

Gordon's Bay

Scuba Diving Club

Artificial Reef Business Plan

Sink a Destroyer

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Purpose

Artificial reef projects have become increasingly popular in Australia, with projects being completed in Queensland, South Australia and Western Australia. Artificial reefs provide numerous benefits to the community. The reef itself, being designed for divers, is a significant source of diving tourism. In Sydney, such a dive site will complement rather than compete with existing dive sites, encouraging increased dive tourism in the city. This will directly impact the local dive industry, but increased tourist numbers will inevitably contribute to the local hospitality industry and broader local economy as well.

In addition to tourism, artificial reef projects have consistently been proven to be valuable community resources. In addition to the underwater nature reserve created around the reef, the reef itself will contribute to research and educational opportunities for local marine scientists and students.

Background

The Gordon's Bay Scuba Diving Club Inc (GBSDC) is an Australian non-profit incorporated association registered in NSW and operating from Clovelly NSW. The Club was founded in 1990 and has, since that time, maintained the underwater nature trail in Gordon's Bay Clovelly NSW Australia.

The Club was awarded a Sydney Morning Herald Community Service award in 1993.

The Professional Association of Diving Instructors (PADI) awarded the Club *the PADI*

Service to the Diving Community Award in 1996. The Club has also received Commonwealth Heritage Grants totalling \$12000.00 to maintain the underwater nature trail, to support marine science research projects on biological controls of algae on coastal bathing platforms and a community fish identification sign at Clovelly Beach NSW.

Acknowledgements

This project has been inspired by similar projects in Perth: HMAS Swan; Adelaide: HMAS Adelaide; Goldcoast: HMAS Brisbane.

The Club acknowledges the information provided by the Artificial Reef Society of British Columbia www.artificialreef.bc.ca and the information provided by the Queensland Government, Environmental Protection Agency/ Queensland Parks and Wildlife Service www.epa.qld.gov.au in the preparation of this document.

Project Information

Location of artificial reef

The current site proposed is a 32-36 metre line on a sandy bottom, located approximately 1 kilometre south of Wedding Cake Island and 2 kilometres east of Gordon's Bay. 33d 56°.000 S 151d 16°.900 E, Chart AUS 197. <http://www.gordonsbayscubadivingclub.com/>

The Australian Maritime Safety Authority has advised that this site is well clear of existing shipping lanes. The Professional Fisherman's Association has also advised that the proposed site would not conflict with commercial fishing areas.

Acquisition of a ship

The New South Wales Premier's Department has advised GBSDC that HMAS Canberra will be decommissioned in Perth and that the Australian Defence Force has registered GBSDC's interest in acquiring a vessel.

A decommissioned Royal Australian Navy ship is a valuable commodity and a ship must be acquired through a competitive tender process. In Canada the Artificial Reef Society of British Columbia (ARSBC) paid \$237,000¹ for one ship and \$178,000 for three others. (Enermark 2001) The HMAS Swan in Perth has been quoted as costing \$300,000. (Sandilands May 1998).

The HMAS Swan was acquired through a tender process with it being awarded to the Shire of Busselton who then granted the ship to the Geographe Bay Artificial Reef Society to sink the ship. Dive Store Operators then pay a fee to the Society for the privilege of conducting a dive charter business to the ship. In Queensland, the QLD Government became the owner of the decommissioned ship the HMAS Brisbane, and are now responsible for its management.

Location of a suitable Sydney dock

As there is extensive pre scuttling preparations of the ship it is essential that a dock can be conveniently located to complete this process. The Lord Mayor of Sydney Clover Moore MP, has said the City of Sydney would consider the use of Blackwattle Bay as a possible pre scuttling site.

Environmental assessment

GBSDC will fully comply with all environmental regulations, and a detailed environmental assessment will be made prior to the creation of the artificial reef. Jones & Welshford report that the greatest impact is on bottom living animals (benthic) and advise that in the case of a destroyer that approximately $< 4600\text{m}^2$ will be permanently smothered. This impact is offset by the additional surface area available for colonisation of marine plants and invertebrates created by the artificial reef structure. The larger the ship in surface and interior area the more additional surface area available for habitat. Turbidity will be a minor immediate consequence of the emplacement and is a function of the density and size of surface sediment at the proposed site. Turbidity arising from

¹ Canadian Dollars converted to Australian using exchange rate of 1.1848 at 3 March 2006

emplacement will generally be transitory and usually will not lead to any direct indirect impacts. Jones & Welshford have examined the scientific literature including the proceedings of the Third, Fourth and Fifth International Conference on Artificial Habitat for Fisheries. They report that they have not seen any data suggesting that scuttling a ship, in the manner in which the ARSBC does, is in any way harmful to the marine environment.

Government approvals and EIS.

A permit from the Commonwealth Department of Environment and Heritage under the Environment Protection (Sea Dumping) Act 1981 is required to ensure the sunken ship does not harm the environment. The cost of applying for this approval is \$5000.

However, the approval process can not be concluded until a definitive proposal is prepared and the ship acquired. It is envisaged that GBSDC and the Dive Industry will fund the relevant environmental impact assessment. The Sydney Harbour Institute of Marine Science (SHIMS) has offered to do the science.

Ship Preparation

Anthony Jones and Richard W Welsford from the Artificial Reef Society of British Columbia (ARSBC) give the following information in preparing a ship for sinking. This is based on the ARSBCS' sinking of five ships from 1991 through to 1997.

After acquiring a decommissioned warship, the ARSBC spends at least seven months and 75 man months preparing a vessel for the sinking event. Preparation includes:

1. Removal of residual hydrocarbons and other possible contaminants such as lubricating oils.
2. Removal of wires and other objects that could potentially ensnare a diver.
3. Closing off access to restricted compartments such as the boiler room.
4. Securing and or removal of doors.
5. Rendering the vessel diver safe by opening holes in the exterior so that ambient light is allowed to penetrate the wreck every 20 meters.

Materials that would be hazardous or toxic to marine organisms such as mercury, PCB's hydrocarbons and other liquids including refrigerants must be removed from the ship before sinking.

Detailed site surveys map the bottom, to determine the location of baseline and the orientation of the ship within the site.

The ships are sunk in a controlled manner. Usually 8-10 charges are placed in the bowel of the ship. The object is to flood the lower parts of the ship as quickly as possible to ensure that the ship sinks on target. Jones and Welshford report that over their last four sinkings, that the sinking times have decreased from about 18 minutes to under three minutes. Jones and Welshford further report that all their sites are marked with a buoy system to clearly identify the location of the reef and facilitate tie-up moorings. Over the vessel centre is an isolate danger buoy. Cautionary buoys mark the fore and aft of the

reef. A pair of private mooring buoys sits on each side of the reef for ease of dive charter operators. It is envisaged a similar system would be established at the reef.

Financial Information

Management

A variety of management models have been adopted for artificial reefs in Australia. In the case of Western Australia, a private non-profit group, similar to the existing GBSDC conducts the ongoing management of the reef and its maintenance. In contrast, the Queensland Government manages their artificial reef directly.

It is currently envisioned that the artificial reef will be managed and maintained by the NSW government, as with the Queensland model. This system ensures a dedicated team to manage the ongoing project and coordinate with all stakeholders. The on-going maintenance of the site will be funded through user fees, which has proved a successful financial model both within Australia and overseas.

Initial Costs

While it is impossible to fully quantify the project costs until a vessel has been acquired, the following estimates are based upon the experience of other artificial reef projects and preliminary guidance from contractors.

Cost Item		Amount
1. Project Management & Preliminary Works		
Site assessment	Can be extensive depending on vessel / location	\$ 50,000
Ship stability	Required for larger vessels	\$ 10,000
Project management fees	Will depend on extent of outside help	
Community liaison		
2. Preparation & Towage		
Pre-tow preparations		\$ 25,000
Tow costs	Wide variance depending on vessel & location	?
Wharfage	Wide variance - based on per metre per day	
Tow to Site	Wide variance - based on per metre per day	
3. Ship Preparation for Scuttling		
Hazmat Report and preliminary \	May not be necessary depending on vessel	\$ 25,000
Concrete ballast	May not be necessary depending on vessel	
Preparation works	Ship strip-out & diver access works	
Contingency for ship preparation work		
4. Scuttling		
Preparation works	All scuttling contractor expenses	
Explosives & materials		
5. Moorings & Navigation Aids		
Navigation Aids	May not be required - cardinal mark &/or IDM ?	
Moorings	If installed at time	
DEH Approvals	Sea Dumping permit	\$ 5,000
6. Management Costs		
Project costs	Administrative expenses for managers	
Legal Fees	Preparation of contracts & deeds	
Event management	Media etc.	
Insurance	Full coverage for entire project inc. at wharf, tow & scuttling	\$ 150,000
7. Contingency		
	General contingency holding	

** There will also be receivables of scrap & souvenirs etc depending on the ship.

In addition to these costs, as mentioned above the ship must be purchased from the RAN through a competitive tender process. Depending upon the vessel, this cost can be estimated to be \$250,000. Some of this cost will be recovered through scrap metal that is stripped from the ship prior to sinking.

The total cost of the project is thus estimated to be >\$565,000, though the exact cost will only be able to be determined once the vessel is acquired.

It is envisaged that the project will be funded from a variety of sources, with the majority of funding being derived from Government grants. While industry and local SCUBA clubs will be able to contribute towards the initial project costs, the small size of the dive industry in Sydney precludes private sector funding. The difficulty in policing access to the site and variability of cash flow also makes a project-financing arrangement unlikely. The proposed SCUBA Diving tax may be an ideal way to fund the project for the State Government, with project costs ultimately passed on to users.

Ongoing Management Costs

Once the artificial reef is established, on-going management will be required to ensure that the site is maintained to a high standard and that critically the safety of the site is monitored. Again the cost of this management will be dependent on the structure of the management committee and vessel, but is unlikely to be substantial. The cost of the on-going management should easily be covered by revenue from commercial dive operators.

Revenues

It is proposed that the project's upkeep be self-funded through levies on commercial dive operators, a model that has successfully been applied elsewhere in Australia and overseas. In Queensland, the Government charges a \$10,000 p.a. mooring fee and \$15 per diver to commercial operators. While it is difficult to estimate the exact revenue streams in advance, the following estimates have been prepared based on industry input on the current situation in Sydney, and using the same charges as Queensland with 4 dive boat operators.

The following brief model includes both the increase in total divers using commercial operators as a result of increased publicity and attractiveness of the Sydney dive industry, as well as the percentage of these divers visiting the artificial reef. The model assumes that for any increase in the total number of divers utilising commercial dive services as a result of the reef project, 80% will be visiting the reef itself. The other 20% represents additional dives at other sites as a result of the publicity surrounding the reef.

	Current	Current + 10%	Current + 20%	Current + 30%
Industry				
Fee per diver	\$125	\$125	\$125	\$125
Divers	16,000	17,600	19,200	20,800
Total Revenue	2,000,000	2,200,000	2,400,000	2,600,000
Reef dives (%)	20	25.5	30	34
Reef dives	3,200	4,500	5,750	7,000
Reef Managers				
Mooring fees	40,000	40,000	40,000	40,000
Diver fees	48,000	67,500	86,250	105,000
Total Revenue	88,000	107,500	126,250	145,000

Advisory Board

Advisory board positions are honorary. The board has been set up to advise the Club on the proposal to create an artificial reef.. Italics indicate that the board member is a GBSDC member.

President: *Mr Peter Howard*

Ambassadors at Large: *Jessica Rowe Channel NINE Today Show*

Peter Overton reporter 60 Minutes Australia

Secretary & Project Coordinator: *Mr John Rowe*

Dive Site Selection: *Mr John Ebner*, Former Seabed Engineer in Charge, Sydney Water
Ocean Outfalls

Industry Liaison Officer & Pre-Scuttle Chairman: *Mr Richard Poole* Pro Diving Services

Legal Officer: *Mr Timothy Price*, Partner Phillips Fox

Medical Officer: *Dr Martin J Talty* Medical Practitioner

Auditor: Mr Warren Duncan, Senior Partner, Duncan Dovico

Scrap Metal Liaison: Luke Parker, Managing Director Sell & Parker

Volunteer Directors: *Marina Kouzmin, Matt Pride, John Hawkin*

Marine Science: Dr Peter Steinberg, Chairman Sydney Harbour Institute of Marine
Sciences

Government Liaison: *Mr John Rowe*

Webmaster and Photographer: *Mr George Evatt*

Project Writer & Webmaster: *Mr Jason Hoare*

Media Liaison: *Mr Sam Heard*, Network 10

Catering: *Ms Claudia Rowe*

Consultancy: *Mr Angus Sullivan** McKinsey & Co, New York

Smile Coordinator: *Mr Chester Randolph Price*

Bibliography

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Enermark Tex, The Tourism Aspects of Artificial Reefs: The Nine Fundamental Lessons
www.artificialreef.bc.ca

Enermark, Tex, Recycling Economics from the Perspective of Artificial Reef Creation
www.artificialreef.bc.ca

Jones Anthony & Welsford Richard W, Artificial Reefs in British Columbia
www.artificialreef.bc.ca

Queensland Government, Environmental Protection Agency/ Queensland Parks and
Wildlife Service www.epa.qld.gov.au

Sandilands Jane “Swansong”, National Community Link The Magazine May 1998 Issue
4 National Australia Bank Ltd.

Where are we at and whose support do we have?

Australian National Maritime Museum Mary Louise Williams

The concept sounds very interesting.

1. Australian Maritime Authority Mike Kinley.

The site west of Wedding Cake Island is suitable from the navigational perspective being well clear of any route used by shipping.

2. Canadian Artificial Reef Consultants Roy Gabriel

The life expectancy of an artificial reef is in excess of one hundred years. To be a total success, the ultimate goal is to have the ship on the bottom in an upright configuration with diver friendly access holes to enhance diver safety and enjoyment. It has been proven world wide that it will also benefit the marine life in the area.

3. CARP (Central Coast Artificial Reef Project) Sue Dengate

We are more than happy to provide assistance for this group (GBSDC) for a subsequent vessel.

4. Clean Up Australia Ian Kiernan

No response.

5. Creating underwater value: the economic value of artificial reefs for recreational diving. Linwood H. Pendleton.

Scuba diving at artificial reefs generates market impacts that help to sustain local economies and provide new tax revenues especially in areas where scuba diving tourism draws out-of-town visitors. Artificial reefs offer economic benefits through the enhancement of shoreline protection, fishery resources and recreational fishing and diving opportunities.

6. Fisheries manager NSW Department of Primary Industries, Ocean Trawl

Darren Hale

DPI is happy for you to deal direct with the NSW Professional Fisherman's Association in relation to the location (of the reef) to trawl shots.

7. Fisheries Conservation Manager NSW Department of Primary Industries Geoff

Longhurst

The Department lends in principle support to the proposal as it may provide benefits to the marine environment as well as a variety of stakeholders, proper development approval processes must be followed. And will only provide official comment or support within the context of official developmental approval processes.

8. Fisheries Marine Protected Areas NSW Department of Primary Industries

Andrew Read

The identification of appropriate sites and the declaration of marine protected areas (MPA'S) is governed by a suite of objectives and criteria and it is unlikely that an artificial reef would be a priority site...you should investigate the possibility of a fishing closure over the area.

9. Geographe Bay Artificial Reef Society John Jennings

We would be happy to assist wherever we can

10. Lord Mayor of Sydney Clover Moore MP, has said that the City of Sydney would

consider the use of Blackwattle Bay as a site for pre-scuttling preparations. She

believes an artificial reef would provide tourist and educational opportunities

11. Manly Hydraulics Lab Andrew Judge

There is a great deal of information from the Lab ...that will be useful when you come to prepare your EIS.

12. Marine Discovery Centre Bondi Will Scott

Madly busy with the rebuild of the centre but I like the idea.

13. Minister for Defence Senator the Hon Robert Hill

HMAS ships Tobruk Kanimbla and Manoora may be replaced by 2010-2015.

HMAS Westralia & HMAS Adelaide September 2006, HMAS Success 2015-2017

HMAS Canberra was decommissioned in November 2005.

You should approach the State government with a business plan in consultation with community groups and business for support. The benefits of such projects are real and worthwhile. And they translate into business opportunities in eco tourism which multiply into other local service industries.

14. Member for Coogee Paul Pearce

No response

15. Member for Kingsford Peter Garrett

As my electorate only extends to the high water line I have no jurisdiction over this matter but I will watch with interest as the issue progresses.

16. Member for Parramatta Tania Gadiel

I think the project is a great idea.

17. Member for Wentworth, Malcolm Turnbull has written on our behalf to the Hon

Robert Hill, Minister for Defence, requesting the decommissioning list of the RAN.

Is exploring the possibility of the Navy handing over the PONG SU which is scheduled to be sunk for target practice for the RAN?

18. Member for Vacluse Mr Peter Debnam believes the project to be an excellent idea and has offered to assist where possible.

19. Minister for the Environment & Heritage Senator for Western Australia Ian Campbell,

Artificial reefs are labour intensive, time consuming and can be very expensive, in particular the financial aspects of the clean up and scuttling of the vessel can be extremely high. You may wish to consider approaching your local council or state environment agent to discuss the possibility of a joint arrangement. An application fee of \$5000.00 applies. See www.deh.gov.au/coasts/pollution/dumping/index.html

20 NSW Heritage Office David Nutley

Our role is to ensure that any vessel proposed for scuttling does not have a level of historical significance that may be best retained through alternative uses.... And that the site for scuttling does not impact on existing historic shipwrecks.

21 NSW Department of Environment and Conservation Jim Booth

Contact the Commonwealth Department of Environment and Heritage to ensure the proposal follows the relevant regulatory process.

22 NSW Premier's Department Col Gellatly, Director General has advised us that the Australian Defence Force has registered our interest in acquiring a vessel.

23 PADI Asia Pacific Shahram Saber

We appreciate your input and ask for your patience whilst we review your submission and develop an appropriate response to assist you

24 Pro Dive Peter Gardiner

We would be keen to support any initiative that promotes diving and would agree that this sort of venture would probably prove to be effective.

25 Professional Fisherman's Association Richard Bagnato

We want to cooperate with you and divers and can see no problems with the site you have chosen for trawling. However you'd better check it out with Telstra as I think there are a lot of cables there. You can't anchor. Anything north of your site would be fine for trawling but south there would be a problem for us.

26 Randwick City Council Murray Matson

In the absence of a more specific proposal it is not possible for council to express a view with regard to level of public support

27 Reach: Submarine Cable Protection Eric Fielding-Smith

There is a one nautical mile exclusion zone around submarine cables

28 SCAN (Scuba Clubs Association of Australia)

See CARP

29 Scuba Warehouse. Judith MacDonald.

Wonderful idea. We just need to make it happen

30 Scubaroo Yves Moulard

Confirming position at around 40m depth for the Keel,

Top cranes will be at 20m top wheelhouse at 25-m main deck at 32m-bilge floor at 39m

Ship bow to SE, Anchors at 43m to the SE,

33d 56'.000 S

151d 16'.900 E,

Chart AUS 197

All accessible from Long Bay / Gordon's Bay / Rose Bay

31 Shire of Busselton

John Jennings of the Geographe Bay Artificial Reef Society is happy to share his experiences and knowledge on the sinking of the HMAS Swan

32 Subaquatic Bill Marden

Terrific idea. Let's go.

33 Sydney Harbour Institute of Marine Science (SHIMS) Dr Peter Steinberg Chair

SHIMS is a collaborative venture between UNSW, UTS and Macquarie University.. On behalf of SHIMS I wish to express our support and enthusiasm for your Artificial Reef project. Such reefs have been a real educational and recreational drawcard elsewhere in the world and I'm sure such a habitat off the Sydney coast will likewise enhance local enjoyment and knowledge of our marine environment. Should you require any assistance on the science side of the project please let me know.

34 Tourism and Sport and Recreation (NSW) Minister for Sandra Nori

This matter falls within the portfolio of the Hon Bob Debus . I have sent your correspondence to him for consideration.

35 Tourism Australia Mr Tim Fisher

I think your proposal has some merit. Best of luck in pursuing this matter with the State stakeholders.

36 Waverley Council

No response

37 Woollahra Council

No response

25th February 2006