

# Report from stakeholder workshops Hawkesbury Shelf Marine Bioregion

Held 10<sup>th</sup>, 15<sup>th</sup> and 18<sup>th</sup> March 2016  
In Sutherland, Gosford and Sydney CBD

Facilitated by Danielle Annells Consulting

Prepare for	<b>Marine Estate Management Authority</b>
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## **Executive summary**

This report contains a record of the feedback received from stakeholders recorded at three workshops recently conducted by the Marine Estate Management Authority (MEMA) in relation to the Hawkesbury Shelf Marine Bioregion Assessment.

The Assessment aims to enhance marine biodiversity in the Hawkesbury Shelf marine bioregion while achieving balanced community outcomes, including opportunities for a wide range of recreational and commercial uses.

As part of the process the NSW Government asked MEMA to determine the priority threats for the bioregion and to develop and assess options to manage these threats. In March 2016 a Discussion Paper was released outlining suggested management initiatives for consideration by stakeholders and the community.

To coincide with the release of the Discussion Paper, MEMA organised a second round of stakeholder and community engagement, including workshops, to seek feedback on the draft management initiatives.

Workshops were held at three different locations across the region and were well attended by a range of stakeholders.

The aim of the workshops was to:

- Provide stakeholders with an update on the Assessment including the findings of the threat and risk assessment (TARA) for the Hawkesbury Shelf marine bioregion.
- Seek feedback on the suggested management initiatives and additional or alternative initiatives.

Outline how to provide additional feedback on the suggested management initiatives and the TARA.

- Answer questions regarding the Assessment and the process followed.

The focus of the workshop was to seek feedback on three main management initiatives, as these were perceived to hold the most interest to stakeholders. The three initiatives were:

- Initiative 1 – Improving water quality and reducing marine litter
- Initiative 2 – On-ground works for healthy coastal habitats and wildlife
- Initiative 4 – Spatial management for biodiversity conservation and use sharing

A smaller amount of time was spent on the remaining five initiatives and thus less feedback was recorded for these:

- Initiative 3 – Marine research to address shipping and fishing knowledge gaps
- Initiative 5 – Improving boating infrastructure
- Initiative 6 – Reducing user conflicts in Pittwater
- Initiative 7 – Improving accessibility
- Initiative 8 – Landuse planning for coasts and waterways

## **Response to the Threat and Risk Assessment (TARA)**

Participant feedback on the TARA encompassed a range of views with some stakeholders stating strong support for the approach and the extent of the study undertaken, while others noted the difficulties in doing the assessment given the scope.

Participants raised a number of questions about the TARA methodology and inclusions, as much of the detail is not provided in the discussion paper. Comments from the workshop discussions highlight that the summary tables presented in the discussion paper may create unwanted perceptions such as:

- The extent of the assessment being limited or skewed (because only the high and medium threats are presented).
- Aggregating the different categories together makes it appear that everything within that category is high (rather than just one of the stressors).
- Discussion paper appears to give much more weight to environmental benefits than social and economic benefits (because of the difference in size of the summary tables).
- It appears that cumulative impacts were not taken into account.

## **Feedback on the management initiatives**

### **Initiative 1 – Improving water quality and marine debris**

Participants provided a lot of feedback on the types of litter and litter hotspots.

There seems to be significant information gaps or lack of in-depth understanding about:

- How much litter there is, and how much of the different types there is, such as the amount of 'ghost' fishing gear.
- How much litter the marine environment (and parts of it) can sustain.
- The impact of plastics on fish and the ecosystem function including human health.

It was expressed that regulation and compliance measures are needed and have the most impact in reducing the impact of litter in waterways. Other ideas include incentives such as paying volunteer clean up groups, taking a strong and provocative education and awareness approach, providing more bins and trash racks and encouraging product and manufacturing innovation towards more environmentally friendly products.

Participants also provided a lot of views about the pollutants that are affecting water quality and the habitats they would like to see protected. Responses on how to reduce the impact of pollution from runoff in waterways can be categorised into the following themes:

- Compliance
- Smarter planning
- Utilise and incentivise smarter design, technology and systems
- Manage water flows
- Incentives and funding

- Increase community interest

It was felt that there is currently very little uptake of Water Sensitive Urban Design (WSUD) due to lack of funds, incentives and compelling evidence of the benefits.

### **Initiative 2 – On-ground works for healthy coastal habitats and wildlife**

Priority areas for on-ground works within the bioregion are the intertidal zone, including saltmarsh, riparian habitats and stormwater.

For cost effectiveness and efficiency in on-ground works, stakeholders suggest that clarity must be provided in relation to the overlap with the coastal reforms and collaboration among state agencies and other stakeholders is key. The word 'consistency' was used multiple times as a request for MEMA initiatives and the Coastal Management reforms to be implemented together.

Levies were also suggested multiple times as a way to raise revenue for works.

Views were cautious in relation to the urban mangrove management policy. A number of concerns were expressed that there is a risk the policy will be misused for aesthetic purposes and it will be difficult to enforce compliance.

If a mangrove policy is to be done, stakeholder views show convergence that it should be done at an estuary wide level based on a natural impact assessment – not done at a property level. Some stakeholders considered this may be achieved through a Coastal Zone Management Plan.

Comments about the initiative to improve marine wildlife incident reporting are supportive and a variety of ideas are offered. Stakeholders listed a number of species as key marine wildlife at risk that they would like to see included.

### **Initiative 3 – Marine Research to address shipping and fishing knowledge**

It is seen as a strength to conduct more research to maximise the benefits we receive from the marine estate, as many stakeholders would like to see evidence as the basis for decision making.

Many comments were made about weaknesses in this proposed initiative – centring on the premise that more research is needed. Stakeholders recommend that a broader scope of research is needed, including making better use of community knowledge, in order to make the initiative more effective at addressing the priority threats.

### **Initiative 4 – Spatial management for biodiversity conservation and use sharing**

Spatial management is supported as '*it is integral to delivering biodiversity outcomes to all users*' and not supported unless there is enforcement and education to address issues and equitable and fair use. Views differ on whether it should or should not be used for extractive use management. Views were also mixed in relation to the question of whether current spatial management in the bioregion is effective.

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Many views were recorded on the outcomes people would like to see from the spatial management initiative. Stakeholders would like clarity on the targets, scope and definition of the initiative, with evidence-based decisions that consider the social, economic and environmental aspects. There is a recognition that this is very complex and multiple spatial/temporal management is needed, as is a consistency of rule set and terminology.

Numerous data sources were recorded as environmental, social or economic data layers that could help MEMA develop this initiative further.

A large number of other considerations were also recorded, which when aggregated, suggest that further research and planning is needed before spatial management plans and decisions are made.

### **Initiative 5 – Improving boating infrastructure**

Participants noted a number of issues for consideration in planning for future boat storage requirements across environmental issues, funding, infrastructure and vessel type and ownership.

In particular, environmentally friendly moorings were mentioned. It is also suggested that funds should be raised from boating users through mooring fees and boat registration to fund improvements to infrastructure and habitat restoration.

### **Initiative 6 – Reducing user conflicts in Pittwater**

A number of stakeholders expressed support for commercial fishing in Pittwater. Suggestions for ways to reduce user conflict in the area include education, better infrastructure and policies such as the use of zoning i.e. *'fair zoning regulation which balances different needs and users against environmental outcomes'*.

Some participants suggest that the Department of Primary Industries should fund changes while others believe it should be funded from end-users.

### **Initiative 7 – Improving accessibility**

Stakeholders suggested some priority sites for improving wheelchair and pram access to marine areas, such as iconic sites and finding a balance between places that are crowded and those that are not. Some comments refer to a trending reduction in access for fishing and that this should be reversed.

Participants suggest that increasing the overall public amenity (such as with more toilets and bins) is a cost efficient way to improve accessibility and that funding for better infrastructure to support various user needs is required.

### **Initiative 8 – Landuse planning**

Key issues raised by stakeholders to be examined as part of a review of the State Environmental Planning Policies (SEPPs) can be summarised into two categories: environmental issues, and legislative issues. Stakeholders would like to see water

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quality targets addressed and protection of habitats as well as consistency or a reduction in related legislation.

Participants suggest that state authorities need to work closer together with better communication and sharing of information in order for SEPPs to better integrate with catchment management plans and strategies.

### **Participant feedback and evaluation**

Overall feedback from participants about the workshops was very positive, with many expressing that it was informative.

All elements on the evaluation form averaged between 3 and 5 out of 5 (where 5 = strongly agree). See page 89 for details.

## **Introduction**

The NSW government asked the Marine Estate Management Authority (MEMA) to undertake an assessment of the Hawkesbury Shelf marine bioregion and to develop and assess options to improve management.

The assessment aims to enhance marine biodiversity in the Hawkesbury Shelf marine bioregion while achieving balanced community outcomes, including opportunities for a wide range of recreational and commercial uses.

The assessment has piloted the Authority's new 5-step decision-making process for marine estate management.





The process began in 2014 when stakeholders were asked what benefits – the uses and values – they enjoy from the marine estate. Following this engagement, independent and agency experts assessed the risks and threats to these benefits and identify priority threats. The next step was to assess current management and develop management responses to the priority threats. A suite of eight suggested management initiatives were developed and published in a discussion paper.

## **Report from stakeholder workshops Hawkesbury Shelf Marine Bioregion**

To coincide with the release of the discussion paper, MEMA organised a second round of stakeholder and community engagement, including workshops, to seek feedback on the draft management initiatives.

The aim of the workshops was to:

- Provide stakeholders with an update on the Assessment including the findings of the threat and risk assessment (TARA) for the Hawkesbury Shelf marine bioregion.
- Seek feedback on the suggested management initiatives and additional or alternative initiatives.
- Outline how to provide additional feedback on the suggested management initiatives and the TARA.
- Answer questions regarding the Assessment and the process followed.

Workshops were held from 9.30am – 3.00pm at three different locations across the region:

- Sutherland – Thursday 10 March 2016
- Gosford – Tuesday 15 March 2016
- Sydney CBD – Friday 18 March 2016

They were well attended, by a range of stakeholders and this report contains a record of the feedback from stakeholders provided at these three workshops.

## Attendee list

<b>Sutherland Workshop - March 10, 2016</b>	
<b>Name</b>	<b>Organisation</b>
Aimee Beardsmore	Wollongong City Council
Alison Hanlon	Hurstville City Council
Anthony Wales	Hurstville City Council
Beth Noel	Sutherland Shire Council
Cheryl Lappin	Shellharbour City Council
Gary Schoer	National Parks Association of NSW, Southern Sydney
John Turnbull	National Parks Association of NSW
Mark Bulley	NSW Fish Habitat Partnership
Martin Puchert	National Parks Association of NSW
Melissa Frater	Hawkesbury Commercial Fisherman's Association
Melvin Brown	Underwater Skindivers & Fishermen's Association
Nathan Varley	Sutherland Shire Council
Philomena Gangaiya	Wollongong City Council
Simon Trippe	Underwater Skindivers & Fishermen's Association

<b>Gosford Workshop - March 15, 2016</b>	
<b>Name</b>	<b>Organisation</b>
Alastair Cooke	USFA/ Central Coast Sealions
Allan Reed	Hawkesbury Commercial Fishermans Association
Ana Rubio	Hornsby Shire Council
Ben Fullagar	Wyong Shire Council
Dane Van Der Neut	Wild Caught Fishers Coalition
Gary Howard	Professional Fishermen's Association
Hayley Leczkowski	Local Land Services
Jane Smith	Community Environment Network
Justin Field	Nature Conservation Council of NSW
Kristy Munro	Newcastle City Council
Kym Bilham	Lake Macquarie City Council
Malcolm Poole	Recreational Fishing Alliance of NSW
Mary Howard	Wild Caught Fishers Coalition
Peter Freewater	Local Land Services
Tim Macdonald	Gosford City Council
Tony Williams	Hawkesbury Commercial Fishermans Association
Troy Gaston	University of Newcastle
Warren Brown	Gosford City Council

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<b>Sydney CBD - March 18, 2016</b>	
<b>Name</b>	<b>Organisation</b>
Adrian Turnbull	Warringah Council
Belinda Atkins	Sydney Coastal Councils Group Inc.
Bronwyn Englaro	Randwick City Council
Christine Turner	Sydney Water
Claudette Rechterik	Sea Life Trust
Darcie Bellanto	Underwater Research Group
Dr Ezequiel Marzinelli	Centre for Marine Bio-Innovation UNSW
Dr Luke Hedge	University of NSW
Dr Penny Berents	Australian Marine Sciences Association
Dr Peter Tate	Sydney Water
Dr Will Figueira	Australian Marine Sciences Association
Fiona McCuaig	Australian Marine Conservation Society
Jason Davidson	Hawkesbury Commercial Fishermans Association
Jason Ruszczyk	Warringah Council
Katherine Howard	Sydney Coastal Councils Group Inc.
Kevin Ruming	NSW Department of Industry
Lachlan Barnes	Manly Council
Mark Boulter	Sydney Fish Market
Maura Pigeon	Manly Council
Megan Kessler	EDO NSW
Melanie Thomas	Pitwater Council
Mike Holme	Dive Industry association of Australia
Odd Kristensen	Underwater Research Group
Oliver Wady	Underwater Skindivers and Fishermans Association
Paul Bennett	Local Land Services
Richard Nicholls	Dive Industry association of Australia
Robert Gauta	Commercial Fishermen's Co-operative Limited
Sam McGuinness	Waverley Council
Svetlana Kotevska	Hurstville City Council
Tom Heath	Kogarah City Council
Tricia Beatty	Professional Fishermen's Association
Zahra Anver	NSW Department of Industry

<b>Marine Estate Management Authority attendees over all three workshops</b>	
Peter Gallagher	Department of Primary Industries
Dr Bob Creese	Department of Primary Industries
Lesley Diver	Department of Primary Industries
Betsy Harden	Department of Primary Industries
Alan Jordan	Department of Primary Industries
Steve Hartley	Office of Environment and Heritage
Sarah Joyce	Office of Environment and Heritage
Elizabeth Irwin	Office of Environment and Heritage
Clare Murphy	Office of Environment and Heritage
Dr Peter Scanes	Office of Environment and Heritage

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Geoff Ross	Office of Environment and Heritage
Jocelyn Dela-Cruz	Office of Environment and Heritage
Michael Drake	Transport for NSW
Nam Tran	Transport for NSW
Karen Conley	Transport for NSW
Jack Hannan	Transport for NSW

Facilitated by: Danielle Annells of Danielle Annells Consulting

### Workshop methodology

The workshop agenda was the same across the three workshops and had the following format.

9:30am Registration, tea and coffee

9:45am Opening presentations

10:00am Presentation on threat and risk assessment (TARA)

10:20am Discussion re threat and risk assessment

10:50am Morning tea

11:20am Presentation on draft management initiatives

11:40am Workshop activity: Management initiatives round one

12:35pm Lunch

1.05pm Workshop activity: Management initiatives round two

2.00pm Workshop activity: Management initiatives round three

3:00pm Concluding remarks and next steps

3:30pm Workshop close

Following the opening presentations and presentation on the TARA, the first activity was to give participants the opportunity to digest the TARA findings. At their tables, participants were asked to discuss their responses to the question:

Considering the TARA findings, does anything surprise you or stand out to you with regard to

- the priority threats to the environment
- the priority threats to the social and economic benefits

Each table had a facilitator from one of the MEMA agencies who scribed participant comments.

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Following morning tea, participants heard a brief introduction to the management activities. It was explained that there would be three 'rounds' for participants to provide feedback on the proposed management initiatives.

The first two rounds would focus on initiatives 1, 2 and 4 as there were the ones that are of primary interest to stakeholders. Participants were asked to:

1. *Choose one topic of interest from the following management initiatives:*

*Initiative 1.1 – Reducing litter and marine debris*

*Initiative 1.2 – Reducing water pollution from catchment run off*

*Initiative 2.1 – On-ground works: rehabilitation*

*Initiative 2.2 and 2.3 – On ground works urban mangroves; and marine wildlife incident planning*

*Initiative 4 – Spatial management*

2. *Move to the table that will be discussing it.*
3. *Listen to a short presentation on the initiative from your table facilitator*
4. *Use the templates provided to record your feedback on the initiative*

Each table was provided with pre-prepared templates with questions to respond to regarding their chosen topic.

At the conclusion of the first round participants had lunch and then an opportunity to choose another topic of interest for the second round.

As a final, third round, participants were invited to provide feedback on any or all of the eight management initiatives, including:

*Initiative 3 – Marine research*

*Initiative 5 – Improving boating infrastructure*

*Initiative 6 – Pittwater*

*Initiative 7 – Improving accessibility*

*Initiative 8 – Land use planning for coasts and waterways*

Templates with questions for each of the initiatives were posted around the room and participants could move freely among them and add their feedback.

To conclude the workshop, participants were provided with information about next steps in the assessment process and how they could provide further feedback. They were invited to share 'three words or less to describe their experience in the workshop' and asked to complete feedback forms.

## Responses to the Threat and Risk Assessment (TARA)

Participants listened to a short presentation on the Threat and Risk Assessment, the methodology used for it and how the data was aggregated to comprise the summary tables presented in the discussion paper. Following this, they were given an opportunity to digest what they had heard and review the findings. In small groups at their tables people were invited to respond to the question '*does anything stand out to you or surprise you?*'. Comments recorded during these discussions are listed below.

Some stakeholders applauded the approach and the extent of the study undertaken, while others noted the difficulties in doing the assessment given the scope. Of note, many people commented that the summary tables presented in the discussion paper might create unwanted perceptions such as:

- The extent of the assessment being limited or skewed (because only the highs and mediums are presented).
- Aggregating the different categories together makes it appear that everything within that category is high (rather than just one of the stressors).
- Discussion paper appears to give much more weight to environmental benefits than social and economic benefits (because of the difference in size of the summary tables).

At each workshop the question was also raised as to whether the cumulative impacts were taken into consideration.

### General comments

#### In the positive

- Major threats were well captured
- Thoroughly done – happy with TARA, well undertaken
- Pleased to see holistic view being taken and using structured risk-based approach
- Trust in the science – develop, exemplify, educate community
- Positive that MEMA is threat and risk based approach that looks beyond fishing restrictions as a management technique
- Credible process given 'confidence' data

#### Environmental

- Difficulties generally with the marine environment – hard to see what is going on under the sea – adds to complexity of knowledge/data gathering
- Need environment to be resilient to more than bare minimum
- How to measure biodiversity (benchmarks)
- What are our objectives (targets)
- Is lack of research a threat to environmental values
- No validation of loss of habitat – no trends determined and therefore not presented in risk assessment

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- Still some local knowledge missing from the environmental assessment report (background)
- Legacy issues – saltmarsh matters
- Biomass rather than biodiversity?
- Issue of surrogacy of habitats for biodiversity
- Gap between threatened and protected species and habitat for certain species e.g. crayweed disappeared in 1980s from Sydney Harbour (likely due to pollution) but didn't know at the time – there was a knowledge gap
- Spatial extent – difficulty in data

### Concerns re process

- Worried that political processes will modify or overtake process
- Concerns re TARA and discussion paper – more what it doesn't say
- Opportunity for better education of CALD groups re identification of threatened species as key to minimising the occurrence of impacts on them
- Control measures for submission process – restricting overseas submissions
- Some feel that the TARA is inaccessible and hard to understand.
- Some of the earlier community engagement and the timelines it was done within was unreasonable and didn't account for their group's needs – to be able to attend.

### Questions about the assessment

- Was precautionary principle used on low/no data situations?
- Can we apply the outcomes to individual catchments?
- Some questions re how the trends results were obtained
- Questions about funding that will be available to implement any outcomes
- How legacy impacts are being assessed?
- How are threats being redistributed?
- How are the three benefit types being weighted and compared?
- 

### Data presentation suggestions

- Is summary best way to present data?
- The threats are very broad
- Summary table identifies threats that are mostly high – concern that people may assume that everything is high – need better communication
- Better balancing with those threats that are low. Present this as it is important to show that some are being managed well
- Ranking/priority/number of medium or high to enable community to understand e.g. 15 highs, 10 mediums etc
- Consider valuing some high to extreme
- The table compiles high and medium threats but the full picture isn't captured because the low is lost. Perhaps the symbol could be a pie chart that could be used to present a more nuanced, holistic view of the situation
- Need to include all threats and not just high and medium
- Pie chart to identify numbers of high/medium and low
- Difficult to comment on detail as discussion paper only provides summary



### Cumulative impacts

- How are cumulative or synergistic effects taken into account in risk process i.e. multiple activities have low effects but in combination have a higher effect and risk
- Cumulative impacts (stressors)
- Complexity – understanding linkages is difficult
- How do we consider cumulative impacts?
- Have cumulative impacts been considered in the TARA approach?

### Aggregations

- Aggregations distort threat/activity impact – e.g. grouping of recreation/tourism including 4WD/off-road vehicles with swimming and shark meshing
- Why is recreational fishing a stand alone and not off-road vehicles etc
- Grouping places less emphasis on importance of impact/threat of actual activity
- Table presentation. Categories are confusing e.g. recreation/tourism/swimming
- Grouping raises questions e.g. recreation and tourism category – does it tar swimming and four wheel driving with the same brush?

### Were these things looked at?

- TARA hasn't dealt with underwater compliance – e.g. feeding of fish
- Healthy rivers report should be incorporated in TARA
- Problem (threat) invasive species overlooked. Should've been more of a threat to more than one benefit (e.g. social, economic and environment). Invasive species should be listed as 'threat/activity' (table 1)
- Didn't consider localised depletion
- Legacy issues – how have they been included?
- Lack of reference to dredge spoil dumping impacts - would have expected it to be there.
- Have future activities been looked at? E.g. wave generators, oil and gas exploration, offshore wind turbines.
- Questions where the invasive species impacts/threats are captured
- Ghost pots – are they covered – marine debris
- Surprised Bass Point not in bioregion
- Can't see where marine pests have been considered

### Mapping

- Suggestion: we need to provide maps that compare the runoff and land pressures with the aquatic reserves and provide area percentages
- Seagrass mapping is old now (8 years old and no longer correct) – needs updating – especially near Botany Bay

## Comments regarding the priority threats to the environmental assets

### Shipping

- Surprised that shipping risk moderate for clear waters – fuel spill, shipping effluent, antifouling paints etc
- Port Kembla and Botany Bay – increased shipping will mean an increased risk of marine pests – may need to consider localised management
- Surprised shipping only medium for clean waters e.g. oil spills, bilge water etc (marine pests)
- Has the biosecurity aspect of commercial vessels been considered as a stressor
- Ballast water and crude oil impacts are a surprise

### Estuary Opening / Modified freshwater flows

- Estuary increasing trend rather than static – local council flood management strategies as evidence and data
- Estuary opening risk rating moderate for clear water – feeling that risk should be higher
- Dredging – query why increasing trend (regional clearing) but to still have static on statewide scale
- Foreshore development rating for impact on clear water should be higher

### Point source, diffuse, stormwater, sewage

- Pollution/water quality – surprised to see this as only a moderate risk to marine habitat and threatened species (agricultural diffuse, point source etc) – would have expected high.
- Surprised that urban stormwater trend in estuary is static not increasing
- Surprised sewerage and septic point source trend is increasing. Would expect it to be decreasing due to better treatment etc
- Agricultural diffuse source, why is it increasing in marine waters but static in the estuary – considering all comes through the estuary to reach open water
- How has the TARA differentiated point source versus diffuse source impacts in estuary
- Point source issues are not separated into coast and estuary
- Urban stormwater discharge in estuary – surprised it's static and not increasing
- Surprised agricultural diffuse source not high across all categories
- Agricultural diffuse source, why static in estuary yet increasing in coastal waters?
- Urban stormwater discharge and water quality generally – should be more focus on sewage treatment
- Point source discharge only M for marine habitats and assemblages and threatened and protected species
- Query trend re urban stormwater discharge re Sydney estuaries – not static there is an increase in development in the catchments which is an increased intensification

## Fishing

- Recreational fishing – impact on clear water understated debris in shallow water such as plastic from fishing activity
- Recreational Fishing – impact on marine habitat and assemblages risk rating seems low, trend is low because less people are fishing but fishing is using some technology – fish finders etc and trend would be higher
- Threats posed by spear fishers is lower/different than other recreational fishing – i.e. less rubbish, selective fishing so lower threat to threatened species etc. Would appreciate that at least being acknowledged.
- Note that commercial fishing only gets ‘Moderates’ – some questions regarding the reality of that especially compared to recreational fishing
- Rec fishing – re marine habitat and assemblages – should be high and increasing and there is a huge evidence base for this i.e. Percival Lester review, nature paper by Stuart Smith et al 2013/14
- Question the evidence to support recreational fishing as reducing. Need to mitigate against uncertainty with the precautionary principle as an example
- Surprised that threat of recreational fishing is decreasing- would have expected it to be on the increase
- Process question – request for individual commercial fishers to be contacted for the engagement process, and the diver community
- Fishers expertise – why no separate report for that (just Aboriginal)?
- Commercial fishing medium threat – should be low as commercial fishers are very restricted to area and reduction in numbers of commercial fishers
- Fishing management strategy for recreational fishing and risk assessment required – money is there
- Haven’t considered positive impacts of catch and release fishing – what ongoing value is that to the fishery?
- Commercial fishers not consulted on the TARA
- Recreational fishing should be rated H against marine habitat and assemblages – e.g. selective removal of certain species and size classes
- Commercial fishing – Tuggerah and Hawkesbury, why singled out? Doesn’t seem to link with TARA report itself

## Recreation

- Recreational tourism – impact on clear waters surprising
- Recreational fishing is decreasing as a threat but recreation and tourism is an increasing threat – these are not necessarily directly linked but just of note.
- Recreational boating – impacts of 2-stroke motors on clean waters, might expect that to push the risk to high and also wash/erosion due to speed in some locations.
- Recreational boating – why is it static at a regional level but increasing in estuaries – wouldn’t that lead to increases over the whole bioregion?
- Dive industry needs closer regulation

## Comments regarding the priority threats to the social and economic benefits

### In general

- Discussion paper appears to give much more weight to environmental benefits than social and economic benefits
- Table questioned helpfulness of this smaller table, environmental table has much more detail. Table 2 is too summarised.
- Suggest threats on table 1 are more comprehensive and all have relevance to social and economic benefits
- Knowledge gap is a threat and impacts negatively other social and economic benefits

### Regulation

- Effect of regulation – without knowing detail readers assume it is about cutting regulation, whereas some regulation may be needed to protect species/areas.
- Need a statement about effect of regulation and role of regulation – should be made separate from threat and risk matrix. Regulation is as much a part of the solution as it is a threat.
- Effect of regulation only localised with regard to fishing and other activities

### Things missing

- Social value of visiting marine estate
- Impact of water quality on social and economic benefits not in social and economic table
- It doesn't look like businesses were represented in the community engagement workshops – why isn't there a rating for 'viability of businesses'? – should be Medium and increasing.
- Lack of education re value (related to lack of funding) or should this be in environmental TARA too?
- Include lack of education in this section of the TARA
- Invasive species should be listed as a threat to social and economic benefits (table 2)
- Lack of funding and support for research should be 'lack of knowledge of systems'.
- Social benefits of knowing that something is looked after e.g. looking after environment, good stewardship in care of environment isn't included in Table 2
- Increasing population should be counted as a threat
- Lack of resource – has it been considered in social and economic?
- Lack of funding for research impacts: impacts not stated for enjoyment, cultural heritage and use etc
- Have potential activities re increased population/development been taken into account with TARA?
- Offshore energy infrastructure could be used in future and become a threat

### **Relationship with fishing**

- Economic value of recreational fishing includes bait shops – i.e. from commercial fishing.
- Recreational fishing sector not captured correctly in terms of value
- Same for commercial fishing
- Social perception of commercial fishing misrepresented and distorted
- How recreational fishing is seen as a decreasing trend?

### **Other comments**

- Labelling/category of 'impacts on cultural heritage and use' confusing name of threat
- Query as to whether intrinsic and bequest values relates to intergenerational equity – should that fit under economic benefit? Would it not also have an impact on cultural heritage and use?
- Surprising that intrinsic and bequest values is an economic benefit rather than a social benefit
- Increasing trend in resource use conflict if spatial management is introduced
- Why did Pittwater get singled out as a location of concern? There are many others where conflict also exists
- Resource use conflict versus viability of businesses – no medium or high risk – therefore why is there an issue for Pittwater, Tuggerah and Hawkesbury
- What reward process for those conducting activity very well could be there i.e. estuary prawn fishery – low bycatch
- Lack of translation of science to policy to community (communication and community consultation) – this results in people resisting change.

## Feedback on management initiatives

### Initiative 1 Improving water quality and reducing marine litter

#### 1.1 Reducing litter and marine debris

According to workshop participants, the most problematic litter in water environments is fishing gear, food and drink rubbish (waste from consumables) and plastics of all kinds. Plastic bags were highlighted as problematic because of the danger they present to marine wildlife.

The litter hotspots are considered to be estuaries, the corners of bays/coves that are at the extremities of prevailing winds (especially southerly winds) and areas where the litter is harder to collect. Hotspots are also determined by the proximity to densely populated areas and places of high use for social, dining or recreational activities. The amount of litter present in an area is also influenced by the availability of bins and/or the frequency of rubbish collection from these bins. Of further note, it is felt that communities that recognise the issues do more about it – so community awareness (or lack of it) plays a key role.

Comments show that there is a lack of data and science to provide clarity on who or what is causing the problem and/or available data may not be sufficiently used to guide action. There seems to be significant information gaps or lack of in-depth understanding about:

- How much litter there is, and how much of the different types there is, such as the amount of 'ghost' fishing gear.
- How much litter the marine environment (and parts of it) can sustain.
- The impact of plastics on fish and the ecosystem function including human health.

However, a few comments highlight the need for a *focus on action rather than research* and that there could be some legislative avenues to explore regarding the use of plastics etc.

Recommended key stakeholders include a large number of marine-related community organisations and government bodies, as well as less obvious ones such as manufactures, retailers and water companies.

Participants cited a wide range of good programs/initiatives that reduce litter in waterways, many of them volunteer-based and some government funded activities that have now ceased. Some initiatives involve innovation or strong action such as the '*ban the bag*' campaign in the UK.

It was expressed that regulation and compliance measures are needed and have the most impact in reducing the impact of litter in waterways. Other ideas include incentives such as paying volunteer clean up groups, taking a strong and provocative education and awareness approach, providing more bins and trash racks and encouraging product and manufacturing innovation towards more environmentally friendly products.

There was also the suggestion to look towards more collaboration between interested and influential stakeholders and focusing on stormwater via levies. A detailed transcription of the notes taken during the workshop follows.

Type of litter	What kind of litter do you think is the most problematic in water environments and why?
	<ul style="list-style-type: none"> <li>- <i>Definition of 'litter' should include marine debris</i></li> </ul> <p><b>Fishing gear</b></p> <ul style="list-style-type: none"> <li>- Lines (people snag fishing lines), lures, bait bags, lead from sinker, fishing traps (<i>refer to Tangler Blue</i>)</li> <li>- Ex-crab pots no longer in use (ghost gear)</li> <li>- Witches hats used for crab catching, but also catch other species (NB: There has been a shift in type but seeing more than before.)</li> <li>- Illegal fish attractive devices</li> <li>- Submerged litter e.g. styrofoam for marking traps – has an impact on fish</li> <li>- <i>Re crabs traps - legislation prohibits removing them. There is difficulty in identifying which ones are abandoned. Traps are meant to have ID on them – with a number/contact /registration on top so it can be identified.</i></li> <li>- <i>We need biodegradable fishing bait bags</i></li> </ul> <p><b>Other recreational gear</b></p> <ul style="list-style-type: none"> <li>- Dive weights, buoys and moorings</li> </ul> <p><b>Human consumption waste</b></p> <ul style="list-style-type: none"> <li>- Water bottles (PET), bottle caps and rings, cigarette litter, take away coffee cups, soy sauce containers, straws, cans, wrappers, containers, land based litter generally.</li> <li>- <i>100 tonnes waste removed with clean 4 sure</i></li> </ul> <p><b>General plastics and microplastics</b></p> <ul style="list-style-type: none"> <li>- Bags, polystyrene balls, broken up plastics, nurdles (microfibers), fibres from fabrics,</li> <li>- <i>There are issues with wildlife ingesting plastic bags. Plastic bags can look like jellyfish</i></li> <li>- <i>Sealik Trust is doing a study on the fish they feed penguins - to find out what plastic is in the stomach.</i></li> </ul> <p><b>Biodegradable waste</b></p> <ul style="list-style-type: none"> <li>- Lawn clippings, leaf litter (<i>runs off hard surfaces into creeks, lack of knowledge of baseline of how much leaf litter would naturally end up in estuaries</i>).</li> </ul>

Litter locations	Where are litter 'hot spots' in the marine environment?
	<p><i>This could be a specific location e.g. Cabarita Bay, or it could be a type of location e.g. mangroves, under bridges etc.</i></p>

- *Anywhere where people are!*
- *The marine environment is hard to manage- we can't see what's there or clean up easily and don't know the full impact of litter and debris.*

#### **Natural locations**

- Beaches (open zone)
- Bays
- Mangrove zones
- Feed beds
- Creeks, rivers
- Estuaries (worse than in open coast), e.g. *Chipping Norton Lakes, Little Manly, Sydney Harbour, Pittwater, Tuggerah lakes, Wyong river, corner reaches of Hawkesbury (Patonga, Cowan), Milson's Point Walk to Lavender Bay (Kirribilli Harbourside Walk), Manly Cove*

#### **Man-made locations**

- Jetties
- Marinas
- Stormwater drains/outlets
- Carparks
- Embankments
- Boat ramps
- Breakwaters

#### **Natural conditions**

- More on south facing beaches because of southerly winds – affected by prevailing winds, corners of bays (wind traps), bays and coves (due to winds), eastern ends of the bays (due to southwest winds), at extremities of prevailing winds
- After the floods
- High tide limits – anything that can float will be picked up
- Major weather storms

#### **Man-made conditions**

- Public holidays and social events such as beach sporting events
- Rubbish collection day
- Over flowing bins – animals getting at it
- Lack of garbage bins – leads to issues (rubbish attracts rubbish), there is a need for recycle and rubbish bins at beaches
- Open bins- rubbish flying out/ birds e.g. Pyrmont Bridge
- Leaf litter in suburban areas – street sweeping
- Roads and gutters flowing into waterways (without GPTs)
- Point sources
- Depends on perception – where communities recognise the issue, they do more about it
- Notice it more in areas where it is hard to collect, other areas are cleaner, e.g. Manly Cove (southerly winds)- Can't get beach raking down to the water, so



<p>an issue there more than Manly beach.</p> <ul style="list-style-type: none"> <li>- Carparks “paper tickets” are actually plastic</li> </ul> <p><b>Proximity to:</b></p> <ul style="list-style-type: none"> <li>- Pubs</li> <li>- Sport arenas</li> <li>- Social recreational venues (especially alcohol drinking),</li> <li>- Wharves (especially where there are restaurants),</li> <li>- Campgrounds</li> <li>- National Parks e.g. Royal beaches (magnet for litter)</li> <li>- Offshore coal ships (e.g. Stockton),</li> <li>- Oyster sites infrastructure (e.g. Brisbane water in Hawkesbury)</li> <li>- Cities (especially cigarette butts, unintended consequences of no smoking areas?)</li> <li>- Dense populations- all coastlines e.g. Coogee, Clovelly, Maroubra, All national beaches. Sydney- massive catchment and population, Shelly Beach at Manly - no fishing for 15 years but still has fishing gear debris</li> </ul>
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<b>Type of tossers</b>	<p><b>Who or what do you think is causing the problem?</b></p> <p><i>Note that this question is crucial but can be very difficult to answer without a detailed understanding of the issue.</i></p>
<ul style="list-style-type: none"> <li>- People! Through stormwater as well as litter/rubbish dumping</li> <li>- See Tangler Blue program and Smith article (2014) to categorise debris</li> </ul> <p><b>To answer this question we need:</b></p> <ul style="list-style-type: none"> <li>- Explicit program funding, citizen science backed by scientists or other ways to get sub-tidal data e.g. environmental grant for divers and fishers to do clean ups</li> <li>- Larger sample sizes of EPA litter data (waterways) from GPTs and litter bins in city – expand this to the bioregion</li> <li>- To get data from clean ups incentive e.g. funding for collecting data from clean ups like clean up Australia Day</li> </ul>	

<b>Information gaps</b>	<p><b>What information don't we have that we need to tackle litter and microplastics in waterways?</b></p>
<p><b>Regarding litter and debris in general</b></p> <ul style="list-style-type: none"> <li>- The amount of rubbish that enters marine environment in populated areas</li> <li>- Litter audit and sources</li> <li>- Behavioural audits- who and why</li> <li>- Reef litter – how much is ok?</li> <li>- What litter (types) and where (sources) - e.g. personal, recreational activities</li> <li>- Catchment level studies to identify point source</li> </ul>	

- Research sub-catchments and samples and prioritise funding
- Stormwater – what is in it?
- The amount of fishing gear (current focus is on plastics) eg. Ghost nets, crab pots

**Regarding plastics specifically**

- Lack of research and communication on what plastic does to the environment
- Cumulative impacts of plastics
- Impact of microplastics on fish and ecosystem function, bottom feeders.
- What are biggest impacts from plastics in marine environment? Is it just to wildlife? Do we know the effect of large plastics on the marine environment?
- Microplastics and impact on human health (through fish health)
- Research grant in Lake Macquarie on microplastics

**Data sources**

- Could identify sources from data already exists
- See Clean Up Australia reports
- EPA reports from local governments
- Two Hands project and Take 3 for the Sea- Do they record data?

**We need to act!**

- Focus should be action at this time, not research
- There is evidence abroad – we need action not data
- Don't let research prevent real action

**Strategy ideas**

- Need ongoing campaigns – school campaigns
- Picking up litter shouldn't be a punishment at schools — leads to negative connotations
- Lack of communication / education – e.g. microplastics especially of younger generations
- Where are the legislative loopholes e.g. POEO Act – microplastics – identify and address these

<b>Key stakeholders</b>	<b>Who are the important organisations or people to have involved in developing initiatives to tackle litter and microplastics in water environments?</b>
	<ul style="list-style-type: none"> <li>- <i>Depends on where litter is coming from!</i></li> </ul> <p><b>Community</b></p> <ul style="list-style-type: none"> <li>- Stakeholders of litter hotspots.</li> <li>- Recreational fishing groups, recreational fishers</li> <li>- All groups with affiliations with waterways eg SLS clubs</li> <li>- Local community groups</li> <li>- Local environmental groups</li> <li>- Volunteer groups</li> <li>- Tangler blue</li> </ul>

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- Community groups e.g. take 3, OCCI, Surftrider (beach education club)
- Aboriginal communities
- SLS clubs
- Marine groups
- Boating people

**Fishing**

- Commercial fishers, Fishing industry
- Port Harbour Master knows fishing grounds via radio contact with boats.

**Manufacturers**

- Manufacturers of polluting products
- Industries – producers of plastics
- Container Deposit Scheme (CDS) suppliers like Coca Cola
- Manufacturing industry (bin liners, plastic bags)
- High level businesses- supplier
- Industry groups

**Retailers**

- Restaurants and other retailers
- Coles and Woolworths- all supermarkets
- Retailers – Coca Cola, supermarkets, convenience and takeaway stores, fruit and veg packs
- Retail associations eg. Plastic bags- look to success in Northern Territory and Canberra.

**Other industries**

- Waste companies
- Waste educators network and contractors
- Scientists

**Schools** (Department of Education – curriculum)

**Government**

- Local Councils
- Local Land Services
- DPI intertidal zone responsibility and RMS responsibility
- Government – federal, state, local
- Marine Park Authority
- Minister for Environment

*ETS- economic mechanisms- product should reflect the environmental impact- move to new ideas*

*See circular economy cycle- Germany recycles coke bottles 20 times.*

<b>Successful programs</b>	<p><b>Do you know of any good programs/ initiatives that reduce litter in waterways? What do those programs do? Why do you think they are good?</b></p> <p><i>Think broadly here – these might include good urban to reduce water</i></p>
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*impacts, right down to good litter bins and council services.*

### **Research**

- Southern Cross Uni, Steve Smith marine debris program
- ANSTO – Dr Berents Research
- Tangler Blue – surveys tracking litter

### **Community/Volunteer**

- Floating Landcare in the Hawkesbury – using oyster trays, school group, e.g. Bar Island
- Collect litter – community service groups after big storms (free except for supervisor)
- Clean 4 sure – volunteer group (Hawkesbury/Gosford/Tuggerah)
- Take 3
- Surf rider – link rubbish clean up with surf lessons
- Eco angels
- Green Army- similar for pollution/rubbish, litter audits in bush areas
- Coast keepers and harbour keepers- dive groups to clean up areas
- Grassroots- community action
- Underwater clean ups (dive industry association)
- Commercial fishers trawlers, picking up rubbish independently
- South Manly- initiate sustainability
- Blue Green Bondi
- PADI divers against debris

### **Government**

- Environmental trust grants setting aside money for debris from environmental trust grants to make more appealing. Need to incentivise.
- National urban water initiative – commonwealth funded now finished (3 rounds – big grants), targeted stormwater harvest and reuse and salinity
- Urban sustainability initiatives – environmental trust initiative finished in 2011 \$2 million grants x 2, strategic planning and onground works
- Wyong council – gross pollutant trays – keep record of waste coming out
- National Marine Debris Initiative
- Container Deposit Scheme (CDS)- SA model

### **Awareness raising**

- Waste less recycle more – yet to see results, frustrated spending is limited to litter
- Litter programs/campaigns – don't be a tosser
- Need a coordinated approach to marine litter campaigns
- Use of social media for education
- Need more shock value/factor – pictures of injured wildlife on bottles – labelling (translate smoking campaigns). "Littering can harm wildlife"
- 'Do the right thing' campaigns (see YouTube)
- Need spokesperson e.g. Will Anderson

**Report from stakeholder workshops  
Hawkesbury Shelf Marine Bioregion**

- Ad campaign “Bin your butt”- How successful was it?
- Education and awareness that cigarette butts are littering

**Incentive schemes**

- CDS (incentive based schemes)
- Litter monitors at big council events – returning bottles at events for free (discount drinks), pick up rubbish for incentives, shaming but fake process (actors)
- Fund free hire dive gear for divers to do clean ups, even free parking

**Other behaviour change/innovation**

- Ban the bag (Northern Territory, England)
- Circular economy idea
- Teracycle (turn cigarette butts into plastic toothbrushes)
- Take Pot- Crab pot program in Chesapeake Bay
- Need more preventable measures- source control eg. Baby wipes
- Tangle bins for fishing spots (Negative issues – tangler bins got vandalised)

<b>Funding</b>	<b>How do you think this initiative could be achieved in the most cost effective and efficient way?</b>
	<ul style="list-style-type: none"> <li>- Levies on manufactures of polluting products – to create incentives</li> <li>- 100 tonne rubbish off George’s River – corrective services personnel, can’t use volunteers</li> <li>- EPA grants just gather data but not clean up at same time, minimal environmental outcomes (negative example)</li> </ul>

<b>New ideas</b>	<b>If you had the ability to do 3 things to reduce the impact of litter in waterways, what would they be?</b>
	<p><b>Compliance and enforcement</b></p> <ul style="list-style-type: none"> <li>- Name and shame – e.g. food authority website style, if a company gets fined then they are shamed. We need something more than fines for big companies.</li> <li>- Consider increasing fines.</li> <li>- Regulation: Compliance measures – higher fines, need adequate regulations and compliance and policing. Litter needs to be a higher priority issue.</li> <li>- Regulation: Ban microplastic products, plastic bags, straws, balloons – regulation is the most effective.</li> <li>- Regulation: Restrict or ban- don’t just target the consumer, this needs to be a top down- joint approach.</li> <li>- Ban CocaCola (comprehensive CDS system not industry system)</li> <li>- Ban plastic bags (or other method)</li> <li>- Regulation: <i>Ban the Bags</i> in UK, it only worked through regulation and</li> </ul>

enforcement, not the consumer side.

### **Incentives**

- Incentive shift from plastic to biodegradable, at all levels eg. National or down to a café.
- Pay “Clean up armies” who currently do it volunteer.
- Grants and funding for charities
- Citizen science – empower community to take an active role
- Encouraging/incentives/awards for rubbish collection

### **Education and awareness**

- Education/awareness campaigns (strong visual messaging) publicising a litter reporting app/website.
- Education on the impact of litter. Spread evidence and knowledge, including behaviour change. Change the mentality – *it's everyone's problem*.
- Increase SLS education and visibility in schools such as through ‘crime scene’ investigation.
- See school waterway/beach litter program (Observatory Hill, Department of Education environmental education).
- Raise the profile of iconic species via ad campaigns.
- Education - including through YouTube and social media.
- Communicate what the culprit is and the costs associated.
- Early education for kids as well as business education e.g. educating regarding one-use straws, nurturing a re-usable culture e.g. disposable coffee cups
- Paint the drains “everything you see ends up in the sea” ad campaigns.
- Education and knowledge programs – awareness and clean up programs (people need to see it – the impact and amount of litter and the impact on wildlife).

### **Make it easier to ‘do the right thing’**

- More bins and emptied more often or remove bins to just overflows e.g. coastal holiday communities
- More trash racks (more gross pollutant traps)
- Focus on generating behavioural changes at litter hot spots eg. Shopping centres.

### **Product/industry change**

- Focus on prevention- preventative strategy management actions eg. No parking tickets
- Put more effort on preventative measures
- Reduce litter at the source
- Product labelling- this plastic bottle may end up in a bird's stomach – campaigns for behaviour change
- Improve recycling and use glass more
- Eliminate packaging (where possible? e.g. bait bags), use alternative options.
- Polystyrene – what to do? collect? regulate?

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- Promote rustable hooks – because of the social impact of public health and safety, rustable hooks are better than steel as they will corrode/degrade faster
- Research/behaviour change/education/new technologies e.g. biodegradable lines, hooks (noting this can mean it just breaks up faster into microplastics)
- Chowder Bay café in Manly - stopped offering straws

**Collaboration**

- Coordinate- national efforts to look at the problem.

**Research** (see info gaps section)

<b>Other actions</b>	<b>Are there other actions/ideas which should also be included?</b>
	<ul style="list-style-type: none"> <li>- <i>Is debris just seaweed and driftwood? There needs to be a definition in the Discussion Paper.</i></li> </ul> <p><b>Collaboration</b></p> <ul style="list-style-type: none"> <li>- Funding for and coordination of programs.</li> <li>- Resolve jurisdiction issues – who is responsible? DPI/OEH/EPA/RMS/Plans of management etc.</li> <li>- National level- import taxes on harmful environmental products that come in.</li> <li>- This is not just for councils or government but clean up groups could be talking to restaurants etc.</li> </ul> <p><b>Compliance</b></p> <ul style="list-style-type: none"> <li>- Increased funding for compliance officers (local councils and DPI fisheries and RMS boating office) aimed at waterways and other areas like carparks and town centres.</li> </ul> <p><b>Stormwater</b></p> <ul style="list-style-type: none"> <li>- Stormwater levy funding can be accessed by councils but must be spent where it comes from i.e. from Tuggerah Lakes – must be spent on Tuggerah Lakes even though the issues might be elsewhere.</li> <li>- State government to facilitate stormwater levy funding under LGA regulation. Levy could also only be used to maintain trash racks but only if built through this grant - not existing ones.</li> </ul> <p><b>Smoking</b></p> <ul style="list-style-type: none"> <li>- Ban smoking on beaches</li> <li>- Education of smokers that butts are litter</li> <li>- Sand pits at pubs for butts.</li> </ul> <p><b>Innovation</b></p> <ul style="list-style-type: none"> <li>- Grid racks/trash racks/socially accepted trash racks – aesthetically, water sensitive urban design</li> </ul>

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- Stainless steel straws
- Change style of bins
- Underwater bins (sea-bin project)
- Need bulk rail to transport at a cheap enough rate for organics for composting out west.
- Focus on preventable actions - to reduce litter.
- Communicate to push awareness about project re sharks, rays and underwater pollution based at Frenchs Forest. Worldwide database in Switzerland. Only organisation to hold underwater data in the world.



**Initiative 1 Improving water quality and reducing marine litter**  
**1.2 Reducing water pollution from catchment run-off**

Many factors were discussed as slowing the uptake of water sensitive urban design (WSUD). Two key issues emerge from the recorded comments - without funding support or 'being made to do it', many people, developers or councils are not going to engage in it.

Costs are seen as prohibitive – especially for retrofitting older urban areas and ongoing maintenance. The lack of legislation, integrated across the state, with enforceable targets means that builders are only 'building to bare minimum regulations' and councils have no 'legislation stick'.

A third issue was also identified and that is a 'lack of confidence in outcomes'. There is a lack of information or evidence that WSUD is making a difference and no incentives for developers such as increased property values.

Other hindrances discussed include a resistance to change and the limited knowledge of councils, builders and the community in relation to specifications and what is fit for purpose or not fit for purpose. It is noted that some councils have a greater capacity and are more proactive and perhaps these could be showcased as model examples.

The main types of pollution are summarised as:

- Sewerage and stormwater
- Agricultural activities
- Residential development
- Heavy industry
- Recreational activities

The term 'best-practice' was recorded many times in relation to how to manage the pollution and run off from agricultural land uses. In addition, farmers should be supported with better incentives and education on appropriate land use. Some views state that farming should be precluded at the waters edge.

Additional management suggestions include the enforcement of water quality targets and better land use management by government agencies.

Stakeholders would like to see many features of the environment protected summarised into the following themes:

- Ecosystem and biodiversity
- Natural beauty
- Freshwater habitats
- Saltwater habitats
- Maintaining quality seafood
- Maintaining balance between the needs of people and the environment
- Specific locations

The important organisations or people to have involved in developing initiatives to tackle pollution in runoff to water environments are government and regulatory bodies, Sydney Water, community 'end-users', knowledge gatherers and sharers (e.g. universities and scientists) and primary industry. It was suggested that state

## Report from stakeholder workshops Hawkesbury Shelf Marine Bioregion

government should lead to overcome trans-boundary issues. It was also suggested that funding institutions are also important.

Participants were asked ‘if you had the ability to do three things to reduce the impact of pollution from runoff in waterways what would they be?’. The responses can be categorised into the following themes:

- Compliance
- Smarter planning
- Utilise and incentivise smarter design, technology and systems
- Manage water flows
- Incentives and funding
- Increase community interest

Repeated words in this section include ‘enforcement’, ‘stormwater’, ‘retention’, ‘source’, ‘WSUD’ and ‘innovation’.

Other suggested actions speak to the need to raise standards and resource regulation. A change focus is needed in our collective thinking and we need to work more proactively with nature.

To achieve this initiative in the most cost effective and efficient way we need fines and taxes, collaboration and a strategic approach.

Uptake	What do you think are the main factors slowing uptake of water sensitive urban design (WSUD)?
<p><i>“Principles are there... but...”</i></p> <p><b>Lack of funding</b></p> <ul style="list-style-type: none"> <li>- No ongoing funding source to allow councils to implement on a large strategic scale</li> <li>- It’s ad hoc – some councils don’t install because of costs for maintenance</li> <li>- Need ongoing funding sources</li> <li>- Costs to individuals, cost to implement, costs to maintain</li> <li>- Maintenance costs, (lack of) reporting on what is collected, appropriate maintenance schedules</li> <li>- Funding is needed for councils and home owners</li> </ul> <p><b>Lack of regulation and clarity about responsibility and method</b></p> <ul style="list-style-type: none"> <li>- Transboundary issues</li> <li>- Why isn’t regulation integrated?</li> <li>- Lack of state government legislation, currently voluntary</li> <li>- There isn’t consistent zoning/planning</li> <li>- We need integrated water estuary management programs - estuary-wide/catchment-wide management plans</li> <li>- State government support – regulation – changes to planning regulations</li> <li>- Political parties – lack of political will, lack of ability to work together</li> <li>- Councils need backup with regulation</li> <li>- Lack of consistency with regulation</li> </ul>	

- No legislation requirements- from the state
- Lack of impetus (no regulatory requirement) –no strategic framework regionally
- Need to connect this to state drivers
- Targets aren't enforceable and some are not achievable
- No incentive to make people/development to implement WSUD
- DCPs but difficult to actually measure and therefore enforce
- Resentment about shifting costs to individuals whilst industry/point sources are not regulated
- Builders only building to bare minimum regulation – need to regulate to enforce more
- Councils- no funding or no legislation stick

#### **Legacy issues**

- Difficult to retrofit/failing systems
- WSUD needs available land but this is often not possible in urban areas
- Inertia to change
- We need funding for local councils to retro fit Water Sensitive Urban Design in already developed areas
- We need Incentives for retrofitting

#### **Lack of compelling evidence and/or benefits**

- No targets, how do you demonstrate it will work (no one can measure e.g. how much is the SQID device really decreasing the loads)
- No incentive for developers (they will lose money and land – what is the benefit – e.g. increased value of property)
- Lack of information/evidence to indicate that SQIDs are meeting the targets
- Lower Georges Rovers tried to develop a WSUD plan – set objectives with an action plan (better than DCP)
- Staff who implement WSUD are engineers and for them the constraints are different – cost, crime
- There is a delay between control and impact on the waterway (can't see immediate benefits).
- Need incentives for uptake (i.e. reduced costs) and disincentives for non-compliance
- Lack of information about benefits
- Lack of incentives
- Lack of confidence in outcomes
- We need incentives for residential houses and development - BASIX (Building Sustainable Index) is only new developments

#### **Lack of capacity**

- SW and WWD councils can't manage
- Lack of education
- Need to educate councils
- Research and information distributed
- Clearer guidelines are needed on what is required

- Capacity of councils is varied
- Educate contractors on building systems to specifications
- Inability to integrate – councils need templates

**Need to raise profile of WSUD options and innovate**

- Promote porous materials to allow water to penetrate landscape and flow to rivers
- There is a lack of knowledge
- Public/local council awareness and education, what is fit for purpose, not fit for purpose?
- Some councils have a policy to install Water Sensitive Urban Design whenever doing planning or across more regions
- Some councils more proactive – showcase and use them as a model
- Treat stormwater as a resource- lack of seeing it that way, Plus overflows and outfalls
- Potential mechanism community title for Water Sensitive Urban Design
- CRC for water sensitive cities resource for information
- Link to research body
- Poor clarity of what is involved
- Lack of innovation/resistance to change by stormwater engineers/designers
- Perhaps reluctance to disturb developed areas (inconvenience of digging up roads etc.) to retro fit
- Change of driver from Health to Ecology
- Stormwater BASIX
- Fines - fine material blocks up system
- Community titles are more effective

<b>Locations</b>	<b>What land uses are resulting in the main types of pollution? How should pollution and runoff from agricultural land uses be managed?</b>
<p><b><i>Types of pollution</i></b></p> <p><i>All and cumulative (Wollongong and Sutherland)</i></p> <p><b>Sewer/stormwater</b></p> <ul style="list-style-type: none"> <li>- Sewer outlets and overflows</li> <li>- Stormwater discharges</li> <li>- Point sources STP</li> <li>- Failed septic, onsite treatment plant</li> <li>- Stormwater in sewer</li> <li>- Wet wipes</li> <li>- Overflows, septic and onsite sewage management (maintenance)</li> </ul> <p><b>Agricultural</b></p>	

- Agricultural pollution via diffuse sources – FG, riparian runoff, drainage etc.
- Farming land
- Agricultural runoff
- Fertiliser use on farmlands
- Riparian grazing
- Rural runoff- poor land cover

### **Residential development**

- Urban development, urban runoff
- New development areas – poor erosion, lack of fast greening
- construction phase is peak load
- Over development
- Subdivision
- Infill development
- Already existing development that had no Water Sensitive Urban Design
- Development on historic infrastructure- new infrastructure is not built for new developments

### **Industrial**

- Urban industrial area, especially aging
- Commercial
- Industrial (especially Hawkesbury catchment, south creek and eastern creek)
- Sydney Harbour heavy industry
- Heavy manufactures that use water

### **Recreational**

- Recreation (marine debris)
- Tourism (marine debris)
- Golf courses
- Yachts and houseboats

### ***How to manage***

#### **Agricultural**

- Agricultural (working with land holders on nutrient management strategy) and appropriate land use
- Agricultural – need incentives for water quality control, stock fencing, riparian
- Fund education to increase compliance for BMP on private land
- Can the commercial agricultural enterprises be licensed by the EPA
- Best management standards for farmers
- Preclude farming at waters edge that is inappropriate – encourage appropriate types of farming
- Buffer zone at waters edge – prevent cattle accessing or inappropriate cropping
- More research on best practice for agricultural land in suitable language

- and at minimal cost to inform farmers
- Better incentives for farmers
- Best managed practices- agricultural waste water recycling and Dairy spraying
- Farmers to use more organic fertiliser
- Queensland model testing of soils before apply fertilisers

**Water quality**

- Manage water on site better
- Regulatory requirement for councils and developers to meet water quality targets
- Water quality targets that are enforced

**Broader**

- LLS incentive based scheme
- Managed via land use management changes/implement best management practice. Resource Government to do land use management on public land better.
- Industrial development of urban land – need to include upstream impacts on marine estate
- Bring back Catchment Management Authorities – manage catchment
- Tuggerah Lakes – since shutting power station down, fish has massively increased – positive management on fish habitat regeneration and fish stocks
- Community titles or developments
- Overflow abatement- priorities based on metric which has social, environmental and economic aspects

<b>Key features</b>	<b>Which key features of the environment would you like to see protected and where?</b>
<p><i>(note: comments in this section are not de-duplicated to show the importance to stakeholders)</i></p> <p><i>Everywhere!!</i></p> <p><b>Ecosystem and biodiversity</b></p> <ul style="list-style-type: none"> <li>- Biodiversity, species abundance and diversity</li> <li>- Threatened species/communities - identify ecosystem services</li> <li>- Ecological health</li> <li>- Diversity of habitat types</li> <li>- Breeding grounds</li> <li>- Water quality, water quality</li> <li>- Endangered Ecological Communities (EECs)</li> </ul> <p><b>Natural beauty</b></p>	

- Trees and waterways (value from community)
- Beautiful waterways and bush
- Pristine areas- keep pristine and protected
- Escarpment

#### **Freshwater**

- Lakes, rivers (waterways) creeks
- Riparian areas, riparian vegetation, riparian zones
- Ramsar sites
- floodplain vegetation protected
- Flows
- Riparian zones and corridors
- Wetlands
- Mud flats
- Upper reaches of very catchment should be prioritised
- Natural water dammed and removed – replaced with treated effluent so different water quality and quantities, has impact on fish habitat etc

#### **Saltwater**

- Mangrove habitats, mangroves,
- Saltmarsh/coastal wetlands, saltmarsh, saltmarshes, saltmarsh
- Seagrass, seagrass, seagrass, seagrasses
- Intertidal areas
- Rocky reefs, inshore coastal reefs
- Foreshores
- Estuaries – identify point source pollution
- Coastal area protected from development
- Coastal beaches
- Near shore habitats
- Better enforcement of intertidal protected areas

#### **Quality seafood**

- Seafood quality/commercial confidence
- Oyster areas (good indicator of water quality)
- Government has duty of care - fish should not be eaten from harbour
- Shellfish
- Fish amenity and visual verses main habitats

#### **Balance**

- Recreational use
- Human verses Ecological – need both
- Swimming

#### **Location specific**

- Lake Macquarie – hot water pumped in from power station
- Towra Point Aquatic Reserve

**Report from stakeholder workshops  
Hawkesbury Shelf Marine Bioregion**

- Whole of Sydney Harbour- harbour is suffering from serious pollution issues- it's contaminated by heavy metals.
- Extend North Harbour Aquatic Reserve to meet up with Cabbage Tree Bay
- Ecosystem services of lagoons- Manly
- Consistency across aquatic reserves- regarding regulations
- Better protection for Long Reef
- Lake Illawarra
- Remnant urban bushland

**Concerns**

- Micro plastics
- New indicators and better testing
- More rapid detection

<b>Key stakeholders</b>	<b>Who are the important organisations or people to have involved in developing initiatives to tackle pollution in runoff to water environments?</b>
	<p><b>Government/regulatory bodies</b></p> <ul style="list-style-type: none"> <li>- State government (EPA, DPI, OEH, Planning, SW)</li> <li>- Councils and State government should lead</li> <li>- Local Land Services – Greater Sydney</li> <li>- EPA – regulatory bodies</li> <li>- Office of water, Water authorities e.g. Sydney Water and Hunter Water</li> <li>- Local government, councils e.g. Hornsby and Gosford</li> <li>- Roads and Maritime Services</li> <li>- Department of Primary Industries</li> <li>- Water authorities (particularly overflows and outfalls), councils, Environmental Protection Agency, Planning, Food Authority, Department of Primary Industries</li> </ul> <p><b>Supporting points about these stakeholders</b></p> <ul style="list-style-type: none"> <li>- LLS should not be sitting under DPI – a service has been lost, a regional body to assist with trans-boundary issues e.g. CRA</li> <li>- Policies forced on local councils can lead to water quality issues (e.g. increase hard sand)</li> <li>- Environmental Trust for programs</li> <li>- State government funding</li> <li>- Sydney Water - all of the infrastructure, owner of large stormwater channels</li> <li>- Office of Environmental Heritage- providing science eg. Benefit mapping for intervention points</li> <li>- Department of Primary Industries and Local Land Services – at catchment scale</li> </ul>



## Report from stakeholder workshops Hawkesbury Shelf Marine Bioregion

- Department for Planning and Environment- set state wide planning regulations and requirements, also big land owner and proposals of development
- Local councils because land manager and local development controls
- Sydney Coastal Councils have done a paper on stormwater and Water Sensitive Urban Design developers
- Department of Planning (because it needs to be regulated)
- There are different DCPs leading to transboundary issues – so state government should lead (same governance as education)

### **Community and end-users**

- Whole of catchment
- Source stakeholders
- Community
- Land holders, residents
- Residents and general community- better awareness around run off
- Community groups – especially environmental councils, Water Watch
- Hawkesbury estuary engage communities – they do salinity and chlorophyll monitors
- End-users- Local users
- End users- fishers, boaters, residents and waterfront, recreational users
- End users- swimmers, fishers, agriculture
- End users- shellfish growers, general public (swimmers- contact recreation)
- Boating Association, boats
- Recreational fishers
- Tourists

### **Knowledge gatherers and sharers**

- Universities
- Researchers
- Scientists
- Research - improving efficiency of use, demonstrate efficiency, test solutions
- CRC for water sensitive cities
- Educators
- School education – Marine Teachers Association

### **Primary Industry**

- Commercial fishers
- Agricultural industry, NSW farmers
- Farmers and landowners- hobby farmers
- Primary producers

### **Other industry**

- Developers

**Report from stakeholder workshops  
Hawkesbury Shelf Marine Bioregion**

- Stormwater engineers and infrastructure builders
- Funding intuitions- e.g. Banks had green loans
- Potential for public and private partnership

**New ideas**

**If you had the ability to do 3 things to reduce the impact of pollution from runoff in waterways, what would they be?**

**Compliance**

- To have as legal obligation rather than voluntary or guidelines
- Increased pollution compliance
- Landuse planning to regulate and control water quality – statewide DCPs don't have weight. Need to enforce councils to do it
- input control
- To assist regulation and enforcement: More monitoring of point and diffuse, but monitoring needs to be targeted.
- 'Blue book' old department of housing best practice – but lack of enforcement and compliance measures. Need more compliance officers.
- Council needs to help with Compliance
- A big STICK for developers i.e. legislation, certification for developers of subdivisions on WSUD.
- Legislation requirements so developers have to take actions to meet targets in DCP's (development control plans)- to minimise runoff
- Make it a legal requirement All new developments and infrastructure to have Water Sensitive Urban Design - treatment at the source.
- Having Water Sensitive Urban Design or similar in regulation
- Enforcement- councils are slow to act (septics etc.)

**Smarter planning**

- Stop development in floodplain in Hawkesbury (on-site sewage management and diffuse source pollutions problems)
- Riparian buffers
- Modelling each estuary – land capability
- Set goals for each waterways
- Planning – where we put possible pollution activities – think about it
- Better understanding of baseline and routes of impact
- Balance of urban/developed areas and native bushland (strategic planning) – existing and new
- Development controls especially cumulative effects – need coordinated approach
- Identify point source for baseline date – funding and research
- Innovation – new approaches/management ideas for the whole process from the planning stage
- Coordinate with spatial planning to get greatest effect for spatial planning.
- Clear identification of objective and solutions, locally rather than global solutions

### **Utilise and incentivise smarter design, technology and systems**

- Better maintenance for treatment systems
- Trade offs/trading of pollution
- Remove all chemicals/contaminants from inputs (source control)
- More water sensitive urban design (rain-gardens, Gross Pollutant Traps, better filtration)
- Special levies within a known pollution 'hot spot' source catchment i.e. all contributing pay a levy for monitoring a sub-catchment
- Stormwater retention basins – harvesting reuse
- More trash racks at outlets
- Filtering stormwater
- Stormwater quality improvement devices
- Treatment at source
- Block water events- reduce number of events
- Buffering nutrient runoff, riparian fencing
- Technology for low cost maintenance device
- Demonstration sites
- Multi-use facilities
- Retro fitting new developments
- Use less pesticides
- Better practices
- Local builders to do sediment and erosion control
- Reduce erosion (riparian fencing)
- Rain gardens, bio-filtration, Water Sensitive Urban Design - currently not strategic.

### **Manage water flows**

- Make sure there is clean water going into rivers for environmental flows
- Retention - reduce flow - manage in catchment before waterway
- Tackle at the source –residential- reduce hard surfaces, rainwater
- Overflows stopped and reduced.

### **Incentives and funding**

- Encourage reduction inputs (behavioural change)
- Benefits to developers
- Work with rural landholders especially riparian/coastal floodplain to educate re BMP and assist with the money to get them to implement these actions
- Funding a sustainability cost benefit analysis – research into short term and long term projections, what worked and what didn't work on a big scale – lessons to learn.
- Funding for Sydney Water to rebuild their infrastructure to significantly reduce overflows
- Incentives- Money eg. Rainwater tank rebate, reduced rates, reduced developer contribution
- Grants to encourage innovative design (research)
- Business grants- innovative designs

**Increase community interest**

- Public education on reducing pollution. and especially within schools
- Education and awareness – stop it at the source
- Waterwatch program – citizen science
- Set new community benchmarks
- ‘Report cards’ means something to community but it is not establishing/motivating a change in behaviour, extend ‘river keeper’ program. Georgesriver.com.au provides encouragement
- Education sites
- Target behaviour change, challenging- long term behaviour change program
- Wash cars better
- Manage expectations- can’t always be perfect

<b>Other actions</b>	<b>Are there other actions/ideas which should also be included?</b>
	<p><b>Regulation</b></p> <ul style="list-style-type: none"> <li>- An overarching body with regulatory powers to deal with catchment run off e.g. EPA</li> <li>- EPA have the reputation already and knowledge base – appropriately resource EPA</li> </ul> <p><b>Raise standards</b></p> <ul style="list-style-type: none"> <li>- No-net pollution. Don’t allow developers to pollute at all – same restrictions apply to all</li> <li>- Are we creating a licence to pollute by having less stringent targets in some areas?</li> <li>- Maintaining environmental flows when harvesting diffuse water</li> <li>- All inputs to waterways should be undisturbed land use quality</li> <li>- Chemical and medical residues need to be removed</li> <li>- All values should be higher</li> <li>- All waterways should improve water quality</li> <li>- Certification (expand BASIX)</li> <li>- Ban products that contribute to the problem- eg. Car washes</li> <li>- For acute issues- recreation, shellfish, immediate triggers are needed - measurements and models</li> <li>- For chronic issues - long term average targets</li> </ul> <p><b>Changes in our focus</b></p> <ul style="list-style-type: none"> <li>- Change in focus for school programs – focus on marine environment.</li> <li>- Don’t just focus on industry e.g. tree logging/fishing industries that when managed can be sustainable, focus instead on stressors/habitat impacts etc. Specific environmental programs rather than teachers teaching incorrect information.</li> <li>- Doug McKenzie- MOHR- community based social marketing-</li> </ul>

<p>internationally recognised behaviour change expert</p> <ul style="list-style-type: none"> <li>- Education for communities that stormwater is your problem- it can affect your health</li> <li>- Greater communication between agencies</li> <li>- Help innovation to happen – incentivise it</li> </ul> <p><b>Proactively working with nature</b></p> <ul style="list-style-type: none"> <li>- Stormwater harvestings</li> <li>- Rain gardens</li> <li>- Riparian vegetation- regeneration programs</li> <li>- Linkages with spatial planning and habitat rehabilitation is essential</li> <li>- Black water</li> </ul>
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<b>Funding</b>	<b>How do you think this initiative could be achieved in the most cost effective and efficient way?</b>
	<p><b>Enforcement and taxes</b></p> <ul style="list-style-type: none"> <li>- Greater fines that are enforced</li> <li>- Polluter pays – fines have to be high to make the polluter pay</li> <li>- Government levies</li> </ul> <p><b>Collaboration</b></p> <ul style="list-style-type: none"> <li>- Partnerships to save \$\$, linkages using expertise of agencies</li> <li>- Links between state and councils are needed</li> </ul> <p><b>Be strategic</b></p> <ul style="list-style-type: none"> <li>- Identify the biggest water pollution threats that we get biggest bang for buck – target the causes</li> <li>- Incentive scheme that capitalises on making better use of waste / i.e. resource recovery</li> <li>- Grants to help investigate and develop case studies to develop guidance and implement fixes</li> </ul>

Initiative 2 On ground works for healthy coastal habitats and wildlife  
**2.1 Rehabilitation works**

Priority areas for on-ground works within the bioregion are the intertidal zone, including saltmarsh, riparian habitats and stormwater.

In terms of how priorities should be determined, a variety of views were recorded. Some feel that community priorities in Coastal Management Plans (CMPs) should be used, while other suggest state priorities should be used. Some believe that priorities should be based on what ecological outcomes would be best achieved, and others suggest that it should be a combination of *“robust biological assessment of key habitats, communities and species in need and allow communities to nominate areas that are of high value to them.”*

For cost effectiveness and efficiency in on-ground works, stakeholders suggest that clarity must be provided in relation to the overlap with the coastal reforms and collaboration among state agencies and other stakeholders is key.

Views on fair fund sharing arrangements for repair of legacy issues show support for linking funding to who will benefit from the work and who caused the impacts. Stakeholder comments show support for both grants and direct funding or a combination of both, with one suggestion that grants should be used for small works (communities/councils) and direct government funding for larger strategic works. Either way, it is felt that there should be better integration of similar works programs and agencies with land management responsibilities should be funded to tackle large issues.

Levies were suggested multiple times as a way to raise revenue, for example *‘require all councils to have an environmental levy’*. It is suggested that grants schemes should be closely tied to council budget cycles and Coastal Zone Management Plans and must fund monitoring and evaluation as well.

The word ‘consistency’ was used multiple times in response to the question *‘what is the best approach for MEMA and Coastal Management reforms to be implemented together?’*. Many points were raised about the need for coordination between state agencies and related policies so that it is clear how the different processes work together.

It is also felt that more funding is needed for councils and any initiatives must have community support to ensure that there is the political will to implement them. Education and rehabilitation work are the main suggestions for how to target community awareness and involvement in on-ground works.

**Do you have suggestions for priority areas for on-ground works within the bioregion?**

- **What habitat types are there?**
- **What are the issues affecting the habitats that could be addressed?**
- **Who are the stakeholders involved in these areas?**

- 
- Focus on **stormwater** / Gross Pollutant Traps etc
- Floodgates – **intertidal zone** – all stakeholders with potential impacts/benefits
- **Windang Island** – wildlife disturbance/threat hotspot
- Complete/install **fishways** (e.g. Hacking River)
- Where no retreat for saltmarsh consider **saltmarsh friendly** seawalls or other green infrastructure
- **Quibray Bay** for oyster reef

**Agricultural land management**

- Riparian vegetation
- Coastal floodgate management
- Stock management
- Bank stabilisation **especially in the Hunter.**

**How do you think this initiative could be achieved in the most cost effective and efficient way?**

**Collaboration among stakeholders**

- Partner with others e.g. Local Government, stakeholders, cross agency i.e. Roads and Maritime Services, Crown Lands, Local Land Services etc
- Get industry/stakeholder support
- Government funds to develop/plan/prepare for large scale multi-partner projects that other stakeholders can later buy into

**Provide clarity**

- Overlap with Coastal Reforms – work out how these work together
- Run a process/mapping etc to 10 priority areas, target education funding to those areas

**Get funding for works**

- Increase state and federal government funding to these activities in partnership with Local Government Areas etc
- Polluter/damager pays for new occurrences/incidences
- For old problems need to help repair with grant schemes/inducements

**How should priorities for on-ground works be determined (locations and types of works)?**

**Community first**

- Determined through community process of Coastal Zone Management Plan, then linked to grant scheme
- Research, data gathering etc needs to be collected and collated/prioritised. Sharing of data across agencies/unis/LGA/others etc – goes into Coastal Zone Management Plan – funding grants or direct funds
- Funding/sharing costs informed by activities and community priorities – assessment of best cost/benefit of activities
- Through Coastal Zone Management Plan manuals? Describe process in them?
- Community steering committees?
- Getting community understanding of this is difficult - education is essential

#### **State/ Federal first**

- State priorities used
- Use some existing prioritisation reports e.g. Federal government report and fill knowledge gaps where needed.
- Publish a list of priorities- this will help reduce pressures from local interest groups.  
Priorities need to be consistent with strategic goals identified under MEMA process
- Fill knowledge gaps. Examine Council/agency existing databases e.g. Asset registers etc.
- Use other regional plans, LLS plans etc, some questions as to adequacy of regional plans

#### **Ecology first**

- Based on what ecological outcomes would best be achieved.
- Risk management approach/strategic- the whole of area/ catchment management
- Focus needs to be on ecosystem services but also need to consider social and economic issues
- Consider climatic change
- Base it on keystone species, communities and habitats

#### **Balance**

- A combination of a robust biological assessment of key habitats, communities and species in need, and allow communities to nominate areas that are of high value to them (within those habitats, communities and species as being of high priority and need.)
- Need to identify the gaps and how to most effectively add value- prioritise issues and aim to deliver coordinated response.
- Balance local government association pressures against broader strategic needs- don't just oil the small squeaky wheel, think of the whole machine.



**What would be a fair fund sharing arrangement for repair of legacy issues such as cleared riparian areas or drainage wetlands?**

**Do**

- Cash contributions should not be the only thing counted – in-kind needs to be better counted/included
- User pay/stakeholder who benefits should contribute
- Start at low cost/resource required areas first and move to more impacted areas
- Community/neighbour sharing of cost/effort
- Work to link varied groups with similar outcomes
- Direct to some e.g. Land manage agencies
- Grants to private and some others and for common activities like riparian revegetation
- Direct to some for legacy issues sites
- Direct money to innovative activities (e.g. oyster rehabilitation)
- Change legislation to require rehabilitation works in cases where landowner refuses. It's sinister but not as strong as compulsory acquisition.
- Need to develop policies that require future development to maintain or improve environmental outcomes e.g. Environmental engineering must be "green" engineering
- Development near waterways must enhance riparian habitat
- Have a category under grant funding program specifically for legacy issues:
  - Where current landowner gets benefit eg. flood gates
  - Where current landowner gets no benefit eg. contamination

**Don't**

- Don't want to reward poor land management
- 50/50 is not fair

**It depends...**

- Depends on \$\$ available
- Monitoring and evaluation cost sharing would be best but need good government support/core funding of that monitoring and evaluation
- Current need for matching money, especially cash would be difficult for some private landholders
- Depends who benefits- Land owner? Community? Others?
- People who cause impacts should contribute to costs of rehabilitation especially for current impacts rather than legacy impacts.
- Concerned about reference to development offsets, as the proposed offset system wouldn't ensure protection of important habitats e.g. saltmarsh and mangroves.
- It isn't covered well in (TARA) - Threat and Risk Assessment eg. crayweed lost due to legacy of past water pollution

**Should there be a grant scheme or direct State Government funding of on-ground works?**

**Grants**

- Grant scheme needs to be evidence based and related to strategic goals.
- Would a grants scheme replace or be in addition to those in existence? For example, Office of Environmental Heritage estuary manage grants.
- Depends on who will do works – if community LGA then grants program would be better – who will provide the resources. Grants to others increases the ownership of outcomes
- Private landholders may need extra support and grant programs are good for them
- But grants won't prevent or address the issue of ongoing damage to coastal, estuarine and marine environments from development. This requires planning, regulatory approaches e.g. Terrestrial and riparian area protection, strong controls of sediment and control and enforcement of waterway pollution etc.
- Have grants for small works (community/councils)...

**Direct**

- ... but direct Government funding for larger strategic works
- Some projects should demonstrate collaboration but others should get direct funding.
- Need to get private landholders more involved. Could this be done through greater state government direct funding?
- ALC's need support and direct funding to manage their lands

**Either way**

- State Government money is vital but need to ensure money can be sustainably provided.
- Needs to have recurrent funding and/or long term programs (5yrs+)
- Better integration of similar programs
- Setup single site/of information on all similar programs i.e. recreational fishing / jetty / boating / fees etc and estuary management (Office of Environment and Heritage) and ET and HAS and Monitoring and Evaluation and maintenance
- Single storage site for products/reports etc
- Shift back to total catchment management with community input
- Require local government area to have an environmental levy that could be put towards other funding etc
- Fund other agencies with land management responsibilities for large legacy issues where they occur.
- Need to ensure funding source for ongoing maintenance of works
- Require funding partners even for the larger government funded projects.
- There should be a combination of both – grant scheme and direct State government funding.

- For repair and improvement of legacy environmental damage, eg. Clearing, drainage, infrastructure damage etc.

*Funding always an issue – so whatever way works*

**If a grants scheme, what is best method to deliver an on-ground works grant program?**

**Ways to fund**

- Have relatively high contribution from state government, particularly for more strategic issues
- Suggest a levy for environmental work program with ongoing funding, for example:
  - LGA- rates/environmental levy
  - Sydney Water- rates/environmental levy
  - LLS- rates/environmental levy
  - Local business- gross pollutants
  - Big companies have corporate and social responsibilities supported by money
  - Must be siloed for environmental works, not general revenue.

**Basis/structure**

- Tie to Coastal Zone Management Plan
- Align grants cycle with council budget cycle
- Use combined Marine Estate Management Authority scheme. Projects selected on basis of identified priorities
- Use partnership process to ensure guide results
- Allocation towards project development/ designing as opposed to implementation
- Link to current strategies in coastal management reforms but have a capacity to address new priorities that are outside of review timetable.
- Don't rely entirely on volunteer groups to do all the rehabilitation that needs to be done- they are over exploited already.

**Components**

- Must fund monitoring and evaluation as well.
- Need better cost/benefit analysis and information on benefits of rehabilitation works.
- Any grants program needs clear and simple application process with good assessment/oversight to ensure higher priorities get addressed, plus activities targeted to fill any gaps left by the grants program.
- Important- any grants program needs a specific date when the successful applicants will be announced to enable efficient planning and implementation of on-ground works.
- Environmentally Friendly Moorings (EFM) - have a scheme where those who get EFM's are charged reduced mooring fees, but those who don't

progressively pay more. The gap would help fund the Environmentally Friendly Mooring roll out.

*Noted: study on economic values of environmental services of Sydney Harbour*

**What is best approach for MEMA and Coastal Management reforms to be implemented together?**

**Guidance needed**

- All/most MEMA initiatives should be a requirement in the Coastal Reform Manuals (in Coastal Reforms)
- Could shared compliance/education about issues etc between LGA/Agency be a better methodology? Cross-jurisdictional powers.
- Where are the boundaries? E.g. How far “up-catchment” do we go?

**Consistency, cross-linking**

- Need to be consistent
- Funding consistent across both reform processes – including social survey, link in with monitoring and evaluation activities and communication of results
- MEM plans/initiatives need to feed into CMPs and funds for the CMP activities must be linked to how it meets the MEMA
- Also include in SEPP/mapping for SEPP – get MEMA initiatives/priority areas in SEPP
- Include MEMA initiatives in the Coastal Management manuals and Regional and State Growth plans to ensure consistency of objectives etc.
- Policy statement/Memorandum of Understanding between how these two reform processes work together.
- MEMA needs to provide strategic oversight and override coastal management (developer- related) to extend any inconsistency

**Funding**

- More funding for local councils- new grants program would be good,
- Need to maximise total monies available given administrative costs associated with multiple ‘buckets’
- Some funding for local councils, but some provided at a larger (bioregion wide) scale

**Interface with community**

- Must have and show community support for initiatives to ensure political will to implement them.
- Education needs to be ongoing and targeted appropriately i.e. to right cultural audience.

**Other thoughts**

- Mapping will be an issue - we have opportunity to get it right
- Moorings would fit well under a MEMA program

**Would your group/organisation be willing to assist in partnering on the implementation of this initiative? How could they help?**

- National Parks Association/State government partnering in Grant fund apps etc
- USFA (spearos) willing to help in relevant projects
- Create a database of groups that could/would be able to help – use volunteer website to source people and promote apps
- LGA already involved – bushcare management etc
- Infrastructure and Flood Plain management – goes through LGA operational plan and comes through Coastal Zone Management Plans etc

**How can we target community awareness and involvement in the initiative?**

**Education**

- Target/focus on school education
- Education of community - state government funded education program delivered by community groups

**Rehabilitation work**

- Increase 'fish care' volunteers involved in habitat rehabilitation
- More funding support towards rehabilitation projects (various, whatever appropriate)
- Vegetation management plans
- Landcare and dunecare etc – use community groups to spread word

**Are there other actions/ideas which should also be included?**

**Politics**

- Politics behind the issue needs to be addressed
- Political/public education – to allow educated political response to public pressure on issues

**Coordination between state agencies and related policies**

- How MEM Act fits with Coastal Zone Management Planning
- How does on ground works initiative fit with coastal management i.e.

- coastal reform process, LGA management, flood plain management etc
- Consistent enforcement / controls
  - State government mapping of habitat rehabilitation opportunities – must be regularly updated to feed in to coastal reform/CMP process – coastal environment area mapping
  - Some concern regarding offsets as an option for development approval. Should MEMA be involved in this?
  - Sees risk of conflict of outcomes at a local scale, would money spent in this MEMA initiative be better directed to coastal management by LGA etc? Others see it as a possible opportunity for these two reforms to be working together

**Areas to focus**

- Focus / acknowledge Blue Carbon (carbon sequestration benefits)
- Focus on saltmarsh
- Add specific dot point on page 25 on the Discussion Paper to include restoring seagrass beds.
- Do a trial of no-anchoring areas against 'control' to monitor seagrass recovery.
- Link with green web program

**Extra funding and resources**

- Overall extra resources towards on ground works most needed and welcome to address impacts, just not sure of how/under what process they should be best managed
- Funding needs to be regionally coordinated to ensure sensible, fair spread of money
- Support a coordinated development of sites that could be available for third parties to contribute to.
- Series of levies to help fund the works required
- Require all councils to have an environmental levy

Initiative 2 On ground works for healthy coastal habitats and wildlife  
**2.2 Urban mangrove management policy**

Views on the proposed urban mangrove policy were conservative with a number of concerns expressed along the lines that *“the risk of people abusing the policy is too high to make it a realistic option to have as a manageable method. Compliance is very difficult. Who will do the trimming? Who will do compliance?”*. A few comments were noted that it should not be used for aesthetic or view management.

If a mangrove policy is to be done, stakeholder views show convergence that it should be done at an estuary wide level based on a natural impact assessment – not done at a property level. Some stakeholders considered this may be achieved through a Coastal Zone Management Plan.

Views were mixed as to whether policy would or would not assist in saltmarsh rehabilitation *‘saltmarshes may not be preserved or regained by removal of mangrove vegetation regardless of policy’* and *‘should saltmarsh be included in these management plans or separate particular saltmarsh management plans – migration pathways etc?’*

**Do you know of areas in the bioregion where such an initiative could be helpful?**

**Broad**

- Any urban/estuary interface
- Saltmarsh rehabilitation areas
- Stormwater areas
- Most areas of mangrove expansion is occurring where urban catchment is increasing the sedimentation

**Specific**

- Elliot lake – Shellharbour
- Fairy creek – Wollongong
- Brisbane waters along the Hawkesbury and Hunter
- Anywhere where mangroves intersect with populated areas – Davistown, Harveys Bay

**Be mindful of...**

- Shouldn't be used for aesthetic/view management
- We need improved compliance not increased loss of mangroves from trimming
- What about impacts on birds and insects?
- Can't lose sight of the amenity of having mangroves
- Review the policy and initiatives in the 'existing' policy.
- Yes a good idea to have explicit policy that protect mangroves and doesn't facilitate mangrove destruction

- An initiative to ensure mangroves are not illegally cleared everywhere within the bioregion.

**Should the sustainable trimming of mangroves be assessed at an estuary or local level?**

**Estuary – broad**

- Estuary scale plan
- Catchment level if used at all

**Both local and estuary**

- Local level and estuary level needs to be assessed
- Estuary wide, but with provision to include local details

**Other planning considerations**

- Offsets will not work for mangroves due to lack of comparative vegetation types
- Take cumulative impacts into account and could make it work from compliance point of view
- Issue related to equity e.g. Resident A = clearing, Resident B = annoyed case, Cant clear = illegally removed

**Should Mangrove Management Plans be put on public exhibition by foreshore land managers (e.g. Councils), similar to Coastal Zone Management Plans?**

**Consensus**

- Yes
- Yes, to ensure consistency across catchments and whole of the state
- Would form part of Coastal Zone Management Plans
- Need to get in now to Coastal Zone Programs being developed by each council
- Yes through a Coast Zone Management Plan
- Through Coastal Zone Management Plan process

**Should the trimming of fringing mangroves be restricted to areas zoned for residential (R-zones) purposes only?**

- Shellharbour council – “yes” but need a detailed investigation to check
- No, also need to be able to do public areas
- LGA management of mangroves at stormwater outlets is where this kind of policy could be useful

**Concerns**



- The risk of people abusing the policy is too high to make it a realistic option to have as a manageable method. Compliance is very difficult. Who will do the trimming? Who will do compliance? Would this create a grey area that could increase risk of abuse/misunderstanding etc?
- How would trimming be managed/ compliance?
- Don't trim- removed for critical purposes only eg. Stormwater
- No shouldn't have trimming for residential purposes eg. View restoration
- Mangrove Management Plan would need to consider information such as saltmarsh migration pathways/options and if possible include in saltmarsh friendly seawalls.

**Should trimming be restricted to areas where property boundaries have absolute water frontage (i.e. no roads, paths or parklands or public land between the property proposing trimming and the water)?**

**Approach not supported**

- Base it on natural impact assessment, not whether someone has a road in front of them
- Consistent irrespective of location
- Through a more strategic plan
- No, some commercial areas or social VIP areas (i.e. parks) would need to also have options. But all would need to be considered in a broad plan/CMP
- Need to go through a public, transparent planning process to determine where it could/not be done. Suggest through CMP.
- An increase in education activities needs to also occur concurrently
- Approval process based on information- broad picture or whole of estuary
- Reporting processes reviews and therein an equity issue
- No trimming
- Equity issues

**Are there other actions/ideas which should also be included?**

**Integrated planning**

- Expand the scope of the mangrove management plans to beyond just trimming to the other conservation areas
- Should these Mangrove Management Plans be in the coastal reforms/manuals/Coastal Zone Management Plans
- Mangrove Management Plans need to be estuary wide – not done at a property level
- Should saltmarsh be included in these management plans or separate particular saltmarsh management plans – migration pathways etc, possible future techniques that could be used, priority property acquisition

sites/locations etc, mangrove removal from saltmarsh

**Exercise caution**

- Trampling impacts etc of actually doing the activity – what’s the environmental assessment of that?
- Limit the time of year of activity, re seeding
- What’s the contingency plan if they are permanently damaged?
- There would be value in having a clear and scientific review/ workshop on the issues.
- Support for not removing mangroves for aesthetic reasons
- Concerned about Illegal trimming issues. Compliance – who will do this?
- Saltmarshes may not be preserved or regained by removal of mangrove vegetation regardless of policy.
- Saltmarsh should be a focus – as decreasing area
- Conservation management of mangroves - will it be at risk?

**Community involvement**

- Community response- therefore decision regarding management cannot be left to individuals and invested interest.
- It’s better to retain them than clearing – improved community education to benefits of retaining mangroves
- Community ownership of the issue to have a broader compliance
- Use program/ projects like RIDS- Regional Illegal Dumping Squads- using a system of compliance and convert operation to undertake compliance and community education.

**Initiative 2 On ground works for healthy coastal habitats and wildlife**  
**2.3 Marine wildlife incident planning and guideline implementation**

Comments about this initiative are supportive and a variety of ideas are offered. One of the strongest themes is to use existing systems and expand them to include broader reporting (such as existing Apps and programs). Other comments suggest there should be a strong link to education to encourage more uptake.

Stakeholders listed a number of species as key marine wildlife is at risk that they would like to see included. In addition shark meshing and boating speeds are listed as key concerns.

<b>Reporting</b>	<p><b>What ideas do you have to encourage voluntary reporting of marine wildlife interactions?</b></p> <p><i>One of the actions proposed under this initiative is to improve voluntary reporting of interactions with marine animals by large and small commercial vessel operators, zoos, aquariums and wildlife rescue organisations.</i></p>
<p><b>In general</b></p> <ul style="list-style-type: none"> <li>- Simply reporting</li> <li>- Educate community on who to report to why and when and encourage reporting</li> <li>- Providing community with reports and updates</li> <li>- Whatever system- Anonymous</li> <li>- Anonymous</li> </ul> <p><b>Government centric</b></p> <ul style="list-style-type: none"> <li>- Centralised compliance processes with agencies/NGOs</li> <li>- Commonwealth vs state reporting processes</li> <li>- Commonwealth/state agreement</li> </ul> <p><b>Media</b></p> <ul style="list-style-type: none"> <li>- Phone hotlines available – promoted in the community on signs at boat ramps</li> <li>- Reporting – set up info line – so there is access to information</li> <li>- Phone app: want to report? Advertise via a community media program</li> <li>- Community newsletters</li> <li>- Facebook/twitter account - Like Foxscan, Deerscan, Indian Mynah spotting – website</li> <li>- Leaflet by region- identification with incentive</li> <li>- Citizen science portal with request for information</li> <li>- Expand Apps- e.g. Wild about whales. Re-tasked and validated</li> <li>- Develop easy to use App- accessible to everyone with multiple platforms</li> <li>- Use existing systems e.g.</li> </ul>	

- Wild about Whales,
- Facebook page- peer group review, photographs, ideas increase
- Social media, website

### Campaigns

- Waterways – maritime promotion
- Education campaign- Ministerial launch or surrogate advertising company
- School education program/ Outreach
- Use of incentives and increasing community engagement and ownership
- Improved networking with industry and community groups

### Specific targets/communication channels

- Better management of risk – re Pelican/hooks - with improved reporting
- Target species – outline/id – boat licences and wildlife information, fishing licences and wildlife information
- Use fishing vessel licence processes for direct surveys or information
- Data from wires
- Form partnerships with other organisations e.g. Recreational fishers questionnaire

### Incident action plans

#### Are there key areas where marine wildlife is at risk that you would like to see included?

*One of the actions proposed under this initiative is to develop incident action plans for unacceptable wildlife interactions with cetaceans in key areas of the bioregion.*

- **Saltmarsh**
- Biodiversity of **seagrass**
- **Whale** migration routes / encounters should be policed by DPI and RMS under delegation from OEH
- Threats to **oysters** – water quality
- **Seahorse** habitat
- **Mutton bird** habitat
- **Pied oyster catcher** habitat – creek mouths
- Recreational boating/**fur seal** interactions e.g. pilons captain cook bridge
- Interaction with fishers regarding **seals** (harming through clubbing / spearing etc.)
- Manage conflict between recreational use (e.g. dog walking) in important wildlife areas (**shorebird** sites)
- Dog walking through saltmarsh – **migratory shorebirds**
- Cultural collection of **invertebrates** from rock platform
- **Marine fauna** interaction with vessel by restriction of speed

### Impacts of human interventions/behaviour

- Coastal lagoon opening impacts on fish kills (acid sulphate)

## Report from stakeholder workshops Hawkesbury Shelf Marine Bioregion

- Shark meshing bather protection plan covers these issues well
- Shark meshing (Bather Protection Program) make sure protection is in place
- Boating channels – speeds

### **Planning ideas**

- Urban catchments
- Site management plans for wildlife
- Support incident action plan processes
- Manage interactions through education
- Education with 'new communities' that value marine resources differently e.g. Not eating v's conservation education in different language groups.

**Initiative 3 – Marine Research to address shipping and fishing knowledge gaps**

Stakeholders named a number of important groups involved in citizen science in the bioregion including education and research organisations, groups that care for the environment, fishers and other community groups.

Suggestions for engaging with these stakeholders involve a variety of techniques and media and that MEMA should be funded and structured to coordinate it, as well as develop quality control protocols for citizen science.

It is seen as a strength to conduct more research to maximise the benefits we receive from the marine estate, as *“evidence is the best basis for decision making, more is always better!”*. In addition, some participants recommend the use of a precautionary principle *“(we) support additional research and should apply precautionary principles where there is a lack of scientific certainty.”*

Many comments about weaknesses were recorded – centring on the premise that more research is needed. Desired research includes looking into the contamination in Sydney Harbour, dredging impacts and ongoing monitoring to identify new problems early. Comments suggest that the research is *‘very specific’*. *‘Don’t just limit to boating and fishing! What about habitats? Rare species’*.

Thus, stakeholders recommend that a broader scope of research is needed, including making better use of community knowledge, in order to make the initiative more effective at addressing the priority threats.

Citizen Science	Who are the important groups involved in citizen science in the bioregion and what specific skills do they bring?
<p><i>Must complement (not replace) “traditional” research</i></p> <p><b>Education and research organisations</b></p> <ul style="list-style-type: none"> <li>- Could be some schools e.g. at rock platforms</li> <li>- Environmental Education Centres (several in bioregion)</li> <li>- Universities</li> <li>- Southern Oceans Seabirds Study Association (SOSSA) (southern part of bioregion)</li> <li>- Underwater Research Group – Species counts/ statistics – if more than fishing and shipping</li> <li>- Marine discovery centres</li> <li>- Reef Life Surveys</li> <li>- Ocean Watch</li> <li>- Water Watch</li> <li>- ORCCA</li> </ul> <p><b>Care of environment</b></p> <ul style="list-style-type: none"> <li>- Ocean and Coastal Care Initiatives (OCCI)</li> <li>- National Parks Association</li> </ul>	

**Report from stakeholder workshops  
Hawkesbury Shelf Marine Bioregion**

<p><b>Fishing</b></p> <ul style="list-style-type: none"> <li>- Commercial fishers</li> <li>- All fishers</li> </ul> <p><b>Community</b></p> <ul style="list-style-type: none"> <li>- Adjoining landholders/businesses/LGAs</li> <li>- Dive operations</li> <li>- Snorkelers, divers, swimmers, photographers, filmmakers</li> </ul>
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<b>Further engagement</b>	<b>How best should we engage relevant stakeholders in the research?</b>
<p><b>Engagement techniques:</b></p> <ul style="list-style-type: none"> <li>- Social media use</li> <li>- An app/website</li> <li>- Round table discussion</li> <li>- Data sharing with other stakeholders (e.g. councils) that have data and interest</li> <li>- TV ads – Foxtel etc</li> <li>- Annual NGO ‘get togethers’ (e.g. cetacean one at Commonwealth level)</li> <li>- Engage directly with commercial fishers</li> <li>- Local workshops attended by local community/ council as the host.</li> </ul> <p><b>Procedures:</b></p> <ul style="list-style-type: none"> <li>- Funds for facilitators, marketing and engagement</li> <li>- Central contact person within the MEMA sphere</li> <li>- Develop quality assurance/quality control protocols re citizen science</li> <li>-</li> </ul>	

<b>Other actions</b>	<b>Are there other actions/ideas which should also be included?</b>
<ul style="list-style-type: none"> <li>- Corporations that impact on the environment require an EPA licence – why not shipping on a national scale?</li> <li>- Citizen science awards annually (specific for bioregion?)</li> <li>- Was a species assessment done for Sydney Harbour?</li> </ul>	

<b>Funding</b>	<b>How do you think this initiative could be achieved in the most cost effective and efficient way?</b>
<ul style="list-style-type: none"> <li>- Sometimes we just have to invest in research in order to make better decisions</li> <li>- Via associations / clubs / groups that have the knowledge base</li> </ul>	

<b>Strengths</b>	<b>What do you see as the strengths of the suggested initiatives/s to maximise the benefits you receive from the marine estate</b>
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<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>- Targeting known issues</li> <li>- More research is important</li> <li>- Evidence is the best basis for decision making, more is always better!</li> <li>- Facilitate adaptive management</li> <li>- Totally support fishing knowledge gaps research and development proposals. Other similar research and development demands also come from consumer demand for third party certification.</li> <li>- With lack of gaps in research (fish/species) the 'take-ten' position to increase protection with a no-take marine sanctuary (default) – only benefits can occur from this due to the small, inadequate amount of current protection.</li> </ul> <p><b>Research required:</b></p> <ul style="list-style-type: none"> <li>- Information on anchoring.</li> <li>- Information on commercial and recreational effort and their interaction with each other, wildlife in need and could also be used in spatial planning.</li> </ul> <p><b>Precautionary principle:</b></p> <ul style="list-style-type: none"> <li>- Shipping - yes, but adopt precautionary principle immediately</li> <li>- Support additional research and should apply precautionary principles where there is a lack of scientific certainty.</li> </ul>
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<b>Weaknesses</b>	<b>What do you see as the weaknesses of the suggested initiatives/s to maximize the benefits you receive from the marine estate</b>
<b>Weaknesses</b>	<ul style="list-style-type: none"> <li>- Insufficient regard of general MPA research</li> <li>- Insufficient funding identified</li> <li>- There is also going to be more demands with climate change risks such as ciguatera risk fish moving south over time.</li> <li>- Utility of program on sediment re-suspension to deal with shipping and fishing knowledge gaps is not clear.</li> <li>- Management addresses impact on by-catch/ non-targeted species but not on target species.</li> </ul> <p><b>Further research is needed</b></p> <ul style="list-style-type: none"> <li>- Lack of scientific monitoring of biodiversity – across the bioregion; continuous (to detect spatial and temporal changes). Monitoring is essential to know whether the reforms are successful and identify new problems early</li> <li>- Lack of ongoing studies of ecosystems, organisms and interactions</li> <li>- Lack of early warning alarm system to detect changes in biodiversity</li> <li>- Very specific... are there other data gaps?</li> <li>- Don't limit to just boating and fishing! What about habitats? Rare species?</li> <li>- Natural changes e.g. heavy rains / floods not included in data</li> <li>- More research on dredging impacts</li> </ul>



**Report from stakeholder workshops  
Hawkesbury Shelf Marine Bioregion**

- More assessment of changes / benefits at existing AR's in bioregion
- Better (+ more comparable) economic info. Between fishing sectors
- More data collection and research into catch and take from NSW waters.
- Does shipping include boating in general? Lots of questions of how best to deal with pollution and transport of exotic species which occurs via boating in general.
- Impact on recreational fishing on stocks (knowledge gap) – decrease effort/behaviour of groups.
- Chemical contamination of Sydney Harbour
- Sydney Water untreated sewer overflows using Sydney Harbour as a dumping site.
- What are the species in Sydney Harbour?
- What threatened species are found in the Hawkesbury Shelf Bioregion?

<b>Changes</b>	<b>What changes would make the suggested initiatives more effective at addressing the priority threats (and why?)</b>
	<p><b>Further research needed:</b></p> <ul style="list-style-type: none"> <li>- A broader scope of research needed</li> <li>- Broader range of research requiring identifying important biodiversity assets.</li> <li>- Scientific monitoring program – biodiversity and biomass (habitats, rare species)</li> <li>- Increased surveys to fishers / boats etc to gain more data</li> <li>- Data collection to include weather / stormwater / sewerage – as should mapping</li> <li>- Lower Hunter swing basin project should ensure it looks at PFOS (Perfluorooctane sulfonate) re-suspension.</li> </ul> <p><b>Resourcing:</b></p> <ul style="list-style-type: none"> <li>- “Community” knowledge - make better use of this</li> <li>- Research levies from activities which have mod./high threats (e.g. shipping, port operators)</li> <li>- Survey by local people of boating and fishing gaps under agreed guidelines parameters.</li> </ul> <p><b>Communication:</b></p> <ul style="list-style-type: none"> <li>- Communicating results of monitoring to the general public in a clear, accessible way.</li> </ul>

#### ***Initiative 4 - Spatial management for biodiversity conservation and use sharing***

Numerous data sources were recorded in response to the question ‘*does your organisation manage any environmental, social or economic data layers that could help MEMA develop this initiative further?*’. Stakeholders noted reports and surveys, programs and projects, social and economic data, local government data and environmental data.

Views were mixed in relation to the question of whether current spatial management in the bioregion is effective. In the negative, were comments such as “*inadequate and site specific*”, “*many habitats under represented*” and “*doesn’t meet CAR but needs to*”. Suggestions for improving the adequacy include: removing political interference, and properly accounting for cumulative recreational fishing habits.

If the government adopts spatial management, stakeholders gave many suggestions for how they would like to see further public participation. There is an emphasis on seeking and using local knowledge, conducting face-to-face sessions and exploring evidence together to make decisions.

Spatial management is supported as ‘*it is integral to delivering biodiversity outcomes to all users*’ and not supported unless there is enforcement and education to address issues and equitable and fair use. Views differ on whether it should or should not be used for extractive use management.

Many views were recorded on the outcomes people would like to see from the spatial management initiative. Stakeholders would like clarity on the targets, scope and definition of the initiative, with evidence-based decisions that consider the social, economic and environmental aspects. There is a recognition that this is very complex and multiple spatial/temporal management is needed, as is a consistency of rule set and terminology.

Stakeholders anticipate that there could be a number of positive affects for their use at the 15 pre-identified and 44 additional sites, across cultural values, improvements to recreational opportunities and resolving conflicts. However there are also concerns about negative effects from loss of access or crowding and fishing issues such as inequity and other losses such as income or access to resources.

A large number of other considerations were also recorded, which when aggregated, suggest that further research and planning is needed before spatial management plans and decisions are made. Participants also noted a number of sites, species and habitats that they would like to see specifically considered in this initiative, especially saltmarsh and seagrass.

Data	Does your organisation manage any environmental, social or economic data layers that could help MEMA develop this initiative further?
<p><b>Reports and surveys</b></p> <ul style="list-style-type: none"> <li>• Reef life survey data</li> <li>• Hawkesbury report on commercial fishing (2008 report -pristine condition)</li> <li>• Halpern Report</li> <li>• Hoisington report</li> <li>• Kearney risk report</li> <li>• Underwater Skindivers and Fisherman’s Association (USFA)</li> <li>• Competition data CSIRO (Matt Poulton)</li> <li>• Reef life survey – citizens science – measure of biodiversity biomass</li> </ul> <p><b>Programs and projects</b></p> <ul style="list-style-type: none"> <li>• Weedy Sea Dragon program – Dave Booth UTS</li> <li>• Results from overall projects- Common Wild Harvest</li> <li>• Shellfish program- water quality data</li> <li>• Bolstering citizen’s science capacity. Greater support for groups and increase coordination of various users</li> <li>• Recognised education to continue aggregate information</li> </ul> <p><b>Social data</b></p> <ul style="list-style-type: none"> <li>• Catch value vs. social benefits</li> <li>• Spearfishing competition catch data over time</li> <li>• Friends of Cabbage Tree- visitors to the Bay (divers)</li> <li>• Data portal initiative</li> </ul> <p><b>Economic data</b></p> <ul style="list-style-type: none"> <li>• Dive industry association- economic data (including associated businesses), number of divers</li> <li>• Commercial fishing- economic data (on shore economic benefits)</li> <li>• Deloitte Access Economics Report (Sydney Fish Market- Mark Bowlter)</li> </ul> <p><b>Local Government data</b></p> <ul style="list-style-type: none"> <li>• NSW Department of Primary Industries to create spatial management areas</li> <li>• Local government information</li> <li>• Local government – access to users groups, local business, stakeholders, consultation, recreation</li> <li>• Data from councils about permits</li> <li>• Pittwater Waterway Review- consulting with MEMA. Communication</li> </ul>	

consulting process

**Environmental data**

- What data/analysis is there between recreational and commercial fishing
- Impact of mooring and dive boats at specific sites e.g. Grey nurse breeding sites
- Photos of rare and threatened species site tagged. Photo libraries – dive clubs, dive shops, snorkelers

**Other data**

- Potential conflict areas (e.g. Magic Point)
- Lack of data about impacts of commercial fishers
- Sewage overflows and ocean outfalls from Sydney Water
- Public safety

<b>Evaluation of current management</b>	<b>How adequate and effective do you think current spatial management is in the bioregion (e.g. aquatic reserves, intertidal protected areas) and how could these be improved?</b>
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**Inadequate:**

- Cabbage Tree, Shiprock, recreational fishing is allowed - East Maitland Reef
- Brooklyn – parts of no take
- Berowa
- Aquatic reserves small
- Fail on NEOLI criteria- (No-take, Enforced, Old, Large, and Isolated)
- Most areas fished (i.e. not no take)
- Established for local decisions (not ecological)
- Patchy
- management has heavily impacted commercial fishers over the last 40 years
- Zoning underpinned by science or conservation/protection goal /objective
- Inadequate and often site specific
- Inconsistency of what you can do and can't
- Inconsistent terminology- assume no take in all aquatic reserves
- Doesn't meet Comprehensive, Adequate and Representative (CAR) principles but needs to
- Many habitats under represented

**Adequate:**

- Protection from multiple stressors
- Remove stressors (fishing and trophic cascades)
- Threatened species better than habitats

**Improved adequacy by:**

- more enforcement (CALD/NESB) IPA

- Improved safety and ethics understanding
- Safe boating, recreational fishing
- Need to consider user safety- weather
- Remove the political interference
- Input from relevant user groups around those zones
- Compliance
- How are recreational fishing impacts being monitored and managed
- Management needs to properly account for cumulative recreational fishing impacts
- Use department information
- Is there a risk if spatial management does not occur to specific habitats

**Public Participation**

**How would you like to see MEMA further engage with stakeholders and the public if spatial management is adopted by the NSW government to enhance biodiversity**

**Use local knowledge**

- Every landholder adjacent
- Every business advised
- Local people, shop owners, industry business
- Role of knowledge local/users to facilitate self-regulation
- Involve citizens e.g. Citizen Science and Friends of Cabbage Tree Bay
- Local councils involved in or within locality of spatial area

**Engagement methods**

- Information nights
- Education with different user groups
- Verbal face to face with commercial sector
- Contact to associations – USFA, RFA, PFA, HCF
- Targeted meetings with certain groups
- Capture all stakeholders including those less inclined to contribute for various reasons (too busy, retail property by divers) such as not for profit, commercial fishers

**Process design**

- Alternative approach – Step 1 Identify habitats, Step 2 Talk to the community
- Get different stakeholders around the table, show data and try to explore common agreement and disagreement spatially
- Converge ideas into decisive actions
- Vision the objective – like on maps
- Independent scientific process with small targeted workshops
- Inclusion of social counselling and economic advice
- State government coordinating

**Information to include and explore**

- Fill knowledge gap about fishing/nursery areas
- Better understanding of what it is that we are protecting
- Better information on impacts
- Passive use evidence should be engaged
- Spatial management can be used to enhance other initiatives e.g. habitat restoration
- Inclusion of broader social services provided
- Improve transparency - biological objectives being rectified
- Identify the issue at the right spatial scale
- Use data layers
- Clearly separate biodiversity and user conflict issues
- Regulation
- Science to underpin the process

**Some issues to overcome**

- Web portal overly complicated
- Languages communication issues
- Signage is difficult- too many and complex. Better to have simple zones

<b>Support/Not support</b>	<b>Do you support the concept of spatial management measures? If yes, why? If not, why?</b>
	<p><i>-Why is question being asked?</i></p> <p><i>-No one thing will fix everything; need to deal with all issues!</i></p> <p><b>Why Not?</b></p> <ul style="list-style-type: none"> <li>• Not about fisheries management. Fisheries managed for target species e.g. Bare island angler fish</li> <li>• Fisheries management not looking at many species</li> <li>• Can argue social and economic issues</li> <li>• Focussing on extractive use – many non-extractive users have right to look at environment in uncorrupted state</li> <li>• Political enforcement required – commitment to Sydney M.P.</li> <li>• Don't restrict unless education of people to address issues</li> <li>• The number of snorkelers/divers equals recreational fishers</li> <li>• Equitable and fair use – limitations on use of environment</li> </ul> <p><i>-Primary goal of prosecution of Marine Estate Management Act</i></p> <p><b>Why?</b></p> <ul style="list-style-type: none"> <li>• Support because evidence shows protection (NEOLI) delivers an increase in biomass, biodiversity and size</li> <li>• Economic benefits</li> <li>• Tailored rules for specific sites</li> <li>• Intergenerational benefit – assist recovery to original state</li> </ul>

- Knowledge and existence value, intrinsic value, bequest values
- Integral to delivering biodiversity outcomes to all users
- Complementary measures also required

<b>Outcome</b>	<b>What outcome would you like to see from this initiative? In answering consider social, economic and environmental considerations</b>
	<ul style="list-style-type: none"> <li>• Would like to see CAR system overlay (comprehensive, adequate, representative) principles used as a starting point for protection planning - current arrangements don't meet CAR.</li> <li>• Learn from past experience!</li> <li>• Simplicity is critical!</li> </ul> <p><b>Clarity on targets, scope and definitions</b></p> <ul style="list-style-type: none"> <li>• Better targeting with clearer understanding of the stressor that's having the impact</li> <li>• Clear statement of management of options and what is on the table e.g. Multi-use</li> <li>• Clarity around expected outcomes from Coastal Reforms</li> <li>• Need to identify scientific reference sites and mix of areas for differing uses</li> <li>• Clarification of scope and extent of the components e.g. More clarity around what is meant by biodiversity conservation</li> <li>• Consistency in regulations across aquatic reserves</li> <li>• Improved transparency on what's wanted and why</li> <li>• Difficult stock levels - virgin and 40% of virgin biomass - is it for consumption or to have lots of fish to look at?</li> </ul> <p><b>Social considerations</b></p> <ul style="list-style-type: none"> <li>• Acknowledge all uses – different needs and benefits of users</li> <li>• Need good consultations with local communities and local government</li> <li>• Need evidence on what is creating impacts</li> <li>• Main interested parties should be involved (fundamentally) in all spatial decisions</li> <li>• Social and economic impacts are minimised and benefits quantified</li> <li>• Areas reserved for conservation outcomes and social and economic benefits</li> <li>• Trust among user groups/ stakeholders</li> <li>• Avoid political issues such as Ocean Beaches and Headlands</li> <li>• What trade-offs are made and how and by whom?</li> <li>• Are there time-based mechanisms to user conflict?</li> </ul> <p><b>Economic considerations</b></p> <ul style="list-style-type: none"> <li>• Fair user group consideration i.e. commercial fishing haven investment</li> <li>• Failure to recognise the impact on the consumer if reduction in commercial fishers</li> </ul>

- Need to work out if restriction is needed
- Map commercial working grounds and breeding areas to understand impacts (environmental and financial)
- Filling of key knowledge gaps, mostly economic and social

#### **Environmental considerations**

- Going back to the MEMA vision.
- Review closures
- Exclude destructive industries, e.g. offshore coal and gas
- Need to recognise protected areas that already exist
- Use design (e.g. wakeboard impacts on shore erosion) to manage impact
- Biodiversity – protected areas to enhance diversity and abundance
- Enhancing marine biodiversity
- Sustainable marine diversity
- How do we have a sustainable industry that doesn't export ecological impact?
- Association between impacts and decision – environmental impact study of recreational fishing needs to be done (especially important for Hawkesbury Shelf)
- Linkages between processes e.g. links with coastal reforms
- Traditional marine park zoning insurance policy (improved productivity)
- Shouldn't be fishing in Sydney Harbour due to contaminants
- Zoning and transport, consultatively, target goals, human health risks
- Reduced risks to biodiversity while minimising impacts on social and economic benefits

#### **Commercial fishing concerns**

- How does this balance with recreational fishers
- Commercial fishing is deemed sustainable, so why do you need spatial closure
- Want good evidence base without bias against commercial fisheries

#### **Need evidence based decisions**

- Afraid of political decisions
- Want evidence base to spatial decisions
- Any management initiatives based on sound data not just survey
- Metrics to evaluate existing risks
- Any discussion about spatial management needs to be based on good data, including commercial data

#### **Compliance**

- Consistency of rule set and terminology – very complex
- Being locked out of areas
- Better linkages with planning legislation
- Increase sanctuary zones that follow relevant principles and will follow compliance



- Resources for compliance e.g. Council officers have power but not empowered
- Better understanding of rules e.g. Recreational fishers

**Large area managed as a marine park**

- Lots of protected areas but allow multiple use
- Series of Marine Park Authority to enable increase fish stocks
- Sydney region could do with greater protection. A Sydney Marine Park
- Have a strategy for take and no take
- Great Barrier Reef model, zoning, represent areas

**How to proceed**

- Amend Discussion Paper – North Sydney Harbour
- Get different interest groups together (like coal, gas etc)
- Start with an agreed objective
- Look for shared values, common outcomes and start lines on maps
- Overlay different information sets
- All user groups being happy – an allocated zone for each user (Ultimate goal)
- Need to aim for maximising communication and response outcomes
- Recognition that there's multiple spatial/temporal management
- Further involvement from stakeholders in provision of data

<b>Social and economic impacts</b>	<b>How could the spatial management initiative affect (positively/negatively) your group/organisation's use at the 15 pre-identified and 44 additional sites</b>
<p><b>Positive effects...</b></p> <p><b>... on the ecosystem</b></p> <ul style="list-style-type: none"> <li>• Increased biodiversity and biomass – e.g. currently poor at Long Reef</li> <li>• CAR principles applied for habitat</li> <li>• Buffer zones</li> <li>• Tidal, currents</li> </ul> <p><b>... on culture</b></p> <ul style="list-style-type: none"> <li>• Intrinsic benefits – intergenerational issues, existence values</li> <li>• Rights to wider range of activities</li> <li>• Commercial fishers have great knowledge</li> </ul>	

**...on recreation**

- Attraction to passive users
- More fish and divers – attracted by nature - bold and beautiful Manly
- Recreational fishing is not a positive financial (economic activity) but adds social value
- Positive impact for dive industry. We want a Marine Park!
- Positives from social use from some existing sites e.g. Bondi
- Manly Entertainment Centre - Marine Park Authority positively supported. Recreational and passive use.
- Dive industry- More Marine Park Authorities, increase divers and increase money for associated businesses
- CSIRO aggregate data from spearfishing competitions
- Access, safety

**...on resolving conflicts**

- Commercial fishing haven, conflicted with recreational fishers will help with regulation
- May resolve user conflicts
- Reduce use conflict through enforcement and clarity
- Sydney Fish Markets- strongly support use of CAR - asking others to nominate

**Negative affect from...**

- Crowds
- Loss of access
- Loss of consumptive use
- Biosecurity risks
- Access rights – loss of product for community
- Restrict access
- Do all of these sites cover the full range of biodiversity? So negative might be a lack of representation.

**... fishing**

- Depth of water critical for spearfishing (20m depth limit)
- Most existing sites are open to spear and regularly used
- Use pre-dates the war (cultural values impacted)
- Hawkesbury fishing impacts – devalue and decrease impacts
- Potential loss of bait supplies
- Equity issues – only elite spearfishers can access some sites
- Displaces fishers to other sites
- Small towns/villages along river heavily reliant on fishing commercially (welfare dependence)
- Increasing human population – increasing impacts by rec fishing
- There is a desire for more fish by all
- Pelagic competitions - \$1000/each for competition expenditure

**... specific areas**

- Wybung Head – not clear of evidence underpinning, what values are being protected, recreational fishing bias
- Hawkesbury River, Tuggerah Lakes, Lion islands – why have they been identified? What was the threat? Why are these additional sites, impact?
- Closures would impact Sydney Fish Market
- Cabbage Tree- Increase species will expand around the corner. A good model supported by most of the community
- Cabbage Tree Bay- Getting too busy. Pollution increase, infrastructure demands, handpicking rubbish
- Barrenjoey Head- people not aware it is an Aquatic Reserve

**... Pittwater**

- Negatively impact on commercial fishing
- User conflict issue
- May be better ways to manage this issue than spatial management
- Pittwater Council- Narrabeen Heads: impacts of sea level rise. Change in SSP (Single Super Phosphate) composition
- Pittwater: develop framework to reduce user conflict and use as a model example

**Other considerations:**

- Tourism benefits of fishing
- The cultural value of father and son fishing together
- Groups that enjoy extractive use like spearfishers do not see the need for sanctuary zones
- Consider local decisions, e.g. population expansion and downstream impacts – link decisions, impacts from a broader perspective
- Marine park/closure may not be single solution
- Appropriate regulation is needed, not red tape, but need to manage common resource
- Need before and after research – monitoring and evaluation is needed
- Look at effectiveness of current spatial management initiatives and impact on each perspective (CAR, commercial fishing, etc)
- Is there conflict in areas other than Pittwater – how/when this be considered in spatial planning
- Education is needed
- Need good information /communication to different users about any spatial management and needs spatial compliance – simplicity is needed otherwise will create disharmony / conflict (not solve the problem)
- Understandable and clear and consistent terms
- Identify user conflict e.g. Swimming vs. recreational fishing in same area
- Spatial management needs to be based on clear evidence
- Education and understanding about resource training
- Zoning shouldn't reflect existing use but evidence for objective of enhancing marine biodiversity
- Find areas now that identify threats and manage for the future
- 1) identify
- 2) consultation between all groups – outcome based consultation

**Report from stakeholder workshops  
Hawkesbury Shelf Marine Bioregion**

- What are links with coastal management reforms and SEPP review (State Environment Protection Policy)
- Traditional large sanctuary zones as in existing NSW Marine Parks may not be most appropriate in Hawkesbury.
- Urban development- how are impacts considered and linked with land pollution
- Seagrass zones need to be protected!!

Sites/species/ habitats	What additional sites, species or habitats would you like to see specifically considered under this?
<p><b>Sites</b></p> <ul style="list-style-type: none"> <li>• All 15 sites currently (Aquatic Reserves) to be fully protected marine sanctuaries!</li> <li>• Gordon Bay – conflict between spearfishers and others</li> <li>• North Sydney Harbour include Fairlight Manly Cove- extend around North Head to Cabbage Tree Bay</li> <li>• Cabbage Tree Bay</li> <li>• Shelley Beach – good example of protection but anchor impacts on seagrasses</li> <li>• Botany Bay Recreational Fishing Haven</li> <li>• Martin Island (5 islands) possible marine estate</li> <li>• Foggy’s Cave – grey nurse aggregation (near Terrigal)</li> <li>• Bare Island- high level of user conflict</li> <li>• Little Bay- spear gun and recreational user in large numbers with increase complaints to council</li> </ul> <p><b>Species</b></p> <ul style="list-style-type: none"> <li>• Sydney pigmy pipe horse</li> <li>• Bare Island angler fish</li> <li>• Weedy sea dragon (declining)</li> <li>• Blue groper</li> <li>• Shark species- (shouldn’t be listed on meshing program)</li> <li>•</li> </ul> <p><b>Habitats</b></p> <ul style="list-style-type: none"> <li>• Seagrasses</li> <li>• Noxious species- lack of funding</li> <li>• Where is the <i>Posidonia australis</i>?</li> <li>• Sandy beaches, important, ecology</li> <li>• Newcastle- Hexham swamps, key areas of habitat, hotspots</li> <li>• Native vegetation – nursery grounds, estuaries</li> <li>• Seagrass, saltmarsh, sponge gardens and mangroves</li> <li>• Marine – wetlands – saltmarsh – seagrass</li> <li>• Kelp habitats (thinning)</li> </ul>	

- Rock platforms

**Broader ecosystem considerations**

- Unique mix of sea life. No resources for management. Management plan resourced.
- Ecosystem research required
- Comprehensive based on biodiversity
- Waterway management (as well as land)
- What area of environment has been impacted by cables, offshore fishing? Environmental impact and then impact commercial opportunities?

**Other needs to be considered**

- Spear fishing not have any further restriction on access
- Discriminates if no boat
- Longitudinal studies and links to weather patterns and floods
- OEH management
- Greater need for information across all users/values
- Need to progress communication and response
- Need compensatory measures for recreational fishers, or give alternative areas. More difficult to compensate.
- Compensate commercial fishers more to increase pressure in another part of the state.
- Dive restrictions based on what the environment needs

## Initiative 5 – Improving boating infrastructure

Participants noted a number of issues for consideration in planning for future boat storage requirements across environmental issues, funding, infrastructure and vessel type and ownership.

In particular, environmentally friendly moorings were mentioned. It is also suggested that funds should be raised from boating users through mooring fees and boat registration to fund improvements to infrastructure and habitat restoration.

### What types of issues need to be considered in planning for future boat storage requirements?

#### Environmental issues

- Habitat impacts
- Climate change
- Ecological values of foreshore – saltmarsh, mangroves
- Use of environmentally friendly moorings, other infrastructure – shading issues for seagrass

#### Vessels

- Vessel ownership by type and region
- Seeking data for unregistered, unlicensed boats such as kayaks, SUPs
- Compliance for abandoned vessels – resource intensive
- Larger vessels on fore + aft moorings blocking views / load capacity

#### Area

- Sydney Harbour / Port Jackson
- Growth areas
- Shared use of waterfront reserves – multiple users
- It is not possible to accommodate all of the boats in Sydney Harbour because there can be a waiting list of 10 years.

#### Infrastructure

- Environmentally friendly materials for infrastructure
- Increased use of floating pontoons against fixed wharves
- Ensure sufficient pump out facilities for number of vessels stored
- Land boat storage (Akuna)
- Install more moorings

#### Funding

- Improving incentives (access to funds) for innovation
-

**Do you have any comments on how the Government can help shape the best mix of boat storage options on busy waterways in the Bioregion?**

**Careful choice of areas**

- Utilise manmade or modified environments where biodiversity is low or limited e.g. Chipping Norton Lakes (rehabilitated sand mining sites)
- Provision of LAND/ FORESHORE in conjunction with Parks
- Need for dredging should be natural limiting factor on number of vessels in light of costs, environmental impacts - currently unsustainable

**Facilitate through better infrastructure**

- Efficient storage especially for small boats vs on-water moorings
- More fish cleaning tables at boat ramps
- Cater for all boat users - passive + motorised

**Engagement**

- Engage with the boating public

**Funding**

- Increase costs for moorings - similar to car parking spot

**How do you think this initiative could be achieved in the most cost effective and efficient way?**

**Funding**

- User pays – boat registration fees fund ramps and storage
- EOI / Tender (Public)

**Are there other actions/ideas which should also be included?**

- Increase swing mooring fees to be closer to marina fees
- Education – boat license – provide more info about rules / regs

**Environmental issues**

- Storage fees used to improve habitat programs
- Boat fees fund habitat restoration
- Capacity and environment
- Need to maintain efficient and effective regulation that maintains environmental outcomes.
- A marine park is about compromise- can we offer to recreational fisherman better access to some good fishing spots....in return for making a network of marine sanctuaries within the marine park. This would make everyone happy!

## Initiative 6 – Reducing user conflicts in Pittwater

A number of stakeholders expressed support for commercial fishing in Pittwater. Suggestions for ways to reduce user conflict in the area include education, better infrastructure and policies such as the use of zoning i.e. 'fair zoning regulation which balances different needs and users against environmental outcomes'.

Some participants suggest that the Department of Primary Industries should fund changes while others believe it should be funded from end-users.

### What do you think is the best way to reduce user conflict in Pittwater?

#### Support for commercial fishing

- Concern about commercial fishing singled out as problem
- Such things shouldn't be undertaken simply because there is a conflict between leisure and food production.
- Commercial fishing already reduced impacts
- Limited commercial use but vital
- Stop demonising commercial fishing in favour of recreation
- Importance of commercial fishing
- Commercial fishing only haven
- Ban commercial
- Co-existence – why must you exclude primary producers for the purpose of leisure?
- Too many uses? Removing commercial fishing won't address overcrowding
- See impact of all such closures- loss of families in area, loss of children in schools etc.
  
- 2 haul crews 3-4 people, 9-10 fishers that net
- 7 haulers early 80's + 15 meshus video
- Silt and B Bay crews

#### Views on compensation

- Suitable compensation
- Compensation does not help men and women whose whole lives have been based on working outside. What jobs can they find? Where are they going to go?
- If you are going to remove 8 – 10 individuals' livelihoods they should be suitably compensated.
- More money cannot compensate the loss of fishing history and social – economic history of small family fishers.
  
- **Recreational fishing**  
Study shows that majority of recreational fishers don't see there is a problem.



- Declare a recreational fishing haven

### Zoning

- Fair zoning regulation which balances different needs and users against environmental outcomes
- Designate areas for different users – motorised boats vs. passive craft/swimmers.
- Specific no take zones
- Various closures - seasonal, temporal
- Potential loss of commercial access
- Removing nets, splashing around artificial reefs hook & line

### Education

- Educate users to co-exist
- Address users in different way to 'establish' conflict and mitigate risks
- Education - days? School education program - significant part of the catch
- Educate communities and fishers – recreational and commercial resolve conflict

### Research

- What is the number of rec. fishing boats, skiers, wake-boarders
- Don't know social & environmental impact of other uses e.g. boating

### Policy/Procedures

- Develop a framework to reduce user conflicts using Pittwater as a model example
- Removal of political agenda
- Restrictions on other user groups
- Cultural values

### Infrastructure

- Install more public moorings.
- Artificial reef for more habitat

## Who should pay for this and why?

### Government

- Department of Primary Industries
- DPI/Local Council

### User pays

- Those who say there is a problem - recreational fishers.
- Money from boat registrations and recreational fishing licences
- Partly funded by Recreational Fishing Trust Fund – for the benefit of

**Report from stakeholder workshops  
Hawkesbury Shelf Marine Bioregion**

- recreational fishers
- The users
- Recreational trust?

**How do you think this initiative could be achieved in the most cost effective and efficient way?**

**Compensation**

- Relocating or reducing fishing effort by way of buy-outs

**Policy/Procedure**

- Understand the resources/assets and where they are. Take into account competing uses and manage fairly.
- Dispute resolution process

## Initiative 7 – Improving accessibility

Stakeholders suggested some priority sites for improving wheelchair and pram access to marine areas, such as iconic sites and finding a balance between places that are crowded and those that are not. Some comments refer to a trending reduction in access for fishing and that this should be reversed.

Participants suggest that increasing the overall public amenity (such as with more toilets and bins) is a cost efficient way to improve accessibility and that funding for better infrastructure to support various user needs is required.

### What are the priority sites for wheelchair and pram access?

#### Conduct further engagement to find out

- Disability Access Committees inform about key sites – some councils have one or similar
- Consult with volunteer groups e.g. disabled surfers
- Some councils have plans to increase access

#### Areas

- Iconic sites e.g. Palm Beach, Sydney Harbour Islands, remote beaches
- Some places are overcrowded limiting access to all that want access. These places to be looked at to increase capacity
- Balance “density” sites e.g. choose 50% high density sites, 50% low density sites

#### Infrastructure

- Offer the right access e.g. canoe launch unit for disabled

#### Create more safety

- Spearfishers pass close to swimmers which can be intimidating even if it is unintended. Spearfishers have injured others with trailing a hook or spear

### How do you think this initiative could be achieved in the most cost effective and efficient way?

#### Increase general public amenity

- Toilets
- Garbage bins
- Stop removing access – improving access for commercial fishers e.g. RAMPS – suggestion for commercial only ramps (resource use conflict with other boats)

## Report from stakeholder workshops Hawkesbury Shelf Marine Bioregion

- Lack of parking at key locations + over regulation (timing / cost)
- Lack of public transport access
- Associated issues like litter + bins, road congestion, parking w/ improved access e.g. Hornsby Council have put bins at camp site to cater for rubbish, dangerous parking spots leading to accidents
- More bike paths on waterways

### **Formalise access**

- Stop removing access – tracks through NPWS for commercial fishers – need to allow access through gates, permits etc.
- Formalising access so removes need to ‘make their own’ e.g. boardwalk in mangroves

### **Are there other actions/ideas which should also be included?**

#### **Cultural heritage**

- Need to ensure that cultural heritage reforms include coastal and marine areas, resources and estate management measures where appropriate.
- Aboriginal cultural educational programs conflicts with current controls

#### **Funding for better infrastructure**

- Aging access infrastructure – maintenance and replacement program with funding required (e.g. Lake Illawarra)
- Issue: funding e.g. for things like sea walls, which can improve access
- Obstacles to getting kids/ school groups out in the water

#### **Increase access and limit it**

- Access conflict is an issue - if increasing access for some groups, how do we limit it for others?

## **Initiative 8 – Land use planning for coasts and waterways**

Key issues raised by stakeholders to be examined as part of a review of the State Environmental Planning Policies (SEPPs) can be summarised into two categories; environmental issues and legislative issues. Stakeholders would like to see water quality targets addressed and protection of habitats as well as consistency or a reduction in related legislation.

The particular locations or activities in the upper catchments of estuaries that stakeholders have concerns about are to do with impacts on water quality and inconsistency in planning across local government areas resulting in questionable land use near the waters edge.

Participants suggest that state authorities need to work closer to together with better communication and sharing of information in order for SEPPs to better integrate with catchment management plans and strategies.

Additional ideas were offered including that development controls across the SEPPs for coastal development should be consistent, that agencies need to be integrated and not divided so that land use planning can meet coastal protection objectives and that better land use planning on wetlands, floodplains and foreshores is needed.

### **What key issues should be examined as part of a review of the State Environmental Planning Policies (SEPPs)?**

#### **Environmental issues**

- Climate change impacts and adaption considerations
- Water quality targets addressed
- Stormwater BASIX
- Water quality / ecological targets / guidelines
- No go zones e.g. seagrass, wetland retreat habitats
- Too many loop holes from state significant development + council rezoning plans - preventing protection of e.g. wetlands
- Coastal SEPP - should promote total catchment management
- Coastal erosion, SLR + storms
- Maintain the ecological PROCESSES (quality of habitat, not just area) that these SEPP areas provide in addition to just physical area
- Ambulatory boundaries - aggregating or receding foreshores
- Vulnerability / inundation / artificial protection of coastal flood plain – how to capture in SEPP

#### **Legislation and policies**

- Rigorous consideration of all environmental legislation - without questioning
- Consistency with other legislation and planning instruments
- Consistency of terminology, definitions
- Clarity around jurisdiction
- Bringing different legislation together / reducing no. of pieces of legislation
- Integration - consistency in the approach
- Including elevation triggers into process to ensure whole of natural inundation

- areas included, i.e. full tidal (HAT) rather than a distance in from bank/coast/foreshore
- Water sensitive urban design (WSUD)

**Do you have any concerns about particular locations or activities in the upper catchments of estuaries?**

- *Yes – all the threats previously identified*

**Environmental**

- Protecting bushland/underdeveloped areas e.g. large defence lands in upper catchment equals protects water quality.
- What are the potential impacts from atmospheric sources?
- Feral annual (pigs) control in upper catchment

**Water quality**

- Sewage overflows
- Runoff from catchments- levels from nutrients
- Any activity that creates diffuse source pollution
- Stormwater
- Point pollution source

**Areas**

- New development in Western Sydney
- The intertidal zone – must include whole of it (up to highest astronomical tide (HAT) ) in definition of foreshore
- Upper catchment not covered in new coastal SEPP
- South Creek, Hawkesbury River – tip beside create. Appropriate land use next to waterways and rigorous controls + compliance
- Buffer zones on creeks – consistency between councils for development

**Policy/Procedures**

- Inconsistency in Local Government Area approaches.
- Ensure management initiatives/ options result from an integrated assessment.

**Activities**

- Coal mining Hunter River
- Land use

**How might the SEPPs best integrate with catchment management plans and strategies?**

**Policy/Procedures**

## Report from stakeholder workshops Hawkesbury Shelf Marine Bioregion

- Increased statutory weight of the communication and performance under the SEPP's.
- Plans demonstrating progress towards the SEPP objectives
- CAP's updated in accordance with the SEPPs every 4 years or so.
- If the right SEPPs are developed to address a threat then these will be used in plans and strategies
- I often hear "sometimes you just need a policy / law to fix that problem!"

### Engagement

- State authorities working together
- Communication among government departments
- Sharing of info between government departments
- Local government areas not adequately consulted on the GSLLS (Greater Sydney Local Land services) catchment management plans.

### Zoning

- Common understanding of council boundaries / zoning
- Consistency of zoning in catchment between / amongst councils - 23 councils Hawkesbury catchment

### How do you think this initiative could be achieved in the most cost effective and efficient way?

#### Legislation

- Legislation makes people change behaviour. They find the money

#### Environmental

- SEPP to include waterway outcomes e.g. enforceable stormwater management – ecological processes maintained or improved
- Water infrastructure master plan at the strategic planning stage based on a water sensitive approach

### Are there other actions/ideas which should also be included?

#### Consistency

- Development controls across the SEPPs for coastal development should be consistent
- Agencies need to be integrated and not divided so that land use planning can meet coastal protection objectives.
- Need to better articulate how this will work with other MEMA initiatives – especially water quality and on ground works

**Environmental**

- All coastal wetlands need to be recognised in the new coastal management SEPP mapping.
- Complement with eco-engineering and rehabilitation of key taxa (eg. oysters, seaweeds, etc) to manage other threats listed in Table 6
- Renewable energy sources offshore e.g. Wave energy
- Consideration of offshore industries e.g. Offshore petroleum if it were to develop in the future
- Impact investing for environmental and economic benefits
- How to manage existing land use that is impacting on waterways but not captured through DA etc process i.e. mostly agriculture land use, especially on coastal floodplains

**Zoning**

- Definition of foreshore – environmental protection/ vulnerability zones etc
- No green zones in recreational fishing havens unless the science proves it

**Policy/procedures**

- No planning process on increasing activities e.g. ferry movements + infrastructure
- Capping population growth in catchments

**Access**

- Coastal SEPP for access for recreational + commercial fishers

**Regulation**

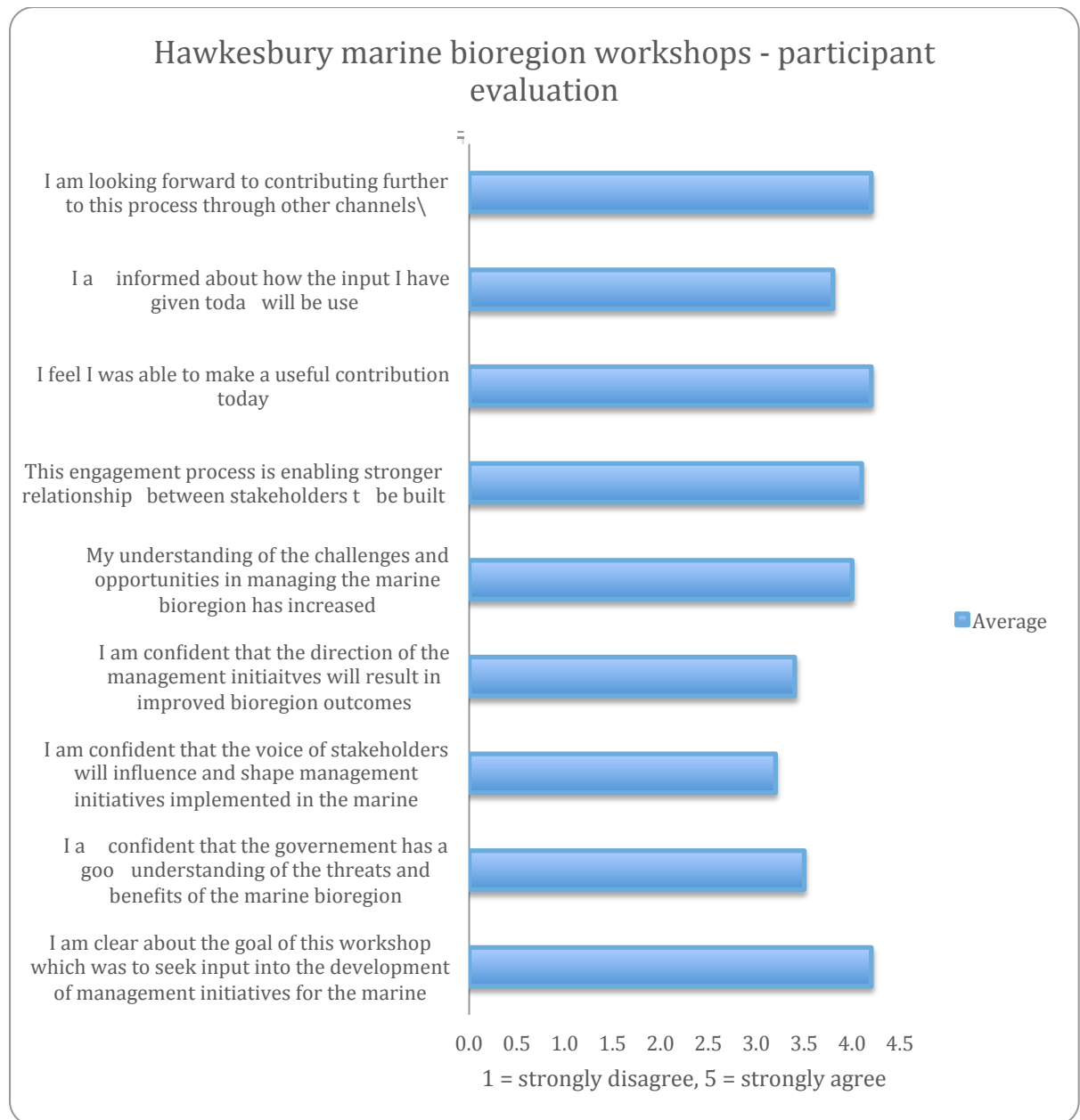
- Over regulation small industries, under regulation of large industries



## Participant comments about the workshop experience

factorial **informative** stakeholder collaborative mangrove  
reinvent motivate motivating sort out collegiate inclusive daunt debatable  
karma **challenging** step forward homework daunting worthwhile  
**diverse** provoking frustrate illuminate **engaging** provoke frustrating  
confuse cooperative appreciative enjoyable disappoint **engage** participation  
illuminating **initiative** confusing ongoing **outcome** **positive** beacon  
stimulating **workshop** optimistic stimulate **challenge** context diversity minded  
consultation **lots** **smart** sharing involve productive **interesting** **lot**  
jurisdiction **listen** educational happening thoughtful communications surprising  
**point of view** bloody passionate **happen** engagement **interest** network wheel  
deliver **a lot** disappointed communication **surprise** **steps** **open** concern  
completed **idea** **step** discussion fun involved intention thank you cross useful  
friendly **understanding** **great** concerned calm **forward** task **view** hearing  
surprised issue **hope** **good** process amount pleased thank forget **science**  
State opportunity complete **really** policy somewhat share direction so far **work**  
experience please greater group knowledge important **people** happy understand  
clear sort sense **new** line **another** thought hear **think** **other** point keep  
best far a little side mind **very** day **some** **will** much over

## Evaluation of the workshop



## Comments on feedback forms

### Appreciation

- *Thank you*
- *Keep up the communication.*
- *Good idea to workshop stakeholders*
- *The processes to enable engagement were of a high standard. Facilitator did job well.*
- *Well run workshop. Thank you for running these.*
- *Well organised and run. Incredible background work undertaken on the threat and risk assessment.*
- *Thank you!*
- *Very well executed – I think all user groups can be happy with marine zonings to cater for all users with the other management initiatives also.*
- *Thanks for inviting Sydney Fish Market to this process.*

### Process improvements

- *Consult with councils re 44 additional sites*
- *I didn't know what to expect prior to the workshop – this was explained quite well in the first 15 minutes and the time given for management initiatives could be extended. I thought the key initiatives discussed today were the correct ones to discuss.*
- *Noisy room – difficult to hear sometimes. A lot of work required (background material to digest) in the time available to contribute constructively*
- *Would have liked a little more time to interrogate the content of the discussion paper and TARA in full workshop. Good to learn what others think in the full forum.*
- *Lots of questions for on-ground group activity with same time for contributions.*
- *No Power Points. Submission process still ... CALD communities and interests ... interests... Need to review summary documents was ridiculous. Underrepresentation of stakeholder interest workshop – drivable interests*
- *Special interest groups: all commercial fishers need to be contacted through DPI and informed of this process. Recognise the cultural significance of the historic fishing industry that is left in the process. Recognise the consumers who rely on commercial fishing in the process of evaluation.*

## Report from stakeholder workshops Hawkesbury Shelf Marine Bioregion

- *More details on risk assessment process would have been helpful. Great to have the Universities involved.*
- *Possible allocate more time to the key initiatives – not sure about the value of the time spent on the lesser ones.*

### **Spatial management**

- *Not so sure about the big ideas up front honestly – e.g. lack of explicit statement about marine park as explicit option, but whether the fine listening skills of facilitator for issue 4 will be translated to shared opinions of political arm is questionable but we hope the extensive science is listened to as much as the threat and risk analysis.*
- *Important to gather views, not try to discuss/reach agreement. Good job for first one. Somewhat skeptical that the process will adequately address the vision, biodiversity, gap in network. Initiative 4 is too ambiguous.*
- *The issue of spatial management will be pressing and there will be conflict with user groups. Needs to be managed and science based not political.*
- *Re spatial management initiative – more specificity is desirable. Vague language in the summary document leads all stakeholder groups to assume the worst, even though those assumptions may be the total opposites!*

### **Fishing and Pittwater**

- *Pittwater issue is completely focusing on that commercial fishing is the user group problems and the answer is to remove commercial fishing from Pittwater, this is not right and appears that decisions have already been made that commercial fishing is the problem.*
- *Recreational havens aren't recognized through the process. DPI needs to contact all commercial fishers with regards to this process. Recommendations to be made in August with very limited facts. Pittwater should not have commercial fisher removal outcomes "thin end of the wedge".*

### **Maintain a science focus**

- *Stakeholder engagement is so important but also very important to remember the science.*
- *This questionnaire is indicative of my concerns with this process. Consultation is important but has to be based on science-based process which seems to be getting lost. Questions should have been shared with participants in advance to enable better engagement.*
- *Fantastic stakeholder engagement but very important to keep the science in mind and not let opinions dictate decision making.*
- *I'm concerned that stakeholder views will influence and shape management initiatives implemented in the marine bioregion at the expense of good science.*

### **Other concerns**

- *I'm very concerned that a lack of funding will prevent any real work from being undertaken. There are a number of conflicting groups/areas that will make it difficult to reach a position of mutual satisfaction. Integration of the different elements of work will be critical to the overall success.*
- *The threats which have been identified are wide ranging but many are symptomatic of one overriding issue which has not been mentioned i.e. population growth. There is a tendency in working through process of TARA and management options to lose sight of the overall objectives i.e. "enhance and conserve marine biodiversity... etc".*

### **Requests**

- *Need to provide better quality coffee*
- *I would like to see a report containing all the feedback noted in the workshops.*
- *Can we get an electronic version of the workshop outcomes please*