

Lower Yorke Peninsula Marine Park Regional Impact Statement

A report prepared for
Department of Environment, Water and Natural Resources

Prepared by



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Abbreviations

| | |
|---------|---|
| ABS | Australian Bureau of Statistics |
| C | Council |
| CBA | Cost Benefit Analysis |
| DC | District Council |
| DEH | Department for Environment and Heritage |
| DENR | Department of Environment and Natural Resources |
| DEWNR | Department of Environment, Water and Natural Resources |
| DMITRE | Department for Manufacturing, Innovation, Trade, Resources and Energy |
| fte | full-time equivalent |
| GABMPCC | Great Australian Bight Marine Park Consultative Committee |
| GMUZ | General Managed Use Zone |
| GRP | gross regional product |
| HPZ | Habitat Protection Zone |
| MPLAG | Marine Park Local Advisory Group |
| MPSIAT | Marine Parks Social Impact Assessment Tool |
| NL | natural level |
| PIRSA | Department of Primary Industries and Regions SA |
| RAZ | Restricted Access Zone |
| RIAS | Regional Impact Assessment Statement |
| RIS | Regional Impact Statement |
| RISE | Regional Industry Structure and Employment |
| SA | South Australia |
| SAMPIT | South Australian Marine Parks Information Tool |
| SARFAC | South Australian Recreational Fishing Advisory Council |
| SARDI | South Australian Research and Development Institute |
| SEIFA | Socio-Economic Indexes for Areas |
| SIA | social impact assessment |
| SLA | Statistical Local Area |
| SPA | Special Purpose Area |
| SZ | Sanctuary Zone |
| UNHL | unnaturally high level |
| UNLL | unnaturally low level |

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Executive Summary

Situated in the Gulf St Vincent Bioregion, the Lower Yorke Peninsula Marine Park is located around the heel of Yorke Peninsula, from Point Davenport Conservation Park to near Stansbury, and includes Troubridge Island.

Impacts of implementing the draft management plans were assessed against a base case scenario of no management plans. The base case is not static, and requires an understanding of the existing trends in natural resource, economic and social conditions. There are external factors which influence both the 'with management plan' and the base case scenarios that were taken into consideration.

Marine Park Profile

The eastern coastline of the park is dominated by limestone cliff slopes and includes mostly sheltered, low rocky shores, bays and some sandy beaches. Linked offshore are large areas of low profile platform reef interspersed with sandy seafloor and seagrass. Particular features include the high current shoal grounds adjacent to Edithburgh, and the unique mobile sand spit of Troubridge Island.

The southern coast bays contain large areas of seagrass scattered with sandy seafloor patches.

From a socio-economic viewpoint the community relevant to the Lower Yorke Marine Park is that of the Yorke Peninsula region. The two statistical local areas (SLAs) that comprise the region are Yorke Peninsula – North (DC) and Yorke Peninsula – South (DC). Some of the key socio-economic characteristics of the region include:

- a resident population of almost 11,800 persons in 2010/11.
- a lower concentration of younger people (aged 0 to 14 years), a lower share of persons aged 15 to 64 years and a significantly higher share of people aged 65 and over compared with the State.
- Total population is projected to increase by almost 6 per cent by 2026, whereas the SA population is expected to increase by around 23 per cent.
- The unemployment rate in the Yorke Peninsula region was 2.8 per cent in the June quarter of 2011, well below the state rate of 5.3 per cent.
- Approximately 43 per cent of the businesses in the Yorke Peninsula region were classified in the agriculture, forestry and fishing sector.
- Mean taxable income was \$48,900 in 2009/10 10 per cent below SA's average of \$54,000.
- Over the period 2000/01 to 2010/11, median dwelling prices increased by 227 per cent (\$251,000 in 2010/11) compared with a 197 per cent in SA as a whole (\$357,500).
- In 2009/10, the top contributors to GRP were the agriculture, forestry and fishing (31 per cent) and ownership of dwellings (12 per cent) sectors.
- The commercial fishing and tourism industries are important to the local economy in terms of contributing to jobs and GRP. Directly and indirectly commercial fishing and aquaculture contributed 4 per cent of GRP (\$17.2 million) and 2 per cent of employment (94 fte jobs) in 2009/10. By

comparison, the tourism sector contributed 7 per cent of GRP (\$26.2 million) and 11 per cent of employment (460 fte jobs).

Ecological Impacts

In general the habitats within the park can be considered to be in a condition comparable to the time of European settlement, although there are some potential minor threats from agricultural run-off or septic tank overflows in some areas, and port activities nearby. A number of species within the park were assessed as having lower abundances compared with pre-European levels. The current state of the ecosystems in the park was generally considered to reflect the condition of their component habitats and species.

The proposed management arrangements are predicted to have a net positive long-term impact on South Australia's marine biodiversity. Without the proposed management arrangements there is potential for future activities to occur that could impact on marine habitats, species and ecosystems. Depending on the type and location of zoning, the positive ecological impacts inside the Lower Yorke Peninsula Marine Park will include (1) maintenance of habitats and ecosystems in relatively good condition, and (2) changes in some ecosystems towards a more natural and resilient condition. Such changes include increases in the size and abundance of some fished species, which may potentially have socio-economic benefits, and the overall shift towards a more natural ecosystem is also expected to provide a number of management benefits, although these potential benefits have not been quantified.

The proposed zoning alone does not address all the potential threats listed above, which would require complementary management measures, but various zone restrictions (with habitat protection and sanctuary zones covering about 84 per cent and 8 per cent of the park, respectively) will assist with the future protection of habitats from a range of potentially damaging activities that may otherwise be possible under the existing management framework. Some habitats of particular conservation note include seagrass meadows that are important for overall productivity, fisheries and sediment stability, habitat for threatened and migratory birds and estuarine habitat, including a Wetland of National Importance. Maintenance of healthy habitats in general is essential for the functioning of ecosystems and the long-term sustainability of fisheries, aquaculture, and marine-based tourism.

When considered in isolation, snapper and King George whiting have potential to increase in size and abundance inside one of the sanctuary zones, although the confidence around these particular predictions is low.

Economic Impacts

In summary, the proposed draft zoning is expected to have the following economic impacts on the following sectors of the regional economy: potential positive impact in the tourism sector in the medium to long term, neutral impact in the aquaculture, property, marine infrastructure and operations, mining and coastal development sectors and short, medium and long term negative impacts in the commercial fishing sector.

Commercial fishing

The estimated economic impacts on commercial fisheries, based on SARDI's average annual displaced catches and corresponding average annual prices, are relatively small for the Lower Yorke Peninsula Marine Park. The State Government has committed to buy out licences and quota entitlements of displaced effort and catch,

although details of the buyout are yet to be finalised. Compensation payments have the potential to offset, at least in part, the negative impact of the displaced catch, estimated to have an average annual gross value of \$47,000 (mainly in the rock lobster sector).

Aquaculture

There are no known current or potential impacts expected from the draft zoning in this marine park on current or future aquaculture enterprises. This is consistent with Government policy commitments.

Tourism

The actual placement of sanctuary zones is unlikely to place real restriction on recreational fishing with sanctuary zones over highly fished areas limited. However, the perception that recreational fishing opportunities will be restricted by implementing 'no-take' zones is real. So there is potential for a downturn in fishing-based tourism in the short-term until visitors are informed and convinced of the actual situation on the water. In the long-term, managed marine parks will provide certainty that the marine environment within them is being protected and this may support the growth of the ecotourism industry, provided the necessary investment in tourism infrastructure and support services is undertaken. Other, non-extractive tourism, such as diving, is likely to benefit from the implementation of sanctuary zones.

Property prices

Given that the overall impact on the region is not expected to be large in absolute terms, the impact on property values is, similarly, not expected to be significant. States of Australia have introduced marine parks with sanctuary zones in the last decade without any known long-term effects on property values. External factors notwithstanding, the trend in the Yorke Peninsula residential property prices illustrated in the regional socio-economic profile is unlikely to be affected by the proposed marine park zoning.

Port, harbour and shipping operations

The ports of Klein Point and Port Giles have been excluded from the marine park. In addition, the harbours of Klein Point and Port Giles have been declared special purpose areas. Adelaide Brighton Cement has indicated that they may expand their shipping facilities at Port Giles. No significant impacts on shipping activities arising from the zoning in this park are expected, which is consistent with Government policy commitments.

Mining

There are 28 mining leases/miscellaneous purposes licences adjacent to the park relating to limestone mining around Wool Bay to Klein Point. A further six white shale mineral leases are located near Port Giles. There is a petroleum exploration licence overlapping part of this marine park extending from Troubridge Point to near Stansbury but does not include Troubridge Island. Conditions attached to existing licences will not change and the operations to which these licences refer to will not be affected by zoning.

Coastal development

There are no significant projects and infrastructure in this marine park. Adelaide Brighton Cement has expressed that in the future it will need to upgrade its shipping facilities at Klein Point. The details of this potential development are not known yet.

Social Impacts

The overall social impacts of the Lower Yorke Peninsula Marine Park on communities living in the Yorke Peninsula region are expected to be low given the magnitude of the economic impacts that have been projected and low levels of regional unemployment and measured relative disadvantage. Commercial fishing is an important source of employment and is estimated to contribute 94 jobs to employment in the region, although relatively small when compared with tourism which contributes some 460 jobs. Economic impacts from displaced commercial fishing in the region were too small to model, but in a region with very low unemployment, and low to moderate measured relative disadvantage, any job losses are likely to have minimal social impact. The impact on recreational fishing is considered to be low with adjustments in zoning designed to minimise any potential negative impacts. Consequently, any impact on local community identity as a fishing centre, and on fishing as a way of life is also likely to be low.

No impacts on local government operations, infrastructure and revenue or compliance related activities are expected as a result of the proposed draft zoning.

Experience elsewhere in Australia and internationally, suggests that a range of benefits from the establishment of marine parks become evident over time. These include increased opportunities for education about marine life and conservation, and increased tourism and ecotourism opportunities. This experience indicates that these benefits usually take approximately five years to be evident, and that in the earliest stages of marine protected areas being developed, local communities are more likely to identify possible negative impacts than potential benefits. It takes time to observe how the park's ecological and economic impacts evolve, with social impacts (positive or negative) flowing from these.

Marine parks have broad support in the South Australian community. Market research commissioned by the state government between 2006 and 2012 found strong support for the concept of marine parks among South Australians with approximately 85 per cent in favour of them in 2012 (87 per cent support in metropolitan Adelaide and 82 per cent support in regional areas). Those least likely to support marine parks have been fishing groups (in 2009 55 per cent of respondents who did not support marine parks identified restricted fishing as the reason, this dropped to 39 per cent in 2012). Between 2011 and 2012 the market research findings identify a decline in those who believe they will have limited access to marine parks and an increase in those who associate swimming, boating and snorkelling with marine parks.

A critical factor in determining the ultimate impact of marine parks is how well local communities are able to adapt to change and how cohesive they are in supporting each other through change. Feedback provide for the social impact assessment indicates that communities living near the Lower Yorke Peninsula Marine Park are expected by most to not adapt well to changes brought by the park (although a minority disagree) but most consider they will be sufficiently resilient to manage these changes. The level of support provided by government to adjust to change is also crucial. One very important factor that affects community attitudes is how informed they are, and feedback from market research and marine park local advisory groups, as well as

analysis of media reports indicates a gap in this information. In particular, increasing communities' understanding of the scientific rationale underpinning marine protected areas, and the benefits that these can bring, needs to be enhanced. This is one of the functions of impact assessment which is best conceived of as a continuous process informing both the establishment and operation of marine parks.

1. Introduction

In 2009, the SA Government established 19 marine parks covering approximately 44 per cent of the State's waters. The Government has prepared a draft management plan for each of South Australia's marine parks. These draft management plans include a number of proposed zones where certain activities will be restricted for biodiversity conservation purposes. Global scientific research is demonstrating that marine parks have the potential to conserve coastal and marine biodiversity (PISCO 2007).

However, it is recognised that the zoning of marine parks will come with some costs such as restrictions on commercial and recreational activities. The *Marine Parks Act 2007* provides that when the Minister prepares a draft management plan, an impact statement of the expected environmental, economic and social impacts of the management plan must also be prepared. The impact statements are designed to assist the community to understand the projected impacts of the draft management plans¹ during public consultation.

The Department of Environment, Water and Natural Resources (DEWNR) contracted EconSearch Pty Ltd and its project partners to provide:

1. Impact statements for each of the 19 marine parks which describe both positive and negative impacts of implementing the draft management plans on the local marine ecosystems, economies and communities. These impact statements are to comply with the SA Government's Regional Impact Assessment Statement Policy (RIAS) and with Section 14(4)(c) of the *Marine Parks Act 2007*.
2. A state level Cost Benefit Analysis (CBA) of the proposed management of the 19 marine parks through zoning regulations. The CBA is to comply with the SA Governments Regulatory Impact Statement (RIS) Policy, but is not a RIS in its own right. The results of the CBA are presented in the *Marine Park Impact Statements Main Report*.

1.1 Marine Park Planning Process

Marine parks in South Australia will be zoned for multiple-uses, providing for varying levels of conservation, recreational and commercial use. Zoning provides the basis for the management of marine parks, in accordance with the objects of the *Marine Parks Act 2007*. Figure 1–1 describes the marine park zones.

The Government has developed a table of activities and uses that occur in the marine environment and summarises how these activities are expected to be managed in each marine park zone. The prohibitions and restrictions in the matrix will be included in regulations that will be finalised when marine park management plans are adopted (see Appendix 2).

¹ The impact statements were prepared before the draft management plans were finalised.

Figure 1–1 Marine Park Zones

| | |
|---|--|
| <i>The management plans will contain the following management zones:</i> | |
| General managed use | A zone primarily established so that an area may be managed to provide protection for habitats and biodiversity within a marine park, while allowing ecologically sustainable development and use. |
| Habitat protection | A zone primarily established so that an area may be managed to provide protection for habitats and biodiversity within a marine park, while allowing activities and uses that do not harm habitats or the functioning of ecosystems. |
| Sanctuary | A zone primarily established so that an area may be managed to provide protection and conservation for habitats and biodiversity within a marine park, especially by prohibiting the removal or harm of plants, animals or marine products. |
| Restricted access | A zone primarily established so that an area may be managed by limiting access to the area. |
| <i>To accommodate site specific community needs, within a marine park there may be:</i> | |
| Special purpose area | An area within a marine park, identified as a special purpose area and with boundaries defined by the management plan for the marine park, in which specified activities, that would otherwise be prohibited or restricted as a consequence of the zoning of the area, will be permitted under the terms of the management plan. |

Source: Adapted from sections 4 and 5, *Marine Parks Act 2007*.

The suite of protection provided by this framework will assist with the delivery of the objects of the *Marine Parks Act 2007*. Specifically:

- a) “to protect and conserve marine biological diversity and marine habitats by declaring and providing for the management of a comprehensive, adequate and representative system of marine parks; and
- b) to assist in—
 - i. the maintenance of ecological processes in the marine environment;
 - ii. the adaptation to the impacts of climate change in the marine environment;
 - iii. protecting and conserving features of natural or cultural heritage significance;
 - iv. allowing ecologically sustainable development and use of marine environments; and
 - v. providing opportunities for public appreciation, education, understanding and enjoyment of marine environments.”

The Government dedicated significant resources to gathering environmental, economic and social knowledge and working with community and key stakeholder interests to develop draft park zoning. Key elements of this process are described in Table 1-1.

Table 1-1 Public consultation process to date

| Initiative | Timeframe |
|---|-------------------|
| Statewide consultation on Liberal Government draft policy document <i>Marine protected areas: a shared vision</i> . 23 public meetings/information sessions held involving some 1600 people. | 2001/02 |
| Labor Government policy <i>Blueprint for the SA representative system of marine protected areas</i> developed following the above consultation process, with further consultation undertaken with key stakeholders and across relevant government agencies. | 2003/04 |
| The Draft <i>Encounter Marine Park Zoning Plan</i> was released for 3 months' public consultation as a pilot process to test key concepts for statewide application. 427 submissions were received. Local consultation was undertaken targeting the Fleurieu Peninsula, Kangaroo Island and Adelaide. 15 public information days and 48 stakeholder group meetings were held. | 2005 |
| The Marine Parks Draft Bill (2006) was developed and 3 months' statewide consultation was undertaken on this, involving 16 regional public meetings/information sessions and 112 submissions. | 2006-07 |
| On 29 January 2009, the Minister for Environment and Conservation released the outer boundaries of 19 new marine parks, for a public consultation period of three months. During the comment period, approximately 15,000 copies of the consultation brochure with submission form were distributed through various means. By the end of the three month consultation 2,357 submissions had been received by the Department for Environment and Heritage (DEH) representing a total of 3, 295 individual respondents. In addition, 56 public information days were held and 4,800 people were estimated to have been directly engaged in the consultation process. Nearly 150 groups provided comment on either the marine parks network or one or more individual marine parks. These included key interest groups, organisations, businesses, associated bodies, local governments, not for profit organisations, community groups and recreational clubs. Three regional Pilot Working Groups with multi sectoral representation were established to advise on outer boundary design with minimum three meetings of each. Outer boundaries of seven parks were amended as a result of the consultation process. | 2009 |
| Phase 1 - Management planning for South Australia's marine parks network. A Statewide community engagement process was undertaken involving: | Late 2009 onwards |
| <ul style="list-style-type: none"> 13 Marine Park Local Advisory Groups (MPLAGs) established across the state, and the Great Australian Bight Marine Park Consultative Committee (GABMPCC). 67 public MPLAG meetings were facilitated. Peak stakeholders were invited to provide early advice on their preferred zoning for marine parks. A key stakeholder forum was held where broad agreement was reached on the priority areas for conservation | April 2012 |

Source: Adapted from SA Government Submission to the Marine Parks Select Committee, 2011.

The Scientific Working Group and Marine Parks Council of South Australia are independent advisory bodies providing advice to the Minister. In finalising draft management plans for public consultation, both the Scientific Working Group and Marine Parks Council assessed the merits of the draft zoning schemes and strategies for management against the objects of the *Marine Parks Act 2007* and provided the Minister with independent advice.

In finalising draft management plans, discussions were held with members of the Marine Parks Steering Committee as representatives of relevant Government agencies. The Steering Committee considered whether draft management plans took appropriate consideration of all relevant statutory requirements and effectively implemented the Government's policy commitments for marine parks.

Based on the collective advice from MPLAGs, other community members, peak stakeholders and discussions across relevant agencies, the Government developed a

draft management plan with zoning for each of the 19 marine parks for formal public consultation. The draft management plans are currently out for public consultation.

1.2 Policy Commitments

The Government has made a range of policy commitments² to help ensure South Australian lifestyles and livelihoods are maintained, and to provide more certainty for the industries that use the marine environment. The commitments informed the design of zoning for each marine park, and include:

- access to specific key recreational and commercial fishing sites through appropriate zoning
- access for existing and future aquaculture development through appropriate zoning
- certainty that marine parks will not affect access to, or use of, jetties, break walls or boat ramps
- accommodation of approved coastal development as well as future development and infrastructure needs
- accommodation of approved mining, petroleum and geothermal development activities
- accommodation of shipping and harbor activities
- certainty that marine parks will not create an extra approval process as government agencies will work together to streamline administration.

1.2.1 Displaced Commercial Fishing Policy Framework

The adoption of marine park management plans with zoning will displace some commercial fishing activities. This Policy Framework³ describes the steps that support this process:

1. Avoid displacement by pragmatic zoning;
2. Redistribute effort only where possible without impacting ecological or economic sustainability of the fishery;
3. Market-based buy back of sufficient effort to avoid impact on the fishery;
4. Compulsory acquisition as a last resort option.

The Government expects that market based buy back of effort and any necessary compulsory acquisition will be undertaken under the authority of the Minister for Agriculture, Food and Fisheries. The Minister for Sustainability, Environment and Conservation will consider any fair and reasonable compensation in accordance with section 21 of the *Marine Parks Act 2007*, and it is envisaged that regulations will be drafted to support this process.

² A complete list of the commitments is available at Appendix 2 of the *South Australia's Marine Parks Network Explanatory Document* which accompanies the draft management plans.

³ The Displaced Commercial Fishing Policy Framework is provided at Appendix 5 of the *South Australia's Marine Parks Network Explanatory Document*.

2. Method of Assessment

This study undertook both an impact analysis and an economic evaluation, in the form of a cost benefit analysis (CBA), of implementing the marine park draft management plans. The method and results of the CBA are presented in the Main Report.

Impacts of implementing the draft management plans were assessed against a base case scenario of no management plans. This also applies to the CBA. The base case is not static, and requires an understanding of the existing trends in natural resource, economic and social conditions. There are external factors which influence both the 'with management plan' and the base case scenarios that need to be taken into consideration.

2.1 Ecological

The ecological impact assessment was required to:

1. describe the current status of the marine habitats, plants and animals in each marine park;
2. discuss (in qualitative terms) the services that the protected ecosystems provide to South Australians (where not possible to measure their economic value);
3. identify the range of activities that impact on the environment and quantify how the draft management plans will influence the marine environment, against a base case of no management plans;
4. assess the implications of the management plans in 5, 10 and 20 years on species diversity and abundance, marine habitats, and ecosystem function;
5. include case studies that highlight the potential impacts of the draft management plans on iconic and threatened species and contribute to case studies that effectively communicate the trade-offs between the different environmental, social and economic factors.

The outcomes for Items 1, 4 and 5 listed above are included in each individual park statement and can be found in Section 4 of this impact statement. The outcomes for Item 2 are generic across the park network and are briefly introduced in Section 3.1 of this impact statement and detailed in Appendix 4 of the Main Report (see Ecosystem services). The outcomes for Item 3 inform the outcomes for Items 4 and 5, and are discussed in a generic sense in Appendix 1.1.4 of the Main Report. It should be noted that despite the broad spectrum of activities that can potentially be influenced by zoning under the *Marine Parks Act 2007*, the proposed zones have been located in such a manner that very few current activities will be affected. The most widespread of these is fishing, with the cessation of all forms of fishing inside most SZs and RAZs (with exceptions relating to existing restrictions), and benthic trawling inside HPZs of six parks. Furthermore, predicting species and ecosystem responses to the cessation of fishing is highly complex (see Appendix 1.3 of the Main Report) and, compared to other activities, there are generally more data available to inform the assessment. Consequently, the extent and depth of discussion on fishing-related responses may appear to be disproportionate in comparison to other activities, but this is not intended to place any particular emphasis on fishing as a threatening process.

The process of ecological impact assessment undertaken for the current report can essentially be summarised by three main steps:

1. Activities and uses: determining the range of activities and uses that potentially impact on the marine environment under current management regimes, and then determining how the marine park zoning and management arrangements will influence them.
2. Baseline: determining the current status of the marine species, habitats, and ecosystems in the marine parks; what are we comparing future changes against?
3. Predictions: assessing the implications of the marine park zoning and management arrangements in 5, 10 and 20 years on species, habitats, and ecosystems against the case of no marine park zoning and management arrangements.

A total of 205 species or species groups, 11 habitat types, and 11 habitat-based ecosystem types were selected for the impact assessment (see Appendices 2, 4 and 6 of the Main Report).

Further details of the methodology can be found in Appendix 1 of the Main Report.

2.2 Economic

At a regional level, the economic impact analysis was based on the input-output method. This method provides a standard approach for the estimation of the economic impact of a particular activity. The input-output model is used to calculate industry multipliers that can then be applied to various change scenarios, as has been done in this study.

For this impact assessment an input-output model was constructed specifically for the Yorke Peninsula region (see Map in Appendix 1). The model is known as a Regional Industry Structure and Employment (RISE) model which is an extension of the standard input-output model that is used within the SA Government for various types of impact assessment.

At a micro level individual businesses could be impacted by marine parks. To assess the impact on commercial fishing operations representative financial models of fishing businesses were constructed for each of the relevant fishing sectors. These models were based on financial information collected and reported by EconSearch (2010) over the past 13 years. The results of the financial modelling provided input into the regional RISE model to estimate impacts on the regional economy.

The principal driver for change in fishing industry operations and profitability is lost access to the resource. Estimates of displaced catch were provided by the South Australian Research and Development Institute (SARDI). PIRSA Fisheries and Aquaculture provided detailed information on the recreational and commercial fisheries relating to the:

- current condition of the fishery;
- outlook for the fishery without marine parks management plans;
- marine parks impacts on the fishery; and
- measures to mitigate anticipated impacts.

Discussions were also held with representatives of each of the commercial fishing sectors, recreational fishing, mining, various State Government departments and Local

Government (see Appendix 3). These discussions provided insights to the likely responses of businesses and organisations associated with or members of the interviewee's organisation. Because of time and resource constraints it was not possible to undertake discussions with or collect data from all potentially impacted parties.

Because some of the activities that could potentially be impacted by marine parks are related to the tourism sector, the Yorke Peninsula RISE model includes explicit specification of the regional tourism industry. This was done by following the standard ABS method of constructing tourism satellite accounts.

The following indicators of economic impact were generated using the economic modelling framework described above:

- value of output,
- gross regional product (GRP),
- household income and
- employment.

(Value of) Output is a measure of the gross revenue of goods and services produced by commercial organisations (e.g. the value of processed seafood products) and gross expenditure by government agencies. Total output needs to be used with care as it can include elements of double counting when the output of integrated industries is added together (e.g. the value of processed seafood includes the beach value of the fish).

Gross regional product (GRP) is a measure of the net contribution of an activity to the regional economy. GRP is measured as value of output less the cost of goods and services (including imports) used in producing the output. In other words, it can be measured as the sum of household income, 'gross operating surplus and gross mixed income net of payments to owner managers' and 'taxes less subsidies on products and production'. It represents payments to the primary inputs of production (labour, capital and land). Using GRP as a measure of economic impact avoids the problem of double counting that may arise from using value of output for this purpose.

Household income is a component of GRP and is a measure of wages and salaries paid in cash and in-kind, drawings by owner operators and other payments to labour including overtime payments, employer's superannuation contributions and income tax, but excluding payroll tax.

Employment is a measure of the number of working proprietors, managers, directors and other employees, in terms of the number of full-time equivalent (fte) jobs. Employment is measured by place of remuneration rather than place of residence.

Further details of the economic method can be found in Section 3.2 of the Main Report.

2.3 Social

The identification of potential social impacts of different marine park zoning options has been informed by a review of relevant research, analysis of the Environmental, Economic and Social Values Statements developed for each park, a review of the minutes and available correspondence of Marine Parks Local Advisory Groups (MPLAG), an overview of local media reports on the parks, an examination of market research on community perspectives on the establishment of marine parks, an

assessment of MPLAG member perspectives on zoning options and targeted impact assessment interviews. An analysis of SAMPIT4 data was also undertaken to identify the potential impact of the zoning proposal on recreational fishing. An examination of the impacts of the establishment of marine parks in relevant jurisdictions was undertaken to inform the design of the social impact assessment tool.

A 'Marine Parks Social Impact Assessment Tool' (MPSIAT) was developed by the Australian Workplace Innovation and Social Research Centre to identify and compare potential social impacts from the preliminary DEWNR marine park sanctuary zones (DEWNR zones) and zones resulting from Marine Park Local Advisory Groups advice (MPLAG zones). MPSIAT respondents provided perspectives on impacts of zoning proposals based on their experience and expertise. Final MPLAG zone advice was normally based on a majority view. While this approach to decision making delivers a decision it does tend to obscure differences in views and opposing views on potential impacts from the perspectives of different stakeholders. The MPSIAT has been designed to shed light on these differences in order to identify a range of potential social impacts identified by key stakeholders. In the context of the impact assessment process these perspectives can inform our understanding of what the social impacts of the draft zoning proposal are likely to be. This impact assessment statement helps to identify what the likely social impacts will be.

This social impact assessment provides baseline perspectives on potential positive and negative impacts across five domains:

- Education and wellbeing;
- Culture and heritage;
- Recreation and fishing;
- Population and housing; and
- Community.

Social vulnerability of the Impact Region associated with each Marine Park has been determined through a combination of Socio-Economic Indexes for Areas (SEIFA) indexes, population (health, family, education, Indigenous status) and economic characteristics (unemployment, job losses).

The SEIFA Indexes presented here provide a measure of the socio-economic disadvantage for the Impact Regions associated with Marine Parks at the time of the 2006 Census⁵. We have included figures from the *Index of Relative Socio-economic Disadvantage*, the *Index of Economic Resources* and the *Index of Education and Occupation*. Each of these provides a slightly different view of the socio-economic profile and potential vulnerability of each region.

SEIFA values have been standardised with Australia (as a whole) having a value of 1000 and a standard deviation of 100, low scores indicate greater disadvantage. South

⁴ The South Australian Marine Parks Information Tool (SAMPIT) is a computer tool designed to gather information from community members about their favourite fishing spots and areas they believe need protection. Data is collected and reported by 'grid cell'. SAMPIT data for 1,739 people is available including 1311 recreational fishers. Quality control by the Department of Environment and Natural Resources included cross-verification of legitimate naming and activities from the data provided (DENR 2010b).

⁵ Australian Bureau of Statistics. 2008. *Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia - Data only 2006 (cat. no. 2033.0.55.001) and Information Paper: An Introduction to Socio-Economic Indexes for Areas (SEIFA), 2006 (cat. no. 2039.0)*. Note SEIFA Indexes for the 2011 Census are not yet available.

Australia sits below the Australian average with a relative disadvantage level of 979. At the SLA level, South Australian SEIFA relative disadvantage scores range from a low of 527 through to 1107.

A range of SEIFA values at the statistical local areas (SLA) level are associated with the Impact Regions, noting between one and seven SLAs are associated with each Impact Region. These capture information about average socio-economic conditions for the SLA and Impact Region but do not account for variation of individuals within the areas. Areas identified with relative disadvantage may well have individuals and sub-regions that are relatively advantaged. We have also presented individual variables to provide additional information about the potential social vulnerability of SLAs associated with the Impact Regions.

Where an Impact Region has an SLA falling within the top decile in South Australia (i.e. most disadvantaged) a ranking of *High* is provided. A ranking in the second highest decile is ranked as *Moderate*. Where there are moderate to high ranking SLAs they are rated to as *Moderate-High*.

It is important to acknowledge that the impact of marine parks on employment and wellbeing is likely to vary significantly across regions and will be mediated by a range of social and economic factors including:

- the age and retirement intentions of fishers;
- the ability of fishers to adapt to changes within the region in which they fish;
- the opportunities available to fishers and those dependent on fishers to work in other industry sectors;
- the impact of compensation packages provided to fishers on their financial circumstances and the local economy;
- the influence of lifestyle attachment and importance of place in the lives of fishers
- the extent to which the existence of marine parks might generate employment in tourism, research, education and other sectors.

3. Lower Yorke Peninsula Marine Park Description

Covering around 850 km² and situated in the Gulf St Vincent Bioregion, the Lower Yorke Peninsula Marine Park is located around the heel of Yorke Peninsula, from Point Davenport Conservation Park to near Stansbury, and includes Troubridge Island. This marine park also overlays Coobowie Bay and Troubridge Hill Aquatic Reserves, Troubridge Island Conservation Park and partially overlays Point Davenport Conservation Park (DENR, 2010a).

A map of the Lower Yorke Peninsula Marine Park and the proposed draft zoning is provided at the end of this statement at Appendix 5.

3.1 Ecological Description

The eastern coastline of the park is dominated by limestone cliff slopes and includes mostly sheltered, low rocky shores, bays and some sandy beaches. Linked offshore are large areas of low profile platform reef interspersed with sandy seafloor and seagrass. Particular features include the shoal grounds with fast currents adjacent to Edithburgh, and the unique mobile sand spit of Troubridge Island (DENR, 2010a).

The southern coast bays contain large areas of seagrass scattered with sandy seafloor patches (DENR, 2010a).

For the current impact assessment, coastal and marine habitats/ecosystems were divided into the following types: saltmarsh, mangrove, intertidal sand flat, subtidal sand, intertidal seagrass flat, subtidal seagrass, intertidal reef, subtidal high profile reef, subtidal low profile reef, beach, and pelagic. The extent of these habitats (except pelagic) mapped for this park are shown in Table 3-1.

These eleven habitats/ecosystems, and others not considered in the current impact assessment, support thousands of species (Edyvane, 1999; Baker, 2004). They also offer goods and services that are of economic, social and environmental value to SA. The economic value of these services can be difficult to determine but to illustrate the importance of valuing coastal marine habitats in SA a description of the necessary goods and services that need to be taken into account is provided. The goods and services provided by coastal, marine and estuarine habitats were classified under four headings by McLeod and Leslie (2009). These headings were:

- Life supporting services,
- Resources and products,
- Maintaining Earth's living space and
- Recreational and cultural services.

Each one of these headings was divided into categories that could be more easily valued, either directly or as a service. A more detailed discussion of these goods and services is provided in Appendices 4 (habitat specific information) and 5 (consolidated discussion) of the Main Report.

Table 3-1 Summary of habitats

| Zone | Shoreline habitats (km of coastline) | | | | | | Benthic habitats (km ²) | | | | |
|--------|--------------------------------------|-----------------|---------------------|-----------------|----------|-----------|-------------------------------------|---------------------------|---------------|-------------------|----------|
| | Beach | Intertidal sand | Intertidal seagrass | Intertidal reef | Mangrove | Saltmarsh | Subtidal high profile reef | Subtidal low profile reef | Subtidal sand | Subtidal seagrass | Unmapped |
| SZ-1 | 6.4 | | 2 | | | | 0.1 | | 9.9 | 41.4 | 20.1 |
| HPZ-1 | 42.1 | | | 25.3 | | | 14.2 | 17.3 | 18.3 | 186.3 | 480.3 |
| GMUZ-1 | 2.6 | | | 4.3 | | | 0.1 | 12.7 | 2.3 | 8.7 | 42.9 |
| Total | 51.1 | | 2 | 29.5 | | | 14.4 | 30 | 30.4 | 236.4 | 543.3 |

Source: based on GIS data provided by DEWNR.

Zones are labelled as shown in Appendix Figure 5-1.

Intertidal habitats are expressed as shoreline lengths to be consistent with DENR (2010a), and/or because of limitations of the available GIS data, and therefore do not provide a complete indication of the extent of these habitats within the park.

Totals may differ slightly from column sums due to rounding.

3.2 Socio-economic Profile

The socio-economic profile provided in Appendix 1 presents a statistical summary of key economic and social information for the Yorke Peninsula region and, where possible, South Australia (SA). The profile brings together a wide range of existing Australian Bureau of Statistics (ABS) data and some non-ABS data. It has been designed, at a broad level, to aid understanding of the economic and social structure of the region, to indicate how the Yorke Peninsula region contributes to the State economy and to illustrate trends in economic growth or decline.

The Yorke Peninsula region is located west of Adelaide (Figure 1, Appendix 1). The two statistical local areas (SLAs) that comprise the region are Yorke Peninsula (DC) – North and Yorke Peninsula (DC) - South. The Yorke Peninsula regional economy is relevant to the Eastern Spencer Gulf (MP11), Southern Spencer Gulf (MP12), Lower Yorke Peninsula (MP13) and Upper Gulf St Vincent (MP14) marine parks. Table 3-2 presents a summary of the key economic and social information detailed further in Appendix 1.

Some key points from the detailed socio-economic profile in Appendix 1 are as follows:

- The estimated resident population of the Yorke Peninsula region was almost 11,800 persons in 2010/11.
- Compared with the age distribution of the state as a whole, the Yorke Peninsula region has a lower concentration of younger people (aged 0 to 14 years), a lower share of persons aged 15 to 64 years and a significantly higher share of people aged 65 and over.
- The total population in the Yorke Peninsula region is projected to increase by almost 6 per cent by 2026, whereas the SA population is expected to increase by around 23 per cent.

- The unemployment rate in the Yorke Peninsula region was 2.8 per cent in the June quarter of 2011, well below the state rate and is less than half of what it was in 2003 (June quarter).
- Almost 60 per cent of the businesses operating in the Yorke Peninsula region did not employ anyone and over one quarter (26 per cent) employed between 1 and 4 people.
- Over the period 2000/01 to 2009/10, the mean taxable income (in nominal terms) increased by 57 per cent in the Yorke Peninsula region (\$48,900 in 2009/10) and 54 per cent in SA as a whole (\$54,350 in 2009/10).
- Median dwelling (units and houses) prices increased by 227 per cent in the Yorke Peninsula region (\$251,000 in 2010/11) and 197 per cent in SA as a whole (\$357,500 in 2010/11) over the period 2000/01 to 2010/11.
- In 2009/10, the top four contributors to total jobs in the region were the agriculture, forestry and fishing (25 per cent), retail trade (15 per cent each), health, community services (13 per cent) and education (9 per cent) sectors.
- In 2009/10, the top contributors to GRP were the agriculture, forestry and fishing (31 per cent) and ownership of dwellings (12 per cent) sectors.
- The commercial fishing and tourism industries are important to the local economy in terms of contributing to jobs and GRP. Directly and indirectly commercial fishing and aquaculture contributed 4 per cent of GRP (\$17.2 million) and 2 per cent of employment (94 fte jobs) in 2009/10. By comparison, the tourism sector contributed 7 per cent of GRP (\$26.2 million) and 11 per cent of employment (460 fte jobs).

Table 3-2 Summary of key economic and social indicators for the Yorke Peninsula region

| Indicator | Yorke Peninsula | SA | Yorke Peninsula as a proportion of SA |
|--|-----------------|-----------|---------------------------------------|
| Population, 2010/11 (no.) | 11,795 | 1,656,299 | 0.7% |
| Birth Rate, 2009/10 (births/1000 residents) | 8.8 | 12.2 | - |
| Death Rate, 2009/10 (deaths/1000 residents) | 11.6 | 7.9 | - |
| Age Distribution, 2009/10: | | | |
| Proportion of Population aged 0-14 | 16% | 18% | - |
| Proportion of Population aged 15-64 | 58% | 67% | - |
| Proportion of Population aged 65+ | 27% | 16% | - |
| Dependency Rate, 2009/10: | | | |
| Child | 27% | 27% | - |
| Aged | 46% | 23% | - |
| Total | 73% | 50% | - |
| Population Projection, Increase from 2006 to 2026 | 5% | 23% | - |
| Employment, June qtr 2011: | | | |
| Labour Force (no.) | 5,068 | 867,500 | 0.6% |
| Unemployed (no.) | 140 | 45,300 | 0.3% |
| Unemployment Rate | 3% | 5% | - |
| Participation Rate, 2009/10 | 47% | 63% | - |
| Businesses, June 2009 (no.) | 1,193 | 141,625 | 0.8% |
| School Enrollments, 2011 | 1,507 | 247,356 | 0.6% |
| Tertiary Enrollments, 2011 | 703 | 208,706 | 0.3% |
| Non-school Qualifications, 2006 | 3,704 | 595,379 | 0.6% |
| Mean Taxable Income, 2009/10 (\$) | 48,870 | 54,349 | - |
| Proportion of Taxable Individuals, 2009/10 | 62% | 74% | - |
| Value per Building Approval, 2010/11 (\$) | 190,261 | 236,269 | - |
| Median Dwelling Price, 2010/11 (\$) | 251,500 | 357,500 | - |
| Commercial Fishing, Ave/yr 2000/01 to 2009/10: | | | |
| Catch (t) | 4,083 | 47,581 | 8.6% |
| Value of Catch (\$m) | 51 | 202 | 25.2% |
| Charter Boats, Ave/yr 2007/08 to 2009/10 (no. of fish) | 40,760 | 146,341 | 27.9% |
| Recreational Fishing, 2007/08: | | | |
| Fishers (no.) | 86,703 | 236,463 | 36.7% |
| Days Fished (no.) | 266,994 | 1,054,200 | 25.3% |
| Gross Regional Product, 2009/10 (\$m) | 386 | 80,356 | 0.5% |
| Employment, 2009/10 (fte) | 4,340 | 774,953 | 0.6% |
| Tourism, 2009/10 (\$m) | 62 | 4,524 | 1.4% |
| Other Regional Exports, 2009/10 (\$m) | 247 | 26,757 | 0.9% |
| Regional Imports, 2009/10 (\$m) | 434 | 40,573 | 1.1% |

Source: Appendix 1.

4. Summary of Impacts

4.1 Ecological

This section presents the summarised results of the ecological impact assessment for this particular park. As such, output tables and other information presented that are not otherwise referenced, represent the professional judgement of the authors. Full details behind the assessments can be found in the Main Report and accompanying appendices (see cross-references below).

4.1.1 Habitats

In general the habitats within the park can be considered to be in a condition comparable to the time of European settlement. There is a number of potential, but minor, land-based threats to water quality (elevated nutrient levels) from: septic tank overflows at Port Moorowie, Edithburgh, and Coobowie (all HPZ-1) (Bryars, 2003), or diffuse runoff from agriculture. The port facilities at Port Giles and Klein Point are outside the park but are nevertheless a potential source of organometal pollution, and there is also increased risk of introduced marine pests associated with shipping activities.

Intertidal shellfish aquaculture within Salt Creek Bay (HPZ-1) can potentially decrease nutrients, compete with native filter feeders, introduce non-native species (Pacific oyster), and physically disrupt habitat. Tidal flows to the intertidal algae and saltmarsh within Salt Swamp Creek (SZ-2) have been affected historically by physical structures (road, causeway) across the entrance, but recent modifications have improved the situation.

The zoning plan states that aquaculture within HPZs will be managed under the *Aquaculture Act 2001* to ensure that all reasonable and practicable measures are taken to achieve the definition of the zone, i.e. no harm to habitats or the functioning of ecosystems (see Appendix 7 of the Main Report).

The proposed zoning alone does not address the habitat modification and potential water quality issues listed above, which would require complementary management measures. However, the zoning plan will influence future activity in all zones and applies specific restrictions on future activity within HPZs, SZs and RAZs, with respectively increasing protection across this hierarchy of zone types (see Appendix 1.2.6 of the Main Report). The Lower Yorke Peninsula Marine Park has about 84 per cent and 8 per cent of the total park area designated as HPZ and SZ, respectively.

For the Lower Yorke Peninsula Marine Park, habitats of particular conservation value include (DENR, 2010):

- seagrass meadows (within SZ-1 and HPZ-1) that contribute significantly to the primary productivity of the region, stabilise sediment and provide important habitat for scalefish and prawns.
- Point Davenport estuary (within SZ-1) is listed as a Wetland of National Importance and is a nursery for many commercially and recreationally important species. Salt Swamp Creek estuary (within SZ-2), although modified, is also important for native plants and animals. Both estuaries are

only partly protected, with significant areas including saltmarsh outside the boundary of the park.

- Troubridge Island and Troubridge Shoals (within HPZ-1) provide habitat for a variety of resident and migratory birds, including threatened species.

4.1.2 Species

4.1.2.1 Threatened and protected species

A large number of marine species is protected in SA under either State and/or Federal legislation, including all syngnathids (seahorses, seadragons, pipefishes, pipehorses), all marine mammals and most seabirds. Some of these species are also listed as threatened species under either State and/or Federal legislation. It was beyond the scope of this impact statement to assess all of these species, but some of the species or species groups that were identified in the Ecosystem Food Webs (see Appendix 6 of Main Report) and/or that are a key feature of this particular marine park are considered here. Each of these species is discussed in more detail in Appendix 3 of the Main Report.

The following species may benefit from maintenance and/or improvement of habitats and ecological processes within the park:

- Australian sea lion (threatened and protected species)
- Little penguin (protected species)
- White shark (threatened and protected species)
- Syngnathids including the leafy and weedy seadragon (protected species)
- Bottlenose and common dolphins (protected species).

Changes in abundance of these species due to the introduction of the proposed management arrangements are not able to be predicted over the next 20 years due to the complexities of ecosystem interactions and/or a lack of data on current status and zone use. Listed threatened species often have individual recovery plans that identify objectives/actions required to mitigate against threatening processes that will ultimately allow recovery of the species. Protection of critical habitat is often identified in these plans as a useful objective, and thus the protection of breeding and aggregation areas under the proposed zoning arrangements should have some positive impact on threatened species. However, the Lower Yorke Peninsula Marine Park is not a key breeding or foraging area for the Australian sea lion and is not a known aggregation area for the white shark. Thus, it is unlikely that the main anthropogenic threatening processes to these species (or the white-bellied sea eagle and eastern osprey) will be out-weighted by any potential positive impact from the individual park zoning and management plan (see Species Profile in Appendix 3 of Main Report).

4.1.2.2 Fished species

South Australia's proposed system of marine parks was designed for biodiversity conservation purposes rather than as a fisheries management tool. Nevertheless, the impact assessment identified that species which are currently fished are most likely to show a direct first-order response over the next 20 years (relative to current uses) to the proposed management arrangements and zonings (see Appendix 1.3 of the Main

Report). Therefore the assessment of the impact on 20 indicator fished species has been provided in a specific section here. More detailed discussion on the rationale for selecting the indicator species, and their expected response to protection, can be found in Appendices 1.3.4 and 3 of the Main Report.

Commercial, recreational and charter fishing occurs within the park for a variety of species. The current status of some of the indicator species that were able to be assessed within one of the sanctuary zones of the park was considered to be at an unnaturally low level (UNLL) compared with a pre-European (pre-fishing) baseline (Table 4-1). A pre-fishing baseline rather than the current baseline is required to enable future predictions of change because the level of fishing activity prior to protection influences the response following protection (see Appendix 1 of the Main Report). The reduced levels of some species do not reflect poorly on fisheries management in accordance with the principles of ecologically sustainable development.

Predicting ecological responses to marine parks is inherently complex and depends on many factors (see Appendix 1.3.7 in the Main Report). In the few instances where it has been attempted, the actual changes have often been different to the predictions (Langlois and Ballantine, 2005). Nevertheless, as required for this assessment, some predictions have been attempted based on a number of assumptions listed in Appendix 1.3.13 of the Main Report. Each species is considered only in isolation and therefore interactions between species also need to be considered when interpreting the potential responses described below (see Section 4.1.3)

Table 4-1 summarises the outcomes of the predictive modelling that was undertaken on a subset of indicator species (see Appendix 1.3 of the Main Report for further details of the methodology, in particular the list of assumptions and limitations in Appendix 1.3.13). Using snapper as an example, Table 4-1 indicates that the current status of adult snapper is at an UNLL in sanctuary zone SZ-1, which includes sand habitat used by snapper. Under the proposed zoning, the adults already resident in this proposed sanctuary zone and any adults visiting this zone from Gulf St Vincent/Spencer Gulf that then become resident (or recruits) would be protected. Snapper populations often comprise a mix of migrant and resident individuals and there is evidence that some individuals become resident in Investigator Strait (see Species Profile in Appendix 3 of the Main Report); it is these fish that are predicted to increase in abundance over time in the absence of fishing activity. Consequently, the size and abundance of the adults is predicted to increase within this zone after 5 years (shown as +), 10 years (shown as ++) and 20 years (shown as +++) (Table 4-1). Without the proposed zoning, adult fish would continue to be captured and the population level was assumed to remain as it is today, as indicated by the zeros at 5, 10 and 20 years. Thus the predicted net effect of the proposed zoning shown in Table 4-1 is a positive increase within this zone across 5, 10 and 20 years. Table 4-1 also shows for snapper that: a spill-over is expected as a result of the population density inside the SZs increasing relative to outside to the point where some fish will tend to migrate from the SZ; but increased larval production from inside the SZ may not occur as spawning may not occur in the area. For adult King George whiting a similar scenario to snapper is predicted (Table 4-1). King George whiting are generally transient during the early part of their life but there is evidence that some adult fish are resident in the Investigator Strait region and that they spawn there also (see Species Profile in Appendix 3 of the Main Report; it is these fish that are predicted to increase in abundance over time in the absence of fishing activity. For the more transient King George whiting sub-adults it is possible that in the absence of fishing their abundance will be temporarily increased during aggregation times inside SZ-1 and in this case they are noted with a + for each of 5, 10 and 20 years, but there is not predicted to be a cumulative increase in abundance over time as individuals will eventually move out of the protected zone.

Of the other indicator species assessed (and which are not presented in Table 4–1), the following observations were made for the Lower Yorke Peninsula Marine Park:

- Species occurring within the park but with insufficient habitat inside proposed zones to warrant an assessment include: bluelthroat wrasse, sea sweep, western blue groper, harlequin fish, southern calamary, blacklip abalone, greenlip abalone, southern rock lobster and razorfish.
- Species occurring within the park but with insufficient information to enable an assessment include: Bight redfish, swallowtail, southern garfish and yellowfin whiting.
- Species occurring within the park but with no fishing interaction include: western king prawn.
- Species considered as not occurring within the park include: mud cockle, Goolwa cockle and blue swimmer crab.

In addition to the species that were able to be assessed, there are numerous other species (target, byproduct, bycatch) that may also respond to or benefit from the cessation of fishing within SZs (see Appendix 1.3.4 of the Main Report), and which may be found in the relevant park zones (Table 4-2). By preventing fishing, a range of benefits for species may be realised including (but not limited to): elimination of direct fishing mortality and post-release mortality; more natural age, size structure and sex ratio of populations, age and size at maturity and fish behaviour; and reduced incidence of disease (see Section 6.1.1 and Appendix 1 of the Main Report for further discussion and references). Each of the species listed in Table 4-2 has a known direct interaction with fishing (see Appendix 2 of the Main Report) which justifies their inclusion here. While the impact of the interaction is largely unknown for most species, the point is that the interaction will be removed through zoning, providing a positive benefit to those species. For example, the weeping toadfish is incidentally caught as bycatch (e.g. Fowler et al., 2009) but little is known about the impacts of these interactions on toadfish populations. Nonetheless, toadfish will benefit from protection inside SZs.

Table 4-2 includes some of the more mobile finfish species which may not respond directly to zoning but may potentially increase in abundance within the park because of the proposed overall reduction of commercial and charter fishing effort, as per the PIRSA (2011) policy position. While it was assumed that the removal of this effort would minimise negative impacts on areas outside SZs, there is potential for the abundance of some fished species to decline outside SZs through displacement of recreational fishing effort, possibly offset to some extent by spill-over (see Appendix 1.3.12 of the Main Report). However, it should be reiterated (see Appendices 1.1.2 and 1.3.13 of the Main Report) that the assessment of the proposed management arrangements does not take into account possible alternative management responses over the next 20 years within the existing management framework.

Only two SZs are proposed for the park and of these only one (SZ-1) shows some potential for a measurable response of fished species. SZ-1 covers a range of habitats from the tidal creek at Point Davenport out to deeper subtidal sand and seagrass habitats that are utilized by a range of fished species. While there is uncertainty around predictions of fished species responses in seagrass habitats, due to the relatively large size of SZ-1, protection of some species and the buffering effect from activities at the boundaries will be significant. In contrast, SZ-2 is situated over Salt Swamp Creek near Coobowie and overlays an existing no-take aquatic reserve (Coobowie Bay Aquatic Reserve). Thus SZ-2 should not show any change directly attributable to the new

zoning arrangements but could experience flow-on effects from the network of zoning across the parks system.

In addition to possible responses to protection from fishing, many of the fished species will gain long-term positive benefits from protection of the habitats that they rely upon for various stages of their life cycles. These benefits will often be manifested both inside and outside the park boundaries. For the Lower Yorke Peninsula Marine Park, protection of the extensive seagrass meadows is critical for the long-term sustainability of species such as King George whiting and southern calamary (Bryars, 2003).

Table 4-1 Potential first-order responses of some indicator species^a.

| Species | Life stages | Sanctuary Zones | Habitat usage | Zone visitation | Recruitment to zone | Recruitment source | Current status | Potential first order responses to zoning at 5, 10 and 20 years | | | | | | | Notes | |
|---------------------|-------------|-----------------|----------------|-------------------------------|---------------------|-------------------------------|----------------|---|----------------------|---|----|-----|------------|---------------|---|--|
| | | | | | | | | Measure | Scenario | 5 | 10 | 20 | Spill over | Larval export | | |
| Snapper | Adult | 1 | Sand | Resident & Temporary resident | Yes (adults) | Gulf St Vincent, Spencer Gulf | UNLL | Size | With Zoning | + | ++ | +++ | | | Resident fish in the population have potential to increase in size and abundance inside SZs | |
| | | | | | | | UNLL | Abundance | With Zoning | + | ++ | +++ | | | | |
| | | | | | | | UNLL | Size | Without Zoning | 0 | 0 | 0 | | | Assumes stocks will remain at current levels under current fisheries management | |
| | | | | | | | UNLL | Abundance | Without Zoning | 0 | 0 | 0 | | | | |
| | | | | | | | UNLL | Size | Net effect of Zoning | + | ++ | +++ | ✓ | × | No larval export as spawning may not occur in this region | |
| | | | | | | | UNLL | Abundance | Net effect of Zoning | + | ++ | +++ | | | | |
| King George whiting | Adult | 1 | Sand, Seagrass | Resident & Temporary resident | Yes (adults) | Gulf St Vincent | UNLL | Size | With Zoning | + | ++ | +++ | | | Resident fish in the population have potential to increase in size and abundance inside SZs (but there is a high degree of uncertainty around this) | |
| | | | | | | | UNLL | Abundance | With Zoning | + | ++ | +++ | | | | |
| | | | | | | | UNLL | Size | Without Zoning | 0 | 0 | 0 | | | Assumes stocks will remain at current levels under current fisheries management | |
| | | | | | | | UNLL | Abundance | Without Zoning | 0 | 0 | 0 | | | | |
| | | | | | | | UNLL | Size | Net effect of Zoning | + | ++ | +++ | ✓ | ? | Larval export possible as spawning does occur in region. | |
| | | | | | | | UNLL | Abundance | Net effect of Zoning | + | ++ | +++ | | | | |
| King George whiting | Sub-adult | 1 | Sand, Seagrass | Temporary resident | N/A | N/A | UNLL | Size | With Zoning | 0 | 0 | 0 | | | Abundance may be temporarily increased during times when fish aggregate in region but there will be no cumulative increase over time | |
| | | | | | | | UNLL | Abundance | With Zoning | + | + | + | | | | |
| | | | | | | | UNLL | Size | Without Zoning | 0 | 0 | 0 | | | Assumes stocks will remain at current levels under current fisheries management | |
| | | | | | | | UNLL | Abundance | Without Zoning | 0 | 0 | 0 | | | | |
| | | | | | | | UNLL | Size | Net effect of Zoning | 0 | 0 | 0 | × | × | | |
| | | | | | | | UNLL | Abundance | Net effect of Zoning | + | + | + | | | | |

^a This table must be read in conjunction with the methods and assumptions detailed in Appendix 1.3 of the Main Report.

Labels in 'Sanctuary Zone' column refer to Appendix Figure 5-1, and are for SZs unless otherwise specified.

Life history information with supporting references is detailed in Appendix 3 of the Main Report.

Current status: UNLL = unnaturally low level compared to pre-fishing; NL = natural level compared to pre-fishing. A pre-fishing baseline was required to enable future predictions of change. A current status of UNLL does not necessarily imply that fisheries exploitation of the species is unsustainable.

The + and – symbols do not indicate the magnitude of a change, but are intended to be indicative of the trend over time. The potential responses do not take into account predator/prey interactions that are discussed in Section 4.1.3 below.

Table 4-2 Other species which may respond to or benefit from protection

| Common name | Species name |
|----------------------|-----------------------------------|
| Blue morwong | <i>Nemadactylus valenciennesi</i> |
| Bronze whaler | <i>Carcharhinus brachyurus</i> |
| Dusky whaler | <i>Carcharhinus obscurus</i> |
| Eagle ray | <i>Myliobatis australis</i> |
| Giant cuttlefish | <i>Sepia apama</i> |
| Gummy shark | <i>Mustelus antarcticus</i> |
| King scallop | <i>Pecten fumatus</i> |
| Queen scallop | <i>Equichlamys bifrons</i> |
| Sand crab | <i>Ovalipes australiensis</i> |
| Sand flathead | <i>Platycephalus bassensis</i> |
| School whiting | <i>Sillago bassensis</i> |
| Southern calamary | <i>Sepioteuthis australis</i> |
| Southern fiddler ray | <i>Trygonorrhina dumerilii</i> |
| Wavy volute | <i>Amoria undulata</i> |
| Weeping toadfish | <i>Torquigener pleurogramma</i> |
| Yelloweye mullet | <i>Aldrichetta forsteri</i> |

4.1.2.3 Other species

There are numerous species that are neither listed as protected/threatened nor fished but which may also benefit from maintenance and/or improvement of habitats and ecological processes in the park. Representatives of such species (see Appendix 2 of the Main Report) in the Lower Yorke Peninsula Marine Park include: long-finned goby (*Favonigobius lateralis*), common bullseye (*Pempheris multiradiata*), Noarlunga hulafish (*Trachinops noarlungae*), Wood's siphonfish (*Siphamia cephalotes*), winkles (*Austrocochlea* spp.), brittlestars, featherstar (*Cenolia trichoptera*), eleven-armed seastar (*Coscinasterias muricata*), short-tail nudibranch (*Ceratosoma brevicaudata*), cartrut shell (*Dicathais orbita*), Roe's abalone (*Haliotis roei*), blue-ringed octopus (*Hapalochlaena maculosa*), *Lepsiella vinosa*, isopods, western black crow (*Nerita atramentosa*), reef crab (*Ozius truncatus*), *Phasianotrochus eximius*, *Phasianotrochus irisodontes*, tulip shell (*Pleuroploca australasia*), *Salinator fragilis*, air breathing gastropod (*Marinula xanthosoma*), sea tulips (*Pyura* spp.), *Thalotia conica*, canopy-forming macroalgae (*Ecklonia radiata*, *Cystophora* spp., *Sargassum* spp. and *Scaberia agardhii*), meadow-forming seagrasses (*Posidonia* spp., *Amphibolis* spp.), and *Sarcocornia quinqueflora*.

4.1.3 Ecosystems

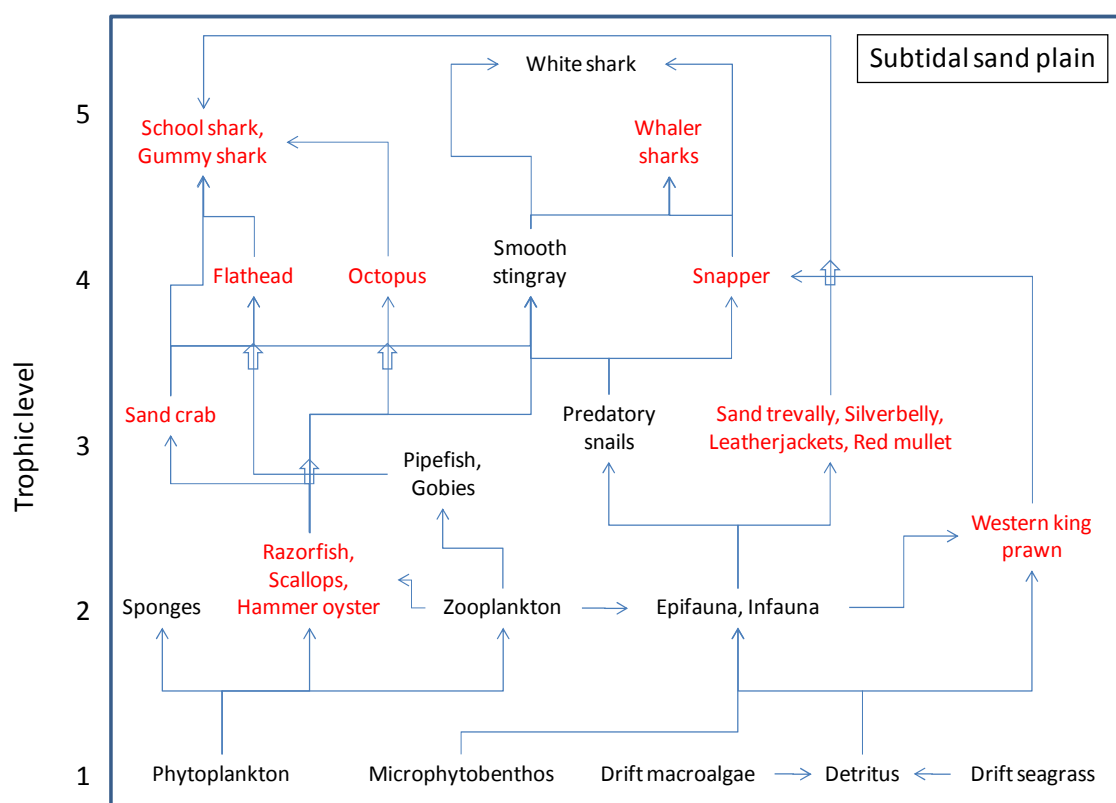
The current state of the ecosystems in the park generally reflects the condition of the component habitats and species documented above. Similarly, responses of the ecosystem to the proposed management changes are informed by the predictions for habitats and species above. The proposed management changes also provide for the restoration of more natural predator-prey relationships (among other interactions) for the more resident species within SZs of an appropriate size. This may result in increased abundances of some species, but decreases for others. Ecosystems within SZ-1 that may show such responses include subtidal sand (see Figure 4–1) and seagrass communities (see Section 4.1.4 below).

As an example of possible ecosystem interactions, Figure 4–1 shows a conceptual food web for subtidal sand indicating how changes in abundance of fished species may affect other species. An increase in snapper may well result in a decrease in prey species such as the sand crab and razorfish.

Natural food webs cannot be fully restored, due to the scales over which the more mobile higher- and middle-order fished species range. However, some increase in abundance of such species is expected as a result of the proposed overall reduction of fishing effort in the marine scalefish and charter fisheries, as per the PIRSA (2011) policy position, and there may be localised flow-on effects for food webs inside the marine parks.

It is also apparent from the simplified food webs (see Figure 4–1 and Appendix 6 of Main Report) that many fished species (shown in red text) and non-fished species are ultimately reliant upon the maintenance of habitat-forming species (such as macroalgae and seagrasses) which lie at or near the base of the food webs, and it is these very habitats that will receive a high level of protection within the marine parks network. Thus the marine parks network will have a positive long-term impact on ecosystems regardless of whether there are zone-specific responses following implementation of the management plans.

Figure 4–1 Simplified conceptual food web for subtidal sand plain habitat

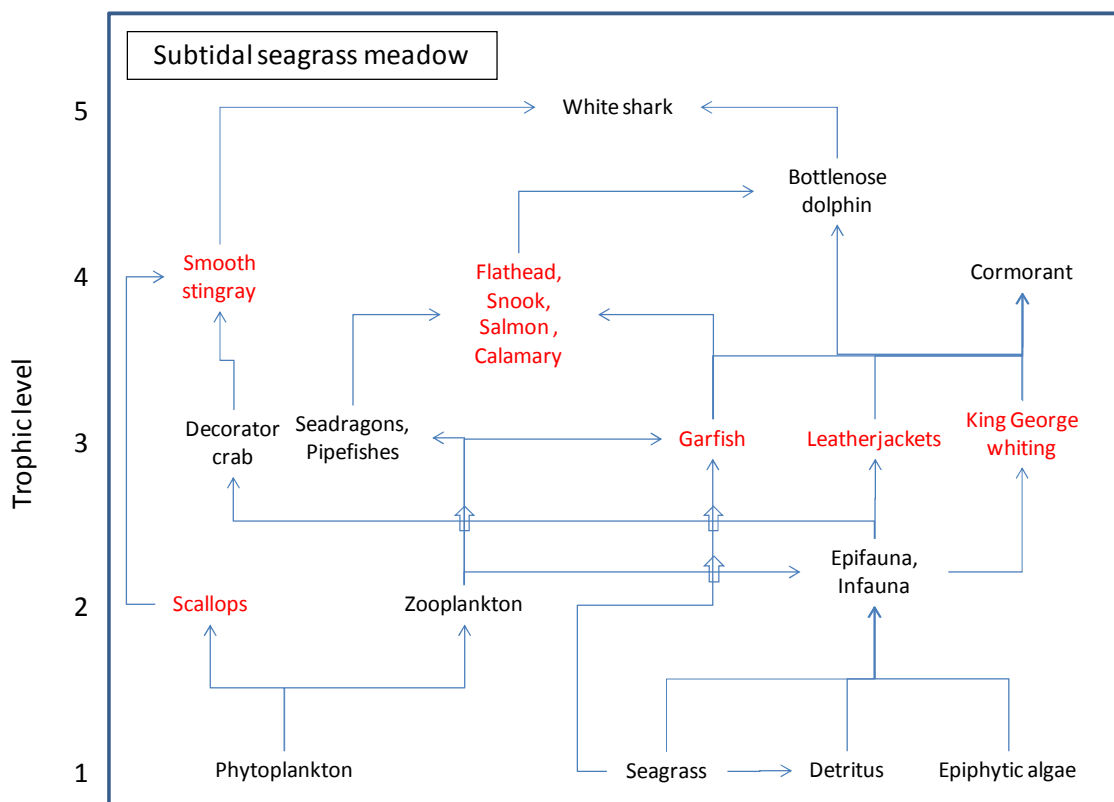


Note: showing links between a variety of species across all trophic levels and indicating those species that interact with fishing (highlighted in red). See Appendix 6 of the Main Report for further details about the food web.

4.1.4 Case study - King George whiting and seagrass

The Lower Yorke Peninsula Marine Park is quite different from most other parks in the proposed network as it has substantial amounts of subtidal seagrass within a sanctuary zone (SZ-1). Whilst it is known that seagrass meadows are a vital habitat in marine systems (see Appendix 4 of the Main Report) and that they harbour an array of species (see Figure 4–1), the response inside SZs to protection from fishing for seagrass-associated species and the ecosystem is uncertain. This is because there are no examples available elsewhere from no-take marine parks, let alone with similar seagrasses and species assemblages to those found in South Australia. In addition to SZ-1, a substantial amount of seagrass is included within HPZ-1 in Sturt Bay and Waterloo Bay. This level of protection is particularly important because seagrass is known to be sensitive to coastal developments and nutrient discharges and the HPZ status could influence any potentially damaging future activities. Protection of the seagrass meadows from future damaging activities will have benefits for a range of biodiversity including fished species that rely upon this habitat for their survival (Figure 4–2).

Figure 4–2 Simplified conceptual food web for subtidal seagrass meadow



Note: showing links between a variety of species across all trophic levels and indicating those species that interact with fishing (highlighted in red). See Appendix 6 of the Main Report for further details about the food web.

One species of particular significance for fishers in SA is the King George whiting (see Appendix 3 of the Main Report for species profile). King George whiting are generally a transient species during the early part of their life cycle but there is evidence that adult fish become resident in some regions (see Species Profile in Appendix 3 of the Main Report). The Investigator Strait region is a known location where adult King George whiting aggregate and in some areas also spawn (Fowler and Jones, 2008). Adult King

George whiting prefer habitats such as low profile reef, sand with broken rubble, and seagrass meadows (Fowler et al., 2011; see also Figure 4–1 and Figure 4–2); at least two of these habitat types are found within SZ-1. Given the large size of this SZ (approximately 13 km by 5 km), these resident fish would be predicted to increase in size in the absence of fishing. Abundance may also increase as other fish move into and become resident within the SZ. Obviously this scenario is purely hypothetical and there are no examples available elsewhere from no-take marine parks that contain King George whiting from which to benchmark such predictions. It is quite possible that the larger fish only become resident in the deeper areas of Investigator Strait (Fowler and Jones, 2008). Nonetheless, the potential exists and with appropriate monitoring programs, such hypotheses can be tested. While the King George whiting scenario may be hypothetical, there is a strong likelihood that more resident seagrass-associated species within SZ-1 that are fished will show a response inside this SZ. The Lower Yorke Peninsula Marine Park represents a unique opportunity to examine the ecosystem response of subtidal seagrass habitat to protection from fishing.

4.2 Economic

4.2.1 Commercial Fishing

The analysis of the impact of displaced catch and/or effort on commercial fishing is based on:

- Estimates of displaced catch and/or effort provided by the South Australian Research and Development Institute (Ward and Burch 2012).
- PIRSA Fisheries and Aquaculture policy position on redistribution of displaced commercial fishing, which states that the displaced catch for sardines can be redistributed, for prawns can be redistributed up to 2 per cent of total fishery catch, and for other fisheries cannot be redistributed (PIRSA 2011). For fisheries where displaced catch cannot be redistributed it is assumed that the displaced effort will be removed from the fishery.

For some fisheries, the relevant fishing industry association has undertaken their own assessment of displaced catch/effort. The methods and data used to make these industry assessments will be reviewed by SARDI (DEWNR pers. comm., 6 July 2012). Analysis of the impact of displaced catch/effort on commercial fishing based on these industry estimates has been included in the following sections.

4.2.1.1 Summary

The estimated economic impacts on commercial fisheries, based on SARDI's average annual displaced catches and corresponding average annual prices, are relatively small for the Lower Yorke Peninsula Marine Park. The State Government has committed to buy out licences and quota entitlements of displaced effort and catch, although details of the buyout are yet to be finalised. Compensation payments have the potential to at least partially offset the negative impact of the displaced catch, estimated to have an average annual value of \$47,000. However, if compensation is limited to the buyout of displaced fishing entitlements, the negative impacts on the local economy are unlikely to be fully offset:

- There would be no requirement for the recipients of the buyout to spend or invest the funds in the region.

- Even if all the funds were invested in full in the region it is unlikely the investment would generate economic activity and wealth equivalent to that generated by the displaced fishing activity. This is because fishers have the opportunity to sell their licences at any time (they are fully transferable) but choose not to. If there were alternative investment opportunities locally that fishers had the skill and risk bearing capacity to undertake, then it is reasonable to assume that they would already be doing it.

For entitlement holders there are potentially direct financial losses suffered as a direct consequence of the cancellation of their entitlement. These could take the form of:

- a pecuniary loss such as removal and re-establishment costs or legal costs in acquiring a replacement licence/entitlements
- a capital loss of business operation - the loss of a partial entitlement or the location of sanctuary zones may negatively impact the efficiency of business operations, which might in turn impact on the market value of plant and equipment, as well as the market value of remaining fishing entitlements held by the licence holder.

4.2.1.2 Sardines

SARDI estimates of historical catch in draft sanctuary zones indicate that there would be nil catch displaced from this marine park.

4.2.1.3 Prawns

SARDI estimates of historical catch in draft sanctuary and habitat protection zones indicate that there would be nil catch displaced from this marine park.

4.2.1.4 Abalone

SARDI estimates indicate that historically there has been minimal catch of abalone in the draft sanctuary zones in this marine park, i.e. an average annual catch of less than 10 kg of greenlip and blacklip combined.

4.2.1.5 Rock Lobster

SARDI estimates indicate that historically there has been an average annual catch of 44,842 kg of rock lobster in the draft sanctuary zones in this marine park. This represents 0.11 per cent of the Northern Zone Rock Lobster Fishery average annual catch or 1.23 per cent of the average annual catch in the Yorke Peninsula region. The value of this displaced catch is approximately \$39,000.

4.2.1.6 Marine Scalefish

SARDI estimates of historic effort in draft sanctuary zones for the Marine Scalefish Fishery are provided in Table 4-3 and historic catch for the main fishery species in Table 4-4. The total sanctuary zone catch of marine scalefish represents 0.03 per cent of the average annual catch in the Yorke Peninsula region.

Table 4-3 Average annual Marine Scalefish effort in draft sanctuary zones by sector

| Sector | Sanctuary zone effort (person days) | % effort of sector |
|----------|-------------------------------------|--------------------|
| Handline | 15 | 0.05 |
| Haulnet | nil | nil |
| Longline | 2 | 0.04 |
| Other | 6 | 0.03 |

Notes: Handline, longline and other gear sectors based on 10 years of data, haulnet based on 3 years of data

Source: Ward and Burch, 2012.

Table 4-4 Average annual Marine Scalefish catch in draft sanctuary zones by main species

| Species | Sanctuary zone catch (kg) | % species catch in fishery |
|---------------------|---------------------------|----------------------------|
| Garfish | 11 | <0.01 |
| King George whiting | 82 | 0.02 |
| Snapper | 108 | 0.01 |
| Southern calamary | 22 | 0.01 |

Notes: based on 3 years of data

Source: Ward and Burch, 2012.

The value of this sanctuary zone catch is approximately \$3,000.

According to the Marine Fishers Association the SARDI estimates are slightly below estimates prepared by licence holders⁶. The industry estimates indicated displaced effort in King George whiting. This estimate of displaced catch (which has not yet been reviewed by SARDI), has an annual average value of \$28,000.

4.2.1.7 Blue Crab

SARDI estimates of historical catch in draft sanctuary zones indicate that there would be nil catch displaced from this marine park.

4.2.1.8 Charter Boat

SARDI estimates indicate that historically there has been an average annual charter boat effort of 20 person days in the draft sanctuary zones in this marine park. This represents 0.09 per cent of the average annual effort for the charter boat industry or 0.60 per cent of the average annual catch in the Yorke Peninsula region. The value of this sanctuary zone effort is approximately \$5,000.

⁶ Catch data from the last five to seven years provided by affected fishers (Marine Fishers Association, pers. comm., 19 June 2012).

4.2.1.9 Sharks⁷

The Gillnet, Hook and Trap sector of the Commonwealth Southern and Eastern Scalefish and Shark Fishery operates in the Lower Yorke Peninsula Marine Park. The fishery occurs predominantly in Commonwealth waters and therefore is managed by Australian Fisheries Management Authority under an Offshore Constitutional Settlement. Target species are school and gummy sharks. A preliminary estimate of an average catch of 58 kg per year will be displaced from the line fishing sector by sanctuary zones in this park. This sanctuary zone catch represents 0.37 per cent of the fishery catch in State waters, and 0.02 per cent of the fishery catch off SA (State and Commonwealth waters).

Likewise with the gill-net sector, a preliminary estimate of average displaced catch of 415 kg per year is expected. This sanctuary zone catch represents 0.36 per cent of the fishery catch in State waters, and 0.06 per cent of the fishery catch off SA (State and Commonwealth waters).

4.2.2 Aquaculture

There are no known current or potential impacts expected from the draft zoning on current or future aquaculture enterprises in marine parks. This is consistent with Government policy commitments. Any potential future prescribed criteria in aquaculture zone polices derived from Section 11 (3a) of the *Aquaculture Act 2001* could add cost to existing or future aquaculture activities, or have additional regulatory impact (PIRSA, pers. comm., 7 November 2011). However, no such prescribed criteria currently exist and potential impacts have not been assessed.

4.2.3 Property Prices

Given that the overall impact on the region is not expected to be large in absolute terms, the impact on property values is, similarly, not expected to be significant. States of Australia have introduced marine parks with sanctuary zones in the last decade without any known long-term effects on property values. External factors notwithstanding, the trend in Yorke Peninsula residential property prices illustrated in the regional socio-economic profile is unlikely to be affected by the proposed marine park zoning.

4.2.4 Tourism

The following assessment is based on discussions with the South Australian Tourism Commission, local councils and local offices of Regional Development Australia.

Fishing-based tourism has been identified as important to the local economy. Several organisations have raised the point that towns identified as 'fishing centres' that are comparatively remote are more vulnerable to a downturn in fishing tourism if fishing visitors perceive that there may be restrictions to their activities. As discussed in section 4.3.5.2, the actual placement of sanctuary zones is unlikely to place real restriction on recreational fishing. However the perception that recreational fishing opportunities will be restricted by implementing 'no take' zones is real (for example, the

⁷ Australian Fisheries Management Authority data shows no reported catch by the Southern Bluefin Tuna fishery or Great Australian Bight trawl fishery in South Australian state waters for the period 2001-2010. No impact from the draft zoning is anticipated on these fisheries.

charter boat industry has identified that they have benefited from an increased number of interstate clients in recent years who come to South Australia to fish because SA waters do not have marine park 'no take' zones). So there is potential for a downturn in fishing-based tourism in the short-term until visitors are informed and convinced of the actual situation on the water.

Ecotourism is an industry in its infancy and is expected to grow, however is unlikely to grow into a large industry because of the natural limitations of rough seas, cold water and sharks. Several organisations raised the issue of operator permits being a key factor in the ability of the industry to grow. In the past, one-year, renewable permits (issued under the *National Parks and Wildlife Act 1972*) were available which is viewed as a barrier to investment in this area. The permitting policy is being changed, with far greater flexibility on the length of time permits can be held, ranging from two-month permits up to 10-year permits⁸ which is seen as likely to boost business investment. There will be situations where eco-tourism operations will occur within sanctuary zones which may benefit from zoning by, for example, not having to share the space with fishers. In the long-term managed marine parks will provide certainty that the marine environment within them is being protected and this is likely to support the ecotourism industry, provided the necessary investment in tourism infrastructure and support services is undertaken.

Other, non-extractive tourism, such as diving, is likely to benefit from the implementation of sanctuary zones however more detailed assessment has not been possible.

4.2.5 Port, Harbour and Shipping Operations

The existing arrangement where shipping, ports and harbour activities are managed pursuant to the *Harbours and Navigation Act 1993* will remain. This includes dredging and channel maintenance, development or improvement of facilities for anchorage, vessel maintenance, loading, unloading and storage of goods, associated commercial and industrial development, sporting and recreational purposes. Under the Government policy commitment on shipping and harbours, all harbours declared under provisions of the *Harbours and Navigation Act 1993* will be zoned special purpose areas. Current and future operations in harbours will not be affected and have been accommodated within marine parks as reflected in the draft management plan zoning.

The shipping industry has suggested that marine park zoning may place potential restrictions on port, harbour and shipping facilities through zoning restrictions. The draft management plans have been prepared in such a way as to minimise any such restrictions and all ports have been excluded from marine parks.

It should be noted that aids to navigation and markers are permitted in any waters in any marine park.

The ports of Klein Point and Port Giles have been excluded from the marine park. In addition, the harbours of Klein Point and Port Giles have been declared special purpose areas. Adelaide Brighton Cement has indicated that they may expand their shipping facilities at Port Giles. No significant impacts on shipping activities arising from the zoning in this park are expected, which is consistent with Government policy commitments.

⁸ See DEWNR's current *Commercial Tour Operators' Licensing and Permitting Policy* at http://www.environment.sa.gov.au/parks/Get_Involved/Commercial_Tour_Operators

4.2.6 Mining

The existing arrangements where DMITRE Minerals and Energy Resources Division oversee activities that support the mineral, petroleum and geothermal resource industries, pursuant to the *Mining Act 1972*, the *Petroleum and Geothermal Energy Act 2000*, the *Offshore Minerals Act 2000* and the *Petroleum (Submerged Lands) Act 1982*, will remain. All existing licences and leases will be accommodated with no change to existing conditions. Applications for new or renewal of licences and leases within and adjacent to marine parks will require the concurrence of the Minister responsible for marine parks under related amendments to the *Mining Act 1972* and the *Petroleum and Geothermal Energy Act 2000*. Where the proposed activity is consistent with the zoning regulations, no further approvals or permits will be required, apart from those required under legislation administered by DMITRE Minerals and Energy Resources Division. Section 19 of the *Marine Parks Act 2007* provides for consideration of activities that are inconsistent with marine park zoning regulations on a case-by-case basis with rigorous assessment and approval processes and due consideration of risk to environmental values (e.g. to consider new/emerging lower impact technologies). The Minister responsible for marine parks will be required to issue a special permit in such cases.

There are 28 mining leases/miscellaneous purposes licences adjacent to the park relating to limestone mining around Wool Bay to Klein Point. A further six white shale mineral leases are located near Port Giles.

There is a petroleum exploration licence overlapping part of this marine park extending from Troubridge Point to near Stansbury but does not include Troubridge Island. There is a petroleum exploration licence application located immediately adjacent to the marine park boundary from Sturt Bay to Waterloo Bay.

As mentioned above, conditions attached to existing licences will not change and the operations to which these licences refer to will not be affected by zoning.

4.2.7 Coastal Development

Marine parks will not prevent coastal developments approved under the *Development Act 1993*. Coastal developments and infrastructure are regulated under the provisions of the *Development Act 1993* with developments considered on a case by case basis by the relevant authorities to ensure that the achievement of the objects of the *Marine Parks Act 2007* and the aims of the specific zone where the development is proposed are supported appropriately. As part of the assessment process, advice or direction may be required from the Coast Protection Board and/or the Environment Protection Authority and other authorities, depending on the nature of the development. Development plans and significant projects are informed by the Planning Strategy which now includes the objects of the *Marine Parks Act 2007*.

Marine parks will not prevent coastal developments approved under the *Development Act 1993*. Approved coastal developments and infrastructure, can be provided for within marine parks through suitable zoning arrangements, permits issued under section 19 of the *Marine Parks Act 2007* or through special purpose area provisions.

The proclamation of the marine parks network will not affect access to, or use of, jetties, breakwalls or boat ramps.

There are no significant projects and infrastructure in this marine park. Adelaide Brighton Cement has expressed that in the future it will need to upgrade its shipping facilities at Klein Point. The details of this potential development are not known yet.

4.3 Social

4.3.1 Summary of method

The social impact assessment drew on multiple sources of information – a review of research relating to established marine parks elsewhere in Australia and overseas; an analysis of market research undertaken in relation to South Australian marine parks; an analysis of MPLAG minutes and of media reports relating to each park, a review of the social values statement prepared for the park, and analysis of the economic impacts identified.

Finally a Marine Parks Social Impact Assessment Tool (MPSIAT) was designed which sought feedback from MPLAG members on different types of social impact expected to flow from preliminary zoning options considered prior to the draft zones presented within the draft management plans.

The findings from these different sources were analysed separately and in combination to determine overall expected social impacts.

Although this report presents impact analysis relating to the draft zones, the MPSIAT findings are included because they represent part of the community consultation process and the draft zones reflect the SA government's response to the findings of that process.

Six of twelve members⁹ (50 per cent) of the Lower Yorke Peninsula MPLAG responded to the online social impact assessment for the Lower York Peninsula Marine Park.

4.3.2 Expected social impacts – at a glance

The overall social impacts of the Lower Yorke Peninsula Marine Park on communities living in the Yorke Peninsula region are expected to be low given the magnitude of the economic impacts that have been projected and low levels of regional unemployment and measured relative disadvantage. Commercial fishing is an important source of employment and is estimated to contribute 94 jobs to employment in the region, although relatively small when compared with tourism which contributes some 460 jobs. Economic impacts from displaced commercial fishing in the region were too small to model and less than one fte job loss can be expected in the region, but in a region with very low unemployment, and low to moderate measured relative disadvantage, any job losses are likely to have minimal social impact.

The impact on recreational fishing is considered to be low with adjustments in zoning designed to minimise any potential negative impacts. Consequently, any impact on local community identity as a fishing centre, and on fishing as a way of life is also likely to be low.

⁹ Any MPLAG members who indicated they did not wish to participate in the social impact assessment a priori were not approached.

Experience elsewhere in Australia and internationally (Ledee *et al* 2011, Cocklin *et al* 1998), suggests that a range of benefits will become evident over time. These include increased opportunities for education about marine life and conservation, and increased tourism and ecotourism opportunities. Experience elsewhere indicates that these benefits usually take approximately five years to be evident, and that in the earliest stages of marine protected areas being developed, communities are more likely to identify possible negative impacts than potential benefits. It takes time to observe how the park's ecological and economic impacts evolve, with social impacts (positive or negative) flowing from these.

Certainly at this stage of the South Australian marine parks' development, monitoring of media reports, feedback from MPLAGs and analysis of their meeting discussions, illustrates the trend to expect the changes associated with their development to be problematic. One very important factor that affects community attitudes is how informed they are, and feedback from market research and MPLAGs, as well as analysis of media reports indicates a gap in this information. In particular, increasing communities' understanding of the scientific rationale underpinning marine protected areas, and the benefits that these can bring, needs to be enhanced.

Marine parks have broad support in the South Australian community. Market research commissioned by the state government between 2006 and 2012 (McGregor Tan Research 2006, 2007, 2008 and 2009; Square Holes 2009, 2011 and 2012) found strong support for the concept of marine parks among South Australians with approximately 85 per cent in favour of them in 2012 (87 per cent support in metropolitan Adelaide and 82 per cent support in regional areas). People interviewed for this research were able to identify seven main benefits arising from marine parks:

1. preservation of the environment for future generations
2. protection and conservation of marine habitats and wildlife
3. increases in fish stocks
4. greater opportunities for scientific research and education
5. greater opportunities for nature based tourism and recreation
6. protection of cultural and heritage sites
7. greater certainty for marine industries and users.

The research found in 2011 and again in 2012 that 88 per cent believe that protection of the marine environment through managed marine parks is the responsibility of current generations for the benefit of future generations.

The market research found that loss of commercial benefits is a particular concern, particularly for those living in regional areas (33 per cent in 2012) compared with those in metropolitan Adelaide (22 per cent in 2012). Those least likely to support marine parks have been fishing groups (in 2009 55 per cent of respondents who did not support marine parks identified restricted fishing as the reason, this dropped to 39 per cent in 2012).

Between 2011 and 2012 the market research findings identify a decline in those who believe they will have limited access to marine parks and an increase in those who associate swimming, boating and snorkelling with marine parks.

4.3.3 Education and Wellbeing

MPSIAT respondents were divided about whether the marine park zoning will provide increased opportunities for education about marine life and for understanding marine conservation issues. International researchers confirm that this is a key outcome and benefit of marine protected areas (Angulo-Valdes and Hatcher 2010).

The impact on local employment through new opportunities associated with the marine park was considered by most MPSIAT respondents to be unlikely. Nor was it expected to improve local quality of life personally, for families or for the wider community while there are mixed perceptions about the likely impact on overall way of life.

The draft zoning proposal is the result of considerable discussion about how potential negative impacts on users of marine resources in the marine park can be minimised. For this reason it is expected that personal quality of life in general and quality of community life is unlikely to be negatively impacted by the draft zoning proposal.

4.3.4 Culture and Heritage

DEWNR undertook a process of consultation with Aboriginal stakeholders about the establishment of the marine parks. No significant negative impacts on Aboriginal communities were identified. However, it is important that further consultation be undertaken in relation to the likely impact of the draft zoning.

Aboriginal people have interacted with the marine environment for thousands of years and their relationships with the sea remain strong through customs, laws and traditions. Traditional usage, Aboriginal cultural heritage, Indigenous Protected Areas, Indigenous Land Use Agreements and Native Title considerations are being taken into account in developing the management plan for the Lower Yorke Peninsula Marine Park.

The Narungga Aboriginal people have traditional associations with areas of the marine park including estuarine and coastal environments which provide food and resources for local Aboriginal people and still hold strong cultural significance today. Parts of the marine park are subject to an Indigenous Land Use Agreement with the Narungga People of Yorke Peninsula.

MPSIAT respondents held varied views on whether the marine park MPLAG zoning would help with maintaining local Australian culture and heritage or in maintaining the local community's identity as a fishing centre.

The impact on community identity is too early to determine at this stage, but given the low impact expected on fishing, it is unlikely that their negative expectations will be realised. Furthermore, there will be different groups within the community with varying degrees of attachment to identity as a fishing centre, just as there will be a range of views about being identified as a place of ecological value.

4.3.5 Recreation and Fishing

4.3.5.1 Recreation

Whilst none of the MPSIAT respondents expected the proposed MPLAG zoning to encourage more recreational activity or a greater range of recreational activities, a

minority expected that the proposed zoning would bring improved recreational facilities (see Appendix Table 4-4).

4.3.5.2 Recreational Fishing

The following assessment is based mainly on the SAMPIT mapping¹⁰, with material from separate interviews with the South Australian Recreational Fishing Advisory Council (SARFAC) and the DEWNR project coordinators who facilitated the MPLAG process, where appropriate.

Recreational fishing occurs mainly:

- North of Point Davenport in Sturt Bay. SZ-1 off Point Davenport will have limited impact, as it is in a lightly fished area and difficult to access (SARFAC, pers. comm. 20 June 2012).
- Around the Troubridge Shoals, Sultana Bay, Edithburgh and Coobowie Bay. SZ-2 is within Coobowie Bay Aquatic Reserve, where fishing is not permitted, and will have no impact on recreational fishing.

The management plan zoning is expected to have low impact on recreational fishing, with access to popular fishing areas maintained.

4.3.5.3 Commercial Fishing

The overall social impacts of the Lower Yorke Peninsula Marine Park on communities living in the Yorke Peninsula region are expected to be low given the magnitude of the economic impacts that have been projected. Economic impacts from displaced commercial fishing in the region were too small to model and less than one fte job loss can be expected in the region, but in a region with very low unemployment, and low to moderate measured relative disadvantage, any job losses are likely to have minimal social impact. Commercial fishing is an important source of employment and is estimated to contribute 94 jobs to employment in the region, although relatively small when compared with tourism which contributes some 460 jobs. The State Government has committed to buy out licences and quota entitlements to offset any unsustainable displaced effort and catch. Although details of the buyout are yet to be finalised, any such payments have the potential to at least partially offset the negative impacts outlined above. Consequently, any impact on local community identity as a fishing centre, and on fishing as a way of life is also likely to be low.

Australian researchers have identified the potential psychological impacts on fishing families arising from uncertainty about fishing business viability, reduced family income, reduced self-esteem arising from the loss of fishing occupation and the difficulty of finding alternative employment in the region (Schirmer et al. 2004: 7-8). Much depends on individual fishers' capacity to adapt which in turn has been found to depend on their financial situation, ability to work elsewhere, business skills and willingness to accept rather than resist change (Marshall and Marshall 2007). This diversity means that

¹⁰ The South Australian Marine Parks Information Tool (SAMPIT) is a computer tool designed to gather information from community members about their favourite fishing spots and areas they believe need protection. Data is collected and reported by 'grid cell'. SAMPIT data for 1,739 people is available including 1311 recreational fishers. Quality control by the Department of Environment and Natural Resources included cross-verification of legitimate naming and activities from the data provided (DENR 2010b).

fishers will vary significantly in the way marine parks affect them, and will have differing views on that impact, as is reflected in Appendix Table 4-4.

Furthermore, there is minimal research on the social impacts of marine parks on commercial fishers and their families in particular, and on communities as a whole (Voyer 2011, 2012, Beeton et al 2012, Fairweather et al 2009). The Great Barrier Reef Marine Park Authority is cited as one exception to this trend (Voyer et al 2012, Beeton et al 2012) while social impact research has also been undertaken in relation to Ningaloo Marine Park in Western Australia (Northcote & Macbeth 2008).

By contrast, economic impacts of marine parks have been significantly more researched. Australian researchers have found that most commercial fishers have adapted their fishing activity and fishing business at least moderately well in the five years following implementation of the 2004 Great Barrier Reef Marine Park rezoning, leading them to conclude that many of the impacts experienced by fishers might be short-term and decline over time as fishers adapt to the change (Ledee et al. 2011: 8). Similarly, research undertaken in New Zealand's Leigh Marine Reserve has found that almost two decades after it was established in 1975, commercial and recreational fishers reported that fishing outside the boundaries had improved over time (Cocklin et al. 1998).

4.3.6 Local Government, Population and Housing

4.3.6.1 Local Government

Through the SA Regional Organisations of Councils, facilitated by the Local Government Association SA, all local government councils which border marine parks in SA were invited to participate in a survey about potential impact of marine park zoning on council operations, council infrastructure and council revenues.

No local council responded. However, based on the response from other local councils and on the expected social and economic impacts, no impacts on local government operations, infrastructure and revenue or compliance related activities are expected as a result of the proposed draft zoning.

4.3.6.2 Population and housing

Economic impacts from displaced commercial fishing in the region were too small to model and less than one fte job loss can be expected in the region, but in a region with very low unemployment, and low to moderate measured relative disadvantage, any job losses are likely to have minimal social impact. Therefore no impact on population and housing is expected.

4.3.7 Community

A majority of MPSIAT respondents believed that their local community would not adapt well to having the marine park although most expected the community to be sufficiently resilient to manage the changes arising from the park's establishment.

The majority of MPSIAT respondents did not expect business opportunities to increase as a result of the proposed zoning of the park, nor did they envisage the need for training programs to assist local people to transition to new occupations that may

emerge from its establishment. However, thought should be given to training programs that assist people to manage changes brought by establishing the park. It is possible that new employment opportunities will emerge, and it will be important for local people to take advantage of those, with training being potentially important to their ability to do so.

The marine park was not expected by any MPSIAT respondents to be a source of pride to the community, or to generate activities and events likely to unite the community. Respondents held mixed views about whether the park would become a source of division in the local community.

While there is little research evidence about the impacts of marine protected areas on communities as a whole, there are several studies in Australia and overseas that have identified a range of positive impacts, including enhanced tourism opportunities with flow on benefits to other sectors in the local economy (Ward et al. 2001, Cocklin et al. 1998). However, these and other benefits are not apparent in the early implementation stages and where positive impacts are reported these tend to be evident after about five years, becoming increasingly evident over the longer term (Cocklin et al. 1998, reporting on New Zealand marine parks established from 1975 onwards).

Given the low economic and recreational fishing impact expected from the zoning, significant adjustment pressures on the community using the park are not envisaged.

4.3.8 SEIFA based analysis of impacts

No job losses are expected to be associated with Southern Spencer Gulf Marine Park, while other impacts from possible job losses in the Yorke Peninsula Impact Region associated with the Eastern Spencer Gulf and Lower Yorke Peninsula Marine Parks were too small to model.

In an area of very low unemployment (2.8 per cent) and low-moderate relative disadvantage (SEIFA and leading indicators), any job losses are likely to have minimal social impact in the Yorke Peninsula Impact Region.

Table 4-5 Social impact for Yorke Peninsula Impact Region

| Impact region | Yorke Peninsula | | |
|--|--|---------------------------|---------------------------|
| Marine Park # and Name | 11: Eastern Spencer Gulf | 12: Southern Spencer Gulf | 13: Lower Yorke Peninsula |
| Jobs impact (fte) | a | 0 | a |
| % impact on region | a | 0% | a |
| Regional unemployment | Very Low (2.8%) | | |
| SEIFA relative disadvantage (SLA) | Low | | |
| Index of Economic Resources (SLA) | Low | | |
| Index of Education & Occupation (SLA) | Low | | |
| Proportion of single parent families ^{b,c} | Low | | |
| Proportion with education lower than year 12 ^{b,c} | Moderate-high (Yorke Peninsula South 66.1%, Yorke Peninsula North 63.0%) | | |
| Proportion of population with Indigenous background ^{b,c} | Moderate (Yorke Peninsula North 4.1%) | | |
| % fair or poor health (self report) | Low | | |
| Expected social impact | Low | Low | Low |

Note 3 SLAs associated with Impact region

Note rounding errors do occur.

^a Impacts too small to model.

^b Source: Australian Bureau of Statistics (2007). *2006 Census Community Profile Series, South Australia (STE 4)*. Canberra: ABS

^c Source: Australian Bureau of Statistics (accessed 2012). *TableBuilder 2006 Census, South Australia (SLA)*. Canberra: ABS

^d Compiled by PHIDU using data estimated from the *2007-08 National Health Survey (NHS)*, ABS (unpublished); and ABS Estimated Resident Population, average of 30 June 2007 and 2008

Note, an Impact Region or SLA is considered high if it has at least one SLA in the highest decile in SA (a moderate value falls in the second highest decile).

4.3.9 Next Steps in Social Impact Assessment

4.3.9.1 Short term objectives

Social impact research constantly identifies insufficient information as a cause of concern for communities affected by the establishment of marine parks, and notes how important such information can be for effective participation in the process of designing and implementing these parks. This includes better communication of the underpinning science of marine protected areas and how it has influenced their design and the setting of zones (Fairweather et al. 2009). The more recent review of marine parks in NSW (Beeton et al 2012) also found that insufficient community informing, and an associated lack of resourcing for this purpose, has resulted in marine parks-related decision making and the benefits of marine parks being insufficiently understood the general public. There is also research evidence of the importance of informed participation in marine park decision making and management, and in the enforcement of compliance (McPhee 2011, Cocklin et al. 1998).

In this context it is important to note that a range of information provision and consultation strategies were implemented by DEWNR to inform the marine parks

decision making process. The SAMPIT and MPLAG processes provided an important opportunity for key stakeholders to contribute to the design of the marine park. This impact assessment report is the foundation for a further community consultation process. Further details about the information provision and consultation processes undertaken by DEWNR are detailed in section 1.1.

A clear message from the market research, media reporting and feedback from MPLAGs is that the scientific arguments in favour of establishing marine parks, including the Lower Yorke Peninsula Marine Park, need to be better understood by the wider community. This is one of the functions of this impact statement which is designed to inform judgements on the impact of the draft zoning proposal. MPSIAT feedback indicates that those members who do not understand the scientific arguments, also tend to disagree that the park's boundaries and proposed zoning are based on sound science.

In their evaluation of New South Wales marine parks, Fairweather et al. (2009: 26) recommended to the Marine Parks Advisory Council of NSW that they be '*... more assertive about the science and other research behind the NSW Marine Park system ...*' partly to refute misinformation being spread by opponents of the parks but also to ensure levels of understanding were increased. Acknowledging community concerns about possible negative impacts on their lives, the researchers identified the importance of ongoing socio-economic impact assessment as one means of improving understanding of the value of marine protected areas to Indigenous, recreational and commercial users of marine parks, mainly because it can capture the economic and social benefits that develop over time (Fairweather et al. 2009: 15-17).

MPSIAT respondents expressed the need for more information about this marine park and how it will operate. Reliance on public forums, open days and processes that involve giving information rather than listening to local voices, have been criticised in local media.

It is important to note that a range of information provision and consultation strategies were implemented by DEWNR to inform the marine parks decision making process. The SAMPIT and MPLAG processes provided an important opportunity for key stakeholders to contribute to the design of the marine park. This impact assessment report is the foundation for a further community consultation process. Further details about the information provision and consultation processes undertaken by DEWNR are detailed in section 1.1.

4.3.9.2 Ongoing impact assessment

Social impact assessment that is repeated over time, provides a mechanism for informing as well as engaging communities, involving them in decision making, and identifying and assisting with managing intended and unintended social consequences (Vanclay 2005). However coastal zone management is often criticised for a failure to facilitate effective community engagement in what has been termed a 'democratic deficit' (Vanclay 2012).

Perceptions of social impacts of change reflect knowledge, experience, values and roles. They provide a guide to possible but not certain impacts. To provide greater certainty about likely impacts we need to subject marine park zones to economic and environmental impact identification processes like those adopted in this impact assessment statement, repeating them over time to measure changes. The results of this process are necessary to inform judgments about the magnitude of social impacts.

The opportunity now exists for key stakeholders to provide perspectives on social impacts in the light of new knowledge about industry, employment, species and habitat impacts provided in this impact statement.

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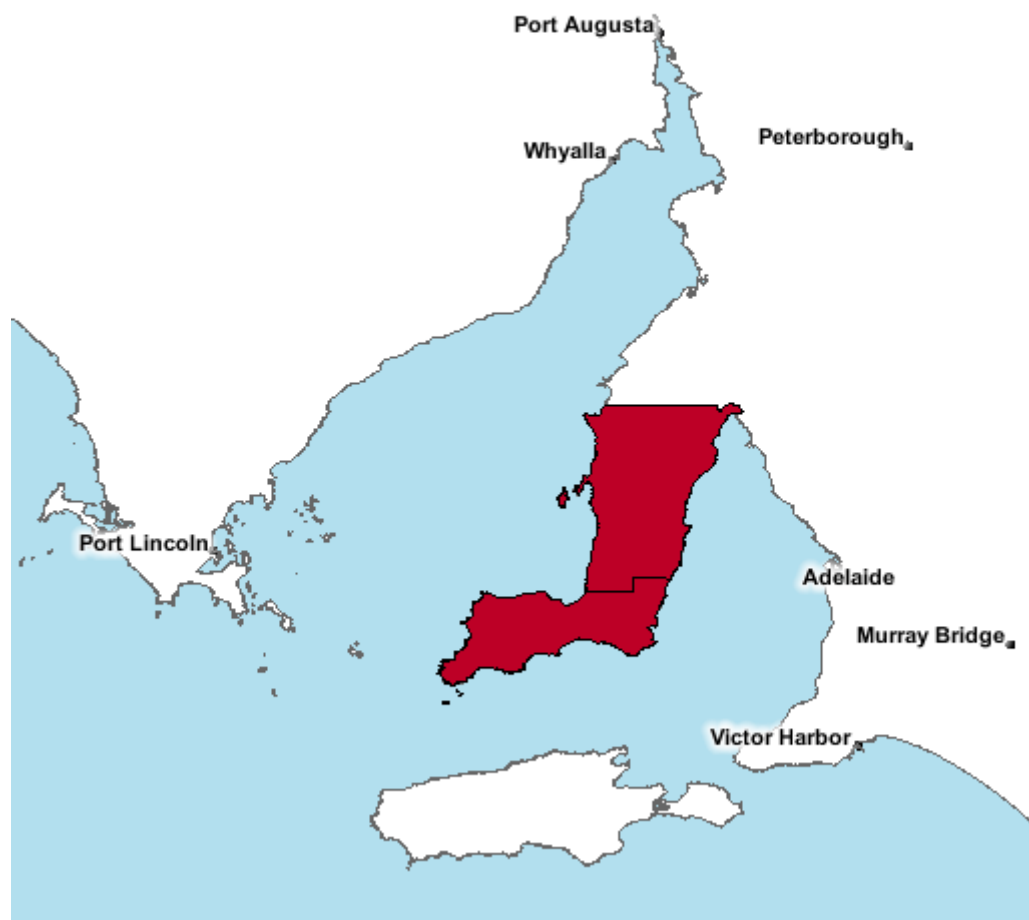
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Appendix 1 Socio-economic Profile – Yorke Peninsula

This socio-economic profile provides a statistical summary of key economic and social information for the Yorke Peninsula region and, where possible, South Australia (SA). The profile brings together a wide range of existing Australian Bureau of Statistics (ABS) data and some non-ABS data. It has been designed, at a broad level, to aid understanding of the economic and social structure of the region, to indicate how the Yorke Peninsula region contributes to the State economy and to monitor trends in economic growth or decline.

The Yorke Peninsula region is located west of Adelaide (Figure 1). The two statistical local areas (SLAs) that comprise the region are Yorke Peninsula (DC) – North and Yorke Peninsula (DC) - South. The Yorke Peninsula regional economy is relevant to the Eastern Spencer Gulf (MP11), Southern Spencer Gulf (MP12) and Lower Yorke Peninsula (MP13) marine parks. Table 1 presents a summary of the key economic and social information detailed further in the report.

Appendix Figure 1-1 Yorke Peninsula region



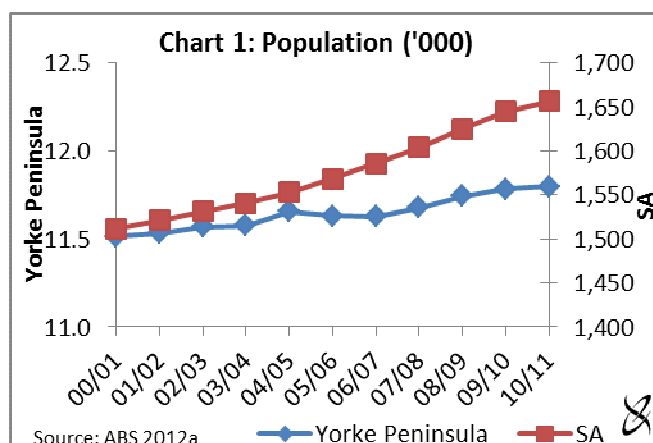
Source: ABS TableBuilder

Appendix Table 1-1 Summary of key economic and social indicators for the Yorke Peninsula region

| Indicator | Yorke Peninsula | SA | Yorke Peninsula as a proportion of SA |
|--|-----------------|-----------|---------------------------------------|
| Population, 2010/11 (no.) | 11,795 | 1,656,299 | 0.7% |
| Birth Rate, 2009/10 (births/1000 residents) | 8.8 | 12.2 | - |
| Death Rate, 2009/10 (deaths/1000 residents) | 11.6 | 7.9 | - |
| Age Distribution, 2009/10: | | | |
| Proportion of Population aged 0-14 | 16% | 18% | - |
| Proportion of Population aged 15-64 | 58% | 67% | - |
| Proportion of Population aged 65+ | 27% | 16% | - |
| Dependency Rate, 2009/10: | | | |
| Child | 27% | 27% | - |
| Aged | 46% | 23% | - |
| Total | 73% | 50% | - |
| Population Projection, Increase from 2006 to 2026 | 5% | 23% | - |
| Employment, June qtr 2011: | | | |
| Labour Force (no.) | 5,068 | 867,500 | 0.6% |
| Unemployed (no.) | 140 | 45,300 | 0.3% |
| Unemployment Rate | 3% | 5% | - |
| Participation Rate, 2009/10 | 47% | 63% | - |
| Businesses, June 2009 (no.) | 1,193 | 141,625 | 0.8% |
| School Enrollments, 2011 | 1,507 | 247,356 | 0.6% |
| Tertiary Enrollments, 2011 | 703 | 208,706 | 0.3% |
| Non-school Qualifications, 2006 | 3,704 | 595,379 | 0.6% |
| Mean Taxable Income, 2009/10 (\$) | 48,870 | 54,349 | - |
| Proportion of Taxable Individuals, 2009/10 | 62% | 74% | - |
| Value per Building Approval, 2010/11 (\$) | 190,261 | 236,269 | - |
| Median Dwelling Price, 2010/11 (\$) | 251,500 | 357,500 | - |
| Commercial Fishing, Ave/yr 2000/01 to 2009/10: | | | |
| Catch (t) | 4,083 | 47,581 | 8.6% |
| Value of Catch (\$m) | 51 | 202 | 25.2% |
| Charter Boats, Ave/yr 2007/08 to 2009/10 (no. of fish) | 40,760 | 146,341 | 27.9% |
| Recreational Fishing, 2007/08: | | | |
| Fishers (no.) | 86,703 | 236,463 | 36.7% |
| Days Fished (no.) | 266,994 | 1,054,200 | 25.3% |
| Gross Regional Product, 2009/10 (\$m) | 386 | 80,356 | 0.5% |
| Employment, 2009/10 (fte) | 4,340 | 774,953 | 0.6% |
| Tourism, 2009/10 (\$m) | 62 | 4,524 | 1.4% |
| Other Regional Exports, 2009/10 (\$m) | 247 | 26,757 | 0.9% |
| Regional Imports, 2009/10 (\$m) | 434 | 40,573 | 1.1% |

Demographic indicators

- The estimated resident population of the Yorke Peninsula region increased by 2 per cent (approximately 280 persons) between 2000/01 and 2010/11 and was almost 11,800 persons in 2010/11. Over the same period SA experienced population growth of almost 10 per cent (Chart 1).
- A marginal increase in population together with a small fall in the birth rate (ABS 2011a) and slight increase in the death rate (ABS 2011b) implies limited inward migration to the region over the period.
- Compared with the age distribution of the state as a whole, the Yorke Peninsula region has a lower concentration of younger people (aged 0 to 14 years), a lower share of persons aged 15 to 64 years and a significantly higher share of people aged 65 and over (Table 2).



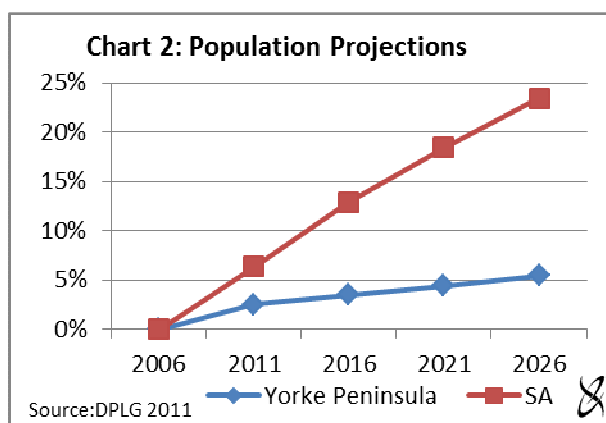
Appendix Table 1-2 Age distribution of the population for the Yorke Peninsula region and SA, 2000/01 to 2009/10

| Age | Year | | | | | | | | | |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 |
| Yorke Peninsula | | | | | | | | | | |
| 0 to 14 | 19% | 18% | 18% | 17% | 18% | 17% | 17% | 16% | 16% | 16% |
| 15 to 64 | 59% | 59% | 59% | 59% | 59% | 59% | 59% | 59% | 58% | 58% |
| 65 or older | 22% | 22% | 23% | 23% | 23% | 24% | 25% | 25% | 26% | 27% |
| Total | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |
| South Australia | | | | | | | | | | |
| 0 to 14 | 19% | 19% | 19% | 19% | 18% | 18% | 18% | 18% | 18% | 18% |
| 15 to 64 | 66% | 66% | 66% | 66% | 66% | 67% | 67% | 67% | 67% | 67% |
| 65 or older | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 16% |
| Total | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

Source: ABS 2010a and ABS 2011c

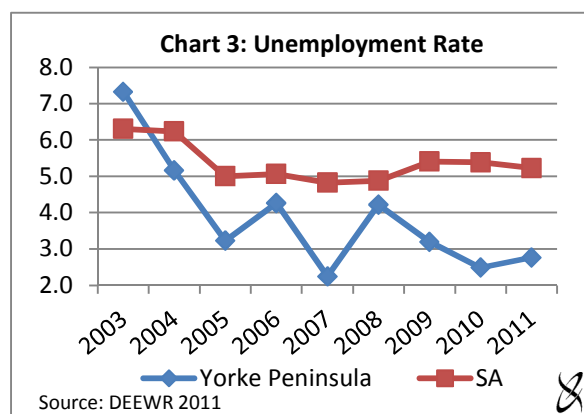
- The total dependency rate for the Yorke Peninsula region was 73 per cent in 2009/10. This implies that for any dependent person (persons aged 0 to 14 and over 65) there was only 1 persons providing support. At the state level the dependency rate was 50 per cent in 2009/10 (ABS 2010a and ABS 2011c).

- According to the Department of Planning and Local Government (DPLG) population projections¹¹, the total population in the Yorke Peninsula region is likely to increase by almost 6 per cent by 2026, whereas the SA population is expected to increase by around 23 per cent (Chart 2).
- Population projections for the Yorke Peninsula region indicate there will be an increase in the population for persons aged 0 to 14 years and a decrease in the working age population (15 to 64 years). The population projections for persons 65 or older indicate that a significant increase of around 26 per cent in this age group is expected over the 20 years to 2026 (DPLG 2011).



Labour force indicators

- In the June quarter of 2011, the labour force in the Yorke Peninsula region was almost 5,100 (by place of residence), an increase of 6 per cent from the March quarter of 2003. By comparison, the labour force for SA increased by 14 per cent over the same period (DEEWR 2011).
- The number of unemployed persons in the Yorke Peninsula region was approximately 350 in March 2003 and 140 in June 2011, a decline of approximately 60 per cent over the period. By comparison, the number of unemployed persons in SA decreased by approximately 11 per cent over the same period (DEEWR 2011).
- The unemployment rate in the Yorke Peninsula region was 2.8 per cent in the June quarter of 2011. The unemployment rate for SA for the same quarter was higher at 5.2 per cent (Chart 3). In the Yorke Peninsula region the unemployment rate is less than half of that in 2003 (June quarters) (Chart 3).
- The labour force participation rate for the Yorke Peninsula region was consistently lower than that for the whole of SA over the years 2002/03 to 2009/10, reflecting the higher number of older people in the region. In 2009/10 the labour force participation rate in the Yorke Peninsula region was around 47 per cent compared to 63 per cent for SA as a whole (DEEWR 2011, ABS 2010a and ABS 2011c).



¹¹ Population projections are not forecasts, they are based on ABS 2006 *Census of Population and Housing* resident population estimates and trends in mortality, fertility and overseas and interstate migration for South Australia. A range of estimates are published, based on the assumed level of migration. The 'medium level of migration' series has been utilised in this analysis. The method used to compile the projections was not influenced by local factors such as land availability or zoning, that is, it was assumed that these factors would not be limiting on population growth.

Business Count

- The total number of businesses operating at the end of June 2009 in the Yorke Peninsula region was 1,193, 0.8 per cent of the total businesses operating in SA (almost 142,000) (ABS 2011d).
- Of the 1,193 businesses operating in the Yorke Peninsula region, approximately 43 per cent were classified in the agriculture, forestry and fishing sector, 12 per cent were in the construction sector and 10 per cent were in the retail trade sector (ABS 2011d).
- Almost 60 per cent of the businesses operating in the Yorke Peninsula region did not employ anyone and over one quarter (26 per cent) employed between 1 and 4 people (ABS 2011d).

Education and training

- The total number of residents in the Yorke Peninsula region with a non-school qualification increased over the 5 years to 2006. In 2006, approximately 40 per cent of all persons aged 15 or over held some form of non-school qualification, compared with 33 per cent in 2001 (ABS 2007 and 2010a).
- The level of qualification was generally lower for the Yorke Peninsula region than for SA, with the proportion of persons with a bachelor degree or higher being significantly lower (ABS 2007 and 2010a).

Appendix Table 1-3 Highest level of qualifications for persons aged 15 and over in the Yorke Peninsula region and SA, 2001 and 2006^a

| Qualification | Yorke Peninsula | | | |
|--|-----------------|------|---------|------|
| | 2001 | | 2006 | |
| Postgraduate Degree | 13 | 0% | 42 | 1% |
| Graduate Diploma & Graduate Certificate | 49 | 2% | 63 | 2% |
| Bachelor Degree | 337 | 12% | 427 | 12% |
| Advanced Diploma & Diploma | 305 | 11% | 406 | 11% |
| Certificate | 1,322 | 46% | 1,637 | 44% |
| Level of education not described or stated | 868 | 30% | 1,129 | 30% |
| Total | 2,894 | 100% | 3,704 | 100% |
| | South Australia | | | |
| | 2001 | | 2006 | |
| Postgraduate Degree | 15,203 | 3% | 22,897 | 4% |
| Graduate Diploma & Graduate Certificate | 14,361 | 3% | 16,098 | 3% |
| Bachelor Degree | 95,812 | 20% | 120,979 | 20% |
| Advanced Diploma & Diploma | 63,469 | 13% | 79,698 | 13% |
| Certificate | 185,129 | 38% | 212,581 | 36% |
| Level of education not described or stated | 115,200 | 24% | 143,126 | 24% |
| Total | 489,174 | 100% | 595,379 | 100% |

^a 2011 Census data on qualifications not available until the second release in October 2012.

Source: 2006 Census of Population and Housing (ABS 2007).

- The total number of students enrolled in primary school in the Yorke Peninsula region decreased by 24 per cent between 2001 and 2011. This decline was comprised of an 28 per cent fall in enrolments in government schools and a 4 per cent decrease in enrolments at non-government schools (Table 4).
- The total number of Yorke Peninsula region students enrolled in secondary school decreased by 14 per cent between 2001 and 2011. The decrease was comprised of a 27 per cent decrease in government school enrolments and a large increase in non-government school enrolments (Table 4).
- Between 2001 and 2011 the total number of Yorke Peninsula regions residents enrolled in a higher education institute increased by 7 per cent. This is significantly lower than that for SA as a whole (38 per cent increase) (ABS 2012a).

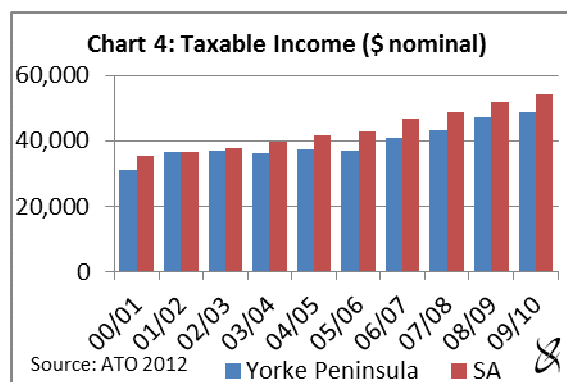
Appendix Table 1-4 School enrolments in the Yorke Peninsula region and SA, 2001, 2006 and 2011

| | Census Year | | |
|--------------------------|-------------|---------|---------|
| | 2001 | 2006 | 2011 |
| Yorke Peninsula | | | |
| Pre-school | 141 | 103 | 116 |
| Primary | | | |
| - Government | 942 | 808 | 676 |
| - Non-Government | 191 | 228 | 184 |
| Total Primary Student | 1,133 | 1,036 | 860 |
| Secondary Students | | | |
| - Government | 612 | 487 | 444 |
| - Non-Government | 9 | 76 | 87 |
| Total Secondary Students | 621 | 563 | 531 |
| South Australia | | | |
| Pre-school | 18,246 | 18,533 | 20,537 |
| Primary | | | |
| - Government | 103,975 | 93,220 | 87,542 |
| - Non-Government | 43,150 | 45,796 | 48,634 |
| Total Primary Student | 147,125 | 139,016 | 136,176 |
| Secondary Students | | | |
| - Government | 57,770 | 51,752 | 51,901 |
| - Non-Government | 31,725 | 35,172 | 38,742 |
| Total Secondary Students | 89,495 | 86,924 | 90,643 |

Source: 2011 Census of Population and Housing (ABS 2012a)

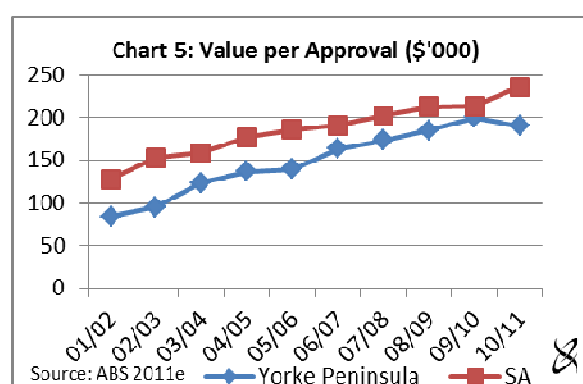
Household income

- The mean individual taxable income in the Yorke Peninsula region fluctuated over the period but was consistently lower than the state average between 2003/04 and 2009/10 (Chart 4).
- Over the period 2000/01 to 2009/10, the mean taxable income (in nominal terms) increased by 57 per cent in the Yorke Peninsula region and 54 per cent in SA as a whole (Chart 4).
- In 2009/10 mean taxable income was almost \$48,900 in the Yorke Peninsula region and around \$54,350 in SA (Chart 4).



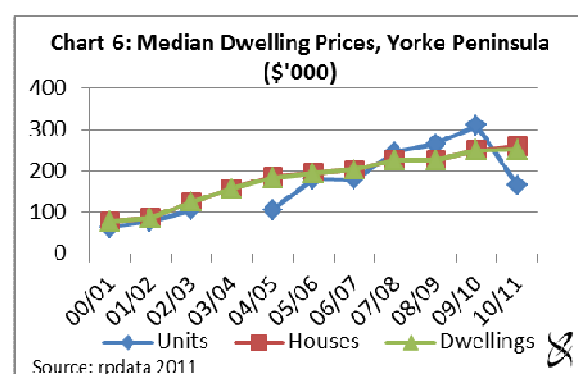
Building approvals

- The number of building approvals for the Yorke Peninsula region increased by 38 per cent over the period 2001/02 to 2010/11. However, the total value of approvals increased by significantly more than that, from \$11 million in 2001/02 to \$33 million in 2010/11, a rise of 210 per cent (ABS 2011e).
- For SA the total number of approvals was 3 per cent greater in 2010/11 than in 2001/02, while the total value was 90 per cent higher (ABS 2011e).
- The average value per approval in the Yorke Peninsula region increased by 125 per cent, from \$85,000 in 2001/02 to \$190,000 in 2010/11 (Chart 5).
- For SA, the value per approval increased from \$128,000 in 2001/02 to \$236,000 in 2010/11, an increase of 85 per cent (Chart 5).



Property Values

- Between 2000/01 and 2010/11 the unit sales prices in the Yorke Peninsula region increased by 162 per cent, from \$63,000 in 2000/01 to 165,000 in 2010/11 (Chart 6). The median unit price in SA as a whole increased by 215 per cent over the 10 year period, from almost \$102,000 to \$320,000 (rpdata 2011).
- The median house price in the Yorke Peninsula region increased by 237 per cent between 2000/01 and 2010/11, from almost \$77,300 to \$260,000 (Chart 6). In comparison, house prices in SA as a whole increased at a lower rate, from \$126,000 to \$370,000 over the same period, a 194 per cent increase (rpdata 2011).



- Overall, median dwelling (units and houses) prices increased by 227 per cent in the Yorke Peninsula region (\$251,000 in 2010/11) and 197 per cent in SA as a whole (\$357,500 in 2010/11) over the period 2000/01 to 2010/11 (rpdata 2011).

Commercial Fishing

- The average annual catch of abalone in the Yorke Peninsula region over the past 10 years, 2000/01 to 2009/10, was almost 124 tonnes. The value of this average annual catch was around \$5.0 million (SARDI by special request).
- In the Yorke Peninsula region over the past 10 years, 2000/01 to 2009/10, the average annual catch of prawns was almost 1,683 tonnes with a beach value of around \$28.8 million (SARDI).
- Annual catch of rock lobster in the Yorke Peninsula region averaged around 45 tonnes with a beach value of approximately \$1.5 million over the period 2000/01 to 2009/10 (SARDI).
- Annual average catch of Marine Scalefish species including miscellaneous species in the Yorke Peninsula region over the period 2000/01 to 2009/10 was approximately 750 tonnes with a beach value of around \$4.5 million (SARDI).
- Blue crabs were caught in this region over the period 2000/01 to 2009/10 but due to the limited number of licence holders catch and value of catch are confidential.
- In the Yorke Peninsula region over the past 10 years, 2000/01 to 2009/10, the average annual catch of sardines was approximately 1,250 tonnes with a beach value of almost \$800,000 (SARDI).
- Between 2007/08 and 2009/10 the charter boat operators in the Yorke Peninsula region caught on average approximately 40,000 fish per annum (SARDI). This compares to an annual average catch for SA of 146,000 fish over the same period (PIRSA 2010).

Recreational Fishing

- Between 2000/01 and 2007/08 the total number of SA resident recreational fishers (those aged 5 and older) in the Yorke Peninsula region (regions 11 to 16 in the report South Australian Recreational Fishing Survey 2007/08 (Jones 2009)) decreased by 17 per cent, from almost 104,000 in 2000/01 to 87,000 fishers in 2007/08.
- Similarly, at the state level the number of SA resident recreational fishers decreased from an estimated 317,200 in 2000/01 to around 236,500 fishers in 2007/08 (a 25 per cent decrease) (Jones 2009).
- A similar pattern occurred in the total number of days fished by SA resident recreational fishers. In the Yorke Peninsula region the number of days fished by SA resident recreational fishers decreased from around 333,000 days in 2000/01 to approximately 267,000 days in 2007/08 (a 20 per cent decline) (Jones 2009).
- For SA as a whole, the total number of days fished by SA resident recreational fishers almost halved over the seven years, from 1.83 million days in 2000/01 to 1.05 million in 2007/08 (Jones 2009).

Economic Contribution of Tourism to the Region

In aggregate, it was estimated that expenditure by tourists in the Yorke Peninsula region in 2009/10 (almost \$62m (TRA 2011 and EconSearch analysis)) generated the following level of regional economic and demographic activity.

- Approximately \$26 million in GRP which represents 6.8 per cent of the regional total (\$386 million).
- Approximately 540 full-time and part-time jobs which represents 11.9 per cent of the regional total (4,500 total jobs).
- Approximately 460 fte jobs which represents 10.6 per cent of the regional total (4,300 fte).

Regional Economic Structure

- At the time of the 2006 population census it was estimated that approximately 85 per cent of the jobs in the region were held by local residents and the balance were held predominantly by residents of adjacent regions (i.e. travelled to work from the surrounding SLAs). Approximately 92 per cent of employed residents were employed locally, with the balance travelling to other areas in SA for work¹².
- It was estimated that there were approximately 4,500 jobs (4,300 fte jobs) in the Yorke Peninsula region in 2009/10 (by place of remuneration) (Table 5).
- In 2009/10, the top four contributors to total jobs in the region were the agriculture, forestry and fishing (25 per cent), retail trade (15 per cent each), health, community services (13 per cent) and education (9 per cent) sectors (Table 5).
- The Yorke Peninsula gross regional product (GRP) was estimated to be \$386 million in 2009/10 (Table 6). This compares with gross state product (GSP) in the same year of \$80.36 billion (ABS 2010b).
- The GRP of the Yorke Peninsula region comprised approximately 0.5 per cent of the SA GSP.
- In 2009/10, the top contributors to GRP were the agriculture, forestry and fishing (31 per cent) and ownership of dwellings (12 per cent) sectors (Table 6).
- Expenditure by households accounted for over one third of the total value of goods and services imported into the region in 2009/10. Among of the intermediate sectors, the top importers in the region in 2009/10 were the agriculture, forestry and fishing (14 per cent) and building and construction (8 per cent) sectors (Table 7).
- Expenditure by tourists (\$62m) contributed approximately 20 per cent of the total value of exports from the region in 2009/10 (Table 7).
- The top contributors to the value of 'other exports' from the region in 2009/10 were the agriculture, forestry and fishing (75 per cent) and manufacturing (13 per cent) sectors (Table 7).

¹² Based on detailed 'journey to work' employment data obtained from the ABS *2006 Census of Population and Housing* using the *TableBuilder* database.

Appendix Table 1-5 Employment, household income and household expenditure, Yorke Peninsula region, 2009/10 ^a

| SECTOR | Total Employment | | FTE Employment | | Household Income | | Household Expenditure | |
|-------------------------------------|------------------|--------|----------------|--------|------------------|--------|-----------------------|--------|
| | (jobs) | (%) | (fte) | (%) | (\$m) | (%) | (\$m) | (%) |
| Agriculture, forestry and fishing | 1,155 | 25.4% | 1,305 | 30.1% | 46 | 25.6% | 1 | 0.2% |
| Mining | 27 | 0.6% | 31 | 0.7% | 2 | 0.9% | 0 | 0.0% |
| Manufacturing | 230 | 5.1% | 231 | 5.3% | 8 | 4.2% | 4 | 1.3% |
| Electricity, gas and water | 37 | 0.8% | 37 | 0.9% | 2 | 1.1% | 2 | 0.7% |
| Building and construction | 261 | 5.8% | 257 | 5.9% | 2 | 1.2% | 6 | 1.8% |
| Wholesale trade | 148 | 3.3% | 161 | 3.7% | 0 | 0.0% | 0 | 0.0% |
| Retail trade | 667 | 14.7% | 578 | 13.3% | 1 | 0.5% | 1 | 0.2% |
| Accommodation, cafes & restaurants | 374 | 8.2% | 288 | 6.6% | 7 | 3.7% | 0 | 0.0% |
| Transport and storage | 160 | 3.5% | 153 | 3.5% | 40 | 22.3% | 47 | 14.8% |
| Communication services | 26 | 0.6% | 32 | 0.7% | 5 | 2.7% | 5 | 1.5% |
| Finance and insurance | 57 | 1.3% | 44 | 1.0% | 0 | 0.0% | 0 | 0.0% |
| Ownership of dwellings ^b | 0 | 0.0% | 0 | 0.0% | 1 | 0.7% | 1 | 0.2% |
| Property and business services | 130 | 2.9% | 117 | 2.7% | 15 | 8.3% | 57 | 18.1% |
| Public administration and defence | 198 | 4.4% | 182 | 4.2% | 12 | 6.4% | 1 | 0.4% |
| Education | 397 | 8.7% | 381 | 8.8% | 16 | 9.1% | 5 | 1.5% |
| Health and community services | 566 | 12.5% | 448 | 10.3% | 21 | 11.4% | 8 | 2.5% |
| Cultural and recreational services | 14 | 0.3% | 13 | 0.3% | 0 | 0.2% | 0 | 0.1% |
| Personal services | 91 | 2.0% | 83 | 1.9% | 3 | 1.8% | 3 | 1.1% |
| Total Intermediate | 4,539 | 100.0% | 4,340 | 100.0% | 181 | 100.0% | 141 | 44.5% |
| PRIMARY INPUTS | | | | | | | | |
| Household Income | - | - | - | - | - | - | 0 | 0.0% |
| GOS and GMI ^c | - | - | - | - | - | - | 0 | 0.0% |
| Taxes Less Subsidies | - | - | - | - | - | - | 28 | 8.7% |
| Imports | - | - | - | - | - | - | 148 | 46.7% |
| Primary Inputs Total | - | - | - | - | - | - | 176 | 55.5% |
| GRAND TOTAL | 4,539 | 100.0% | 4,340 | 100.0% | 181 | 100.0% | 317 | 100.0% |

^a The economic profile of the regional economy is also available in terms of a 60-sector industry classification if required.

^b The ownership of dwellings sector is a notional sector designed to impute a return to the state's housing stock. Total value of output in this sector is an estimate of rent earned on leased dwellings and imputed rent on the balance of owner-occupied dwellings.

^c Gross operating surplus and gross mixed income.

Source: ABS (2006), ABS (2008), ABS (2009), ABS (2010b,c), ABS (2011f), ABS (2012a), EconSearch (2009a,b) and EconSearch analysis.

Appendix Table 1-6 Components of gross regional product in the Yorke Peninsula region by industry, 2009/10 ^a

| SECTOR | Household Income | | GOS and GMI ^c | | Taxes less Subsidies | | Gross Regional Product | |
|-------------------------------------|------------------|--------|--------------------------|--------|----------------------|--------|------------------------|--------|
| | (\$m) | (%) | (\$m) | (%) | (\$m) | (%) | (\$m) | (%) |
| Agriculture, forestry and fishing | 46 | 25.6% | 66 | 42.8% | 7 | 34.9% | 119 | 30.9% |
| Mining | 2 | 0.9% | 4 | 2.7% | 0 | 0.2% | 6 | 1.5% |
| Manufacturing | 10 | 5.5% | 6 | 4.0% | 1 | 3.9% | 17 | 4.4% |
| Electricity, gas and water | 3 | 1.4% | 2 | 1.4% | 0 | 1.1% | 5 | 1.3% |
| Building and construction | 14 | 7.9% | 5 | 3.3% | 1 | 4.9% | 20 | 5.3% |
| Wholesale trade | 8 | 4.4% | 3 | 1.6% | 1 | 4.1% | 11 | 2.9% |
| Retail trade | 14 | 7.6% | 4 | 2.7% | 1 | 4.8% | 19 | 4.9% |
| Accommodation, cafes & restaurants | 11 | 6.0% | 3 | 1.8% | 1 | 8.0% | 15 | 3.9% |
| Transport and storage | 6 | 3.4% | 5 | 3.5% | 1 | 4.1% | 12 | 3.2% |
| Communication services | 3 | 1.6% | 3 | 2.2% | 0 | 1.3% | 7 | 1.7% |
| Finance and insurance | 5 | 2.8% | 5 | 2.9% | 1 | 3.0% | 10 | 2.6% |
| Ownership of dwellings ^b | 0 | 0.0% | 40 | 26.0% | 4 | 19.9% | 44 | 11.5% |
| Property and business services | 7 | 4.0% | 3 | 2.1% | 1 | 2.7% | 11 | 2.8% |
| Public administration and defence | 12 | 6.4% | 2 | 1.3% | 0 | 1.5% | 14 | 3.6% |
| Education | 16 | 9.1% | 1 | 0.6% | 0 | 1.9% | 18 | 4.6% |
| Health and community services | 21 | 11.4% | 1 | 0.9% | 1 | 3.0% | 23 | 5.9% |
| Cultural and recreational services | 0 | 0.2% | 0 | 0.0% | 0 | 0.1% | 0 | 0.1% |
| Personal services | 3 | 1.8% | 0 | 0.2% | 0 | 0.6% | 4 | 1.0% |
| Total Intermediate | 181 | 100.0% | 155 | 100.0% | 19 | 100.0% | - | - |
| Net Taxes in Final Demand | - | - | - | - | - | - | 31 | 8.0% |
| Gross Regional Product | - | - | - | - | - | - | 386 | 100.0% |

^a The economic profile of the regional economy is also available in terms of a 60-sector industry classification if required.

^b The ownership of dwellings sector is a notional sector designed to impute a return to the state's housing stock. Total value of output in this sector is an estimate of rent earned on leased dwellings and imputed rent on the balance of owner-occupied dwellings.

^c Gross operating surplus and gross mixed income.

Source: ABS (2006), ABS (2008), ABS (2009), ABS (2010b,c), ABS (2011f), ABS (2012a), EconSearch (2009a,b) and EconSearch analysis.

Appendix Table 1-7 Value of imports and exports by industry, Yorke Peninsula region, 2009/10 ^a

| SECTOR | Tourism | | Other Exports | | Total Exports | | Imports | |
|-------------------------------------|---------|--------|---------------|--------|---------------|--------|---------|-------|
| | (\$m) | (%) | (\$m) | (%) | (\$m) | (%) | (\$m) | (%) |
| Agriculture, forestry and fishing | 0 | 0.0% | 185 | 74.8% | 185 | 59.9% | 59 | 13.6% |
| Mining | 0 | 0.0% | 7 | 2.6% | 7 | 2.1% | 1 | 0.3% |
| Manufacturing | 3 | 4.2% | 31 | 12.7% | 34 | 11.0% | 26 | 5.9% |
| Electricity, gas and water | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 4 | 0.8% |
| Building and construction | 0 | 0.0% | 1 | 0.5% | 1 | 0.4% | 36 | 8.4% |
| Wholesale trade | 2 | 2.7% | 0 | 0.0% | 2 | 0.5% | 10 | 2.4% |
| Retail trade | 9 | 13.8% | 0 | 0.0% | 9 | 2.8% | 13 | 2.9% |
| Accommodation, cafes & restaurants | 16 | 25.4% | 0 | 0.0% | 16 | 5.1% | 15 | 3.6% |
| Transport and storage | 1 | 1.2% | 1 | 0.3% | 1 | 0.5% | 11 | 2.6% |
| Communication services | 0 | 0.0% | 4 | 1.8% | 4 | 1.4% | 5 | 1.2% |
| Finance and insurance | 0 | 0.0% | 3 | 1.1% | 3 | 0.9% | 4 | 0.8% |
| Ownership of dwellings ^b | 3 | 5.4% | 0 | 0.0% | 3 | 1.1% | 6 | 1.4% |
| Property and business services | 0 | 0.3% | 8 | 3.1% | 8 | 2.5% | 10 | 2.2% |
| Public administration and defence | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 7 | 1.5% |
| Education | 0 | 0.1% | 0 | 0.0% | 0 | 0.0% | 3 | 0.8% |
| Health and community services | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 4 | 1.0% |
| Cultural and recreational services | 0 | 0.7% | 0 | 0.0% | 0 | 0.1% | 0 | 0.1% |
| Personal services | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 1 | 0.3% |
| Total Intermediate | 33 | 53.7% | 239 | 96.9% | 272 | 88.3% | 216 | 49.8% |
| PRIMARY INPUTS | | | | | | | | |
| Household Income | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | - | - |
| GOS and GMI ^c | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | - | - |
| Taxes Less Subsidies | 5 | 8.7% | -2 | -0.8% | 3 | 1.1% | - | - |
| Imports | 23 | 37.6% | 10 | 3.9% | 33 | 10.6% | - | - |
| Primary Inputs Total | 29 | 46.3% | 8 | 3.1% | 36 | 11.7% | - | - |
| FINAL DEMAND | | | | | | | | |
| Household Expenditure | - | - | - | - | - | - | 148 | 34.1% |
| Government Expenditure | - | - | - | - | - | - | 8 | 1.7% |
| Gross Fixed Capital | - | - | - | - | - | - | 29 | 6.8% |
| Change in Inventories | - | - | - | - | - | - | 0 | 0.0% |
| Tourism | - | - | - | - | - | - | 23 | 5.3% |
| Other Exports | - | - | - | - | - | - | 10 | 2.2% |
| Final Demand Total | - | - | - | - | - | - | 218 | 50.2% |
| GRAND TOTAL | 62 | 100.0% | 247 | 100.0% | 308 | 100.0% | 434 | 100% |

^a The economic profile of the regional economy is also available in terms of a 60-sector industry classification if required.

^b The ownership of dwellings sector is a notional sector designed to impute a return to the state's housing stock. Total value of output in this sector is an estimate of rent earned on leased dwellings and imputed rent on the balance of owner-occupied dwellings.

^c Gross operating surplus and gross mixed income.

Source: ABS (2006), ABS (2008), ABS (2009), ABS (2010b,c), ABS (2011f), ABS (2012a), EconSearch (2009a,b) and EconSearch analysis.

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Appendix 2 Activities and Uses Tables

The following tables summarise how activities and uses are expected to be managed once marine park management plans are adopted. The prohibitions and restrictions described in the tables (grey shaded boxes) will be represented in the *Marine Park (Zoning) Variation Regulations 2012*.

Section 4 of the *Marine Parks Act 2007* establishes four types of marine park zones. These are General Managed Use, Habitat Protection, Sanctuary and Restricted Access Zones.

Section 5 of the *Marine Parks Act 2007* provides for Special Purpose Areas. These are areas within a marine park, defined by management plans, in which specified activities will be allowed that would otherwise be prohibited or restricted by zoning.

No additional permits under the *Marine Parks Act 2007* will be required if the activity is already permitted or licensed under another Act.

Exemptions

- The Minister responsible for marine parks may provide a permit for any activity to take place that would not ordinarily be allowed in a specific zone in accordance with section 19 of the *Marine Parks Act 2007*.
- The Regulations also provide an exemption for any person acting in the course of an emergency.
- The Regulations will not apply to a person exercising official powers or functions under a State or Commonwealth Act or an Aboriginal person acting in accordance with an ILUA or Aboriginal tradition..

Existing activities and uses

When management plans are developed, existing and reasonably foreseeable activities and uses will be accommodated, (as outlined by the policy commitments endorsed by Government) by appropriate zoning, the application of Special Purpose Areas or the provision of permits. Apart from fishing activities, any permits, licences or leases that are current at the time of the adoption of management plans, will not be affected by these restrictions.

KEY

| | |
|------|---|
| GMUZ | General Managed Use Zone - being a zone primarily established so that an area may be managed to provide protection for habitats and biodiversity within a marine park, while allowing ecologically sustainable development and use |
| HPZ | Habitat Protection Zone - being a zone primarily established so that an area may be managed to provide protection for habitats and biodiversity within a marine park, while allowing activities and uses that do not harm habitats or the functioning of ecosystems |
| SZ | Sanctuary Zone - being a zone primarily established so that an area may be managed to provide protection and conservation for habitats and biodiversity within a marine park, especially by prohibiting the removal or harm of plants, animals or marine products |
| RAZ | Restricted Access Zone - being a zone primarily established so that an area may be managed by limiting access to the area |

KEY

| | |
|--------|--|
| | Activity is deemed to be consistent with the definition of the zone (i.e. no change to current activity/use). |
| limit | Activity is deemed to be consistent with the definition of the zone when conducted in accordance with stated limits under the Regulations. |
| permit | Activity is deemed to be consistent with the definition of the zone when conducted in accordance with a permit under the Regulations. |
| | Activity is deemed to be inconsistent with the definition of the zone and will not be allowed. However, the Minister for Sustainability, Environment and Conservation may grant a permit for an activity that would otherwise be prohibited or restricted in a zone on a case by case basis. |

RECREATION, EDUCATION AND OTHER

| | GMUZ | HPZ | SZ | RAZ | Limits / Permits / Exceptions |
|---|------|-----|--------|--------|---|
| Operating aircraft | | | | limit | Limit: Aircraft cannot fly within 300m of the ground or sea level, and helicopters not within 500m of the ground or sea level. |
| Diving e.g. scuba/snorkel | | | | | |
| Pedestrian access | | | | | |
| Recreational boating/yachting | | | | | |
| Surfing/swimming | | | | | |
| Domestic animals | | | limit | | Limit: Dogs on leads (up to 2m long); or animals confined to vessels/vehicles; or animals under effective control and behaving in accordance with relevant local Council by-laws. |
| Research | | | permit | permit | Permit ³ : A permit is not required for research authorised under another Act. |
| Commercial photography / film making | | | permit | | Permit ³ : A permit is not required for commercial photography/film making authorised under another Act. |
| Competitions / organised events (non-fishing) | | | permit | | Permit ³ : A permit is not required for non-fishing competitions/organised events authorised under another Act. |
| Tourism operations | | | permit | | Permit ³ : A permit is not required for tourism operations authorised under another Act. |

| RECREATION, EDUCATION AND OTHER | | | | | |
|--|------|-------|-------|-----|---|
| | GMUZ | HPZ | SZ | RAZ | Limits / Permits / Exceptions |
| Animal feeding/baiting/berleying ¹ | | | | | |
| Motorised water sports ² | | | | | |
| Lighting and supervision of fires | | limit | limit | | Limit: Lighting and supervision of fires is confined to designated areas. |
| Camping | | limit | limit | | Limit: Camping is confined to designated areas. |
| Collection of naturally occurring materials for burning in fires | | | | | |

Notes:

¹ Feeding/baiting/berleying animals is not recommended in marine parks, except as required for fishing, aquaculture, research or tourism purposes.

² A person may transit through a sanctuary zone in a motorised vessel, but gear such as water skis or a wake board must be stowed.

³ Standard permits (and conditions) may be issued for activities that are deemed to be low impact. All other activities will be subject to case-by-case assessments and non-standard permits (and conditions) may be issued. DEWNR will develop a permit policy to provide clear guidance to users about activities that require permits.

KEY

| | |
|--------|--|
| | Activity is deemed to be consistent with the definition of the zone (i.e. no change to current activity/use). |
| limit | Activity is deemed to be consistent with the definition of the zone when conducted in accordance with stated limits under the Regulations. |
| permit | Activity is deemed to be consistent with the definition of the zone when conducted in accordance with a permit under the Regulations. |
| | Activity is deemed to be inconsistent with the definition of the zone and will not be allowed. However, the Minister for Sustainability, Environment and Conservation may grant a permit for an activity that would otherwise be prohibited or restricted in a zone on a case by case basis. |

FISHING AND COLLECTING (commercial, recreational and traditional)

Fishing activities are regulated under provisions of the *Fisheries Management Act 2007*.

| | GMUZ | HPZ | SZ | RAZ | Limits / Permits / Exceptions |
|---|------|-----|----|-----|-------------------------------|
| Bait digging/pumping | | | | | |
| Berleying for fishing | | | | | |
| Cockling (pipi and mud cockles) | | | | | |
| Collecting fish by hand (abalone, urchin, scallop, etc) | | | | | |
| Line fishing (including long lining) | | | | | |
| Netting (e.g. dab, haul, swing, gill, beach or power) | | | | | |
| Pot and trap fishing (including drop/hoop nets) | | | | | |
| Purse seine netting (including sardine) | | | | | |
| Raking (crab) | | | | | |
| Spear fishing | | | | | |
| Competitions / organised events (fishing) | | | | | |

FISHING AND COLLECTING (commercial, recreational and traditional)

Fishing activities are regulated under provisions of the *Fisheries Management Act 2007*.

| | GMUZ | HPZ | SZ | RAZ | Limits / Permits / Exceptions |
|---|------|-----|----|-----|---|
| Traditional fishing and collecting (Aboriginal) | | | | | Limit: Activity is limited to persons who are exercising their rights in accordance with an ILUA or Aboriginal tradition. |
| Collecting seagrass/algae (including beach cast) | | | | | |
| Collecting sessile assemblages, stromatolites, fossils and archaeological remains | | | | | |
| Trawling | | | | | |

KEY

| | |
|--------|--|
| | Activity is deemed to be consistent with the definition of the zone (i.e. no change to current activity/use). |
| limit | Activity is deemed to be consistent with the definition of the zone when conducted in accordance with stated limits under the Regulations. |
| permit | Activity is deemed to be consistent with the definition of the zone when conducted in accordance with a permit under the Regulations. |
| | Activity is deemed to be inconsistent with the definition of the zone and will not be allowed. However, the Minister for Sustainability, Environment and Conservation may grant a permit for an activity that would otherwise be prohibited or restricted in a zone on a case by case basis. |

HARBOR, NAVIGATION & TRANSPORT ACTIVITIES ¹

Harbor, navigation and transport activities are regulated under provisions of the *Harbors and Navigation Act 1993*.

| | GMUZ | HPZ | SZ | RAZ | Limits / Permits / Exceptions |
|--|------|-------|--------|-----|--|
| Navigation markers/aids | | | | | |
| General navigation and operation of vessels (other than anchoring) | | | | | |
| Anchoring of vessels – less than 80 metres (overall length) | | | | | |
| Anchoring of vessels – 80 metres and over (overall length) | | | | | Special Purpose Areas will provide for anchoring of vessels 80 metres and over in all harbors and in designated transshipment and anchoring locations and pilot boarding grounds |
| Permanent vessel moorings | | | permit | | Permit: A permit will be required, which includes assessment by DEWNR and DPTI. |
| Dredging | | limit | | | Limit: Activity is confined to harbors established under the <i>Harbors and Navigation Act 1993</i> . |
| Depositing dredged materials | | limit | | | |

Notes:

¹ Activities undertaken to support the ongoing operation of ports and harbors will be provided for in all zones. Also, given the extensive development expected to occur over the next 5-10 years in Upper Spencer Gulf, transitional arrangements will be required. For this purpose all HPZ, SZ and RAZ in Upper Spencer Gulf Marine Park will be declared Special Purpose Areas. This will provide for (a) developments comprising a development or project, or that part of a development or project, within the ambit of a declaration under section 46 of the *Development Act 1993*; and (b) activities comprising development approved under section 49 (crown development and public infrastructure) or section 49A (Electricity infrastructure development) of the *Development Act 1993*. This arrangement will be assessed at the time the first management plan is reviewed.

KEY

| | |
|--------|--|
| | Activity is deemed to be consistent with the definition of the zone (i.e. no change to current activity/use). |
| limit | Activity is deemed to be consistent with the definition of the zone when conducted in accordance with stated limits under the Regulations. |
| permit | Activity is deemed to be consistent with the definition of the zone when conducted in accordance with a permit under the Regulations. |
| | Activity is deemed to be inconsistent with the definition of the zone and will not be allowed. However, the Minister for Sustainability, Environment and Conservation may grant a permit for an activity that would otherwise be prohibited or restricted in a zone on a case by case basis. |

COASTAL DEVELOPMENTS AND INFRASTRUCTURE ¹

Coastal developments and infrastructure are regulated under provisions of the *Development Act 1993*.

| | GMUZ | HPZ | SZ | RAZ | Limits / Permits / Exceptions |
|---|------|-----|----|-----|-------------------------------|
| Infrastructure (marinas, jetties, pontoons, breakwalls) | | | | | |
| Outfall and pipelines | | | | | |
| Renewable energy infrastructure (wind, wave, tidal) | | | | | |

Notes:

¹ Coastal developments and infrastructure in HPZ will be managed under the *Development Act 1993* to achieve the definition of the zone (i.e. no harm to habitats or the functioning of ecosystems). Developments will be considered on a case by case basis to ensure that the achievement of the objects of the Act and the zone are supported appropriately. Development Plans and significant projects are informed by the Planning Strategy which now includes the objects of the *Marine Parks Act 2007* so consideration of these will inform the assessment process. In addition, as part of the assessment process, advice or direction may be required from the Coast Protection Board and/or the Environment Protection Authority and other authorities, depending on the nature of the development. These agencies also have the requirement to take into account the objects of the *Marine Parks Act 2007*.

KEY

| | |
|--------|--|
| | Activity is deemed to be consistent with the definition of the zone (i.e. no change to current activity/use). |
| limit | Activity is deemed to be consistent with the definition of the zone when conducted in accordance with stated limits under the Regulations. |
| permit | Activity is deemed to be consistent with the definition of the zone when conducted in accordance with a permit under the Regulations. |
| | Activity is deemed to be inconsistent with the definition of the zone and will not be allowed. However, the Minister for Sustainability, Environment and Conservation may grant a permit for an activity that would otherwise be prohibited or restricted in a zone on a case by case basis. |

AQUACULTURE

Aquaculture activities are regulated under provisions of the *Aquaculture Act 2001*.

| | GMUZ | HPZ | SZ | RAZ | Limits / Permits / Exceptions |
|--|------|-----|----|-----|-------------------------------|
| Farming of bivalve molluscs | | | | | |
| Farming of aquatic animals (other than prescribed wild-caught tuna) with regular feeding | | | | | |
| Farming of prescribed wild-caught tuna | | | | | |
| Farming of algae | | | | | |
| Pilot leases | | | | | |

Notes: Aquaculture in HPZ will be managed under the *Aquaculture Act 2001* to ensure that all reasonable and practicable measures are taken to achieve the definition of the zone (i.e. no harm to habitats or the functioning of ecosystems). The *Aquaculture Act 2001* operates in addition to the *Marine Parks Act 2007* and requires aquaculture policies to seek to further the objects of the *Marine Parks Act 2007* where they apply within a marine park.

KEY

| | |
|--------|--|
| | Activity is deemed to be consistent with the definition of the zone (i.e. no change to current activity/use). |
| limit | Activity is deemed to be consistent with the definition of the zone when conducted in accordance with stated limits under the Regulations. |
| permit | Activity is deemed to be consistent with the definition of the zone when conducted in accordance with a permit under the Regulations. |
| | Activity is deemed to be inconsistent with the definition of the zone and will not be allowed. However, the Minister for Sustainability, Environment and Conservation may grant a permit for an activity that would otherwise be prohibited or restricted in a zone on a case by case basis. |

WASTEWATER DISPOSAL/ DISCHARGES

Discharges are generally regulated under provisions of the *Environment Protection Act 1993* and the *Environment Protection (Water Quality) Policy 2003*.

| | GMUZ | HPZ | SZ | RAZ | Limits / Permits / Exceptions |
|---|------|-----|----|-----|---|
| Discharge ¹ | | | | | Discharges regulated under sections 3(2) or 8(7) of Schedule 1 of the <i>Environment Protection Act 1993</i> are prohibited |
| Extraction and disposal for a desalination plant ¹ | | | | | |
| Vessel discharge of wastewater ² | | | | | Specifically regulated by Clause 36 of the <i>Environment Protection (Water Quality) Policy 2003</i> |

Notes:

¹ Discharges in HPZ will be managed under the *Environment Protection (Water Quality) Policy 2003* to ensure that all reasonable and practicable measures are taken to achieve the definition of the zone (i.e. no harm to habitats or the functioning of ecosystems).

² Wastewater includes black water, concentrated black water and grey water as defined by the *Environment Protection (Water Quality) Policy 2003*.

| KEY | |
|-------|---|
| | Activity is deemed to be consistent with the definition of the zone (i.e. no change to current activity/use). |
| limit | Activity is consistent with the definition of the zone when conducted in accordance with stated limits. |
| * | Activity is deemed to be inconsistent with the definition of the zone and will not be considered until such time as it can be demonstrated otherwise. |
| | Activity is deemed to be inconsistent with the definition of the zone and will not be permitted. |

RESOURCE EXPLORATION AND PRODUCTION

These activities are regulated under provisions of the *Mining Act 1971*, the *Petroleum and Geothermal Act 2000*, the *Offshore Minerals Act 2000* and the *Petroleum (Submerged Lands) Act 1982* to achieve the objectives of the marine park zones described under the *Marine Parks Act 2007*.

| | GMUZ | HPZ | SZ | RAZ | Limits / Permits / Exceptions |
|--|--------------------------|--------------------------|--------------------------|--------------------------|---|
| Exploration (passive) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| – satellite/high level airborne | | | | | |
| – airborne surveys | | | | * | *Will depend on the nature and timing of the proposed survey in relation to key environmental considerations (e.g. breeding and migration cycles of protected species). |
| – geophysical/geochemical surveys | | | limit | | Limit: Will depend on the nature and timing of the proposed survey in relation to key environmental considerations (e.g. breeding and migration cycles of protected species). |
| Exploration (active) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| – geological sampling | | | * | | * Will depend on nature of proposed surveying |
| – geophysical/geochemical surveys | | | * | | * Will depend on nature of proposed surveying |
| – drilling (drill rig within zone) | | * | | | * Will depend on nature of proposal and its location |
| – deviated drilling (drill rig outside zone) | | | limit | * | Limit: Activity will need to be conducted in accordance with approved conditions * Deviated drilling from outside zone may be considered if consistent with the zone |
| – trenching/bulk sampling | * | * | | | * Will depend on nature of proposal and its location |

RESOURCE EXPLORATION AND PRODUCTION

These activities are regulated under provisions of the *Mining Act 1971*, the *Petroleum and Geothermal Act 2000*, the *Offshore Minerals Act 2000* and the *Petroleum (Submerged Lands) Act 1982* to achieve the objectives of the marine park zones described under the *Marine Parks Act 2007*.

| | GMUZ | HPZ | SZ | RAZ | Limits / Permits / Exceptions |
|--|--------------------------|--------------------------|--------------------------|--------------------------|---|
| Gas storage | | | | | |
| – carbon sequestration (surface facilities within zone) | * | x | x | | * Will depend on nature of proposal and its location |
| – carbon sequestration (surface facilities outside zone) | | | * | * | * Deviated drilling from outside zone may be considered if consistent with the zone |
| Production/ Extraction | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| – seawater (for extraction of resources such as salt) | | | | | |
| – through drillhole (surface facilities within zone) | * | | | | * Will depend on nature of proposal and its location |
| – through drillhole (surface facilities outside zone) | | | limit | * | Limit: Activity will need to be conducted in accordance with approved conditions * Extraction from deviated drillhole from outside zone may be considered if consistent with the zone |
| – underground mining with surface facility | * | | | | * Will depend on nature of proposal and its location |
| – underground mining with no surface facility | | limit | * | * | Limit: Activity will need to be conducted in accordance with approved conditions. May be considered if activity does not compromise habitats or the functioning of ecosystems. * Will depend on nature of proposal and its location. |
| – pipeline on/above ground/seabed/trenched | | * | | | * Will depend on nature of proposal and its location |
| – pipeline underground | | | * | * | * Will depend on nature of proposal and its location |
| – seabed dredging | * | | | | * Will depend on nature of proposal and its location |
| – pit-type extraction | * | | | | * Will depend on nature of proposal and its location |

RESOURCE EXPLORATION AND PRODUCTION

These activities are regulated under provisions of the *Mining Act 1971*, the *Petroleum and Geothermal Act 2000*, the *Offshore Minerals Act 2000* and the *Petroleum (Submerged Lands) Act 1982* to achieve the objectives of the marine park zones described under the *Marine Parks Act 2007*.

| | GMUZ | HPZ | SZ | RAZ | Limits / Permits / Exceptions |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--|
| Processing | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| – mineral facility (mobile e.g. vessel based) | * | | | | * Will depend on nature of proposal and its location |
| – mineral facility (permanent) | | | | | |
| – petroleum/geothermal facility | | | | | |

Notes: All licence applications under the *Mining Act 1971* and the *Petroleum and Geothermal Act 2000* within and adjacent to marine parks are referred by the Minister for Mineral Resources and Development to the Minister for Sustainability, Environment and Conservation for concurrence. A referral process is required for the approval of on-ground exploration, and production activities, as part of the relevant mining regulation protocols between DMITRE and DEWNR. This provides for case-by-case assessment of each proposed activity. This includes activities deemed consistent with with the definition of the zone. The table indicates which activities are likely to be restricted when leases, licences and permits are considered by the Ministers. Activity proposals are considered by assessing risk. Activities likely to compromise the values of any zone would not be approved. A similar process is expected to be undertaken for activities authorised under the *Offshore Minerals Act 2000* and the *Petroleum (Submerged Lands) Act 1982*.

This table may be revised over time as new technologies and techniques are developed, to ensure that new technologies are appropriately considered, consistent with marine park zone objectives.

The following types of special purpose area may be identified in accordance with section 13(1)(c) of the *Marine Parks Act 2007*. Notwithstanding the zoning of the area, the following activities will be permitted in the special purpose areas.

Special Purpose Areas (significant economic development)

Activities comprising a development or project, or that part of a development or project, within the ambit of a declaration under section 46 of the *Development Act 1993*; and

Activities comprising development approved under section 49 (Crown development and public infrastructure) or section 49A (Electricity infrastructure development) of the *Development Act 1993*.

Special Purpose Areas (harbor activities)

Activities undertaken by or on behalf of the Minister responsible for the administration of the *Harbors and Navigation Act 1993*, or a port operator, for the purposes of maintaining or improving a harbor or port. (Harbor, port and port operator have the same meanings as in the *Harbors and Navigation Act 1993*.)

Special Purpose Areas (submarine cables and pipelines)

Activities undertaken for the purposes of maintaining or improving submarine cables or pipelines comprising public infrastructure (within the meaning of section 49 of the *Development Act 1993*).

Special Purpose Areas (transhipment)

Activities comprising the establishment, maintenance or improvement of facilities for a transhipment point prescribed or to be prescribed under the *Harbors and Navigation Regulations 2009*; and

Activities comprising or connected with loading or unloading a vessel at a transhipment point prescribed under the *Harbors and Navigation Regulations 2009*.

Special Purpose Areas (anchoring)

Activities comprising anchoring a commercial vessel (within the meaning of the *Harbors and Navigation Act 1993*) in an area recommended for that purpose by way of a Notice to Mariners by the Minister responsible for the administration of the *Harbors and Navigation Act 1993*.

Special Purpose Areas (shore-based recreational line fishing)

Recreational fishing from the shore by use of a hand line or rod and line. (Hand line, recreational fishing and rod and line have the same respective meanings as in the *Fisheries Management Act 2007*.)

Special Purpose Areas (Murray Mouth dredging)

Activities associated with dredging undertaken for the purposes of maintaining or improving water flows through the mouth of the River Murray.

Special Purpose Areas (Defence Prohibited Area)

Activities undertaken by the Department of Defence in relation to the Proof and Experimental Establishment (Port Wakefield).

Special Purpose Areas (Aquaculture)

Activities authorised under the *Aquaculture Act 2001*.

Appendix 3 List of Parties Consulted

| Name | | Affiliation | Organisation |
|----------|------------|---|---|
| Natalie | Ban | Research Fellow | James Cook University |
| James | Bennett | Fishery Management Officer | Department for Primary Industries and Resources SA |
| Michelle | Besley | Fishery Manager | Department for Primary Industries and Resources SA |
| Andrew | Burnell | Principal Advisor | Department of Environment and Natural Resources |
| Jenny | Cassidy | Senior Project Officer | Department for Transport, Energy and Infrastructure |
| Dave | Cockshell | Chief Petroleum Geophysicist | Department for Primary Industries and Resources SA |
| Shaun | de Bruyn | Manager | South Australian Tourism Commission |
| Graham | Edgar | Senior Research Fellow | University of Tasmania |
| Alice | Fistr | Manager, Fisheries Policy | Department for Primary Industries and Resources SA |
| Ian | Fitzgerald | Secretary | South Australian Recreational Fishing Advisory Council |
| David | Hitchcock | Director, Environment & Infrastructure | The Local Government Association of SA |
| Peter | Hollister | Director, Marine Transport and Policy | Department for Transport, Energy and Infrastructure |
| Vera | Hughes | Team Leader, Legislation and Governance | Department of Environment and Natural Resources |
| Ian | Janzow | Member | Metropolitan Fishers Alliance |
| Sean | Kalling | General Manager Marine Operations | Tony's Tuna International |
| Carl | Kavina | | Flinders Ports Pty Ltd |
| Keld | Knudsen | Senior Policy Adviser | Australian Petroleum Production and Exploration Association |
| David | Lake | Manager | South Australian Tourism Commission |
| Peter | Lauer | Manager Aquaculture Policy, Planning and Environment Unit | Primary Industries and Regions South Australia |
| Ian | Llewellyn | Senior Project Officer | Department for Transport, Energy and Infrastructure |
| Nigel | Long | Director Corporate and Social Responsibility | South Australian Chamber of Mines and Energy |
| Neil | MacDonald | Executive Officer | Gulf St Vincent Prawn Fisherman's Association |
| Neil | MacDonald | Executive Officer | Charter Boat Owners and Operators Association |
| | Members | | Marine Park Council |
| | Members | | South Australian Regional Organisation of Councils |

| Name | | Affiliation | Organisation |
|------------|-------------------|---|---|
| | Members | The Scientific Working Group | Department of Environment and Natural Resources |
| Angus | Mitchell | Principal Policy Officer | Department of Environment and Natural Resources |
| Gary | Morgan | Chairman | Wildcatch Fisheries SA |
| Merilyn | Nobes | Policy Manager, Fisheries and Aquaculture | Department for Primary Industries and Resources SA |
| Peter | Noble | Secretary | Surveyed Charter Boat Owners and Operators Association |
| Craig | Noell | Fishery Manager | Department for Primary Industries and Resources SA |
| David | Pearce | Project Coordinator, Marine Parks Project | Department of Environment and Natural Resources |
| Justin | Phillips | Executive officer | Blue Crab Pot Fishers Association |
| Justin | Phillips | Executive officer | Gulf St Vincent Prawn Fishery |
| Justin | Phillips | Executive Officer & Industry Liaison Officer (PIFS) | South Australian Rock Lobster Advisory Council, South East Professional Fishermen's Association, Northern Zone Rock Lobster Fishing Association |
| Keith | Rowling | Fishery Manager | Department for Primary Industries and Resources SA |
| Brenton | Schahinger | Chairman | South Australian Recreational Fishing Advisory Council |
| Rob | Shaw | | Department for Primary Industries and Resources SA |
| Scoresby | Shepherd | Senior Research Fellow | South Australian Research and Development Institute |
| Peter | Short | Project Director | Department for Transport, Energy and Infrastructure |
| Emmanuelle | Sloan | Manager, Aquaculture Planning Unit | Department for Primary Industries and Resources SA |
| Sean | Sloan | Director of Fisheries and Aquaculture Policy | Primary Industries and Regions South Australia |
| Adam | Stanford | Commercial Analyst | South Australian Tourism Commission |
| Graham | Tapley | President | South Australian Sardine Industry |
| Chris | Thomas | Branch Manager | Department of Environment and Natural Resources |
| Michael | Tokley | Executive officer | Central Zone Abalone Fishery |
| Lianos | Triantafillos | Fishery Manager | Department for Primary Industries and Resources SA |
| Hank | van der Wijngaart | President | Scuba Divers Federation of SA |
| Paul | Watson | Executive Officer | South Australian Sardine Industry Association |
| Tim | Ward | Program Leader, Wild Fisheries | South Australian Research and Development Institute |

| Name | | Affiliation | Organisation |
|--------|--------|-----------------------------------|--|
| Scott | Weaver | President | Charter Boat Association of SA |
| Peter | Welch | Executive Officer | Marine Fishers Association |
| Ian | Winton | Deputy Chairman | South Australian Recreational Fishing Advisory Council |
| Alison | Wright | Project Coordinator, Marine Parks | Department of Environment and Natural Resources |
| Qifeng | Ye | Acting Chief Scientist | South Australian Research and Development Institute |

Appendix 4 MPSIAT feedback

Appendix Table 4-1 General views about the Lower Yorke Peninsula Marine Park

| | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree | Don't know |
|---|-------------------|----------|----------------------------|-------|----------------|------------|
| Fully understand scientific arguments in favour of this Marine Park | 0 | 2 | 0 | 4 | 0 | 0 |
| Establishment of this Marine Park is based on sound scientific evidence | 3 | 2 | 1 | 0 | 0 | 0 |
| DENR Preliminary Marine Park zone for this Marine Park is about right | 3 | 2 | 0 | 0 | 0 | 1 |
| MPLAG zone advice for this Marine Park is about right | 0 | 0 | 1 | 4 | 0 | 1 |
| More information is needed about this Marine Park & how it will operate | 0 | 0 | 0 | 3 | 3 | 0 |

Note: 6 of 12 members responded to the MPSIAT.

Source: Australian Workplace Innovation and Social Research Centre MPSIAT 2011

Appendix Table 4-2 Tourism, education & wellbeing impacts for Lower Yorke Peninsula Marine Park

| | Very unlikely | Unlikely | Neither likely nor unlikely | Likely | Very likely | Don't know |
|---|---------------|----------|-----------------------------|--------|-------------|------------|
| MP likely to increase tourism in our area | | | | | | |
| DENR zone | 3 | 2 | 0 | 0 | 0 | 1 |
| MPLAG zone | 2 | 2 | 0 | 0 | 1 | 1 |
| There will be more opportunity for charter boats to exploit ecotourism opportunities | | | | | | |
| DENR zone | 2 | 2 | 1 | 0 | 0 | 1 |
| MPLAG zone | 2 | 1 | 1 | 1 | 0 | 1 |
| MP will provide increased opportunities for education about marine life | | | | | | |
| DENR zone | 2 | 1 | 0 | 3 | 0 | 0 |
| MPLAG zone | 0 | 2 | 0 | 4 | 0 | 0 |
| MP will provide increased opportunities for our understanding of marine conservation issues | | | | | | |
| DENR zone | 0 | 3 | 0 | 3 | 0 | 0 |
| MPLAG zone | 0 | 2 | 0 | 4 | 0 | 0 |
| MP will create new employment opportunities for local people | | | | | | |
| DENR zone | 3 | 1 | 1 | 0 | 0 | 1 |
| MPLAG zone | 2 | 1 | 1 | 0 | 1 | 1 |
| MP will have no impact (positive or negative) on me or my family | | | | | | |
| DENR zone | 2 | 2 | 1 | 1 | 0 | 0 |
| MPLAG zone | 2 | 2 | 1 | 1 | 0 | 0 |
| MP will improve the quality of life of people in my community | | | | | | |
| DENR zone | 2 | 2 | 1 | 0 | 0 | 1 |
| MPLAG zone | 1 | 3 | 0 | 0 | 1 | 1 |
| MP will improve my personal quality of life | | | | | | |
| DENR zone | 2 | 4 | 0 | 0 | 0 | 0 |
| MPLAG zone | 2 | 3 | 0 | 0 | 1 | 0 |
| MP will negatively change our way of life* | | | | | | |
| DENR zone | 0 | 2 | 1 | 0 | 2 | 1 |
| MPLAG zone | 0 | 2 | 2 | 1 | 1 | 0 |

Note: 6 of 12 members responded to the MPSIAT. *Question is negatively scored.

Source: Australian Workplace Innovation and Social Research Centre MPSIAT 2011

Appendix Table 4-3 Culture and heritage impacts for Lower Yorke Peninsula Marine Park

| | Very unlikely | Unlikely | Neither likely nor unlikely | Likely | Very likely | Don't know |
|--|---------------|----------|-----------------------------|--------|-------------|------------|
| MP will respect the interests of Aboriginal communities | | | | | | |
| DENR zone | 1 | 0 | 1 | 4 | 0 | 0 |
| MPLAG zone | 1 | 0 | 2 | 3 | 0 | 0 |
| MP will help preserve Aboriginal culture & heritage | | | | | | |
| DENR zone | 1 | 1 | 2 | 1 | 0 | 1 |
| MPLAG zone | 1 | 1 | 1 | 1 | 1 | 1 |
| MP will help preserve local Australian culture & heritage | | | | | | |
| DENR zone | 1 | 1 | 2 | 1 | 0 | 1 |
| MPLAG zone | 1 | 1 | 1 | 1 | 1 | 1 |
| MP will help maintain our community identity as a fishing centre | | | | | | |
| DENR zone | 3 | 1 | 1 | 0 | 0 | 1 |
| MPLAG zone | 1 | 1 | 1 | 0 | 2 | 1 |

Note: 6 of 12 members responded to the MPSIAT.

Source: Australian Workplace Innovation and Social Research Centre MPSIAT 2011

Appendix Table 4-4 Recreation & fishing impacts for Lower Yorke Peninsula Marine Park

| | Very unlikely | Unlikely | Neither likely nor unlikely | Likely | Very likely | Don't know |
|--|---------------|----------|-----------------------------|--------|-------------|------------|
| MP will help to encourage recreational activities | | | | | | |
| DENR zone | 2 | 2 | 2 | 0 | 0 | 0 |
| MPLAG zone | 2 | 2 | 2 | 0 | 0 | 0 |
| MP will discourage recreational fishing* | | | | | | |
| DENR zone | 1 | 0 | 0 | 3 | 1 | 1 |
| MPLAG zone | 0 | 1 | 0 | 3 | 1 | 1 |
| MP will bring better local facilities e.g. for recreation & fishing | | | | | | |
| DENR zone | 2 | 4 | 0 | 0 | 0 | 0 |
| MPLAG zone | 2 | 3 | 0 | 0 | 1 | 0 |
| MP will bring a wider range of activities for local people to participate in | | | | | | |
| DENR zone | 3 | 1 | 1 | 0 | 0 | 1 |
| MPLAG zone | 3 | 1 | 1 | 0 | 0 | 1 |
| Any significant losses in commercial fishing would be very damaging for my family* | | | | | | |
| DENR zone | 1 | 1 | 2 | 1 | 1 | 0 |
| MPLAG zone | 0 | 1 | 4 | 0 | 1 | 0 |
| Any significant losses in commercial fishing would be very damaging for the community* | | | | | | |
| DENR zone | 0 | 0 | 0 | 3 | 3 | 0 |
| MPLAG zone | 0 | 2 | 0 | 4 | 0 | 0 |

Note: 6 of 12 members responded to the MPSIAT. *Question is negatively scored.

Source: Australian Workplace Innovation and Social Research Centre MPSIAT 2011

Appendix Table 4-5 Population & housing impacts for Lower Yorke Peninsula Marine Park

| | Very unlikely | Unlikely | Neither likely nor unlikely | Likely | Very likely | Don't know |
|--|---------------|----------|-----------------------------|--------|-------------|------------|
| MP will bring too many tourists here & change the quality of our life | | | | | | |
| DENR zone | 4 | 2 | 0 | 0 | 0 | 0 |
| MPLAG zone | 3 | 3 | 0 | 0 | 0 | 0 |
| MP will see too many locals leaving the area | | | | | | |
| DENR zone | 0 | 4 | 1 | 1 | 0 | 0 |
| MPLAG zone | 0 | 4 | 0 | 1 | 0 | 1 |
| MP will increase property prices making it more difficult for locals to buy houses | | | | | | |
| DENR zone | 3 | 2 | 0 | 0 | 0 | 1 |
| MPLAG zone | 3 | 2 | 0 | 0 | 0 | 1 |
| MP will lead to a lowering of beachfront property prices | | | | | | |
| DENR zone | 1 | 1 | 1 | 0 | 2 | 1 |
| MPLAG zone | 1 | 2 | 0 | 1 | 1 | 1 |

Note: 6 of 12 members responded to the MPSIAT.

Source: Australian Workplace Innovation and Social Research Centre MPSIAT 2011

Appendix Table 4-6 Community response impacts for Lower Yorke Peninsula Marine Park

| | Very unlikely | Unlikely | Neither likely nor unlikely | Likely | Very likely | Don't know |
|---|---------------|----------|-----------------------------|--------|-------------|------------|
| Our community will adapt well to having the MP | | | | | | |
| DENR zone | 0 | 4 | 1 | 0 | 0 | 1 |
| MPLAG zone | 0 | 3 | 1 | 1 | 0 | 1 |
| Our community is strong enough to manage changes brought by the MP | | | | | | |
| DENR zone | 1 | 0 | 2 | 3 | 0 | 0 |
| MPLAG zone | 0 | 2 | 0 | 4 | 0 | 0 |
| A number of potential business opportunities will be brought by the MP | | | | | | |
| DENR zone | 1 | 2 | 1 | 1 | 1 | 0 |
| MPLAG zone | 2 | 2 | 1 | 1 | 0 | 0 |
| Need for training programs to help people adapt to new occupations associated with the MP | | | | | | |
| DENR zone | 1 | 3 | 0 | 1 | 1 | 0 |
| MPLAG zone | 0 | 3 | 0 | 3 | 0 | 0 |
| MP will divide our community into those for & against it* | | | | | | |
| DENR zone | 0 | 2 | 0 | 4 | 0 | 0 |
| MPLAG zone | 0 | 2 | 1 | 3 | 0 | 0 |
| MP will be a source of pride to this community | | | | | | |
| DENR zone | 1 | 3 | 1 | 0 | 0 | 1 |
| MPLAG zone | 1 | 3 | 1 | 0 | 0 | 1 |
| MP will increase number of events & other activities that bring the community together | | | | | | |
| DENR zone | 2 | 2 | 0 | 0 | 1 | 1 |
| MPLAG zone | 2 | 3 | 0 | 0 | 0 | 1 |

Note: 6 of 12 members responded to the MPSIAT. *Question is negatively scored.

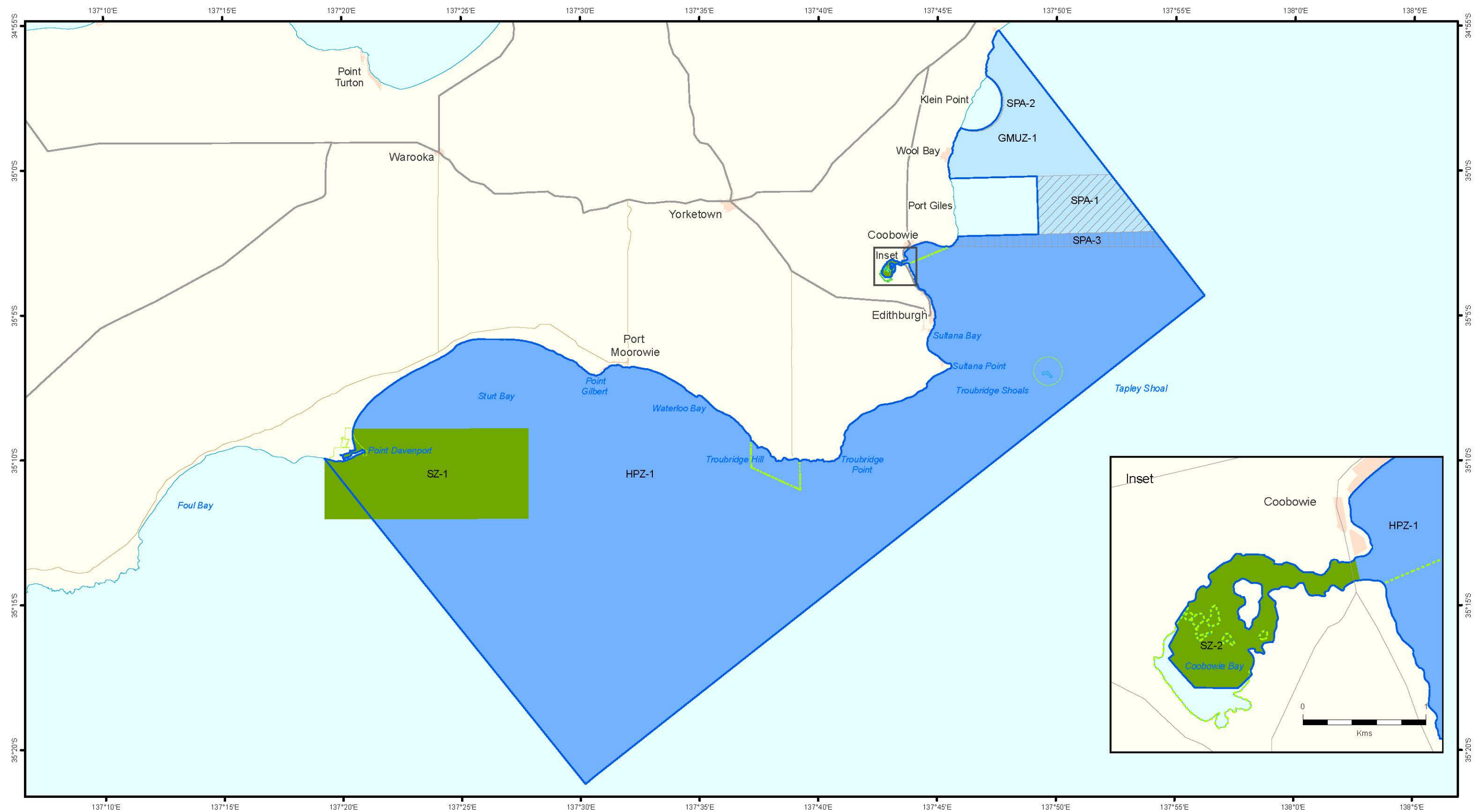
Source: Australian Workplace Innovation and Social Research Centre MPSIAT 2011

Appendix 5 Map of Marine Park Showing Draft Zoning

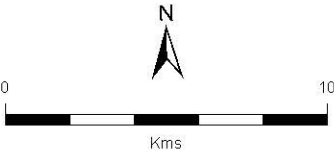
Appendix Figure 5-1 Map of Marine Park Showing Draft Zoning

See next page.

Marine Park 13 - Lower Yorke Peninsula



- | | |
|--|------------------------------------|
| Marine Park Draft Zoning | Topographic |
| Sanctuary Zone | Built Up Area |
| Habitat Protection Zone | Marine Park Boundary |
| General Managed Use Zone | Existing Reserves under other Acts |
| Special Purpose Area (Harbor Activities) | Coastline (median high water) |
| Special Purpose Area (Anchoring) | Major Road |
| | Minor Road |



THIS MAP IS INDICATIVE ONLY AND IS NOT INTENDED FOR NAVIGATIONAL PURPOSES

Produced by Marine Parks Project
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Data Source Marine Parks, NPWSA,
Topographic Data, Coastline (median high water) - DEWNR
Aquatic Reserves - PIRSA

Compiled 6 August 2012
Projection Lambert Conformal Conic
Datum Geocentric Datum of Australia, 1994

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