Executive Summary of the report "A biological and economic assessment of the 2001 change in the Minimum Legal Length (MLL) of snapper in NSW"

In 1999, fisheries scientists with the New South Wales state government recommended a 4 cm increase in the Minimum Legal Length (MLL) of snapper from 28 to 32 cm to reduce the problem of growth overfishing. Given concerns about the financial impacts of a 4 cm size increase for some commercial fishers, the Minister for Fisheries at the time committed to implementing two separate size limit increases of 2 cm increments. The first increase from 28 to 30 cm took effect 1 July 2001; the second increment was to occur after a study of the biological and economic effects of the first increment. Accordingly, the purpose of this study is to report on the biological and economic impacts of the 2 cm increase in the legal catch size of snapper from 28 to 30 cm. The implications of the findings for an increase to 32 cm are also considered.

The research method for assessing the impact of the 2 cm size increase is a "before-and-after" comparison of biological, catch and economic information, complemented by a statistical analysis of price information for four years preceding and five years following the change. The Ocean Trap and Line (OTL) Fishery constitutes the scope of the study because 95% of all commercially caught snapper are from this fishery.

This summary reports on the results of the first change to increase the MLL by 2 cm from 28 to 30 cm, as well as the second anticipated change for an additional 2 cm increase in the MLL from 30 to 32 cm (as originally recommended by NSW fisheries scientists). Key points about biological, catch and economic issues are reported.

Effects of increasing the MLL by 2 cm from 28 to 30 cm

Three key outcomes arise with regard to biological issues:

- The shift in size composition of landed snapper is consistent with previous expectations about the impacts of a 2 cm increase. This shift suggests that the snapper protected by the new size limit have grown and are now contributing to the fishery at these larger sizes and increasing the average weight of fish caught and hence the weight of fillets.

- There has been an increase in the proportion of 3- and 4-year-old snapper in landings since the MLL change. This is a very desirable shift because it reduces the dependency of the fishery on 2- and 3-year old fish and therefore reduces the risks associated with a year or two of poor recruitment. However, the age composition of the fishery is still typical of a heavily fished stock with more than 65% of the catch in 2002/03 and 2003/04 being 2- and 3-year-old fish. The snapper stock and its fishery would likely benefit from a further reduction in reliance on 2- and 3-year-old fish.

- The analyses of trends in average snapper catch per day from trapping indicate that snapper greater than or equal to the 30 cm MLL, and hence available to commercial fishers remaining in the OTL fishery, has increased markedly since the period prior to the 2 cm increase.

Five key points on catch are important to note:

- The total volume of commercial catch of snapper has declined markedly since the early 1990s. This overall decline is part of a long-term trend (even prior to the years discussed in this report) and is mainly associated with a corresponding decline in the numbers of commercial fishers who target snapper. More specifically, the trends between 1997/98 and 2005/06 are as follows:

    - OTL catch declined by 35.2% from 2,299 tonnes to 1,491 tonnes.

- Snapper catch declined by 27.3% from 278 tonnes to 202 tonnes.
- For the period 2001 to 2005, the number of fishing businesses voluntarily surrendered by (active) OTL fishers catching snapper for the creation of Recreational Fishing Havens was 24; the number for Marine Protected Area buy out programs was 32.
- In the OTL fishery, there was a 47.4% decline in the number of fishers catching any snapper from 380 to 200 fishers. Regarding the 180 fishers who stopped catching snapper, approximately 78 fishers participated in the buy out programs between 2001 and 2005, and another 102 fishers stopped fishing for snapper in the OTL fishery for other reasons (between 1997/98 and 2005/06), although they may still be participating in the OTL fishery catching other species or participating in other fisheries.
- The number of fishers in the OTL fishery who contribute to catching 90% of the total landings of snapper also declined by 47.4% between 1997/98 and 2005/06 from 116 to 61 fishers (though these fishers may still be participating in the OTL fishery or other fisheries).

- Even with the declines in snapper landings and fishers, individual fishers caught on average a greater weight of snapper per fisher in 2005/06 than in 1997/98. This is evident for all fishers catching snapper and for those who contribute to catching 90% of the total—catch for both categories increased by 39%.

- On a regional basis, dedicated snapper fishers (i.e., those contributing to catching 90% of landed snapper) caught 70% more fish per person in the Northern area, 14% more in the Mid-North in 2005/06, and 40% more in the Central area, compared to 1997/98. These increases in catch per fisher are consistent with expectations following the increase in MLL; they may also be associated with naturally productive years in those areas and/or the reduction in the number of participating fishers. The South was the only area to experience a decline in catch, a 7% drop compared to 1997/98.

- The relative importance of the MLL change with respect to other reasons for leaving the snapper fishery is difficult to isolate given the available data. While the change to a 30 cm MLL may account for a proportion of the impact on fishers choosing not to continue fishing snapper or to continue at a lower level, other factors such as natural variation in biological production, buy outs of fishing entitlements or uneconomic operating costs, may also contribute to lower levels of total catch. While year-to-year variations make it difficult to distinguish other factors from the effectiveness of the size limit increase, the analysis of trends within data sets, combined with the comparison of means, immediate impacts, and overall trends, suggests that the change in MLL has had a positive overall impact.

The following six points on economic issues are particularly relevant:

- The estimated Gross Value of Production (GVP) of all catch from the OTL fishery was already in decline before the MLL change for snapper and this decline has been at a faster rate than the decline in GVP from snapper. For example, after taking inflation into account, the OTL GVP declined by 38% over the nine years of record. Over the same period, snapper GVP declined by 32%. This means that factors other than the snapper MLL change are important in the declining GVP of the OTL fishery.

- While the estimated GVP from fishers catching 90% of the total landings of snapper declined in absolute terms, overall average income from snapper per OTL fisher contributing to catching 90% of the total snapper catch (after adjusting for inflation) increased by 40% between 1997/98 and 2005/06 (from $24,493 to $34,277).

- On a regional basis, over the nine years of record, average income from snapper per OTL fisher contributing to catching 90% of the total snapper catch (after adjusting for inflation),

increased by 64% in the North (from $27,246 to $44,758), by 10% in the Mid-North (from $25,361 to 27,785), and by 35% in the Central area (from $26,499 to $35,569). It decreased by 11% in the South area (from $12,850 to $11,479).

- There were increased catches of leatherjackets and bream in the year immediately following the MLL change. Although average incomes from snapper fishing declined by 18.9% for OTL snapper fishers contributing to 90% of the total snapper catch in the year following the change, for many of these snapper fishers the increase in catch of leatherjackets and bream offset short-term losses in income from snapper. In other words, large increases in landings of leatherjackets and bream by fishers since 2000/01 may have offset the short-term losses in income from not catching snapper under 30 cm in length. After adjusting for inflation, the GVP of the OTL fishery – already in decline – decreased slightly from 2000/01 to 2001/02, suggesting that the change to snapper MLL did not have a significant overall impact on the OTL fishery as a whole.

- Over the five years of record after the change, there is a 7 per cent increase in the inflation-adjusted price of snapper per kilogram sold at the Sydney Fish Market, ie a comparison of the before-and-after periods demonstrates that the price of snapper has increased in real terms.

- Although the proportion of all NSW snapper sold at the Sydney Fish Market is unknown, records of NSW sales kept according to grade size allow some comparative analysis. The grade categories are small (less than 34 cm), medium (34 to 48 cm) and large (greater than 48 cm). For the four years of record before the size limit change, there is a price premium of 5.1% and 7.4%, respectively, for small snapper compared to medium and large snapper. For the three years after the size-limit change, the price premium increases to 14.6% and 20.5%, respectively. This suggests that a refinement of the small grade size category has occurred through the elimination of snapper less than 30 cm, i.e., the removal of sizes below the legal size limit. This information indicates that, taking inflation into account, the increase in MLL has been positive for size grade and price.

The next step: Increasing the MLL by 2 cm from 30 to 32 cm

In summary, the biological information indicates that the increase in MLL contributes to increases in snapper catch per fisher and the available biomass of larger fish. Associated with these benefits are increases in the spawning biomass and egg production and therefore probable increases in recruitment. Nevertheless, the composition of the catch indicates that the east-coast snapper stock is still a very heavily fished stock. The next step in continuing to improve yield in this fishery is to shift the size composition of landed snapper by an additional 2 cm. This is consistent with the original scientific advice in the late 1990s that further benefits would occur by increasing the MLL to 32 cm and beyond. It is also consistent with the original Ministerial decision to implement a 2 cm increase from 28 to 30 cm in 2001 as the first part of a planned 4 cm increase, with the second increase to take place following an assessment of the impact of the initial increase.

ATTACHMENT 2

Commonwealth Update (excerpt from AFMA Update fortnightly newsletter)

ETBF

Drum monitor trials: Sea trials of the drum monitor commenced in the ETBF during September with prototype units fitted to vessels Vanessa S and the Sensation. Initial results appear positive with drum monitor data successfully transmitted from these vessels via their Vessel Monitoring System (VMS) to AFMA. Under the ETBF Management Plan 2005, operators in the fishery will be required to install drum monitoring units on their boats. These units will monitor drum usage and form the basis of the effort monitoring system which will be implemented under the Plan. AFMA has entered into a contract with VIPAC Engineers and Scientists to design, test, manufacture and install drum monitoring units on all ETBF boats. The drum monitor units will send VMS messages when fishing activities occur. This includes information on the vessel's location, time, date and the type of event, eg. commencement or completion of a set or haul, and the number of drum rotations. Depending on the success of the trial, a fully operational drum monitoring system could be implemented in the ETBF by early 2008.

SBT Fishery Management Plan

AFMA is inviting comments from Statutory Fishing Right holders and other interested parties on draft amendments to the Southern Bluefin Tuna Management Plan 1995. Comments should be sent by Wednesday 7 November 2007 to Ryan Murphy, Manager Southern Bluefin Tuna Fishery, Australian Fisheries Management Authority, PO Box 7051 Canberra Business Centre, Canberra ACT 2610, by fax to (02) 6225 5439, or email ryan.murphy@afma.gov.au.

General AFMA Updates

Proposed US legislation on IUU fishing and bycatch: The US Government published a proposal for legislation that would ban imports to the US of seafood from countries whose fishers are engaged in Illegal, Unregulated and Unreported (IUU) fishing activities, and from countries that employ fishing practices that result in the bycatch of "protected living marine resources". The proposed legislation specifically mentions the mandatory use of circle hooks in longline fisheries to mitigate sea turtle capture but is likely to be much wider in application. The US indicated the legislation will likely be enacted in 2009. The US Government is undertaking domestic consultation on the proposed legislation. This consultation will later be widened to include international stakeholders. The Australian Government, led by the Department of Agriculture Fisheries and Forestry (DAFF) is liaising with US counterparts to determine the application and impact of such legislation on Australian fisheries. The Government will prepare a submission in response to the proposed legislation once it becomes available.

South-east Commonwealth Marine Reserve Network declared

A network of 13 new Commonwealth Marine Reserves has been declared in Australia's South-east Marine Region (Commonwealth waters) under the Environment Protection and Biodiversity Conservation Act 1999. The region extends from the far south coast of New South Wales, around Tasmania and Victoria and west to Kangaroo Island off South Australia. This is the first temperate deep sea network of marine reserves in the world. The reserves came into effect on 3 September 2007. They are managed by the Department of the Environment and Water Resources (DEW) under delegation from the Australian Government Director of National Parks. The activities allowed in the South-east Commonwealth Marine Reserve Network are based on a system of zones which allow and prohibit certain activities. While some fishing methods are allowed in some zones of some of the reserves, demersal trawl, Danish seine, scallop dredge and gillnetting below 183 metres are not allowed in any of the reserves. These arrangements are explained in detail on the DEW website.

To fish in areas where it is allowed or to transit any of the reserves, commercial fishers must register for an approval prior to fishing. There are no fees or charges associated with being

registered. For more information on how to register please contact the South-east Region Manager on (02) 6274 1111 or go to the DEW website. Maps are also available.

Dramatic decline in illegal fishing
The Australian Government has announced a 90 per cent reduction in incursions by foreign motorised fishing vessels in its northern waters at its six-monthly meeting with State Fisheries Ministers in Darwin recently.

AFMA has played a major part in this reduction along with Border Protection Command, Customs and Defence.

New submarine cable protection zones in NSW waters
Fishers operating off NSW should be aware that the Australian Communications and Media Authority (ACMA) has declared protection zones over two key submarine cables that land at Sydney beaches. In the protection zones, activities that may cause cable damage are prohibited or restricted. Some prohibitions and restrictions will be particularly relevant to commercial fisheries, such as those relating to demersal longlining, trawl fishing and anchoring. The protection zones came into effect on 1 October 2007 as follows:

- the Northern Sydney Protection Zone; extending from Narrabeen beach to 40 nautical miles offshore covering northern branches of the Australia Japan Cable and Southern Cross Cable, including the area between these two cables; and

- the Southern Sydney Protection Zone; extending from Tamarama and Clovelly beaches and extending 30 nautical miles offshore covering the southern branches of the Australia Japan Cable and Southern Cross Cable, including the area between these two cables.

Bycatch Action Plans
Bycatch action plans identify the specific bycatch issues in a fishery and detail actions required to address those issues. The bycatch action plan is then integrated into the management arrangements for the fishery to enable the actions to be implemented. Plans are reviewed every 2 years. The most recent Bycatch Actions Plans completed by AFMA are for the Northern Prawn Trawl Fishery and the SESSF. Details of other actions plans and Implementation Reports are available at: http://www.afma.gov.au/information/publications/fishery/baps/default.htm

ATTACHMENT 3

Proposed amendments to *Fisheries Management (Ocean Trawl Share Management Plan) Regulation 2006*, *Fisheries Management (Supporting Plan) Regulation 2006* and the *Fisheries Management (General) Regulation 2002*

A number of amendments to the *Fisheries Management (General) Regulation 2002* ("the General Regulation") and the movement of provisions from the General Regulation into the *Fisheries Management (Ocean Trawl Share Management Plan) Regulation 2006* ("the OTSMP") were postponed due to the tight time frame for implementing Share Management Fisheries by February 2007.

Following is a summary of proposed regulation amendments relevant to the OT fishery. DPI proposes to prepare an information paper to inform fishers and fishing businesses owners of the changes prior to the end of the year.

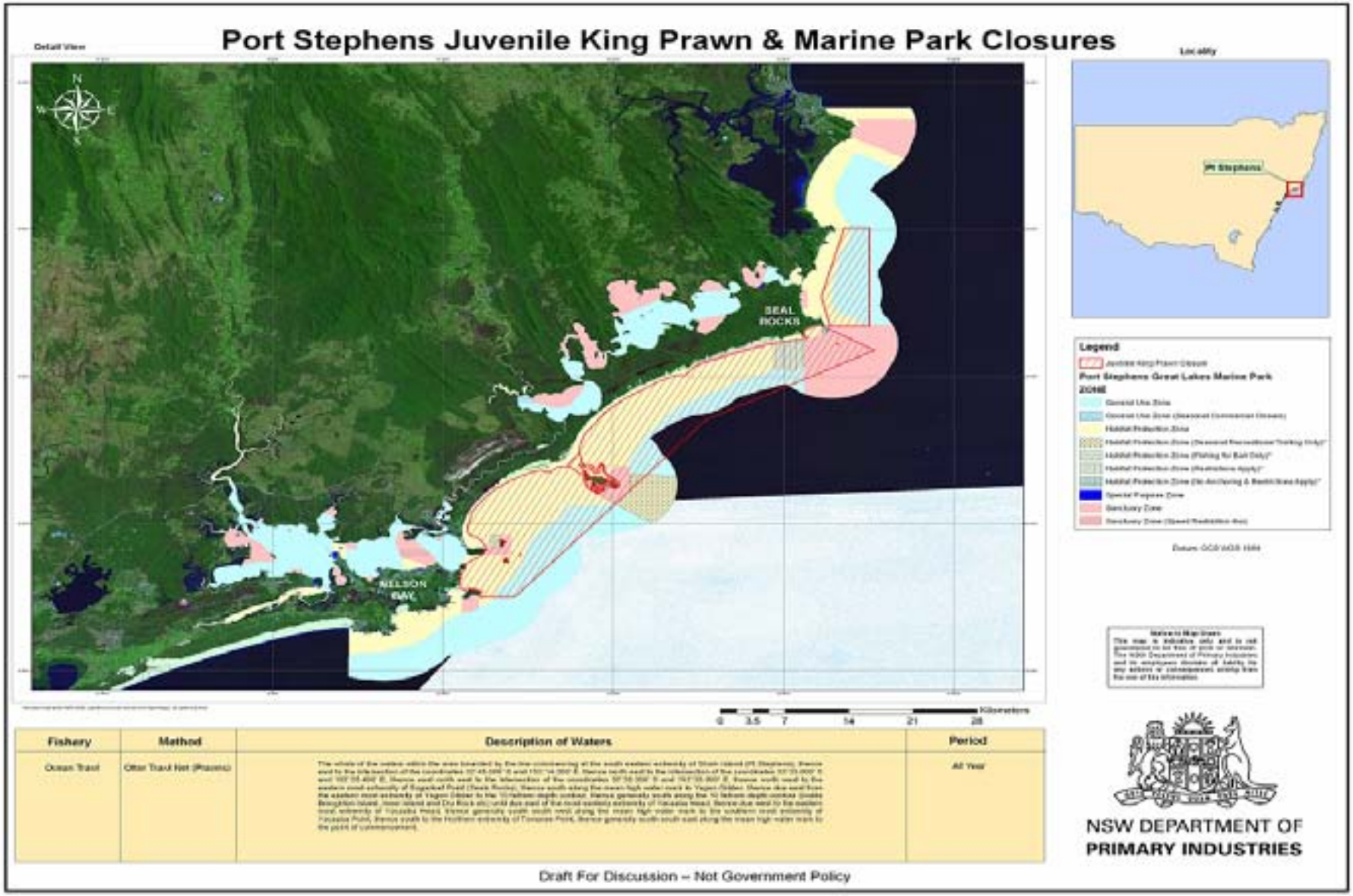
Proposed regulation changes

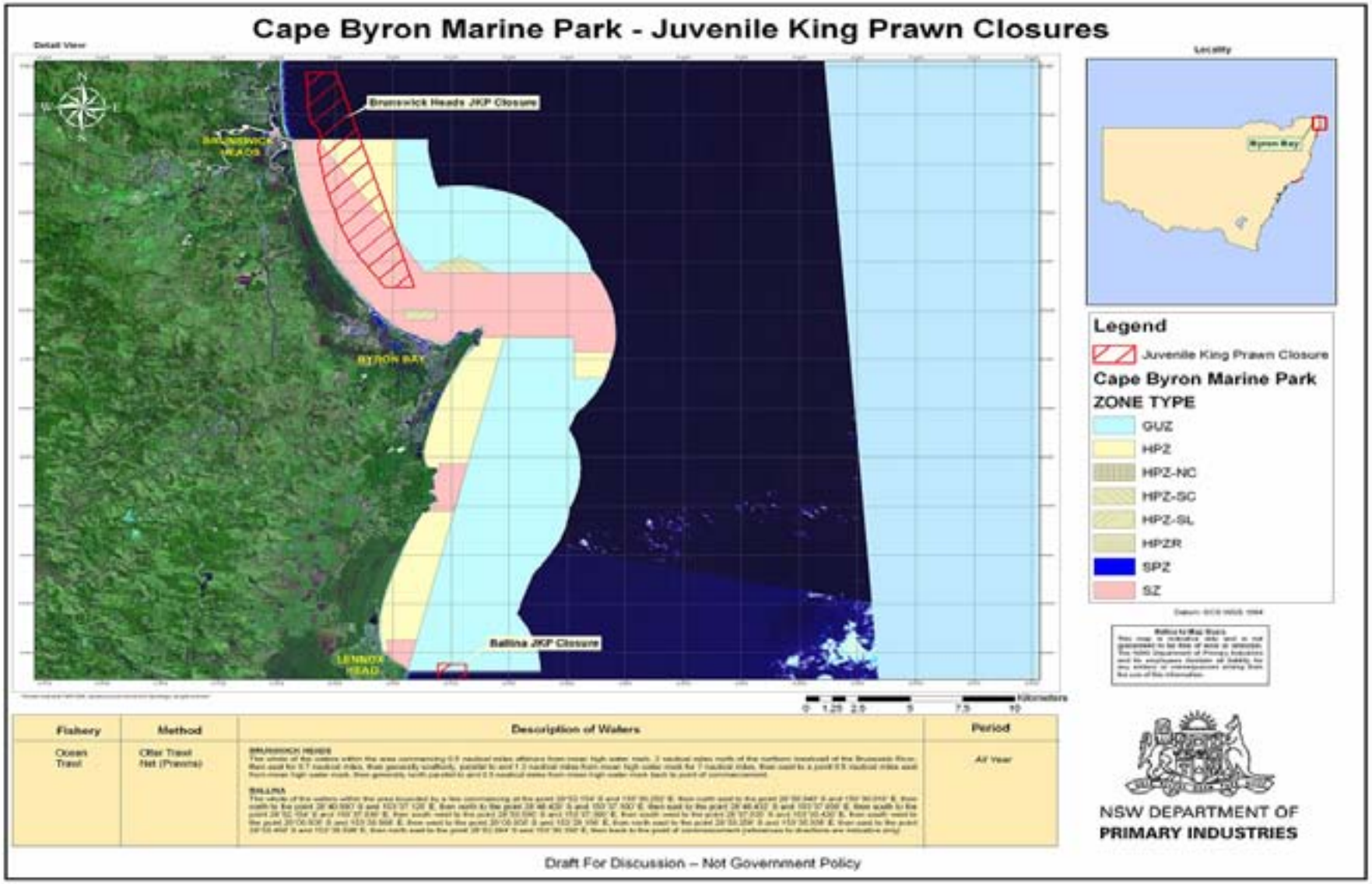
- Movement of fishery specific provisions (gear, BRDs etc) into the OTSMP
- Movement of relevant section 8 closures into the OTSMP (most already in SMP) and amendments to minimise inconsistency with the Marine Park zoning rules
- Authority for DPI to refuse transfer of shares if fees payable in respect of the fishing business are outstanding
- Revised penalties for various 'penalty notice offences' (generally new offences) such as;
    - Breach of endorsement conditions in SMF ($500)
    - Breach of licence conditions (increase from $200 to $500)
    - Failure to make record of catch (increase from $200 to $300)
    - Notice of transfer of external authorities ($200)
    - FB owner not to give FB card to a person not nominated for business ($300)
    - Nominee to return FB card to FB owner if nomination revoked ($200)
- Authority to conduct observer work
- Carriage of commercial fishing gear through various Recreational Fishing Havens
- Restriction on use of spikes - designated harmful species only (see MAC agenda)
- Enable certain fishing closures made under section 8 of the Act to prevail over the OTSMP including closures that relate to;
    - Protecting seagrass in estuaries (and other habitats as needed)
    - Food safety
    - Pollution events
    - Fish kills
- Provide for the use of landing nets as an ancillary aid to all lawful commercial fishing gear
- Try gear as follows:
    - Single net, maximum headline 4m, body 40-75mm diamond, codend 35-45 square-mesh with maximum 3mm twine, otter boards no greater than 0.5^2m each.
- Various changes to the otter trawl net (prawns) including;
    - Unlawful to take abalone and kingfish (in addition to lobster already prohibited)
    - Droppers of minimum length 100mm
    - Maximum 1 line of ground chain with links not more than 12mm diameter
    - Body of net 40-75mm (currently 40-60mm)

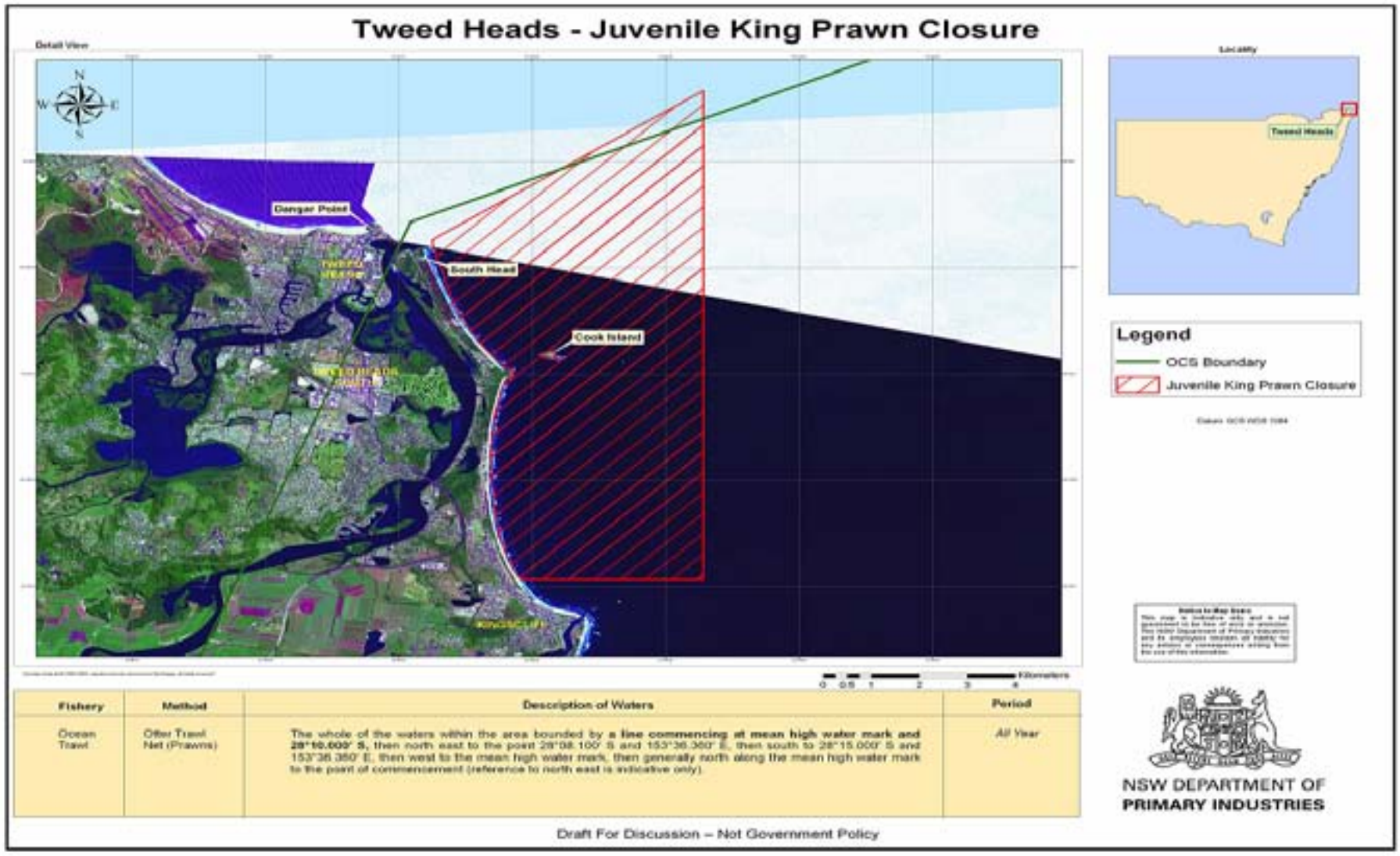
- Clarification that interstate BRDs may remain in nets when nets used in NSW
- Decisions on codend specifications pending

- Various changes to the otter trawl net (fish) including;
  - No longer necessary to register net
  - Unlawful to take abalone (in addition to lobster already prohibited)
  - Unlawful to mid-water trawl (bottom trawling only)
  - Maximum head line length 60m
  - Maximum sweep length 186 metres (100 fathom)
  - Providing for BRDs approved by Director-General (none proposed yet)
  - Maximum 1 line of ground chain with links not more than 12mm diameter
  - Clarify that drawstring permitted
  - Clarify that frill (skirt) permitted provided not attached more than 5 meshes from the end of the codend;
  - Clarify that rope to split catch permitted provided it is of greater circumference than the net and does not reduce the effective mesh size of the meshes
  - Codend on designated school whiting grounds
    - Double twine codend permitted
    - May be greater than 100 meshes in circumference (considering max 200 meshes)
  - Codend on other grounds
    - Single twine not more than 6mm diameter
    - Codend not more than 100 meshes in circumference, and in any event no greater in number of meshes in circumference than that part of the net immediately forward of the codend.
- Various changes to the Danish seine trawl net (fish) including;
  - No longer necessary to register net
- Closure issues
  - Port Kembla (Red Point to Windang island) closure to be regulated
  - Twofold Bay closure to be regulated
  - Merimbula Bay closure to be regulated
  - Western boundary of South West Rocks (Juvenile King Prawn) closure moved to the beach and the closure changed to 12 months of the year (in accordance with FMS)
  - Closure of all waters outside 11,00m to trawling
  - Closure to trawling over reef (hard rock or reef, not gravel)

Also note that the *Fisheries Management (General) Regulation 2002* was amended earlier this year and that the OPT unit levy is no longer payable. Any future financial contributions by industry to administration, consultative processes and or research will be determined as part the broader cost recovery policy.


Port Stephens Juvenile King Prawn & Marine Park Closures
Detail View
Locality
Port Stephens
SEAL ROCKS
NELSON BAY
Legend
Port Stephens Great Lakes Marine Park
Zones
0 3.5 7 14 21 28
Kilometers
Fishery
Method
Description of Waters
Period
Ocean Trawl
Otter Trawl Net (Prawns)
All Year
NSW DEPARTMENT OF
PRIMARY INDUSTRIES
Draft For Discussion – Not Government Policy


Cape Byron Marine Park - Juvenile King Prawn Closures
Detail View
Brunswick Heads JKP Closure
BRUNSWICK HEADS
BYRON BAY
Ballina JKP Closure
LENNOX HEAD
Locality
Byron Bay
Legend
Juvenile King Prawn Closure
Cape Byron Marine Park
ZONE TYPE
GUZ
HPZ
HPZ-NC
HPZ-SC
HPZ-SL
HPZR
SPZ
SZ
Kilometers
0 1.25 2.5 5 7.5 10
Fishery
Method
Description of Waters
Period
Ocean Trawl
Otter Trawl
Net (Prawns)
All Year
NSW DEPARTMENT OF
PRIMARY INDUSTRIES
Draft For Discussion – Not Government Policy



Fishery	Method	Description of Waters	Period
Ocean Trawl	Otter Trawl Net (Prawns)	The whole of the waters within the area bounded by **a line commencing at mean high water mark and 28°10.000' S,** then north east to the point 28°08.100' S and 153°36.360' E, then south to 28°15.000' S and 153°36.360' E, then west to the mean high water mark, then generally north along the mean high water mark to the point of commencement (reference to north east is indicative only).	*All Year*

OTFMS Appendix 4. Specific management arrangements for trawling for whiting

The following arrangements will apply with respect to trawling activities for the targeting of whiting.

Species
Red spot whiting (Sillago flidersi) and stout whiting (Sillago robusta).

Catch and effort controls
The level of catch and fishing effort will be monitored to help determine whether the harvest of whiting is sustainable and commercially viable. A target range for the annual landed catch of whiting will be set at 1,110 to 1,400 tonnes per year (the two species combined), with a trigger to review the arrangements for harvesting whiting if the annual catch lies outside this range. In the event that the upper catch trigger is exceeded, consideration will be given to implementing more stringent controls on whiting fishing effort, including creating a separate limited access fishery. If additional biological information shows significant differences between red spot whiting and stout whiting, the catch ranges may need to be set differently for each of them.

Prawn gear and areas
"Prawn Trawl endorsement holders will be required to use square mesh cod-ends (that retain prawns and whiting at an appropriate size) when trawling in all waters open to trawling (see management response 2.1 (d) (i)). Prawn trawl nets will also need to include an approved BRD such as the 'modified square mesh panel' (See management response 1.2(b))."

"The FMS provides for a period of one year before the modified square mesh panel will need to be positioned within 1.2 metres from the cod-end drawstring so that it effectively excludes small fish, including whiting. This provides a one year period for industry and DPI to identify a limited number of designated whiting grounds and associated times within which a square mesh panel comprising 40mm mesh can continue to be used. The 40mm mesh panel will still retain appropriately sized whiting whereas the standard 65 or 75mm minimum mesh panel will not."

Fish gear and areas
"Fish trawl endorsement holders can use a net with a minimum 90mm mesh throughout and a cod-end made of double braided twine in all waters open to trawling that are less than 55 metres (30 fathoms), subject to a firm commitment to conduct and implement the results of research relating to the selectivity of a single rig net designed specifically to catch whiting at optimum sizes and to minimise bycatch – i.e testing gear configurations such as mesh orientations, cod-end circumference, hanging ratio, twine diameter, etc. This research will be completed within the next three years and will be funded by fishing businesses with entitlements in the OTF, with industry input in the form of a working group to oversee the project. Opportunities for supplementary funding through external sources will be explored."

Ongoing review
The above arrangements will be subject to ongoing review pending the outcomes of research, such as on the biology or stock dynamics of red spot whiting or stout whiting.

ATTACHMENT 8

OUTCOME OF CLARENCE RIVER PROFFESSIONAL FISHERMEN'S ACCOCIATION HOSTED – OCEAN TRAWL CROSS REGION MEETING
TUESDAY 23 OCTOBER 2007 – 11:00AM
MACLEAN

Participants:
Gordon Farrell, John McGuren, Darren Ward, Phil Ward, Donald Anderson, Shane (Sparrow)

NB Donald Anderson left the meeting and Darren Hale joined the meeting after lunch.

Apologies
None

OUTCOMES

1. What became of the 'lost option' (i.e. 150 Round, single twine 4mm mesh, 40 to 50 mm diamond) proposed by industry, agreed to by the MAC, contained in the draft FMS but omitted from the final FMS?

2. The position of the BRD at 1.2m (mandated in the FMS) came from generalised discussions between industry and NSW DPI staff and is not based on any specific research trials.

3. Progress toward finding an acceptable resolution to the current impasse has been significantly compromised by the 'non-appearance' of Matt Broadhurst at the previous meeting.

4. The specifications of the 'Free – Trial' codends are different yet again to gear trialled by NSW DPI and upon which the mandated gear in the FMS has been derived (i.e. the BRD on the free trial gear has a 90mm mesh not the minimum 60mm mandated in the FMS and they are 100 round (2m) not 90 round).

5. Industry's experience of comparative trawl shots done with DPI staff have shown that the mandated gear resulted in losses of 20kg of good size king prawn on a 140kg retained night when compared with existing gear. This loss was shown to be occurring through the BRD.

6. Industry's own experience of comparative trawl shots has shown that once the product volume reaches around 40kg in the mandated gear, 50% of everything caught after that point is lost due to insufficient volume in the codend.

7. Industry's experience has also shown that the mandated codends 'pack-down' as opposed to swelling out to accommodate larger catch loads.

8. Discussions confirmed earlier industry criticisms that the research was done during the worst fishing periods experienced in recent memory, in limited areas holding large prawns at the time, using shot times half as long as the industry norm and therefore results cannot possibly accurately reflect the range of fishing conditions experienced.

9. The mandated gear does not accommodate fleet variability resulting from unitisation.

10. Significant advances have already been achieved in OTF gear overtime. Improvements should be measured against the performance of 200 Round 40mm diamond gear which is currently permitted.

11. Mortality rates of different size classes of prawns pre and post capture are unknown.

Follow-Up

Industry now needs to develop and present to NSW DPI and Government a detailed strategic response to include the following elements:

1. **An industry funded scientifically robust investigation of two alternative gear options shown below** (see Diagrams 1, 2 and 3)

   NB Any alternative gear proposed by industry must be demonstrated under controlled scientifically robust experimentation to achieve improvements in;

a) Size selectivity of primary and secondary species
b) Reductions in overall bycatch levels

NB These improvements should be measured against the performance of 200 Round 40mm diamond gear which is currently permitted.

The following actions are recommended:

i) Industry should seek to engage with reputable scientists to investigate options for an undergraduate or post graduate project to perform the work.

   Potential collaborators include Sydney University Professor of Experimental Ecology, Tony Underwood and Director of the National Marine Science Centre, Coffs Harbour, Professor Alistair McIlgorm – NB Professor McIlgorm is a former Associate Director of the Faculty of Fisheries and Marine Environment at the Australian Maritime College and holds a PhD from the University of Queensland, in which he modelled management of the East Australian tuna fishery.

ii) Matt Broadhurst should be kept in the loop as his confidence in the methodology developed and the comparability of any results produced to his own investigations will be critical to their acceptance within NSW DPI, Government and more broadly.

iii) Potential to engage with OceanWatch Australia OWA (particularly with NSW SeaNet Officer Dave Cranston) to build capacity with other efforts to fund and investigate industry driven trawl gear modifications should be pursued.

iv) Strategy development and implementation timeframes should seek to deliver a completed comprehensive report of results by no later than May 2008.

2. **A justification submission to NSW to include:**

i) A summary of industry's position in relation to the mandatory gear implementation as set out in the FMS and a chronology of events, meetings, submissions etc. to date (**NB** Particular emphasis should be placed on the need to provide for codends with a greater volume under normal fishing conditions and to redress unacceptable economic and social impacts associated with massive reductions in catches of key primary and secondary species if the mandated gear implementation goes ahead in its current form).

ii) A synopsis of industry's proposed response.

iii) A strong emphasis on the ability of this industry initiated and managed response to deliver significant gains for industry, Government and NSW DPI (over other options) in the areas of:

a) Simplification of management arrangements.
b) Greatly reduced management, compliance and enforcement costs.
c) Cross regional industry elements providing leadership and working together in a state-wide fishery to deliver a practical workable compromise which effectively balances key shared challenges of providing for true ecological, social and economic sustainability.
d) Recognising that industry will still suffer considerable economic impacts from these changes but believes that the proposed approach will deliver an acceptable on balance outcome over the mandatory gear.
e) Industry is not in anyway seeking to totally reject the outcomes of NSW DPI research rather we are seeking to keep the best elements of their findings and marry them to industry observed gear improvements to achieve a better outcome for all.

iv) Clearly articulating the critical need to allow sufficient time for industry, government and NSW DPI to properly consider the results of the study and craft a suitable management response.

In addition

- The issue of the lost option should be placed on the agenda for the upcoming OTFMAC meeting

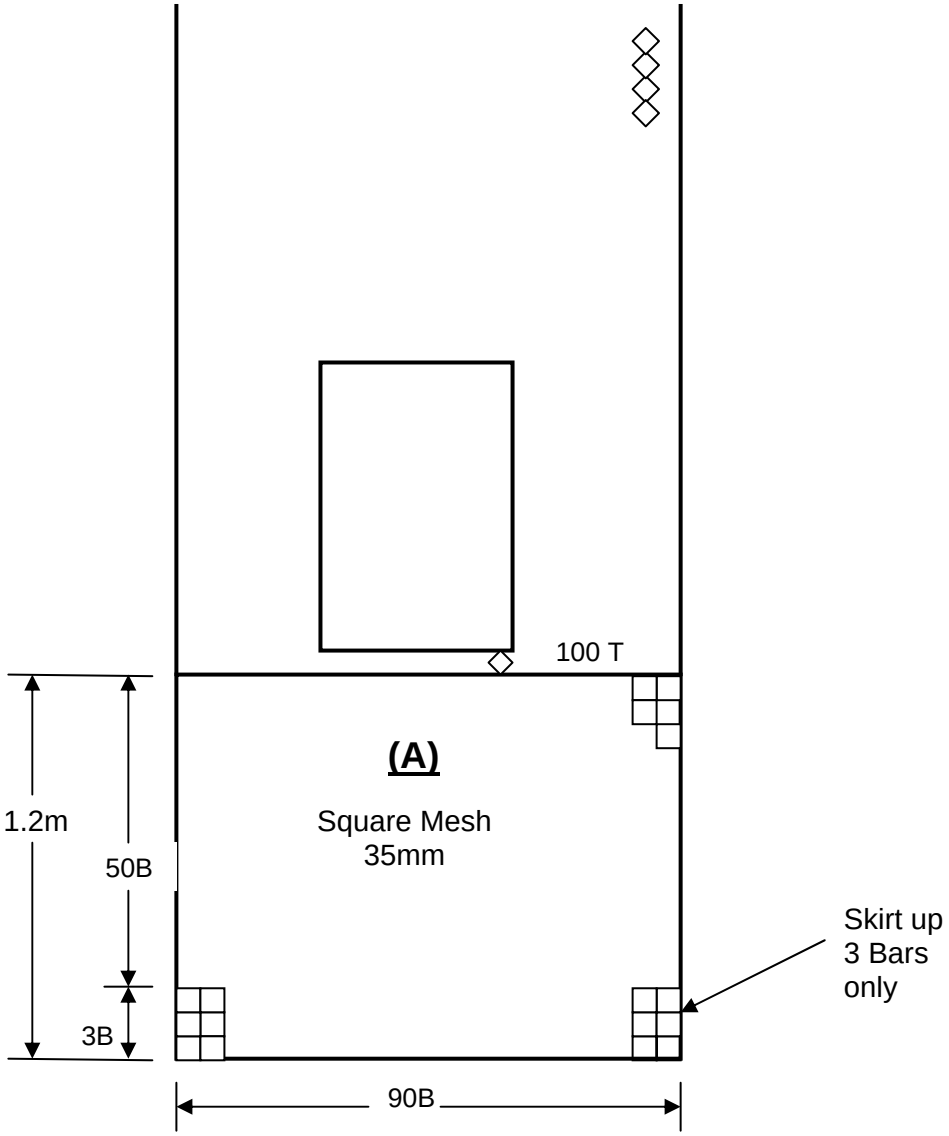
- Industry should seek to get its justification and synopsis to Government and NSW DPI in time to allow for this strategy to be canvassed to the broader industry through the OTFMAC at its next meeting

Outcome of CFPA Hosted Ocean Trawl Cross Region Meeting
Maclean Tuesday 23 October 2007 11:00AM

CODEND: DPI Square Mesh 35mm
2m diameter circumference.
Cubic volume: 0.309 metres of **(A)**

BRD: Composite Square Mesh Panel

Diagram 1. Industry Square Mesh Option



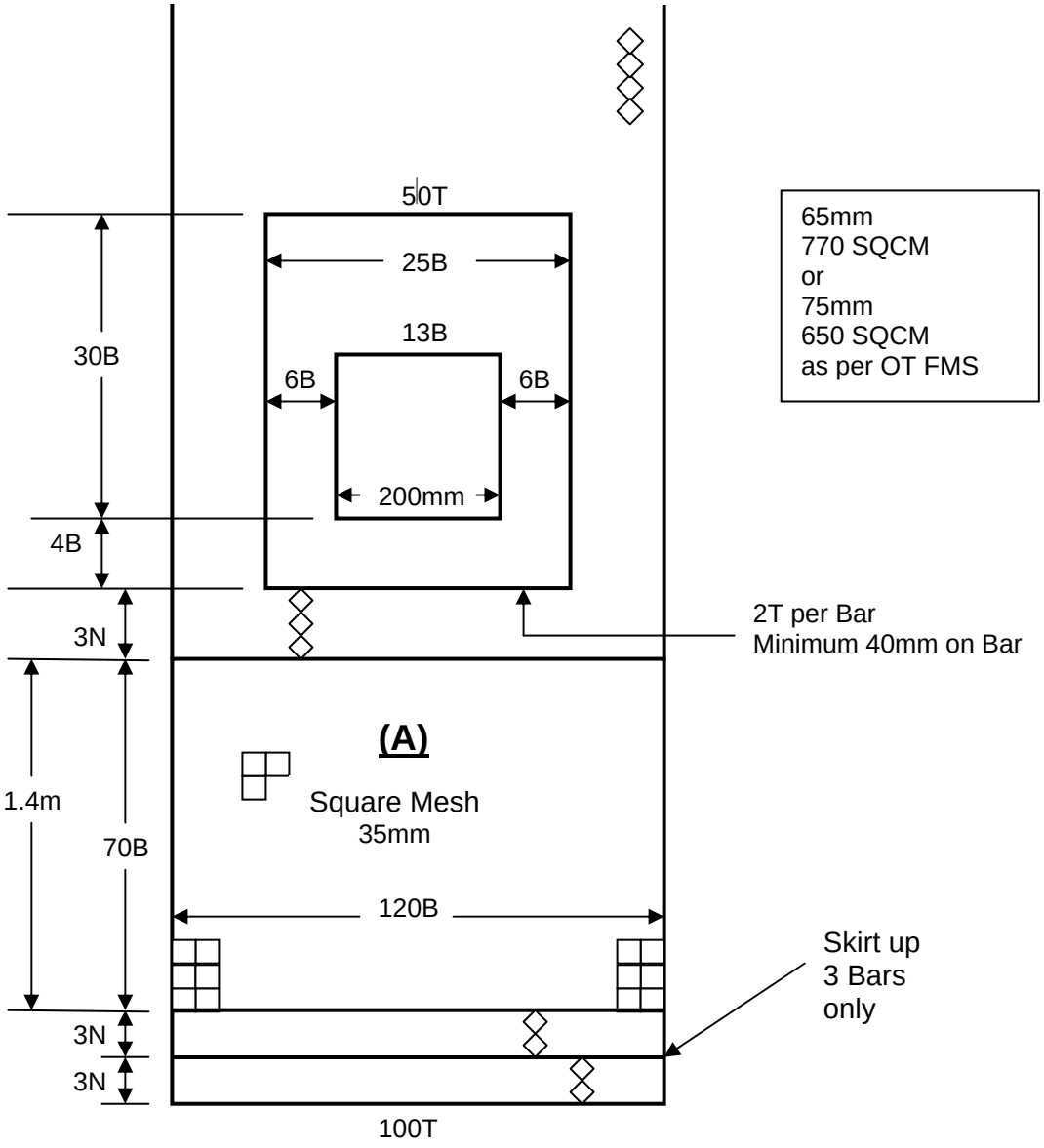
The problem in the codend is the cubic volume for large vessels and the position of the BRD.

Outcome of CFPA Hosted Ocean Trawl Cross Region Meeting
Maclean Tuesday 23 October 2007 11:00AM

CODEND: DPI Square Mesh 35mm
2.4m diameter circumference.
Cubic volume: 0.6414 metres of **(A)**

BRD: Composite Square Mesh Panel

Diagram 2. Industry Diamond Mesh Option 1

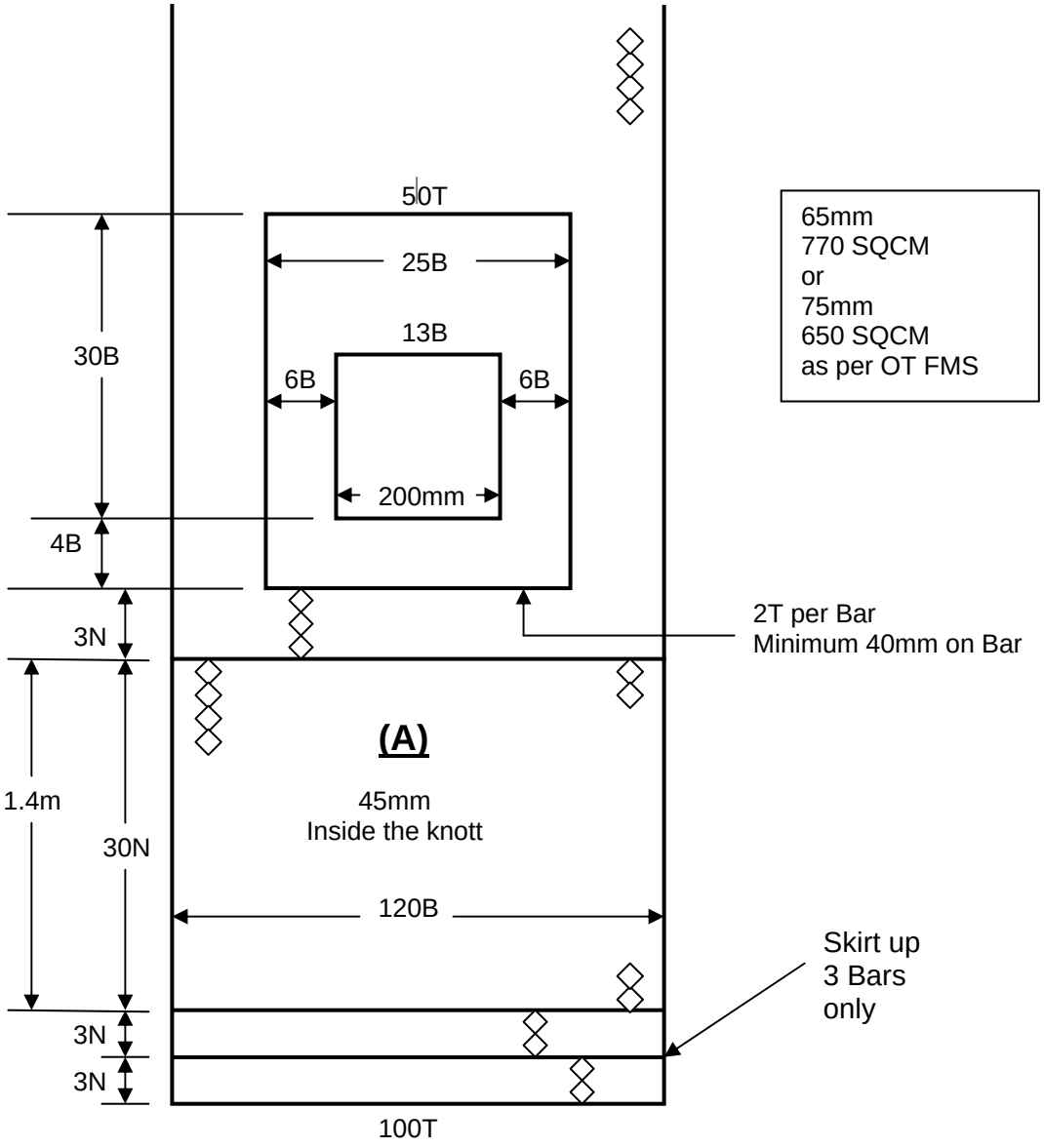


Outcome of CFPA Hosted Ocean Trawl Cross Region Meeting
Maclean Tuesday 23 October 2007 11:00AM

CODEND: DPI Square Mesh 35mm
2.46m diameter circumference.
Cubic volume: 0.6789 metres of **(A)**

BRD: Composite Square Mesh Panel

Diagram 3. Industry Diamond Mesh Option 2



F95/322(2)

FISHERIES MANAGEMENT ACT 1994

Section 8 Notification - Fishing Closure

South-East Trawl Fishery - Trip Limits

I, Edward Obeid, prohibit the taking for sale of those fish species as described in Column 1 of the Schedule to this Notification, for the period shown opposite in Column 2, by the methods of fishing shown opposite in Column 3, from the waters shown opposite in Column 4, except when those fish species are taken in accordance with the trip limit conditions specified in Column 5.

This prohibition will be effective from 1 May 2003 to 30 April 2008, inclusive.

The Hon Edward Obeid OAM, MLC
Minister for Mineral Resources
Minister for Fisheries

SCHEDULE

COLUMN 1 *SPECIES*	COLUMN 2 *PERIOD*	COLUMN 3 *METHOD*	COLUMN 4 *WATERS*	COLUMN 5 *TRIP LIMIT*
Gemfish (*Rexea solandri*).	See NSW Government Gazette No. 59, 19-5-00			
Redfish (*Centroberyx affinis*).	From **1 November to 31 December** and **1 January to 30 June** of each year all dates inclusive.	Otter trawl net (fish).	All NSW ocean waters **north** of **Barrenjoey** Headland including those waters subject to an OCS agreement between the State and Commonwealth.	No more than **250 kg** whole weight in possession on board the fishing vessel once each day or from the time of departure to the time of return to port (when longer than a day).
Redfish (*Centroberyx affinis*).	From **1 July to 31 October** of each year, all dates inclusive.	Otter trawl net (fish).	All NS W ocean waters **north** of **Barrenjoey** Headland including those waters subject to an OCS agreement between the State and Commonwealth.	No more than **1000 kg** whole weight in possession on board the fishing vessel once each day or from the time of departure to the time of return to port (when longer than a day).

Schedule continued...

COLUMN 1 *SPECIES*	COLUMN 2 *PERIOD*	COLUMN 3 *METHOD*	COLUMN 4 *WATERS*	COLUMN 5 *TRIP LIMIT*
Redfish (*Centroberyx affinis*).	From **1 January to 31 December** of each year, all dates inclusive.	Otter trawl net (fish).	All NSW ocean waters **south of Barrenjoey** Headland including those waters subject to an OCS agreement between the State and the Commonwealth.	No more than **100 kg** whole weight in possession on board the fishing vessel once each day or from the time of departure to the time of return to port (when longer than a day).
Orange roughy (*Hoplostethus atlanticus*), **smooth oreo dory** (*Pseudocyttus maculatus*), **black oreo dory** (*Allocyttus niger*), **spiky oreo dory** (*Neocyttus rhomboidalis*) and **warty oreo dory** (*Allocyttus verrucosus*).	From **1 January to 31 December** of each year, all dates inclusive.	By all methods.	All NSW ocean waters including those waters subject to an OCS agreement between the State and the Commonwealth.	**0 kg.**
Pink ling (*Genypterus blacodes*), **mirror dory** (*Zenopsis nebulosis*), **blue-eye trevalla** (*Hyperoglyphe antarctica*), **blue grenadier** (*Macruronus novaezelandiae*) and **royal red prawns** (*Haliporoides sibogae*).	From **1 January to 31 December** of each year, all dates inclusive.	By all methods.	All NSW ocean waters west of a line drawn 3 nautical miles east of the coastal baseline.	**0 kg.**

Schedule continued...

COLUMN 1 *SPECIES*	COLUMN 2 *PERIOD*	COLUMN 3 *METHOD*	COLUMN 4 *WATERS*	COLUMN 5 *TRIP LIMIT*
Blue warehou (*Seriolella brama*).	From **1 January to 31 December** of each year, all dates inclusive.	By all methods.	All NSW ocean waters including those waters subject to an OCS agreement between the State and the Commonwealth.	No more than **100 kg** whole weight in possession on board the fishing vessel once each day or from the time of departure to the time of return to port (when longer than a day).
Spotted warehou (*Seriolella punctata*).	From **1 January to 31 December** of each year, all dates inclusive.	By all methods.	All NSW ocean waters including those waters subject to an OCS agreement between the State and the Commonwealth.	No more than **50 kg** whole weight in possession on board the fishing vessel once each day or from the time of departure to the time of return to port (when longer than a day).
Jackass morwong (*Nemadactylus macropterus*).	From **1 January to 31 December** of each year, all dates inclusive.	By all methods.	All NSW ocean waters **north of Barrenjoey** Headland including those waters subject to an OCS agreement between the State and the Commonwealth.	No more than **50 kg** whole weight in possession on board the fishing vessel once each day or from the time of departure to the time of return to port (when longer than a day).
Jackass morwong (*Nemadactylus macropterus*).	From **1 January to 31 December** of each year, all dates inclusive.	By all methods.	All NSW ocean waters **south of Barrenjoey** Headland including those waters subject to an OCS agreement between the State and the Commonwealth.	No more than **350 kg** whole weight in possession on board the fishing vessel once each day or from the time of departure to the time of return to port (when longer than a day).

Schedule continued...

COLUMN 1 *SPECIES*	COLUMN 2 *PERIOD*	COLUMN 3 *METHOD*	COLUMN 4 *WATERS*	COLUMN 5 *TRIP LIMIT*
Ocean perch (*Helicolenus percoides*).	From **1 January to 31 March** of each year, all dates inclusive.	By all methods.	All NSW ocean waters **north of Barrenjoey** Headland including those waters subject to an OCS agreement between the State and the Commonwealth.	No more than **500 kg** whole weight in possession on board the fishing vessel once each day or from the time of departure to the time of return to port (when longer than a day).
Ocean perch (*Helicolenus percoides*).	From **1 April to 31 December** of each year, all dates inclusive.	By all methods	All NSW ocean waters **north of Barrenjoey** Headland including those waters subject to an OCS agreement between the State and the Commonwealth.	No more than **1000 kg** whole weight of each fish species in possession on board the fishing vessel once each day or from the time of departure to the time of return to port (when longer than a day).

COLUMN 1 SPECIES	COLUMN 2 PERIOD	COLUMN 3 METHOD	COLUMN 4 WATERS	COLUMN 5 TRIP LIMIT
Ocean perch (*Helicolenus percoides*).	**From 1 January to 31 December** of each year, all dates inclusive.	By all methods.	All NSW ocean waters **south of Barrenjoey** Headland including those waters subject to an OCS agreement between the State and the Commonwealth.	No more than **300 kg** whole weight of each fish species in possession on board the fishing vessel once each day or from the time of departure to the time of return to port (when longer than a day).
Tiger flathead (*Neoplatycephalus richardsoni*), **tooth/goldspot flathead** (*Neoplatycephalus aurimaculatus*), **sand flathead** (*Platycephalus bassensis*) and **yank flathead** (*Platycephalus speculator*).	From **1 January to 31 December** of each year all dates inclusive.	By all methods.	All NSW ocean waters **south of Barrenjoey** Headland including waters 3 nautical miles east of the coastal baselines.	No more than **200 kg** whole weight of all **flathead species combined** in possession on board the fishing vessel once each day or from the time of departure to the time of return to port (when longer than a day).

ATTACHMENT 11

Development of a 'Days' management regime for the NSW Ocean Trawl Fishery

Introduction

As it has been some time since the MAC has discussed a 'days' regime for the OT fishery DPI has prepared a summary of the major issues for the OTMAC to consider. DPI will also provide detailed information on some of the following issues at the meeting to assist the MAC during discussions. As many of the issues listed below are dependent on each other DPI intends to document advice received by the OTMAC and formulate a preferred approach for further consideration.

Process for industry consultation / education

The process for industry consultation does not need to be developed at this stage however ideas from industry are welcome. Fishers will also need to be educated on any new program prior to implementation, so again any ideas from industry are welcome. Such processes typically involve:

- An industry consultation paper
- Industry port meetings (consultation & education)
- Internal DPI consultation across divisions (consultation & education)

A further issue that should be considered early on is; how many options and how much detail on each option do we need to provide to broader industry? Decisions on this will assist guide the options pursued, noting that there are ultimately a myriad of options and combinations of options that could be pursued.

DPI suggestion for discussion: DPI proposes to use advice from the MAC to narrow down the options that will be tabled for broader industry's consideration. DPI would prefer to table one or two detailed programs with commentary on the costs and benefits of each (or parts thereof).

Boundaries / impediments

There are boundaries / impediments that need be acknowledged, including but not limited to the following. Other boundaries / impediments identified by OTMAC should be documented:

- The "Review into Structural Adjustment in NSW" may influence this process
- Cost – how much will Government and/or industry be willing to contribute to develop and implement this program?
- DPI resources – dependant on cost/funding
- Technology (VMS, data loggers, winch monitors, cameras) – dependent on cost/funding
- Southern fish trawl is still a Restricted Fishery
- Some boats are also used in other fisheries (potential monitoring issues – see below)
- Legal challenges

As it is likely that funding will be a critical limiting factor, the options presented below for compliance and the allocation of days are listed in order of what could be expected to be least expensive to most expensive.

DPI suggestion for discussion: The 'Review into Structural Adjustment in NSW' and funding to implement a days regime are critical limiting factors and are at least in part outside the control of DPI and the MAC. Consequently, DPI suggests that at this stage the MAC should focus on the potential for industry to contribute to the costs, what to do with the Southern Fish Trawl Restricted Fishery, and two potential scenarios; a 'modest' program and an 'ideal' program. The approach pursued into the longer term will be guided by the outcomes of some of the above issues.

Objectives
Objectives could include the following. Other objectives identified by OTMAC should also be documented:

- Effort control
- Restructuring (achieved through trading, minimum night / share holdings)
- Optimising catch rates for viability reasons (how would this be achieved?)
- Business level flexibility (leasing etc)
- Minimal costs
- Consistent programs for OPT and OFT (or very similar) to minimise costs

DPI position: DPI is supportive of all of the above concepts and is keen to work with the MAC to try to achieve them. For some of the objectives above, it may be appropriate to consider alternative complementary strategies. For example, it may be preferable to implement 'rotational harvesting' or 'sampling regimes' like those adopted by South Australian prawn fishers to optimise catch rates rather than rely solely on a days regime. DPI encourages the MAC to table any additional objectives, noting that DPI has not at this stage included the concept of "a fair allocation of shares / days to all fishers" as this is a very subjective issue heavily biased by opinion and possibly self interest.

Monitoring & enforcing 'days' fished
Options to ensure compliance with a 'days' regime include;

- Log book based system
- VMS based system
- Multi endorsed businesses (which fishery is the boat operating in - using up days)
    - 'Prior reporting' or 'at sea reporting' by fisher
    - Winch monitors
    - On-board cameras
- Linking days used to the shareholder / business
    - Reported by fisher or re-introduce link between businesses and boats
- Systems that complement QLD and / or the Commonwealth's VMSs
- Funding a VMS based system;
    - Opportunities for external funding - who else benefits?
    - Attributing costs to Govt/Industry (transponder, installation, poling costs…)

DPI suggestion for discussion: Compliance with any such program is critical to the integrity of the program and as such it is DPI's position that strong consideration be given to appropriate technology to deliver a high level of compliance. DPI would at this stage be supportive of greater focus / expense on, for example, a VMS based system in lieu of a complex and costly day allocation process. DPI is willing to work with industry to explore external sources of funding, but emphasises that industry must be willing to play a key role in driving any such process.

Due to the multi endorsed nature of the NSW commercial fishing industry DPI also considers that a 'prior reporting' or 'at sea reporting' system may be necessary – to determine if a boat is operational in the prawn trawl or fish trawl sector or alternatively another fishery. Similarly, as boats are currently not linked to fishing businesses it may be necessary for fishers to declare the fishing business a boat is working against (days would be allocated to the business/business owner not the boat). Any such reporting requirements could potentially be linked to a satellite or web based electronic catch reporting system. With respect to linking boats and businesses an alternative cost effective approach may be to re-introduce the link between boats (ocean trawlers only) and fishing businesses via regulation.

Research needs / determining annual allocations for the fleet
The following factors relating to the allocation and monitoring of days need to be considered;

- A measurable 'unit of effort' (days, net unit days, boat length days or similar)
- Determining total annual effort (TAE) (Minister, independent committee)
- How often determinations are made (consider stock, fishery needs, costs)
- Information required (dependent on 'unit of effort')

DPI suggestion for discussion: DPI acknowledges that both days fished and boat capacity are important factors in accurately assessing actual fishing effort, but is also of the view that the more factors included the greater the monitoring costs may be. Choosing a measurable 'unit of effort' also depends on the management controls retained (see 'Opportunities' below). For example, there would be no point adopting 'total unit days' as the unit of effort if 'total units' are no longer relevant to the fishery. With respect to determining total annual effort levels, DPI would like to explore the option of an independent committee, such as the TAC setting committee, established in respect of the abalone and lobster fisheries. With respect to how often determinations are made, it may be feasible (and cost efficient) to make such determinations every 2, 3 or 5 years, rather than annually as occurs in the lobster and abalone fisheries.

Trading / leasing days

- Should trading of shares be permitted?
- Should leasing of days be permitted?
- Annual allocation (lobster & abalone model) or 'real time' allocation (QLD model)
- Should boat / net capacity be taken into account (linked to 'unit of effort' above)
- Stamp duty & capital gains issues

DPI suggestion for discussion: DPI is supportive of a framework that provides for the trading of shares (that then give rise to days) in order to provide business level flexibility and to encourage autonomous adjustment. The option of leasing days, similar to leasing quota in the lobster and abalone fisheries, may also be a feasible option subject to costs and complexity.

A fundamental issue to consider in relation to trading shares and the subsequent re-allocation of days to the transferor or transferee is:

1. *Whether the days should be re-determined for each business annually (or every so many years) when the 'total annual effort' (TAE) is set, despite shares being transferred in the interim, as per the NSW lobster and abalone models, or*
2. *Whether the days should be re-determined for the businesses involved in the transfer of shares upon transfer of those shares, as per the QLD 'real time' model.*

Another fundamental issue to consider, if boat capacity is used to determine how many days a business should be allocated, is:

1. *Whether the days should be adjusted upon transfer of the shares, or*
2. *Whether the days should be adjusted annually or each time the TAE is set based on any changes in the overall capacity of boats in the fishery.*

How often the TAE is set, whether boat capacity is an issue and the cost to develop systems to administer the above will influence any decisions ultimately made. A power point presentation outlining the above issues will be presented at the meeting.

Additional issues
Issues for consideration include:

- Should minimum shareholdings continue to be used to restructure
- Should measures be introduced to ensure number of boats does not increase
- What is a 'day' (midnight to midnight, midday to midday, 24 hrs after leaving port)
- Annual cap per business (what will it achieve, what level, effect on restructuring?)
- Is 'steaming time' an issue in NSW (if so, how should it be addressed?)
- Where cost effective, different arrangements may be able to adopted for OPT & OFT.

Allocation
Factors for consideration include:

- Single allocation across OT or separate allocations for OPT and OFT
- School whiting?
- Current share allocations (Note: issues with trading)
- New class of shares
- Recent participation (Note: recent investors may not have participation – cost)
- Units (Note: not all boats are unitised – cost)
- VCH (Note: no longer traded with shares, recent investors may not have VCH - cost)
- Offsetting immediate impact on businesses by over-allocating the total number of days available to the fishery and then reducing it over time. Such strategies may need to be explored if the criteria for allocating shares are expected to seriously disrupt businesses in the short term and / or no additional assistance (eg. buy-outs) is available.

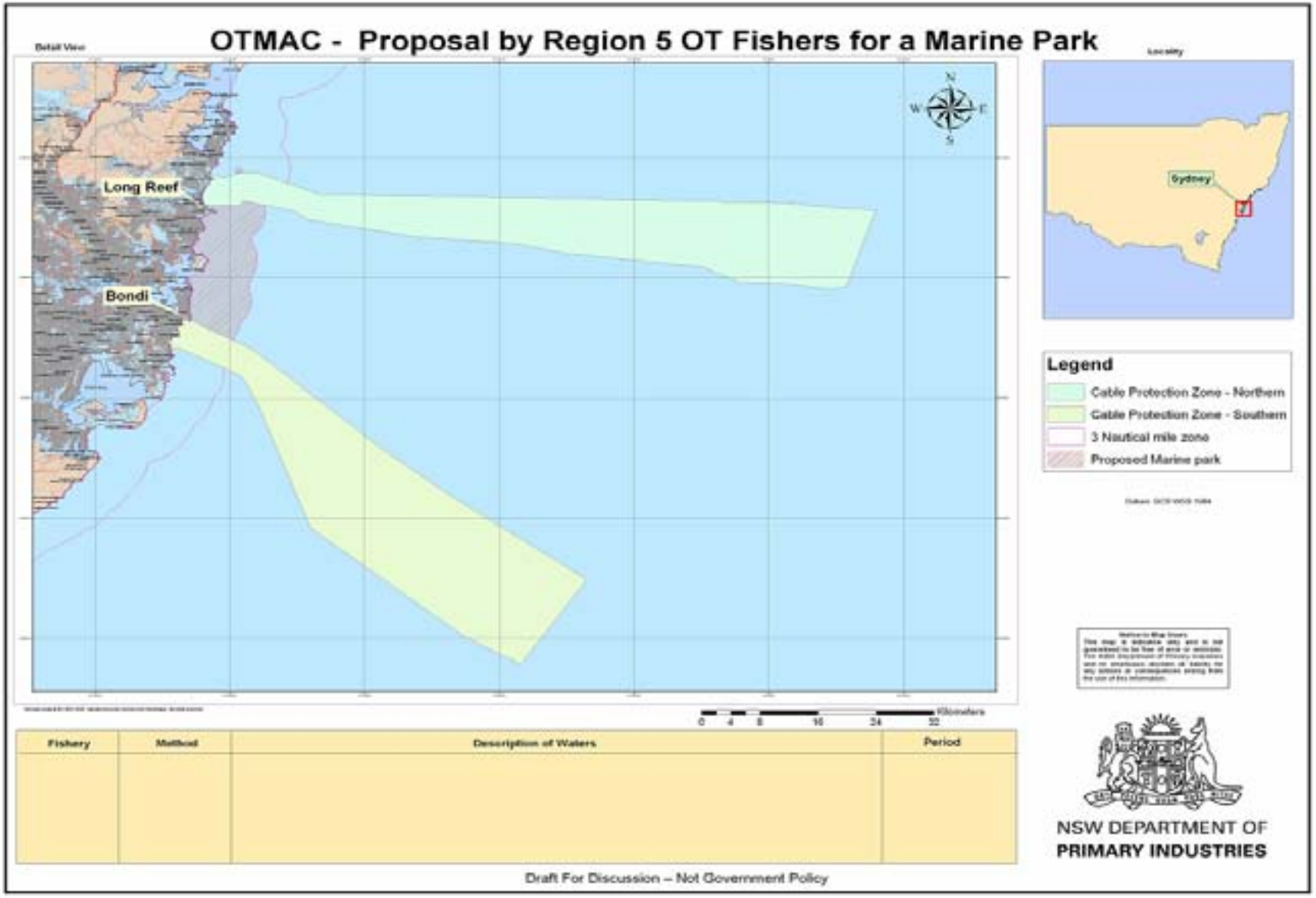
DPI suggestion for discussion: As previously supported by the OTMAC separate allocations of days for OPT and OFT to provide for sector / stock specific management and to manage the lateral transfer of effort between these two sectors is preferred. An option to be considered is to introduce a new class of shares ('OPT day shares' and 'OFT days shares') – to overcome issues with allocation and trading multiple classes of shares and its effect on the total number of days in the fishery (a presentation on these two issues will be provided at the meeting). Using the new class of OPT and OFT shares to determine the number of days that the businesses is eligible for in the OPT and OFT fisheries.

As there are so many possible scenarios for allocating days, the factors to be used (current shares, net units…..) and the formulae for allocating the days will need to be narrowed down by DPI following preliminary feedback from the MAC. Ultimately, costs will also need to be considered. To assist DPI, feedback on the weight given to each of the preferred factors will also assist.

Opportunities
Opportunities could include the following. Other opportunities identified by OTMAC should be documented:

- Electronic catch reporting
- Opportunities to gather spatial and temporal data on activity through VMS
- Trading across NSW prawn fisheries (EPT, EG & OT)
- Trading with QLD prawn trawl fishery
- Trading with C/W [fish] trawl fishery
- Outsourcing services to external providers
- Removal of redundant rules or rules that create inefficiencies for Industry and Govt
    - Hull units?
    - Engine units?

- Net units?
- Multiple share classes?
- Lines on the water (Inshore/offshore/deepwater prawn and north/south fish)?


OTMAC - Proposal by Region 5 OT Fishers for a Marine Park
Long Reef
Bondi
Sydney
Legend
Cable Protection Zone - Northern
Cable Protection Zone - Southern
3 Nautical mile zone
Proposed Marine park
Fishery
Method
Description of Waters
Period
NSW DEPARTMENT OF
PRIMARY INDUSTRIES
Draft For Discussion – Not Government Policy