

Values and impact statement

2021 proposed amendments to marine parks



Department for Environment and Water

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Department for Environment and Water

GPO Box 1047, Adelaide SA 5001

Telephone National (08) 8463 6946
 International +61 8 8463 6946

Fax National (08) 8463 6999
 International +61 8 8463 6999

Website www.environment.sa.gov.au

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Contributing authors: Simon Bryars and Craig Meakin

Information, data and mapping support: Jonathan Phillips, Tim Noyce

Internal reviewers: Liz Barnett, Danny Brock

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1 Introduction

The South Australian government is committed to maintaining South Australia's network of marine parks and revising the current sanctuary (no take) zone boundaries.

In 2018, the state government commissioned an [independent review \(External link\)](#) of marine park Sanctuary Zones (SZs), taking into consideration the economic, social and environmental values held by regional communities and the commercial and recreational fishing sectors.

The review demonstrated that while the 2013 marine parks buyback program had removed displaced fishing effort at a fisheries level, there were still some important fishing areas lost to commercial fishers and concern from the industry that some SZs are having an impact on their operations.

Following consultation between the commercial fishing, recreational fishing and conservation sectors during 2019; the government proposed amendments to six marine park SZs. In addition, the government proposed to expand the outer boundaries of two marine parks to facilitate the management of three new areas; Windara shellfish reef, Glenelg metro shellfish reef, and the Port Stanvac restricted access area.

Between May and July 2020, all proposed changes underwent a six week period of public consultation ([public consultation report](#), [appendices](#)).

After considering feedback received through the consultation process, the Minister for Environment and Water adopted a set of management plan amendments on 14 September 2020, and the marine park boundary changes were proclaimed on 17 September 2020. The amendments were then authorized by the Governor and tabled in Parliament on 22 September 2020 (these are termed the '2020 Amendments').

The Parliamentary process is now complete for two of the six 2020 amendments. The following changes came into effect on 1 January 2021:

- Upper South East Marine Park Management Plan - shore based recreational line fishing is now allowed in the Coorong Beach South Sanctuary Zone
- Encounter Marine Park Management Plan - the northern boundary has been extended to create a new sanctuary zone at Port Stanvac and new zoning has been created around the Metropolitan Shellfish Reef at Glenelg.

The Parliamentary process is not yet complete for the 2020 Amendments affecting the following marine parks and sanctuary zones:

- Upper Gulf St Vincent Marine Park; adjusting the boundaries of Clinton Wetlands Sanctuary Zone (SZ-1) and creating a new Windara Reef Sanctuary Zone (SZ-5) with a special purpose area to allow recreational fishing
- Nuyts Archipelago Marine Park; altering the boundaries of Nuyts Reef Sanctuary Zone (SZ-1) and Isles of St Francis Sanctuary Zone (SZ-8)
- Neptune Islands (Ron and Valerie Taylor) Marine Park; altering the boundaries of North Neptune Island Sanctuary Zone (SZ-1)
- Western Kangaroo Island Marine Park, altering the boundaries of Cape du Couedic Sanctuary Zone (SZ-3).

Temporary restrictions are in place to prevent the amendments coming into operation before the Parliamentary process is complete (i.e. there remains no fishing in the affected sanctuary zones).

To resolve the Parliamentary process, the government encouraged further discussions between the peak South Australian commercial fishing and conservation bodies; seeking a fair balance between their interests. Taking into

account feedback from those discussions a package of revised management plan amendments has been developed for public consultation.

In addition, changes are also proposed for the management plan of the Southern Kangaroo Island Marine Park. Collectively these proposed amendments (termed the '2021 Proposed Amendments') have been carefully considered to balance access to important high-value fishing areas whilst also addressing environmental concerns of the conservation and scientific communities.

Importantly the 2021 Proposed Amendments do not replace the 2020 Amendments but will amend some of the changes made in 2020. The 2021 Proposed Amendments and the 2020 Amendments that will remain unchanged are summarized here:

- o Nuyts Archipelago Marine Park – A 2021 Proposed Amendment to reinstate the original boundaries of the Isles of St Francis Sanctuary Zone with a Special Purpose Area overlaid in the north east region to allow for commercial abalone fishing only. The 2020 Amendment to increase the size of Nuyts Reef Sanctuary Zone is maintained.
- o Neptune Islands Group (Ron and Valerie Taylor) Marine Park - A 2021 Proposed Amendment to revise the North Neptune Islands Sanctuary Zone with a north east extension to the outer boundaries of the marine park.
- o Upper Gulf St Vincent Marine Park - A 2021 Proposed Amendment to reinstate the original boundaries of Clinton Wetlands Sanctuary Zone with the inclusion of a Special Purpose Area about 2km SW of Port Arthur to allow shore-based recreational line fishing. The 2020 Amendment to include Windara shellfish reef within the marine park is maintained.
- o Western Kangaroo Island Marine Park - The 2020 Amendment to decrease the size of Cape du Couedic Sanctuary Zone is maintained.
- o Southern Kangaroo Island Marine Park - A 2021 Proposed Amendment to add a new sanctuary zone at D'Estrees Bay with a Special Purpose Area that allows for shore based recreational line fishing.

2 Scope and Methodology

2.1 Scope

As part of the legislative requirements for making amendments to or creating marine park sanctuary zones, a values and impact statement must be prepared. The values and impact statement prepared here by the Department for Environment and Water (DEW) considers the four 2021 Proposed Amendments. The 2020 Amendments that will remain unchanged have already been addressed in the BDO EconSearch (2020) report.

The 2021 Proposed Amendments are:

- o Nuyts Archipelago Marine Park – reinstate the original boundaries of the Isles of St Francis Sanctuary Zone with a Special Purpose Area overlaid in the north east region to allow for commercial abalone fishing only
- o Neptune Islands Group (Ron and Valerie Taylor) Marine Park - revise the North Neptune Islands Sanctuary Zone with a north east extension to the outer boundaries of the marine park
- o Upper Gulf St Vincent Marine Park - reinstate the original boundaries of Clinton Wetlands Sanctuary Zone with the inclusion of a Special Purpose Area about 2km SW of Port Arthur to allow shore-based recreational line fishing
- o Southern Kangaroo Island Marine Park - add a new sanctuary zone at D’Estrees Bay with a Special Purpose Area that allows for shore based recreational line fishing.

Figures 2.1-2.4 show the proposed zoning maps for the four 2021 Proposed Amendments. As some of these areas have also been through the 2020 Amendment process, a timeline has been created to visually display this; Figures 2.5-2.8 show the timelines of amendments since the 2012 management plans were finalized.

2.2 Methodology

The current report relies heavily on the previous reports prepared for DEW by BDO EconSearch (2018, 2020), with additional information being prepared by DEW. The broad methodology follows that of BDO EconSearch (2018, 2020) with (1) a description of environmental, economic (commercial fishing and tourism only) and social values of each SZ area and how these values may have been impacted under the existing marine park management arrangements, and then (2) how these values may be impacted under the proposed changes to existing marine park arrangements. When undertaking the impact assessment a critical assumption needs to be outlined here. Whilst the 2020 proposed amendments were passed through parliament and came into effect on 1 January 2021, not all of them were fully executed. For three of the SZs considered in this current assessment (Isles of St Francis, North Neptune Islands, and Clinton Wetlands SZs), a temporary restriction was put in place that effectively means that the 2012 zoning arrangements are still in place. Thus when undertaking the impact assessment, the 2021 Proposed Amendment must be compared against the 2012 arrangements and NOT the 2020 Amendments.

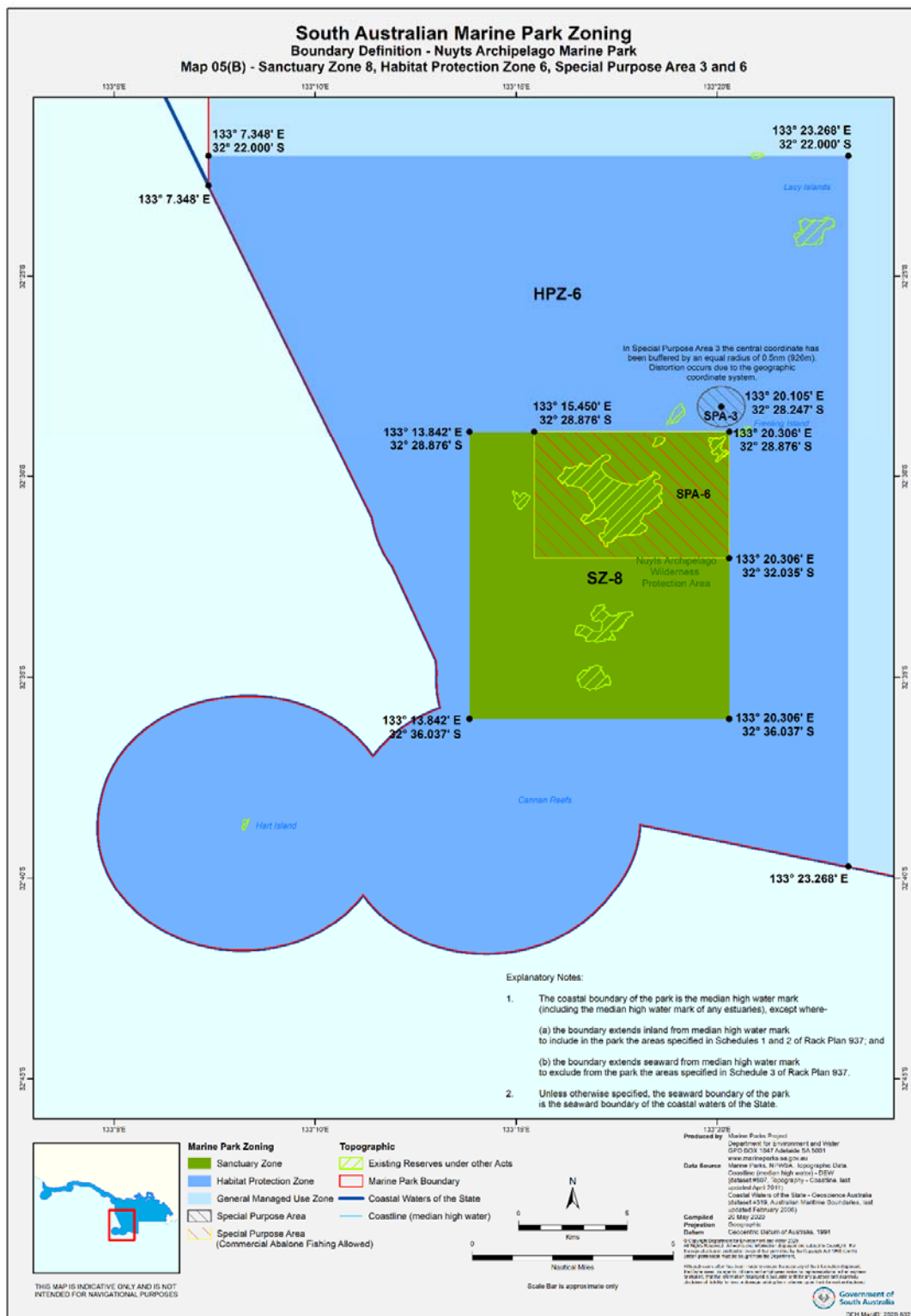


Figure 2.1. 2021 Proposed Amendment to the Isles of St Francis Sanctuary Zone, Nuyts Archipelago Marine Park

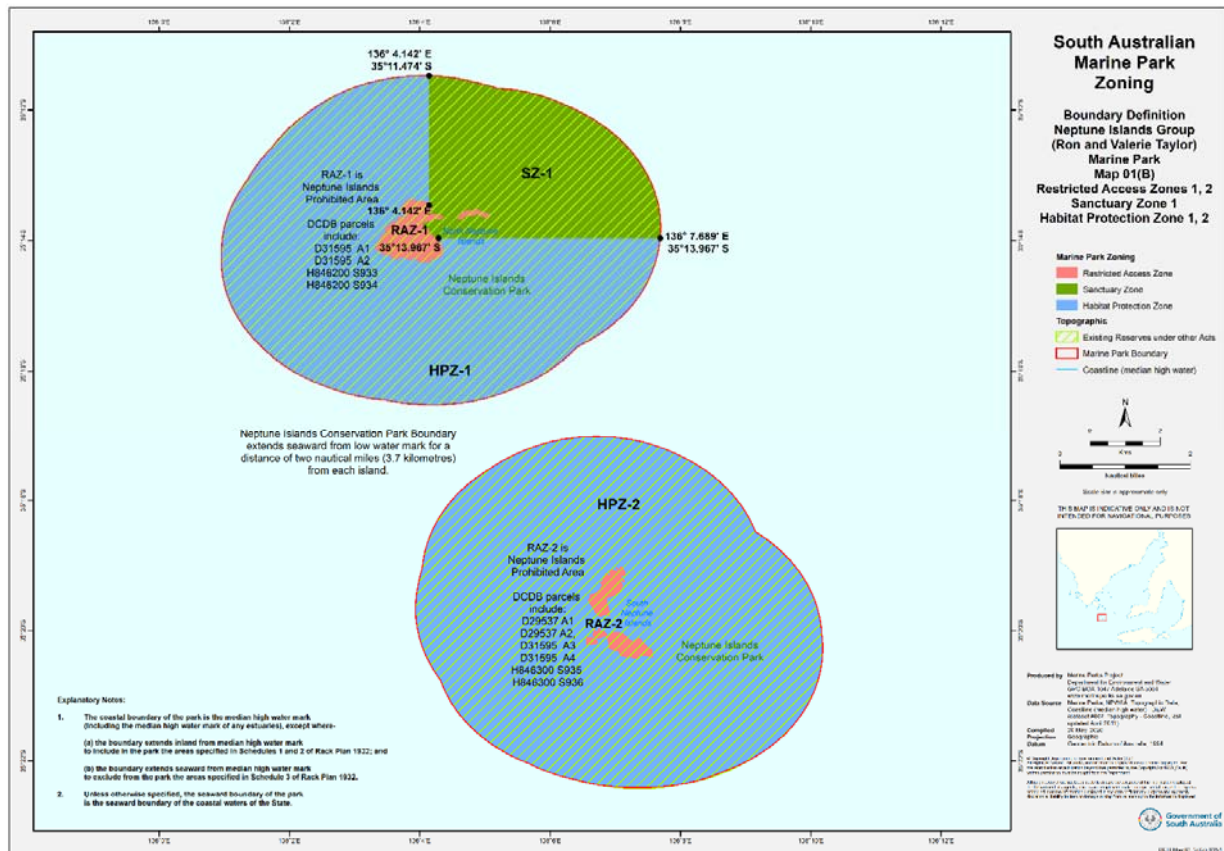
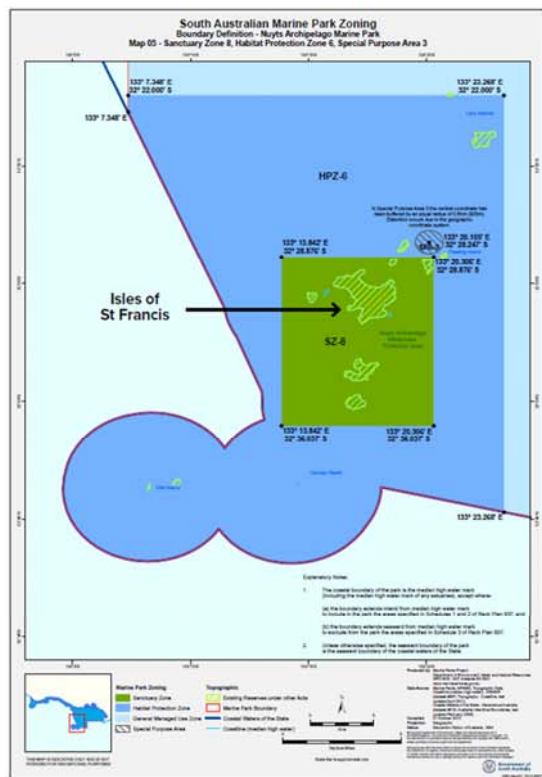


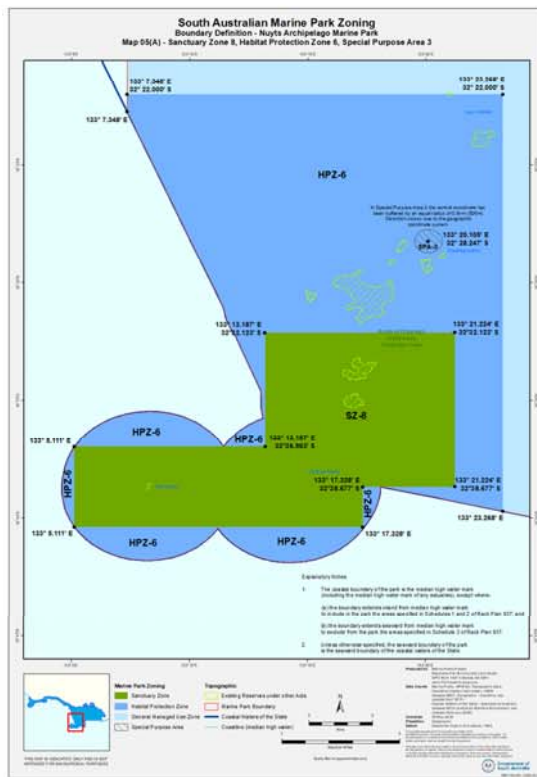
Figure 2.2. 2021 Proposed Amendment to the North Neptune Islands Sanctuary Zone, Neptune Islands Group (Ron & Valerie Taylor) Marine Park



2012



2020 Amendment



2021 Proposed Amendment

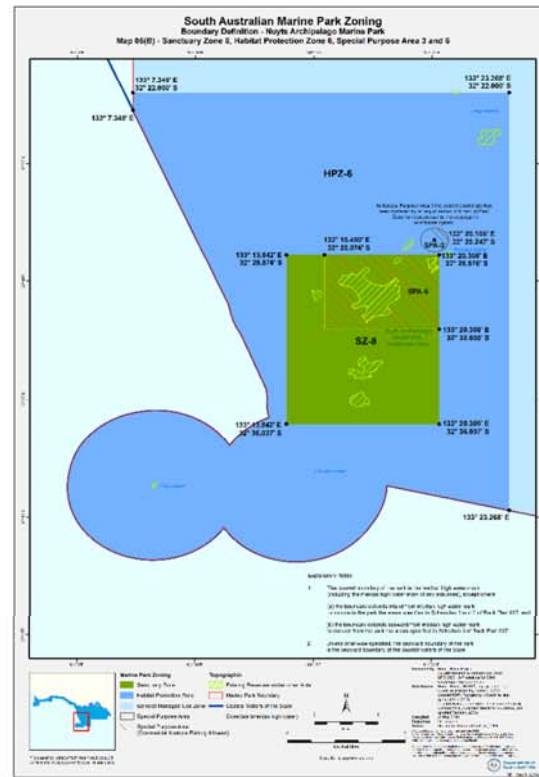


Figure 2.5. Timeline of amendments for the Isles of St Francis Sanctuary Zone

[illegible][illegible]

South Australian Marine Park Zoning

Boundary Definition
 Neptune Islands Group
 (Ron and Valerie Taylor)
 Marine Park
 Map 01(A)
 Restricted Access Zone 1
 Sanctuary Zone 1
 Habitat Protection Zone 1

Marine Park Zoning

- Restricted Access Zone
- Sanctuary Zone
- Habitat Protection Zone

Transports

- Ferry, Boat and other
- Marine Park Boundary
- Location of any shipwreck

Scale

0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

Inset Map

1:500,000 Scale

Legend

NPZ-1

NPZ-2

NPZ-3

NPZ-4

NPZ-5

NPZ-6

NPZ-7

NPZ-8

NPZ-9

NPZ-10

NPZ-11

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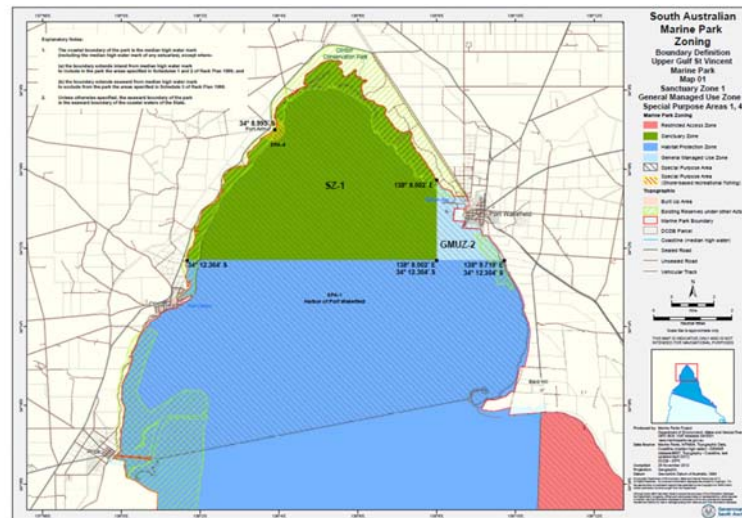
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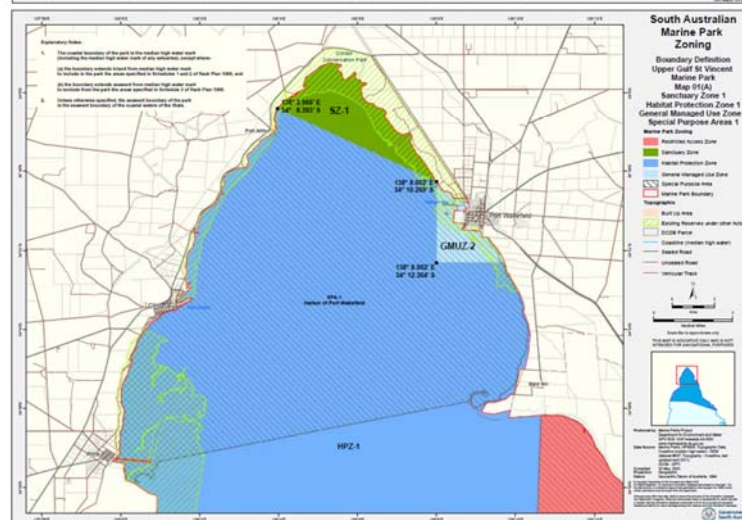
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2012



2020
Amendment



2021
Proposed
Amendment

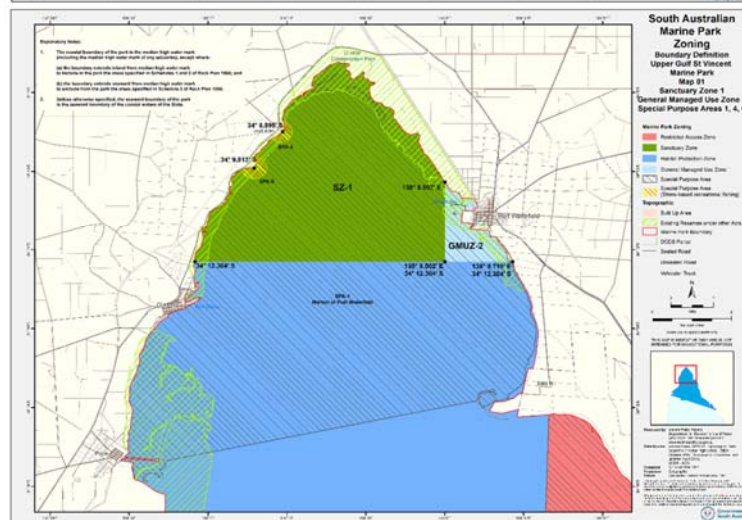
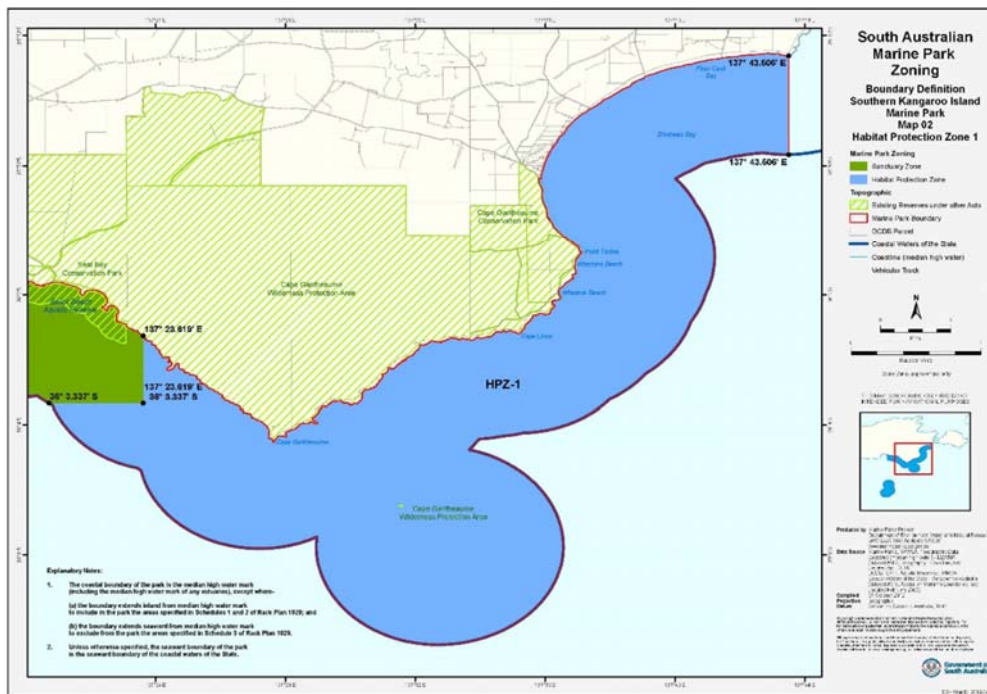


Figure 2.7. Timeline of amendments for the Clinton Wetlands Sanctuary Zone

2012



2021 Proposed Amendment

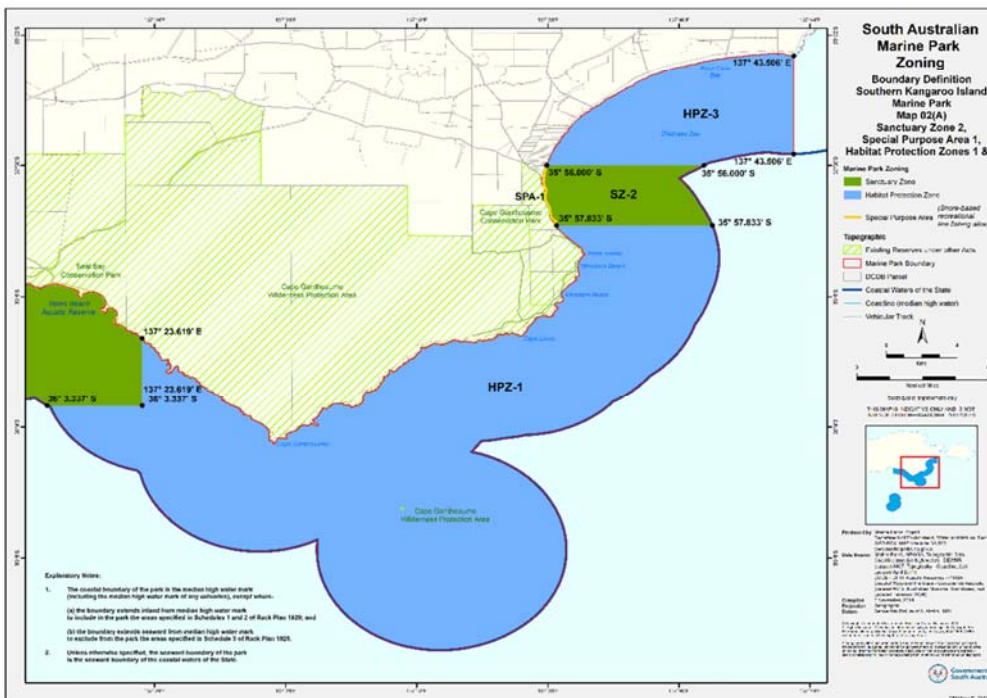


Figure 2.8. Timeline of amendments for the D'Estrees Bay Sanctuary Zone

3 Values and Impacts

Section 3 provides summary tables of the environmental, economic and social values of the four SZs for which changes are proposed under (i) existing arrangements and under (ii) changed arrangements.

3.1 Isles of St Francis Sanctuary Zone

Table 3.1. Summary table for Isles of St Francis sanctuary zone – impacts on values of existing arrangements (text taken directly from BDO EconSearch 2020 report)

Environmental value	Economic value		Social value
	Commercial fishing industry	Tourism industry	
Regional characteristics: ▶ Third largest SZ in the marine parks network. ▶ Biodiversity hotspot influenced by the Leeuwin Current and containing species common to Western and South Australia. ▶ Contains rocky cliffs, sandy beaches, reefs, seagrass meadows and unmapped deep water habitats in a comparatively 'pristine' state. ▶ Conserves habitat for Southern rock lobster, Maori octopus, greenlip abalone, blacklip abalone, purple sea urchin, sea sweep, Western blue groper, baitworm, king scallop, queen scallop and yellow-eye mullet. State/National priorities: ▶ Provides haul-out and breeding sites for the nationally vulnerable Australian sea lion. ▶ Provides habitat for several shark and fish species of conservation concern, including vulnerable white shark, Western blue groper, Western blue devil, harlequin fish, and blue throated wrasse. ▶ Provides habitat for rare/conservation concern species, e.g. uncommon seaweeds, sponges, ascidians, soft corals and the black cowrie. ▶ Significant breeding area for short-tailed shearwaters and white-faced storm petrels. Also protects nesting sites of state endangered ospreys, state endangered white-bellied sea eagles, rare Cape Barren geese, little penguins and the rare rock parrot. Habitats and biodiversity: Fish and macro-invertebrate species richness is high in comparison to other surveyed SZs. The SZ has a high abundance of large fish. Commercially and recreationally fished species abundance is about average in comparison to other surveyed SZs. Sharks and rays are relatively abundant. Fish assemblages were similar inside the SZ compared to the adjacent HPZ.	Background and context: The principal fisheries that previously used the SZ were the NZRL and Abalone Fisheries. The MSF records minimal catches from this SZ. A small amount of charter boat activity occurred. Historically, the total gross value of displaced catch in this SZ is estimated to be approximately \$645,000, principally from the Abalone (1.78% of fishery catch), NZRL (0.44% of fishery catch) and Marine Scalefish (0.19% of fishery effort) Fisheries. Displaced effort from the Charter Boat Fishery was confidential but would be minimal (less than \$4,000 for entire marine park). Areas to the west of St Francis Island, Masillon Island and Fenelon Island are made up of reef suitable for Rock Lobster and Abalone. A large part of the SZ is made up of sandy habitats unsuitable for Rock Lobster and Abalone fishing. Predictions due to SZ implementation: In aggregate, it was estimated that the impact of zoning in the SZ will generate the following loss of regional economic activity on an ongoing annual basis; \$0.87m in total GRP (less than 0.1% of the regional total (\$3.4b in 2018/19), 6 fte jobs (less than 0.1% of the regional total (25,915 fte jobs in 2018/19) and \$0.50m in household income (less than 0.1% of the regional total (\$1.8b in 2018/19)). Commercial Fisheries Voluntary Catch/Effort Reduction Program: For each of the fisheries (Abalone, NZRL, Marine Scalefish and Charter Boat) more than the estimated displaced catch has been removed from the fishery through the Commercial Fisheries Voluntary Catch/Effort Reduction Program such that the remaining fishers now have greater relative access to the available biomass. The displaced catch and effort removed from this SZ from the Abalone Fishery was the equivalent of two-thirds of the annual gross income of an average Abalone licence and for the MSF was the equivalent of half the annual gross income of an average MSF licence. The displaced catch and effort removed from the NZRL and Charter Boat fisheries in this SZ equated to foregone annual income of approximately \$645,000.	No recognised tourism activities take place in or adjacent to the SZ. Since there are no tourism activities, there is no economic contribution to the region from tourism. Since there were no existing tourism activities when the SZ was established, no changes to tourism values are expected.	Recreational uses: Recreational activity is minimal in the SZ due to the remote nature of the SZ. The SZ is far from the nearest public boat ramp and is inaccessible to most recreational boats. Shore-based recreation activities on the islands within the SZ would be minimal due to the remote location. Recreational fishing: Prior to SZ implementation, recreational fishing at the SZ was minimal, with only some area lost due to the SZ, likely a result of people that had fished from commercial charter boats. Shore-based line fishing is now prohibited in the SZ but the SZ lies offshore and is unlikely to have been fished much from the shore previously. Social values: Commercial fisheries were concerned that the closure of this productive fishing area would negatively affect the catch of scale fish species, rock lobster and abalone for the commercial fishery and recreational catches of various species. A number of scientific monitoring sites are located within the SZ as part of the Marine Parks Monitoring, Evaluation and Reporting Program. The SZ has 'wilderness value'. The SZ aligns with and overlays an existing Nuyts Archipelago Wilderness Area, complying with community design principle 8, Seek synergies with existing protected areas. Observations since SZ implementation: Due to a lack of specific information available at the SZ level, it is difficult to assess whether social values have changed due to the implementation of the SZ. More broadly, support for marine parks in the local region by residents of the West Eyre region over the period 2013 to 2017 has fluctuated around 70% (initially 64% in 2013, dropping to 59% in 2016, before increasing to 82% in 2017).

Environmental value	Economic value		Social value
	Commercial fishing industry	Tourism industry	
Threats addressed by the SZ: The SZ addresses the following threats to conservation values within the SZ from the activities of the Rock Lobster and Abalone fisheries: removal of fished species biomass (medium risk); bycatch of Australian sea lions (medium risk, applies to Rock Lobster Fishery only); introduced marine pests/aquatic diseases (low risk); disturbance to breeding colonies of marine mammals and birds. Predictions due to SZ implementation: Rock lobster, greenlip abalone, blacklip abalone and snapper in the SZ are predicted to increase in size and abundance over the next 20 years. Western blue groper, bight redfish, swallowtail, bluethroat wrasse, harlequin fish and/or sea sweep in the SZ are predicted to maintain size and abundance over the next 20 years. Observations since SZ implementation: There is insufficient data collected to note observed changes in species diversity/population characteristics due to the SZ.	Observations since SZ implementation: It should be noted that the detection of any impact of the SZ on the stocks and fisheries of impacted species is not possible because the scale of natural inter-annual variation is greater than the scale of the catch displaced. No negative change in the Marine Scalefish and Charter Boat Fisheries since the introduction of the SZ. Catches of Southern Rock Lobster have been maintained in the presence of the SZ and there is no evidence of a negative impact on regional CPUE in the fishery since the introduction of the SZ. The number of Rock Lobster operators has declined since 2014 and the buyout of catch is consistent with this although not definitively the cause. Abalone catch in the region has been very low in recent years and there is no evidence of a negative impact since the introduction of the SZ. These observations are based on estimated historical catches in the SZ. Current and future catch in all fisheries could potentially be lower/higher and the development of new industries, such as aquaculture, is possible. However, there is no way to measure these foregone opportunities and therefore they were not measured.		

Table 3.2. Summary table for Isles of St Francis sanctuary zone – impacts on values of changing existing arrangements (text modified from BDO EconSearch 2020 report with additional text added by DEW)

Environmental value	Economic value		Social value
	Commercial fishing industry	Tourism industry	
Description of proposed amendment to zoning: Revert the SZ back to the original 2012 SZ-8 (133.3 km²) and overlay the north eastern part of the SZ with an SPA (36.2 km², SPA-6) to allow commercial abalone fishing only (Figures 2.1 and 2.5). Area surrounding the SZ reverts back to the original 2012 HPZ-6. Expected impacts (in the context that the 2020 amendment was not fully executed): Area removed from existing SZ: Threats removed from the cessation of commercial abalone fishing will be re-introduced to the SPA part of the SZ (selective removal of target species abalone) potentially affecting trophic structure of ecosystem; disturbance of non-target species from fishing activities, particularly Australian sea lion, osprey and white-bellied sea eagle, although the Australian sea lion breeding colonies are not included within the proposed SPA. Greenlip and blacklip abalone, targeted by commercial fishers in this SZ, are unlikely to increase in size and abundance in the SZ over the next 20 years. The SZ is a priority monitoring site. Altering the SZ area with respect to areas with and without fishing would reduce the effectiveness of this site for monitoring purposes. The SZ is one of the only examples of an entire offshore island archipelago captured within a SZ. It also represents an important transitional zone between eastern and western distributed species and habitats due to the influence of the warm Leeuwin current. Changing/downgrading the zoning would compromise the marine park system by reducing protection for these unique offshore island habitats. Proposed changes to the third largest SZ would compromise the adequacy of the network. (Noting that if the 2020 amendment was fully executed there would likely be a net positive ecological impact of including St Francis Island and surrounding islands back into an SZ (even with the proposed abalone SPA) as this area was recognised as having outstanding biodiversity value as opposed to the areas included as SZ in the 2020 amendment to the south around Hart Island and Cannan Reefs which were suspected to be mainly sand habitat).	Expected impacts (in the context that the 2020 amendment was not fully executed): The area available to commercial abalone fishers will be increased by 36.2 km² in the north eastern corner of the SZ. This area was identified by the industry as being important fishing grounds. The positive economic impact to the western zone abalone fishery would be very similar to that described in the BDO EconSearch (2020) report as the spatial area proposed to be changed to HPZ from SZ in the 2020 amendment is very similar to the spatial area proposed as SPA in the current proposed amendment (see Figure 2.5). There would be no impact (positive or negative) on other commercial fishing sectors.	Expected impacts (in the context that the 2020 amendment was not fully executed): Since there are no tourism activities, there would be no impact on tourism from opening part of the SZ to abalone fishing activities. (Note that passing cruise ships have now started doing occasional guided trips ashore to St Francis Island but that this would not be affected by abalone fishing).	Expected impacts (in the context that the 2020 amendment was not fully executed): No impact on recreational fishing (noting that if the 2020 amendment was fully executed then there would have been an impact on recreational fishing both positive and negative – see BDO EconSearch 2020). There may be possible loss of ‘wilderness value’.

3.2 North Neptune Islands Sanctuary Zone

Table 3.3. Summary table for North Neptune Islands sanctuary zone – impacts on values of existing arrangements (text taken directly from BDO EconSearch 2020 report)

Environmental value	Economic value		Social value
	Commercial fishing industry	Tourism industry	
Regional characteristics: - Contains steep cliff running into deep water as well as a protected bay with seagrass and sand bottom - Receives warm water from the Leeuwin Current and cool water from Flinders current allowing for high biodiversity - Habitat for southern rock lobster, Maori octopus, greenlip abalone, blacklip abalone, purple sea urchin, western blue groper and sea sweep. State/National priorities: - World renowned hot spot for the vulnerable white shark, which regularly forage in the area for seals - Contains half of the breeding population of long-nosed fur seals in South Australia - Breeding colony for the vulnerable Australian sea lion - Habitat for the endangered coastal stingaree, which is endemic to South Australia - Seabirds protected under international treaties roost and nest on the islands. The area also provides breeding habitat for the little penguin, rare rock parrot, rare sooty oystercatcher, rare Cape Barren goose, endangered white-bellied sea eagle and endangered fairy tern. Habitats and biodiversity: Little is known about the fish and macro-invertebrate species diversity, because the SZ is not currently monitored. Threats addressed by the SZ: The SZ addresses the following threats to conservation values within the SZ from the activities of the Rock Lobster and Abalone fisheries: removal of fished species biomass (medium risk); bycatch of Australian sea lions (medium risk, applies to Rock Lobster Fishery only); introduced marine pests/aquatic diseases (low risk); disturbance to breeding colonies of marine mammals and birds. Predictions due to SZ implementation: Rock lobster, greenlip abalone and blacklip abalone in this SZ are predicted to increase in size and abundance over the next 20 years. Bight redfish, bluethroat wrasse, harlequin	Background and context: The principal fishery that previously used the SZ was the NZRL Fishery. Abalone catches from this region are classed as low importance. The MSF records small or confidential catches from this SZ. A small amount of Charter Boat activity also occurred. Historically, the total gross value of displaced catch in this SZ is estimated to be \$447,000, principally from the NZRL (1.06% of fishery catch), Abalone (0.17% of fishery catch), Marine Scalefish (0.06% of fishery effort) and Charter Boat (0.10% of fishery effort) Fisheries The nearshore habitat of SZ is comprised of reef suitable for Rock Lobster and Abalone. While reef habitat does occur around the North Neptune Islands, it is suspected that further offshore, much of the SZ is comprised of sand that is unsuitable habitat for Rock Lobster and Abalone. Predictions due to SZ implementation: In aggregate, it was estimated that the impact of zoning in the SZ will generate the following loss of regional economic activity on an ongoing annual basis; \$0.50m in total GRP (less than 0.1% of the regional total (\$3.4b in 2018/19), 6 fte jobs (less than 0.1% of the regional total (25,915 fte jobs in 2018/19) and \$0.29m in household income (less than 0.1% of the regional total (\$1.8b in 2018/19)). Commercial Fisheries Voluntary Catch/Effort Reduction Program: For each of the four fisheries (NZRL, Abalone, Marine Scalefish and Charter Boat) more than the estimated displaced catch has been removed from the fishery through the Commercial Fisheries Voluntary Catch/Effort Reduction Program such that the remaining fishers now have greater relative access to the available biomass. The displaced catch from the NZRL Fishery in this SZ was the equivalent of two-thirds of gross income of an average NZRL licence. The displaced catch and effort from the Marine Scalefish, Abalone or Charter Boat fisheries in this SZ equated to foregone annual income of approximately \$447,000. Observations since SZ implementation: It should be noted that the detection of any impact of the SZ on the stocks and fisheries of impacted species is not possible	White shark cage diving has taken place at the Neptune Islands since the late 1970s. The South Australian government currently permits three commercial shark cage diving tour operators to utilise the Neptune Islands. Visitor numbers increased from 1,127 visitors in 2008/09 to 9,807 in 2016/17. The 9,907 shark cage diving patrons in 2016/17 led to an estimated 19,614 visitor nights, \$6.8 million of expenditure on tour fees and \$1.5 million of other expenditure in the Eyre Peninsula region. The contribution of this activity to GRP was \$7.4 million, including \$3.5 million from flow-on effects. The contribution to employment was around 67 fte jobs, including 26 fte from flow-on effects. The existence of the SZ does influence the decision to visit Port Lincoln for shark cage diving for some people (around 14% of patrons). Value is added to the tour due to the existence of the SZ. This is supported by survey results from 2016 suggesting that awareness of the SZ increases on tour (from around 19% to 49%) and some patrons spoke to others specifically about the SZ after returning home (around 13% of the original sample).	Recreational uses: Recreational activities (including shore-based activities) are minimal in the SZ due to the remote nature of the SZ. The SZ is far from the nearest public boat ramp on the mainland and is inaccessible to most recreational boats. Recreational fishing: Prior to SZ implementation, recreational fishing at the SZ was minimal, with only some area lost due to the SZ. Shore-based line fishing is now prohibited in the SZ but it lies offshore and is unlikely to have been fished much from the shore previously. Social values: The community values the SZ for the shark cage diving industry, which generates significant income for the regional economy. Since 2012, about 32 research permits for 10 different projects have been granted for white shark research within the SZ. Research in the SZ is primarily aimed at tracking the movement and residency patterns of white sharks. This develops knowledge about the population size and site fidelity of white sharks as well as any potential impacts of the cage diving industry on shark behaviour. More recently, DEWNR has engaged with researchers to monitor the movement of acoustically tagged sharks between marine parks and assess connectivity between these parks. The shark cage tourism industry is monitored to track the number of visitors, and calculate benefits to the local community in terms of jobs created and economic contribution. The SZ has 'wilderness value'. Observations since SZ implementation: The SZ has provided long-term viability for the shark cage diving industry by protecting the local environment and the sharks while they are inside the zone. The shark cage industry has continued to thrive since the management plan was implemented and provides significant economic benefit to the state and region. Research has shown that tourists become more educated about marine parks and the marine environment by going on a shark cage trip.

Environmental value	Economic value		Social value
	Commercial fishing industry	Tourism industry	
fish, swallowtail, sea sweep and western blue groper are predicted to maintain size and/or abundance inside the SZ. Observations since SZ implementation: There is insufficient data to note observed changes in species diversity/population characteristics due to the SZ.	because the scale of natural inter-annual variation is greater than the scale of the catch displaced. No negative change on regional CPUE in the Abalone, Marine Scalefish and Charter Boat Fisheries since the introduction of the SZ because these fisheries are minor contributors. The number of Rock Lobster operators has declined since 2014 and the buyout of catch is consistent with this although not definitively the cause. The NZRL Fishery has maintained nearly 100% of the TACC since 2009 indicating the overall Rock Lobster harvest is being maintained even with the North Neptune Island SZ. The TACC was increased in 2015. These observations are based on estimated historical catches in the SZ. Current and future catch in all fisheries could potentially be lower/higher and the development of new industries, such as aquaculture, is possible. However, there is no way to measure these foregone opportunities and therefore they were not measured.		Due to a lack of specific information available at the SZ level, it is difficult to assess whether social values have changed due to the implementation of the SZ. More broadly, support for marine parks in the local region by residents of the West Eyre region over the period 2013 to 2017 has fluctuated around 70% (initially 64% in 2013, dropping to 59% in 2016, before increasing to 82% in 2017).

Table 3.4. Summary table for North Neptune Islands sanctuary zone – impacts on values of changing existing arrangements (text modified from BDO EconSearch 2020 report with additional text added by DEW)

Environmental value	Economic value		Social value
	Commercial fishing industry	Tourism industry	
Description of proposed amendment to zoning: Increase the area of the SZ by 10.5 km² to the north east. New SZ area of 19.5 km² (SZ-1) and new HPZ area of 52.1 km² (HPZ-1) (Figures 2.2 and 2.6). Expected impacts (in the context that the 2020 amendment was not fully executed): Threats removed from the cessation of commercial fishing will be re-introduced if part of the SZ is opened to fishing (selective removal of target species (rock lobster, abalone) potentially affecting trophic structure of ecosystem; removal of species caught as bycatch (Rock Lobster Fishery), disturbance and risk of entanglement of non-target species from fishing gear/activities, particularly Australian sea lion (Rock Lobster Fishery)). Rock lobster, greenlip abalone and blacklip abalone, targeted by commercial fisheries in this SZ, are unlikely to increase in size and abundance in the opened part of the SZ over the next 20 years. Bight redfish, bluetthroat wrasse, harlequin fish, swallowtail, sea sweep and western blue groper may not maintain size and abundance in this SZ over the next 20 years. The SZ has several habitat types that are sensitive to disturbance such as seagrass and reef and associated fauna communities. However, it is unlikely that there would be any future activities such as aquaculture or coastal developments in this SZ due to its remote location. Nonetheless, the rezoning of SZ to HPZ would allow such activities to potentially occur in the future. The SZ represents the only example of a remote offshore island ecosystem in the lower Eyre region with complete representation of intertidal and subtidal habitats. Changing/downgrading the zoning would compromise the marine park system by reducing the protection for these remote offshore island habitats.	Expected impacts (in the context that the 2020 amendment was not fully executed): The area available to commercial fishers will be increased overall by 14.8 km² (2012 SZ = 34.3 km², proposed SZ = 19.5 km²) with areas opened up in the southern and western section, but a loss of area in the north eastern section. However, the areas opened up along the nearshore of North Neptune Island are the key reef habitats for rock lobster and abalone fishing (see Figure 3-21, p 107 of BDO EconSearch 2018). The positive economic impact to commercial fisheries would be very similar to that described in the BDO EconSearch (2020) report as the spatial area proposed to be changed from SZ to HPZ in the 2020 amendment is very similar to the spatial area in the current proposed SZ amendment (see Figure 2.6). The offshore extension to the SZ from the 2020 proposed SZ is unmapped but is likely to be predominantly sand habitat that is unsuitable for rock lobster and abalone fishing, and therefore will not influence economic outcomes for those sectors. The rezoning of parts of the SZ to HPZ would make other activities which could affect commercial fishing, such as aquaculture, possible in this zone, but the likelihood is unknown.	Expected impacts (in the context that the 2020 amendment was not fully executed): Opening part of the SZ to fishing activities could negatively impact on tourism activities. Increased fishing activities would likely occur, such as shark, rock lobster and abalone, can be expected to have a negative effect on shark cage divers and the wilderness experience. However, the area to remain closed to fishing is the area where shark cage diving mostly occurs. The reintroduction of commercial fishing would likely not be supported by the shark cage diving industry. While activities such as aquaculture could affect the wildlife experience for tourism activities, they are unlikely to occur in the area subject to the rezoning of SZ to HPZ.	Expected impacts (in the context that the 2020 amendment was not fully executed): As the area was only lightly used by recreational boat fishers, it is unlikely that rezoning part of the SZ to HPZ would affect this. The Rock Lobster, Abalone and MSF Fisheries would likely resume fishing the opened area. Opening part of the SZ to commercial fishing would be supported by the commercial fishing industry, but likely not supported by the shark cage diving industry, the conservation sector nor recreational fishers. There may be possible loss of 'wilderness value'. The impact of opening part of the SZ to non-fishing activities allowed in a HPZ but not a SZ is unknown. It is unlikely that activities such as aquaculture and coastal developments (jetties, wharves, etc.) would occur in the location of the rezoning of SZ to HPZ.

3.3 Clinton Wetlands Sanctuary Zone

Table 3.5. Summary table for Clinton Wetlands sanctuary zone – impacts on values of existing arrangements (text taken directly from BDO EconSearch 2020 report)

Environmental value	Economic value		Social value
	Commercial fishing industry	Tourism industry	
Regional characteristics: - Represents the entire top of gulf ecosystem from land to sea including saltmarsh, mangroves, intertidal seagrass and dense shallow seagrass meadows. - Only example of extensive seagrass, mangrove and saltmarsh habitats within an inverse estuary. - Most extensive protected example of upper gulf shallow water seagrass communities in the GSV Bioregion. - Partially overlays Clinton Conservation Park, establishing a protected corridor between the land and sea. State/National priorities: - Home to the state rare samphire thornbill (endemic to the northern shores of GSV). - Recognised as a coastal wetland of national importance. - Provides important nesting and feeding grounds for resident shorebirds, as well as feeding grounds for migratory shorebirds whose habitats are required to be protected under international treaties. Habitats and biodiversity The mangroves and seagrass meadows in the SZ are an important fish nursery, particularly for fish species with a southern migratory path. Mangroves and saltmarsh provide habitat for a number of state or nationally protected shorebirds, including state rare samphire thornbill, state rare glossy ibis and the state rare musk duck. Fish species are typical of seagrass habitats, e.g. weedy whiting, toadfish and blue swimmer crabs. Fish species richness is comparable to other SZs dominated by seagrass habitats. Commercially and recreationally targeted fish species abundance is comparable to other SZs. Fish assemblages and abundance are similar to the adjacent HPZ. Threats addressed by the SZ The SZ addresses the following threats to conservation values in this SZ from the activities of the MSF: removal of fished species biomass (medium risk); introduced marine pests/aquatic diseases (medium risk); habitat disturbance from haul netting, vehicle access and anchoring (low risk).	Background and context: The MSF was the principal fishery that previously used the SZ with some minor use by the Blue Crab and Charter Boat Fisheries. Historically, the total gross value of displaced catch in this SZ is estimated to be at least \$179,000, principally from the MSF, accounting for 1.04% of fishery catch. Displaced catch and effort from the Blue Crab and Charter Boat Fisheries are confidential but would be minimal (\$1,000 or less for the entire marine park). Most of the SZ is comprised of seagrass beds and sand flats which are suitable habitat for Blue Crabs and Marine Scalefish species. Predictions due to SZ implementation: In aggregate, it was estimated that the impact of zoning in the SZ will generate the following loss of regional economic activity on an ongoing annual basis; \$0.59m in total GRP (less than 0.1% of the regional total (\$3.1b in 2018/19)), 14 fte jobs (0.1% of the regional total (28,709 fte jobs in 2018/19)) and \$0.27m in household income (less than 0.1% of the regional total (\$1.6b in 2018/19)). Commercial Fisheries Voluntary Catch/Effort Reduction Program: More than the estimated displaced catch has been removed from the MSF through the Commercial Fisheries Voluntary Catch/Effort Reduction Program such that the remaining fishers now have greater relative access to the available biomass. The displaced effort from the MSF fishery from this SZ was the equivalent of the gross income of 5 average MSF licences and resulted in the removal of 5 fishing businesses from across the fishery, of which 3 haulnet licences were removed that targeted catch from the GSV region. Observations since SZ implementation: It should be noted that the detection of any impact of the SZ on the stocks and fisheries of impacted species is not possible because the scale of natural inter-annual variation is greater than the scale of the catch displaced.	No recognised tourism activities take place in or adjacent the SZ. Since there are no tourism activities there is no economic contribution to the region from tourism. Since there were no existing tourism activities when the SZ was established, no changes to tourism values are expected.	Recreational uses: Boating and fishing are popular in waters around Port Wakefield and Port Clinton. Boat ramps are located near the SZ at Port Clinton and Port Wakefield. Crabbing for blue swimmer crabs is popular along intertidal mud flats including Port Wakefield and Port Clinton. Caravan parks and camping facilities are located adjacent to the SZ at Port Clinton and Port Wakefield. Clinton Conservation Park and the SZ are popular with birdwatchers. The area (including the SZ) is recognised as a wetland of international importance. Recreational fishing: Shore-based recreational fishing was minimally impacted by the SZ. An area at Port Arthur with shore access was excluded from recreational fishing restrictions in the SZ to accommodate shore-based fishing. The other shoreline within the SZ is inaccessible or difficult to fish due to saltmarsh and mangroves. Boat-based recreational fishing has lost some nearshore and offshore areas. It is unknown how important these areas were for recreational boat fishers. Social values: Recreational fishers value the SZ as a garfish spawning ground that is important to protect. Recreational fishing around Port Arthur is valued. Submissions to the zoning identified the area between Port Arthur and Port Clinton as a 'hotspot' for the Marine Scale Haul Net Fishery. Likewise, submissions to the zoning identified its importance as a healthy example of an inverse estuary system. It is also known by the conservation sector as a Nationally Important Wetland, particularly for shorebirds. Birdlife Australia undertakes annual shorebird surveys of the SZ and adjacent Clinton Conservation Park, maintaining an important time series of data (from 2009) on the distribution and abundance of species. A number of scientific monitoring sites are located within the SZ as part of the Marine Parks Monitoring, Evaluation and Reporting Program. Observations since SZ implementation: Due to a lack of specific information available at the SZ level, it is difficult to assess whether social values have changed due to the implementation of the SZ. More broadly, support for marine parks in the local region by residents of the Northern

Environmental value	Economic value		Social value
	Commercial fishing industry	Tourism industry	
Predictions due to SZ implementation: Razorfish (intertidal seagrass resident) inside the SZ are predicted to increase in size and abundance over the next 20 years. Blue swimmer crab, King George whiting, southern calamari and southern garfish are predicted to temporarily increase in size and/or abundance while inside the SZ. Observations since SZ implementation: There is insufficient data to note observed changes in species diversity/population characteristics due to the SZ.	No negative change in the Blue Crab Fishery since the introduction of the SZ. Catches of Blue Crab, Southern Calamari and Snapper have been maintained in the presence of the SZ and there is no evidence of a negative impact since the introduction of the SZ. Reduced catches of Garfish and King George Whiting post SZ implementation are the continuation of the long term historic trend of reduced catch due to fishery and environmental pressures to these species and there is no evidence of a negative impact since the introduction of the SZ. These observations are based on estimated historical catches in the SZ. Current and future catch in all fisheries could potentially be lower/higher and the development of new industries, such as aquaculture, is possible. However, there is no way to measure these foregone opportunities and therefore they were not measured.		and Yorke region over the period 2013 to 2017 has fluctuated around 80% (initially 85% in 2013, dropping to 65% in 2016, before increasing to 80% in 2017).

Table 3.6. Summary table for Clinton Wetlands sanctuary zone – impacts on values of changing existing arrangements (text modified from BDO EconSearch 2020 report with additional text added by DEW)

Environmental value	Economic value		Social value
	Commercial fishing industry	Tourism industry	
Description of proposed amendment to zoning: Revert back to the original 2012 zoning and SZ. New SZ area of 59.4 km² (SZ-1) and new HPZ area of 52.1 km² (HPZ-1). Retain the existing SPA adjacent to Port Arthur (SPA-4) (Figures 2.3 and 2.7). Add a new SPA (SPA-6) adjacent to the coastline about 2km SW of Port Arthur to allow shore-based recreational line fishing. Expected impacts (in the context that the 2020 amendment was not fully executed): There would be a minor negative impact on biodiversity values by allowing shore-based recreational line fishing to occur at a location about 2km SW of Port Arthur (noting that this activity does already occur at Port Arthur). (Noting that if the 2020 amendment was fully executed there would be a positive ecological impact from the proposed zoning as the Clinton Wetlands SZ has outstanding biodiversity value).	Expected impacts (in the context that the 2020 amendment was not fully executed): None. (Noting that if the 2020 amendment was fully executed there would potentially have been a negative impact from the proposed zoning on commercial fisheries that had re-entered the SZ since 2020).	Expected impacts (in the context that the 2020 amendment was not fully executed): None.	Expected impacts (in the context that the 2020 amendment was not fully executed): A positive impact for recreational fishing by allowing shore-based recreational line fishing to occur at a location about 2km SW of Port Arthur. (Noting that if the 2020 amendment was fully executed there would potentially have been a negative impact from the proposed zoning on recreational fishers that had re-entered the SZ since 2020).

3.4 D’Estrees Bay Sanctuary Zone

Table 3.7. Summary table for area of proposed D’Estrees Bay sanctuary zone – impacts on values of existing arrangements (text taken from unpublished work conducted for DEW in 2012 with additional text added by DEW)

Environmental value	Economic value		Social value
	Commercial fishing industry	Tourism industry	
The area proposed as an SZ is 23.3 km² and is currently designated as part of a large HPZ (HPZ-1) within the Southern Kangaroo Island Marine Park (Figures 2.4 and 2.8). Regional characteristics: ▶ Abuts Cape Gantheaume Wilderness Protection Area and Conservation Park ▶ Adjacent to the long sandy beach and dunes of D’Estrees Bay, the slightly more sheltered waters support some of the largest seagrass beds on the south coast of Kangaroo Island ▶ Representative of exposed rocky reefs, with associated highly diverse macro-algae (seaweed) communities. State/National priorities: ▶ D’Estrees Bay is an important nesting area for the state endangered white-bellied sea eagle and eastern osprey. Habitats and biodiversity ▶ The area is a mixture of dense seagrass (7.3 km²), sand (9.1 km²) and reef (6.1 km²) habitats, with 0.8 km² of the area unmapped (for a habitat map, see Figure 3-51, p 172 of BDO EconSearch 2018). The area includes 4.1 km of shoreline beach habitat. ▶ No known biodiversity surveys have been undertaken within the proposed SZ area. ▶ Surveys and information from elsewhere along the south coast of Kangaroo Island indicate the types of species that would be found in the proposed SZ (e.g. Bryars et al. 2016).	Background and context: The area overlaps with potentially fishable grounds for the Northern Zone Rock Lobster Fishery, Central Zone Abalone Fishery, and Marine Scalefish Fishery. Some rock lobster and abalone fishing likely occurs in the proposed area from time to time. The Marine Scalefish Fishery is thought to not operate there. Under the existing marine park management arrangements of a HPZ, there would have been no impact on commercial fisheries since 2012.	There are no known commercial tourism activities in the proposed SZ area, and therefore no impact of the existing marine park management arrangements.	Recreational uses: There are some shacks and holiday accommodation along the shoreline of D’Estrees Bay. Under the existing marine park management arrangements of a HPZ, there would have been no impact on recreational uses since 2012. Recreational fishing: Some recreational fishing does occur in D’Estrees Bay but would be relatively minor compared to other locations on Kangaroo Island such as American River and Kingscote. There is a beach boat ramp located at D’Estrees Bay adjacent to the proposed SZ. Under the existing marine park management arrangements of a HPZ, there would have been no impact on recreational fishing since 2012. Social values: The area is considered to have ‘wilderness value’. Under the existing marine park management arrangements of a HPZ, there may have been a positive impact on the ‘wilderness value’ of the area due to the association and perception of the marine park since 2012.

Table 3.8. Summary table for D’Estrees Bay sanctuary zone – impacts on values of changing existing arrangements (text derived from unpublished work conducted for DEW in 2012 with additional text added by DEW)

Environmental value	Economic value		Social value
	Commercial fishing industry	Tourism industry	
Description of proposed amendment to zoning: Create a new SZ in D’Estrees Bay by changing part of the HPZ to SZ. New SZ area of 23.3 km², new HPZ areas of 297.3 km² (HPZ-1) and 52.3 km² (HPZ-3) (see Figures 2.4 and 2.8). Expected impacts: Previous work done on a proposed SZ in D’Estrees Bay in 2012 predicted that with the cessation of fishing, the SZ would have positive benefits for reef species such as rock lobster, abalone, and western blue groper (unpublished data, DEW). These predictions still hold for the proposed SZ. Changing the zoning from HPZ to SZ will prevent future activities that may be allowed in a HPZ such as aquaculture or coastal developments. Nonetheless, given the remote and exposed nature of the area, these activities are unlikely to occur there anyway. The inclusion of the new SZ will add to the principles of the network of SZs being Comprehensive, Adequate and Representative due to the addition of seagrass meadows which are absent from SZs on the south coast of Kangaroo Island (see Bryars et al. 2016, 2017).	Expected impacts: The area available to commercial fishers will be decreased by 23.3 km². There are no current estimates available for the value of displaced commercial catch in the proposed reduced area of the SZ. Nonetheless, the area of reef habitat (which is of interest to the rock lobster and abalone sectors) is relatively small at 6.1 km² of mapped reef. It is understood that the D’Estrees Bay SZ has been offered by those sectors in exchange for access to part of the Cape du Couedic SZ (2020 amendment passed through parliament but not yet fully executed). SARDI estimates of historical catch for Marine Scalefish and Charter boat fisheries in draft sanctuary zones back in 2012 (which included an SZ in D’Estrees Bay) indicated that there would be nil catch displaced for these two sectors (unpublished data, DEW).	Expected impacts: There are no known commercial tourism activities in the proposed SZ area, and therefore no impact is expected.	Expected impacts: Closing the new proposed area to fishing would have an unquantified negative impact on the available area for recreational and commercial fishing activity. There will likely be some negative response from locals and holiday home owners who recreationally fish the area; noting that an equivalent area was proposed as an SZ back in 2010 but was removed following advice from the Marine Park Local Advisory Group (see Figure 2-18 p46, BDO EconSearch 2018). The provision of a SPA to allow recreational line fishing in the SZ reduces the potential impact on recreational fishing. There may be an increase in ‘wilderness value’ due to the designation as an SZ.

4 Conclusions

4.1 Impacts of changing existing management arrangements for the four 2021 Proposed Amendments

The proposed amendments at the Isles of St Francis SZ will result in a positive impact for economic values associated with commercial fishing (i.e., the Western Zone Abalone Fishery) and a negative impact for the environmental values associated with the resumption of abalone fishing.

The proposed amendments at the North Neptune Islands SZ will result in a positive impact for economic values associated with commercial fishing (i.e., the Western Zone Abalone Fishery, Northern Zone Rock Lobster Fishery, Marine Scalefish Fishery, and Charter Boat Fishery) and a negative impact for the environmental values associated with the resumption of fishing. There is potential for a negative impact on economic values associated with the shark cage diving tourism industry.

The proposed amendments at the Clinton Wetlands SZ will result in minimal impacts on environmental, economic and social values.

The proposed amendments at the D'Estrees Bay SZ will result in a negative impact for economic values associated with commercial fishing (i.e., the Central Zone Abalone Fishery, Northern Zone Rock Lobster Fishery), a positive impact for the environmental values associated with the removal of fishing, and a negative impact for social values associated with recreational fishing.

4.2 Differing impacts from three of the 2021 Proposed Amendments vs the equivalent 2020 alternative amendments if they were to become active

Whilst the current impact assessment considers changes from existing management arrangements to the proposed management arrangements, it is worthwhile considering what the potential impact is of the three 2021 proposed amendments vs the equivalent 2020 alternative amendments if they were to become active, i.e. Isles of St Francis, North Neptune, and Clinton Wetlands SZs. In terms of environmental values, the three 2021 proposed alternative amendments provide a better nett environmental outcome than the 2020 amendments because (1) St Francis Island is still included in the Isles of St Francis SZ (even despite commercial abalone fishing being allowed around the island), (2) a larger area of SZ is included in the North Neptune Islands SZ, and (3) the entire Clinton Wetlands SZ remains intact (except for the addition of a small SPA to allow shore-based recreational line fishing). In terms of commercial fishing, the impacts are varied; for the Northern Zone Rock Lobster Fishery and the Western Zone Abalone Fishery the impact is close to neutral, while for the Marine Scalefish Fishery the impact is negative, due to the Clinton Wetlands SZ not being opened.

4.3 Overall impacts from the completion of the marine parks review

Whilst the current impact assessment considers changes from existing management arrangements to the proposed management arrangements, it is worthwhile considering what the potential impact is due to the package of 2020 amendments that have been passed already, the 2020 Amendments that will remain unchanged, and the 2021 Proposed Amendments. In summary, if all changes were legislated, then the marine parks review would have delivered the following suite of changes:

- Upper South East Marine Park - Shore based recreational line fishing allowed in the Coorong Beach South Sanctuary Zone.
- Encounter Marine Park - Northern boundary extended to create a new sanctuary zone at Port Stanvac and new zoning created around the Metropolitan Shellfish Reef at Glenelg.
- Nuyts Archipelago Marine Park – Original boundaries of the Isles of St Francis Sanctuary Zone remain with a Special Purpose Area overlaid in the north east region to allow for commercial abalone fishing only.
- Nuyts Archipelago Marine Park – Nuyts Reef Sanctuary Zone increased in size.
- Neptune Islands Group (Ron and Valerie Taylor) Marine Park - North Neptune Islands Sanctuary Zone decreased in size.
- Upper Gulf St Vincent Marine Park - Outer boundaries increased and zoning applied to provide protection for Windara shellfish reef.
- Upper Gulf St Vincent Marine Park – a new Special Purpose Area overlaid on the Clinton Wetlands Sanctuary Zone about 2km SW of Port Arthur to allow recreational shore-based line fishing.
- Western Kangaroo Island Marine Park - Cape du Couedic Sanctuary Zone decreased in size.
- Southern Kangaroo Island Marine Park - New sanctuary zone created at D'Estrees Bay with a Special Purpose Area that allows for shore based recreational line fishing.

Overall there will be a range of gains and losses for the environmental, economic and social values due to changes in different sanctuary zones across the Marine Parks network. The collective suite of changes outlined above is predicted to have the following overall impacts:

- Positive economic impact for the Western Zone Abalone Fishery
- Positive economic impact for the Central Zone Abalone Fishery
- Positive economic impact for the Northern Zone Rock Lobster Fishery
- Neutral economic impact for the Marine Scalefish Fishery
- Neutral economic impact for the commercial tourism industry
- Negative environmental impact
- Positive social impact for recreational fishing

5 References

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