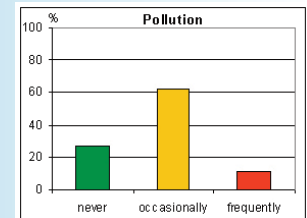


Figure 64: Perception of participants regarding pollution.

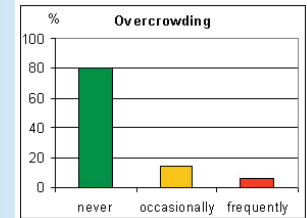


Figure 65: Perception of participants regarding overcrowding.

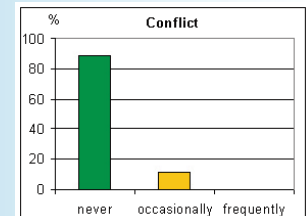


Figure 66: Perception of participants regarding conflict between recreational users.

Quality of Criteria Influencing Recreation:

• **Pathways, Air Quality and Recreational Facilities** received the highest satisfaction ratings of the facilities and criteria influencing recreational activities (Figure 60).

• **Public Toilets** received the lowest rating in Aghada (~ 1.5), well below average, on a scale of poor = 1 to excellent = 7 (Figure 60).

Types of facilities desired in Aghada:

- **Marinas**
- **Better Access to the Water**
- **Public Toilets**
- **Youth Club**
- **Coffee Places and Restaurant**
- **Bins and Recycling Facilities**
- **Improved Signage**
- **Pedestrian Crossing**

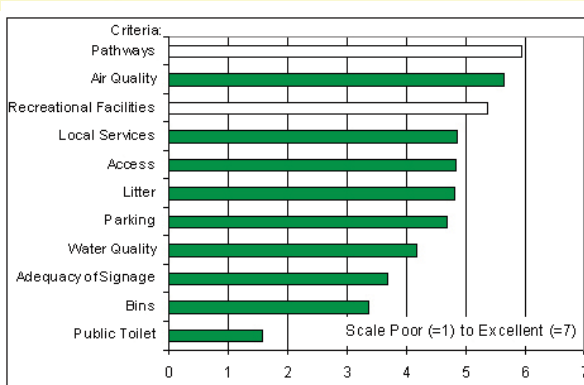


Figure 60: Graph showing rating and range of facilities and criteria in Lower Aghada. Green bars represent data collected in 2005 and 2006 respectively (n=37) and white bars represent data collected in 2006 only (n=16).

89% of participants like to see more recreational facilities in Aghada.

4.2.7 East Ferry - Key Trends

Special Features:

- Most of the East Ferry Area is designated as scenic landscape
- Idyllic coastal setting
- Murphys Bar and the East Ferry Pier on the mainland and the Marlogue Inn and East Ferry Marina on Great Island

Survey Participants:

- 29 people (17 residents and 12 visitors)

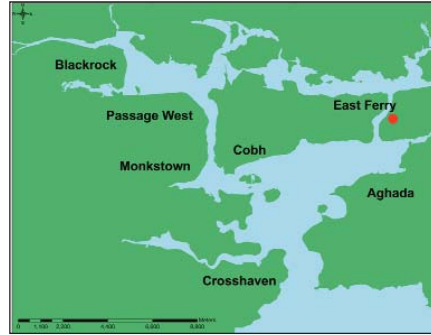


Figure 67 : Map indicating location of East Ferry.

Recreational Activities:

The most popular activities in East Ferry (Figure 68):

- **SAILING and SEA-ANGLING**
- **WALKING**
- **ANGLING FROM SHORE**

83% of people surveyed would take part in more recreational activities, if recreational facilities were better.

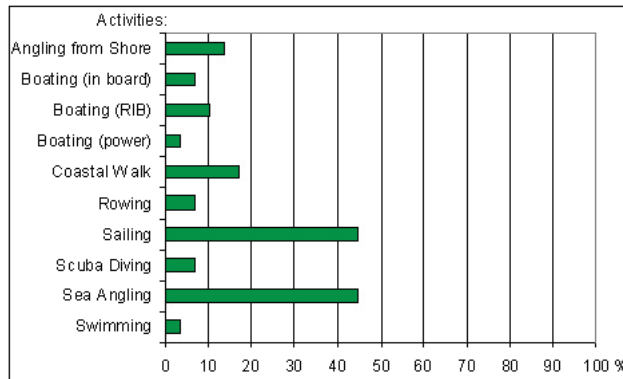


Figure 68: Graph showing range of recreational activities chosen by people surveyed (n=29) and percentage distribution of participation in East Ferry.

Perceptions During Recreational Activities:

• **Unlawful** and **Nuisance Behaviour** were *never* encountered by **over 90%** of survey participants during their chosen recreational activity (Figure 71 and 72).

• **Pollution** was witnessed by a majority of participants on an *occasional* basis during their chosen recreational activity (Figure 73).



Figure 70: View of East Ferry Marina from the mainland.

• **Overcrowding** was *occasionally* experienced during recreational activities by most people surveyed (Figure 74).

• **Conflict Between Recreational Users** during recreational activities was *never* experienced by most survey participants (Figure 75).

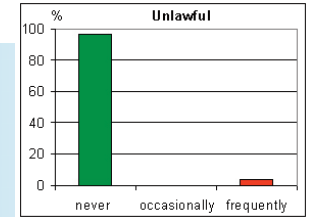


Figure 71: Perception of participants regarding unlawful behaviour.

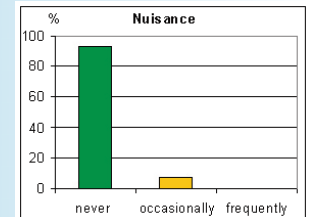


Figure 72: Perception of participants regarding nuisance behaviour.

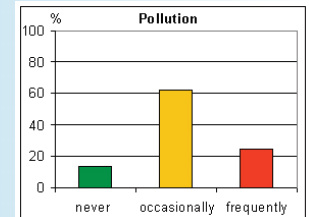


Figure 73: Perception of participants regarding pollution.

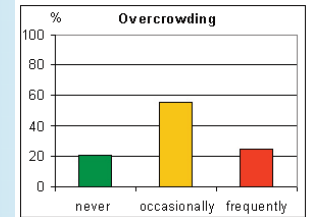


Figure 74: Perception of participants regarding overcrowding.

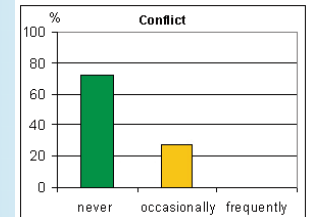


Figure 75: Perception of participants regarding conflict between recreational users.

Quality of Criteria Influencing Recreation:

• **Air Quality, Access, Litter and Water Quality** received the highest satisfaction ratings of criteria and facilities (Figure 69).

• **Adequacy of Signage, Local Services, Parking and Bins** received below average ratings on a scale of poor = 1 to excellent = 7 (Figure 69).

Types of facilities desired in East Ferry:

- **Larger Marina**
- **Public Toilets and Showers**
- **Parking**
- **Shop**
- **Coffee Place**
- **Access to the Water**
- **Picnic Area**

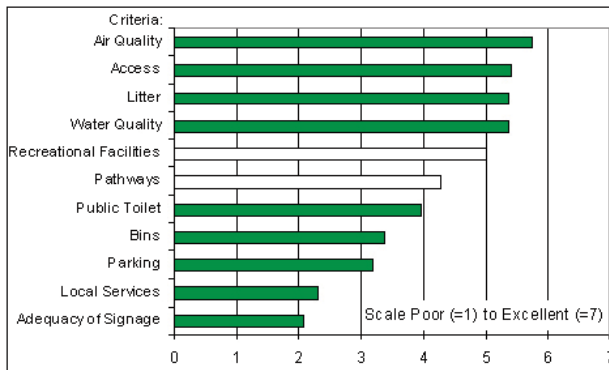


Figure 69: Graph showing rating and range of facilities and criteria in East Ferry. Green bars represent data collected in 2005 and 2006 respectively (n=22) and white bars represent data collected in 2006 only (n=7).

89% of participants like to see more recreational facilities in East Ferry.

4.2.8 Cobh - Key Trends

Special Features:

- Heritage Town
- Port of emigration between 1848 and 1950 over 2.5 million people emigrated from Cobh
- Last port of call for the *Titanic*
- Visitor attractions include Cobh Heritage Centre and St. Coleman's Cathedral

Survey Participants:

- 63 people (43 residents and 20 visitors)

Recreational Activities:

The most popular activities in Cobh (Figure 77):

- **WALKING**
- **SWIMMING**
- **ANGLING FROM SHORE**

63% of people surveyed would take part in more recreational activities, if recreational facilities were better.

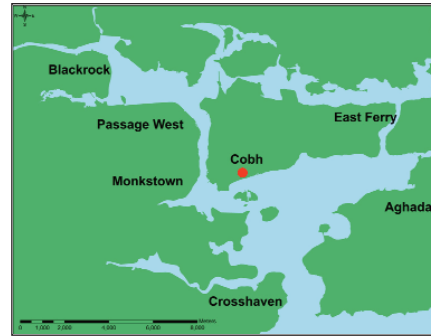


Figure 76: Map indicating location of Cobh.

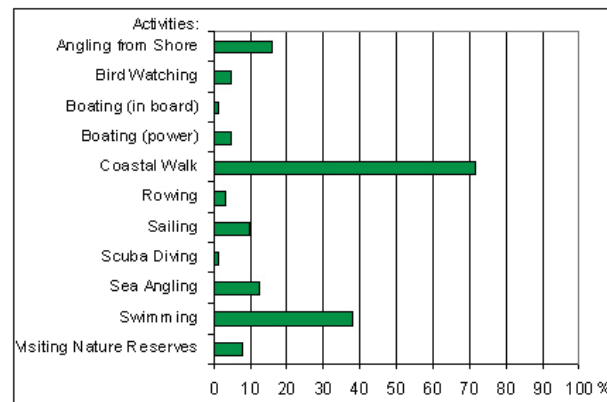


Figure 77: Graph showing range of recreational activities chosen by people surveyed (n=63) and percentage distribution of participation in Cobh.

Perceptions During Recreational Activities:

• **Unlawful Behaviour** was experienced on an *occasional* basis (46%) or *never* (43%) by most survey participants during their chosen recreational activity (Figure 80).

• **Nuisance Behaviour** was *occasionally* encountered by most survey participants during their chosen recreational activity (Figure 81).

• **Pollution** is witnessed on an *occasional* basis by a majority of people surveyed during their chosen recreational activity (Figure 82).

• **Overcrowding** and **Conflict Between Recreational Users** during recreational activities were *never* experienced by **over 70%** of people surveyed (Figure 83 and 84).

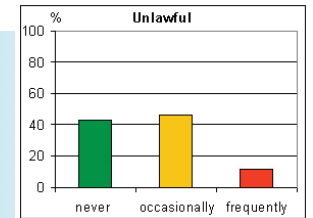


Figure 80: Perception of participants regarding unlawful behaviour.

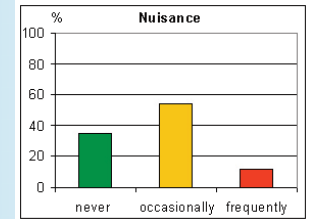


Figure 81: Perception of participants regarding nuisance behaviour.

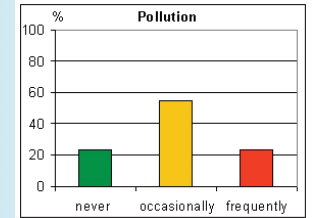


Figure 82: Perception of participants regarding pollution.

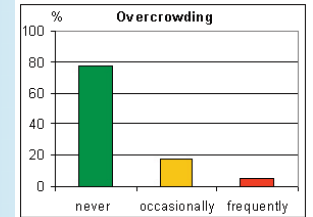


Figure 83: Perception of participants regarding overcrowding.

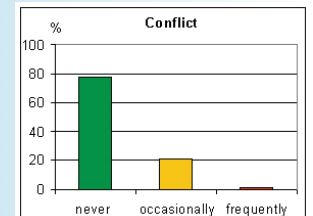


Figure 84: Perception of participants regarding Conflict between recreational users.



Figure 79: Boats sailing past the waterfront of Cobh.

Quality of Criteria Influencing Recreation:

• **Pathways** received the highest satisfaction ratings of facilities and criteria (Figure 78).

• **Public Toilets, Litter, Parking and Water Quality** received below average rating on a scale from poor = 1 to excellent = 7 (Figure 78).

70% of participants would like to see more recreational facilities in Cobh.

Types of facilities desired in Cobh:

- **Marina**
- **Cinema**
- **Sport Facilities**
- **Playgrounds**
- **Facilities for Young People**
- **Coffee Places and Restaurants**
- **Cleaner Beaches and Facilities**
- **Slipways**

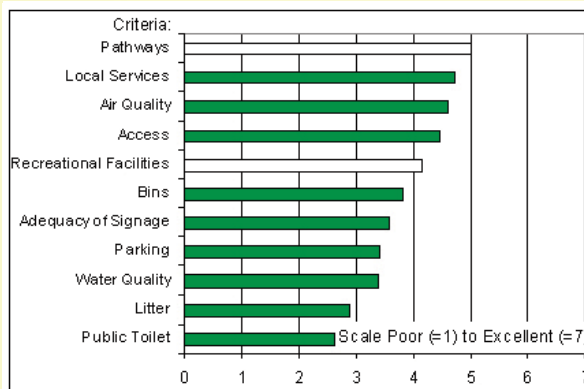


Figure 78: Graph showing rating and range of facilities and criteria in Cobh. Green bars represent data collected in 2005 and 2006 respectively (n=63) and white bars represent data collected in 2006 only (n=35).

4.3 Recreational Boating Carrying Capacity

4.3.1 The Carrying Capacity Study Area

The study area (Figure 84) used to investigate the carrying capacity included an area outside the harbour mouth as ‘spill out area’; this takes into consideration boats that leave the harbour during day trips. The spill out area was established following consultation with expert opinion (M. Mc Cauley, Irish Marina Federation, *pers. com.*).

It was estimated that an average boat travelling at 6 - 7 knots under favourable conditions and with the desire to return to the harbour the same day, would travel a distance of approximately 24 km. A depth of at least 5m is used as minimum depth criteria. Considering these thresholds the area used for the calculation of the carrying capacity covers approximately 52 km² (52,172,301 m²).

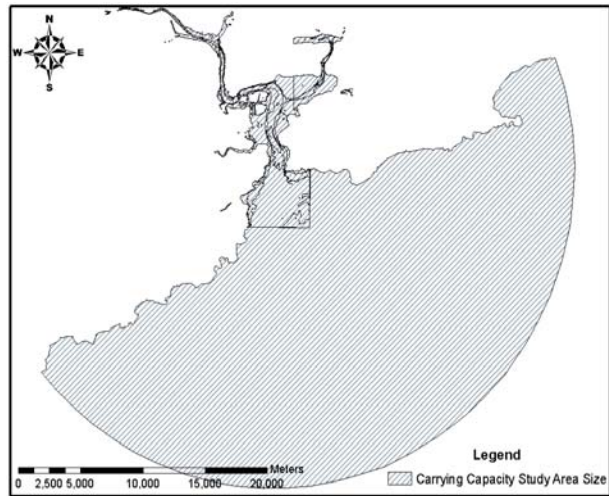


Figure 84: Map indicating the area included into the carrying capacity calculations.

4.3.2 Peak Use Rate Cork Harbour

The peak use rate of Cork Harbour is estimated at 1945 boats (see Table 12) considering a scenario, where all boats potentially ‘parked’ in the harbour are active on the water.

Table 12: Summary of the number of boats parked in Cork Harbour.

Category	Marinas and Boatyards	Moorings	All
Number Boats	910	1035	1945

4.3.3 Boating Density Cork Harbour

The carrying capacity study area of approximately 52 km² is divided by the 1945 boats ‘parked’ in the harbour and equals to a boating density area of approximately 0.026 km² (26 823 m²) per boat in Cork Harbour.

4.3.4 Optimal Number of Boats

1. Boat sizes in Cork Harbour derived from the inventory:

- 910 boats in marinas and boat yards (47% of all boats) have an average boat size estimated at 9.71 m (Table 6).
- 339 boats on moorings (17% of all boats), which are at least 6m long, have an average boat size of 8.46 m (Table 5).
- 696 boats on moorings are less than 6m long (36% of all boats) and are estimated to have at least a size of 5 m (Section 4.1.2.3).

The average boat size in Cork Harbour has been estimated at 7.8 m combining all three average boat sizes in proportion.

2. Boat types in Cork Harbour derived from the inventory:

The Port of Cork data on boat types (Figure 8) and consultation with the owners and managers of the marinas and boat yards (Table 5) suggests that *sailing boats* are the prevalent boat type in Cork Harbour.

3. Boating densities derived from the literature:

Considering that the prevalent recreational boat type in Cork Harbour is the sailing boat and applying the suggested densities from the literature (Table 1), a standard density of ~ 0.032 km² (32 3758 m²) is used for the calculation of the optimum number of boats for Cork Harbour for the purpose of this study. A spatial area of 0.032 km² converts to approximately eight

American acres; this density corresponds closely to several American studies on recreational boating carrying capacity for sailing boats and/or low powered watercraft (Ashton 1971; Jaakson et al. 1989; Radomski & Schultz 2005).

4. Calculation of the optimum number of boats for the Cork Harbour study area:

- $52\,172\,301\text{ m}^2 / 32\,375\text{ m}^2 = 1611.49$
- 52 km^2 (study area) divided by 0.032 km^2 (boating density from literature) ≈ 1611 boats.

According to the estimations and the literature on safety density standards the optimum number of boats for the Cork Harbour boating carrying capacity study area would be 1611 boats.

4.3.5 Carrying Capacity

The carrying capacity for Cork Harbour is established for an extreme scenario, where all the boats that are 'parked' in Cork Harbour are on the water. Furthermore the considered study area includes a substantial section outside the harbour mouth that is limited to the maximum distance a boat can travel safely on a day return trip under ideal boating conditions.

1611 boats (optimum number) represent approximately 82% of the 1945 boats (peak use rate) parked in Cork Harbour, therefore the boating carrying capacity for this scenario is exceeded by approximately 18%.

5. Discussion

This chapter will discuss the results of the investigation into recreational activities and boating carrying capacity of Cork Harbour.

5.1 Recreation in Cork Harbour

Recent and projected growth of the marine tourism and recreation sector in Ireland will have implications for many coastal locations. Impacts associated with increased levels of activity, coupled with the ancillary development required to support the growth of the sector will place demands on the management of the coastal environment. Knowledge of the extent of recreational activity, use-use and use-environment interactions, capacity estimation, and stakeholder viewpoints are all criteria that require analysis in the development of a strategy for recreation. Furthermore, an improved understanding of these criteria will contribute to the better understanding of planning requirements for the sector.

At present no recreational management strategy or plan is in place for Cork Harbour. However, over the course of two Cork Harbour Forum¹ workshops held in 2006 the concept of an integrated plan for the harbour received much support from stakeholders (statutory and non-statutory). Within such a plan, an overarching objective would be to ensure that the recreation sector, in its entirety, is developed in a sustainable manner in Cork Harbour. In a multi-use environment such as Cork Harbour this objective presents a number of challenges in terms of management and requires informed decision-making to bring about harmonious interaction between different recreation user groups, and wider user groups of the harbour, e.g. commerce, industry, and conservation. Other factors that need to be considered for the sustainable management of recreational activities in Cork Harbour include provision of a framework for the facilitation of safe, sound and satisfactory recreational experiences in the harbour area.

In order to understand the interactions, impacts and issues associated with recreation activities in Cork Harbour it was first necessary to establish a baseline. This study represents a first attempt at collating information on recreation activity and users in Cork Harbour. To date, data on recreational activities in Cork Harbour has not been collated in a systematic manner and there is no single organisation or regulatory body tasked with responsibility for management of, and planning for the marine recreation sector in Ireland. In fact, a number of statutory bodies have responsibilities for regulating activities within the harbour that relate to marine recreational users. For example: the Harbour Master is responsible for controlling navigation on the waterways, ensuring compliance with speed limits and other features of navigational safety; rangers from the National Parks and Wildlife Service are responsible for sites (coastal or otherwise) designated as protected conservation areas; local authority (City and County) and Environmental Protection Agency personnel are responsible for ensuring compliance with waste management and water quality regulations; and Department of Agriculture, Fisheries and Food personnel are responsible for foreshore administration and licensing. Some degree of integration between statutory bodies has been achieved with respect to marine tourism and recreation in Cork Harbour through the actions of the County Development Board² and the Cork Harbour Forum.

Information from this study, combined with other Corepoint activities (e.g. development of integrated management strategy for the harbour, landscape characterisation of a pilot area in the harbour and creation of GIS for harbour management) will form the basis for Corepoint's contribution to assisting the local authority in: planning support in Cork Harbour; and identifying scenarios where the local authority may play a role in resolving interactions and engaging in collaborative actions with other stakeholders (statutory and non-statutory). Similarly, the

¹ The Cork Harbour Forum is a multi stakeholder group representing the various interests contained within the harbour; the Forum is facilitated by the Corepoint Project.

² The priorities of Cork County Development Board (2006-2008) include the development of a Draft Tourism Implementation Plan, which is relevant to marine leisure and recreation in Cork Harbour.

delivery of tourism and environmental actions identified through the Cork Harbour Forum and development of key actions to encourage the development of tourism products will benefit from the data collated as part of this study.

The first step in progressing to sustainable recreation is to define and describe the current resource. The inventory developed for Cork Harbour provides information on the recreational contribution of the harbour, and gives an indication of the scale and range of recreation activities, and facilities, in the harbour. The development of the recreation inventory for Cork Harbour also facilitated the identification of key stakeholders, who provided information to the study, and who are potential participants in any process designed to create an integrated management plan for the harbour.

5.1.1 Recreation Activities

As demonstrated by the present study, Cork Harbour hosts a number of recreational activities involving high numbers of participants, (e.g. boating), and smaller interest groups, (e.g. wind surfing). The range of activities extends from active interests, (e.g. scuba diving), to more passive forms of recreation, (e.g. walking). Residents and visitors use the harbour as a recreational resource year round; with visitor numbers peaking in the summer months. Thus, the harbour provides a multi-season amenity catering for a range of recreational users.

Overall, of the activities included in the user perception survey, coastal walking was selected as the leading recreational activity in Cork Harbour. Despite the number of walking clubs that use Cork Harbour and its environs for scheduled walks, the majority of respondents took part in walking around Cork Harbour on an individual basis and not while taking part in an organised event or as a member of a club. The popularity of walking amongst residents and visitors to Cork Harbour is influenced by the availability of a network of diverse walks (e.g. cliff top, shoreline, wooded) within the harbour environs. Additionally, walking does not require special equipment and participation in the activity does not necessarily depend on the support of a recreational club.

The second most popular activity chosen by survey participants was swimming; participation in this activity was indicated for all survey locations. Similar to coastal walking, this is an activity, which does not depend on specialist equipment and is mostly conducted on an individual basis. Survey respondents indicated that participation in swimming was influenced by access, safety – avoidance of dangerous currents, and to some extent by water quality. Survey participants selected sailing as next most popular recreational activity in Cork Harbour (Figure 15). As expected participation levels in sailing peak where sailing clubs, marinas and moorings are present in Cork Harbour. The provision of facilities for sailing, and marine recreation in general, as well as the capacity for boats in the harbour, is discussed further in the subsequent sections of this chapter. Although walking, swimming and sailing are the most popular recreational activities in Cork Harbour, respondents indicated considerable levels of participation in activities such as angling, rowing and power boating. The survey indicated lower rates of participation in more specialist activities such as scuba diving and wind-surfing.

As well as information on recreation activities, the present study also revealed perceptions – both from visitors and residents - concerning criteria that would influence participation in water-based recreational activities. This provided insights into the satisfaction levels of recreational users, as well as giving an indication for motivation or reluctance to use the harbour for recreational purposes. The majority of survey respondents indicated that they would engage in more recreational activities in Cork Harbour, if facilities were improved and increased.

5.1.2 Recreation Facilities

A key objective of the study was to examine the extent to which current facilities influence the type and frequency of recreation in Cork Harbour. Facilities were categorised as those directly associated with recreation, e.g. clubs, and those which have some influence on recreation, e.g. parking, signage, and access. In all the survey locations facilities that would improve access to

the water and accommodate water-based recreation were desired. Common facilities requested include: marinas or slipways; amenities for children and young adults, and the provision of bins and public toilets in a number of locations.

In terms of access-related facilities the distribution of slips, marinas and moorings within Cork Harbour were previously mapped by the CMRC. The inventory of marinas (Figure 4), moorings (Figure 5) and sailing clubs (Figure 11) shows distribution is skewed towards the southwest area of Cork Harbour and is particularly concentrated around Crosshaven. Most mooring areas in Cork Harbour have reached their capacity except for some mooring locations in the Passage West and Aghada area (P Murphy, Port of Cork, *pers. comm.*). The decline in available mooring space capacity suggests that marina development will become more attractive to satisfy the demand for more boating berthage space in Cork Harbour. This premise is corroborated by the number of proposals for marina development within the harbour submitted for planning consideration: Passage West (200 berth); Monkstown (80 berth); Cobh (120 berth) and Haulbowline (200 berth). In all survey locations respondents expressed a desire for the development of more marinas and/or larger marinas.

Marinas can positively affect the local economies of towns and villages around the harbour through the generation of direct and indirect revenue. For example, a scenario for the proposed Cobh marina, where 500 boats visiting between the months of May and September, with an average of six visitors per boat spending ~€100 in the general vicinity of the marina, would result in ~€900,000 entering the local economy (B Curtis, Cobh Sailing Club, *pers. comm.*). Marinas are also attractive because they offer the additional benefit of revenue generation, as well as providing ancillary facilities that are demanded by recreation users of the harbour, e.g. toilets as well as access to the water. While the development of new marinas and/or the expansion of existing marinas will lead to an increase in accessibility to the waters of Cork Harbour, the development of associated land-based infrastructure, e.g. for servicing or repair of additional boats, will also need to be considered.

In general, respondents perceived the maintenance of existing access points and slipways to be good. However, it should be noted that a possible bias may exist in the survey regarding locations that are frequently used recreational areas, where facilities are generally maintained to a higher standard compared to more peripheral locations. An appraisal of existing access points requiring repair or upgrade, combined with identification of emerging demand areas, would be a beneficial input to any plans to develop and further promote Cork Harbour as a marine recreation area.

Judging from the responses received through the survey, increasing the availability of public toilets, bins, parking spaces and providing adequate signage will improve the general quality of Cork Harbour in relation to existing (and future) participation in water-based recreational activities. Educational and prohibitive signage could provide information to increase appreciation and awareness of Cork Harbour and addresses issues such as littering, unlawful behaviour and good practice when pursuing particular recreational activities (see Section 5.1.3).

While it is clear that the provision of good quality facilities would serve to increase levels of participation in water-based recreation in Cork Harbour, and enhance the experience of current users – the planning of any improvements would be best delivered within a strategic plan that would identify needs in terms of the entire harbour and those that are locally specific. In relation to facilities, specific issues exist for each survey location, such as the combination of limited parking facilities with poor public transport in East Ferry, and the dissatisfaction concerning several facilities-related issues impacting participation in recreational activity in Passage West and Cobh. It should be recognised that benefits associated with improvements in facilities would serve other community service needs within the harbour as well as those of the recreation and leisure sector, e.g. parking or food outlets. While it is important that the identified needs of each survey location are considered, the quality of facilities that received

high ratings from respondents, e.g. pathways, should also continue to be maintained and if possible improved for sustained user satisfaction of the user.

5.1.3 User Perceptions

The study also sought to investigate the perceptions of recreational users with regard to their use of the harbour. Perceptions of survey respondents revealed current issues and potential concerns at local levels, as well as for the entire harbour. The issues and potential concerns addressed are in some instances closely interlinked with each other, e.g. unlawful behaviour such as speeding can have safety implications. Additionally, user perceptions regarding these issues will be influenced by the factors such as the availability and quality of recreational facilities as discussed in Section 5.1.2.

Survey participants allocated favourable scores to the management criteria of 'safety' within Cork Harbour. This option is influenced by a number of factors; a number of respondents recounted the sheltered natural environment that Cork Harbour provides – making it suitable for a range of age groups participating in recreation; and the aforementioned perception that heavily used access points are well maintained and safe to use. However, while Cork Harbour is regarded as being safe, the category of 'safety' failed to score as 'excellent' in the survey. Reasons for this are likely to be linked to the low scores given by respondents to the categories of 'information on rules and codes of conduct', 'enforcement of legislation', 'adequacy of signage' and 'nuisance behaviour'. The low scores attributed to 'information on rules and codes of conduct' and 'enforcement of legislation' is influenced by the claim of approximately half of the respondents to have encountered occasional unlawful activity e.g. speeding, or nuisance behaviour, e.g. ignorance of right-of-way on harbour waters,, while participating in recreation within the harbour. Certain aspects of the nuisance and unlawful activities would probably require more than the provision of information in order to improve, however, other instances arise due to a lack of understanding between different user groups, e.g. cyclists and pedestrians using the same coastal pathway. It is for the latter circumstances that information directed at the recreation user groups in question would lead to improved interactions. Additionally, many respondents stated awareness of rules and regulations associated with recreation in the harbour but where unable to cite exact examples when asked. Codes of practice and more effective law enforcement are needed in certain cases to ensure a more consistent satisfactory recreational experience in the harbour area. A more detailed analysis of levels and types of officially documented breaches of regulations in contrast to the perception of levels of control in the area would be worthwhile.

Poor perceptions of the harbour in the context of pollution and litter control issues seem to be locally specific and suggest that action is needed to address this situation for certain locations within the harbour. Respondents tended to base their perceptions of water quality on visual assessments. For example, the low scores attributed to water quality in certain survey locations, e.g. Cobh, are due to the visibility of sewage being discharged from direct outfalls into the lower harbour. Despite poor perceptions of water quality at local sites, participation in recreational activity did not appear to overly adversely affected, e.g. in Cobh 40% of respondents indicated they swam in the local waters. Conversely, participation in swimming was under 5% in East Ferry, where water quality was given a high rating – however access and safety would also influence this finding.

Particularly poor perceptions on litter also appear site specific, with higher populated survey locations, e.g. Cobh, Blackrock, Passage West and Monkstown, scoring lower in this category. In each of the aforementioned locations, as well as in Aghada, the availability of 'bins' received low scores implying user dissatisfaction. A litter management strategy would best decide where to allocate bins, certainly increased provision in higher populated areas may improve the situation, but locating additional bins in quieter areas of the harbour may lead to over use and illegal dumping. It should be noted that a weakness in the design of the questionnaire meant that respondents were not required to offer more information on the type of pollution

and/or litter that was deemed to be a problem – this information would help target appropriate responses to particular categories of litter / pollution.

With regard to ‘overcrowding’ and ‘conflict’ the majority of survey participants indicated they never had experience of these issues. This would suggest current interactions between recreation user groups in the harbour are harmonious. However, in the absence of an overall plan or strategy for recreation in the harbour it can be argued that the current ad hoc scenario may change in the future and interactions may not remain the same. Similarly, the contemporary concerns and issues raised previously (e.g. litter, access, safety, etc.) must also be considered in terms of future scenarios, where recreation activities such as boating are likely to increase, causing a change in the magnitude and impact of these issues, and in turn, to the capacity of the harbour to accommodate associated change. The perceptions on overcrowding are interesting when considered in the context of the discussion in Section 5.2.

5.2 Recreational Boating Carrying Capacity

Although not the most popular activity, boating was chosen as the focus of a capacity assessment because of its recent and projected growth, and the planning and management implications of accommodating this growth. The boating carrying capacity calculations for Cork Harbour were undertaken for a specific set of conditions and suggest for the present scenario that carrying capacity is exceeded by 18%. However, the result has to be viewed in the context of the limitations and terms of reference for this calculation:

- The unlikely event that every boat in the harbour is operating on the water; and
- A lack of operational boating density standards for the harbour, limiting the calculation to standards suggested for boating carrying capacity in other environments and countries.

The result of the carrying capacity exercise does not assume an everyday use scenario for the harbour, rather it presents an extreme “what if” scenario, i.e. all boats in the harbour being on the water simultaneously. During events such as Cork Week an approximate maximum of 500 boats would be on the water at any one time (I Venner, Cork Week Organising Committee, *pers. comm.*), which falls below the number of boats at peak use rate included in the capacity calculation. Additionally, the guidelines adopted from international good practice could be considered as overly conservative and may not reflect user / regulator opinion in the Cork Harbour / Irish context.

The study estimated the number of boats stored in Cork Harbour at approximately 1945. For the carrying capacity exercise this number was applied to a usable water area of approximately 52 km². In comparison, Chichester Harbour in the UK has 9014 recreational vessels stored within a sub-tidal and tidal area of approximately 30.74 km². Chichester Harbour is a multi-use harbour and has the ecological designation of Area of Outstanding Natural Beauty (AONB). Issues such as overcrowding, conflict between different harbour users, lack of maritime awareness/knowledge and balancing demands for improved boating facilities with environmental needs were identified in Chichester Harbour through workshops with the stakeholders of the area (Conservancy Chichester Harbour 2007). Chichester Harbour has developed a series of policies and guidelines for use as part of a wider management plan for the harbour, thus facilitating better use of the harbour’s capacity. A similar approach comprising policies of use and integrated management could offset any potential negative interactions and overcrowding issues in Cork Harbour, as well as ensuring the potential for water-based recreation in the harbour is fulfilled in a sustainable manner.

Results suggest that overcrowding on the water is not considered a problem by recreational users of the harbour; however, results (from this survey and others) show an increasing trend in recreational boat ownership. Thus, the estimation of carrying capacity needs to be regularly

revisited in terms of changing conditions. The formula used does allow for the input variables to be changed in order to reflect rates of activity, however, external criteria such as interactions and constraints with other users, potentially as part of a zonation plan (see Section 5.2.1), should be factored into any future assessment. An integrated long-term strategy for the harbour could provide a framework for such assessments.

It could be argued that the value of the exercise was the process rather than the results, as the exercise involved: 1) the collection of data (e.g. on current use, facilities, and capacity), and identification of data gaps and trends; and, 2) interaction with stakeholders relevant to water-based recreation in Cork Harbour - both of which are of value to efforts focused on planning for recreation in Cork Harbour. The exercise was also useful when considered in the context of planning for future growth of the water-based recreation sector, much of which will be boating related, and what challenges may lay ahead for Cork Harbour in terms of planning and management.

5.2.1 Future Use of Sustainable Recreation Measuring Tools

The information collated and analysed for this study, in the context of ROS principles, is useful when aspiring to zone an area for the purposes of: ensuring recreational users are presented with appropriate choices regarding participation in a preferred recreational activity; choosing a setting with adequate facilities for the recreation activity in question; and, ensuring multiple users of the harbour can interact harmoniously.

To improve the quality of the overall recreational experience in Cork Harbour certain basic criteria and facilities have been identified that require upgrade or development. Water-based recreation, particularly boating and sailing, is currently centred in Crosshaven, but this locality is approaching capacity and may not be able to cater for the projected interest in water-based activities. Other locations such as Passage West, Monkstown and Cobh have the potential to become locations for increased water-based recreation if adequate facilities and infrastructure are provided.

The data collected as part of this study could be employed in the development of zoning scheme for recreation – as outlined in the ROS approach. The concept of zoning areas of the harbour for specific activities emerged from discussions held during the Cork Harbour Forum workshops. Workshop participants felt this would offer opportunity for reducing any potential conflict between the various sectors of interest in Cork Harbour. The Cork Harbour Forum workshops also identified information gaps on a number of levels, which would need to be addressed to ensure better understanding of the harbour and its. At present, systems of zoning already exist for Cork Harbour: informal areas of use; terrestrial planning zones; and special interest zones, e.g. landscape units and ecologically designated areas. As Cork Harbour is an area of multiple uses incorporating a wide range of different interest groups, planning / zoning for recreation should not be carried out in isolation but in the context of an integrated management strategy which considers all other activities, and their interactions, in the harbour. Improved data gathering, information sharing - incorporating information from other sectors, and potential collaborative actions between all key sectors could improve and refine recreational (boating) carrying capacity calculations to satisfy future planning and management requirements.

6. Conclusions and Recommendations

There is a diverse array of recreation activities undertaken within Cork Harbour. It has to be assumed that current levels of participation will be maintained or, more likely, increase into the future. This will pose challenges to those tasked with planning and management of the terrestrial and marine elements of the harbour area. **Marine spatial planning** is not as yet a formal planning tool in Ireland; however, the concept is becoming increasingly prominent internationally as a means of aiding effective management of marine resources and activities. The data collated as part of this study on coastal recreation in Cork Harbour provides the basis for input from the recreation sector to any potential marine spatial plan or integrated strategy for Cork Harbour. Furthermore, the information from the Corepoint study could be further expanded to produce stakeholder use and activity maps /zones for Cork Harbour.

The inventory of baseline information on recreation should also be further developed to support planning and management for recreation, but also as input to an integrated strategy for Cork Harbour. For example, an **appraisal of existing access points** to the water, combined with **identification of emerging demand areas**, would be beneficial to any plans to develop and promote Cork Harbour as a location for marine recreation, while also feeding into the wider management of the harbour. Similarly, building on elements of the inventory such as mooring and marina berth data, and public transport services would inform planning for recreation and non-recreation services in Cork Harbour.

The **development of a recreation strategy for Cork Harbour** should be considered, this could be nested within an integrated or a wider tourism strategy for the harbour. Such a strategy would facilitate the development of an agreed vision, amongst all stakeholders, for recreation in Cork Harbour; this vision would: ensure that relevant information on recreation is collected in a systematic manner; regulatory mechanisms for recreation activities within the harbour are put in place; impacts are monitored; and, capacity assessments are undertaken as appropriate.

Consideration should also be given to linking current (and future) data on recreational activities to the broader tourism objectives for the harbour. For example, merging recreation inventory data with data on marine heritage, such as location of, and access to, key sites. Additionally, using locations with high levels of participation in coastal recreation as points of dissemination for information on the marine heritage of Cork Harbour, or **developing products and services that optimise the tourism potential of Cork Harbour**, e.g. heritage walking / kayaking trails around Cork Harbour.

Carrying capacity for recreational activities, i.e. boating, is one tool that can support decision-making, in terms of addressing user interactions and tackling environmental and overcrowding issues, within coastal environments such as Cork Harbour. However, this tool should not be the only determining factor when evaluating management options for an area, the dynamic nature of the coastal environment has to be considered, and reflected, in the planning and management tools utilised. The data to emerge from carrying capacity assessments, such as the Cork Harbour exercise, should be used to **stimulate dialogue amongst key stakeholders** with a view to identifying favourable scenarios, (e.g. is it desirable in the future to have 500+ boats on the water more often than present, should certain recreation activities be targeted for expansion, etc.) and implementing actions to ensure these scenarios are realised.

To predict realistic future scenarios of water-based recreation in Cork Harbour, information from all relevant stakeholders in Cork Harbour, such as the commerce, industry and environmental sector, has to be incorporated. This requires improved information flow between all the relevant sectors in Cork Harbour but could for example; refine recreational (boating) carrying capacity calculations.

Ensuring that an environment remains within its carrying capacity is intrinsically linked to ensuring impacts associated with human activities are minimised. Considering the range of recreation activities in Cork Harbour the minimisation of impacts could be achieved or improved upon by **producing codes of practice/conduct** and **guidelines for recreationists**, detailing how they can reduce impacts associated with their particular activity. Implementation of this action would also address the perception to emerge regarding insufficient information on rules and codes of conduct, while also serving to sustain the positive safety record of the harbour, and raise awareness and appreciation of Cork Harbour.

Development associated with coastal recreation in Cork Harbour is still at a relatively embryonic stage; however, the projected growth of coastal recreation is likely to lead to future demand for infrastructure to support expansion of the sector. The relevant authorities should look to development of coastal recreation in other locations with a view to identifying **indigenous and international good practice**, thus ensuring that some of the prominent negative impacts, e.g. fragmentation of habitats, deterioration of environmental quality, associated with coastal recreation are not repeated in Cork Harbour.

7. References

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Appendix 1: Questionnaire

Site ID number:	Location:
Date:	Time:

Weather Conditions

Visitor Local Resident

Q1 How often would you participate in the following activities?

Activity	This Year	No. of Times	Season(s) S W A Sp
Angling from shore	<input type="checkbox"/>	_____	_____
Sea angling	<input type="checkbox"/>	_____	_____
Sailing	<input type="checkbox"/>	_____	_____
Rowing/Canoeing	<input type="checkbox"/>	_____	_____
Boating (Power boat)	<input type="checkbox"/>	_____	_____
Boating (RIB)	<input type="checkbox"/>	_____	_____
Boating (In board)	<input type="checkbox"/>	_____	_____
Swimming	<input type="checkbox"/>	_____	_____
Water/jet skiing	<input type="checkbox"/>	_____	_____
Surfing	<input type="checkbox"/>	_____	_____
Scuba diving	<input type="checkbox"/>	_____	_____
Bird watching	<input type="checkbox"/>	_____	_____
Coastal walks	<input type="checkbox"/>	_____	_____
Visiting Nature Reserves	<input type="checkbox"/>	_____	_____
Other	<input type="checkbox"/>	_____	_____

Q2 For any one visit how much time in total do you spend on your recreational activity?

30 mins 2 hours >5 hours
 1 hour 2.5 hours Other
 1.5 hours >3 hours _____

Q3 Is there an overnight stay associated with your recreation activity?

Yes No

Q4 Are you a member of a recreational club(s) in the area?

Yes No

If yes, which club(s)?

Q5 Do you rent, own or borrow, the equipment used for your recreational activity?

Rent Own Borrow

Q6 On a scale of 1 – 7 (where 1 = poor, 7 = excellent) how would you rate the location of your visit today, in terms of the following criteria:

Adequacy of signs in the area	<input type="checkbox"/>
Parking facilities	<input type="checkbox"/>
Public toilets facilities	<input type="checkbox"/>
Provision of bins	<input type="checkbox"/>
Recreational facilities	<input type="checkbox"/>
Water quality	<input type="checkbox"/>
Air quality	<input type="checkbox"/>
Litter	<input type="checkbox"/>
Adequacy of paths	<input type="checkbox"/>
Access	<input type="checkbox"/>
Local services in the area	<input type="checkbox"/>
Recreational facilities for:	
Youths <input type="checkbox"/> Middle aged <input type="checkbox"/> Elderly <input type="checkbox"/> Tourists <input type="checkbox"/>	

Q7 On a scale of 1-7 (where 1 = poor, 7 = excellent), how do you rate the management of recreation activities in the harbour in terms of the following:

Information on rules, codes of conduct	<input type="checkbox"/>
Safety	<input type="checkbox"/>
Enforcement of regulations	<input type="checkbox"/>
Maintenance of access points, slipways	<input type="checkbox"/>

Q8 Do you think you would participate in more recreation activities if the facilities were better?

Yes No

Q9 What type of facilities would you like to see more of?

Q10 In relation to the activity or activities that you participate in – which are the most important any issues, problems or concerns that you can identify? Please state why.

1. _____

 2. _____

 3. _____

Q11 On a scale of 1-7 (where 1= Extremely low, 7 = Extremely high) how would you rate the number of encounters that you had with other recreation users; and did this affect the satisfaction level you obtained from your recreational activity?

	Interaction	Satisfaction
On the water	<input type="checkbox"/>	<input type="checkbox"/>
On the shore	<input type="checkbox"/>	<input type="checkbox"/>

Q12 To what extent did you experience the following during your chosen activity

	Never	Occasionally	Frequently	Location
Unlawful activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Nuisance behaviour	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Overcrowding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Pollution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Conflicts between users	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Q13 Is your recreational activity:

	Yes	No
The main purpose of your trip	<input type="checkbox"/>	<input type="checkbox"/>
An important part of your trip	<input type="checkbox"/>	<input type="checkbox"/>
An incidental part of your trip	<input type="checkbox"/>	<input type="checkbox"/>

Q14 During your visit approximately how much would you spend (in € Euro) on the following?

Duration of visit	_____
	€
Accommodation	_____
Travel (incl. Parking)	_____
Food and Drink	_____
Rents, Fees, Charges	_____
Other	_____

Q15 For each type of recreation activity please indicate on the map the areas you most visit [in red] AND areas where you feel amenities could be improved [in blue].

Q16 Are you aware of any regulations associated with your recreational activity? Please list.

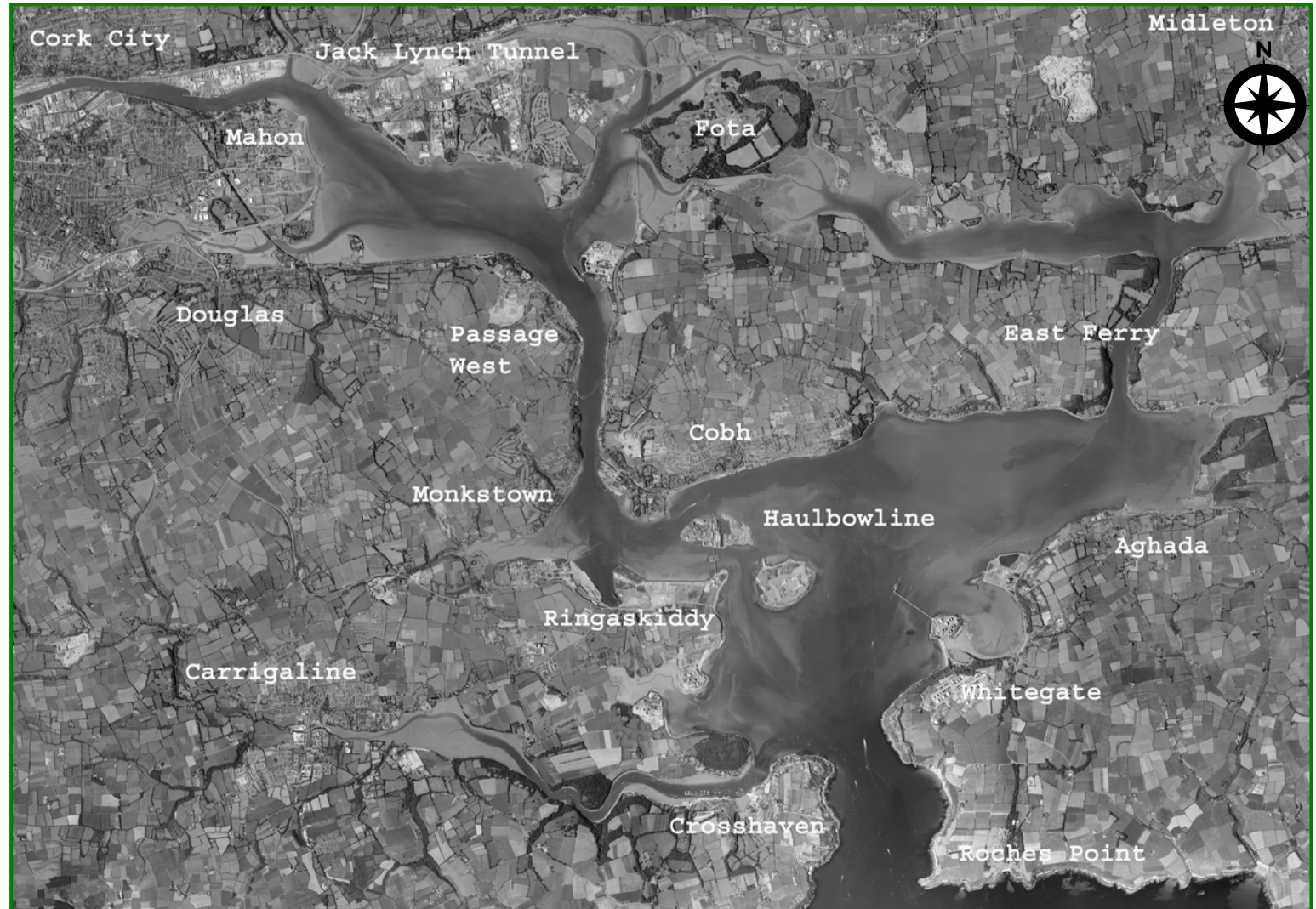
Q17 Do you have any additional comments on recreation in the harbour region?

Q18 Personal Details:

Sex ____ Age ____

No. of adults (>18) in party ____

No. of children (<18) in party ____



Appendix 2: Personal Communications

- Carmel Dineen, Port of Cork, 22/08/2006.
- Pat Murphy, Port of Cork, 23/11/2006.
- Ian Venner, Cork Week Organising Committee, 12/2006.
- Noel Fitzgerald, Port of Cork, 01/2007.
- Mark McCauley, Irish Marine Federation, 01/2007.
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