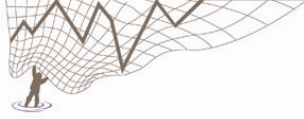




**Cardno
Ecology Lab**

Shaping the Future

Marine and Freshwater Studies



**Offshore Artificial Reefs
(Newcastle, Sydney & Wollongong)
EA/Draft PER
Submissions Report**

**Job Number: EL0910105A
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Cover Image: Artificial reef in Japan. Photo courtesy of I&I NSW.

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1 Introduction and Background

1.1 Project Description

Industry & Investment NSW (I&I NSW) propose to improve recreational fishing opportunities in NSW by deploying purpose built offshore artificial reefs (OARs) in the vicinity of Newcastle, Sydney and Wollongong. In each region (Newcastle, Sydney and Wollongong), four individual 'reef units' (i.e. a reef set) will be deployed at water depths between 30 m and 40 m. Each unit will be 12 m high, 15 m long and 12 m wide and have the bulk of the internal structure within the bottom 4 m, to provide a low centre of gravity for stability. The structures will be manufactured from steel beams and plates, each weigh approximately 35 tonnes (dry weight) and will sit directly on the seabed without the need for additional anchorage, other than the weight of the unit itself. The four units will be configured in a line spaced 200 m apart. The final OAR locations that will be used for the OAR project are described below:

- Newcastle (Swansea). Approximately 3.6 km offshore from Blacksmiths Beach and the entrance to Swansea Channel.
- Sydney (South Sydney). Approximately 1.2 km off The Gap and 1.9 km south-east of South Head.
- Wollongong (Port Kembla). Approximately 2.4 km offshore from Perkins Beach.

The Sydney location has been selected for the first OAR deployment. Subsequent deployments at Wollongong and Newcastle will be dependent on the success of the first Sydney OAR. A more detailed description of the project is provided in Section 4 of the Offshore Artificial Reefs (Newcastle, Sydney and Wollongong) Environmental Assessment/draft Public Environment Report (the 'EA/draft PER', Cardno Ecology Lab, February 2010).

1.2 Legislative Context

The proposal is subject to Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) as it is considered to be of State planning significance. It is also subject to approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the Commonwealth *Environment Protection (Sea Dumping) Act 1981* (EP (SD) Act). Separate assessment guidelines were issued to meet the requirements of both State and Commonwealth legislation, however, as the requirements were similar, the Department for the Environment Heritage and the Arts (DEWHA) requested that a single Environmental Assessment/draft Public Environment Report (EA/draft PER) be prepared to assess the potential impacts of the project.

1.3 Exhibition Stage

The EA/draft PER was publicly displayed between 11 March 2010 and 19 April 2010 with exhibition at the following locations:

- The Department of Planning (Information Centre, 23 – 33 Bridge Street, Sydney).
- Woollahra Municipal Council (536 New South Head Road, Double Bay, Sydney).
- Double Bay Central Library (548 New South Head Road, Double Bay, Sydney).
- Lake Macquarie City Council (126 – 138 Main Road, Speers Point, Lake Macquarie).
- Swansea Library (228 Pacific Highway, Swansea).
- Wollongong City Council (41 Burelli Street, Wollongong).

- Warrawong District Library (Westfield Shopping Centre, Warrawong).
- Department of Environment, Heritage and the Arts (John Gorton Building, King Edward Terrace, Parkes, Canberra).
- Nature Conservation Council of NSW (Level 2, 301 Kent Street, Sydney).

Advertisements were placed in the following publications on 10 March 2010:

- Sydney Morning Herald.
- Newcastle Herald.
- Lake Macquarie News.
- Wollongong Illawarra Mercury.

An electronic copy of the EA/draft PER was also available on the Department of Planning's website at:

http://majorprojects.planning.nsw.gov.au/page/coastal-areas/other-coastal-developments/?action=view_job&job_id=2690.

Stakeholders consulted as part of the assessment process were notified of the EA/draft PER exhibition, sent either a hard copy, CD-ROM or a link to view the document online and invited to post submissions.

1.4 Purpose of the Submissions Report

In response to the public exhibition period, submissions were received by the Department of Planning and copies provided to the proponent for review. Under Section 75H(6) of the EP&A Act, the Director-General may require the proponent to submit a response to the issues raised in submissions and prepare a preferred project report that outlines any proposed changes to the project to minimise its environmental impact and any revised statement of commitments. If the Director-General considers that significant changes are proposed to the nature of the project, the proponent may be required to make the preferred project report available to the public. This Submissions Report outlines the issues raised in the submissions that were received and the response of I&I NSW to these issues. The Statement of Commitments and proposed Environmental Management Plan and Construction Methodology (EMP) have been revised in response to some of these submissions (Appendix A and B, respectively).

2 Response to Submissions

2.1 Respondents

The Department of Planning received 15 submissions (Appendix D), including submissions received from government agencies, ports corporations, community stakeholders and one non-government organisation (NGO). Each submission was reviewed and the issues that were raised were extracted with the relevant responses provided in Section 2.2. Where similar issues were raised by different respondents, only one response is provided to avoid duplication.

2.1.1 Department of Environment, Climate Change and Water (DECCW)

DECCW identified a number of issues that required clarification in relation to monitoring and timeframes, decommissioning and location constraints. Advice was also provided to further manage potential impacts to threatened and protected species. DECCW advised that they would not be providing recommended conditions of consent as the activity, if approved, is not a 'scheduled activity' under Schedule 1 of the *Protection of the Environment Operations*

Act 1979 (POEO Act) and is therefore not regulated by DECCW. However, DECCW would be the appropriate regulatory authority for the project, should the Department of Planning issue a project approval for the proposal. Issues raised in DECCW's submissions are addressed in Sections 2.2.1 (Location), 2.2.2 (Legislative Requirements), 2.2.3 (Flora and Fauna) and 2.2.5 (Monitoring and Timeframes).

2.1.2 Industry and Investment NSW (I&I NSW)

Industry and Investment is in support of the project provided that the Statement of Commitments as proposed in the EA/draft PER is implemented and that two additional mitigation and management measures are included in the EMP. Additional issues raised in I&I NSW's submission are addressed in Sections 2.2.5 (Monitoring and Timeframes) and 2.2.6 (Management).

2.1.3 Land and Property Management Authority (LPMA)

LPMA is in support of the project and no objections were raised in relation to the application. Any issues that had been raised during earlier consultation was considered to have been adequately addressed in the EA/draft PER. LPMA commented on issues relating to legislative requirements (Section 2.2.2) and management (Section 2.2.6) for further clarification.

2.1.4 NSW Maritime

NSW Maritime is in support of the project and does not consider the proposed OARs to pose a hazard to typical vessel traffic in the proposed locations (in relation to small commercial and recreational vessels). NSW Maritime is prepared to identify the final locations of the proposed OARs on boating maps and forward the coordinates to the Australian Hydrographer for inclusion on the relevant maritime charts should the project be approved.

NSW Maritime notes that issues associated with shipping have been addressed through the relevant Port Corporations (see below).

2.1.5 Ports Corporations

Submissions were received from Newcastle Port Corporation (NPC) and Port Kembla Port Corporation (PKPC). Neither Port Corporation raised any issues for shipping operations and do not object to the project. NPC requested that they be formally notified prior to deployment of the Newcastle OAR so that relevant maritime charts can be updated for the vessel masters. A response to this request is provided in Section 2.2.1 (Location).

2.1.6 Wollongong City Council

Wollongong City Council is generally in support of the project although conditions were advised in relation to heritage and traffic management. These issues are addressed in Sections 2.2.4 (Heritage) and 2.2.6 (Management).

2.1.7 Nature Conservation Council of NSW (NCC)

NCC objects to the project as it is currently presented and has raised a number of general comments and more specific issues in relation to the potential environmental impacts of the proposed OARs.

General matters raised by NCC (extracted from the Marine Parks Authority 2009, Policy on Artificial Reefs and Fish Attracting Devices in Marine Parks) included a number of broad issues which have already been identified and extensively reviewed in the EA/draft PER. As such responses to these general concerns have not been addressed here.

Specific issues raised by NCC relating to the EA/draft PER are addressed in Section 2.2.1 (Location), Section 2.2.3 (Flora and Fauna) and Section 2.2.5 (Monitoring and Timeframes) of this report.

2.1.8 Community Submissions

Submissions were received from six community stakeholders, including one representative of www.newcastlefishing.com. Submissions were in support of the project although some specific issues relating to the location were raised and have been addressed in Section 2.2.1.

2.2 Overview of Issues Raised

2.2.1 Location

Submissions

DECCW, NPC, NCC, Community Submissions.

Summary of Issues

- The location of the proposed Newcastle OAR has potential to conflict with exploration lease 3220. In its review of adequacy, DECCW advised that a comprehensive assessment of all active exploration licences in or near the proposed OAR site should be included in the EA/draft PER.
- NPC requested that they be formally notified of the deployment date for the proposed Newcastle OAR so that navigational charts can be updated for the information of the vessels masters.
- The proposed Sydney OAR would overlap with waters proposed by the National Parks Association (NPA), identified in 'The Torn Blue Fringe' (Winn 2008) for a Sydney marine park. The EA/draft PER should justify why the artificial reef has not been located outside the recommended marine park boundary. NCC assert that the proposed Sydney OAR should be re-located outside this area as a condition of approval and that further consultation with NPA should be undertaken prior to finalising the artificial reef location should it go ahead.
- If the location of the proposed Sydney OAR is near known fishing reef it would be better placed in a barren sand environment, for example south of Port Hacking.
- It has been suggested that the proposed Newcastle OAR be considered for the first trial.
- The location of the proposed Newcastle OAR is thought to be located on the site of an historic wreck.

Response

Location Selection and Constraints Mapping were done on behalf of I&I NSW (The Ecology Lab 2008), prior to preparation of the EA/draft PER. No active minerals exploration licenses that could potentially conflict with the proposed Newcastle OAR were identified at this time, or during preparation of the EA/draft PER. Should the project be approved, deployment of the Newcastle OAR would depend on the success of the Sydney OAR. As described in Section 2.2.5 (Monitoring and Timeframes), the Sydney OAR will be subject to a three year trial period. Following the review of adequacy by DECCW, I&I NSW has committed to consult the relevant databases for offshore minerals licenses and applications that have potential to conflict with the final proposed OAR locations before any approved deployment.

As described in Table 15, (*Section 8 - Navigation and Safety during Construction, Transport and Deployment*) of the EA/draft PER, I&I NSW has committed to formally notify all relevant Port Authorities prior to any deployment activity.

Artificial reefs of suitable scope, scale, design and construction can be installed in NSW Marine Parks in general use zones and special purpose zones, provided they are assessed to be in accordance with the objects of the *Marine Parks Act 1997* and any other legislative or regulatory requirements (NSW Marine Parks - Policy on artificial reefs and fish attracting devices in NSW marine parks 2009). The Marine Parks Authority is comprised of the Director General of the Department of Premier and Cabinet, as Chairperson; the Director General, Department of Environment, Climate Change and Water; and the Director General of Industry and Investment NSW. The Authority reports jointly to the Minister for Climate Change and the Environment and the Minister for Primary Industries. The NSW government has no plans to establish marine parks in NSW (including the waters of the Hawkesbury shelf bioregion which encompasses Newcastle to Shellharbour) as the Marine Parks Authority is focussing on managing existing marine parks (NSW Government Submission to Legislative Council Select Committee Inquiry into Recreational Fishing, March 2010).

Results of Location Selection and Constraints Mapping and more detailed investigations of the seabed carried out as part of the EA/draft PER (Appendix A of the EA/draft PER) were used to ensure that the proposed OARs would be deployed on areas of bare sandy seabed.

The selected Sydney OAR location was considered to be the most suitable site in terms of the physical, biological and social constraints. A semi-quantitative suitability analysis was undertaken as part of the EA/draft PER to determine which of the three locations would be selected for deployment of the first OAR. The proposed Sydney location ranked the highest overall when considering a range of factors including accessibility, fishing participation, number of anglers, logistics (construction, transport and deployment), habitat limitations, conflict with commercial fishing and heritage values of the area.

Suggestion that the proposed Newcastle OAR is located on the site of an historic wreck, by a community stakeholder, has been noted. Previous location and constraints mapping (Appendix A of the EA/draft PER) does not identify any known wrecks occurring at the depth of the proposed OAR. The exact location of shipwrecks can be inaccurate and in some cases, wreckage may be spread over a large area. For this reason I&I NSW are committed to carry out acoustic swath mapping at the final Newcastle OAR location prior to approved deployment to ensure no unknown obstructions occur there.

2.2.2 Legislation

Submissions

DECCW

Summary of Issues

- It is stated in the EA/draft PER that concurrence under Part 3 of the *Coastal Protection Act* (CP Act) will not be required but that concurrence under the *Coastal Protection Regulation* will be. This latter concurrence is not, however, required as the project is being assessed under Part 3A of the EP&A Act. As the *Coastal Protection Regulation* is made pursuant to Section 53 of Part 3 of the CP Act, it too falls under the authorities excluded by Section 75. Thus, no concurrence will be required from the Minister of the Environment under this regulation.

Response

Noted.

2.2.3 Flora and Fauna

Submissions

DECCW, NCC, Community Submissions.

Summary of Issues

- DECCW recommends that I&I NSW develops an appropriate 'Notification and Response Protocol' for dealing with potential incidents involving the entrapment, entanglement and/or serious injury to threatened and protected marine mammals.
- The proposed OARs will be deployed at water depths between 30 m and 40 m. Some fish species can suffer from barotrauma when they are rapidly brought from deep water (> 10 m) to the surface Hall (2009). The EA/draft PER should comment on whether the reef depth means that fish caught will suffer barotrauma and therefore be unlikely to survive if released resulting in little catch and release fishing and high kill ratios at the sites.
- Increased fishing mortality from an increase in fishing effort could potentially occur within the study area and is of concern if aggregation of fish were not sufficiently balanced by increased production of fish.
- The sentence described on page 104 of the EA/draft PER describes 34 species (12+5+17), not 48 as described in relation to the productivity susceptibility analysis. This requires clarification.
- The location of the proposed Newcastle OAR is in an area where there is a high abundance of one type of fish (leatherjackets, Family Monacanthidae), potentially making catching other species difficult.
- The EA/draft PER should comment on whether the proposed minimum distance of 500 m between an OAR and existing natural reefs is considered to provide a sufficient buffer. For example the western blue groper is known to occupy a home range over several thousand square metres (Reefwatch 2002).

Response

Should the project be approved, I&I will consult with DECCW and any other relevant organisation that is involved in responding to marine mammal incidents to develop a 'Notification and Response Protocol'. The Statement of Commitments (Appendix A, bullet 8) and EMP (Appendix B, Section 4.2.2.4) have been revised to incorporate this.

Barotrauma is an issue that is relevant to recreational and commercial fishing that takes place anywhere in deeper water and is not specific to fishing at the proposed OAR sites. Nevertheless, methods have been investigated to reduce barotrauma effects and to increase post-capture survival (Sumpton *et al.* 2010). Many fishers either vent the fish (St John & Syers 2005) or attach a specially designed release weight (shot-lining). These methods are being promoted in parts of Australia as means of ameliorating the effects of barotrauma (St John & Syers 2005; Theberge & Parker 2005). Research has been undertaken to investigate the effectiveness of these methods in Australia and the US (Sumpton *et al.* 2008, Sumpton *et al.* 2010, Campbell *et al.* 2010) mainly on species of snapper (Lutjanidae). Statistically significant benefits from treating fish for barotrauma has only been found in certain species, but the lack of any negative effects of treating fish indicates that these practices of venting and shot-lining should not be discouraged. These methods are also referred to in the I&I NSW Recreational Saltwater Fishing Guide (I&I NSW 2010) and will be included in the OAR user guidelines that I&I NSW are committed to producing should the project be approved. The OAR user guidelines will also include other information on maximising fish survival (e.g. using the correct gear, quickly removing hooks while fish are in the water and appropriate handling) which also reduces the effects of barotrauma (Sumpton *et al.* 2010).

An assessment of the physiological effects of barotrauma and its mitigation measures on the behaviour and survival of offshore species in NSW is also being carried out by I&I NSW. The project will use a range of research techniques on key recreational species. Retrievable acoustic tags will be used to examine the short-term depth-profiles following release of various species after capture from a range of depths. The data will provide information on the success of different mitigation methods (e.g. venting and release weights) in enabling fish to stay at depth and re-pressurize. Implanted acoustic tags will be used to examine the survival and movements of very large snapper following capture and release at major fishing competitions. A hyperbaric chamber will be built at the Cronulla Fisheries Research Centre (CFRC) aquarium facility to enable manipulative experiments to be done to study the effects of barotrauma on fish physiology and survival. The findings will be used to assist in the development of an I&I NSW policy on the best practices for releasing barotrauma affected fish, which would be incorporated into the OAR user guidelines when results become available.

Species catch composition, diversity, biomass, size-frequency, fish movements and catch rates will be monitored within the study area for the duration of the three year 'trial period' (refer to Section 2.2.5 of this report). If negative impacts are detected (e.g. from increased fishing mortality as a result of increased fishing effort), or it is considered that a species is being overexploited within the OAR management area then appropriate mitigative action will be investigated. This may include, for example, temporary or seasonal closures and/or restrictions on fishing gear or methods.

It is noted that the sentence described in the previous section should be amended to read 'Of the 48 species assessed, 11 were considered to be at relatively high risk, six at low risk and the majority (31 species) at moderate risk to fishing mortality as a result of the proposal'.

It is noted that anecdotal information from a community stakeholder suggests that one type of fish (leatherjacket, Family: Monacanthidae). A high proportion of species recorded in fish surveys of the Newcastle study region as part of the EA/draft PER marine ecology investigations (Appendix F of the EA/draft PER) were leatherjackets, however, a variety of other recreationally important species associated with soft bottom sediments were also recorded in the area e.g. flathead (Family: Platycephalidae), silver trevally (*Pseudocaranx dentex*) and yellowtail scad (*Trachurus novaezelandiae*), for example. The proposed OAR will provide new habitat that will be suitable for different types of species and is expected to increase the species diversity as evident from other long-term studies (refer to the EA/draft PER, Appendix F, Section 2.1.6). Large numbers of leatherjackets are not expected to prevent other species establishing on the OARs and are themselves a recreational and commercially important type of fish.

Fish surveys were carried out as part of the EA/draft PER at each of the proposed OAR locations and at other control locations that shared similar habitat characteristics to the proposed OAR sites (i.e. bare un-vegetated sand located ≥ 500 m from existing reef). As expected, fish assemblages consisted predominantly of demersal species associated with sandy habitat, with some pelagic and transient reef species present. Based on these and other surveys carried out in the study areas (The Ecology Lab 1993) species resident to rock reef habitat are not generally recorded over bare soft substratum and are therefore unlikely to range up to 500 m from their resident reef habitat. As stated in the EA/draft PER, investigations of fish assemblages inhabiting artificial reefs have shown that the local area of influence of an artificial reef can range from 5 m to 50 m, depending on the local environmental conditions and the reef size (Continental Shelf Associates 1982, Gerlotto *et al.* 1989, Fabi *et al.* 1999, in Fabi and Sala 2002). A recent study in Japan has also indicated that deployment of wooden, low relief artificial reefs causes no reduction in fish abundance at adjacent natural reefs (Masuda *et al.* 2010). A minimum of 500 m is therefore considered sufficient distance to allow for variation and minimise the risk of interaction between resident natural and artificial reef populations. As a precautionary measure, objective A.2.1 of the Monitoring Plan aims to investigate movements of high priority species within the wider study

area. This will include biotelemetry to track fish movements, stereo – videography and Baited Remote Underwater Video Stations to observe fish in the vicinity of the OARs and proximal natural reefs.

Adult eastern blue groper (*Archoerodus gouldii*) establish territories on rocky reef (NSW DPI 1999). The home range of the western blue groper (*Archoerodus gouldii*) studied on Kangaroo Island, SA (Reefwatch 2002), consisted only of rocky substratum, with boulders and attached macroalgae. The report does not suggest that the home range of the western blue groper extends beyond the rocky reef substratum, across bare sand, nor does it indicate the distance at which species could be found away from the nearshore rocky reef habitat with which it is associated. This is not, therefore an appropriate example to suggest that eastern blue groper that are resident to existing natural reef could range across sand up to 500 m away from their territory. Under the FM Act, eastern blue groper is not a protected species in NSW but is subject to bag and size limits and it is protected from spearfishing.

2.2.4 Heritage

Submissions

Wollongong City Council.

Summary of Issues

- The EA/draft PER states that I&I NSW has chosen the location of the OARs to avoid any known maritime heritage or Aboriginal sites. If approved, the consent should be conditioned to ensure the development avoids placing OARs on or near any shipwreck sites and/or any area of Aboriginal or heritage significance.

Response

Location Selection and Constraints Mapping was carried out on behalf of I&I NSW (Appendix A of the EA/draft PER) and more detailed surveys of the seabed, including acoustic swath mapping and towed video, were carried out as part of the EA/draft PER. No anomalous features were observed that warranted further investigation for historic or cultural significance at the proposed Wollongong OAR site.

2.2.5 Monitoring and Timeframes

Submissions

DECCW, I&I NSW, NCC.

Summary of Issues

- The EA/draft PER does not identify a timeframe over which monitoring of the Sydney OAR would be undertaken to determine success prior to deployment of the Newcastle and Wollongong OARs. In order to justify the establishment of the second and then third OARs, the success of the initial Sydney site must be assessed against the overall objectives of the project, environmental performance and principles of ecologically sustainable development.
- The evaluation of the Sydney OAR should include inter-annual and seasonal monitoring to investigate impacts on migratory species.
- The proposed monitoring plan for the Sydney OAR, for which funding is currently directed should be conducted as a priority and proposed measures to mitigate any identified impacts should be implemented as necessary.
- The EA/draft PER does not contain sufficient details of the time or length of monitoring to be undertaken. Monitoring of the OARs should be undertaken over the life of the project to determine the environmental impact of the structures and the need for decommissioning.

- Monitoring beyond the first three years should address the following key issues:
 - Scouring/deposition around the base of each of the units.
 - Loss of structural integrity from corrosion or excessive marine growth.
 - Leaching of heavy metal contaminants (which may not become evident within the first three years of the project).

NCC advises that if I&I NSW proceed with the project, the following conditions should be included:

- The EA/draft PER should be revised with knowledge of what monitoring is financially possible.
- Monitoring of the structures should continue if the structures are to remain on the seabed after decommissioning.
- The initial OAR must be removed at the end of the three year program, depending on the outcome and success of the monitoring program.

Response

Three Year Monitoring Plan

As indicated in Section 11.2.6 of the EA/draft PER, during the first three years of operation, I&I NSW is committed to all *priority one* objectives of the Monitoring Plan including:

A. Biological

A.2.1. Investigate movements of high priority species within the direct study area.

A.2.2. Assess effectiveness in terms of catch rates, species composition and fish stocks.

A.3. Investigate occurrence of threatened/protected species on the OARs.

B. Physical

B.3.1. Assess structural integrity.

B.3.2. Remove fouled gear and debris.

C. Socio-Economic

C.1.1. Assess effectiveness in terms of popularity with recreational fishing groups and OAR related expenditure.

Priority two monitoring objectives during the first three years may also take place but will depend on the available funds and resources as stated in the EA/draft PER (refer to Table 1 of Appendix B). The current monitoring proposal funded by the Recreational Fishing Trust has been designed to meet priority one objectives as well as provide detailed information regarding differences in fish community structure and behaviour between artificial and naturally occurring reef. An application for additional funding via an ARC linkage grant between the Department (I&I NSW) and UNSW is currently being developed to investigate the dynamics of artificial reef benthic communities, with particular reference to the cycling of nutrients and broader questions relating to the role of artificial structures in terms of production. This application, if successful, would incorporate priority two monitoring objectives in particular those relating to the dynamics of benthic assemblages, the colonisation of macroinvertebrates and the differences in the assemblages between artificial and natural structures.

As outlined in Section 11.2.2 of the EA/draft PER and Monitoring Plan (Table 1 of Appendix B), six monitoring periods were included to investigate temporal or seasonal patterns during the first three years of monitoring. For the biological components of the study, this includes a minimum of two sampling events within each season. At the end of the first three years,

data collected will be analysed and reviewed against the specific objectives of the Monitoring Plan, the overall objectives of the project, environmental performance and principles of ecologically sustainable development. In addition, a final report will be provided to all relevant authorities on the results of the pilot study, including recommendations for modifications, additional mitigation measures or ongoing monitoring requirements. A decision can then be made as to the future of the existing OAR and subsequent deployments at Newcastle and Wollongong.

Long-Term Monitoring Plan

I&I NSW will continue to perform surveillance monitoring beyond the first three years and throughout the operational life of the OAR. Current funding for the OARs project has been secured from the NSW Recreational Fishing Trust (as part of the 2008/09 - 2012/13 Recreational Fishing Trust Investment Plan). In principle, support for construction of the OARs off Newcastle and Wollongong and long-term monitoring of the Sydney OAR has been provided and will be formalised in future Investment Plans for the Recreational Fishing Trust. As the OARs are primarily for recreational fishing purposes, the Trusts are the most appropriate funding source. However, additional funding (e.g. through an ARC linkage grant) is being sought where feasible. Surveillance monitoring beyond the initial three year monitoring program will include the following:

Priority One Objectives:

A. Biological

A.2.1. Investigate movements of high priority species within the direct study area (and general monitoring of fish assemblages).

A.3. Investigate occurrence of threatened/protected species on the OARs.

B. Physical

B.3.1. Assess structural integrity.

B.3.2. Remove fouled gear and debris.

Priority Two Objective

B.1.2. Assess concentrations of heavy metals in adjacent sediments to OARs.

As a minimum, long-term surveillance monitoring will be conducted bi-annually (once every six months) to include monitoring of seasonal variation.

Appropriate management and/or mitigation measures will also be implemented on an *ad hoc* basis should any impacts be detected prior to any interim or formal review stage. The Statement of Commitments has been revised to clarify this (Appendix A, bullet 13).

As stated in the EA/draft PER, removal of OAR units at the end of their operational life will be subject to a separate environmental assessment and decommissioning plan. Should the units remain on the seabed post-decommissioning, then a further risk assessment shall be undertaken to determine which components of the Monitoring Plan should be continued to ensure the units do not become a hazard post-decommissioning.

The Statement of Commitments has been revised to incorporate clarification to the Monitoring Plan (Appendix A, bullets 11, 12 and 13). Section 4.1.2 of the EMP has also been revised to clarify the timeframe of the proposed Monitoring Plan (Appendix B).

2.2.6 Management

Submissions

I&I NSW, LPMA, Wollongong City Council, NCC.

Summary of Issues

- The proposed EMP should be implemented with the following changes:
 - An outline of the process to be employed in any required removal of installed OARs. This will be required if the proposed removal of structures as a mitigation measure is retained in any approval of the project. Note that I&I NSW questions whether this measure is required considering the general low level of risk identified in the EA/draft PER.
 - Section 4.2.2.4 of the EMP (*Performance Indicators*) should be amended to 'Records of reported sightings/incidental capture and monitoring data would be reviewed as soon as information comes on board in consultation with I&I NSW threatened species unit to determine appropriate management measures.'
 - Section 4.2.2.4 of the EMP (*Mitigation*) should include 'fishing gear or method restrictions' as a mitigation measure. This may be required in the event that threatened species listed under the FM Act regularly visit or take up residence in the OAR structures. This is justified as hook and line fishing (in an areas important for the survival of threatened fish species) is listed as a key threatening process under the FM Act.
- The proposed 'User Guidelines' in the EMP must be produced and include all points listed in Section 4.1.3 of the EMP.
- I&I NSW has committed to the establishment of a management area around each OAR in consultation with LPMA by creation of a Crown Reserve under the *Crown Lands Act 1989*. LPMA supports this but highlights that licensing arrangements and/or creation of a Crown Reserve and appointment of a reserve trust manager will occur separately to the planning process and will be finalised after consent has been granted.
- If approval is granted LPMA consider it essential that the commitment requiring I&I NSW to be responsible for the long-term management of the OARs be incorporated into the project approval.
- No specific issues relating to traffic were raised in relation to the project, however, in addition to the mitigation measures outlined in Section 8.1.5.2 (*Traffic*) of the EA/draft PER, Wollongong City Council recommends that the conditions at Appendix C are also observed.
- Two community stakeholder submissions requested that SCUBA divers should be excluded from the site.

NCC advise that if I&I NSW proceed with the project, the following conditions should be included:

- There should be no fishing competitions or profit making fishing ventures allowed at the site
- The area should be marked as a site of scientific research with information on the aims of and timeline of the project.

Response

The removal process would be dependent on whether the OARs have remained structurally sound, to the extent that they could be lifted intact, directly from the seabed, or whether they would require dismantling so they could be removed in sections. It is therefore considered most appropriate that a detailed description of the removal process is outlined in the separate environmental assessment and safe work method statement which will be undertaken in the event that the structures are removed, rather than in the existing EMP.

Section 4.2.2.4 of the EMP has been revised to incorporate the amendments to 'performance indicators' and 'mitigation' (Appendix B). A decommissioning plan will also be submitted to DEWHA in accordance with any Sea Dumping Permit conditions.

I&I NSW has committed to produce the OAR user guidelines as outlined in Section 4.1.3 of the EMP (Appendix B). This will be provided through the I&I NSW website and relevant publications.

I&I NSW concur that licensing arrangements with LPMA will be finalised separately to the planning process and will be applied for if the project is approved. I&I NSW commits to the establishment of an OAR management area through the creation of a Crown Reserve 'or through a similar lease agreement' under the *Crown Lands Act 1989*, upon further consultation with LMPA. The Statement of Commitments (Appendix A, bullet 2) and EMP (Appendix B, Section 4.1.1) have been revised accordingly. In the event that an OAR management area will be established through a Crown Reserve, I&I NSW will be responsible for ongoing management of this area. No specific permits will be required for fishing activities within the OAR management area.

As outlined in Section 8.1.5.2. of the EA/draft PER and Section 3.2.3 of the EMP, a detailed Traffic Management Plan (TMP) will be developed in accordance with the RTA (2002) *Guide to Traffic Generating Developments* to minimise impacts on local traffic/parking during the construction, transport and deployment stage of the project. Appendix C (provided in Wollongong City Council's submission) will be provided to the appointed sub-contractor and consulted in development of the TMP.

The proposed OARs have been developed for the benefit of recreational fishing, however, I&I NSW will not exclude any groups from using the OARs. Reports of incidences of conflict within the OAR management area will be dealt with on an *ad hoc* basis. Should issues be identified during the initial deployment then appropriate management measures will be investigated. This approach has been effective in managing the I&I NSW estuarine artificial reef program.

I&I NSW do not intend to exclude profit making fishing ventures, which could include charter fishing and commercial fishing. Fishing competitions are also an important activity for many anglers and provide opportunities for family and community interaction, as well as broader economic benefits to rural and regional towns. Many competitions also promote ethical and responsible fishing using conservative bag, size and release rules. Note that I&I NSW does not regulate fishing competitions in NSW, but uses codes of practice to manage these events to improve environmental and social outcomes. These codes of practice will be introduced to fishing competitions in the OAR management area, as required.

Information on the aims and timeline of the project will be incorporated into the OAR user guidelines which will be published and made available on the I&I NSW website. Section 4.1.3 of the EMP has been revised to incorporate this (Appendix B). The area will not be physically marked because of navigational hazards, as stated in Section 4.1.1 of the EMP. The location of the OARs and extent of the OAR management area will be made available on the I&I NSW website and in the OAR user guidelines.

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4 Appendices

Appendix A

Revised Statement of Commitments

Appendix A: Revised Statement of Commitments. Additional/revised commitments are highlighted.

I&I NSW is committed to ensuring that environmental stewardship is effectively applied throughout the construction, transport, deployment and long-term operation of the proposed OAR. Having successfully implemented artificial reefs in estuarine locations and fish aggregation devices in offshore locations, I&I NSW has an understanding of the management and monitoring requirements and the resources and expertise necessary to ensure that significant environmental impacts are avoided, appropriately mitigated or managed.

Extensive planning and consultation work has also been undertaken prior to the environmental assessment stage to identify and minimise potential constraints and select locations likely to have the least environmental impact, with optimal results.

The EA/draft PER has identified measures to mitigate and manage potential environmental impacts specific to the proposed OAR project that I&I NSW are committed to. These measures have been consolidated into an EMP and a Monitoring Plan.

In summary, actions committed for the project, if approved, are as follows:

1. Construction, transport and deployment activities will be carried out in accordance with procedures outlined in the EMP. The appointed contractor will be fully certified and qualified to carry out the works as outlined in the EMP safely and efficiently and will develop an additional CEMP and OH&S plan to address site-specific environmental and safety issues. Site specific management plans will be submitted to DEWHA for approval prior to deployment of the OARS.
2. A management area will be established around the OAR, in consultation with the LPMA by creation of a Crown Reserve or similar lease agreement under the *Crown Lands Act 1989*. In the event that an OAR management area will be established through a Crown Reserve, I&I NSW will be responsible for ongoing management of this area.
3. Information on activities permitted within the proposed management area and user guidelines including a code of conduct will be provided via the I&I NSW website and through relevant publications to ensure best practice and safety during the operational life of the OAR.
4. Long-term management of the proposed OARs will be the responsibility of I&I NSW and carried out in accordance with the EMP. This includes implementing measures to manage and mitigate impacts on flora and fauna (including threatened species and matters of national environmental significance), water and sediments, navigation and safety, infrastructure, commercial and recreational fishing.
5. Monitoring and review will be carried out to ensure the structural integrity and stability of the units as described in the EMP and Monitoring Plan. I&I NSW will provide an annual report to DEWHA and other relevant authorities, which will present key findings from the proposed monitoring programme on the Sydney OAR.
6. Monitoring and review will be carried out to mitigate any potential impacts on threatened and protected species (including matters of NES) as described in the EMP and Monitoring Plan. I&I NSW will report to DEWHA should matters impacts to matters of NES be identified.
7. I&I NSW will be responsible for the removal of fouled gear and debris collected on the OARs, that could be harmful to threatened or protected species as described in the EMP and Monitoring Plan.

8. I&I NSW will develop an appropriate notification and response procedure in consultation with DECCW and other relevant organisations for dealing with any incidents involving marine mammals.
9. Monitoring and review of catch rates, species catch composition, size-frequency distribution and habitat utilisation of fish will be carried out within the study areas to identify the need to mitigate potentially adverse impacts as described in the EMP and Monitoring Plan.
10. Monitoring and review will be carried out to ensure that the proposal is effective in meeting the project objectives and that target user groups are satisfied with the operation of the OARs.
11. I&I NSW are committed to carry out all priority one objectives as outlined in the Monitoring Plan during the first three years of operation and will implement measures to mitigate or manage any potential impacts as necessary.
12. Monitoring of the OARs will be carried out by I&I NSW for the operational life of the OARs.
13. Post-decommissioning monitoring will be carried as required if the structures are to remain in-situ.
14. I&I NSW will ensure that appropriate sand penetration tests are carried out in the final OAR locations. **Results of these tests will be provided to DEWHA.**
15. At the time of preparation of the EA/draft PER, no minerals licence applications were found to occur within the vicinity of the proposed OARs. I&I NSW will, however, consult the relevant databases for offshore minerals exploration licences and applications which have potential to conflict with the final proposed OAR locations in advance of any approved deployment.
16. I&I NSW are also committed to ensuring that local community groups, LALCs, commercial fishing groups and the general public are informed of the project staging and EMP for the proposed OARs as it develops in the future.

Appendix B

Revised EMP

Appendix C

Wollongong City Council Development Guidelines (Traffic)

Appendix D

Submissions