Investigating Cultural Values associated with the Coastal Wetlands in Northern Adelaide, South Australia

by

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CONTENTS

List of Figures

List of Tables

DECLARATION

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Signed..... 

Date.....18 Oct 2018

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ABSTRACT

Coastal wetlands are an important part of the mosaic of habitats that make up the South Australian coast. They perform a range of essential environmental functions, are highly productive and support regional economies. However, coastal wetlands in South Australia are under threat. Key threats are induced by development activities and sea level rise. Coastal wetlands perform a range of environmental functions including filtering of land-based run-off to the sea, buffering the coast from storms and wave energy, providing feeding grounds and habitat for an abundance of species both terrestrial and marine. Ecosystems can provide a range of provisioning, regulating, supporting and cultural services. Analysing ecosystems using an ecosystem services framework has proven beneficial in developing biodiversity conservation strategies. An opportunity to investigate Cultural Ecosystem Services (CES) locally has arisen through a coastal reclamation project implemented by the Goyder Institute of South Australia. One key element of the project is an ecosystem service evaluation, part of which is trying to understand cultural values attached to the coastal wetlands north of Adelaide. Cultural values are rarely considered in planning and decision making in South Australia. This study is designed to investigate the cultural and social values that the population living adjacent to the coastal wetlands of northern Adelaide, as well as those who visit and recreate, or use this coastline. Three dimensions of cultural values regarding cultural practices, environmental spaces and cultural ecosystems benefits are considered in this study. The aim of this study is to understand the cultural values associated with Northern Adelaide coastal wetlands and to contribute to the ecosystem service valuation of the Goyder Institute project. In this study, mixed methods were incorporated into the survey questions. Two data collection approaches; online survey and household questionnaires were used in this study. A total of 85 questionnaires were received and SPSS software was used to analyse the data. The results of this study show the interaction between people and the coastal region based on their cultural practices, places and benefits. In addition, the results show the perception of the respondents for the development of coastal wetland. The conclusion can be drawn that taking into consideration cultural values is vital for enhancing environmental planning and management. Finally, the outcomes of this study will help decision makers better understand cultural values associated with coastal wetlands in northern Adelaide, South Australia.

Key words: cultural values, cultural ecosystems services, coastal wetlands, cultural practices, cultural places and cultural benefits

1. INTRODUCTION

Background

Coastal wetlands (seagrass, mangrove and saltmarsh) are an important part of the mosaic of habitats that make up the South Australian coast. They perform a range of essential environmental functions, are highly productive and support regional economies. However, coastal wetlands in South Australia are under threat. Along the northern Adelaide metropolitan coast, approximately 80% of coastal saltmarshes and about 25% of mangroves have been lost due to human activities and actions. Edyvane (1999a, p. 93) cites key threats as conversion of saltmarshes to grazing lands, rubbish dumping (including old vehicles and household waste), recreational use of off-road vehicles and uncontrolled camping, unregulated shack development, weed invasion and drainage. Other threatening actions such as building seawalls and storm water infrastructure have also negatively affected South Australia's coastal saltmarshes (Fotheringham & Coleman 2008, pp. 90-2). Rising sea level is an emerging threat facing coastal wetlands in northern Adelaide (Caton et al. 2009b, p. 80).

Coastal wetlands perform a range of environmental functions including filtering of land-based run-off to the sea, buffering the coast from storms and wave energy, providing feeding grounds and habitat for an abundance of species both terrestrial and marine (Edyvane 1999b, p. 20) (Department of Environment Water and Natural Resources 2013, p. 12). Most recently, coastal wetlands have been recognised for their potential to sequester carbon (Hopkinson, Cai & Hu 2012, p. 186). This function has earned these habitats the title of 'blue carbon' ecosystems. For this reason, the South Australian Government recognises the importance of South Australia's coastal habitats in its climate change policies (Department of Environment Water and Natural Resources 2018).

These environmental functions are important to people. The benefits that people receive from natural processes are labelled 'ecosystem services' (Millennium Assessment, 2005). Ecosystems can provide a range of provisioning, regulating, supporting and cultural services. Analysing ecosystems using an ecosystem services framework has proven beneficial in developing biodiversity conservation strategies. This is because it allows input from affected groups and reduces conflict in decision-making (Greenaway et al. 2015, p. 9);(García-Llorente et al. 2018). For example, coastal management bodies could take into account site-specific needs and consider local community values, perceptions and experiences, to develop practical management responses at the local and regional levels (Leadbeter 1996, pp. 41-3). The application of ecosystem services analysis is still in its infancy.

Of all of the ecosystem services Cultural Ecosystem Services (CES) are least well-understood (Richards & Friess 2015). CES refers to a broad range of non-material benefits such as opportunities for wildlife recreation, social recreation in public spaces, or habitats as sites of education. Recognising the ecosystem services provided by 'fragments of natural ecosystems that remain in

urban areas' is noted as particularly important (Richards & Friess 2015). Understanding CES requires an investigation into use of habitats by people─ the different activities people carry out and where the activities take place (Richards & Friess 2015).

This study

An opportunity to investigate CES locally arose through a coastal reclamation project implemented by the Goyder Institute of South Australia 'From Salt to C: carbon sequestration through ecological restoration at the Dry Creek Salt Field'. The Goyder Institute project aims to restore degraded coastal wetlands. It is assessing the restoration of the Dry Creek salt fields as a means of assisting South Australia to become carbon neutral (Goyderinstitute.org 2018). In helping South Australia achieve its climate-ready policy, the Goyder Institute project includes a feasibility assessment of Blue Carbon and co-benefits derived from salt field restoration (Goyderinstitute.org 2018). One key element of the project is an ecosystem service evaluation, part of which is trying to understand cultural values attached to the coastal wetlands north of Adelaide.

Cultural values are rarely quantified, acknowledged or openly considered in planning and decision making in South Australia. Understanding the social and cultural values associated with the coastal wetlands of northern Adelaide will therefore make an important contribution to the ecosystem service valuation and the larger project.

This study is designed to investigate the cultural and social values that the population living adjacent to the coastal wetlands of northern Adelaide, as well as those who visit and recreate, or use this coastline, attribute to it. Based on Greenaway et al. (2015, pp. 9-10), three dimensions of cultural values; cultural practices, environmental spaces and cultural ecosystem benefits are considered in this study. Cultural practices consider how people interact with each other and with the coastal wetland environment between Torrens Island and Thompson Beach. Cultural spaces include places where people interact with each other and with the coastal region. Cultural ecosystem benefits comprise what people feel and what benefits they derive from the coastal region.

Study aim

The aim of this study is to understand the cultural values associated with Northern Adelaide coastal wetlands between Torrens Island and Thompson Beach and to contribute to the ecosystem service valuation of a Goyder Institute project. This study has the following objectives:

1. To contribute to a better understanding of cultural values associated with the coastal wetlands situated north of the city of Adelaide between Torrens Island and Thompson Beach in South Australia.
2. To investigate the cultural practices associated with the coastal wetlands in the Northern Adelaide coastal region between Torrens Island and Thompson Beach in South Australia.
3. To identify the different uses and significance of the coastal wetlands to local communities and user groups.
4. To identify how people feel about, and what benefits they derive from, the coastal wetlands between Torrens Island and Thompson Beach in South Australia.

2. LITERATURE REVIEW

2.1 Introduction

Globally, coastal wetlands are recognized as important and special habitats. They perform a range of functions that are environmentally and economically valuable. They provide essential services, such as supporting livelihood opportunities for people, maintaining water quality, preventing erosion from storms, and enhancing carbon sequestration (Webb et al. 2013, p. 458). Yet, coastal wetlands are one of the most vulnerable ecosystems on the planet. Growing populations in coastal regions put pressure on natural resources, variety of development activities, and pollution, can lead to the devastation of coastal wetlands ecosystem (McLusky and Elliott 2004, cited in Dick et al. 2011, p. 623).

Bai et al. (2014, p. 295) and Barbier et al. (2011, p. 169) report that globally, considerable coverage of coastal wetlands have been lost. The most common reasons for this loss include human activities associated with industrial and agricultural developments, urbanization, land reclamation for salt production, port expansion, sea level rise and other land uses such as aquaculture ponds (Bai et al. 2014, p. 295) ; (Akumu et al. 2011, p. 15) ; (Barbier et al. 2011, p. 180) ; (Brander et al. 2012, p. 62) and (Laegdsgaard 2006, p. 279). In South Australia, approximately 80% of coastal saltmarshes have been lost due to the reclamation for salt production and industrial development (Edyvane 1999b, p. 20).

There is now a shift to protect these habitats from further loss and degradation (Laegdsgaard 2006, p. 379). In order to protect, conserve and restore these habitats, effective decision making is required (Laegdsgaard 2006). Effective decision making regarding appropriate management options requires understanding of the ecological functions of the ecosystems and causes of problems in particular sites (Laegdsgaard 2006, p. 379). For example, Boon (2012, p. 848) states that for effective management it is important to identify species and how the species function.

In South Australia, an opportunity has arisen through a coastal reclamation project implemented by the Goyder Institute of South Australia 'From Salt to C: carbon sequestration through ecological restoration'. The project is designed to inform decision makers about restoration options and to enhance research expertise on climate action and a coastal saltmarsh restoration. Ecosystem service evaluation of the saltmarsh is one component of the project, part of which includes cultural values (Goyderinstitute.org 2018). This study is designed to gain an understanding of cultural values associated with the coastal saltmarsh north of Adelaide to help inform the wider project and to assist in better decision-making in the region.

2.2 Coastal Wetlands

As defined by the Ramsar Convention, wetlands are

> *'areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres'* (Millennium Ecosystem Assessment 2005a).

Coastal wetlands are a dynamic part of the intertidal zone of coastal environments. They are habitats situated in places of low wave action and receive intermittent tidal inundation (Adam 2002, p. 39) ; (Creighton et al. 2017, p. 6). These habitats are situated between terrestrial lands and marine ecosystems, acting as a buffer both from the sea and from landward inputs into the coastal zone (Edyvane 1999b, p. 20). Coastal wetland habitats are found in a wide geographic range from sub-arctic to tropical regions and extensively in temperate latitudes (Ouyang & Lee 2014, p. 5057). Barbier et al. (2011, p. 177) suggests that coastal saltmarshes are dominated by low species diversity. Species diversity in Australia's coastal wetlands differs according to latitude. The most species diverse saltmarshes are distributed in temperate regions. This is the inverse of mangrove species distribution, where mangrove diversity is highest in the tropics (Saenger et al., 1977; Adam et al., 1988; Adam,1994; Specht and Specht, 1999; Duke, 2006; Saintilan, 2009a, b, cited in Boon et al. 2015, p. 455).

South Australia has a good representation of Australia's coastal saltmarshes. They are found around parts of the coast of South Australia with several different plant associations including grasses, shrubs, herbs and sedges (Scientific Working Group 2011, pp. 59-62). Salt-tolerant species such as *Sarcocornia quinqueflora, Halosarcia spp, Sclerostegia arbuscula, Suaeda australia, Maireana oppositifolia*, and *Melaleuca spp* are found in South Australia's saltmarshes (Bryars 2003; Fotheringham and Coleman, 2008, cited in Creighton, Gillies & Alleway 2015, p. 23).

The northern coastline of the Gulf St Vincent (GSV) is a low tidal energy environment. The GSV is approximately 70 km wide from east to west and 160 km long from north to south, and the coastline is about 350 km long (Grady & Brook 2000, p. 5). In and around the Gulf are different coastal habitats such as tidal flats with seagrass meadows, intertidal sandflats, mangroves and saline marshland. Mangroves and saltmarshes environment widely dominate the parts of the northern GSV coast (Bourman, Murray-Wallace & Harvey 2016, p. 178). Approximately 20, 000 ha of mangrove and saltmarsh habitats are found in low lying areas of the GSV.

Figure 2. 1 Map of study area and indicating coastal wetland habitats along northern Gulf of St Vincent.
Source of map: Bourman, Murray-Wallace and Harvey (2016, p. 179)

These coastal wetland areas are important for feeding, spawning and nursery ground of invertebrates, fish and waterbirds including for internationally important shorebirds (Edyvane 1999a, p. 84). This study focuses on areas adjacent to the coast between Torrens Island and Thompson Beach which is part of the northern Gulf of St Vincent (see Figure 2.1).

Over 90% of South Australians live in Adelaide situated on the eastern shore of the Gulf (Edyvane 1999a, p. 84), it provides valuable assets such as transportation, fishery production, recreational activities (Grady & Brook 2000, p. 5). Many townships outside of the city of Adelaide around the GSV are popular tourist destinations (Grady & Brook 2000, p. 6).

2.3 Threats to coastal wetlands

Coastal wetlands are one of the most vulnerable ecosystems globally. There are many threats to coastal wetlands. The most common threats include eutrophication, climate change and sea level rise, reclamation and pollution (Adam 2002, p. 47). Sewage discharge and agricultural run-off are the main sources of excess nitrogen. Increasing nitrogen is a major cause of eutrophication which contributes to changing patterns of productivity and species distribution. For example, nitrogen stimulates the productivity of algae. The algae smothers saltmarsh and contributes to the dieback of saltmarsh vegetation (Adam 2002, p. 47). Increase in tidal inundation from sea level rise causes the loss of coastal saltmarsh (Adam 2009). The global mean sea level rise (1993-2009) has been estimated at 3.4 ± 0.4 mm per annum. Based on this figure, a contemporary global model predicted that up to 20% of global coastal wetlands may disappear by 2080s due to sea level rise alone (Webb et al. 2013, p. 457). In addition, saltmarsh reclamation for development activities such as industrial, agricultural, port and residential developments leads to loss of saltmarsh (Laegdsgaard 2006, p. 279). The impacts of industrial pollution, oil spills, run-off of nutrients, herbicides and pesticides result in degradation or loss of saltmarsh habitats (Adam 2009).

South Australian coastal wetlands are under threat by many causes. The major causes include the land reclamation for salt production, industrial development, pollutions, sea level rising, and using grazing lands. Due to reclamation of salt production, the extensive loss of saltmarshes occurs north of Adelaide and at the top of the Gulf at Price (Fotheringham & Coleman 2008, p. 90). At the northern beaches of the Adelaide metropolitan area, about 80% of saltmarshes have been lost due to the effects of salt-pans reclamation and industrial development (Edyvane 1999b, p. 20). North of Adelaide, salt production bund walls limit the tidal inundation. As a consequence of this, saltmarsh sediments may experience acid sulphate soil syndrome leading to habitat loss (Scientific Working Group 2011, p. 61). This would lead to the loss of large areas of some plant communities along the seawall in St Kida, such as shrubby samphire (Coleman, Coleman & Fotheringham 2017, p. 29).

Some areas of GSV saltmarsh near ports and urban areas are used as dumping grounds for vehicles and household waste. As a result, pollutants may have impacts on saltmarsh flora and fauna. Another source of pollution comes from accidental discharges from shipping and boating (Fotheringham & Coleman 2008, p. 92). Moreover, storm water and sewage enhance eutrophication and cause algae bloom. The deposited wrack from the algae bloom can damage saltmarsh communities, for example, causing unvegetated areas (Fotheringham & Coleman 2008, p. 92).

Rising sea level is another serious threat to the loss of coastal wetlands in northern Adelaide (Caton et al. 2009b, p. 80). Fotheringham and Coleman (2008, p. 91) state that when sea level rises, saltmarsh communities will retreat inland. Roads and levee banks located behind saltmarshes, hinder saltmarshes moving landwards. In this situation, mangroves colonize saltmarsh habitats (Fotheringham & Coleman 2008, p. 91). The combination of the sea level rising and urban expansion favour mangrove colonisation, which in turn reduces the saltmarsh habitats (Caton et al. 2009a, p. 80) and (Fotheringham & Coleman 2008, p. 91).

Converted wetlands land into grazing lands have been found in rural areas of coastal saltmarshes of South Australia. Many areas of saltmarsh, especially in rural areas of the Gulf St Vincent (GSV), have been cleared for pasture in order to develop livestock farming, for example, grazing lands for sheep (Edyvane 1999a, p. 93). Hard-hoofed animals make the saltmarsh lands compacted along tracks and only fragments of saltmarsh species are found in grazing saltmarsh lands (Fotheringham & Coleman 2008, p. 92). This leads to the devastation of the South Australia coastal saltmarshes.

2.4 Ecosystem services of coastal wetlands

The combination of geomorphological conditions, characteristics of vegetation and habitats of coastal wetlands provide essential ecosystem services (Ouyang & Lee 2014, p. 5057). Ecosystem services are defined as:

> *"the benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as regulation of floods, drought, land degradation, and disease; supporting services such as soil formation and nutrient cycling; and cultural services such as recreational, spiritual, religious, and other nonmaterial benefits "*(Millennium Ecosystem Assessment 2005a).

Functioning of the ecosystems provide a wide array of services. The services contribute to human needs indirectly and directly. Some services are essential for human survival and some are for enjoyment (Small, Munday & Durance 2017, p. 58). According to the Millennium Ecosystem Assessment, there are four categories of ecosystem services. These are summarised in Table (2.1).

Table 2. 1 Four categories of ecosystem services and their characteristics

Ecosystem Service Category	Service Characteristics
Provisioning	provide food and timber
Supporting	nutrient cycling and soil formation
Regulating	climate regulation, water purification and natural hazards protection
Cultural	non-material benefits- spiritual values, recreation and aesthetics

(Millennium Ecosystem Assessment 2005b); (Science for Environment Policy 2015, p. 5)

Ecosystem services fill the gap between ecology and economics. Ecosystem services use economic valuation to assign a value to an ecosystems. However, within the broader ecosystem, the ecosystem services approach and application adds some values; such as non-use, cultural, intrinsic, and moral, and take the appropriate steps to understand and take these into consideration. Therefore frameworks of ecosystem services need to accommodate different kinds of values; including cultural values in valuation (Harmsworth & Awatere 2013, p. 281).

Although intertidal coastal wetlands occupy only four percent of land area globally, they provide a wide range of ecosystem services (Spencer & Harvey 2012, p. 23). Many studies reveal that wetlands ecosystems provide many ecosystems services such as improving water quality, controlling pollutants, protection from flooding, enhancing carbon sequestration, reducing greenhouse gas emissions, improving biodiversity, and supporting biofuel production (Bernal and Mitsch, 2012; Gill et al., 2017; Kadykalo and Findlay, 2016; Liu et al., 2012; Main et al., 2017; Strand and Weisner, 2013, cited in Pedersen, Weisner & Johansson 2019, p. 1316). Marine and coastal ecosystems services provide provisioning services, for example, food, fibre, fuel, medicines, regulating services such as freshwater storage, hydrological balance and flood protection, supporting services including biochemical and nutrient cycling and cultural services, for example recreation, aesthetics (Clara et al. 2018, p. 191), inspiration for art, development of knowledge and health (Verschuuren 2006, p. 301).

2.4.1 Provisioning services and coastal wetlands

Coastal wetlands provide raw materials (fuel wood and resin) and food (fish, crab and honey) (Barbier et al. 2011, p. 181). For example, historically, in Australia, Aboriginal people used species such as *Melaleuca spp*. and *Casuarina glauca* for bedding and for making canoes (Boon 2012, p. 846). In addition, wetlands are the spawning ground for fishes that in turn contribute to local livelihoods and commercial fishing in many coastal communities (Herr & Landis 2016, p. 8) (Barbier

et al. 2011, p. 179). In Australia, over 75% of commercial and recreational fishing depend on coastal wetland habitats (Creighton, Gillies & Alleway 2015, p. 13).

Other provisioning services include food sources, nesting and roosting sites for resident and migratory shore birds (Boon 2012, p. 846). Coastal saltmarshes of northern metropolitan Adelaide, particularly from Gillman to Middle Beach, are important bird conservation regions (Caton et al. 2009b, p. 106) as they form a critical place along the East Asian-Australian Flyway of migratory shorebirds (Department of Environment Water and Natural Resources 2013, p. 12).

2.4.2 Supporting services and coastal wetlands

Coastal wetlands support the improvement of water quality and maintenance of groundwater because they have a unique function of filtering the surface water and reduce effects of pollution (Creighton, Gillies & Alleway 2015, p. 24). The water filtration services in turn benefit human health and adjacent ecosystems such as seagrass habitats (Barbier et al. 2011, p. 179). In addition, coastal wetlands provide important habitats for marine and birds species, such as shorebirds, fishes and crabs (Barbier et al. 2011, pp. 179-81).

2.4.3 Regulating services and coastal wetlands

Coastal wetlands protect the coastline from natural hazards. They reduce the effect of storm surges and the impacts of incoming waves by reducing wave velocity, height and duration. They also prevent coastal erosion and stabilize the sediment (Barbier et al. 2011, p. 179).

Carbon sequestration is one of the most productive ecosystem services of coastal wetlands (Barbier et al. 2011, p. 179). They are dubbed ‘blue-carbon’ ecosystems (Ewers Lewis et al. 2018, p. 263). Compared to other terrestrial ecosystems, coastal wetlands are higher carbon sequesters (Creighton, Gillies & Alleway 2015, p. 12). Carbon accumulation in coastal wetlands is stable over longer times and the decomposition rate is lower than terrestrial plants (Ouyang & Lee 2014, p. 5067). Consequently, this accumulated carbon limits the emission of carbon dioxide into the atmosphere (Creighton, Gillies & Alleway 2015, p. 12) . These coastal ecosystems have the capacity to store and sequester a huge amount of carbon (Herr & Landis 2016, p. 8). For this reason, coastal wetlands including coastal salt marshes, mangrove forests and seagrasses are good examples of nature based solutions for climate mitigation and adaptation.

2.4.4 Cultural services and coastal wetlands

According to Satz et al. (2013, p. 675) 'although it is often recognized that nature provides many intangible benefits to people, these benefits are difficult to characterize, let alone to measure'. Richards and Friess (2015, p. 192) describe that coastal wetlands provide significant cultural services including aesthetic, educational, cultural, and spiritual benefits, and opportunities for recreation and tourism (Barbier et al. 2011, p. 180; Millennium Ecosystem Assessment 2005a, p. 2) ; (Creighton, Gillies & Alleway 2015, pp. 13-4). Consequently, these landscapes support human mental health (Pedersen, Weisner & Johansson 2019, p. 1316). The coastal wetlands north of Adelaide for example, have been shown to provide birdwatching experiences for national and international visitors and serve as an ideal place for nature-based tourism DEWNR (Department of Environment Water and Natural Resources 2013, p. 20).

2.5 Theoretical framework of cultural values

The following discussion builds on better understanding of cultural values. It will provide the definition of values and explain the relationships of values, attitudes and behaviours of people. Express what is the culture and how culture influences the behaviour of people, and will provide the fundamental concept of cultural values explaining how cultural values underpin peoples interaction with the environment.

2.5.1 Values

Values are defined as:

'*internalised sets of beliefs or principles of behaviour held by individuals or groups. They are expressed in the way people think and act. They are based on cultural, religious, philosophic and spiritual traditions, and on current critical reflection, dialogue and debate'*(Harmsworth & Awatere 2013, p. 279).

And, '*a value is a conception, distinctive of an individual or characteristic of a group, which influences the selection from available modes, means and ends of action'*(Evans 2007, p. 7).

Basically, values represent standard/accepted behaviours, actions and goals of individuals and groups. Values also provide the basic principles of organizing and integrating of individual and group goals (Matijević, Vrdoljak Raguž & Filipović 2015, p. 459). Many studies state that values act as a foundation for attitudes. Attitudes link to and influence behaviours in different ways (Baur et al. 2016, p. 43). Values trigger and shape attitudes because values are the basis for inspiration of practices or states of mind. Attitudes are assessments of good or bad, desirable or undesirable, attractive or

bothersome. Attitudes can evaluate individuals, groups of people, practices, and events. Thus, values are one focal component of individual self and identity (Brocchi 2010, pp. 16-7).

Values, attitudes and behaviour interact with each other. Values affect attitudes regarding specific objects and situations, and attitudes influence people's behaviour. Values lead to a variety of attitudinal and behavioural outcomes. In terms of this study, it has been shown that values influence support or opposition for natural resources policy (Vaske & Donnelly 1999, pp. 526-7) . For example, while young, educated people and urban dwellers typically support conservation, others value traditional and extractive resource use such as forestry and mining (Vaske & Donnelly 1999, p. 524). Differences in environmental valuations may come from different personal preferences which are affected by values, historical experience and cultural beliefs (Jackson 2006, p. 20). For example, people who have positive attitudes towards forests interact more with forests because their values determine their desires and how they interact with the environment (Barona 2015, pp. 215-7).

Aggestam (2014, p. 682) describes values orientation related to decision making. Values are the basic mechanisms of beliefs that support the establishment of an individual's value orientation. Values influence motivational structures such as preferences and perspectives, the fundamental basis of decision-making.

2.5.2 Culture

Culture is a difficult term to define (Spencer-Oatey and Franklin 2012). Broadly speaking it refers to society and a particular way of life. Pizzirani, McLaren and Seadon (2014, p. 1317) state that culture is a combination of 'beliefs, knowledge, practices, values, ideas and language within a social group and the social group's attitudes and behaviours'.

> *'Culture is a fuzzy set of basic assumptions and values, orientations to life, beliefs, policies, procedures and behavioural conventions that are shared by a group of people, and that influence (but do not determine) each member's behaviour and his/her interpretations of the 'meaning' of other people's behaviour'*(Spencer-Oatey & Franklin 2012, p. 2).

Brocchi (2010, p. 39) argues that 'No culture could exist without a society. But, equally, no society could exist without culture'. Culture can be characterized by dialect, social structures, perspectives, customs and religion, all of which connect to a person's essential convictions (Small, Munday & Durance 2017, p. 50). Head, Trigger & Mulcock (2005) take a step further explaining a 'culture of nature' as 'sets of beliefs, practices and often unarticulated assumptions which underlie human relations with the environments in which people live'. They argue that 'all people 'have

culture' in that they are socialised to think about land and natural species in particular way' (Head, Trigger & Mulcock 2005, p. 252).

2.5.3 Cultural values

Fish, Church and Winter (2016, p. 212) also explain the fundamental concept of cultural values associated with nature are 'collective principles and life goals, and the associated norms and expectations that influence how ecosystems accrue meaning and significance for people'. This is relevant to this study because it seeks to determine how and why people attach meanings to coastal wetlands. Cultural values are built up over many years of interactions between people and their environment (Satz et al. 2013, p. 681). Cultural values, including cultural norms and beliefs, influence the practices of people (Retallack & Schott 2014, p. 354).

Cultural values reflect the environmental spaces, practices and cultural benefits associated with ecosystem services to human well-being. The cultural values provide researchers and decision makers with a framework of the understanding of cultural significance of ecosystems (Fish, Church & Winter 2016, p. 212). People create the dynamic mix of symbols, beliefs, languages and practices, and constitute culture and they build culturally specific environmental relationships. People maintain these relationships through environmental interactions with various significant places (Jackson 2006, p. 28). For example, a place may be valued because it is associated with family or group activities. According to Greenaway et al. (2015, pp. 9-10), the notion of cultural values can be understood as incorporating three dimensions:

- cultural practices, how people interact with each other and with the environment;
- cultural spaces, where people interact with each other and with the environment; and
- cultural ecosystem benefits, the benefits people seek to derive from the environment.

Environmental spaces refer to the places, localities, landscapes and seascapes where people interact with each other and the natural environment. Cultural practices include expressive, symbolic and interpretive interactions between people and the environment. Cultural benefits provide the dimensions of human well-being that can be derived from the environment (Fish, Church & Winter 2016, p. 212).

The cultural values and ecosystem services have been reviewed in previous sections. The following sections will give insights into the linkage of cultural ecosystems services and cultural values. The importance of considering cultural values in decision-making for environmental planning will be explore next.

2.6 Cultural Ecosystems Services and Cultural Values

Cultural values as part of ecosystem services were defined by Costanza et al (1997) cited in Harmsworth and Awatere (2013, p. 279) as 'aesthetic, artistic, educational, spiritual, and/or scientific values of ecosystems'. Moreover, this definition was expanded by the Millennium Ecosystem Assessment (2005) to include

> '*the non-material benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experience, including, for example. knowledge systems, social relations, and aesthetic values'*(Harmsworth & Awatere 2013, p. 279).

The characteristics of cultural values associated with cultural ecosystem services link to a wide range of philosophical perspectives of people (Fish, Church & Winter 2016, p. 212). Regarding the Australian Heritage Commission, heritage places, including natural or cultural places, have many different values. These different values include not only an array of environmental values but also a wide range of cultural values. Cultural values also comprise of spiritual relationships, sacred sites, customary use of plants and animals, and recreational activities (Jackson 2006, pp. 20-1).

The Daly River management in Australia, studied by Jackson (2006, p. 26), many Indigenous practices are related to different values such as economic, social and cultural values. Examples of such practices involve hunting, fishing, collecting bush tucker and painting artefacts. The Indigenous peoples' practices of interaction with the river system could be classified based on these type of values. It is likely that such a cultural category would be idealised ones; those considered unique to Aboriginal people in the region, like visiting sacred sites and conducting cultural ceremonies.

Pedersen, Weisner and Johansson (2019, p. 1316) state that cultural ecosystems services of wetlands comprises aspects of interactions between humans and nature. The interactions indicate their spiritual, cultural and symbolic values. The WHOQOL Group,1995 cited in Pedersen, Weisner and Johansson (2019, p. 1316) defined quality of life as the perception of people connected to the context of the culture and value systems, and linked to their goals, expectations, standards, and concerns. Perlaviciute and Steg, 2013 cited in Pedersen, Weisner and Johansson (2019, p. 1316) describe that quality of life considers different aspects including health and safety, family and social relations, environmental quality and the aesthetic beauty of nature.

2.7 Integration of cultural values in environmental planning and management

Considering cultural values has become an important factor for shaping support for government policy and decision-making (Greenaway et al. 2015, p. 9). It is recognised that an understanding of cultural values can contribute to collective norms and enhance comprehensive and structured approaches to be incorporated into inclusive decision-making (Greenaway et al. 2015, p. 9). Cultural values underpin policy and action as a factor of protection and management of cultural sites, resources and ecosystems because cultural values motivate people involved in shaping landscape or the environment (Greenaway et al. 2015, p. 10). Jackson (2006, p. 19) states that human interactions with the environment informed by an array of values are important for decision making in environmental management.

Places may also be significant for people because of a link to highly valued materials such as food or medicine (English 2002, p. 223). Examples of environmental spaces include a stretch of footpath, a street, a hill, a green space, a protected shipwreck, a marine conservation area, a national park. All of these spaces provide a range of cultural attributes such as beauty and tranquillity. Cultural practices are physical interactions between people and the environment. Physical practices involve many activities such as walking, dog walking, climbing, running, cycling, sitting, drawing, photography, looking, birdwatching, picnicking and camping. Cultural practices facilitate and organize people to participate in performances or social events through customs or traditions. Environmental spaces provide variety of benefits, including food, plant collection, water, and cultural benefits of feeling calm, spiritually enriched, attaining knowledge acquisition and scientific advancement (Fish, Church & Winter 2016, pp. 212-3).

The beauty of scenery is an aesthetic quality and a human judgement. Scenic beauty does not 'live' as a physical element in the landscape but it comes from our viewing of a scene (Lothian, 1999 cited in Lothian 2007, p. 1). Furthermore, the geographer Meinig commented that landscape is made not just out of what lies before our eyes, and what also exists in our heads (Lothian 2007, p. 1). This is because aesthetics is a full feeling quality, not a subjective quality. It comes from our sentiments, not from our analysis and investigation. Landscape quality cannot be estimated by target measures of the scene, rather as a quality coming from human opinions (Lothian 2007, pp. 1-2). Also, scenic quality is a community asset of impressive centrality (Lothian 2007, p. 22). Considering aesthetic values and ecological functions of a landscape, including coastal wetlands, can help to improve the sustainable management of wetlands ecosystem (Dobbie 2013, p. 179).

In South Australia, the landscape of the Adelaide International Bird Sanctuary comprises of water, plants, animals and special places which is a part of Kaurna culture. Appreciation of local landscape and culture will help underpin the future success of the management of the Adelaide International Bird Sanctuary (Department of Environment Water and Natural Resources 2016, pp. 2-

9). The understanding of the environmental and human phenomena are important factors to provide to the environmentally and culturally sustainable wetlands management (Dobbie 2013, p. 188). The Coastal Protection Branch of the Department for Environment and Heritage perceived that development pressures, including housing and land division, marinas, aquaculture, wind farms and access roads and trails, pose threats to community value (Lothian 2007, p. 11). By estimating and mapping landscape quality, the community is better positioned to choose the best area for development. The development will give monetary advantages while not destroying the visual characteristics which additionally give benefits. For instance, wind farms should not be placed adjoining shores of high quality because there may exist broad inland sites which are more appropriate (Lothian 2007, p. 22).

In Uganda, despite community based biodiversity conservation approaches being applied, there was appeared considerable opposition to protected area management. Mugisha and Infield (2012, pp. 244-50) studied the role of cultural values on protected area management. The aim was to seek the relationship between cultural determination and scientific development perceptive conservation. The study found that failure to consider local values caused conflicts between communities and protected area authorities. Consequently, the new management approaches focused on promoting key cultural values of local people. For example, the conservation managers allowed grazing lands for their beautiful cow called Ankole cows; the local people believe that the cows bring peace and tranquility to their region. Integrating beautiful cows into the park resulted in positive changes in the protected area management. The study concluded that key cultural values underpin the relationship between people and environment. Based on the Uganda case, Schneider (2018, p. 1) describes the integration of cultural values into conservation improves stakeholder relationships and brings positive outcomes.

For the protection and management of coastal saltmarshes around Australia, local planning schemes are required to be consistent with state and regional policy (Laegdsgaard et al. 2009, p. 200). In South Australia, higher biodiversity saltmarshes were under lease for future salt mining, however there is ongoing debate for the future uses of the mining leases (Coleman, Coleman & Fotheringham 2017, p. 20). Coastal saltmarshes are influenced by many human activities including land use changes such as, port dredging which may alter the tidal flow and water circulation pattern that may cause degradation of the wetland ecosystem. Thus, an inclusive decision-making process is important to be taken into account for environmental conservation (Laegdsgaard et al. 2009, p. 198).

Attempts have been made to prevent degradation of coastal wetlands habitats. These efforts have taken many forms in the context of human action and ecosystem services (Gedan, Silliman & Bertness 2009, p. 133). Scholte et al. (2016, p. 467) state that it is important to consider social and cultural values in management of restored wetlands. Cocks, Dold and Vetter (2012, p. 1) state that

the Convention on Biological Diversity (1992) initiated to consider the traditional knowledge and lifestyle, and actions of local communities for conservation and sustainable use of biological resources.

In an Australian context, Aboriginal groups value their relationship with a living healthy river system. They respect the socio-ecological relationships to the obligation and care of river systems. Practices of care involve relationships between people, water, and all the organisms which depend on water. Indigenous management efforts seek to sustain and encourage customary practices, and prefer these relationships (Jackson 2006, p. 28). Considering social and cultural values in conservation of natural ecosystems helps managers and scientists to better understand natural ecosystem management within social-ecological aspects (García-Llorente et al. 2018, p. 1576).

2.8 Challenges and opportunities of cultural values in decision making

Schneider (2018, p. 2) argues that the challenges of considering cultural values still remain. Many aspects of cultural values are difficult to describe extensively and clearly, and in the expression of cultural values, there is a tendency for tangible economic benefits within the ecosystem services framework. Small, Munday and Durance (2017, p. 57) state that non-material benefits of cultural ecosystem services are closely linked to emotional perceptions of people and is not easily measured (Satz et al. 2013, p. 48). As a result, valuing cultural ecosystem services by human perceptions remains a challenge.

Verschuuren (2006, p. 299) describes that cultural and spiritual values are sometimes difficult to present in decision-making. For example, when conservation managers not understand the spiritually and culturally identified information, and local people's values are inadequately interpreted or defined, this has the potential for conflicts between stakeholders. Consequently, this conflict triggers the loss of both ecologically and culturally substantial values.

In order to assess the cultural importance of natural ecosystems, valuations are needed to account for the various cultural and belief systems because there are the linkages between ecosystem performance and human well-being (Ghosh et al, 2005; Harmon, 2003; Posey 1999; Schama, 1995; Vanclay, 2002, cited in Verschuuren 2006, p. 301).

Management strategies become more feasible when the manager perceives the connection between people's attitudes and natural resources. The manager has a chance to understand not only various public perceptions but also analyse how public attitudes may differ from their own. A variety of interests in our dynamic environment, a more comprehensive understanding of public opinions and cultural values can help to support inclusive decision making (Baur et al. 2016, p. 44). Policy makers and conservation mangers need to explore ways to develop understanding and opportunities for the

integration of cultural and spiritual values in ecosystem management (Verschuuren 2006, pp. 304-5). García-Llorente et al. (2018, pp. 1576-7) state that in the context of global change, conservation strategies need to consider an integrated approach encompassing social-ecological perceptions and social interests on ecosystem services. When conservation policies are generated without consideration of social interests and needs of local communities, social conflicts between management and use can occur.

The comprehensive understanding of cultural values, why people think and behave the way they do, reflect conservation mechanisms in some way. The values (e.g. human beliefs) and attitudes (e.g. positive or negative evaluation) on individual behavior (e.g. volunteering to remove invasive species) are widely considered to apply in a conservation context (Homer & Kahle 1988;Manfredo 2008; Kansky et al. 2014, cited in Dietsch, Teel & Manfredo 2016, p. 1213).

2.9 Conclusion

Coastal wetland areas are significant habitats for native plants and animals. They also provide critical ecosystem services, with benefits to both people and wildlife. Coastal habitats provide not only tangible value but also intangible benefits. Regarding cultural services, people enjoy coastal landscapes in many ways, for example, nature-based and recreational activities. However, coastal wetlands are under threat, and require conservation and restoration efforts. For this reason, cultural values are the most important factor to take into account for restoration planning. This is because cultural values are linked to human interaction with ecosystem services of the coastal wetland environment. Although there is a challenge in understanding of cultural values, cultural values are progressively being considered in many environmental planning process.

3. METHODS

3.1 Introduction

Dobbie, 2013 cited in Pedersen, Weisner and Johansson (2019, p. 1317) states that focusing on the perceptions of local people about wetland areas increases the understanding of local conditions. This study follows an empirical approach seeking the opinions and perspectives of a range of participants to obtain new knowledge (Marczyk, DeMatteo & Festinger 2017, p. 6) about cultural values associated with the coastal wetlands in Northern Adelaide. This research approach is related to human social and cultural values, so ethical process and approval was required to conduct the data collection. In order to obtain the data, this study used mixed methods and two survey approaches, including online and household questionnaires. Finally, to present the findings, SPSS (Statistical Package for the Social Science) software was used to summarise the numeric data and the thematic analysis approach was used for qualitative data to reach the main idea of respondents.

3.2 Ethical Process

As this research involves humans approval to conduct the study was sought from the Flinders University Social and Behavioural Research Ethics Committee (SBREC). An application was submitted to SBREC on 18 May 2018. Approval was received on 19 Jun 2018. The ethics papers (introduction letter, information sheet and detailed questionnaire) are presented in Appendix 1.

3.3 Mixed Method

In this study, mixed methods were applied. Specifically, quantitative and qualitative methods were incorporated into the survey questions. Walter (2013, p. 21) suggests that the combination of quantitative and qualitative research methods helps to produce reliable results. Quantitative results can be generalised to the real population under study, and qualitative results can produce meaningful information. Neuman (2013, pp. 203-4) states that the objective of quantitative research is to obtain details of the empirical social world and to express the findings numerically. Quantitative questionnaires were used to capture demographic statistics of gender, age group, frequency of visits

Generally, qualitative methods provide researchers with a wide range of evidence and detailed information (Neuman 2013, p. 39). Qualitative data are descriptive and in the form of text that can be sought from different sources, for example, documents, observational notes, open-ended interview transcripts, physical artefacts, audio- or videotapes, and images or photos (Neuman 2013, p. 477). A qualitative method enables researchers to explore meaning described through and in culture (Corbin & Strauss 2008, p. 13). While closed-ended questions can provide evidence of patterns, open-ended questions gather more in-depth insights on participant attitudes, thoughts, and actions

3.4 Questionnaire Design

This study used a questionnaire of both closed and open ended questions. Closed-ended questions were designed with a fixed set of responses e.g. Likert rating scales. Closed-ended questions are faster to complete for the respondent and more easily coded by the researcher (Neuman 2013, p. 332). However, meaning can be lost due to the fixed and predetermined response categories. On the other hand, opened ended questions provide valuable additional information, especially in regard to seeking reasons, arguments or suggestions. Neuman (2013, p. 332) suggests that it is beneficial to include both open-, and closed- questions to yield the benefits of both methods.

The questionnaire was designed around the research objectives (what cultural practices are associated with the saltmarshes in Northern Adelaide's coastal region of South Australia? Where and how do people interact with each other and with the saltmarsh environment? and What benefits do people derive from the region?)

The questionnaire contained 20 questions (Appendix 1). These questions asked respondents about visitation (how often and for what purpose), and about respondent's sense of connection or belonging to the region, be it involvement with a group or a personal connection. The questionnaire then asked respondents about their awareness of a range of different attractions in the region (from national parks and walking trails to dirt bike parks and the rifle range), whether they had visited the attractions, and whether or not respondents felt the attractions were of importance. Respondents were then asked to rate the importance of 16 different experiential aspects about the coastal region, followed by the importance they attributed to six social and environmental assets and qualities. Two questions sought information about the future and perceptions of respondents about changes that may have an effect on this coast. The final questions sought basic demographic information.

3.5 Data Collection

Surveys are widely used for social science data-collection. Surveys are suitable to examine beliefs or behaviors of people (Neuman 2013, pp. 316-7). Surveys take different forms including interviews, opinion polls, and questionnaire dissemination. Two survey approaches were applied in this study: an online survey and a reply-paid household questionnaire. Both types of survey have different strengths and weaknesses. Generally, online surveys are cheap to administer, fast to deliver and the researcher can easily send reminder emails to respondents to achieve a higher response. Data entry is automated, so the researcher does not need to manually enter results into a spreadsheet. At the same time the public may be unmotivated to complete online surveys for a number of different reasons, including having to pay for internet connection fee (Bryman 2012, p. 677).

The benefits of postal surveys are that they are easy to read and complete, respondents can answer questions at their own convenience Neuman (2013, p. 345), and it is possible to review and check answers. Mail questionnaires can also avoid interviewer bias. On the other hand, the cost of postal surveys is higher, including printing and the expense of reply paid postage. According to Neuman (2013, p. 345), there is a lack of control over what happens to the questionnaire after delivery by the researcher. Consequently, incomplete questionnaires or misinterpretation of questions is possible. Manual data entry and deciphering handwriting responses of respondents, for open-ended questions, can be difficult. In contrast, data entry is automated in the online survey, so that the researcher does not need to enter the data into a spreadsheet. Qualtrics online recorded data file allows export of different data formats (e.g. SPSS, CSV, TSV, XML). However, recoding may be needed depending on the purpose of study for the data analysis.

In order to obtain a wide range representative of the study area, this study method focuses on the online survey and household questionnaire which were designed to:

- explore perceptions of participants from the adjacent communities as to how they feel about the coastal wetlands in question,
- identify how people in adjacent communities use or attribute value to the coastal wetlands

Qualtrics software (Qualtrics 2018) was used to design and disseminate the online survey. The household questionnaire was redesigned for print from the online survey as a booklet.

3.6 Selection of participants

Potential respondents for the online survey were identified as people with specific interests in the region (e.g., people belonging to Adelaide Dolphin Sanctuary Action Group and Friends of Gulf St Vincent) (see Table 3.1). The requirements of the SBREC ethics committee determined how the questionnaires should be administered.

For the online survey, participants were sourced from existing networks with a specific interest in the coastal wetlands such as ‘Friends’ groups and clubs, local and state government employees and elected members of three local councils. The key contact named on the website of the club or group was invited, by email, to disseminate to their network on behalf of the researcher the online survey and associated details about the study. Emails were sent to 61 key network contacts. The online questionnaires were distributed by email on 2 July 2018. The email invitation included the link to access Qualtrics survey, and two attachments: an introduction letter, and an information sheet (Appendix 1) describing the research project.

Sixty-one contacts from various societies, groups, councils and agency employees, as well as consultants working in the area, were invited to distribute the online survey to their networks on the

2/7/2018 and a reminder was sent on 20/7/2018 (See appendix 2) for a copy of the email invitation. Below is a list of networks to whom the email letter was sent.

Table 3. 1 Email distribution list of networks

No.	Name of networks
1	Wilderness Society
2	Conservation Council SA
3	Adelaide Dolphin Sanctuary Action Group
4	Marine Life Society of South Australia Inc
5	Birds SA
10	Adelaide International Bird Sanctuary
11	Birdlife Australia
12	Birdlife Australia (Samphire Coast Project)
13	Friends of the Adelaide International Bird Sanctuary
14	Friends of Gulf St Vincent (FoGSV)
15	Friends of Torrens Island
16	Salisbury And District Historical Society
17	Thompson Beach Progress Association
18	Mallala Foreshore Advisory Committee
19	Salt Creek Remediation Working Party - Two Wells Regional Action Team
20	Kaurna Aboriginal Community & Heritage Association Inc. (KACHA)
21	Adelaide Plains Council
22	City of Salisbury
23	City of Playford
24	Natural Resources Adelaide and Mt Lofty Ranges
25	The Coast Protection Board
26	Adelaide Plains Council
27	Delta Environmental Consulting
28	Integrated Coasts

For the distribution of the household questionnaire, households were randomly selected from suburbs adjacent to the northern Adelaide coastline. The suburbs identified were (see Figure 3.1):

1. Dublin
2. Thompson Beach
3. Middle Beach
4. Two Wells
5. Port Gawler
6. Virginia
7. Burton
8. Salisbury North
9. Paralowie
10. Parafield Gardens

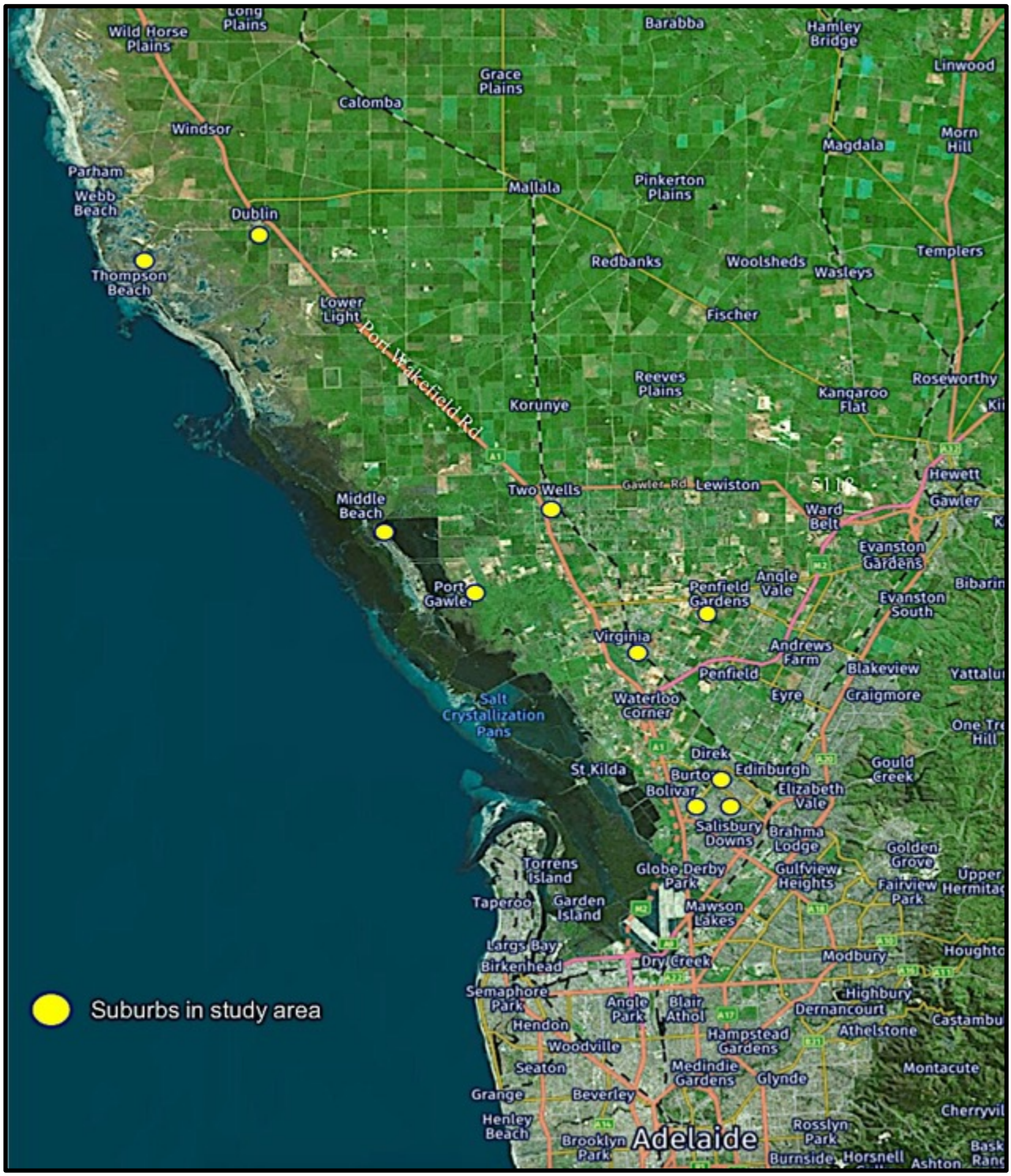

Figure 3. 1 Location of household questionnaires delivered to suburbs between Torrens Island and Thompson Beach

Prior to distribution the household questionnaire documents were assembled as one ‘package’ (questionnaire, copy of the introduction letter, information sheet, and reply-paid envelope) in a large envelope labelled ‘to the householder’. The starting point for disseminating questionnaires was determined following a ‘lottery-draw’ selection method which involves randomly pin-pointing on a map 10 streets from each of the suburbs to be sampled. Ten questionnaires were delivered to each

street. Every 4th house on the same side of a street had a questionnaire 'package' delivered to its post box until all questionnaires were delivered. If the street ended before all questionnaires were delivered then questionnaires were delivered to the other side of the street. Five hundred packages were delivered to randomly selected houses on 18 July 2018. The researcher and helpers drove to each of the 10 suburbs and delivered the packages to the letter boxes of randomly selected households. All 500 questionnaires were delivered within one day.

Table 3. 2 Suburbs by number of postal questionnaires delivered

No.	Suburb	Numbers of questionnaires delivered
1	Dublin	30
2	Middle Beach	30
3	Thompson Beach	30
4	Two Wells	65
5	Port Gawler	20
6	Virginia	65
7	Burton	70
8	Salisbury North	70
9	Paralowie	70
10	Parafield Gardens	50
TOTAL		**500**

3.7 Response

The purpose of using the combination of online survey and household postal questionnaires is to reduce the response rate. The researcher sent the 61 email address to potential groups of networks. A total of 39 responses were returned. It is difficult to predict how many respondents were sent by the networks. A total of 46 of the postal questionnaires were received back. The study received 85 responses in total. The overall reason for the low response rate is that the survey is volunteer based, there is no social connection between researchers and respondents. Due to the non-face-to-face nature of the surveys, the survey may present weak motivation of the participants.

3.8 Analysis of results

Different methods were used to analyse the qualitative and quantitative data. SPSS was used to analyse the quantitative data. Descriptive statistics generated by SPSS summarise numeric data, and present the results in tables, graphs, or single representation of a group of scores. This method helps explore the nature of different variables and their relationships (Teddlie & Tashakkori 2009, p.

258). SPSS generates various statistical outputs including descriptive, frequency, comparisons of means, inferential statistics and high-level simulations (Walter 2013, p. 196).

Before commencing data analysis, the data from the household questionnaires needed to be coded in the form of numbers rather than text. For example, for the variable 'gender', male and female values were assigned a number, '1" representing male and '2' representing female. Similarly, for 'Yes' or 'No' values, '1' was coded as 'Yes' and '2' was coded as 'No', and so on for all closed questions.

The qualitative data received from open-ended questions in the survey questionnaires were entered as verbatim transcripts. The textual data was then analysed by theme. The thematic analysis approach identifies themes that emerge from within the data (Walter 2013, p. 324). Particular ideas or concepts help to interpret and explain the data according to the concepts of theme (Walter 2013, p. 327). The researcher reviewed the passages of qualitative data and found the main ideas of respondents.

3.9 Conclusion

In this study, the empirical approach helped to capture a comprehensive understanding of cultural values regarding coastal wetlands in Northern Adelaide. Using mixed methods provided numerical findings and a wide range of information by describing qualitative data. Both quantitative and qualitative data enhance the data analysis to support the interpretation of findings. The combination of using online and household questionnaires, and the participants open-ended information attempted to contribute the validity of the data for research findings.

4. RESULTS

4.1 Introduction

This chapter presents the findings of the empirical research undertaken in this study. Two surveys were administered via a household questionnaire and an online survey that were seeking the perspectives of people regarding various aspects of the coastal wetlands north of Adelaide. The questions asked were based on the prescribed research questions and included: where people interact with the coastal region, what activities do they undertake there and what benefits are derived from the coastal region. The data were analysed to describe and explore the relationship between the participants and the coastal region. The findings include how often participants engage with the coastal region, what do they do when they visit there, and what kind of benefits they received from the coastal region. Moreover, the findings present the perceptions of participants regarding the coastal region and help in understanding the cultural values associated with the coastal region. All of these findings help to understand more about cultural values associated with the coastal region.

4.2 Demographic characteristics of household and online surveys

A total of 85 participants responded to the surveys. Forty-six postal questionnaires were returned and thirty-nine online surveys. The following discussion presents an overview of the various attributes of respondents including place of residence, age, gender and occupation.

Geographic distribution of survey participants

Overall, a total of 29 post codes from both household questionnaires and online surveys were recorded. Thirty-seven percent (n=31) were from the 5501 postcode and the remaining fifty-two percent (n=44) were from 28 different postcodes. Twelve percent (n=10) of participants did not describe their postcode.

The coastal suburbs where the household questionnaires were delivered had the highest concentration of responses. The postal codes received from household questionaries could be identified based on the location of suburbs where questionnaires were distributed (see Figure 3.1)

The largest number of respondents, thirty-two percent (n=27), were from the 5501 postal code that includes suburbs of Middle Beach, Thompson Beach, Two Wells, Port Gawler and Dublin. Suburbs dissected from the study site by Pt Wakefield Rd were less well represented, such as eight percent (n=7) of responses from Virginia (5120 postal code) and five percent (n=4) from the Salisbury North (5108) and Paralowie suburbs (5108). Two percent (n=2) from Parafield Gardens and Burton were recorded. Moreover, this study recorded four unexpected postcodes (5118, 5090, 5092 and 5014) from suburbs outside of the delivery area.

In terms of the online survey, 22 different postal codes were recorded, distributed across a much wider geographical area. Twelve percent (n=10) of participants did not describe their postal code. Of note, the largest cluster of online participants, five percent (n=4) were from 5501postal code. Two percent (n=2) each from 5000, 5019, 5086 and 5096 postcodes. The other 17 respondents were recorded with different postal code. Respondents were from a wide geographic range. It is difficult to identify suburbs because one postal code represents one or more suburb (see Table 4.1), particularly in the online survey.

Table 4. 1 Postal codes and Suburbs

No.	Suburbs Name	Postal Code	Household survey	Online survey	Total
1	Adelaide	5000	0	2	2
2	North Adelaide	5006	0	1	1
3	Croydon, Croydon Park, Croydon Park South, Devon Park, Dudley Park, Renown Park, Ridleyton, West Croydon	5008	0	1	1
4	Alberton, Queenstown	5014	1	0	1
5	Exeter, Semaphore, Semaphore Park, Semaphore South	5019	0	2	2
6	Grange, Henley Beach, Henley Beach South, Kirkcaldy, Tennyson	5022	0	1	1
7	Fulham, Fulham Gardens, West Beach	5024	0	1	1
8	Eastwood, Frewville, Fullarton, Highgate, Parkside	5063	0	1	1
9	Beulah Park, Kent Town, Norwood, Norwood South, Rose Park	5067	0	1	1
10	College Park, Evandale, Hackney, Maylands, St Peters, Stepney	5069	0	1	1
11	Felixstow, Firle, Glynde, Glynde Dc, Glynde Plaza, Joslin, Marden, Payneham, Payneham South, Royston Park	5070	0	1	1
12	Gilles Plains, Greenacres, Hampstead Gardens, Hillcrest, Manningham, Oakden	5086	0	2	2
13	Hope Valley	5090	1	0	1
14	Banksia Park, Tea Tree, Gully Vista	5091	0	1	1
15	Modbury, Modbury Heights, Modbury North, Modbury North Dc	5092	1	0	1
16	Gulfview Heights, Para Hills, Para Hills West	5096	0	2	2
17	Parafield Gardens	5107	2	0	2
18	Paralowie, Salisbury North	5108	4	0	4
19	Bolivar, Burton, Direk, Globe Derby Park, St Kilda, Waterloo Corner	5110	2	1	3
20	Davoren Park, Davoren Park North, Davoren Park South, Elizabeth Downs, Elizabeth North, Elizabeth Park, Elizabeth West, Elizabeth West Dc	5113	0	1	1
21	Kudla, Munno Para, Munno Para Downs, Munno Para West	5115	0	1	1
22	Evanston, Evanston Gardens, Evanston Park, Evanston Sout, Hillier	5116	0	1	1
23	Gawler	5118	1	0	1
24	Virginia	5120	7	0	7
25	Wynn Vale	5127	0	1	1
26	Port Elliot	5212	0	1	1
27	Brukunga, Dawesley, Kanmantoo, Nairne	5252	0	1	1
28	Bunbury, Colebatch, Deepwater,Tintinara	5266	0	1	1
29	Avon, Calomba, Dublin, Lewiston, Long Plains, Lower Light, Middle Beach, Parham, Port Gawler, Thompson Beach, Two Wells, Webb Beach, Wild Horse Plains, Windsor	5501	27	4	31
30		No response	0	10	10
		Total	46	39	85

Participants by gender (household and online surveys)

A total of 73 out of 85 respondents described their gender. More men than women completed the surveys. In terms of the household survey, 27 males and 18 females responded (see Table 4.2). Regarding the online survey, of those who declared their gender, the same number of males and females responded.

Table 4. 2 Percentage of respondents by gender in household and online survey

Gender	Survey type		Total
	Household survey	Online survey	
Male	32% (27)	16% (14)	48% (41)
Female	21% (18)	16% (14)	38% (32)
Other	0% (0)	1% (1)	1% (1)
No Answer	1% (1)	12% (10)	13% (11)
Total	54% (46)	46% (39)	100% (85)

Age of respondents

The majority of respondents were either middle (41-64) or old-aged (65+). This may be because people in the 61-70 age category are retired and had time to complete the study. There were no participants in the young-adult category (18-20) (see Figure 4.1.).

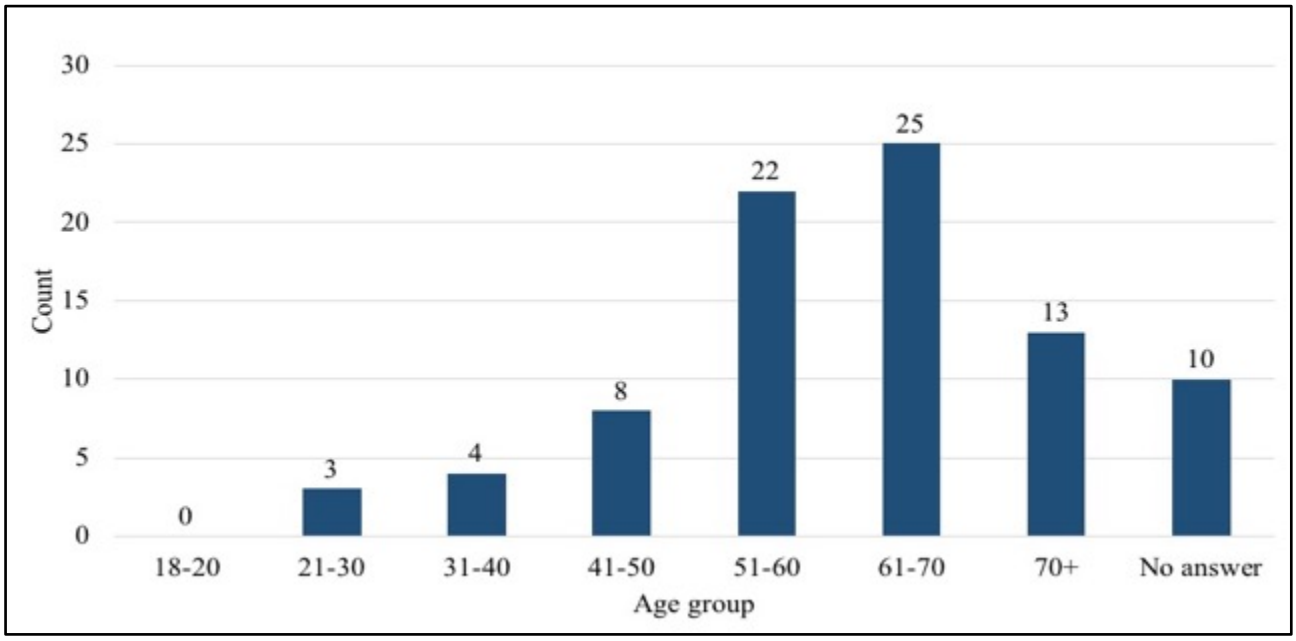

Figure 4. 1 Number of respondents by different age groups

Employment of respondents

Table 4.3 illustrates the different occupation types of respondents to the online survey (a question of this nature was not asked of the household participants). There were more retirees than any other category of employment.

Table 4. 3 Respondents occupation in online survey

No.	Occupation	Count	%
1	Retired	9	23
2	Employed full time (40 or more hours per week)	7	18
3	Self-employed	5	13
4	Employed part time (up to 39 hours per week)	3	8
5	Unemployed and currently looking for work	1	3
6	Unemployed and not currently looking for work	1	3
7	Student	1	3
8	No Answer	12	31
	Total	39	100

The following sections present the main findings related to the interaction of respondents with the coastal region. They will examine patterns of visitation, use and benefits received from the coastal region. Moreover, the qualitative data will explain personal cultural connections and perceptions of respondents. Their perceptions will include their preferences and further supportive information for the development of the coastal region.

4.3 Visitation of the coastal region

The questionnaires asked participants about the regularity of their visits to the region. The results indicated that 80 percent (n=68) of all respondents had visited the coastal region between Torrens Island and Thompson Beach at least once in the last year. In contrast, 15 percent (n=13) had not visited the region in the last year. Five percent (n=4) of respondents did not respond to the question.

Of the eighty percent who had visited the region, the frequency of visitation is quite varied (see Figure 4.2) shows that in the past year some people visited daily and others visited rarely. Nearly one quarter of respondents visited the region daily, followed by almost one fifth of respondents who visited the region at least occasionally. Very few respondents, four percent (n=3) said that they visited the coastal region only occasionally.

4.3.1 Frequency of visitation

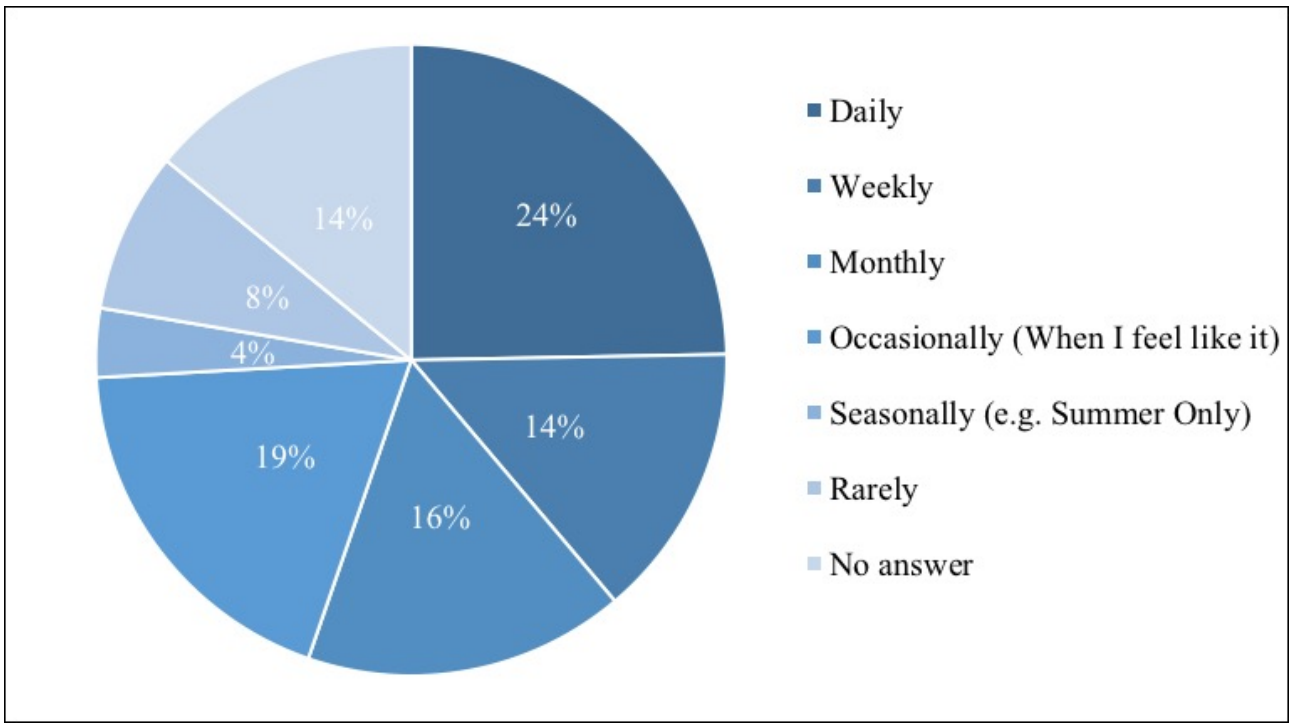

Figure 4. 2 Visiting frequency to the coastal region between Torrens Islands and Thompsons Beach

Table 4.4 compares the distribution of the frequency of visits between household and online survey respondents. The results show that for respondents completing the household questionnaires, the majority visited the region daily 21 percent (n=18)). In comparison, the majority of respondents, 11 percent (n=13), completing the online survey visited monthly. Visiting frequency was also associated with postcode. Respondents from the 5501 postcode visited the region more often than other post codes.

Table 4. 4 Visiting frequency to the coastal region by household questionnaire and online survey

Survey type	Postcode	How frequently do you visit this coastal region between Torrens Island and Thompson Beach?							Total %
		Daily %	Weekly %	Monthly %	Occasionally (When I feel like it) %	Seasonally (e.g. Summer Only) %	Rarely %	No answer %	
HH survey	5501	20	4	1	4	0	2	1	32
	Other postcodes	1	4	2	5	4	4	4	24
	Total	**21**	**8**	**3**	**9**	**4**	**6**	**5**	**56**
Online survey	5501	2	1	1	0	0	0	0	4
	Other postcodes	1	5	11	9	0	1	2	29
	No Response	0	1	1	1	0	1	7	11
	Total	**3**	**7**	**12**	**10**	**0**	**2**	**9**	**44**
Total	5501	22	5	2	4	0	2	1	36
	Other postcodes	2	8	13	14	4	5	6	52
	No Response	0	1	1	1	0	1	7	11
	Total	**24**	**14**	**16**	**19**	**4**	**8**	**14**	**100**

4.3.2 First visit to the coastal region between Torrens Island and Thompson Beach

Figure 4.3 shows that over half of the participants had a long engagement with the region having visited there the first time more than ten years ago, and a further 11 percent (n=9) more than six years ago. It is important to note that a small percentage, two percent (n=2), of participants had never been to the coastal region.

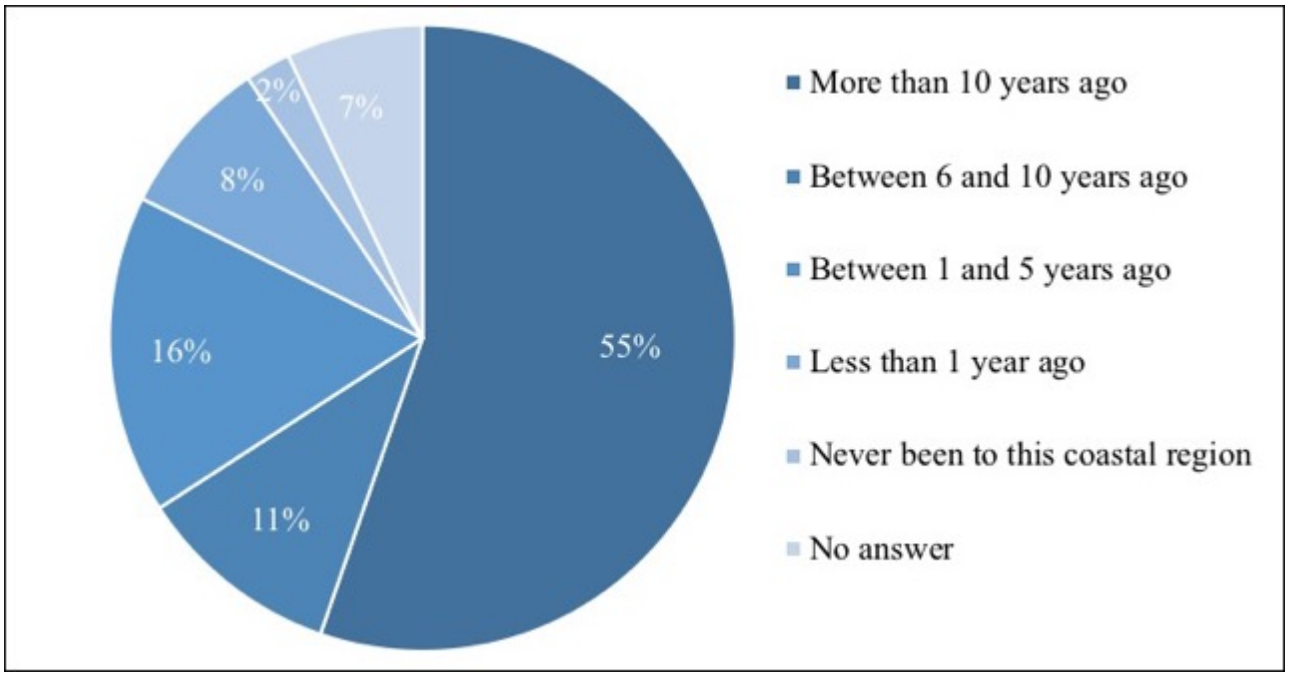

Figure 4. 3 First visit of respondents

Table. 4.5 shows that participants have had a long engagement with the region, having visited the first time more than ten years ago for both those completing the household questionnaire, thirty-two percent (n=27), and almost one quarter of online respondents. A small number of those completing the online survey have never visited the region. While all of the household respondents have been to the region, two percent (n=2) online participants have never been visited

Table 4. 5 First visit of respondents in household and online survey

When did you first visit this coastal region between Torrens Island and Thompson Beach?	Survey type		Total
	HH survey	Online survey	
More than 10 years ago	32% (27)	24% (20)	56% (47)
Between 6 and 10 years ago	7% (6)	4% (3)	11% (9)
Between 1 and 5 years ago	6% (5)	11% (9)	17% (14)
Less than 1 year ago	6% (5)	2% (2)	8% (7)
Never been to this coastal region	0% (0)	2% (2)	2% (2)
No answer	4% (3)	4% (3)	7% (6)
Total	55% (46)	46% (39)	100% (85)

4.4 Use of the coastal region

This study set out to investigate how participants use the coastal region. The results present how social or local groups use the region.

4.4.1 Use of the coastal region by cultural activities

Figure 4.4 shows the main activities of the participants when visiting the coastal region between Torrens Island and Thompson Beach. It confirms that the coastal region is used for a wide variety of activities, some of which are contrasting. For example, nature conservation and resource extraction; low impact activities such as walking and photography compared to dirt bike riding and off-road driving. The most frequently recorded activities were nature appreciation and birdwatching. The second most frequently recorded activities were relaxing/spending time and recreational based activities such as fishing, crabbing, walking and running. The least recorded activity was related to traditional activities.

Some people visited the region for working related activities not listed in the questionnaire including volunteer snake catching, planting trees, gardening, and rescuing bogged vehicles. The respondents also described the other activities such as visiting playgrounds.

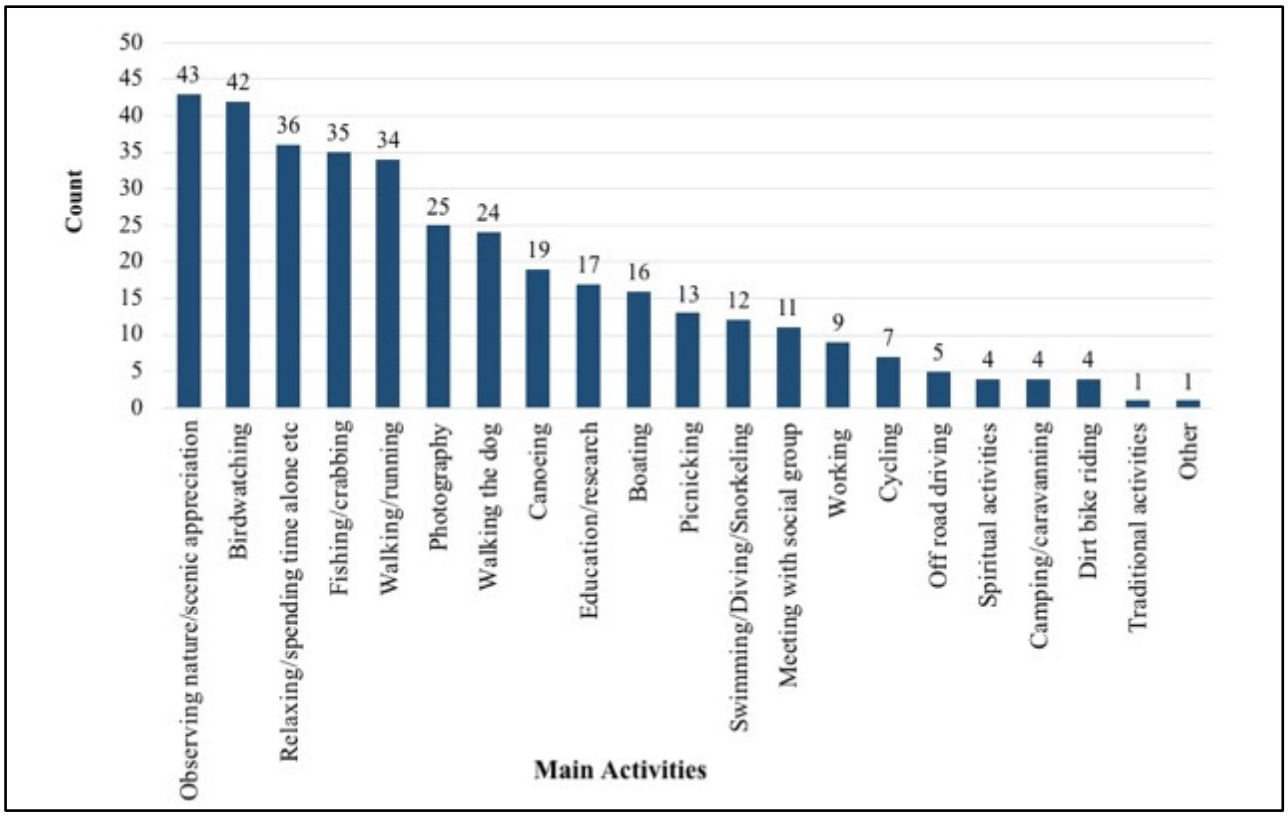

Figure 4. 4 Main activities of the participants when visiting the coastal region between Torrens Island and Thompson Beach

4.4.2 Use of the coastal region by groups

Respondents were asked to identify the name of the groups they belong to. Nearly 30 percent (n=25) of respondents reported they belonged to a group. Fourteen groups were identified that participants are involved in (Table 4.6).

Table 4. 6 Lists of the name of groups attached to the coastal region

No.	Group Name
1	Thompson Beach Progress Association
2	Middle Beach Resident Association
3	Adelaide Plains Rate Payers Association
4	Foreshore Committee Adelaide Plains
5	Unidentified Residents Association Inc
6	Friends of Gulf St Vincent
7	Friends of Torrens Island
8	Adelaide Dolphin Sanctuary Action Group
9	Friends of Adelaide International Bird Sanctuary
10	Friends of Shorebirds South East, Birdlife Australia
11	Birdlife Australia
12	Birds SA
13	Victorian Waders Study Group
14	Samphire Coast Tai Chi

4.5 Cultural benefits derived from the coastal region

Twenty seven respondents reported the benefits they derived from the coastal region between Torrens Island and Thompson Beach. According to the survey results, coastal habitats support a variety of benefits not only for humans but also for wildlife.

The following quotes are examples of benefits what they described.

"Enjoyment and Relaxation to de stress from day to day life" [Online survey, ID60].

"Family recreation" [Household survey, ID04]

"We reside here, peace and quiet, few people or stress, bird life, pristine area. [Household survey, ID11].

"Peace, Quietness and Tranquillity" [Household survey, ID16].

"Fishing" [Household survey, ID27].

"Fishing and crabbing" [Household survey, ID33].

"Birdwatching" [Online survey, ID42].
"Chance to be out in a fascinating environment. Bird viewing" [Online survey, ID769].

"Small population people, small population road traffic, quality air, wildlife and activities" [Household survey, ID12].

"Thompson Beach Progress Association community activities Tai Chi" [Household survey, ID15].

"Home, beauty, mild maritime climate, wondrous birds, animals and plants" [Online survey, ID72].

The results found that the participants have received different benefits from the coastal region. According to the above quotes, this study summarised its key themes that reflect the benefits.

- Fishing
- Crabbing
- Birdwatching
- Admiring fascinating environment
- Pleasant climate
- Peace, quietness and tranquility of the environment
- Quality air
- Relaxation /reducing stress
- Enjoyment
- Family recreation
- Small population and road traffic
- Increase in communities participation through local activities

4.6 Awareness of cultural attractions and broader cultural significance of the coastal region

This study asked respondents about their awareness of cultural attractions and broader cultural heritage significance of the region. The respondents also rated the importance of attractions and cultural heritage significance. The following sub-sections will detail how aware the respondents are of the attractions and cultural heritage significance of the region.

4.6.1 Awareness and importance of the attractions of the coastal region

The respondents were asked about 11 sites/attractions to examine their awareness level and how important were the cultural places in the region . The sites included:

1. Adelaide International Bird Sanctuary National Park – Winaityinaityi Pangkara
2. St Kilda Adventure playground
3. Thompson Beach walking trails
4. Adelaide Dolphin Sanctuary
5. Port Gawler Conservation Park
6. St Kilda Mangrove Trail and Interpretive Centre
7. Garden Island Boardwalk
8. Samphire Discovery saltmarsh trail

9. Middle Beach Caravan Park
10. Port Gawler Dirt Bike track
11. Lower Light Rifle Range

The findings are presented below. There are 22 charts, two for each of the sites of attraction and 11 tables to compare between household and online surveys.

Adelaide International Bird Sanctuary National Park—Winaityinaityi Pangkara

Approximately sixty-four (n=56) percent of respondents had visited the Adelaide International Bird Sanctuary National Park (Winaityinaityi Pangkara) more than once or, at least once. Nearly ten percent (n=8) of participants had not been there but they were aware of the place. Almost thirteen percent (n=11) had not heard of the site (See Figure.4.5). Almost eighty percent (n=67) of respondents reported that the bird sanctuary was an important site.

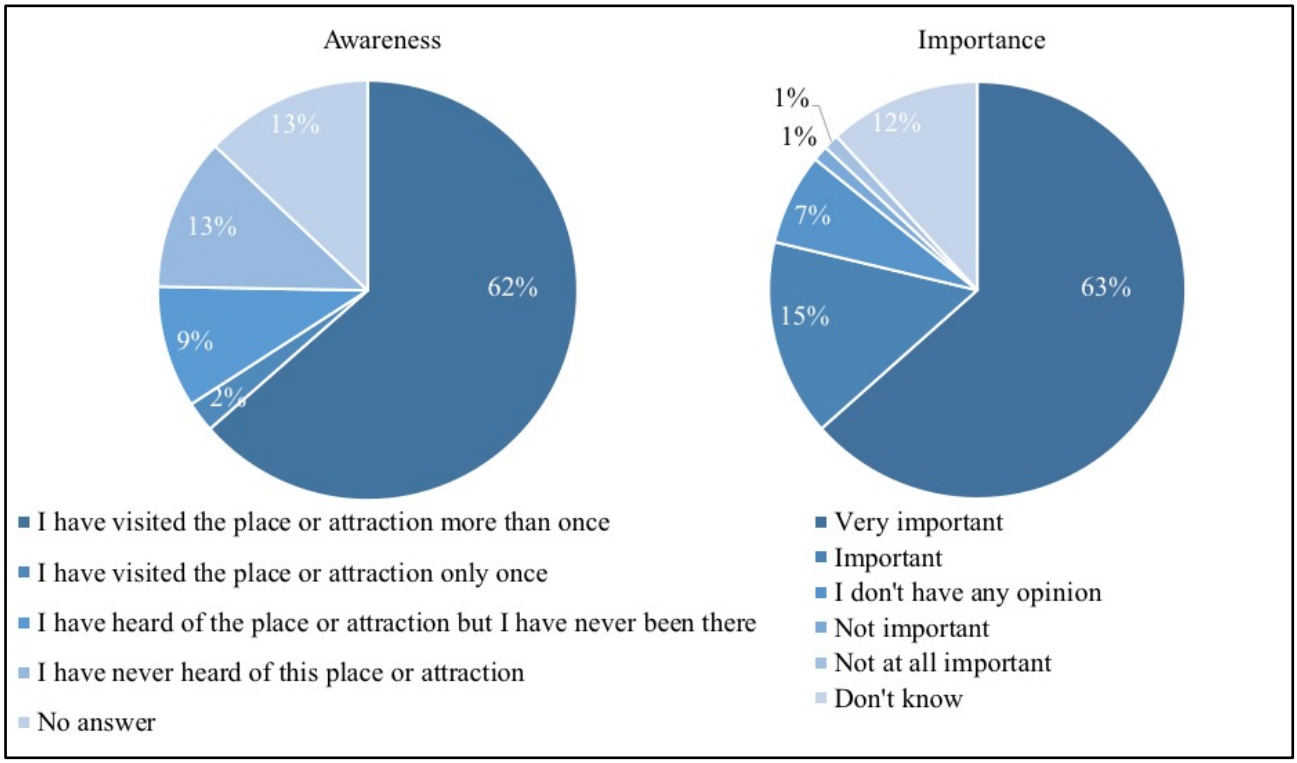

Figure 4.5 Comparison between awareness and importance of Adelaide International Bird Sanctuary National Park—Winaityinaityi Pangkar

There was no noticeable difference between the household and online respondents (see Table 4.7) in terms of rating the importance of the sanctuary. Forty-four percent (n=37) of household respondents and thirty-four percent (n =30) of online participants said that the bird sanctuary was either 'very important' or 'important'. However, twelve percent (n=10) of household respondents have never heard the Adelaide International Bird Sanctuary. In contrast, there were no online

participants who answered this question who said they had never visited there. Overall, the bird sanctuary is an important attraction.

Table 4. 7 Percentage of participants identified Adelaide International Bird Sanctuary National Park—Winaityinaityi Pangkara

Survey type	Awareness	Adelaide International Bird Sanctuary National Park—Winaityinaityi Pangkara						Total
		Very important	Important	I don't have any opinion	Not important	Not at all important	Don't know	
Household	I have visited the place or attraction more than once	21	7	2	1	0	0	31
	I have visited the place or attraction only once	1	0	0	0	0	0	1
	I have heard of the place or attraction but I have never been there	5	1	1	0	0	0	7
	I have never heard of this place or attraction	4	4	4	0	1	0	13
	No answer	0	1	0	0	0	1	2
Total		31	13	7	1	1	1	54
Online	I have visited the place or attraction more than once	29	2	0	0	0	0	31
	I have visited the place or attraction only once	1	0	0	0	0	0	1
	I have heard of the place or attraction but I have never been there	2	0	0	0	0	0	2
	No answer	0	0	0	0	0	11	11
Total		32	2	0	0	0	11	45
Household & Online	I have visited the place or attraction more than once	50	9	2	1	0	0	62
	I have visited the place or attraction only once	2	0	0	0	0	0	2
	I have heard of the place or attraction but I have never been there	7	1	1	0	0	0	9
	I have never heard of this place or attraction	4	4	4	0	1	0	13
	No answer	0	1	0	0	0	12	13
Total		63	15	7	1	1	12	99

St Kilda Adventure Playground

Figure 4.6 shows the participants' awareness and level of importance of St Kilda Adventure Playground. The majority of respondents reported that they had visited St Kilda Adventure Playground, whereas a small number have never visited there. When rating this place, sixty-eight (n=57) of respondents acknowledged that St Kilda Adventure Playground was important.

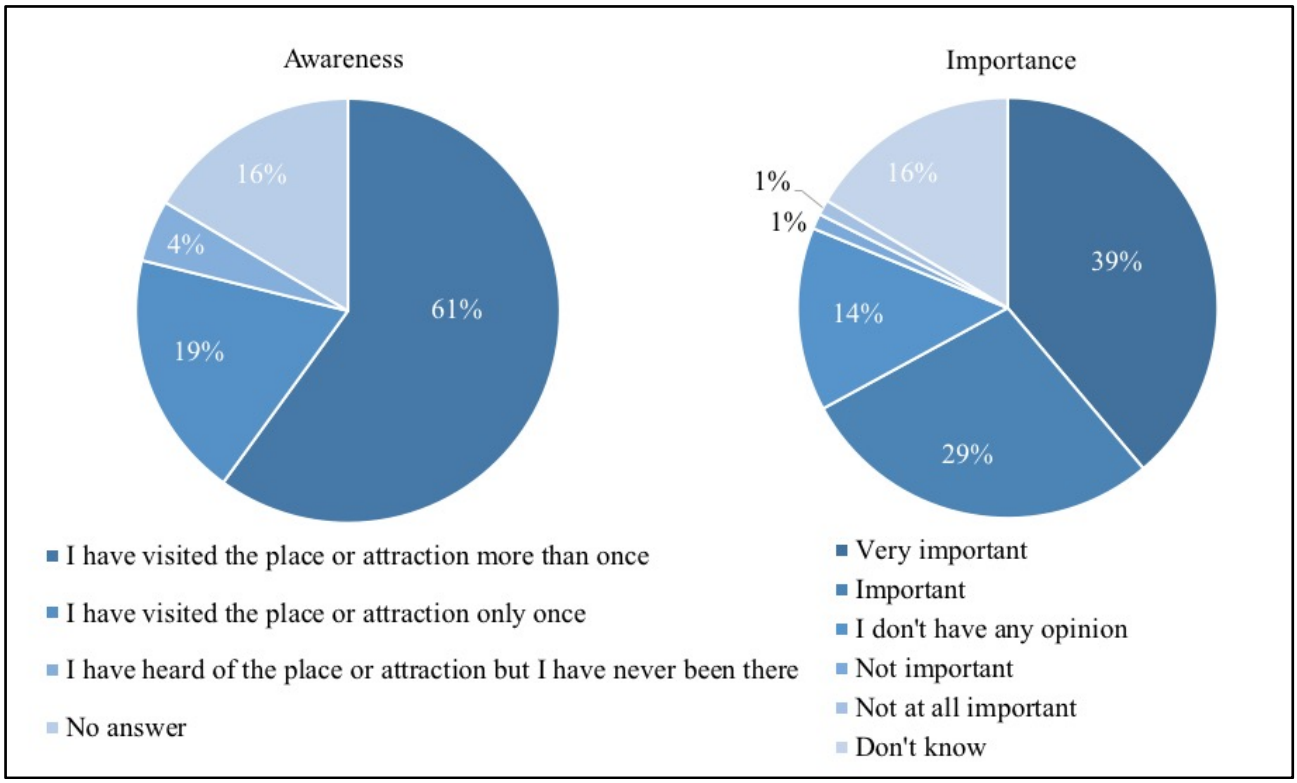

Figure 4.6 Comparison between awareness and importance of St Kilda Adventure Playground

There were noticeably more household respondents who know St Kilda Adventure Playground than online respondents. For example, nearly fifty-two percent (n=43) of household respondents were aware of the site, whereas only thirty-two percent (n=28) of online respondents know the pace (see Table 4.8). While forty-five percent (n=37) of household respondents identified the place as important, only twenty-three percent (n=20) of online participants said it was an important site. Therefore, St Kilda Adventure Playground is more important for household respondents than online participants.

Table 4.8 Percentage of participants identified St Kilda Adventure playground

Survey type	Awareness	St Kilda Adventure playground						Total
		Very important	Important	I don't have any opinion	Not important	Not at all important	Don't know	
Household	I have visited the place or attraction more than once	24	11	5	0	0	2	42
	I have visited the place or attraction only once	4	4	1	0	1	0	10
	No answer	2	0	0	0	0	1	3
Total		30	15	6	0	1	3	55
Online	I have visited the place or attraction more than once	6	7	6	0	0	0	19
	I have visited the place or attraction only once	2	6	1	0	0	0	9
	I have heard of the place or attraction but I have never been there	1	0	1	1	0	1	4
	No answer	0	1	0	0	0	12	13
Total		9	14	8	1	0	13	45
Household & Online	I have visited the place or attraction more than once	30	18	11	0	0	2	61
	I have visited the place or attraction only once	6	10	2	0	1	0	19
	I have heard of the place or attraction but I have never been there	1	0	1	1	0	1	4
	No answer	2	1	0	0	0	13	16
Total		39	29	14	1	1	16	100

Thompson Beach Walking Trails

Nearly half of the respondents have visited Thompson Beach walking trails more than once, however, almost thirteen percent (n =11) reported that they have never heard of the Thompson Beach walking trails (Figure.4.7). Almost forty-four percent (n=38) of participants recognised the place as a 'very important' site; with twenty-eight percent (n=24) answering that it was an 'important' attraction.

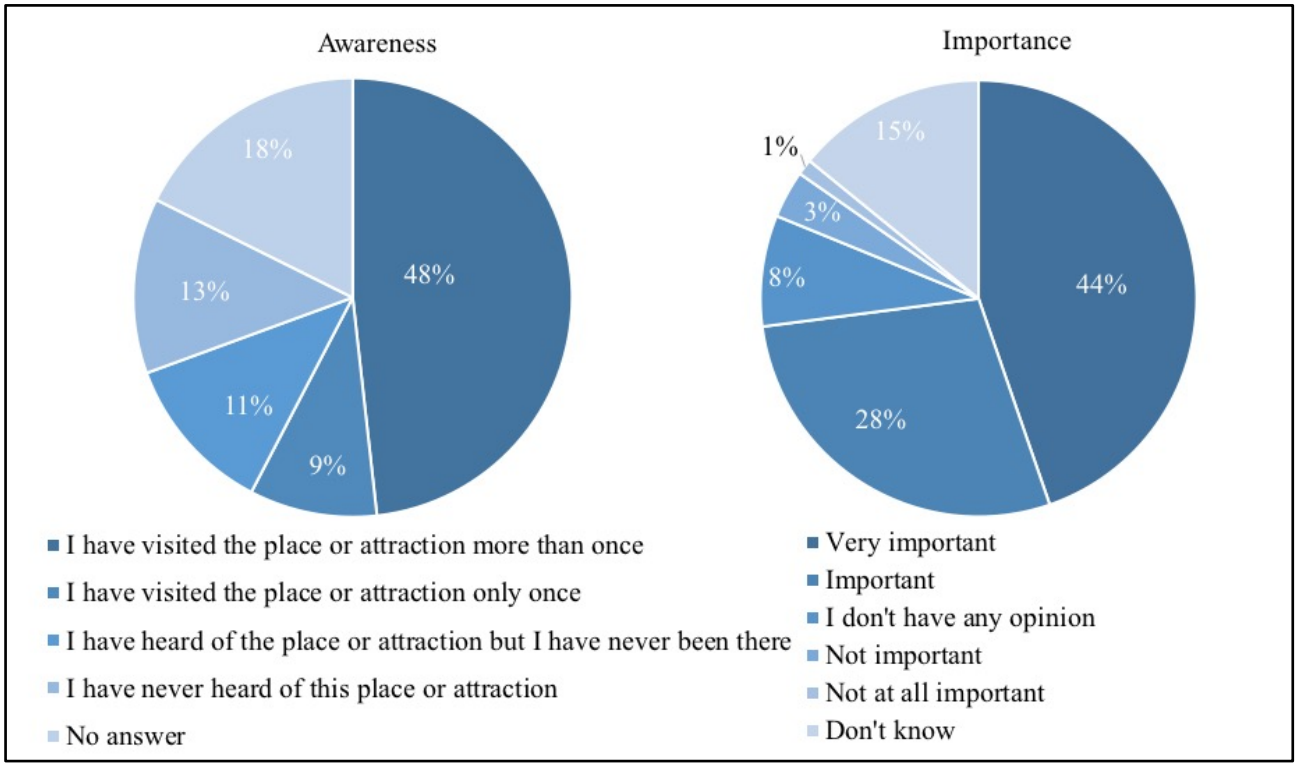

Figure 4.7 Comparison between awareness and importance of Thompson Beach Walking Trails

Table 4.9 compares the figures of household and online participants in terms of rating the importance and awareness of the Thompson Beach Waling Trails. There was no significance differences regarding frequency of vising site. However, twelve percent (n=10) of household participants were not aware of the Thompson Beach walking trails. In terms of rating the importance of the Thompson Beach Walking Trails, while thirty-nine percent (n=33) of household respondents identified it as important, thirty-three percent (n=29) of online respondents identified it as important. Although household respondents were less aware of this site, it is more important for household respondents than online participants.

Table 4. 9 Percentage of participants identified Thompson Beach Walking Trails

Survey type	Awareness	Thompson Beach walking trails						Total
		Very important	Important	I don't have any opinion	Not important	Not at all important	Don't know	
Household	I have visited the place or attraction more than once	15	6	1	0	0	0	22
	I have visited the place or attraction only once	1	4	0	1	0	0	6
	I have heard of the place or attraction but I have never been there	1	4	2	1	0	0	8
	I have never heard of this place or attraction	5	1	4	1	1	0	12
	No answer	1	1	0	0	0	4	6
Total		23	16	7	3	1	4	54
Online	I have visited the place or attraction more than once	19	7	0	0	0	0	26
	I have visited the place or attraction only once	0	2	1	0	0	0	3
	I have heard of the place or attraction but I have never been there	1	2	0	0	0	0	3
	I have never heard of this place or attraction	0	1	0	0	0	0	1
	No answer	1	0	0	0	0	11	12
Total		21	12	1	0	0	11	45
Household & Online	I have visited the place or attraction more than once	34	13	1	0	0	0	48
	I have visited the place or attraction only once	1	6	1	1	0	0	9
	I have heard of the place or attraction but I have never been there	2	6	2	1	0	0	11
	I have never heard of this place or attraction	5	2	4	1	1	0	13
	No answer	2	1	0	0	0	15	18
Total		44	28	8	3	1	15	99

Adelaide Dolphin Sanctuary

More than half of respondents have been to Adelaide Dolphin Sanctuary. Although twenty percent (n=17) of participants have never been there, they were nevertheless aware of this sanctuary (see Figure 4.8). It is interesting that over seventy-three percent (n=62) of respondents assessed that the Adelaide Dolphin Sanctuary to be an important attraction.

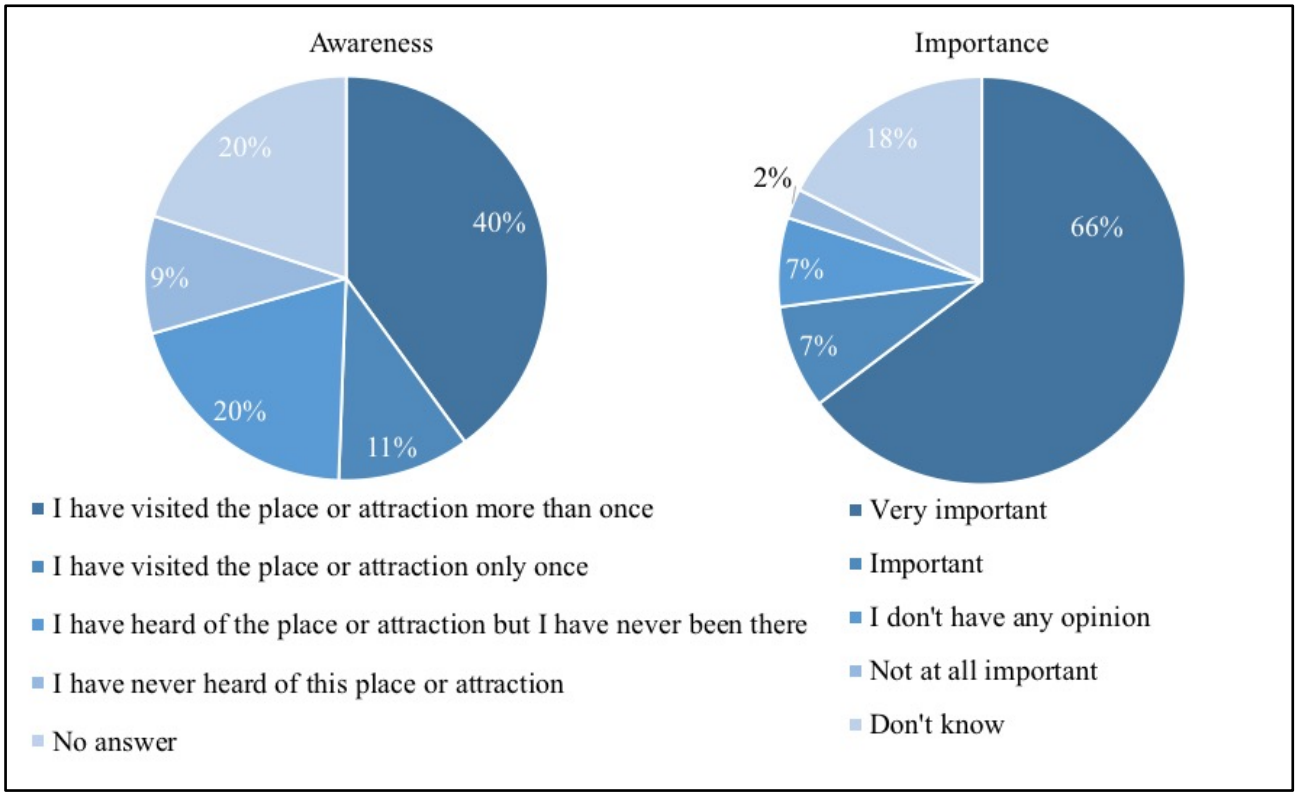

Figure 4.8 Comparison between awareness and importance of Adelaide Dolphin Sanctuary

Table 4.10 shows that twenty-three percent (n=19) of household respondents and twenty-eight percent (n=24) of online participants have visited Adelaide Dolphin Sanctuary. Fourteen percent (n=12) of household respondents have never been there and nine percent (n=8) have never heard of the site. In contrast, there were no online participants saying they had never heard of the site.

However, in terms of rating the importance of the dolphin sanctuary, a greater number of household respondents defined it as 'very important' site, compared to the online respondents. Although household respondents were less aware of the site compared to the online respondents, it was more important for them.

Table 4. 10 Percentage of participants identified Adelaide Dolphin Sanctuary

Survey type	Awareness	Adelaide Dolphin Sanctuary					Total
		Very important	Important	I don't have any opinion	Not at all important	Don't know	
Household	I have visited the place or attraction more than once	17	0	0	0	0	17
	I have visited the place or attraction only once	6	0	0	0	0	6
	I have heard of the place or attraction but I have never been there	8	1	4	1	0	14
	I have never heard of this place or attraction	5	1	2	1	0	9
	No answer	0	1	1	0	6	8
Total		36	3	7	2	6	54
Online	I have visited the place or attraction more than once	22	1	0	0	0	23
	I have visited the place or attraction only once	4	1	0	0	0	5
	I have heard of the place or attraction but I have never been there	4	2	0	0	0	6
	No answer	0	0	0	0	12	12
Total		30	4	0	0	12	46
Household & Online	I have visited the place or attraction more than once	39	1	0	0	0	40
	I have visited the place or attraction only once	10	1	0	0	0	11
	I have heard of the place or attraction but I have never been there	12	3	4	1	0	20
	I have never heard of this place or attraction	5	1	2	1	0	9
	No answer	0	1	1	0	18	20
Total		66	7	7	2	18	100

Port Gawler Conservation Park

Overall, approximately forty-seven (n=40) of participants have been to the Port Gawler Conservation Park more than once and only once, and nearly sixteen-percent (n=13) have only heard of the place and seventeen percent (n=15) of participants have never heard of the place (see Figure 4.9). However, almost seventy-one percent (n=59) of respondent, reported that this conservation park was 'very important' and 'important'.

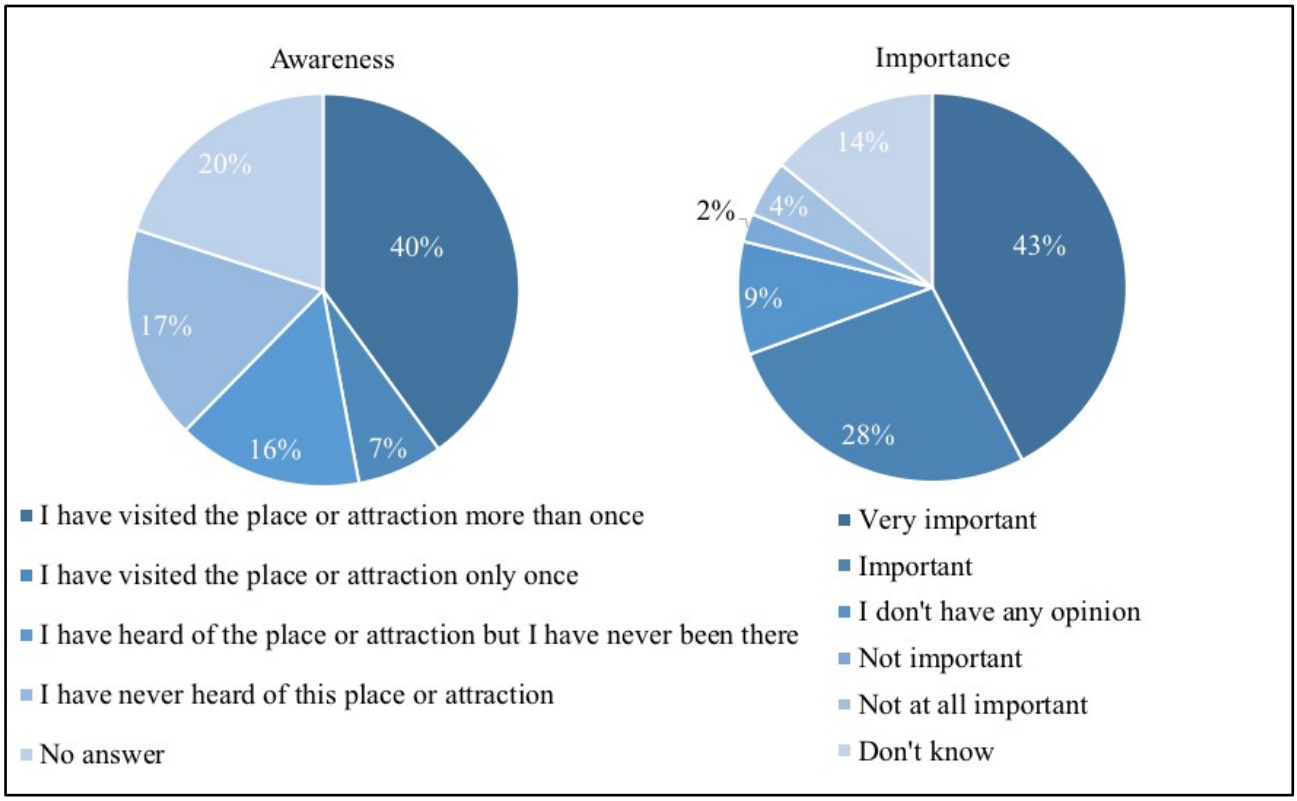

Figure 4.9 Comparison between awareness and importance of Port Gawler Conservation Park

The results found that more online participants were engaged with the Port Gawler Conservation Park than the household respondents. For example, while twenty-seven percent (n=23) of online respondents have been to the conservation park, nineteen percent (n=17) of household participants have been there (see Table 4.11).

Fourteen percent (n=12) of participants of the household questionnaire have never heard of the conservation park. This figure was four times higher than online respondents who said they had never heard it. However, eleven percent (n=9) more household respondents than online participants identified it as an important place.

Table 4. 11 Percentage of participants identified Port Gawler Conservation Park

Survey type	Awareness	Port Gawler Conservation Park						Total
		Very important	Important	I don't have any opinion	Not important	Not at all important	Don't know	
Household	I have visited the place or attraction more than once	14	2	1	0	0	0	17
	I have visited the place or attraction only once	0	2	0	0	0	0	2
	I have heard of the place or attraction but I have never been there	5	4	4	0	0	0	13
	I have never heard of this place or attraction	5	4	2	1	2	0	14
	No answer	1	4	1	0	0	2	8
Total		25	16	8	1	2	2	54
Online	I have visited the place or attraction more than once	17	4	0	0	2	0	23
	I have visited the place or attraction only once	0	4	1	0	0	0	5
	I have heard of the place or attraction but I have never been there	1	2	0	0	0	0	3
	I have never heard of this place or attraction	0	2	0	1	0	0	3
	No answer	0	0	0	0	0	12	12
Total		18	12	1	1	2	12	46
Household & Online	I have visited the place or attraction more than once	31	6	1	0	2	0	40
	I have visited the place or attraction only once	0	6	1	0	0	0	7
	I have heard of the place or attraction but I have never been there	6	6	4	0	0	0	16
	I have never heard of this place or attraction	5	6	2	2	2	0	17
	No answer	1	4	1	0	0	14	20
Total		43	28	9	2	4	14	100

St Kilda Mangrove Trail and Interpretive Centre

Thirty-eight percent (n=33) of respondents have visited St Kilda Mangrove Trail and Interpretive Centre more than once and sixteen percent (n=13) have been there only once (see Figure 4.10). However, twenty-two percent of respondents (n=19) have never been there. Regarding rating the importance of St Kilda Mangrove Trail and Interpretive Centre, seventy-one percent (n=60) of all respondents identified it as 'very important' and an 'important' place.

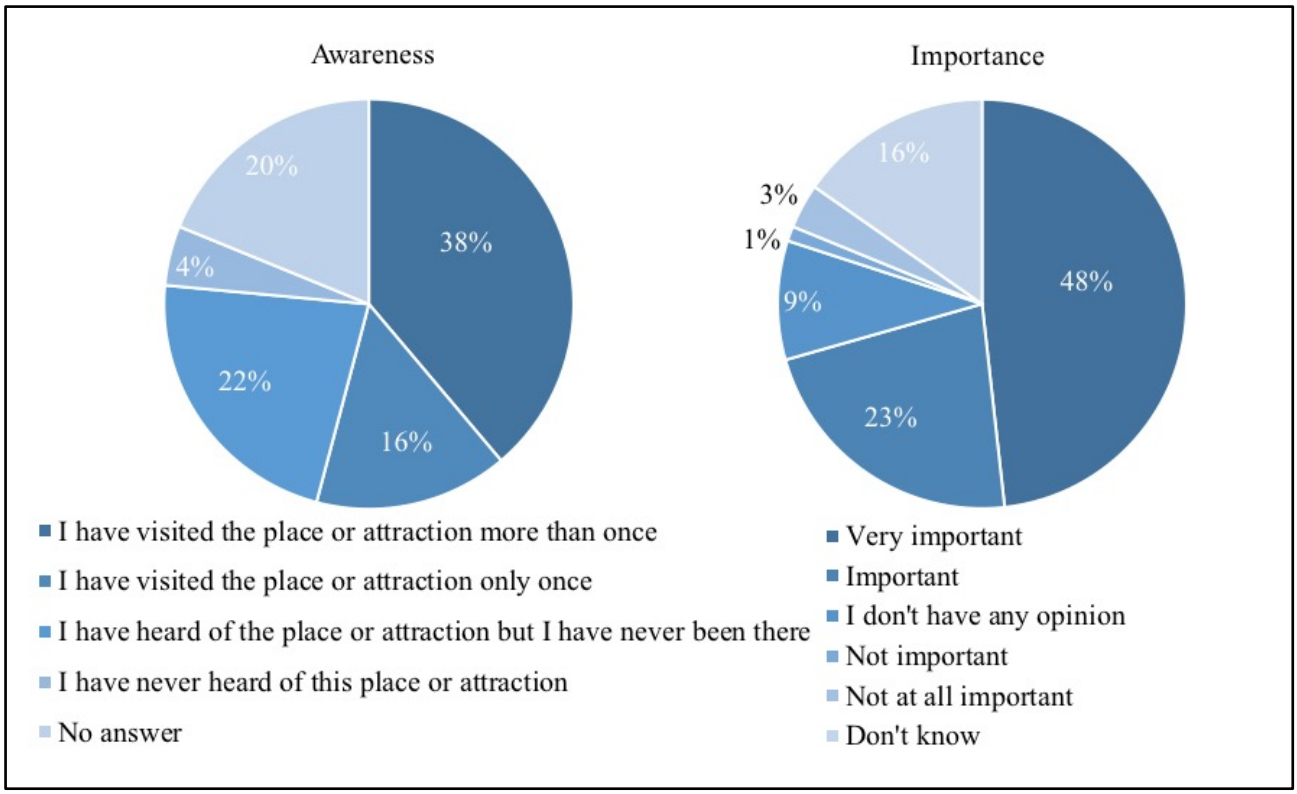

Figure 4.10 Comparison between awareness and importance of St Kilda Mangrove Trail and Interpretive Centre

Table 4.12 compares the figures of household and online participants showing in terms of rating importance and awareness of St Kilda Mangrove Trail and Interpretive Centre. Thirty percent (n=25) of online respondents and twenty-four percent (n=21) of household respondents have been there. While a few participants, four percent (n=4), in the household survey said they have never heard this place. None of the online respondents said they had not heard of this place. In terms of rating the importance of the site, twenty-eight percent (n=24) of household respondents, and twenty percent (n=17) of online participants, identified it as 'very important'.

Table 4. 12 Percentage of participants identified St Kilda Mangrove Trail and Interpretive Centre

Survey type	Awareness	St Kilda Mangrove Trail and Interpretive Centre						Total
		Very important	Important	I don't have any opinion	Not important	Not at all important	Don't know	
Household	I have visited the place or attraction more than once	14	2	1	0	0	0	17
	I have visited the place or attraction only once	2	4	0	0	1	0	7
	I have heard of the place or attraction but I have never been there	7	5	4	1	0	0	17
	I have never heard of this place or attraction	1	0	2	0	1	0	4
	No answer	4	0	0	0	0	5	9
Total		28	11	7	1	2	5	54
Online	I have visited the place or attraction more than once	14	7	0	0	0	0	21
	I have visited the place or attraction only once	4	4	0	0	1	0	9
	I have heard of the place or attraction but I have never been there	2	1	2	0	0	0	5
	No answer	0	0	0	0	0	11	11
Total		20	12	2	0	1	11	46
Household & Online	I have visited the place or attraction more than once	28	9	1	0	0	0	38
	I have visited the place or attraction only once	6	8	0	0	2	0	16
	I have heard of the place or attraction but I have never been there	9	6	6	1	0	0	22
	I have never heard of this place or attraction	1	0	2	0	1	0	4
	No answer	4	0	0	0	0	16	20
Total		48	23	9	1	3	16	100

Garden Island Boardwalk

Almost thirty-six percent (n=32) of participants acknowledged the Garden Island Boardwalk and have visited there. However, seventeen percent (n=15) of respondents said that they have never heard of the place (see Figure 4.11). Nearly fifty-seven percent (n=49) of all respondents reported that Garden Island Boardwalk was an important site.

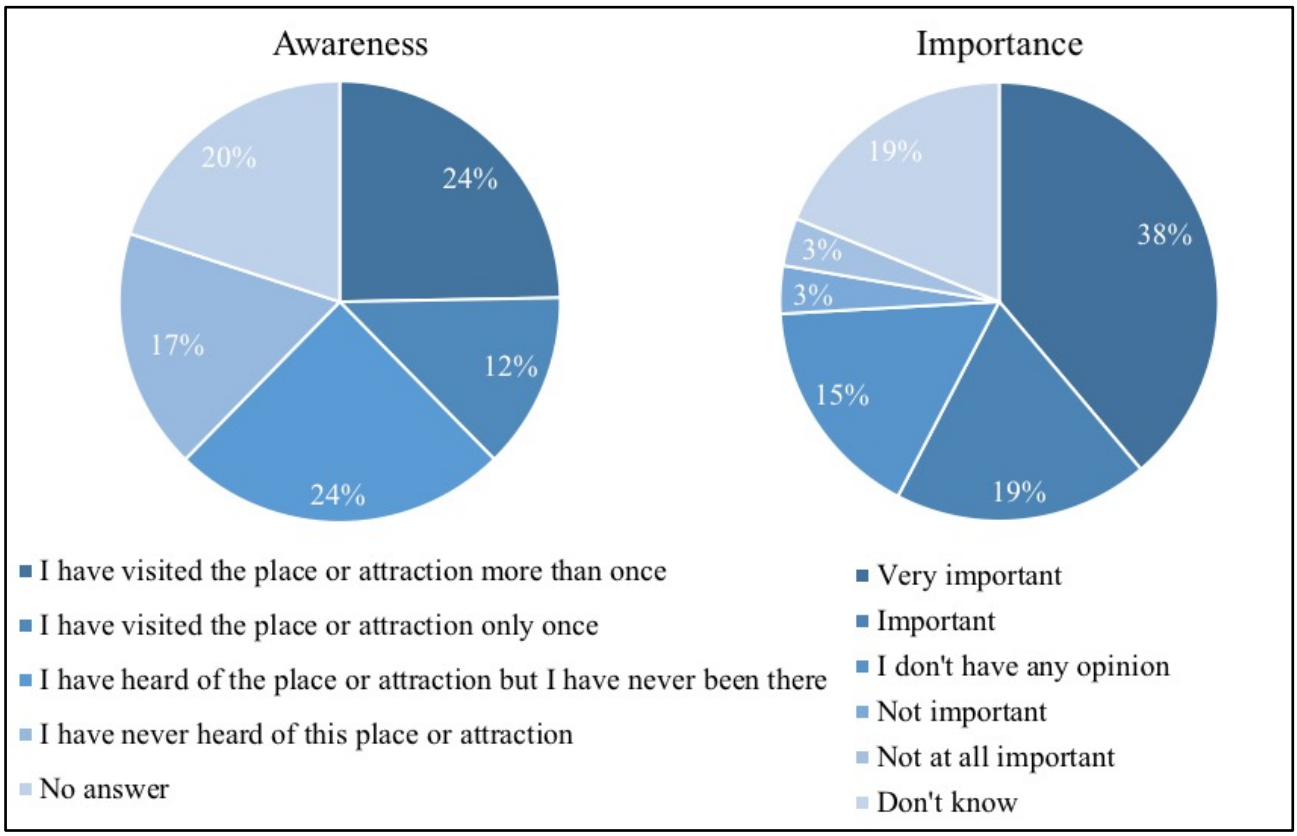

Figure 4.11 Comparison between awareness and importance of Garden Island Boardwalk

According to Table 4.13, household respondents were less engaged with the Garden Island Boardwalk than online participants. For example, while nearly fifteen percent (n=13) of household respondents have been to the place, compared to twenty-two percent (n=19) of the online respondents have visited there. The household respondents were less aware of the place compared to online participants. Fourteen percent (n=12) of household respondents said they had of never heard this place, whereas only three percent (n=3) of online participants have never heard about the place. There was no noticeable difference between the household and online respondents in terms of rating the importance of the Garden Island Boardwalk. Thirty percent (n= 26) of household respondents and twenty-seven percent (n=23) of online respondents said that the Garden Island Boardwalk was either 'very important' or 'important'.

Table 4. 13 Percentage of participants identified Garden Island Boardwalk

Survey type	Awareness	Garden Island Boardwalk						Total
		Very important	Important	I don't have any opinion	Not important	Not at all important	Don't know	
Household	I have visited the place or attraction more than once	8	1	0	0	0	0	9
	I have visited the place or attraction only once	2	2	1	0	0	0	5
	I have heard of the place or attraction but I have never been there	8	5	2	1	0	0	16
	I have never heard of this place or attraction	4	0	7	1	2	0	14
	No answer	0	0	2	0	0	6	8
Total		22	8	12	2	2	6	52
Online	I have visited the place or attraction more than once	9	5	1	0	0	0	15
	I have visited the place or attraction only once	4	2	0	0	1	0	7
	I have heard of the place or attraction but I have never been there	2	4	2	0	0	0	8
	I have never heard of this place or attraction	1	0	0	1	0	1	3
	No answer	0	0	0	0	0	12	12
Total		16	11	3	1	1	13	45
Household & Online	I have visited the place or attraction more than once	17	6	1	0	0	0	24
	I have visited the place or attraction only once	6	4	1	0	1	0	12
	I have heard of the place or attraction but I have never been there	10	9	4	1	0	0	24
	I have never heard of this place or attraction	5	0	7	2	2	1	17
	No answer	0	0	2	0	0	18	20
Total		38	19	15	3	3	19	97

Samphire Discovery Saltmarsh

Thirty-four percent (n=29) of participants have visited the Samphire Discovery Saltmarsh site; with twenty percent (n=17) aware of this place but never visited (see Figure 4.12). One fourth of respondents have not heard of this place. However, nearly sixty percent (n=51) of participants believed that the Samphire Discovery Saltmarsh is a 'very important' and 'important' place.

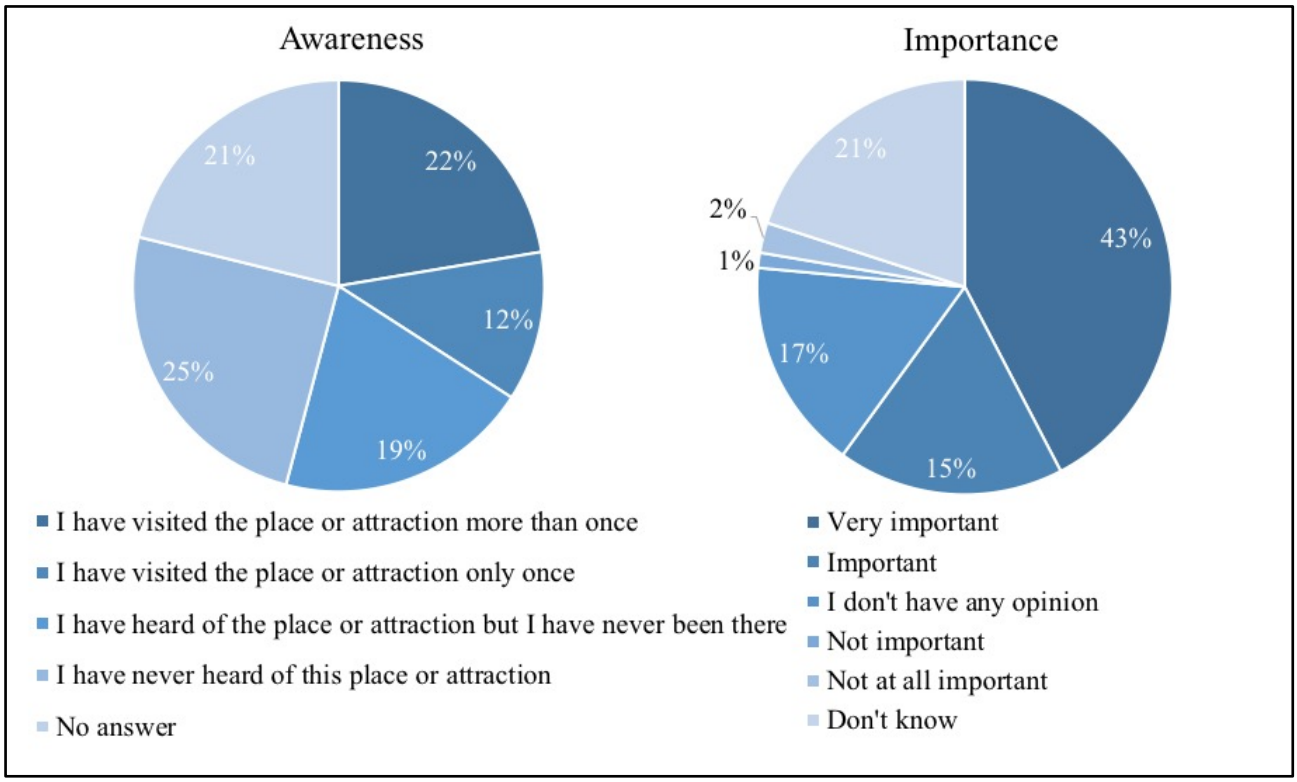

Figure 4.12 Comparison between awareness and importance of Samphire Discovery Saltmarsh

According to the Table 4.14, household respondents were less aware of this place than online respondents. There was no noticeable difference between the household and online participants regarding the frequency of visiting. Fourteen percent (n=13) of household respondents and nearly twenty percent (n=16) of online respondents have been there. However, twenty percent (n=17) of household participants said they had never heard of this place, compared to only five percent (n=4) of online respondents who did not know this place.

Table 4. 14 Percentage of participants identified Samphire Discovery Saltmarsh Trail

Survey type	Awareness	Samphire Discovery saltmarsh trail						Total
		Very important	Important	I don't have any opinion	Not important	Not at all important	Don't know	
Household	I have visited the place or attraction more than once	9	2	0	0	0	0	11
	I have visited the place or attraction only once	1	1	1	0	0	0	3
	I have heard of the place or attraction but I have never been there	6	1	2	0	1	0	10
	I have never heard of this place or attraction	5	4	9	1	1	0	20
	No answer	2	1	1	0	0	4	8
Total		23	9	13	1	2	4	52
Online	I have visited the place or attraction more than once	11	0	0	0	0	0	11
	I have visited the place or attraction only once	4	5	0	0	0	0	9
	I have heard of the place or attraction but I have never been there	5	2	1	0	0	1	9
	I have never heard of this place or attraction	0	0	1	0	0	4	5
	No answer	0	1	0	0	0	12	13
Total		20	8	2	0	0	17	47
Household & Online	I have visited the place or attraction more than once	20	2	0	0	0	0	22
	I have visited the place or attraction only once	5	6	1	0	0	0	12
	I have heard of the place or attraction but I have never been there	11	3	3	0	1	1	19
	I have never heard of this place or attraction	5	4	10	1	1	4	25
	No answer	2	2	1	0	0	16	21
Total		43	17	15	1	2	21	99

Middle Beach Caravan Park

Although approximately thirty-three percent (n=29) of participants have been to the Middle Beach Caravan Park, another thirty-four percent (n=29) said they had never been there but know about this place (see Figure 4.13). Twenty-seven percent (n=23) recognised this place as an important site, and nine percent (n=8) of respondents indicated this place was very important.

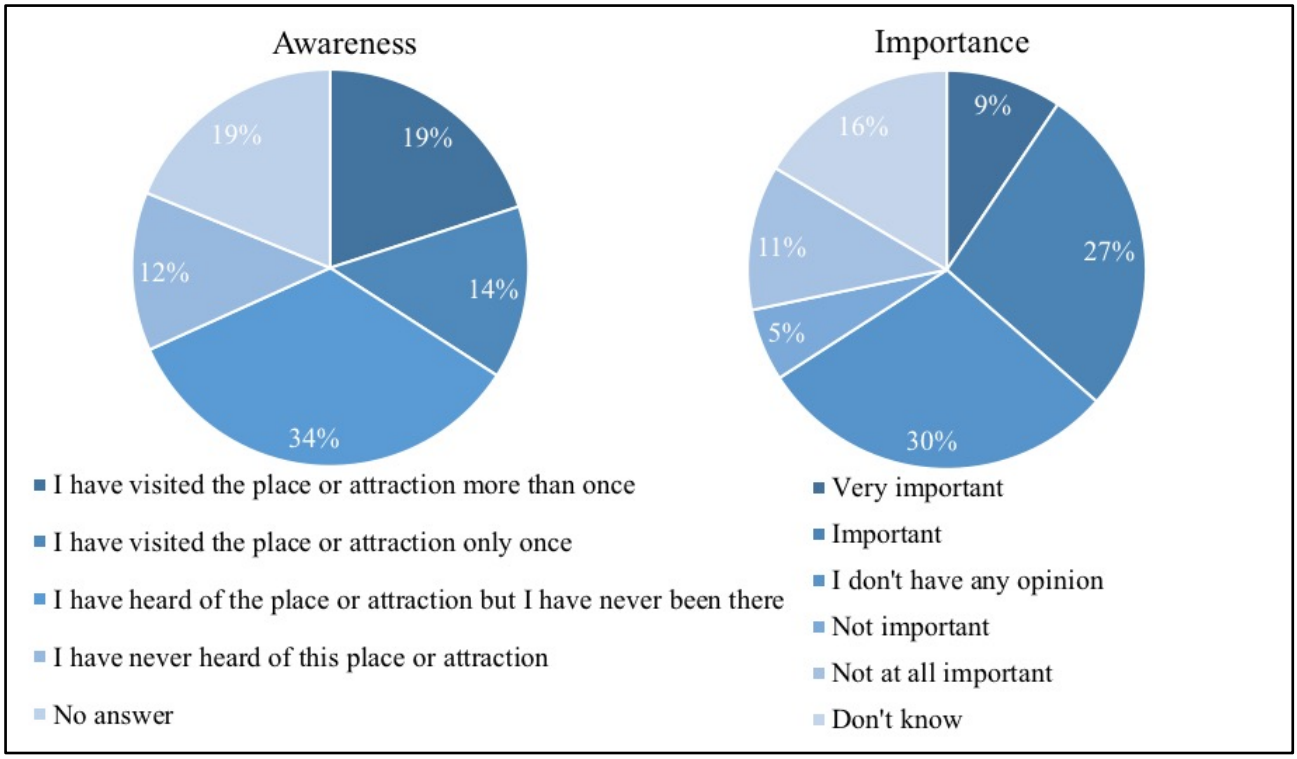

Figure 4.13 Comparison between awareness and importance of Middle Beach Caravan Park

Table 4.15 provides the figures comparing household and online respondents. Household respondents were less aware of and attached to the Middle Caravan Park than online participants. Twenty-two percent (n=19) of household participant know of the Middle Beach Caravan Park, but they have not been there. Moreover, eight percent (n=7) have never heard about this place. In terms of the online survey, twelve percent (n= 10) have heard of the place but also have never visited. Almost five percent (n=4) have not heard about the park. However, twenty-six percent (n=22) of household respondents said that the caravan park is important, compared to only ten percent (n=9) of online participants who said it was important.

Table 4. 15 Percentage of participants identified Middle Beach Caravan Park

Survey type	Awareness	Middle Beach Caravan Park						Total
		Very important	Important	I don't have any opinion	Not important	Not at all important	Don't know	
Household	I have visited the place or attraction more than once	2	7	0	0	0	1	10
	I have visited the place or attraction only once	0	4	2	0	1	0	7
	I have heard of the place or attraction but I have never been there	5	7	7	2	1	0	22
	I have never heard of this place or attraction	1	0	4	1	2	0	8
	No answer	0	0	4	0	0	2	6
Total		8	18	17	3	4	3	53
Online	I have visited the place or attraction more than once	1	5	2	1	0	0	9
	I have visited the place or attraction only once	0	2	4	1	0	0	7
	I have heard of the place or attraction but I have never been there	0	1	5	0	6	0	12
	I have never heard of this place or attraction	0	0	2	0	1	1	4
	No answer	0	1	0	0	0	12	13
Total		1	9	13	2	7	13	45
Household & Online	I have visited the place or attraction more than once	3	12	2	1	0	1	19
	I have visited the place or attraction only once	0	6	6	1	1	0	14
	I have heard of the place or attraction but I have never been there	5	8	12	2	7	0	34
	I have never heard of this place or attraction	1	0	6	1	3	1	12
	No answer	0	1	4	0	0	14	19
Total		9	27	30	5	11	16	98

Port Gawler Dirt Bike Track

Nearly thirty-nine percent (n=33) of respondents have heard of the Port Gawler Dirt Bike Track but never been there, with nearly one fourth of participants have visited (see Figure 4.14). Very few people, four percent (n=4), acknowledged this place as "very important" and nearly seventeen percent (n= 14) said it was important. One-fourth of respondents said it was not at all important. Moreover, it can be noted that one-fifth of participants did not provide their opinion.

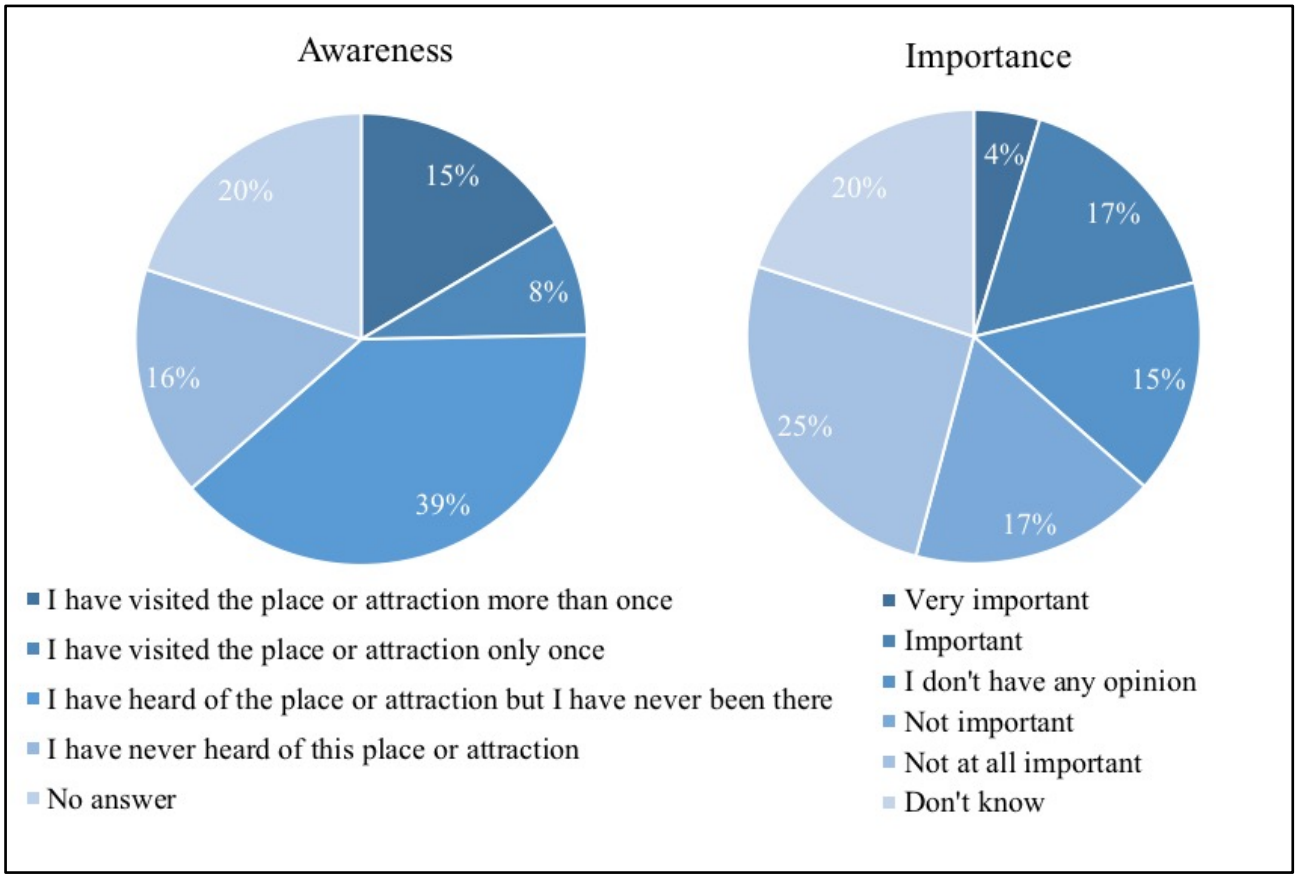

Figure 4.14 Comparison between awareness and importance of Port Gawler Dirt Bike Track

Table 4.16 shows the figures comparing household and online respondents regarding Gawler Dirt Bike Track. There was no noticeable difference between the household and online respondents in terms of awareness of the site. However, more household participants were concerned with the importance of the place. Eighteen percent (n=15) of household respondents said it was an important site, compared to only three percent (n=3) of the online respondents who said it was important.

Table 4. 16 Percentage of participants identified Port Gawler Dirt Bike track

Survey type	Awareness	Port Gawler Dirt Bike track						Total
		Very important	Important	I don't have any opinion	Not important	Not at all important	Don't know	
Household	I have visited the place or attraction more than once	0	5	1	2	0	0	8
	I have visited the place or attraction only once	1	4	1	1	0	0	7
	I have heard of the place or attraction but I have never been there	1	4	4	6	8	0	23
	I have never heard of this place or attraction	2	1	4	0	2	0	9
	No answer	0	0	1	0	1	5	7
Total		4	14	11	9	11	5	54
Online	I have visited the place or attraction more than once	0	2	2	0	2	1	7
	I have visited the place or attraction only once	0	0	1	0	0	0	1
	I have heard of the place or attraction but I have never been there	0	1	1	8	6	0	16
	I have never heard of this place or attraction	0	0	0	0	5	2	7
	No answer	0	0	0	0	1	12	13
Total		0	3	4	8	14	15	44
Household & Online	I have visited the place or attraction more than once	0	7	3	2	2	1	15
	I have visited the place or attraction only once	1	4	2	1	0	0	8
	I have heard of the place or attraction but I have never been there	1	5	5	14	14	0	39
	I have never heard of this place or attraction	2	1	4	0	7	2	16
	No answer	0	0	1	0	2	17	20
Total		4	17	15	17	25	20	98

Lower Light Rifle Range

Nearly half of participants have only heard about the Lower Light Rifle Range and have never been there (see Figure 4.15). Moreover, fifteen percent (n=12) did not know about this place. Over fifteen percent (n= 12) of participants have been there. Regarding the rating of the importance of the Lower Light Rifle Range, thirty percent (n=26) did not provide their opinion, and twenty-six percent (n=22) said 'not at all important', six percent said 'not important'. Therefore, a majority of respondents identified the place as not important.

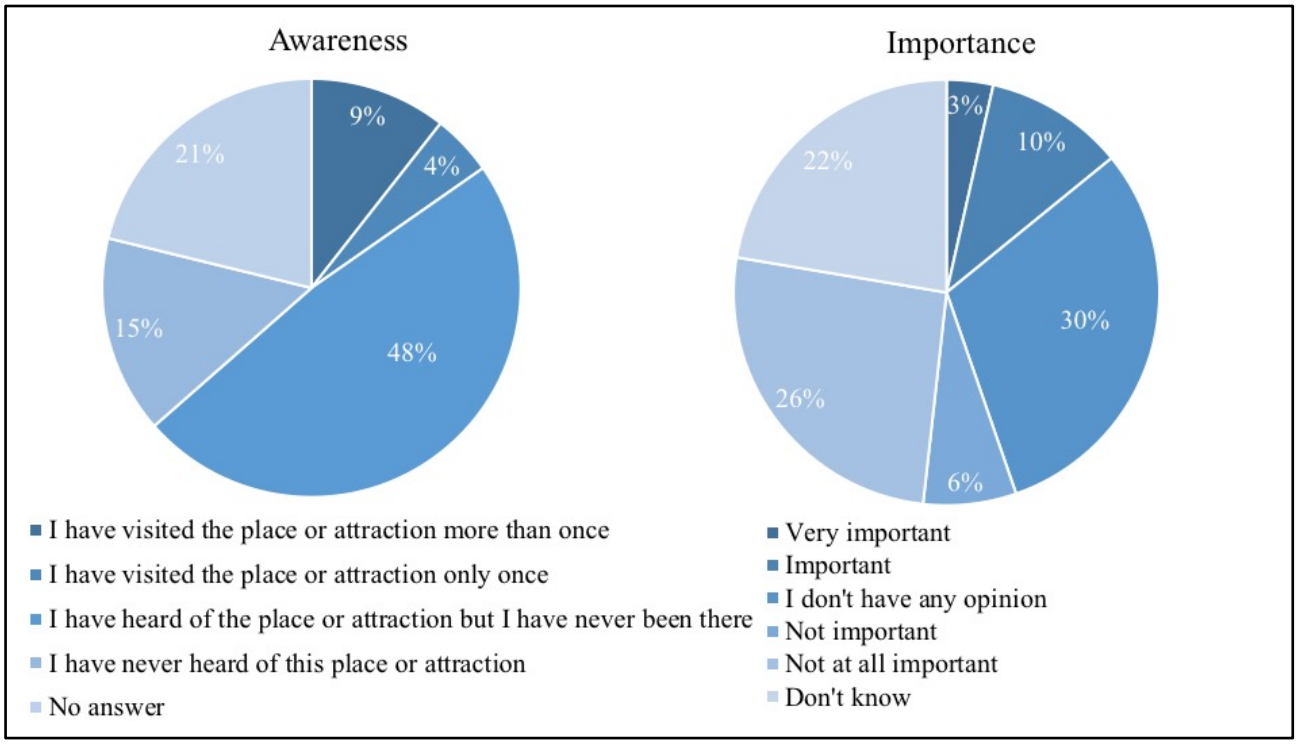

Figure 4.15 Comparison between awareness and importance of Lower Light Rifle Range

Table 4.17 compares the differences between household and online survey. In terms of rating the importance of Lower Light Rifle Range, nine percent (n=8) of household respondents identified it as very important and important, with four percent (n=4) of online participants said also it was very important and important. Moreover, thirty percent (n=25) of household participants and eighteen percent of online participants (n=16) have known the place but they have never been there. Sixteen percent (n=14) of household and online respondents thought that this place was not important. Therefore, this place is not as well-known and a less important site for both household and online participants.

Table 4. 17 Percentage of participants identified Lower Light Rifle Range

Survey type	Awareness	Lower Light Rifle Range						Total
		Very important	Important	I don't have any opinion	Not important	Not at all important	Don't know	
Household	I have visited the place or attraction more than once	1	2	1	0	0	0	4
	I have visited the place or attraction only once	1	1	0	0	0	0	2
	I have heard of the place or attraction but I have never been there	0	4	11	3	12	1	30
	I have never heard of this place for attraction	0	0	6	1	1	1	9
	No answer	0	0	2	0	0	6	8
Total		2	7	20	3	13	8	53
Online	I have visited the place or attraction more than once	1	2	2	0	0	0	5
	I have visited the place or attraction only once	0	0	0	1	1	0	2
	I have heard of the place or attraction but I have never been there	0	1	6	2	7	2	18
	I have never heard of this place for attraction	0	0	1	0	5	0	6
	No answer	0	0	1	0	0	12	13
Total		1	3	10	3	13	14	44
Household & Online	I have visited the place or attraction more than once	2	4	3	0	0	0	9
	I have visited the place or attraction only once	1	1	0	1	1	0	4
	I have heard of the place or attraction but I have never been there	0	5	17	4	19	3	48
	I have never heard of this place for attraction	0	0	7	1	6	1	15
	No answer	0	0	3	0	0	18	21
Total		3	10	30	6	26	22	97

Overall, the most well known and most visited sites include the Adelaide International Bird Sanctuary National Park Winaityinaityi Pangkara, St Kilda Adventure playground, and the Thompson Beach walking trails. In contrast, Lower Light Rifle Range, Port Gawler Dirt Bike track and Middle Beach Caravan Park were the least visited places. Moreover, almost one quarter of all respondents reported that they have never heard of the Samphire Discovery Saltmarshes Trail.

The results summarise that Adelaide International Bird Sanctuary National Park-Winaityinaityi Pangkara, Thompson Beach walking trails and Adelaide Dolphin Sanctuary were the top three important sites. In contrast, Lower Light Rifle Range, Port Gawler Dirt Bike track and Middle Beach Caravan Park were the least important of the attraction sites.

Furthermore, this study also explored the importance of general values and personal values attachment to the region.

4.6.2 Broader cultural heritage significance

With the purpose of contributing to a better understanding of cultural values associated with the coastal wetlands situated north of Adelaide, the survey asked respondents about their awareness of any broader cultural heritage significance of the coastal region. The respondents offered the following quotes regarding the broader cultural heritage significance.

> *"Kaurna people have used the coast for thousands of years. Kaurna people just been granted native title over substantial areas at Middle Beach" [Online survey, ID43].*
>
> *"Australian native people used all these areas to survive in there nomadic life and native flora and fauna in these regions. Save coast line for all" [Household survey, ID23].*
>
> *"It is special to the Kaurna people and now made more so to the whole world with the establishment of the bird sanctuary" [Household survey, ID28].*
>
> *"Indigenous people" [Household survey, ID09]*
>
> *"Significant area for the Kaurna people" [Online survey, ID44].*
>
> *"This is Kaurna land and important summer country" [Online survey, ID72].*
>
> *"I believe the area is culturally significant to the aboriginal people" [Online survey, ID73].*

One respondents mentioned other types of heritage:

> *"Karuna heritage. Many significant sites. War preparations - soda ash and explosives. Mining - shell grit, salt, seagrass. Aspects which relate to Australia trying to become independent, as a nation. Failed attempts at farming the intertidal zone and historic flood prevention. Buried pigmy whale buried in the dunes" [Online survey, ID40].*

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4.7 Cultural values regarding general and personal attachments to the coastal region

This section enhances understanding regarding cultural values. Based on the different aspects of the coastal region, the participants identified how important were the different features. The findings are presented in two main groups of aspects; general and personal values.

4.7.1 General values associated with the coastal region

The questionnaires asked respondents to rate importance of eight different aspects of the coastal region in terms of non-tangible services:

- provide knowledge
- encourage healthy living
- invoke a sense of freedom
- enhance family attachments
- meeting places
- help develop a sense of community
- has sites of local activism
- help generate good memories

Figure 4.16 is a graph about these different aspects related to general values. These general values are related to a group or a community.

The coastal region has numerous opportunities including a learning ground for educational purposes. In this study, over half of respondents identified that the coastal region was very important for educational activities such as research and training. It can be noted that no respondents identified the educational aspect as 'not important'.

The coastal region is an integral part of the lives of people. Natural functions of the coastal region provide opportunities for healthy living and were identified by forty-one percent (n=35) as 'very important'. Very few respondents, one percent (n=1), assessed this aspect as 'not important'.

The coastal landscape is related to a sense of freedom. A number of participants, thirty-seven percent (n=32) of participants believe that the coastal region is very important for a sense of freedom. In contrast, a smaller percentage of respondents rated this area as 'not important'.

The coastal environment also provides a place for family attachments. Approximately thirty-six percent (n=30) of respondents identified this region as 'very important' as a place to enhance family attachments. However, 3.5% (n=3) considered it as 'not important'.

The coastal region between Torrens Island and Thompson Beach providing places for people to meet was identified by forty percent (n=34) as 'important'. Very few respondents assessed these places as 'not important (five percent (n=4).

The coastal region contributes to social interaction through supporting of common places to meet. Thus, the region is considered ‘very important’ and ‘important’ for a sense of community, as identified by about thirty-nine (n=32) and thirty-four (n=29) respectively. Only one respondents identified the region as ‘not important’.

In this study, thirty-four percent (n=29) of participants identified these places as important for local activism, particularly social engagement with environmental related activities. A minority of respondents (n=2) described that it was not important for local activism.

Overall, the majority of respondents rated that knowledge (education/history/nature) was the most important aspect, followed by healthy living opportunities. In contrast, places for local activism was the least important place attachment.

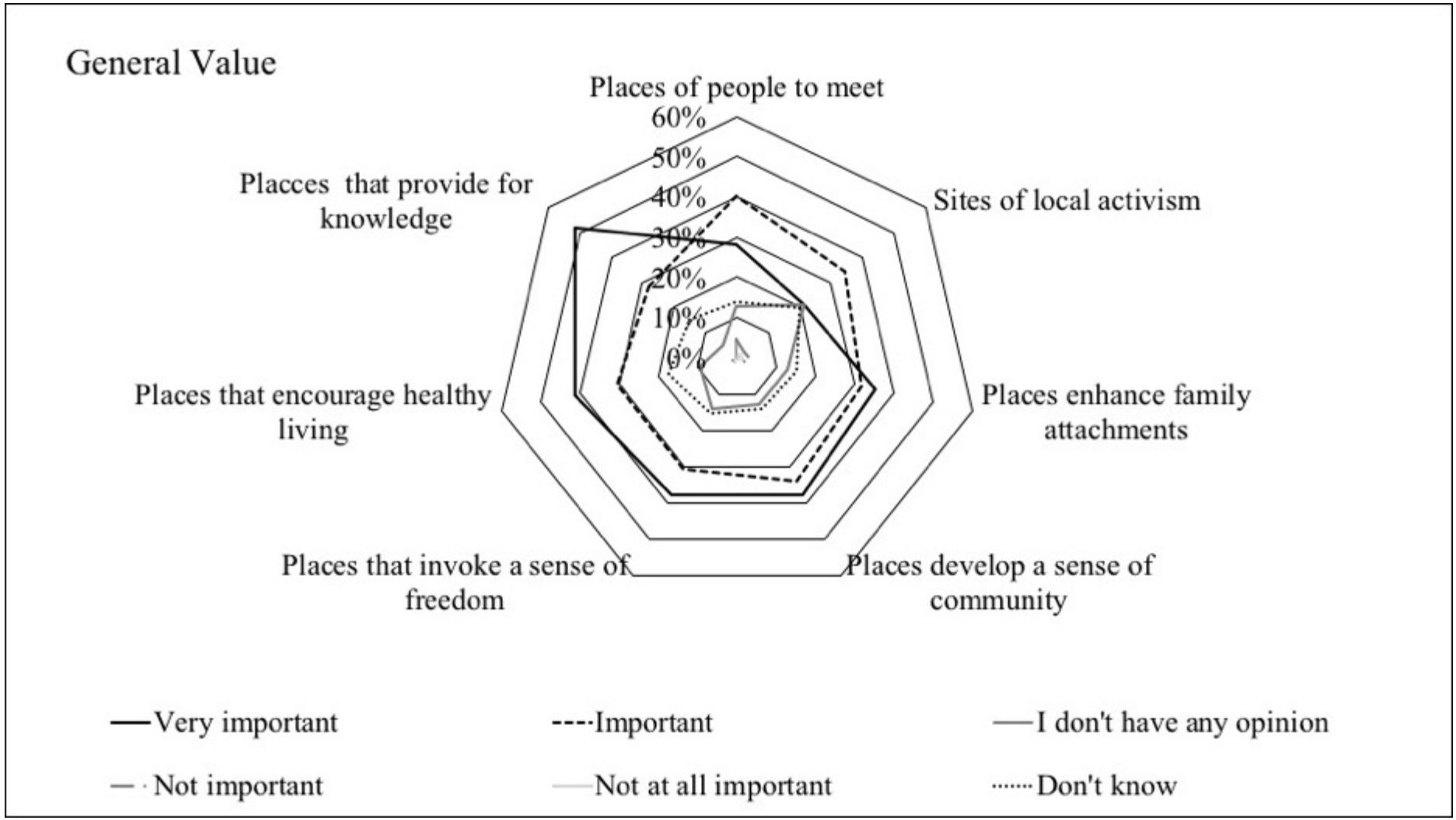

Figure 4.16 Values associated with different aspects of the coastal region

4.7.2 Personal value attachments to the coastal region

The questionnaires asked respondents to rate nine different aspects of cultural places where they interact in the coastal region. They are;

- Places people enjoy to visit
- Places that generate good memories
- Places to relax
- Places that foster a sense of inspiration
- Places to reflect
- Places that foster a sense of pride
- Places for doing exercise
- Places that foster creativity
- Places of work

The participants rated how important these different aspects of cultural places were in thinking about the coastal region between Torrens Island and Thompson Beach. These different aspects of cultural places related to personal values are described in figure (4.17).

The coastal region provides enjoyable places where people interact with each other and the coastal environment for various cultural activities to visit. The area was rated 'very important' regarding aspects of enjoying and visiting by more than half of the respondents. Interestingly, no participants identified the coastal region as 'not important' to enjoy visiting. Nearly half of respondents believe that the coastal region was very important for generating good memories. A few participants rated this was not an important aspect.

People visit the coastal region to relax. Thus, the region is considered 'very important' and 'important' in terms of relaxing activities, as identified by about thirty-four (n=29) and thirty-five percent (n=30) of respondents respectively. Only four percent (n=3) of respondents identified the area as 'not important'.

The diverse values of the coastal region support a sense of inspiration as well. Almost thirty-two percent (n=27) identified this as a very important aspect concerning inspiration. However, very few respondents, nearly ten percent (n=9), assessed it as 'not important'.

People spend their times at the coastal region for personal reflection. In this study, one fifth of participants identified the place was very important for personal reflection. A few participants, nearly five percent (n=4), described that it was not important regarding this aspect.

In terms of a sense of pride, the coastal region was very important, as identified by thirty-three percent (n=28) participants. However, six percent (n=5) of respondents rated as 'not important'.

The coastal region provides places for many activities including exercise, however only twenty percent (n=17) identified it as very important for doing exercise. A few participants, eight percent (n=7) indicated it as 'not important' place for physical exercise.

The landscape of the coastal region stimulates creativity. With regards to fostering creativity aspect, almost one fourth of respondents rated as it ‘very important’, but nearly ten percent (n=8) of participants indicated it as ‘not important’.

Places of work was a less popular aspect. Few people, eight percent (n=7), identified it as important. Nearly thirty percent (n=25) indicated no opinion and fourteen percent (n=12) denoted it as not important.

Overall, two aspects; the enjoyment of visiting and generating good memories were the most important for individual value. Followed by three other aspects; places to relax, a sense of inspiration and a sense of pride also important aspects. In contrast, places of work was the least popular aspects determined by participants.

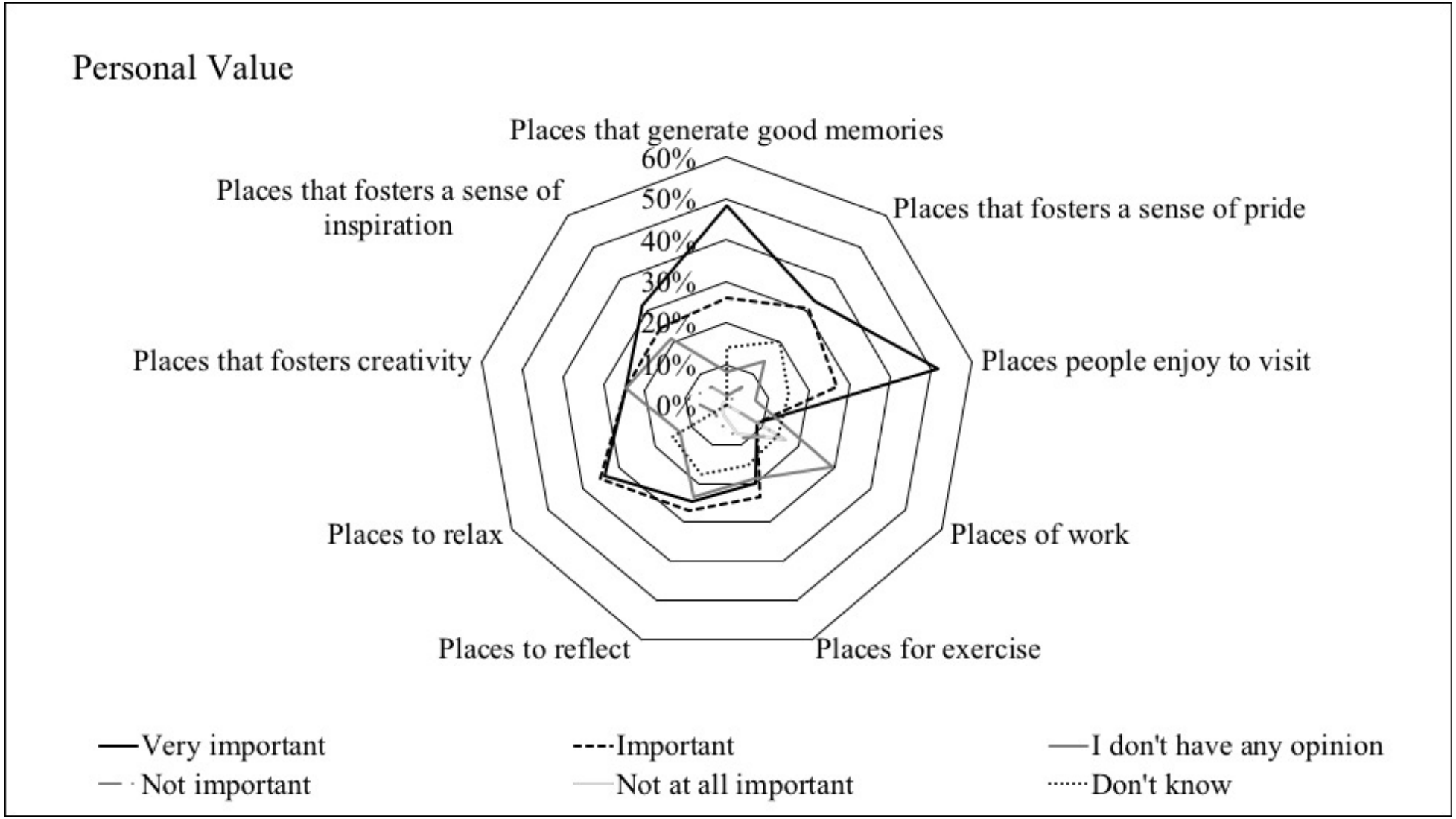

Figure 4.17 The importance of different aspects of the coastal region to personal values

4.8 Broader cultural connection to the coastal region

This section will identify broader cultural connection to the region based on two main perceptions of connection, personal cultural connection and a sense of belonging to the coastal region.

4.8.1 Personal cultural connection to the coastal region

This study asked the participants about their personal connections to the coastal region between Torrens Island and Thompson Beach.

Twenty-one percent (n=18) of participants identified personal connections to the coastal region, the majority of respondents, seventy percent (n=59) said they did not have any and nine percent (n=8) did not answer. Examples of personal connections to the coastal region included;

> *"Safe and quiet" [Household survey, ID30].*
>
> *"My house is there" [Online survey, ID61].*
>
> *"Family connection through the ownership of nearby farm land" [Household survey, ID38].*
>
> *"My ancestors are from there" [Online survey, ID71].*
>
> *"My late husband's family were the first European folk to settle at St Kilda" [Online survey, ID72].*
>
> *"Lived and worked in area for over 40 years, now living in Thompson Beach since 2016 and have represented area as councillor since 2000" [Online survey, ID66].*
>
> *"Local crabbing and fishing Beaches and Bird Sanctuary used all the time" [Household survey, ID04].*
>
> *"As a proponent of the study and conservation of birdlife I have a keen interest in the birds that inhabit this region (both local and migratory) and in joining with other like-minded people to ensure that the birds and their habitats are protected and maintained" [Online survey, ID45].*

Another aspect of insight of the respondents centred around the sense of attachment to the region.

4.8.2 A sense of belonging or attachment to the coastal region

The respondents answered the question about a sense of belonging or attachment to the coastal region between Torrens Island and Thompson Beach. This contributes a better understanding of the relationship between people and the coastal region. The results categorised seven aspects regarding a sense of attachment to the coastal region between Torrens Island and Thompson Beach. The seven categories are described in below.

- Cultural memories
- Nature appreciation
- A sense of home
- Recreational opportunities
- Educational opportunities
- Working with a group
- Dynamic habitats of coastal wetlands

Cultural memories

Cultural memories drive the behaviour of participants to attach to the coastal region and maintain the lifestyle they value.

> *"Memories of childhood crabbing with my family (Thompson Beach). Picnics with my grandchildren at St Kilda" [Household survey, ID02].*
>
> *"Primarily a happy feeling of nostalgia. As a young boy, I would go to St Kilda with my friends to catch crabs. In my 20s, I had some picnics with my football club, and others. In my 40s, we took Japanese exchange students and teacher there for recreation at the adventure playground and picnics" [Household survey, ID21].*
>
> *"Have lived at Parham for almost 40 years. Love the whole coastline the changing seasons, birdlife, fishing and crabbing. Visited the beaches with my parents who are now no longer here. Have many memories that the next generation can enjoy" [Online survey, ID43].*
>
> *"Making memories there with my children and friends" [Online survey,ID61].*
>
> *"Having I used at Virginia nearly 50 years our family. Now their families visit these places and look to them as "stamping grounds" where memories are made to last forever" [Household survey, ID79].*

Nature appreciation

The art of nature inspire the participants and enhanced a sense of belonging to the coastal region.

> *"I feel at home under the open bowl of the sky, listening to the birds, squelching in the mud and not hearing another human activity in the entire sound-scape. It is what makes the metropolitan area bearable for me" [Online survey, ID40].*
>
> *"I breathe it in when I wake and drift to sleep listening to the settling of the stilts. It is home" [Online survey, ID72].*

"I found Middle Beach about 17 years ago and happened to purchase a property. There about 14 years ago and have lived there ever since. I love the quiet coastal feel and brilliant star studded skyline. I work in the city and feel where can you come home at night and you always feel you are on holidays" [Household survey, ID85].

"Appreciation of nature- importance of mangroves area (often undervalued)" [Online survey, ID41].

"It makes me feel proud that we have left untouched land for natures beauty." [Online survey, ID49].

A sense of home

The coastal region provides the people with spaces for living. A long period of living in the area increased the sense of belonging to the coastal region.

"It is my home, where we live" [Household survey, ID11].

"Because I live near the coast around Middle Beach a visit regularly and it is an amazing ecosystem. No new housing" [Household survey, ID23].

"I have lived in the area for 60 years, visited regularly as a family with friends when children were younger" [Household survey, ID37].

"I live at Thompson Beach and have a sense of home and belonging which I believe gives me more of a strong sense of a desire to protect" [Online survey, ID66].

"We have a beach house at no 1 The Esplanade Thompson Beach. It's a place we are building to create memories for our children and one that is so peaceful and beautiful" [Online survey, ID74].

"Grown up here and my kids love it" [Household survey, ID80].

Recreational opportunities

Providing recreational opportunities is one of the reasons for the sense of attachment to the coastal region. The participants engage with the coastal environment for recreational activities.

"My main contact has been through personal kayaking around Garden Island and the amazing natural spaces, experiences and wildlife we have so close to home. I also work within a section of the Torrens Island/Thompson Beach region" [Online survey, ID53].

"Having been camping, fishing , crabbing and now also helping to restore its environment since 1967 . It is like my 2nd Home to me" [Online survey, ID60] .

"I love the beach. I especially like the Bird Sanctuary. Being a bird lover, I feel happy they have someone looking out for them and their environment" [Household survey, ID82].

Educational opportunities

The dynamic habitats of the coastal region inspire people who want to study or research. According to the following quotes of participants, providing educational opportunities is one sense of belonging to the coastal region.

> *"Increased involvement over the past three years with ongoing surveys and volunteer activities has endeared this wonderful and unique environment to me. There is such diverse beauty in these areas any time of year and the scope of birds, wildlife and flora is captivating" [Online survey, ID44].*

> *"As a member of the South Australian Ornithological Association (Birds SA) this area, (along with the Coorong), is a critically important resource for sustaining birdlife. Moreover it provides the opportunity to study the different species, to better understand their feeding behaviour and to enhance their chances of survival" [Online survey, ID 45].*

Working with a group

The coastal environment creates working opportunities and meeting with members of various groups. Working with a group creates a sense of belonging to the coastal region.

> *"From working in the environment with a community of people. In the Garden Island/Torrens is area - this place is just beautiful -it is in my heart" [Online survey, ID69].*

> *"Part of my walk route. Involvement with community groups and education and learning e.g. school trips and scout excursions" [Household survey, ID01].*

> *"Volunteering with different groups has made this more special to me" [Online survey, ID49].*

Dynamic habitats of the coastal wetland

Coastal wetlands provide habitats for flora and fauna that inspire people with a sense of attachment to the coastal region.

> *"I feel a sense of attachment because of the importance of this area to the Migratory Shorebirds. This is or rather was, their safe haven after their extremely long flight. It is now being decimated and that upsets me a great deal. I find it distressing and depressing" [Online survey, ID58].*

> *"It is an importance in many places of untouched natural beauty including native vegetation that is now endangered, bitter blue butterfly, bitter blue bush to name just a few" [Online survey, ID67].*

> *"A connection with the environment, that is bird life, mangroves and habitat" [Online survey, ID68].*

4.9 Importance of value assets of the coastal region

In order to evaluate the importance of the features of the coastal region between Torrens Island and Thompson Beach, six main features were examined. Two questions were asked of the participants; one to identify how important to participants are the environmental features and the other to consider how important to participants is the preservation of the main features for the future.

- Environmental qualities (Landscape value/aesthetics – native flora and fauna)
- Educational opportunities (research, training and field observation)
- Environmental services (carbon storage, coastal protection)
- Facilities for active recreation (areas for playing/exercising, walking/cycling, birdwatching/fishing)
- Indigenous and other cultural sites
- Access infrastructure such as roads, carparks and walkways

4.9.1 Environmental qualities

In terms of coastal environmental qualities, including landscape value/aesthetics, native flora and fauna, the participants of questionnaires identified the importance to this environmental qualities and the importance of the need to conserve this environment for the future (see Figure 4.18).

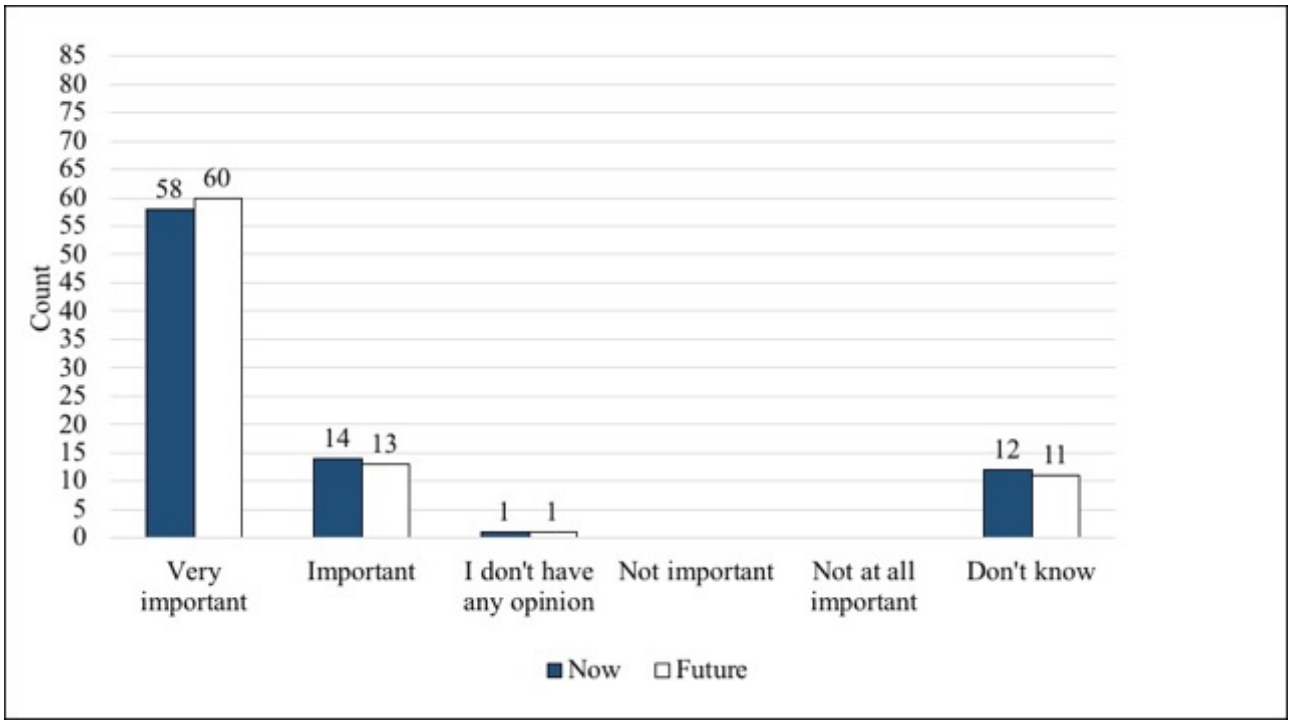

Figure 4.18 The importance of environmental qualities (Landscape value/aesthetics, native flora and fauna)

Fifty-eight number of respondents described that the coastal landscape, native flora and fauna was ‘very important’ and 60 respondents said that the preservation for the future was ‘very important’ as well. There was no respondent who said ‘not important’. The results clearly show that the environmental qualities such as landscape value, aesthetics, native flora and fauna are very important features of the coastal region.

4.9.2 Educational opportunities

Respondents identified the importance of the coastal environment for educational opportunities. The educational opportunities include research, training and field observation (see Figure 4.19). Generally, the majority of participants described that the coastal region was very important for educational opportunities. In detail, 6 more respondents identified that it was very important for the future than now. A small number of participants thought it was not important, and, 15 number of participants had no idea about the educational aspects. The results indicate the coastal region providing educational opportunities is one of the important features of the region.

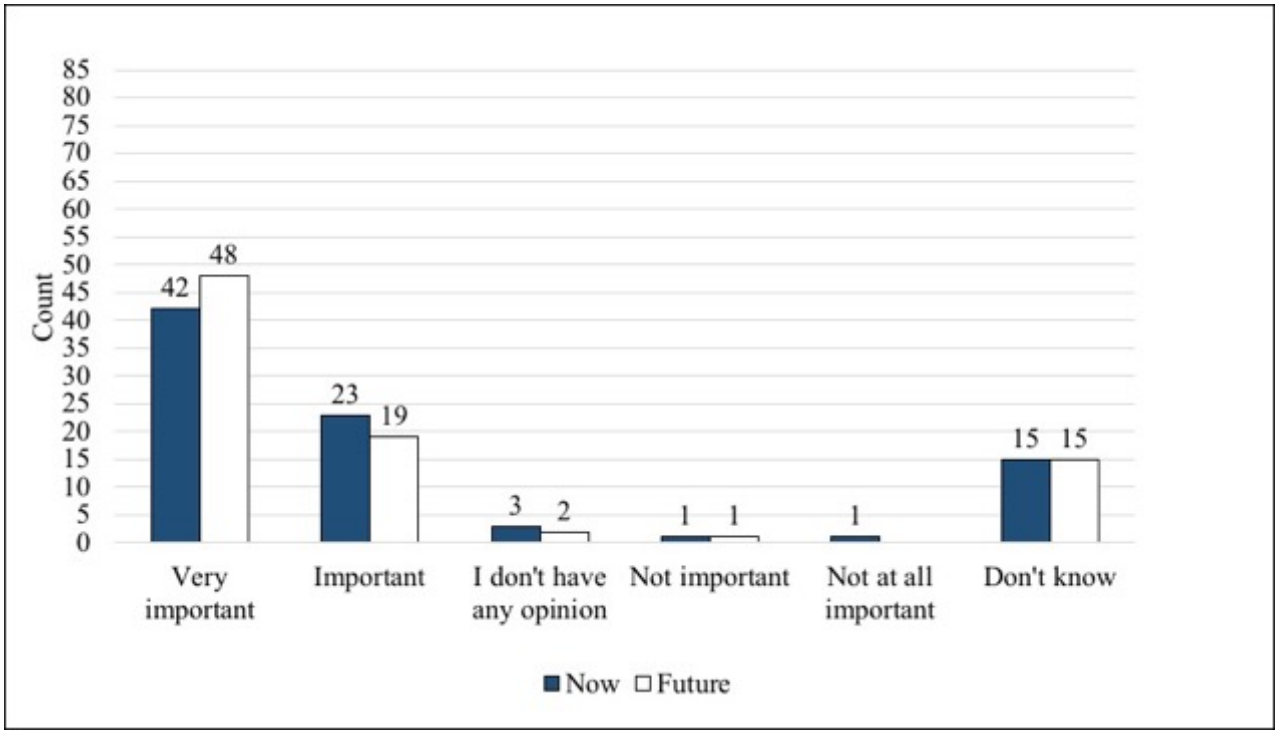

Figure 4.19 The importance of educational opportunities

4.9.3 Environmental services

In Figure 4.20, participants identified the importance of environmental services such as carbon storage, coastal protection from storm and sea level rises, and sediment trapping. Most of the respondents identified that the coastal region was very important for the aspect of environmental

services for now and the future. Only a small number of participants described it as not important. Therefore, environmental services is another important feature of the coastal region.

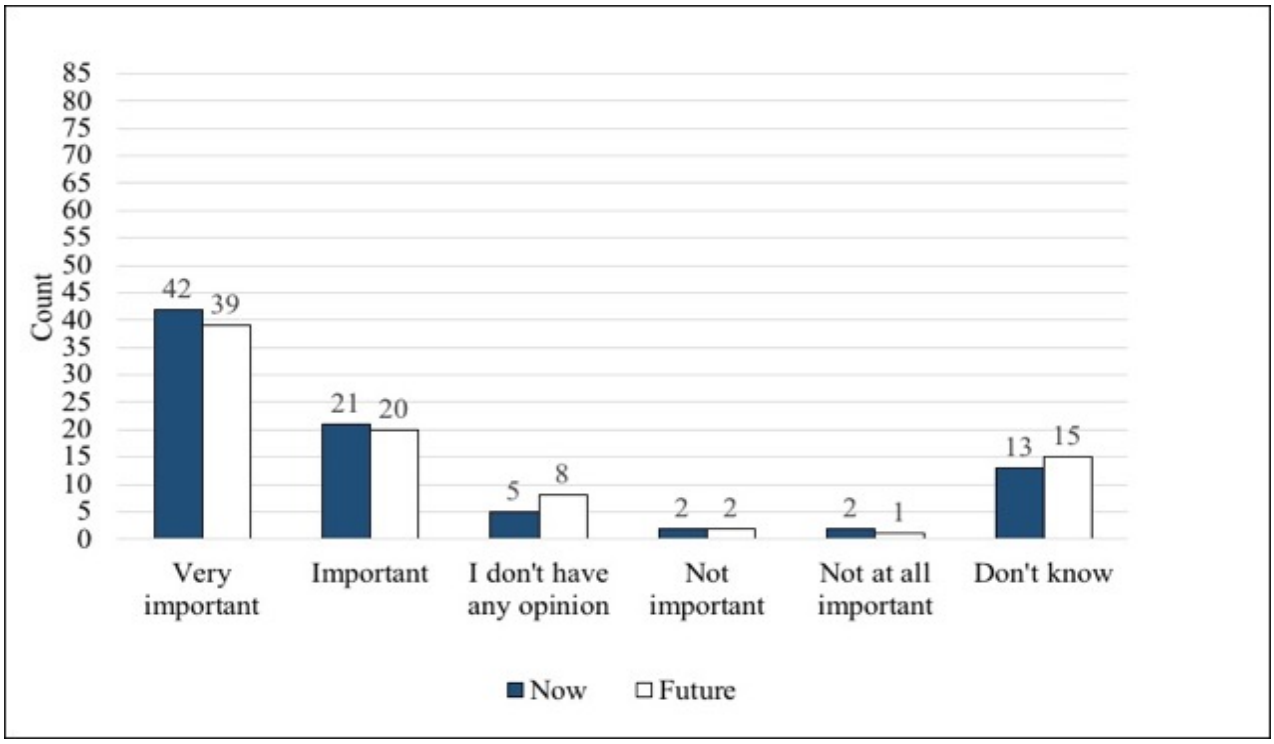

Figure 4.20 The importance of environmental services

4.9.4 Facilities for active recreation

Respondents identified the importance of facilities for active recreation in Figure 4.21. Active recreation includes areas for playing, exercising, paths for walking, cycling, sites for birdwatching and fishing. The results show that these facilities were important factors identified by nearly half of respondents. Four more participants described it as very important for future preservation. A small number of participants answered that facilities for active recreation were 'not important'.

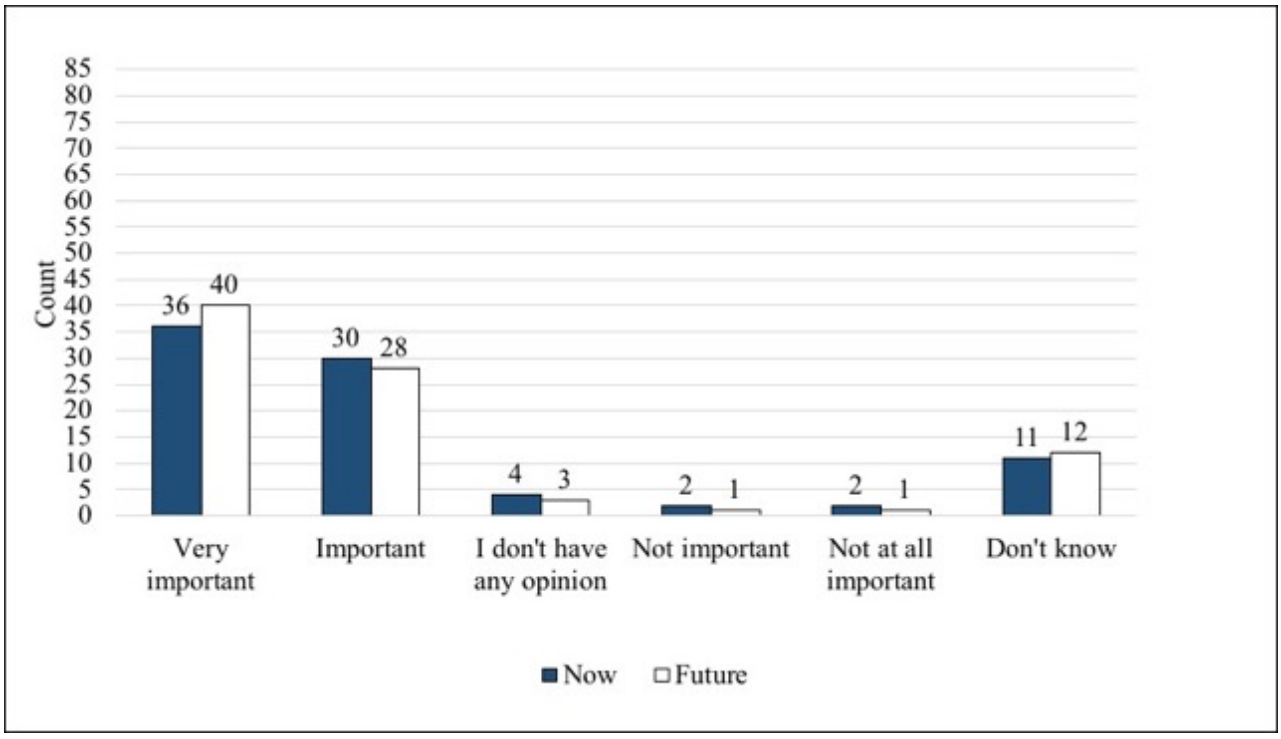

Figure 4.21 The importance of facilities for active recreation (areas for playing, exercising, walking, cycling, birdwatching, fishing)

4.9.5 Indigenous and other cultural sites

The respondents identified the importance of Indigenous and other cultural sites in Figure 4.22. Twenty-eight of respondents described that Indigenous and cultural sites were very important, and 5 more participants said they were very important for the future preservation. However, nearly one fifth of participants did not have an opinion. Moreover, 4 participants said Indigenous and other cultural sites were not at all important and 2 participants described said not important for now and future preservation. According to this result, indigenous and other cultural sites are moderately important features of the coastal region.

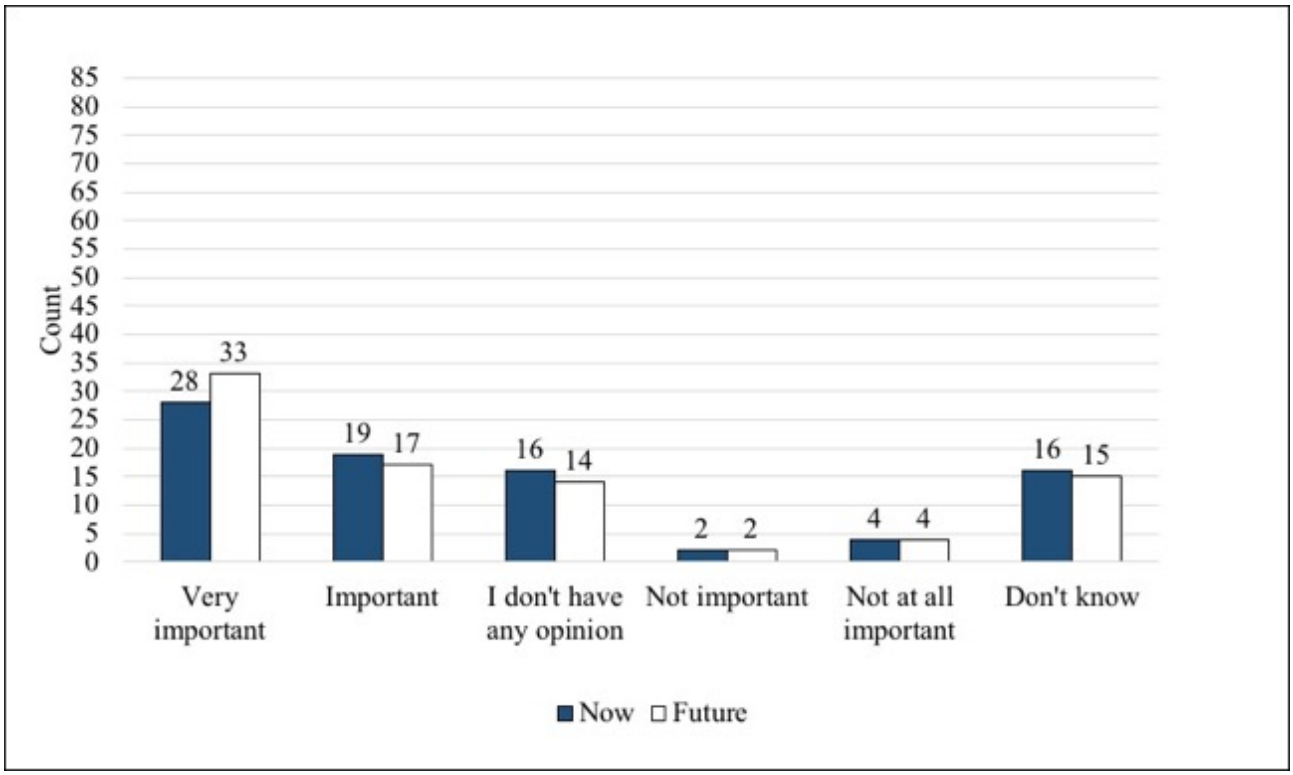

Figure 4.22 The importance of Indigenous and other cultural sites

4.9.6 Access infrastructure

The Figure 4.23 shows the importance of the access infrastructure. In this survey, the access infrastructure includes roads, car parks and walkways. Nearly 35 out of 85 respondents identified these features as important and over 25 of respondents said 'very important'. There was no significant difference between now and the future. Fourteen respondents had no idea about this feature.

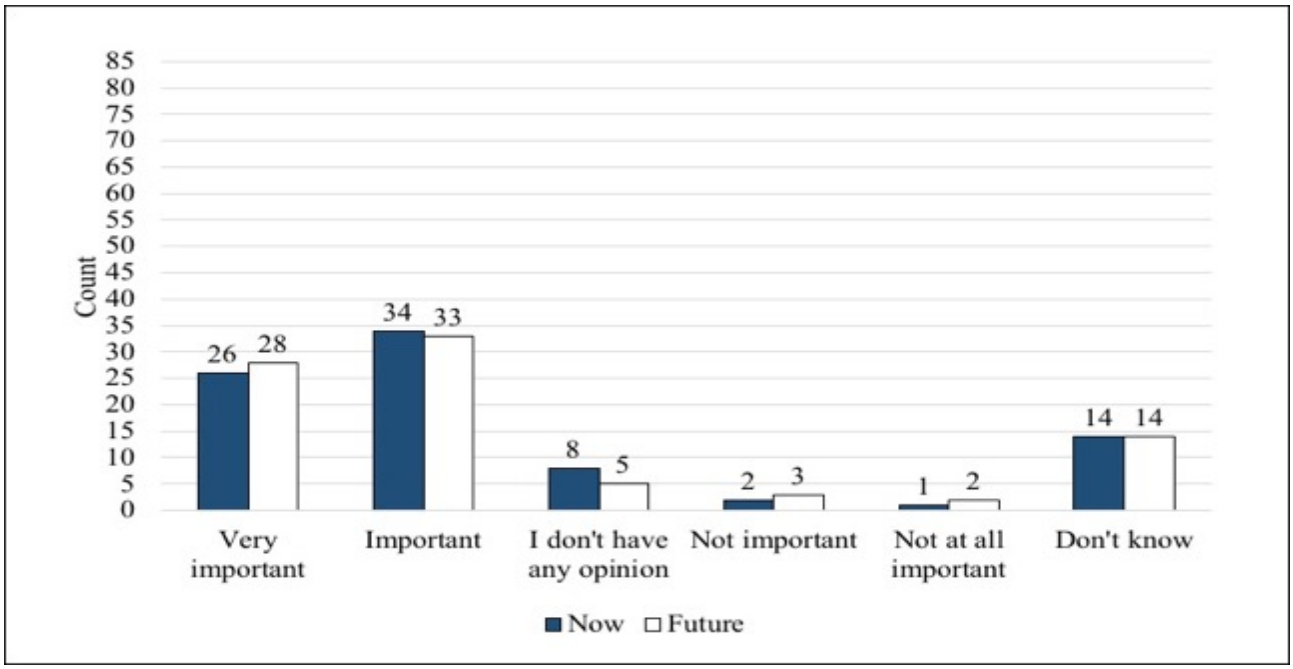

Figure 4.23 The importance of access infrastructure

The survey examined the importance of assets and qualities of the coastal region, and how it is important to preserve these environmental assets for the future (Figure 4.18 to Figure 4.23). The survey found that environmental qualities (landscape value/aesthetics – native flora and fauna) were the most commonly identified values; followed by educational opportunities (research, training and field observation), and environmental services (carbon storage, coastal protection from storms and sea level rises). Moreover, the environmental qualities, educational opportunities and active recreation were more important features for the future preservation than other assets.

In addition, this study examined how the participants' were concerned with the impact of erosion, flooding and storms disturbing their use of the coastal region and is explored in next section.

4.10 Impacts of erosion, flooding and storms

This survey asked the participants if they were concern the impact of erosion, flooding and storms would affect their use of the coastal region. The participants identified their concern and explained the reason for their choice. The comparison between household and online respondents indicated the different attitudes toward their use of the coastal region and the impacts.

Figure 4.24 illustrates how much participants are concerned about the impacts of erosion, flooding, and storms on their use of the coastal region between Torrens Island and Thompson Beach. The results found that the majority of household and online participants reported that they are highly concerned about the impacts of erosion, flooding, and storms. While twenty percent (n=17) and sixteen percent (n=14) of household respondents said 'strongly agree' and 'agree'. Fifteen percent (n=13) of online participants strongly agreed and seven percent (n=6) of online participants agreed on that point. A minority of respondents, including eight percent (n=7) of household respondents and three percent (n=3) of online respondents were not concerned with the impacts. Fourteen percent (n=12) of online respondents and only one percent (n=1) of household participants did not know about how concerned they were about the impacts of erosion, flooding and storms on the coastal region.

Overall, a majority of respondents were concerned about the impact of erosion, flooding and storms. However, it is interesting to note that household respondents were more concerned about the impacts than that of online participants.

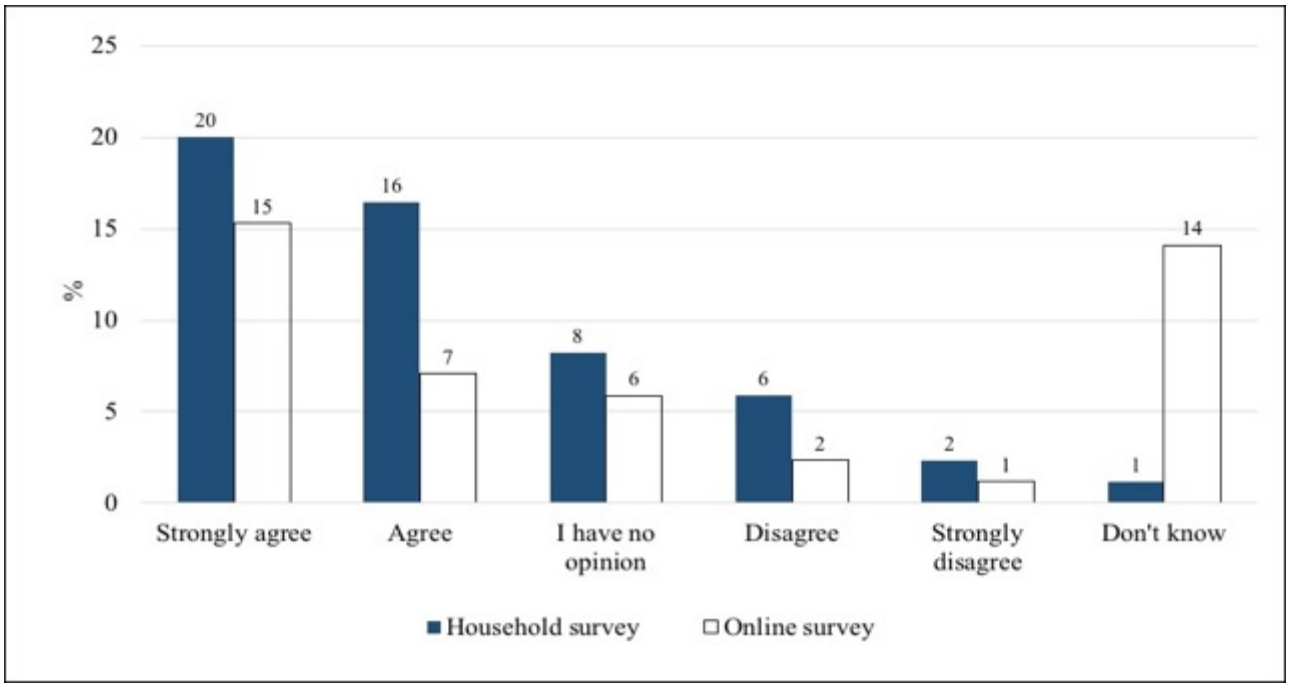

Figure 4.24 How much agree or disagree with the impacts of erosion, flooding and storm affect on the coastal region

The survey participants provided the following reasons why they agree or not agree on the impacts of erosion, flooding and storms on the coastal region.

> *"I am concerned that the impacts of erosion, flooding and/or storms will affect my use of this coastal region between Torrens Island and Thompson Beach. Please give a reason for your choice. Difficult to access for safety reasons to youth members of scouts where I am a leader; also bus driver for school trips" [Household survey, ID01].*

> *"Due to the effects of Climate Change, this area will become more exposed to erosion and degradation" [Online survey, ID48].*

> *"There has already been erosion to much of the dune's. Flooding to the coastal settlements is becoming more regular. Global warming is going to continue to have an impact on our coastal regions" [Online survey, ID67].*

However, a respondent stated that these natural disaster would not affect on their use.

> *"I think this effect is over stated. We have been in this area for 8 years and we have seen no evidence on this. We may not see any effect during our lifetime"[Household survey, ID13].*

> *"Rarely the coastal area is flooded or storms are not a problem".*

> *"Erosion is primarily as a result of human activities. Flooding and storms are natural phenomena. None of these will affect my use of this region"[Online survey, ID45].*

According to the Figure 4.24 and their reasons, the majority of respondents recognise the effects of climate change and global warming, and are concerned that the impacts that will affect their use of the region. Moreover, the participants described not only their concern about the impacts of erosion, flooding and storm, but also their perception for the future of the coastal region.

4.11 Preference for the future scenario of the coastal region

The study asked the participants to describe their preference for the future of the coastal region between Torrens Island and Thompson Beach. The survey asked about the participants desires for the future of the coastal region. This might help to provide a better understanding of cultural values for decision makers to take into consideration to assist in planning and management of the environmental programme of the region

The respondents indicated their preference for the future of the coastal region (Figure.4.25). The vast majority of respondents would like to see the coastal region have more conservation, particularly online respondents with twenty-eight percent (n=24) and household respondents with fourteen percent (n=12). While another fourteen percent (n=12) of households respondents wanted the region to stay exactly the way it is now, online respondents were less interested in this point. Twenty-four percent (n=20) of household respondents and five percent (n=4) online participants, wanted the region to have more development only if it is sustainable. Only one percent (n=1) preferred to see the region undergo extensive development and urban growth. Related to this assessment, household respondents had a higher response rate than online participants. Only one percent (n=1) of household respondents did not contribute to this aspect, whereas twelve percent (n=10) of online respondents did not contribute.

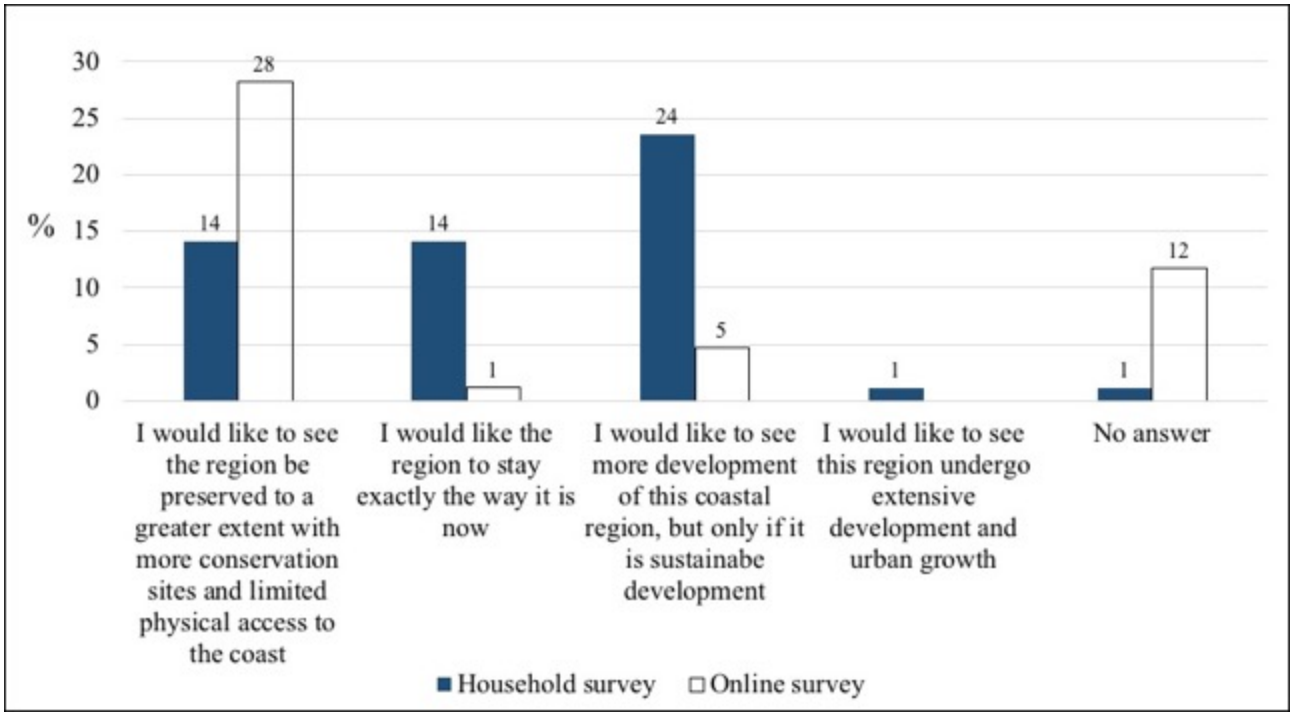

Figure 4.25 Preference for the future of the coastal region

Overall, household respondents considered both aspects of conservation and development activities only if it is sustainable development. Online respondents were more interested in the conservation aspect.

The participants supported the reason for their choice. The following are reasons of concern for the preservation of ecological significance without considering urban growth.

> *"I would like to see the region preserved so that future generations an enjoy and experience it. I feel that this would be lost if it was developed for urban growth" [Household survey, ID01].*

> *"The area has high ecological significance and is also under threat with sea level rise so I do not encourage more development even if it is sustainable. There are plenty of existing developments and townships that could be upgraded to meet future needs and encourage/bring tourism to the region" [Online survey, ID51].*

> *"I would to see the coast presented. I would like to see the native vegetation remain not turn into concrete jungles" [Household survey, ID25].*

The following are comments made by participants related to considering preservation and development activities in sustainable ways.

> *"Keep it as it is with improvements to keep it up with changing times/technology but ensure it is still sustainable" [Household survey, ID03].*

> *"The only reason this area has been preserved to date is its inaccessibility. You need a middle option in there, which is only undertaking development in there, where it enhances the values of the site - e.g. fencing, boardwalks, look-out towers, interpretive facilities etc" [Online survey, ID40].*

> *"Mixed between chosen point and sustainable development. For bird and plant species conservation is important" [Online survey, ID69].*

> *"I think it important to conserve the habitat of the local and visiting birdlife and fish breeding grounds. I don't think that development of the area for human use is compatible with conservation" [Online survey, ID73].*

Overall, the respondents highlight that the coastal region is a critical habitat. The region has a wide range of biodiversity including important local native flora and fauna. The coastal region provides important habitats for birds and aquatic species including migratory shorebirds, fishes and crabs. In addition, they clearly describe that coastal wetland conservation is need for future generations.

4.12 Further comments for the development of the coastal region

The respondents provided further information and suggestions based on their personal experiences and local condition. These are important reasons to consider for sustainable use of the

coastal region between Torrens Island and Thomson Beach. They described why the coastal region is important.

> *"This place is unique for the shorebirds and very special privilege to see them. There is seagrass that is rare in this area. The open space is very special to walk along the trails and along the beach. You can see and hear lots of different birds. Also the red hooded plover is in this area and must have protection please. The dolphins are around Torrens Island and Saint Kilda a lot. What is left of the mangroves must have full protection. To many crabs are being taken from these beaches. Stingrays are being taken. Too much fishing is happening in the Adelaide dolphin sanctuary and it should be a refuge for the fish. I have kayaked there many times also and have seen owls and eagles. Please I urge you to protect what we have left " [Online survey, ID49].*

In addition, they highlighted the local social significant features of the region.

> *"I am guilty of ignorance regarding indigenous significance for the area. I believe there should perhaps be more public awareness through structured education about our local features and how they can be impacted by changes, by commerce or politics. Weather we visit these places regularly or not, we all need to care about their fate, and welfare" [Household ID21].*

The coastal ecosystem is under threat from different causes. Respondents wanted better decision making, better conservation strategy, and a fair budget allocation for coastal management.

> *"I think any coast line is very important, but this stretch of coast line is close to me and has a very diverse collection of flora and fauna. There should be more fines for dumping rubbish and under size fishing. What we do along the coast line could damage the already fragile ecosystem. In saying that I have lived here (local) for over 40 years and have seen the landscape change. And this must stop. I do hope the powers to be will make the right decision for the coast line. Save it all!" [Household survey, ID23].*

> *"It is so important to maintain this area as naturally as possible. However, we do need to maintain walkways and development knew ones. This is not happening at present. I would like to maintain walkways along beach. At present most has too much use a weed build up. So beach cannot be enjoyed by people, children, etc. We do not want to commercialize the area. However, it needs to be upgraded in many areas – bite-size esplanades, etc, for safety reasons. Nowhere to ride bikes in our area, no sealed frontage [Household survey, ID39].*

> *"Responsible investment is required, not political promises that are never kept and if given, some nominal action that is so under-funded it should never have been started. Most funding goes on bureaucratic admin" [Household survey ID28.*

According to the above transcripts of survey participants, the results found that the coastal region provides the critical habitats for variety of species, spaces for people to enjoy cultural activities including recreational activities. In addition, they state the threats to the coastal region and suggestions for solutions. The findings are summarised in five main categories.

- Habitats: The coastal region provides critical habitats for many species including birds (e.g. shore birds, Red hooded plover, Owls), fishes, Dolphins, crabs, Stingrays, seagrasses and mangroves.

- Spaces: The region provides open space, beaches and walkways.

- Recreational opportunities: People engage with the coastal region for recreational activities including walking, kayaking and cycling.

- Threats: The participants highlighted the threats to the coastal region. The threats are dumping rubbish, undersize fishing, overfishing in the Adelaide Dolphin Sanctuary and too much weed build up.

- Action to be considered: The participants suggested that conservation actions are needed to be considered for the coastal region. They argued that some actions were under-funded and most of the funds went to other administration. Moreover, some stated that their ignorance of indigenous significance of the area. In order to enhance understanding of indigenous features, more public awareness through structured education about the local features of the region were required.

4.13 Summary of Research Findings

This study clearly determined that there exists an important relationship of cultural values associated with the coastal wetland region in Northern Adelaide. The vast majority of the population who live adjacent to the coast and who are interested in the coastal areas answered that they have visited the coastal region. The local people in particular have strong cultural connections to the coastal environments. They are more aware of the region and are engaged with the area. They reported that their surrounding environment is also important for their daily life, using the coastal wetland region for many activities, including nature-based and recreational based activities. Moreover, they received the tangible and intangible benefits derived from the region. This study identified community groups which interact with coastal habitats. The participants stated their support for the relationships between specific places of attraction and the degree of importance. For example, Adelaide International Bird Sanctuary National Park is regarded as the most important site; but the Lower Light Rifle Range is the least considered place of interest and importance.

In addition, analysis of general and personal values highlights the importance of different aspects, including education, encouraging healthy living; inducing a sense of freedom; generating good memories and as a place to relax and to enjoy visiting. A better understanding of these aspects can help to explain the significance of cultural values associated with coastal regions. Moreover, the impacts of erosion, flooding and storms effects on the coastal region, and perceptions of future use are also important aspects to be considered. In terms of future perceptions, the majority of online participants want to see more conservation; however, most of the household questionnaire participants want to see more development of this coastal region, but only if it is sustainable development..

5. DISCUSSION

Introduction

Cultural values are rarely accessed and acknowledged openly for consideration in environmental planning and decision making. Therefore, this study attempts to fill this gap and provide a better understanding of the values associated with this coastal region. This was achieved by investigating the social and cultural practices associated with people's interactions with the coastal region; by identifying the different uses and significance of the coastal wetlands to local communities; by examining how people feel about the region and the perceived benefits they derive from it.

This chapter discusses the main findings of the results section with reflection to the aim of the study, which is to understand the cultural values associated with Northern Adelaide coastal wetlands. The study set out to investigate local community values, perceptions and experiences, in relation to the northern Adelaide coastline with a view to informing the larger Goyder Institute 'Salt to C' Ecosystem Services project with the potential to inform future planning and decisions for this region. The discussion presents an overview of the key findings from this study following the three dimensions of cultural value:

- cultural practices, how people interact with each other and with the environment;
- cultural spaces, where people interact with each other and with the environment; and
- cultural ecosystem benefits, the benefits people seek to derive from the environment.

Key Findings

A number of important elements have emerged on the basis of this study. They will be discussed in order of significance for the three different aspects of cultural value—the non-material benefits people obtain from the coastal wetlands. The most important finding of the study is that respondents were able to identify a range of values associated with the coastal wetlands that included spiritual enrichment, reflection, recreation, and aesthetic experience.

Cultural practices (how people interact with each other and with the environment)

The people use the coastal region between Torrens Island and Thompson Beach for a wide variety of cultural activities. When the respondents visit the coastal region, they are mainly involved in observing nature and scenic appreciation, birdwatching relaxing/spending time alone, fishing and crabbing, walking, and running are the most popular activities in the region. The findings in this study are consistent with the findings of Clara et al. (2018) in 'the value of coastal lagoons'. According to Clara et al. (2018, p. 195), when visiting coastal region, people are mainly involved in relaxing,

sightseeing, birdwatching and bush walking activities. This is because they imply appreciation for the quality of the environmental conditions including natural habitats Clara et al. (2018, p. 195). Moreover, Bourman, Murray-Wallace and Harvey (2016, p. 1) provide other reasons why people have connections to a coastal region. They use coastal regions for recreation, such as swimming, fishing, boating, surfing, sunbathing, for enjoying the pleasant climate of coastlines, and exploring historical and cultural connections, admiring the beauty of nature and observing coastal landscapes formations. Creighton, Gillies and Alleway (2015, p. 13) describe that wetlands provide unique sites for recreational activity; such as fishing, crabbing, birdwatching and enjoying the visual landscape. Moreover, English (2002, p. 221) indicates that, "flora, fauna and landscape features are seen as being integral components of people's cultural construction of "country" or significant lands. These features can also form significant components of story sites or traditional places." Therefore, the features of natural landscapes are seen to be highly likely to encourage the people to participate in various cultural activities.

This study highlights that nature based activities including nature appreciation, birdwatching and relaxing/spending time alone, and recreational based activities such as fishing and crabbing, walking and running are important cultural activities associated with the coastal region between Torrens Island and Thompson Beach.

Uses and significance of the coastal wetlands to the respondent group

Different uses and significance of the coastal are identified in this study. Regarding cultural places, this study identified that the most well-known, important and most visited sites are the Adelaide International Bird Sanctuary National Park Winaityinaityi Pangkara, St Kilda Adventure playground, and the Thompson Beach walking trails. Although, Adelaide Dolphin Sanctuary were less aware places described by the household respondents, they identified it as an important site. The environmental conditions of the Adelaide International Bird Sanctuary National Park Winaityinaityi Pangkara, St Kilda Adventure playground, the Thompson Beach walking trails and Adelaide Dolphin Sanctuary favour the participants to visit to undertake nature and recreational based activities such as birdwatching, watching dolphin and walking. Adelaide International Bird Sanctuary is an internationally important shorebirds area and it is a critical part of the East Asian-Australian Flyway of migratory shorebirds (Department of Environment Water and Natural Resources 2013, pp. 2-12). Thus, people who are interested in birdwatching or bird conservation, know about this place. Commonly, St Kilda Adventure playground is a typical public space and is particularly for children and family enjoyment. A majority of respondents are aware of the common well known places. In order to consider the importance of cultural significant sites, the Adelaide International Bird Sanctuary National Park Winaityinaityi Pangkara, St Kilda Adventure playground, the Thompson

Beach walking trails and Adelaide Dolphin Sanctuary are the more important sites compared to the other sites. Therefore, this study illustrates that these unique places where situated in the coastal region between Torrens Island and Thompson Beach are important cultural sites.

Additionally, this study observes the cultural heritage significance of the region. Most of the participants were aware that the coastal region is a home of Indigenous people or Kaurna people (Aboriginal people). According to this, it is highly likely that the study area north of Adelaide, between Torrens Island and Thompson Beach, is a significant heritage region. The region may have traditional activities of Aboriginal people. This assumption supported by Jackson (2006, p. 26) is that Indigenous people visit sacred sites to participate in traditional ceremonies. It seems possible that the coastal region between Torrens Island and Thompson Beach is a part of the cultural heritage site with traditional and cultural activities. Anaecc & Armcanz (2000), cite in Jackson (2006, p. 21) report that "Indigenous cultural and spiritual values may relate to a range of uses and issues including spiritual relationships, sacred sites, customary use, the plants and animals associated with water, drinking water or recreational activities". Therefore, it can be assumed that the coastal region has significant cultural values related to indigenous cultural heritage sites.

Moreover, it is interesting to note that that more than half of the participants, who live adjacent to the coastal region, use the coastal region daily. This appears to be supported by Pedersen, Weisner and Johansson (2019, p. 1319) suppose that sixty-six percent of respondent, who live near the wetland areas, visited the coastal region every day. High frequency of visitation means that the sites are well frequented-people are drawn to the places. Thus, it can be assumed that they like visiting them and therefore have an attraction to them.

Regarding aspects of social groups that use the coastal region, this study records many social groups associated with the coastal region. According to the Millennium Ecosystem Assessment (2005b, p. 40), ecosystems influence the social relationships and maintain the particular cultures of social groups. For example, the perspective of fishing societies differ to the perspective of agricultural societies. Basically, values represent standard/accepted behaviours, actions and goals of individuals and groups (Matijević, Vrdoljak Raguž & Filipović 2015, p. 459), and Fish, Church and Winter (2016, p. 212) describes that cultural values are associated with collective principles and life goals. Therefore, the functions of social groups may enhance collective principles and actions that favour a sense of belonging to a coastal region. Although this study did not examine the functions of community groups, it is interesting to note that their cultural practices may interlink with the significance of the coastal region. Therefore, it should take into account this finding related to social groups which may have significant cultural values regarding use of the coastal region. This study highlights that not only individual but also social or community groups use the coastal region.

In addition, this study clearly highlights the preference of the respondents for future development of the coastal region. Particularly household respondents emphasise and consider both aspects of conservation and development activities, only if it is sustainable development. Online respondents are more interested in the conservation aspect. This finding distinguishes the views between household respondents and online participants. According to Cocks, Dold and Vetter (2012, p. 7), the desires people attach to nature and their cultural values may favour conservation compared to other values such as economic values. Therefore, it can be assumed that the household respondents may prefer the development of their region. Pedersen, Weisner and Johansson (2019, p. 1323) state that taking into consideration a local's opinion is required in a holistic approach for greenery and urban planning with sustainable development. This finding, therefore, suggests to consider the perspective of local residents concerning both development activities and conservation for further development of the coastal region.

Moreover, the respondents identified that environmental qualities (e.g. landscape value, aesthetics, native flora and fauna) are the most important features of the coastal region and the preservation of these environmental qualities is critical for the future as well. Visible landscape including green spaces and water area, diversity of flora and fauna are critical features of the qualities of coastal wetlands. It is possible to state that these environmental qualities favour people to become attached to the coastal region. Pedersen, Weisner and Johansson (2019, pp. 1319-20) found in their study that the aesthetic beauty of a coastal wetland is the most important aspect in environmental qualities. Eaton, 2001; Wang, Nassauer, Marans, & Brown, 2012, cited in Dick et al. (2011, p. 179) explain that ecological function and biophysical characteristics of wetlands are aesthetically relevant in attractiveness and promote preference of people. Aesthetic values are related to people's perception of the landscape (Lothian 2007, p. 1). According to Dobbie (2013, p. 22) considering the aesthetic value helps to improve sustainable wetland ecosystem management. Therefore, considering environmental qualities of the coastal wetland between Torrens Island and Thompson Beach is the most important aspect of the coastal region.

Furthermore, this study indicates that the facilities for active recreation (e.g. areas for playing, exercising, walking, cycling, birdwatching and fishing) is an important feature of the coastal region. These facilities are related to cultural spaces where people interact with each other and with the environment. The cultural spaces are related to the cultural practices how people interact with the environment. For example, people who want to walk, they use walkways; and people who want to go birdwatching, they visit birdwatching sites. Coastal saltmarshes support unique areas for access to recreational fishing sites (Creighton, Gillies & Alleway 2015, p. 13). St Kilda Adventure playground is another typical example of a facility for active recreation. These facilities enhance the attachment between people and the environment. These facilities shape interactions between people and the

environment. Therefore, facilities for active recreation are important features to facilitate the interaction between people and the coastal region.

This study also identifies the importance of access infrastructure (e.g. roads, carparks and walkways). Access infrastructure is a primarily important feature that favour cultural activities including walking, swimming and picnicking. However, this study found that access infrastructure are less important than others such as environmental qualities and educational opportunities identified by the respondents. Peschardt et al (2012) cited in Pedersen, Weisner and Johansson (2019, p. 1316) support that that accessibility provides a fundamental opportunity to attach to nature in everyday life. However, Laegdsgaard et al. (2009, p. 185) argue that public access to saltmarsh areas can cause increasing litter dumping. Consequently, plants and animals in saltmarsh areas suffer from harmful effects of smothering by litter. Also, Brander et al. (2012, p. 68) clearly states that road infrastructure can cause mangrove fragmentation. Based on these literature, it can be concluded that although access infrastructure is important to some extent, the negative impacts of access should be taken into account for decision-making. Nevertheless, the perspective of respondents concerning access infrastructure are critical to take into account in sustainable development of the coastal wetland.

Additionally, this study finds that the majority of respondents are concerned the impacts of erosion, flooding and/or storms will affect their use of this coastal region between Torrens Island and Thompson Beach. The household respondents are more concerned about the impacts of erosion, flooding and storms compared to online respondents. There are some possible reasons for this result. For example, the household participants know more about the local area and they have a stronger cultural attachment to the coastal region compared to online respondents. Therefore, explaining the household respondents concern about the impacts of erosion, flooding and storms on their use of coastal region.

Some literature can support the opinion of household residents regarding the impact of flooding, erosion and storms. Akumu et al. (2011, pp. 15-6) study in in north-eastern (New South Wales) NSW, sea level rise would have impacts on coastal wetlands including mangroves, in terms of flooding and erosion. Caton et al. (2009a, p. 80) also state that rising sea level is a serious threat to coastal wetlands in northern Adelaide because saltmarsh communities are sensitive to sea level change. Many causes including sea level rise will affect coastal saltmarshes (Adam 2009, p. 20). In the same study, Adam suggests that conservation management is needed now, even if the effects of some threats will not be obvious for decades. Therefore, the opinions of the respondents concerning the impacts of erosion, flooding and storms, should be considered for a conservation and management plan of the region.

In addition, the participants highlight other threats to the coastal region. They report that the common threats are dumping rubbish, undersize fishing, overfishing in the Adelaide Dolphin

Sanctuary and too much weed build up. The respondents are highly concerned about the impacts of these threats to the coastal region. The participants suggested that protection and conservation actions must be considered for the sustainable development of coastal region. For example, there should be more fines for dumping rubbish and under size fishing (Household survey, ID23). Moreover, they argued that some actions were under-funded and most of the funds went to other administration (Household survey, ID28). It should take into account the view of the respondents concerning the threats to the coastal region between Torrens Island and Thompson Beach.

Benefits derived by the community from the coastal wetlands between Torrens Island and Thompson Beach

This study found that the coastal region is an important place for providing knowledge (educational/historical/nature-based) and healthy living opportunities. The respondents identified that the coastal region is a good place for providing educational opportunities. Previous studies describe that people obtain many cultural ecosystem benefits, including knowledge and educational values, spiritual enrichment, cognitive development, reflection, recreation, and aesthetic values, spiritual and religious values, social relations, sense of place, cultural heritage values, recreation and ecotourism (Satz et al. 2013, p. 675); (Barbier et al. 2011, p. 192). This study investigates which cultural ecosystem services are more important among the many cultural services. This study also highlights that knowledge (educational/historical/nature-based) opportunities is an important cultural aspect of the region. It is possible to hypothesise that a variety of coastal habitats and local cultural diversities favour these educational opportunities. The idea supported by Fish, Church and Winter (2016, p. 213) is that ecological phenomena play an important role in educational attainment, knowledge advancement and scientific improvement.

In addition, the coastal region encourage people for healthy living. Coastal wetland ecosystems services provide provisioning services, for example, food, fibre, fuel, medicines; regulating services like freshwater storage, hydrological balance and flood protection; supporting services including biochemical and nutrient cycling; and cultural services, for example recreation, aesthetics (Clara et al. 2018, p. 191), inspiration for art, development of knowledge and health (Verschuuren 2006, p. 301). People receive ecosystems goods and services including food (e.g. fish and crab), quality of air and water, spaces for walking and spaces for relaxing from the coastal wetlands.

According to (Millennium Ecosystem Assessment 2005b, p. 52) ecosystem services have a strong impact on health. In addition, Pedersen, Weisner and Johansson (2019, p. 1316) indicate that the green areas and water spaces of wetland habitats contribute to well-being and human mental health. Consequently, it would lead to positive outcomes of health. Moreover, ecosystem services

play an key role in supporting opportunities for health through the function of landscape (Verschuuren 2006, p. 313). It may be the reason that these ecosystem services help healthy living opportunities. Therefore the coastal region between Torrens Island and Thompson Beach provide cultural ecosystem services including healthy living opportunities.

This study highlights that enjoyment of visiting, generation of good memories, relaxation, inspiration and a sense of pride are important aspects of the coastal region. According to Millennium Ecosystem Assessment (2005b, p. 66), "people have benefited in many ways from cultural ecosystem services, including aesthetic enjoyment, recreation, artistic and spiritual fulfillment, and intellectual development". Moreover, Creighton, Gillies and Alleway (2015, p. 13) describe that wetlands provide unique sites for recreational activities such as fishing, crabbing birdwatching and visual landscapes. Therefore, it is possible to hypothesis that the coastal region benefits the respondent by providing many cultural services.

Overall, this study finds that the respondents receive tangible and intangible benefits derived from the coastal region between Torrens Island and Thompson Beach. The tangible benefits include fishing and crabbing. Intangible benefits are admiring the environment, pleasant climate, peace, quietness and tranquillity of the environment, quality air, relaxation, reducing stress, enjoyment, family recreation, birdwatching, small population, less road traffic and an increase in the communities cohesion through local activities.

There are many studies which support these findings regarding ecosystem benefits. Scientific Working Group (2011, p. 60) describe in their study that many people who live in along the coast of South Australia receive tangible benefits such as fishing and crabbing and Baur et al. (2016, p. 49) highlight that the respondents in their study receive important intangible benefits including aesthetics and beauty of nature. In addition, ecosystem services benefit humans regarding health and feeling of well-being (Fisher, Turner, & Morling, 2009; Haines-Young & Potschin, 2013; Sandifer, Sutton-Grier, & Ward, 2015 cited in Fish, Church and Winter, 2016, p. 191). This study enhances the previous findings regarding ecosystem benefits. Moreover, this study indicates that the coastal region provides not only tangible benefits but also intangible benefits derived from coastal region.

Summary of discussion

This discussion assists to offer a better understanding of the relationship between ecosystem services of the coastal wetlands between Torrens Island and Thompson Beach, and social and cultural behaviors of the respondents. This discussion highlights the importance of cultural activities, significant cultural sites, cultural benefits based on the interaction of respondents with the coastal region, their perceptions and their values regarding the coastal region. All of these important discussion points reflect how the cultural practices associated with the coastal wetlands identifies

different uses and significance to local communities and user groups and explains how people feel about, and the benefits, they derive from the coastal wetlands.

6. CONCLUSION

The coastal wetlands between Torrens Island and Thompson Beach are some of the most diverse and productive ecosystems in South Australia. However, they are under threat from a variety of human activities and climate change. A number of recent initiatives recognise their importance and serve to offer increased protection and recognition of this region. Examples include the Adelaide International Bird Sanctuary National Park—Winaityinaityi Pangkara. This study set out to explore cultural values associated with the coastal wetlands between Torrens Island and Thompson Beach in northern Adelaide contributing to the Goyder Institute project 'Salt to C' and its Ecosystem Service Valuation. The project is important because no other studies have specifically explored cultural values ('culture' in its widest sense) attached to these coastal wetlands.

This study provides a new understanding of the importance of this coastal region to the people who live nearby and who visit. The findings show that cultural interactions with the coastal region provide cultural benefits and that the perceptions of people who live nearby are important factors to consider in future conservation efforts of the coastal wetlands.

People use the coastal region for both nature-based and recreational-based cultural activities. They are drawn to the area because of the environmental qualities and the facilities. The cultural practices undertaken are related to the aesthetics, beauty, environmental qualities and access infrastructure of this region. Therefore, this study suggests that the significance of cultural activities should be considered in future conservation efforts of the coastal wetlands.

In terms of considering cultural spaces, where people interact with each other and the environment, two important factors emerge from this study in considering the importance of the cultural sites. They provide unique environmental habitats and cultural recreational opportunities. As examples; the Adelaide International Bird Sanctuary National Park (Winaityinaityi Pangkara) and the Adelaide Dolphin Sanctuary, provide critical habitats for shorebirds and dolphins respectively. In addition, the St Kilda Adventure playground and the Thompson Beach walking trails provide recreational opportunities and cultural benefits; such as for exercising, relaxation and generating good memories. This study therefore highlights the importance of considering the integration of ecosystem point-of-views and social cultural aspects in future sustainable wetlands ecosystem development.

In order to consider the significance of cultural heritage aspects, this study indicates that the coastal region between Torrens Island and Thompson Beach is home of to many of the Indigenous Kaurna people (Aboriginal people). This area hosts evidence of historical events. According to Millennium Ecosystem Assessment (2005b, p. 40), 'many societies place high value on the maintenance of either historically important landscapes ("cultural landscapes") or culturally significant species'. This coastal region demonstrates ecological values and also significant cultural

heritage values. Encouraging engagement with significant cultural heritage sites of value may in turn help the preservation of the coastal wetland ecosystems.

Moreover, the ecosystem services of the coastal region benefit the people in various ways, and are derived from an interaction with the unique features of the coastal regions. These benefits in turn are related to cultural ecosystem services. Noted, cultural ecosystem services include aesthetic, educational, cultural and spiritual benefits and recreational opportunities (Millennium Ecosystem Assessment 2005a, p. 2). This study suggests that it is important to conserve the coastal region because ecosystem services are related to human well-being (Millennium Ecosystem Assessment 2005a, p. 1).

In addition, this study shows that educational opportunities and a healthy living environment are important cultural services of the region. Educational opportunities can provide a better understanding of the natural habitats, the complex environmental issues and social-cultural features associated with the coastal region; and in turn can lead to the positive outcome of obtaining knowledge. This study suggests more action for the provision of education/knowledge opportunities, to assist in a better understanding of the ecological, social and cultural values of the coastal region should be undertaken. The sustainable use and restoration of wetland ecosystem services can help support human needs; including water, food, shelter and good health outcomes (Millennium Ecosystem Assessment 2005a, p. 47). This study suggests that more action is needed in policy formation and implementation regarding education/knowledge opportunities and to protect the quality of the coastal regions for healthy living opportunities.

Acknowledging the perceptions of local people will assist in environmental planning and management decision-making. According to the findings of this study, there is no doubt that the respondents are aware of the importance of the coastal region and that they recognise threats to their use of this area. Regarding García-Llorente et al. (2018, p. 1576), considering social and cultural values in ecosystem conservation efforts helps to contribute better understanding of ecosystem management within social-ecological aspects. The household survey responses suggest that development should be considered for the coastal regions, but that any development must be sustainable. Therefore the policy implications are that future development must include local resident's feedback/input and that the policies make sure that the development is sustainable. In addition, other policy implications based on the online responses are that they prefer conservation, so that policy implications for that group must be along the lines of ensuring conservation is put in place as a policy moving forward on some areas of the sustainable development of the coastal region.

Overall, this study shows that cultural practices, cultural places and cultural ecosystem benefits are interlinked. Cultural practices are physical interactions between people and environmental spaces, and environmental spaces provide a variety of benefits (Fish, Church & Winter

2016, pp. 212-3). This study highlights the importance of considering the integration of ecosystem points-of-view with social cultural aspects, for sustainable wetlands ecosystem development. This concept is in line with modern global conservation priorities and efforts. This view is also supported by García-Llorente et al. (2018, pp. 1576-7) who state that in the context of global change, conservation strategies need to consider an integrated approach that encompasses a holistic, social-ecological perceptive.

Recommendation (Implication for further research)

A specific study related to Indigenous culture is needed in order to examine how and where indigenous people interact with the coastal region. It would be interesting to use a participatory approach, for example, participatory mapping to determine the significant Indigenous cultural sites and where in the region, and how, Indigenous people interact with these sites.

People use the coastal region for various purposes including for their daily life, recreational activities and taking tangible and intangible benefits. The impact assessment regarding social and cultural practices should be conducted in a further study. It would be beneficial to the sustainable development of the coastal region.

Research Limitation

Limitations of this study include the retrieval of only a relatively small number of answered questionaries. This study conducted two survey approaches; household questionaries and an online survey. Although a total of 500 household questionnaires were delivered, this study only received 46 household questionnaires in return. There was not time or funds available to undertake follow-up reminders to households where the questionnaires were delivered. While sixty one network 'owners' were approached to distribute the online survey, only 39 responses were received. There was no control over the online survey once it was sent to the 'owner' of the network. It is impossible to know how many network 'owners' forwarded on the survey. In addition, the networks were primarily environmentally based. As such there is a strong bias towards environmental protection in the online survey responses. A greater effort should have been made to pursue respondents who might appreciate the region for its four-wheel drive access and other high impact activities. Analysing a total of 85 questionnaires as a small sample, may have limited the validity of the findings of this study. Nevertheless, the majority of the household respondents lived adjacent to the coastal region between Torrens Island and Thompson Beach, and this can be considered a positive aspect of the research findings, because these respondents represent the study focus area.

This study recorded mainly quantitative and descriptive information through household questionnaires and online survey. It would be a limitation of this study while interpreting the data.

This study could have investigated additional focus group discussions or face-to-face interviews which may access more qualitative information and provide different or understanding of local conditions and the complex culture. However, due to the time limitation of study period, this study conducted only household questionnaires and online survey.

In addition, this study identified only the name of the social group. The identification of the roles and responsibilities of social or community groups are a limitation of this study. However, the findings of this study contribute at least what types of social groups are interacting with the coastal region. It would be beneficial to further understanding of social and cultural values associated with the coastal region

Another limitation is regarding the respondents' age group. In this study, the number of young people who responded small. The majority of respondents were middle age or retires. As such one of the limitations of this study is that it did not represent the views of both the older and the younger demographic. It would have been better to take into account the views of a range of age groups. However, this study mainly focuses on cultural values associated with the coastal wetlands, so the views of older participants who live adjacent to the study area provide useful insights based on their experiences with the coastal region and thereby the validity of the study's findings.

Overall conclusion

In order to contribute a better understanding of cultural values associated with the coastal wetlands between Torrens Island and Thompson Beach in northern Adelaide, this study has investigated the cultural practices, significant cultural places and cultural ecosystem benefits. Therefore, this study has potential to contribute to planning and decision-making by generating a clearer understanding of how people feel about, use and associated with the coastal region. Moreover, this study has the potential to be of benefit to the wider community that have an interest in the coastal region. Understanding of the social and cultural values associated with the coastal region will therefore make an important contribution to the ecosystems services valuation and larger project.

APPENDIX

Appendix (1) Letter of Introduction, Project Information sheet and questionnaires

College of Humanities, Arts and Social Science
GPO Box 2100
Adelaide SA 5001
Tel: 08 8201 2760
Beverley.clarke@flinders.edu.au
CRICOS Provider No. 00114A

Date

LETTER OF INTRODUCTION

Dear Householder

This letter is to introduce Aung Ko Thet who is a post-graduate student in the College of Humanities, Arts and Social Science at Flinders University.

He is undertaking research leading to the production of a thesis or other publications on the subject of coastal values associated with the coastal wetlands of northern Adelaide.

He would like to invite you to assist with this project by completing the questionnaire attached with this letter. No more than 30 minutes of your time will be required. Please place the questionnaire in the return-addressed envelope and deliver to an Australia Post letter box.

Be assured that any information provided will be treated in the strictest confidence and none of the participants will be individually identifiable in the resulting thesis, report or other publications. You are, of course, entirely free to decline to answer particular questions.

Any enquiries you may have concerning this project should be directed to me at the address given above or by telephone on 8201 2760, or e-mail beverley.clarke@flinders.edu.au.

Thank you for your attention and assistance. Your input has the potential to influence decision.

Yours sincerely

Associate Professor Beverley Clarke
College of Humanities, Arts and Social Science

This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project number INSERT PROJECT No. here following approval). For more information regarding ethical approval of the project the Executive Officer of the Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email human.researchethics@flinders.edu.au

inspiring achievement

Associate Professor Beverley Clarke

College of Humanities, Arts and Social Sciences

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Adelaide SA 5001

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CRICOS Provider No. 00114A

INFORMATION SHEET

(*Household questionnaire and Online survey*)

Title: Investigating Cultural Values associated with the Coastal wetlands in Northern Adelaide,
South Australia

Researcher
Mr Aung Ko Thet
College of Humanities, Arts and Social Sciences
Flinders University
Tel: 0416497054

Supervisor
Associate Professor Beverley Clarke
College of Humanities, Arts and Social Sciences
Flinders University
Tel: 8201 2760

Description of the study

This study is designed to investigate the cultural and social values that the population living adjacent to the coastal wetlands of northern Adelaide and/or who visit and recreate, or use this coastline, attribute to it.

This project is supported by Flinders University, College of Humanities, Arts and Social Sciences.

Purpose of the study
Cultural values are rarely quantified, acknowledged or openly considered in planning and decision-making. Understanding the social and cultural values associated with this region will therefore make an important contribution to and has the potential to be of benefit to the wider community that have an interest in this coastal region.

What will I be asked to do?
You are asked tom complete the questionnaire attached. Participation is entirely voluntary. It is estimated that it should no longer than 30 minutes to complete the questionnaire. Please use the return-addressed envelope to send your completed questionnaire back to the researchers. t.

Will I be identifiable by being involved in this study?
We do not need your name and you will be anonymous. Your comments will not be linked directly to you. All information and results obtained in this study will be stored in a secure way, with access restricted to relevant researchers.

Are there any risks or discomforts if I am involved?
The researcher anticipates few risks from your involvement in this study. If you have any concerns regarding anticipated or actual risks or discomforts, please raise them with the researcher.

How do I agree to participate?
Participation is voluntary. You may answer 'no comment' or refuse to answer any questions. Your return of the questionnaire will be taken as your acceptance to participate.

How will I receive feedback?
If you would like to receive a summary of the outcomes of the study please send an email to beverley.clarke@flinders.edu.au.

Thank you for taking the time to read this information sheet, and we hope that you will accept our invitation to be involved.

This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project number: INSERT PROJECT No. here following approval).
For more information regarding ethical approval of the project only, the Executive Officer of the Committee can be contacted by telephone on (08) 8201 3116, by fax on (08) 8201 2035, or by email to human.researchethics@flinders.edu.a

Flinders UNIVERSITY

Assessing the cultural services of the coastal wetlands between Torrens Island and Thompson Beach

Is the coast of northern Adelaide important to you?
What should be the future of the coastal wetlands? Who should have access to them and how should they be used now and in the future?

HAVE YOUR SAY!

By completing this questionnaire you have the potential to contribute to decision making for this important coastline.

The survey should take no more than 30 minutes of your time. Please carefully read the instructions for each question.

A return address envelope has been included with this questionnaire. Please use the envelope provided to send your completed questionnaire back to the researchers.

If you have any questions about this survey please email:
beverley.clarke@flinders.edu.au

1. **Did you visit the coastal region between Torrens Island and Thompson Beach in the last year?**

◯ Yes (If Yes, please go to Question 2)
◯ No (If No, please go to Question 3)

2. **How frequently do you visit this coastal region between Torrens Island and Thompson Beach?** Please place an **X** in the appropriate box.

Daily	Weekly	Monthly	Occasionally (when I feel like it)	Seasonally (e.g. Summer only)	Rarely

3. **When did you first visit this coastal region between Torrens Island and Thompson Beach?** Please place an **X** in the appropriate box.
(If you have **never** visited the coastal region between Torrens Island and Thompson's Beach please go to Question 9.)

Less than 1 year ago	Between 1 and 5 years ago	Between 6 and 10 years ago	More than 10 years ago

4. **Do you have any personal cultural connections to this coastal region between Torrens Island and Thompson Beach?**

◯ Yes If yes, please state your cultural connection to this coastal region
◯ No

5. **Are you aware of any broader cultural heritage significance of this coastal region between Torrens Island and Thompson Beach?**

◯ Yes If yes, what is the broader cultural heritage significance of this coastal region?
◯ No

6. **Do you belong to a community or social group that uses this coastal region between Torrens Island and Thompson Beach?**

◯ Yes If Yes, please, please identify the name of your group and go to Question 7
◯ No If No, please go to Question 8

7. **What benefits does this coastal region between Torrens Island and Thompson Beach offer your group?**

8. **What are the main activities you do when visiting this coastal region between Torrens Island and Thompson Beach?**
(Please select all that are relevant to you or your household by placing an X on the relevant circles below)

◯ Walking/running
◯ Walking the dog
◯ Fishing/crabbing
◯ Photography
◯ Observing nature/scenic appreciation
◯ Relaxing/spending time alone etc.
◯ Birdwatching
◯ Camping/caravanning
◯ Picnicking
◯ Education/research
◯ Meeting with a social group
◯ Traditional activities
◯ Spiritual activities
◯ Swimming/Diving/Snorkeling
◯ Canoeing
◯ Boating
◯ Off road driving
◯ Dirt bike riding
◯ Cycling
◯ Working
(Please specify the nature of your work
_____
◯ Other (Please specify)
_____

9. **Are you aware of the attractions listed below in the coastal region between Torrens Island and Thompson Beach?**

In the table below, in EACH ROW, place an **X** on the appropriate circle.
Please be guided by the following legend.

	I've visited the place or attraction more than once (1)	I've visited the place or attraction only once (2)	I have heard of the place or attraction but I have never been there (3)	I have never heard of this place or attraction (4)
Adelaide International Bird Sanctuary National Park—Winaityinaityi Pangkara	○	○	○	○
Port Gawler Dirt Bike track	○	○	○	○
Thompson Beach walking trails	○	○	○	○
Port Gawler Conservation Park	○	○	○	○
Lower Light Rifle Range	○	○	○	○
Middle Beach Caravan Park	○	○	○	○
St Kilda Adventure playground	○	○	○	○
St Kilda Mangrove Trail and Interpretive Centre	○	○	○	○
Garden Island Boardwalk	○	○	○	○
Samphire Discovery saltmarsh trail	○	○	○	○
Adelaide Dolphin Sanctuary	○	○	○	○

10. Please rate places or attractions of this coastal region between Torrens Island and Thompson Beach according their importance to you

In the table below, in EACH ROW, place an **X** on the appropriate circle.
Please be guided by the following legend.

	Very important	Important	I don't have any opinion	Not important	Not at all important	Don't know
	1	2	3	4	5	6
Adelaide International Bird Sanctuary National Park—Winaityinaityi Pangkara	○	○	○	○	○	○
Port Gawler Dirt Bike track	○	○	○	○	○	○
Thompson Beach walking trails	○	○	○	○	○	○
Port Gawler Conservation Park	○	○	○	○	○	○
Lower Light Rifle Range	○	○	○	○	○	○
Middle Beach Caravan Park	○	○	○	○	○	○
St Kilda Adventure playground	○	○	○	○	○	○
St Kilda Mangrove Trail and Interpretive Centre	○	○	○	○	○	○
Garden Island Boardwalk	○	○	○	○	○	○
Samphire Discovery saltmarsh trail	○	○	○	○	○	○
Adelaide Dolphin Sanctuary	○	○	○	○	○	○

11. When thinking about the coastal region between Torrens Island and Thompson Beach how important are the following aspects

In the table below, in EACH ROW, place an X on the appropriate circle.
Please be guided by the following legend.

	Very important (1)	Important (2)	I don't have any opinion (3)	Not important (4)	Not at all important (5)	Don't know (6)
The coastal region provides places for people to meet	○	○	○	○	○	○
The coastal region has sites of local activism	○	○	○	○	○	○
The coastal region provides places that enhance family attachments	○	○	○	○	○	○
The coastal region develops a sense of community	○	○	○	○	○	○
The coastal region invokes a sense of freedom	○	○	○	○	○	○
The coastal region encourages healthy living	○	○	○	○	○	○
The coastal region provides for knowledge (education/history/ nature)	○	○	○	○	○	○
The coastal region helps generate good memories for me	○	○	○	○	○	○

11. (Continued) When thinking about the coastal region between Torrens Island and Thompson Beach how important are the following aspects

In the table below, in EACH ROW, place an **X** on the appropriate circle.
Please be guided by the following legend.

	Very important (1)	Important (2)	I don't have any opinion (3)	Not important (4)	Not at all important (5)	Don't know (6)
The coastal region fosters a sense of pride in me	○	○	○	○	○	○
The coastal region has places I enjoy visiting	○	○	○	○	○	○
The coastal region is a place of work for me	○	○	○	○	○	○
The coastal region has places where I go to exercise	○	○	○	○	○	○
The coastal region has places where I go to reflect	○	○	○	○	○	○
The coastal region has places where I go to relax	○	○	○	○	○	○
The coastal region fosters creativity within me	○	○	○	○	○	○
The coastal region fosters a sense of inspiration within me	○	○	○	○	○	○

12. **In what ways, if any, do you feel a sense of belonging or attachment to this coastal region between Torrens Island and Thompson Beach?**

13. **How much do you agree or disagree with the following statement?**
"I am concerned that the impacts of erosion, flooding and/or storms will affect my use of this coastal region between Torrens Island and Thompson Beach"

Please place an X in ONE box that best describes your preference

Strongly agree	Agree	I have no opinion	Disagree	Strongly disagree	Don't know

Please give a reason for your choice

14. **What would be your preference for the future of this coastal region between Torrens Island and Thompson Beach?**

Please place an X in ONE box that best describes your preference

I would like to see the region be preserved to a greater extent, with more conservation sites and limited physical access to the coast	I would like the region to stay exactly the way it is now	I would like to see more development of this coastal region, but only if it is sustainable development	I would like to see this coastal region undergo extensive development and urban growth

Please give a reason for your choice

15. How important to you are the following assets and qualities of this coastal region between Torrens Island and Thompson Beach?

In the table below, in EACH ROW, place an X on the appropriate circle.
Please be guided by the following legend.

	Very important (1)	Important (2)	I don't have any opinion (3)	Not important (4)	Not at all important (5)	Don't know (6)
Environmental qualities (Landscape value/aesthetics — native flora and fauna)	○	○	○	○	○	○
Indigenous and other cultural sites	○	○	○	○	○	○
Facilities for active recreation (areas for playing/exercising, walking/cycling, birdwatching/fishing)	○	○	○	○	○	○
Educational opportunities (research, training & field observation)	○	○	○	○	○	○
Environmental services (carbon storage; coastal protection from storms and sea level rise)	○	○	○	○	○	○
Access infrastructure such as roads, car parks, walkways	○	○	○	○	○	○
Other (Please specify)	○	○	○	○	○	○

16. **When thinking about the future of the coastal region between Torrens Island and Thompson Beach, how important to you is the preservation of each of the following features?**

In the table below, in EACH ROW, place an X on the appropriate circle.
Please be guided by the following legend.

	Very important (1)	Important (2)	I don't have any opinion (3)	Not important (4)	Not at all important (5)	Don't know (6)
Environmental qualities (Landscape value/aesthetics — native flora and fauna)	○	○	○	○	○	○
Indigenous and other cultural sites	○	○	○	○	○	○
Facilities for active recreation (areas for playing/exercising, paths for walking/cycling, sites for birdwatching/fishing)	○	○	○	○	○	○
Educational opportunities (research, training & field observation)	○	○	○	○	○	○
Environmental services (carbon storage; coastal protection; sediment trapping)	○	○	○	○	○	○
Access infrastructure such as roads, car parks, walkways	○	○	○	○	○	○
Other (Please specify)	○	○	○	○	○	○

17. **Is there anything else you would like to add about the value/importance of this coastal region (between Torrens Island and Thompson Beach)?**

18. **Gender**

Please place an X in ONE box that best describes you.

Male	Female	Other

19. **Which age category are you in?**

Please place an X in ONE box.

18-20	21-30	31-40	41-50	51-60	61-70	70 +

20. **What is your residential postcode?**

THANK YOU FOR COMPLETING THIS SURVEY
PLEASE RETURN IT IN THE ADDRESSED ENVELOPE PROVIDED
If you would like to receive a summary of the research findings please email
Beverley.clarke@flinders.edu.au

Appendix (2) Email letter to the online survey participants

Beverley Clarke

From: Beverley Clarke
Sent: Friday, 20 July 2018 12:51 PM
Subject: Reminder: Have your say! Coastal wetlands survey - assessing cultural values
Attachments: Aung Letter of Introduction - online survey.pdf; Information Sheet Aung - online survey.pdf

Reminder
Assessing the cultural services of the coastal wetlands between Torrens Island and Thompson Beach

I wrote to you two weeks ago to introduce Aung Ko Thet who is a Masters student in the College of Humanities, Arts and Socials Science at Flinders University. He is undertaking a research project investigating values associated with the coastal wetlands of the northern Adelaide coastline from Torrens Island to Thompson Beach. The study is intended to inform decision-makers to help them take into consideration cultural values of these landscapes and to assist with planning and managing environmental programs for the region. These coastal wetlands might be significant for their scenic, spiritual, cultural, historic or recreational importance to you, your family, or groups you are involved in.

Thank you if you have completed the survey!

We would be pleased if you would complete the survey, it takes approximately 15 minutes to complete – accessible at this link:
https://qualtrics.flinders.edu.au/jfe/form/SV_0kqCed87nj4ibsN

As part of the project you are being asked to **circulate to your local networks the online survey link included in this email invitation**, along with the attached 'Letter of Introduction' and 'Information Sheet'. Please include these attachments when you circulate the invitation to potential participants.

Your assistance in completing the survey and forwarding this survey to you network is greatly appreciated.

Be assured that any information provided will be treated in the strictest confidence. Participants are not required to provide their name, so any information they provide is completely anonymous.

Any enquiries you may have concerning this project should be directed to me by telephone on 08 8201 2760 or e-mail beverley.clarke@flinders.edu.au

Thank you for your attention and assistance.

Yours sincerely,

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