
Economic Impacts Draft Zoning Plan Jervis Bay Marine Park

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Marine Parks Authority

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Abbreviations and Glossary

DECCW	NSW Department of Environment, Climate Change and Water
DEWHA	Aust Govt Department of Environment, Water, Heritage and the Arts
I&I	NSW Department of Industry and Investment
JBMP	Jervis Bay Marine Park
MP	Marine Park
MPA	NSW Marine Parks Authority
TRA	Tourism Research Australia
ZP	Zoning Plan

Executive Summary

The purpose of this study was to identify, quantify and where possible value economic impacts which may occur in commercial and non-commercial activities as a result of recommended changes to the current zoning plan for the JBMP.

The study was completed as a desk-based research exercise. Economic impacts were assessed for commercial fishing and aquaculture, recreational fishing, commercial marine tourism, other recreation, local business dependent activity and property prices.

Key findings include:

- Commercial fishing – minor negative economic impacts. Impacts focussed on relatively small changes for single purse seiner and up to seven demersal trawlers. Economic loss to seven demersal trawlers was estimated to total \$777 per annum in producer surplus or \$11,098 gross. No net impact on Abalone catch.
- Recreational fishers – zoning plan changes include both positive and negative developments for recreational fishing. On balance, no net change in economic values.
- Other recreation - recreational activities in the JBMP will not be adversely affected by changes to the zoning plan and minor incremental additional benefits will be created.
- Local businesses – no change in economic values attributable to the zoning plan.
- Property prices – property prices are not likely to be impacted by the minor changes in economic values described in this report.

Relocating the St Georges Head - Steamer Head sanctuary zone north is the only proposed change to the zoning plan receiving a high concentration of stakeholder response. Economic costs to commercial and recreational fishing associated with this change were found to be mitigated by access to a new alternative reef area. Minor economic impacts are also experienced in association with trawl access changes and purse seining. Recreational benefits may be realised by creating new restrictions on boats and jet skis. The paucity of data and the minor nature of changes have prevented quantification of all economic impacts.

1. Introduction

1.1 Impact Assessment Purpose and Scope

The purpose of this report was to provide the NSW Marine Parks Authority (MPA) with an economic impact assessment of draft changes to the Jervis Bay Marine Park (JBMP) zoning plan.

Specifically, the objective of the study was:

- To identify, quantify and where possible value economic impacts which may occur in commercial and non-commercial activities as a result of recommended changes to the current zoning plan for the JBMP.

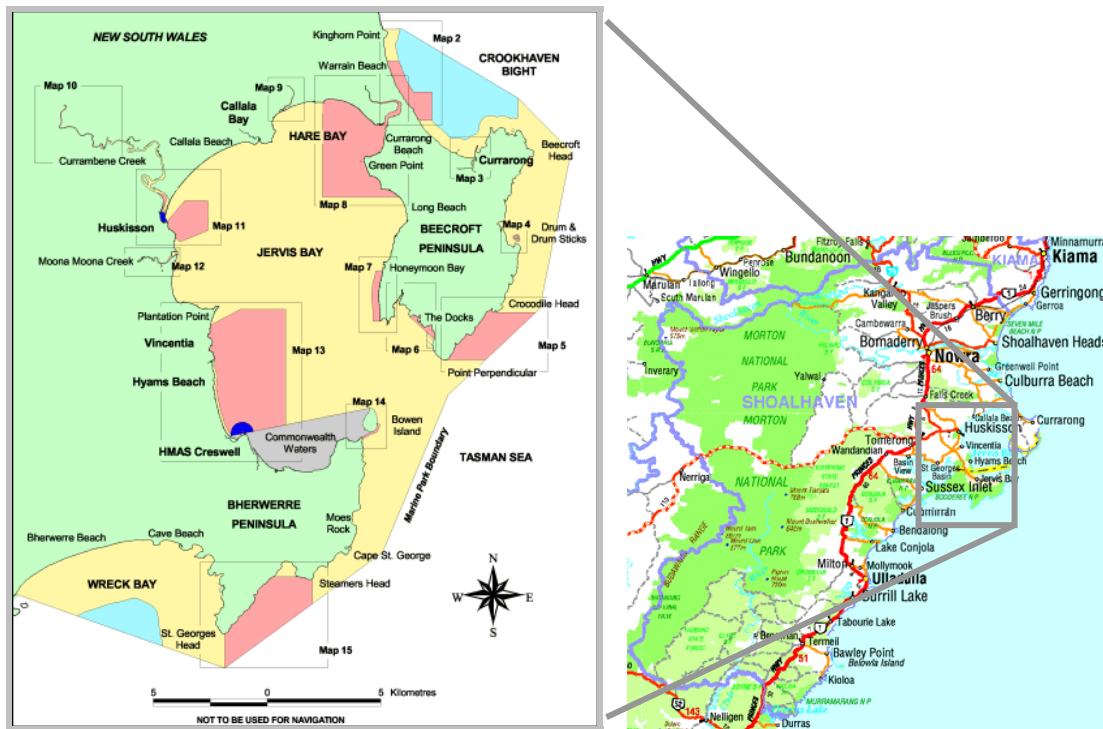
Economic impacts relate principally, but not exclusively, to changes in the level, type and value of commercial and recreational fishing and general recreational activity.

It is important to note that conclusions drawn from this study need to be tempered by the lack of an appropriately comprehensive commercial and recreational fishing data set for the JBMP at a geographic scale that would directly inform development of the zoning plan. The results contained in this report are based on information provided by Marine Park staff, officers at DECCW and NSW Department of Industry and Investment (I&I).

The impact assessment is part of a wider review process that includes preparation of a zoning plan review report (MPA 2009). Preparation of the zoning plan review report included community consultation. The review process is a statutory requirement to ensure that zoning plans protect the important natural and cultural values of the marine park, while providing for a range of sustainable uses including beach activities, swimming, surfing, commercial and recreational fishing, scuba diving, whale and dolphin watching, sailing, boating, research and other activities (MPA 2009).

The Jervis Bay Marine Park spans 100km of coastline and covers an area of 214 km². Figure 1.1 below shows the location of Jervis Bay Marine Park and 2002 zoning plan boundaries.

Figure 1.1 JBMP Location and 2002 Zoning Plan Boundaries



1.2 Background

The MPA is currently reviewing the zoning plan (ZP) for Jervis Bay Marine Park which ensures the conservation of biodiversity in the marine park and regulates its use. Part of the review process has involved producing a draft zoning plan which incorporates changes recommended in earlier zoning plan review reports for the parks. These changes were subsequently announced by Ministers Sartor and Whan in April 2010 as below:

JBMP recommendations:

- Prohibit commercial trawling and lift netting activities in the marine park;
- Relocate St Georges–Steamers Head Sanctuary Zone northward without increasing the sanctuary zone area, but provide a 100m wide habitat protection zone to allow rock fishing;
- Reconfigure one purse seining area within Jervis Bay and remove a purse seining area adjacent to Bowen Island;
- Improve manageability at the Drum and Drum Sticks by straightening zone boundaries;
- Designate an anchoring area in Hare Bay sanctuary zone to facilitate public use;
- Prohibit the use of jet skis at Hyams Beach to facilitate public use and enjoyment;
- Restrict spearfishing and boating in Honeymoon Bay to improve public safety; and
- Restrict motorised vessel access to Carama Inlet and Moona Moona Creek to better protect shallow water habitats.

The Ministers media release can be found at:

www.environment.nsw.gov.au/resources/MinMedia/MinMedia10041901.pdf

Further information on the proposed changes, background research, and the wider consultation process can be found at: <http://www.mpa.nsw.gov.au/jbmp.html>

1.3 Project Method

The project was completed through a process that involved desk-based research, collation, analysis and write up of secondary data from published and unpublished sources (see project reference list and Table 1.1 below), and discussions with DECCW Marine Park Managers, NSW Department of Industry and Investment (I&I) and Department of Environment, Climate Change and Water (DECCW) staff and CARE Pty Ltd.

The project required:

- Description of commercial and non commercial MP activities;
- Documentation of the impact of zoning plan changes on MP activities;
- Identification of background trends relevant to the MP activity – Figure 1.2 below;
- Estimation of net incremental physical impacts of ZP changes;
- Analysis and quantification of economic impacts; and
- Project reporting.

A standalone chapter was prepared for each set of MP activities.

Table 1.1 Possible Sources of Information to Estimate Changes in Economic Values

Example of activity	Possible information source/proxy measure
Commercial fishing and aquaculture	I&I catch records
Recreational fishing	MP reports and surveys
Commercial marine tourism activity e.g. charter fishing, diving, marine mammal watching	Information from unpublished NSW Marine park licensing project
Recreation	Information on patronage of tours MPA recreational surveys of JBMP
Local business activity dependent on MP	Business surveys (2005, and forthcoming)
Property prices	Valuer-General information and online data (eg domain.com)

Source: MPA Project Brief

Figure 1.2 Possible Background Trends in MP activity

Some exogenous factors which may influence commercial and non commercial activities in JBMP include the following.

Social

In migration of retirees and others to coastal towns
Aging of resident population and new arrivals
Obesity and health
Longer working life
Dual income families
Aboriginal communities
Changing holiday patterns (e.g. short breaks, road trips)
Community awareness of environmental impacts/climate change

Technological

Better road access but increasing petrol prices
Trend to 4-wds
Internet, electronic communication/mobiles
Teleworking

Economic

Health care costs for aging populations
Housing affordability
longer working life/quasi-retirement
Dual household incomes – part-time work
Increasing petrol prices
coastal residential development
decline in regional economic importance of primary industry
increase in service sector
rising interest rates for housing loans
Cost of housing /rents in Sydney (Newcastle, Canberra)

Environmental

Climate change re drought, coastal processes etc.
decline of fisheries/ fish stocks
water quality and quantity for coastal lakes/estuaries, urban water supplies

Political/institutional trends

workplace /industrial agreements
creation of NSW multi-purpose MPAs
creation of Commonwealth marine parks
other environmental protection legislation
Structural adjustment programs for NSW and Commonwealth fisheries.

Continued economic growth in the region is likely to affect the MP in at least two ways: by increasing pressure on the environmental resources and hence management of the Park; and also by increasing the value derived from the Marine Park.

Source: MPA Project Brief

2. Commercial Fishing

2.1 Description of JBMP Commercial Fishing

Jervis Bay is an important habitat for fish recruitment to the surrounding commercial fisheries. Only limited commercial fishing occurs in JBMP and much of it is for bait (AgEconPlus 2008).

NSW I&I data for Ocean Zone 8 relates to NSW ocean waters between S35o (immediately north of Currarong), and S36o (south of Moruya). This area includes, but is not limited to, the JBMP has yielded approximately 1,830 tonne of production with an annual average market value of \$5.4 million between 1997-98 and 2008-09¹.

Table 2.1 Commercial Wild Harvest 'In or Adjacent to the JBMP' #

Year	Weight (tonnes)	Value (\$'000)	Number of Fishing Businesses
1997-98	1,969	5,311	166
1998-99	1,620	4,517	168
1999-00	1,816	5,257	146
2000-01	1,900	5,538	143
2001-02	2,140	6,511	129
2002-03	1,740	4,997	110
2003-04	1,735	4,449	96
2004-05	1,989	4,858	92
2005-06	1,745	5,044	91
2006-07	1,640	5,241	85
2007-08	1,829	5,817	75
2008-09	1,843	6,708	66

Source: I&I Fisheries Resource Management Branch, September 2010

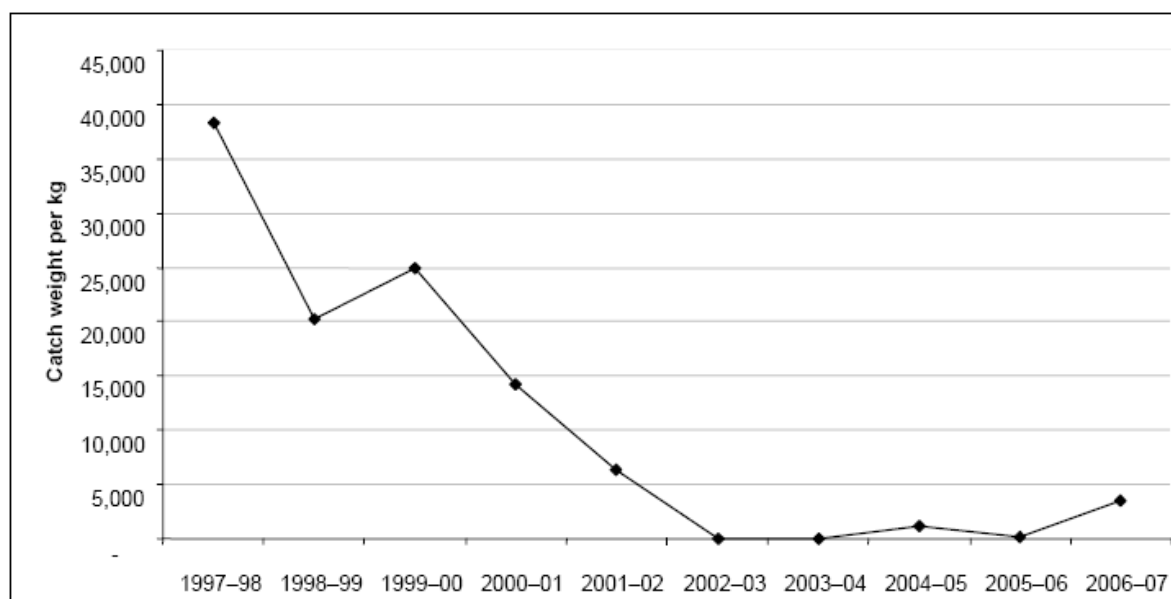
Includes estuary general, fish trawl, ocean hauling, ocean prawn trawl and ocean trap and line.

Prior to the establishment of the MP zoning plan in 2002 the NSW Government completed a buy out of 17 fishing businesses and reduced estuary general commercial fishing activity in the enclosed waters of Jervis Bay (see Figure 2.1). Commercial fishing in the ocean zone outside Jervis Bay has been relatively stable since at least 1997-98 (MPA 2009).

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Note the north of JBMP includes a small fraction of Ocean Zone 7. Given its small size and capacity to distort, Ocean Zone 7 data has not been included in Table 2.1.

Figure 2.1 Jervis Bay Estuary Catch 1997-98 to 2006-07 (kg)



Source: MPA 2009

Structural adjustment has removed most of the commercial fishing industry from inside Jervis Bay and the bait fishing industry has also contracted (NSW MPA advice). There are several Indigenous fishers at Wreck Bay and Orient Point. From interviews completed in 2004 and 2009 it was apparent that there are a small number of fishers to whom the JBMP area is still an important source of income. There are many fishers to the north and south of Jervis Bay who make no use of the bay, preferring to fish in deep water outside MP limits (AgEconPlus 2009).

Commercial fisheries that may operate in the marine park are the Estuary general fishery; Lobster fishery, Ocean hauling fishery, Ocean trawl fishery, Ocean trap and line fishery and Abalone fishery (MPA 2009).

2.2 Zoning Plan Changes that Impact Commercial Fishing

Draft zoning plan changes that will impact on commercial fishing in the JBMP include:

- Prohibition of commercial trawling and lift netting activities in the marine park;
- Relocation of the St Georges-Steamers Head Sanctuary Zone northward without increasing the sanctuary zone area, but provide a 100m wide habitat protection zone to allow rock fishing; and
- Reconfiguration of one area within Jervis Bay and remove an area adjacent to Bowen Island.

2.3 Assessment of Zoning Plan Impacts on Commercial Fishing

Prohibition on Lift Netting

A prohibition on lift netting in JBMP is proposed. Lift netting is not practiced in the JBMP and no licences are issued by I&I for this purpose (AgEconPlus consultation and analysis). It is noted that prior to zoning plan changes there existed an 'option value' for lift netting in the JBMP that will be extinguished by the policy proposal. While option value is relevant, it is difficult to quantify.

Prohibition of Commercial Trawling

Commercial trawl in JBMP is licensed for demersal finfish species rather than prawns and is a minor activity that is limited to two sites within the park, ie Crookhaven Bight in the north and Wreck Bay in the south. Crookhaven Bight is trawled infrequently due to the presence of a reef system that damages trawl nets. Crookhaven Bight is trawled by fewer than six commercial fishing vessels on an *ad hoc* basis. It is a minor resource for local trawl businesses constituting a small number of total trawl 'shots' ie less than 5% of total effort (MPA advice).

Wreck Bay was set aside as a trawl 'turnaround area' under the current zoning plan so that vessels operating outside the park do not need to lift their nets at the end of a 'shot'. Wreck Bay is used infrequently for this purpose and while it is possible that other trawlers use Wreck Bay as a turnaround area, to the best of the MPA's knowledge, it is only used irregularly by a single operator. Change in the zoning plan at Wreck Bay to prohibit trawling will result in an inconvenience for this single operator rather than a reduction in catch.

Trawl operators have indicated that both Crookhaven Bight and Wreck Bay are small parts of their trawl fishing operations ie less than 5% of total effort (MPA pers comm. July 2010). Economic loss is estimated on the following basis:

- I&I catch records 1997-98 to 2008-09 show an average Fish Trawl Catch in or adjacent to the JBMP of 395 tonnes valued at \$1.3 million spread across 41 businesses. An earning per business estimate of \$31,707 gross.
- The number of businesses impacted by zoning plan changes is estimated to total seven ie six in Crookhaven Bight and one in Wreck Bay. The gross value of Fish Trawl Catch across these seven businesses is estimated to total \$221,951 (ie 7 X \$31,707).
- If the full estimated loss to fishing operations is applied ie 5% then total loss across seven businesses will gross \$11,098 per annum (5% of \$221,951) with an estimated producer surplus of \$777 (producer surplus is 7% of gross earnings).

Trawl operators currently fishing Crookhaven Bight and Wreck Bay would offset at least part of this loss by increasing fishing effort in other areas.

Relocation of the St Georges-Steamers Head Sanctuary Zone

Relocation of the St Georges-Steamers Head Sanctuary Zone northward will prevent access to a commercial fishing reef but will 'free up' an alternative reef believed to be of

additional value to commercial fishers – a more detailed discussion of this trade off is provided under the recreational fishing section below.

Although currently closed and not generating economic values, the St Georges-Steamers Head Sanctuary Zone is a key abalone area (per. Comm., Regional Manager South Coast Parks and Wildlife DECCW). Historical values associated with abalone catch are shown in the table below.

Table 2.3 Abalone Economic Values JBMP (\$'000)

Financial Year	Financial Year			
1997/98	1998/99	1999/00	2000/01	2001/02
In or Adjacent to JBMP	7,544	10,006	14,761	9,319
Outside of JBMP	316,118	316,493	295,874	275,477
NSW Total	323,661	326,500	310,634	284,796

Source: I&I September 2010

The I&I fisheries data on abalone catch in the JBMP is a at broad spatial scale and arguably too broad to accurately quantify the economic values that may be affected by zoning changes. Abalone catch data is grouped by Regions and sub zones and the relevant Region is Region 1 south and the South Sub zones within the JBMP are:

- Shoalhaven Heads to Currarong
- Currarong to Point Perpendicular
- Inside Jervis Bay
- North tip Bowen Island to Wreck Bay.

The proposed changes to the zoning plan would see a loss of some area, but the addition of another area.

Reconfiguration of Purse Seining Area

Reconfiguration of one purse seining area within Jervis Bay and removal of an area adjacent to Bowen Island for purse seining will have implications for this form of commercial fishing. Under the current zoning plan two separate areas are available for purse seining within the bay and are predominantly used by a single commercial fishing business to gather live bait for fishing pelagic species such as tuna and kingfish.

Under the proposed zoning plan, the two separate areas, Bowen Island and Plantation Point would be replaced with a single, larger and more easily identified area off Plantation Point. While the single easier to fish area is consistent with the single operator's request, the loss of Bowen Island may result in some economic loss (MPA advice). Bowen Island is suitable for harvesting yellowtail while Plantation Point produces only pilchards. Bowen Island is also a 'fail safe' source of bait during poor weather and during winter months that produce cold currents. The current operator purse seines from an 'open tinny' and is unable to pursue bait in warmer open waters outside the park.

Reconfiguration of the JBMP purse seining area will produce economic impacts ie loss of bait collecting opportunity during rough winter weather (MPA advice) in turn this may have consequences for resultant tuna and kingfish catch. It was not possible to quantify the magnitude of this economic loss.

Summary of Commercial Fishing Economic Impacts

Table 2.4 Economic Impact JBMP Commercial Fishing

Activity	Net Incremental Impact of ZP Changes	Economic Impact of ZP Changes
Lift netting	Not practiced or even licensed in the JBMP	No economic impact. The loss of 'option values' acknowledged.
Commercial trawl	Loss of minor trawl opportunity Crookhaven Bight for up to 6 fishers. Turning zone removed for single trawler at Wreck Bay.	Minor economic impact – areas removed from trawling were a small part of impacted trawl businesses ie less than 5% of total trawl effort. Estimated total producer surplus loss across 7 businesses of \$777 per annum.
Purse seining	Loss of bait collecting opportunity during rough winter weather which may have consequences for resultant tuna and kingfish catch	Economic cost to a single commercial fishing business ie a proportion of overall catch. A small proportion is likely given that this change being pursued by the MPA was instigated by the single commercial fishing business.
Abalone	The proposed changes to the zoning plan would see a loss of some area associated with the St Georges-Steamers Head Sanctuary Zone, but the addition of another area.	No net change in economic values.

While not all of the negative economic impacts on commercial fishers have been quantified, they are relatively minor in nature.

3. Aquaculture

Oyster leases previously established in Currumbene Creek were surrendered in the late 1990s. Mussel aquaculture occurred in Jervis Bay near Vincentia from 1977 to early 2008 under the authority of a NSW Department of Primary Industries experimental permit (now I&I). The operation provided a small quantity of product marketed locally. Other operators have raised the prospect of carrying out similar operations in the area (MPA 2009).

Changes proposed in the draft zoning plan will not impact aquaculture production in the JBMP (AgEconPlus consultation and analysis).

4. Recreational Fishing

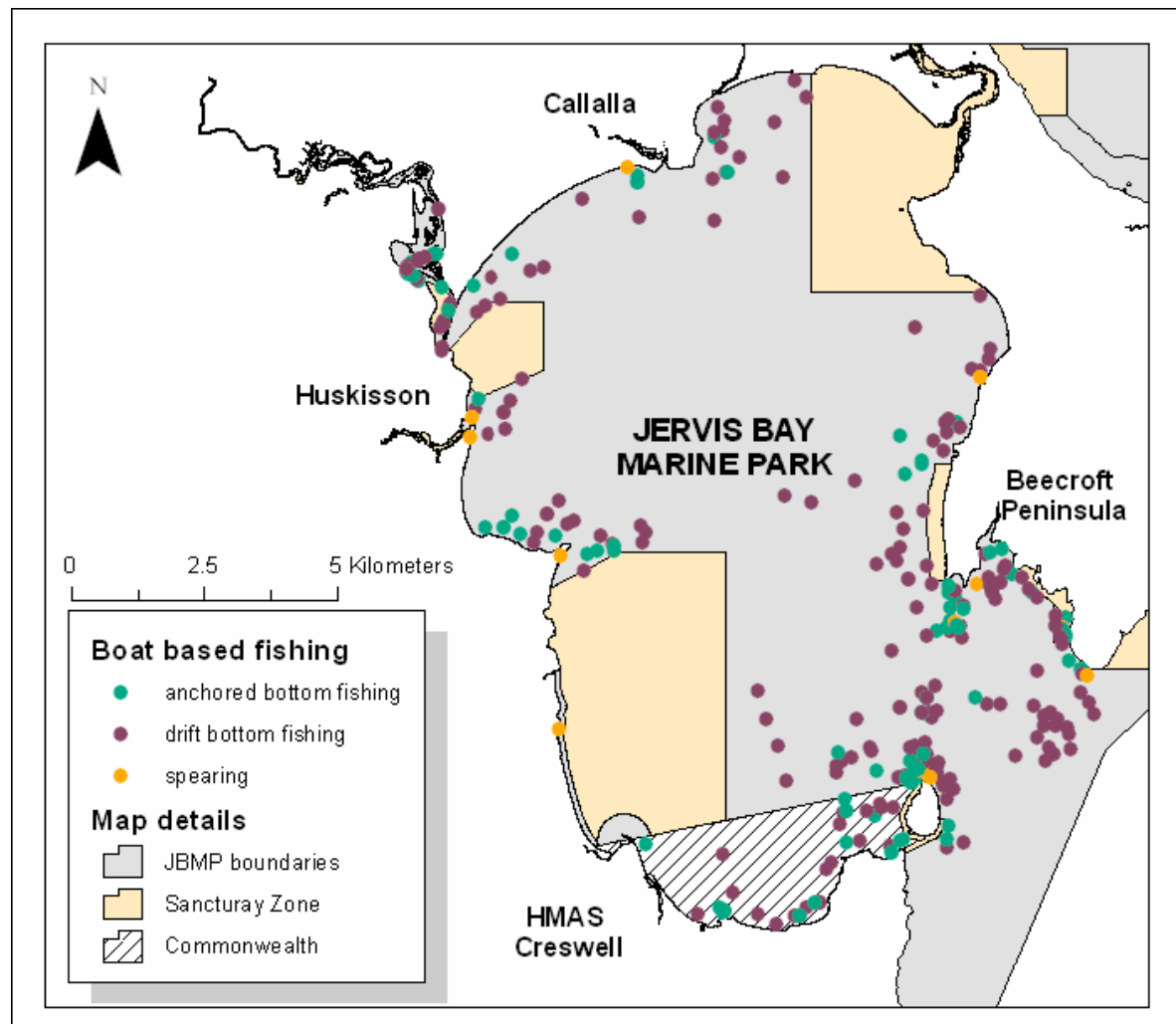
4.1 Description of JBMP Recreational Fishing

JBMP provides a wide variety of angling and spearfishing experiences within a relatively small area because of the range of landforms and available habitats that support a wide variety of fish. Shore and boat based angling are popular and because Jervis Bay provides

protection from rough seas it is patronised when conditions are unfavourable elsewhere (MPA 2009).

Boat based fishing is popular and disbursed throughout the park (Figure 3.1).

Figure 3.1 Boat Based Recreational Fishing in Jervis Bay 2003, 2004 and 2005



Source MPA 2009

Key species targeted by recreational fishers in the park include flathead, squid, snapper, bream and kingfish. The Outer Tubes, on the inside of Point Perpendicular, is renowned as one of the few places in the world where game fishing occurs from the shore, for marlin and kingfish. The collection of abalone is prohibited. A number of other species are hand collected for bait and food, including lobster, pipis, crabs, beachworms, yabbies, sea cabbage and ribbon weed. Fishing competitions are conducted in the marine park and include both line and spearfishing events.

While it was considered in the drafting of the initial zoning plan, for safety reasons access to parts of Department of Defence land on Beecroft Peninsula and in the Commonwealth Booderee National Park have subsequently been closed. This has resulted in a significant reduction in the availability of rock fishing sites within the park (MPA 2009).

In 2005 the value of coastal recreational fishing in the Shoalhaven LGA, which includes the JBMP, was estimated to be \$1.2 million pa (NSW DoP 2005)².

4.2 Zoning Plan Changes that Impact Recreational Fishing

Draft zoning plan changes that will impact on recreational fishing in the JBMP include:

- Relocation of the St Georges-Steamers Head Sanctuary Zone northward without increasing the sanctuary zone area, but provide a 100m wide habitat protection zone to allow rock fishing;
- Improving the manageability at the Drum and Drum Sticks by straightening zone boundaries (see MPA 2009, page 39); and
- Restricting spearfishing and boating in Honeymoon Bay to improve public safety.

4.3 Assessment of Zoning Plan Impacts on Recreational Fishing

Relocation of the St Georges-Steamers Head Sanctuary Zone

Relocation of the St Georges-Steamers Head Sanctuary Zone has caused some concern amongst recreational fishers (MPA pers comm. July 2010).

Moving the St Georges-Steamers Head Sanctuary Zone north will protect a reef habitat type that is not currently well represented within JBMP sanctuary zones and will free an alternative area of reef for recreational and commercial fishing.

The reef type to be protected provides valuable recreational and commercial fishing opportunities and is located at a depth of between 20m and 60m. However, the area of reef to be 'freed up' (between St Georges Head and Brooks Rock) for recreational and commercial fishing is also a useful resource.

The area of reef that is to be freed up for fishing is relatively shallow (<20m deep) and is swept by currents. This means that it is warm and rich in nutrients and fishing potential (MPA pers comm. July 2010). The area of reef to be freed up for fishing is home to high value species such as snapper and attracts pelagic species such as kingfish to its outer edge (MPA pers comm. July 2010).

Inclusion of the 100m wide habitat protection zone to allow rock fishing within the proposed Brooks Rock – Moe's Rock Sanctuary Zone will simply maintain the status quo for shore based recreational fishers at this site.

The only impact of the proposed Brooks Rock – Moe's Rock Sanctuary Zone is a restriction on boat based fishing at the reef to be protected (shore-based fishing will still be allowed between Cape St George and Moes Rock). An alternative site between St Georges Head and Brooks Rock will be made available for recreational fishing under draft zoning plan changes. No economic costs will be incurred.

² DoP (2005) Economic Values of Natural Resources and Natural Environments on the NSW Coast, A report for the Comprehensive Coastal Assessment CCA22 Part 1, page 23.

Improving the Manageability at the Drum and Drum Sticks

Improving the manageability at the Drum and Drum Sticks by straightening sanctuary zone boundaries is a relatively minor change to the status quo and while it might be argued that closing off the passage between Drum and Drum Sticks and the shore will remove a trolling opportunity for recreational fishers and charter boat operators, access to the passage is very weather dependent and alternative, safer sites are plentiful within the JBMP.

Restricting Spearfishing and Boating in Honeymoon Bay

Restricting spearfishing and boating in Honeymoon Bay is simply to improve public safety. The bay is used by small children learning to swim and snorkel. The area of restriction is very small – tennis court size – and alternative spearfishing sites and twelve public boat moorings are available in the area immediately adjacent to Honeymoon Bay.

Summary of Recreational Fishing Economic Impacts

Table 4.1 Economic Impact JBMP Recreational Fishing

Activity	Net Incremental Impact of ZP Changes	Economic Impact of ZP Changes
Boat fishing St Georges-Steamers Head	No change, one 'prospective' reef substituted for another	No economic impact
Boat fishing Drum and Drum Sticks shore passage	Minor change – loss of single trolling opportunity in a park with many similar sites	No economic impact
Spearfishing and boating restrictions Honeymoon Bay	Ample alternative sites available in the area immediately adjacent to Honeymoon Bay	No economic impact

The net impact of zoning plan changes on recreational fishers is neutral ie there are no economic costs or benefits.

5. Commercial Marine Tourism Activity

5.1 Description of JBMP Commercial Marine Tourism Activity

A number of commercial activities are undertaken in the JBMP including charter fishing, charter scuba diving, marine mammal watching and scenic cruises, watercraft hire and kayak tours (AgEconPlus 2008).

In 2002, it was estimated that 58,120 people participate each year in commercial tours within JBMP. Consumer surplus associated with participation in JBMP commercial tourism activities was estimated at between \$1.2 million and \$1.8 million per annum (Gillespie Economics 2007).

In 2008, AgEconPlus estimated 55,000 people participated in commercial tours operated by 26 commercial tour businesses in the JBMP with an estimated gross value of \$2.4 million – see Table 5.1 below. Producer surplus on commercial marine tourism activity is estimated at \$525,000 pa.

Table 5.1 Profile of JBMP Commercial Marine Tourism Activity

Activity	Number of Permits	Estimated Passengers	Cost per Passenger (\$)	Total Revenue for Sector (\$)	Producer Surplus # (\$)
Charter fishing	8	1,813	110	200,000	44,000
Dive	6	3,665	120	440,000	97,000
Mammal/Scenic	9	48,884	35	1,700,000	374,000
Hire	2	378	75	28,000	6,000
Kayak	1	200	100	20,000	4,000
Total	26	54,940		2,388,000	525,000

Source: AgEconPlus 2008 using MPA data

Producer surplus was estimated at 22% of total revenue based on Gillespie *et al* (2005)

The impact of draft zoning plan changes by commercial marine tourism activity is presented in the following sections.

5.2 Assessment of Zoning Plan Impacts on Charter Fishing

NSW MPA permitted charter boat operators provide fishing trips to recreational anglers in the JBMP. There are currently between 8 and 12 charter fishing operators in the marine park operating primarily out of Huskisson and Greenwell Point. Charter boat operator clients land most of their fish in Huskisson, Callala and Currarong. The most common fish caught are blue or grey morwong and eastern blue-spotted flathead (MPA 2009).

Improving the manageability at the Drum and Drum Sticks by straightening sanctuary zone boundaries is a minor change that may remove a single trolling opportunity in good weather for charter fishing boat operators.

5.3 Assessment of Zoning Plan Impacts on Scuba Diving/Snorkelling

Scuba diving is extremely important to the local economy, with around 10,000 charter boat dives undertaken in the JBMP annually. The most commonly dived sites are the shallow rocky reefs, submerged cliff faces and caves around Beecroft Peninsula and Bowen Island. Around 90% of all divers are from areas other than Jervis Bay and Nowra. The number of charter boat dives has remained reasonably constant over the period since 2002 (MPA 2009).

Changes to the JBMP will not impact scuba diving and snorkelling.

5.4 Assessment of Zoning Plan Impacts on Marine Mammal Watching

A small industry based on dolphin watching and sightseeing operates out of the JBMP at Huskisson, accounting for approximately 90% of charter clients and 70% of charter industry revenue in 2007. Operators conduct dolphin watching and sightseeing tours all year round, and whale watching tours during the migrations of humpback whales from June to November. Operators who conduct sightseeing tours and other activities (eg charter fishing) may also watch dolphins and whales opportunistically if it suits their itinerary (MPA 2009).

Changes to the JBMP will not impact marine mammal watching.

5.3 Assessment of Zoning Plan Impacts on Other Commercial Recreation

Other popular commercial recreational activities include canoe and sea-kayaking hire and tours, and recreational boat hire (MPA 2009).

Changes in the JBMP zoning plan will not impact other commercially supplied recreation activities.

6. Other Recreation

Other recreation in the JBMP includes private boating for pleasure, swimming, snorkelling, walking, picnicking and sightseeing and these activities make up the bulk of visitation to the park (AgEconPlus consultation and surveys 2004 through to 2008).

Changes in the zoning plan that may affect passive recreation in the JBMP include:

- Designation of an anchoring area in Hare Bay Sanctuary Zone to facilitate public use;
- Prohibiting the use of jet skis at Hyams Beach to facilitate public use and enjoyment;
- Restricting spearfishing and boating in Honeymoon Bay to improve public safety; and

- Restricting motorised vessel access to Carama Inlet and Moona Moona Creek to better protect shallow water habitats.

Hare Bay Sanctuary Zone

Hare Bay Sanctuary Zone was established to protect important seagrass habitat. Hare Bay is also an attractive and popular picnic and swimming spot. Access to a boat anchoring area in the Bay will allow additional people, arriving by boat, to enjoy the bay. Over summer, this area is used by 'dozens of people' every day (MPA pers comm. July 2010).

While it could be argued that an economic benefit will be created by establishing an anchoring area, it is likely that in the short to medium term, the anchoring area will simply transfer recreational boating from one part of the park to another. No incremental additional economic benefit would be created.

Prohibiting the Use of Jet Skis at Hyams Beach

Prohibiting the use of jet skis at Hyams Beach to facilitate public use and enjoyment is proposed following a series of strong requests from the community. Hyams Beach is a popular swimming and snorkelling destination and noise and safety concerns have been raised by the community in response to a few jet ski riders using the area during summer holidays. Alternative jet ski areas are available throughout the park. No significant loss of economic values is incurred by jet ski riders as a result of this zoning plan change. However, it could be argued that an increase in consumer surplus has been realised by swimmers and snorkelers using Hyams Beach over summer.

Restricting spearfishing and boating in Honeymoon Bay

Restricting spearfishing and boating in Honeymoon Bay to improve public safety will benefit children learning to swim and snorkel in a safe sheltered area. Honeymoon Bay is very protected and given that these areas are limited in the park, it could be argued that a net economic benefit has been created for JBMP visitors.

Restricting motorised vessel access to Carama Inlet and Moona Moona Creek

Restricting motorised vessel access to Carama Inlet and Moona Moona Creek to better protect shallow water habitats will have little impact on JBMP recreation. Carama Inlet will remain open to non motorised vessels such as kayaks and canoes, is already off limits to fishing, is very shallow and can only be accessed approximately six times per year during king tides. No loss in economic benefits is anticipated. The mouth of Moona Moona Creek is closed off at the current time and cannot be accessed by motorised vessels and even when the mouth reopens will hold limited appeal to motorised recreational vessels.

Summary of Other Recreation Economic Impacts

Recreational activities in the JBMP will not be adversely affected by changes to the zoning plan and minor incremental additional benefits may be created.

7. Local Business Activity Dependent on JBMP

The above analysis has established that both commercial and recreational activities dependant on the JBMP will not be adversely impacted by proposed changes in the zoning plan. Businesses directly dependent on the JBMP, including commercial fishing supply chain enterprises, tourism and recreation and MPA expenditure will not be significantly affected. In the absence of impacts on businesses directly dependent on the JBMP, there will not be flow on or multiplier impacts on other local business activity, e.g. retail or accommodation (AgEconPlus consultation and analysis).

8. Property Prices

Property prices will not be impacted by the minor changes in economic values described in this report. Property prices are driven by local supply and demand as well as a range of exogenous factors described in Figure 1.2 including, but not limited to the migration of retirees to coastal towns, teleworking and the cost of housing in major cities.

9. Summary and Conclusions

From the above analysis the following results are summarised.

Table 9.1 Economic Impacts of Draft JBMP Zoning Plan Changes

Activity	Net Incremental Impacts of ZP Changes
Commercial fishing	<ul style="list-style-type: none"> ○ Minor negative economic impacts ○ Impacts focussed on relatively minor changes for single purse seiner and up to 7 demersal trawlers. Impact on demersal trawlers estimated at a total loss in producer surplus of \$777 pa ○ No net impact on Abalone catch
Recreational fishing	<ul style="list-style-type: none"> ○ ZP changes include both positive and negative developments for recreational fishing ○ On balance, no net change in economic values.
Charter fishing	<ul style="list-style-type: none"> ○ No change in economic values
Aquaculture	<ul style="list-style-type: none"> ○ No change in economic values
Scuba diving and snorkelling	<ul style="list-style-type: none"> ○ No change in economic values
Marine mammal watching	<ul style="list-style-type: none"> ○ No change in economic values
Other commercial recreation (eg kayak tours)	<ul style="list-style-type: none"> ○ No change in economic values
Other recreation	<ul style="list-style-type: none"> ○ Recreational activities in the JBMP will not be adversely affected by changes to the zoning plan and minor incremental additional benefits will be created.
Local businesses	<ul style="list-style-type: none"> ○ No change in economic values attributable to the ZP.
Property prices	<ul style="list-style-type: none"> ○ Property prices will not be impacted by the minor changes in economic values described in this report.

Relocating the St Georges Head - Steamer Head sanctuary zone north is the only proposed change to the zoning plan receiving a high concentration of stakeholder response. Economic costs to commercial and recreational fishing associated with this change were found to be mitigated by access to a new alternative reef area. Minor economic impacts would also be experienced by some trawlers (from reduced access) and a single purse seine fisher. Recreational benefits may be realised by creating new restrictions on boats and jet skis.

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