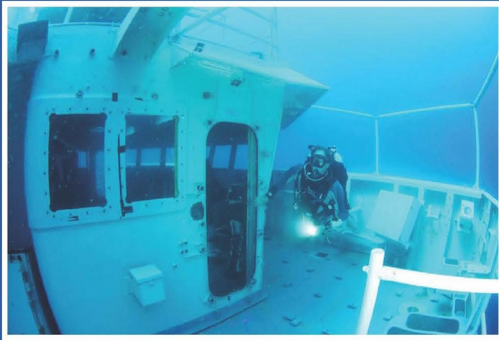


SYDNEY DIVE WRECK BUSINESS CASE

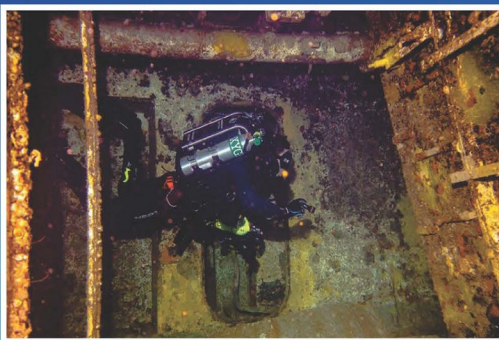
Overwhelming community engagement and support



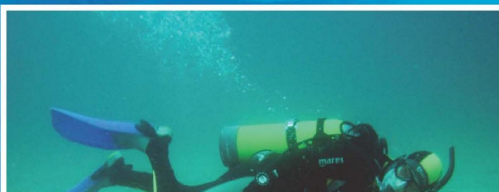
The ex-HMAS Adelaide, photo courtesy of Robb Westerdijk



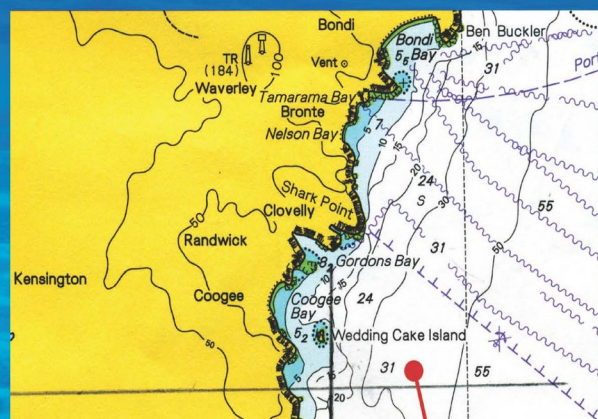
The ex-HMAS Swan in Western Australia courtesy of Rossco Cox



The ex-HMAS Swan in Western Australia courtesy of Rossco Cox



- Located in 30m water depth offshore from Coogee NSW.
- Up to 16,000 dive tourists and \$2.5m–\$10.0m per annum in the local community.
- Fishing closure over the dive wreck only.
- Live video link for non divers from the dive wreck to shore.
- 50 local employment opportunities.
- For more information on the proposers see www.gordonsbayscubadiving.com and sydneydivewreck.com.au
- Proposed Coogee site perfect but the business case is subject to a full environmental impact statement (EIS).



Prepared by the Gordon's Bay Scuba Diving Club Inc. (GBSDC)

Version 17 | 16th May 2023



Duncan Heuer photo of the ex-HMAS Adelaide

‘Full fathom five thy father lies.

Of his bones are coral made

Those pearls were his eyes.

Nothing of him that doth fade

But doth suffer a sea change.

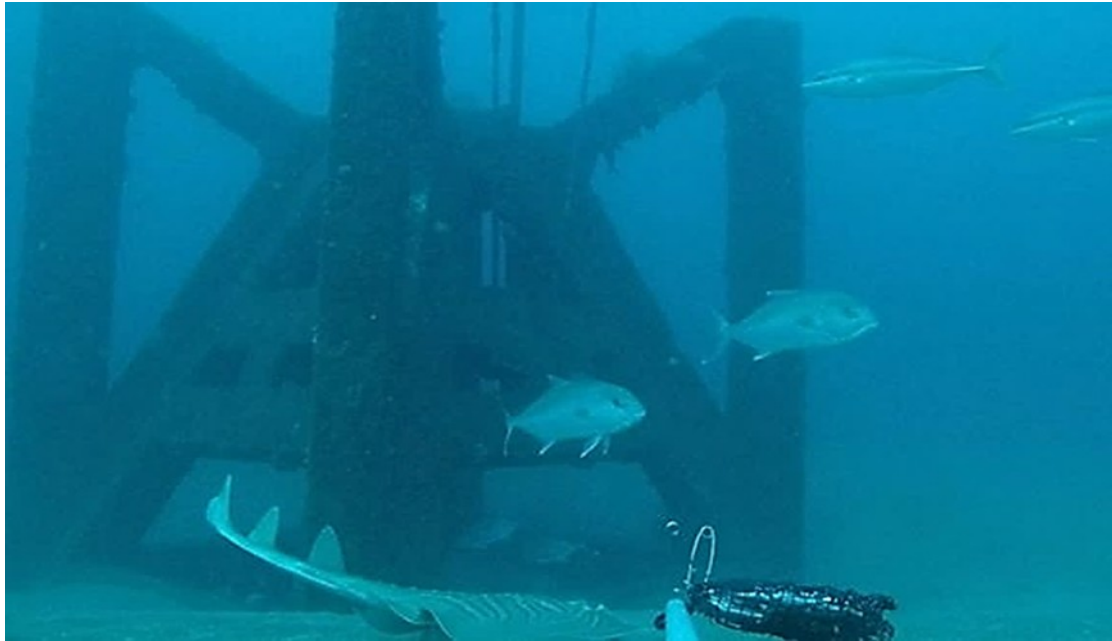
Into something rich and strange

The Tempest, William Shakespeare

“Human beings have always been enchanted by the sea. This vision—to take an ex-Naval ship and give it a second life under the sea as a linked artificial fishing reef and dive wreck—is a true act of transformation. Creating a new, world-class diving experience for Sydney is indeed about creating something “rich and strange”, so that those who love the sea, and everything in it, can truly experience what Shakespeare first called a sea change.” John Rowe,

Offshore Artificial Reefs (OAR) Port Macquarie and Vaucluse NSW

OAR's will be linked to the dive wreck & natural reef for com. & rec. fishing enhancement.



Samson Fish (*Seriola hippos*), Fiddler ray (*Trygonorrhina sp.*) Port Macquarie NSW



Kingfish (*Seriola ialandi*) O.A.R Vaucluse NSW. Other popular fish such as samson fish, snapper, pearl perch and mullet are attracted. An O.A.R to Wedding Cake Island will link the dive wreck-to to the natural reef for fishing enhancement.

Key proposal details

PROPOSAL NAME	SYDNEY DIVE WRECK
Lead proponent (e.g., Council)	Gordons Bay Scuba Diving Club (GBSDC Inc.)
Lead proponent ABN	68620082681, Association Incorp. Act Y2110124
Proposal partners	Australian Government, NSW Government Local Councils
Lead contacts	
Name	John Rowe/Sam Baxter
Position	Founder/President GBSDC Inc.
Phone	+61412099453, 02 4883 4257 +61412261459,
Email	jcprowe@bigpond.net.au sam1.baxter1@gmail.com
Address	4A Trafalgar St Bronte NSW 2024

Proposal scope

This proposal seeks funding from the NSW Government to create a new dive wreck site and artificial fishing reef for Sydney by sinking an ex-navy vessel in recreational dive depths at Coogee NSW. The diver related revenue is forecasted over five years of \$12.4m (low) and \$48.6m (high) at a one-off cost of \$6m-\$10m. This estimate excludes any potential revenue from the linking artificial reef to the natural reef for fishing enhancement. The project supports the strategic imperatives of the NSW Government, See (2.3). The proposed dive wreck has the potential for 100+ years of useful life, with very low post-sinking costs, high economic benefit, and significant recreational, research and environmental benefits for generations to come. There will be a significant spillover benefits for commercial and recreational fishers with the creation of a proposed Offshore Artificial Reef (O.A.R) from the dive wreck to Wedding Cake Island, in line with the NSW DPI's artificial reef program to enhance recreational and commercial fishing DPI (2019). The GBSDC Inc. has consulted widely with the community (see Section 2.5 Stakeholder and community support) and a petition bearing of almost 14000 signatures may be tabled in the NSW Parliament, requesting the NSW Government to make the necessary funds available for the project. Randwick City residents 4037, in fact, have signed a petition in support, along with another 3133 signatures from residents in the eastern suburbs, plus interstate and international visitors for a total of 13908 petition signatures along with another 5500 Facebook & our web site supporters. **(Appendix 10)**

Proposal location

Proposal address 4 kilometers S.S.E from Coogee Beach, NSW

Local government area	Randwick City Council
NSW electorate	Coogee, NSW
Federal electorate	Kingsford Smith, NSW

Acknowledgements

Member for Coogee: Dr Marjorie O'Neill

Former Member for Coogee: Bruce Notley-Smith

Coogee MPs officers: Will Peters, Kat Bampos, Mitchell Price,

Dive industry representatives: Mark Cummins, Damian Jones (PADI), Richard Nicholls (Dive Industry Association of Australia), Duncan Paterson (Dive Centre Bondi), Russell de Groot, and Rod de Groot (Pro Dive Australia) Jason Miles (Sydney Dive Charters) Sue Crowe, Oz Tek, D.I.A.A.

Community representatives: Lynda Newman (Randwick Tourism), Bernadette Summers (Coogee Chamber of Commerce)

Environmental engineering: Ed Rowe, Maritime, and Coastal (Arup).

Independent environmental and marine science advisors: Professor Iain Suthers (UNSW) Emeritus Professor William Gladstone (UTS)

Sydney Marine Park: Adele Pedder.

GBSDC: Mathew Kempton, Sam Baxter (President), John Rowe (Founder, marine scientist)

Very special acknowledgement goes to: Dive instructor Graham Willis for his significant help with this proposal. The helpful advice received from Michael Hukic Commonwealth Bank and Stephen Hall, Senior Consultant Forsythes. Also, to Warren Duncan Mazars and John Mullen (Chair, Australian Maritime Museum)

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1. Executive summary- 1.1 About this proposal

This is a proposal to create a new recreational dive site for Sydney, by sinking a decommissioned navy vessel off the Sydney coast for use as an artificial reef and dive wreck. It also proposes the creation of an Offshore Artificial Reef (O.A.R) connecting the dive wreck to Wedding Cake Island, in line with the NSW DPI, O.A.R program enhancing recreational and commercial fishing (DPI, 2019). There are currently several Royal Australian Navy ships scheduled for decommissioning in the coming years. These include Armidale Class Patrol Boats, Survey Motor Launches and Hydrographic Ships . **Appendix 11** lists potential ships. Another dive site consideration would be to build a purpose-built dive attraction like the Gold Coast City Council has created off Main Beach QLD in June 2022 (GoldcoastCity, 2022).

1.2 What is an artificial reef?

For the purposes of this proposal, an artificial reef is defined as a vessel or other structure that is sunk intentionally as a recreational resource, including for diving, fishing, surfing, marine engineering, environmental restoration, or disposal. A shipwreck is a vessel that has sunk as the result of an accident or misadventure (Edney & Spennemann, 2014). However, as this proposal is mainly for diving and fishing the terms dive wreck and O.A.R will be used interchangeably.



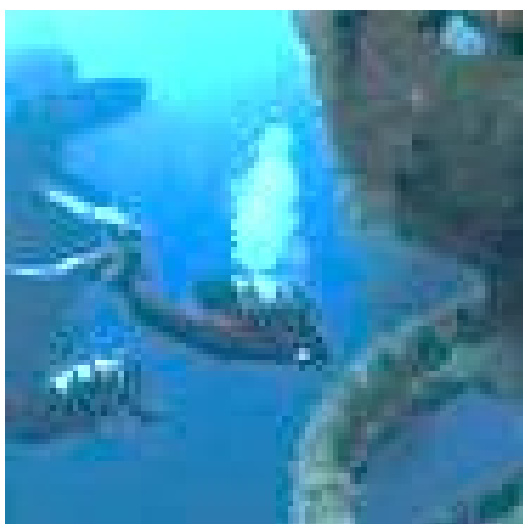
*The ex-HMAS Adelaide—suffered a “sea change” as an artificial reef and dive wreck: Red Rock Cod (*Scorpaena cardinalis*) Spotted Wobbegong (*Orectalobus maculatus*) Eastern Haulfish (*Trachinopstaeniatu*s) Mado (*Atypichthys strigatus*) (Kuitert & Kuitert, 1997) photo Duncan Heuer*

1.3 Dive wrecks and artificial reefs worldwide

Since 1984, more than 159 ships and aircraft (**Appendix 8**) have been sunk worldwide as dive wrecks. In Australia, seven ex-navy and three pirate ships have been sunk as dive wrecks, with an estimated economic benefit of \$30m per annum (Communications, Maura Bedloc, 2016). Dive wrecks contribute millions of dollars to the economy and greatly assist biodiversity by acting as artificial reefs for a range of marine life.

This proposal forecasts (excluding fishing) over 5years a low of \$12.4m and a high of \$48.6m, at a one-off cost of between \$6m and \$10m a cost benefit ratio of between 2.1 and 4.8 (**Appendix 1**).

The most recent dive reef in Australia is the Wonder Reef (GoldcoastCity, 2022) established on the Gold Coast consisting of nine underwater steel “flute sculptures”, weighing 846 tonnes towering approximately 20 meters above the sea floor. The reef was built by MMA Offshore and was opened for diving on the 3rd of June 2022. The City of the Goldcoast delivered the project with \$2.5million in matching funding under the Queensland Government’s Growing Tourism Infrastructure Fund. The project is expected to benefit the community as follows.



Supported 18 jobs during construction.

Created more than 32,000 cubic meters of new reef habitat.

Forecast to inject \$32.8 million into the local economy over 10 years.

Forecast to attract 16,600 visitors annually.

Forecast to support over 80 operational jobs.

Diver numbers since opening have already exceeded second quarter forecast and attracted interstate and international travelers (GoldcoastCity, 2022).

Divers travel the globe in search of ex-Navy vessel dive wrecks and artificial reefs.

Photo PADI

1.4 Proposal location: The proposed dive wreck site is located four kilometres S.S.E off the coast at Coogee. It is also proposed that an O.A.R (MMAOffShore, 2022) will be built linking the dive site with



Wedding Cake Island. The wreck and O.A.R will not be visible from the beach, preserving the natural beauty and amenity of the area. A properly managed dive wreck has the potential for 100+ years of useful life (De Baere et al., 2021; Gabriel, Parker, & Jennings, 2000). The 100 years +life estimate is reinforced when within months of sinking a CaCO_3 layer forms protecting the ship because it is impermeable to oxygen (De Baere et al., 2021). Accordingly, the dive wreck will provide recreational, research and economic benefits for generations to come (**Appendix 1**). However, as this proposed project will attract a high level of public scrutiny, this proposal, and its location will need to be subject to a full and comprehensive environmental impact statement (EIS) like that produced by Worley Parsons (2009) for the ex-HMAS *Adelaide*, by the Birdon Group for the ex-HMAS *Tobruk* (BirdonGroup, 2019) and by MMA Offshore for the Gold Coast Wonder Reef (Offshore, 2023).

Dive wreck site verification to cost \$15000-\$20,000 (Reeds, 2019).An EIS is estimated to cost \$300,000-\$500,000 (Thomas, 2023).

1.5 Project potential

The Australian tourism industry has had sustained growth over the last decade from both the domestic and international markets. Since 2009 international visitors increased 69% and spend increased 77%. However, the COVID 19 pandemic caused severe disruptions to demand for tourism both globally and in Australia. Tourism has experienced a sudden halt in both international & domestic markets. The disruption is evidenced in Sydney with nights declining by 324% and visitors by 174% when pre and post covid averages 2018-2019 and 2020-2021 are compared (**Appendix 2b, 2c**).

Outdoor and nature activities have strong appeal as the world looks to recover from COVID 19 (Austrade, 2023). A Sydney dive wreck will be a great asset to Sydney's eastern beaches and will assist in lifting tourist numbers. 2.1 million domestic & international visitors participate in diving snorkeling & freediving every year (**Appendix 6**). As well as its appeal to the Australian market (**Appendix 1**) the project has potential as an international diving attraction, as diving on ex-Navy ships holds significant appeal for recreational divers snorkelers & free divers worldwide (Kirkbride-Smith, 2014; Randwick, 2023). The linked O.A.R will also appeal to recreational and commercial fishers.

There is a significant difference between attracting interstate and international divers to a Sydney dive wreck, compared to a location such as the ex-HMAS *Adelaide* at Avoca Beach, on the Central NSW Coast. The Sydney tourist market is 20 times as large as the Central Coast market. Sydney is a major tourist hub, with a wide range of existing attractions (Randwick, 2023) which attracted more than 44.8 million overnight visitors in 2019 (**Appendix 2a**). Of these, 4.1 million were international visitors. This compares to only 6.9 thousand overnight stays in the Central Coast for the same period, including just 63,000 international visitors. Growth figures from Austrade confirm this difference, with Sydney recording over 8% annual growth in visitor expenditure pre covid. DNSW has also identified a significant market from China. 536,000 Chinese travelers visited NSW in 2015, and one in ten visitors from China went scuba diving during their trip to Australia (UTS: ACIR). As of December 2022, however the number of Chinese visitors is 90% below pre COVID levels. This is significant as pre COVID the Chinese visitors were the largest source of tourist spending and contributed 20% of leisure travel (Bruno, Davis, & Staib). A dive wreck can only assist in recovering this lost tourist sector. Destination NSW's planning is directed at "*promoting the sustainable growth and development of tourism in NSW*". Destination NSW's strategy sets the bold vision for "*NSW to be the premier visitor economy of the Asia-Pacific by 2030*" and the dive wreck proposal directly supports that vision (NSW, 2022).

1.6 Community support

The community overwhelmingly supports the proposal (**See 2.1 & 2.5 Appendix 10 (a) (b)**). The project has attracted a petition of nearly 14,000 signatures of support, which is to be tabled in the NSW Parliament. Our Facebook and web pages have an additional 5,000 supporters.



John Rowe, his daughter Jessica Rowe, and Ian Hunter celebrate a milestone 10,000 signatures enabling the petition to be tabled in Parliament for a Sydney dive wreck. By 1st April 2023, the petition had acquired an impressive 13900+ signatures.

Project supporters include Michael Daley (MP for Maroubra), Marjorie O'Neill (MP for Coogee), Gabriel Upton (former MP for Vaucluse), Felicity Wilson (MP for North Shore), and Matt Thistlewaite (Federal Member for Kingsford-Smith). See **Appendix 3** for a full list of engagements & supporters.

The project aligns with the NSW Government's strategic goals in the areas of sport and recreation, business activity, tourism, and the goals of sustaining conditions for economic development, increasing jobs, and investment in NSW, and an active recreation sector (NSW, 2022). See pages 31-37.

2. CASE FOR CHANGE

2.1.1 Background, location, current use

Scuttling an ex-Navy ship to create a dive wreck in Sydney waters with linked artificial fishing reefs offers four key benefits to the state of New South Wales:

Environmental: Is positive for the marine environment by increasing the overall biomass of marine life in the dive wreck location and surrounding areas. See pages 17-27.

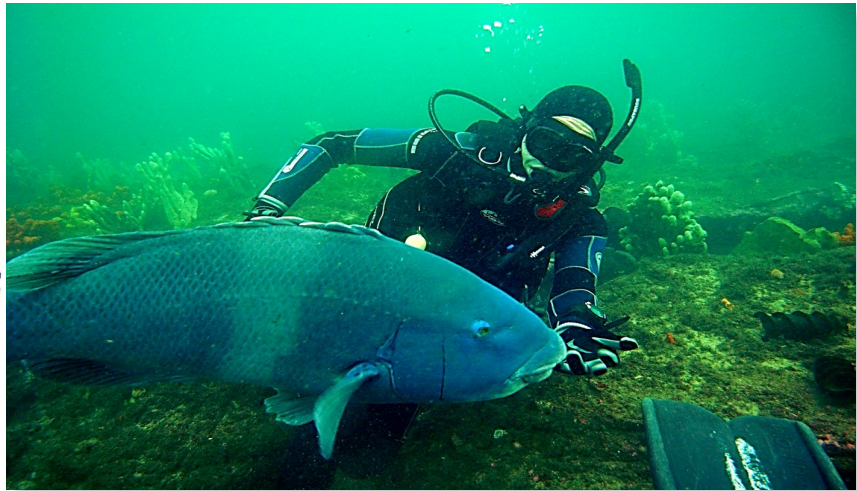
Economic: Provides a strong return on the investment with a payback period within 1–3 years. See pages 24-27.

Research: Provides a new marine research site. See pages 27-28

Community Benefits: Aligns with the strategic imperatives of the NSW Government. Provides additional recreational opportunities for NSW residents and visitors by creating a new scuba free diving & snorkeling site. Further, the linking of the dive site with O.A.R to Wedding Cake Island will further enhance both commercial and recreational fishing opportunities similar to the NSW DPI's artificial reef program (DPI, 2019). See pages 29-47.

2.1.2 Gordons Bay Scuba Diving Club Inc.

This proposal is led by the Gordons Bay Scuba Diving Club Inc. (GBSDC)—a not-for-profit association that was founded in 1993, fulfilling its constitutional objective (GBSDCconstitution, 2023) of maintaining the underwater nature trail, marine education for the public and advocating for a dive wreck. The underwater nature trail (public reserve #1986/75) was created by Rick Poole, Pro Dive Coogee NSW & Dennis Hunt, Marist Brothers Pagewood NSW in 1990. The trail is in Gordons Bay, between Clovelly and Coogee Beaches, NSW. The trail maintenance since 1993 is the responsibility of the Club and has involved more than 2000 community service hours, 2100+ scuba divers, and 900+ dives. GBSDC has worked with RCC & NSW Sport & Recreation on a sea ramp for able and disabled divers, a spear fishing ban, foreshore protection, the creation of a marine reserve, research on the cessation of the use of powered Chlorine to meet RCC's public liability on slippery bathing areas (Coghlan, 1997) participation in the consultative committee, for Gordons Bay instigated by the late Ernie Page, club member & MP for Coogee. Since 2003 to educate the community the Club & RCC have received Coastcare grants totaling \$45,000 for marine identification signs throughout RCC. The club has also received PADI & Sydney Morning Herald Community Service Awards (GBSDCtimeline, 2023).



A diver interacts with our NSW state fish emblem- Bluey the Groper (Archoerodus viridis) Photo George Evatt

2.1.3 Sydney Dive Wreck Organising Committee (SDWOC)

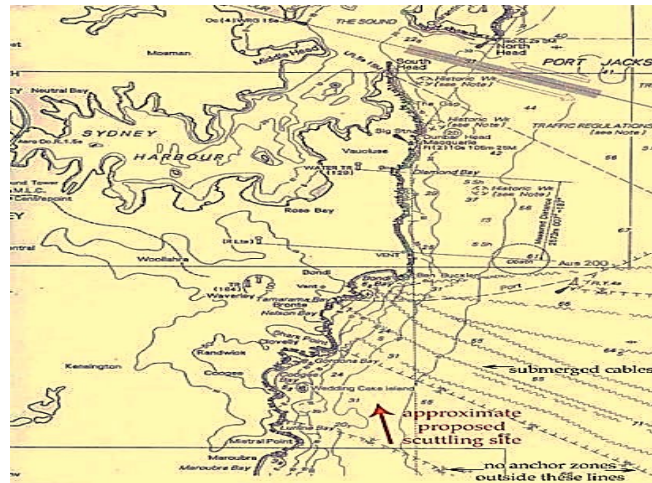
The former MP for Coogee, the Hon Mr. Bruce Notley-Smith, to further explore community response and service delivery for the proposed dive wreck, established the Sydney Dive Wreck Organising Committee (SDWOC) in mid-2015. Members are:

- Chair Dr Marjorie O'Neill, Member for Coogee, Kat Bampos, Coogee MP's office. Emeritus Chair Bruce Notley-Smith
- Dive Industry Representatives, OZtek Sue Crowe, PADI Damian Jones, Dive Industry Association of Australia – Richard Nicholls, Dive Centre Bondi – Duncan Paterson, Pro Dive Australia – Russell de Groot, Rod de Groot. Sydney Dive Charters-Jason Miles
- Community Representatives Lynda Newman - Randwick Tourism former members Bernadette Summers Coogee Chamber of Commerce, BJ Hatton Randwick Chamber of Commerce, Sydney Marine Park, Adele Pedder.
- Environmental Engineering Ed Rowe Arup, Maritime & Coastal.
- Independent Environmental and Marine Science advisors Professor Iain Suthers, UNSW Emeritus Professor William Gladstone UTS
- GBSDC Representatives, Matthew Kempton, President Sam Baxter, Founder, & Marine Scientist John Rowe.

2.1.4 Precedent for Federal Government support

This proposal is based on the Federal Government gifting an ex-Navy ship for the project, and the NSW State Government fully funding the sinking & creation of an O.A.R and ongoing maintenance and management of the dive wreck like the ex-HMAS *Adelaide*. The Federal Government has already made two ships available as dive wrecks in recent years—the ex-HMAS *Sydney*, which was scrapped in Fremantle WA at a cost of \$2.75m and the ex-HMAS *Tobruk*, which was sunk in 2018 off the coast of Bundaberg QLD by the Queensland State Government at a cost of \$10m.

2.1.5 Proposed location: (Australian, 2001) The proposed dive wreck site is located four kilometres S.S.E off the coast at Coogee, in recreational dive depths. The dive wreck is predicated on a complete ban of recreational and commercial fishing in an immediate area around the site, measuring 500sq.m. similar to the ex-HMAS *Adelaide*. (DPI, 2010) The proposal also recommends the creation of an O.A.R, similar to those already created by the DPI (DPI, 2019) with no fishing ban linking Wedding Cake Island to the dive site. The proposed site is still subject to the approval of the recreational and commercial fishers.



2.1.6 Current Use

Presently, very little scuba diving activity occurs at the proposed location because of the sandy sea floor, which supports little marine life (**Appendix 7**). However, a sandy sea floor (NSW Public Works Department, 1989) offers a perfect environment in which to sink a dive wreck and create a linking O.A.R. Additionally, the site is adjacent to five star rated dive sites at Wedding Cake Island, the Magic Point Grey Nurse Sanctuary, and Shark Point, Clovelly NSW (Willis, 2022). The addition of a dive wreck would only enhance the diving in the immediate vicinity of these existing sites.

The Sydney coastline does not currently have a dive wreck, and this proposal is seen as a companion to the dive wreck the ex-HMAS *Adelaide* (1V), which was sunk off Avoca Beach NSW in 2011. Concerns have been raised that this proposal will affect revenue from the ex-HMAS *Adelaide*, however, overseas research contradicts this concern. As a comparative example, Morgan *et al.*, using a travel cost model, indicate an annual use value of \$A1, 735 per diver on specific dive trips to the dive wreck, ex-USS *Oriskany*, located off the Florida coast. However, if a second dive wreck is introduced, diver spend is estimated to increase to \$A3,700 (Morgan, Massey, & Huth, 2009).

2.2 Rationale for investment

The rationale for investment in the project is based on four key factors—environmental, economic, research, and community:

2.2.1 Environmental rationale

In summary, the proposed dive wreck would:

- function as a new habitat for a multitude of fish and invertebrate species
- create effective marine habitats on what is otherwise a soft-bottomed, featureless environment
(Appendix 5)
- provide corridors so smaller fish can safely move from one reef to another.
- conserve pre-existing habitats while also forming new habitats of complex ecological systems.
- alters the connectivity patterns by linking the dive wreck to a natural reef with an O.A.R thus creating additional recreational and commercial fishing opportunities.

Whilst a fishing closure is planned for the dive site, the creation of an O.A.R with no fishing closure leads to more fishing opportunities. Many studies have demonstrated this fact with a higher number of fishes, total living animals, and variety of species present on artificial reefs, compared to natural reefs (Arena, Jordan, & Spieler, 2007; Bohnsack, 1991; Bohnsack, Harper, McClellan, & Hulsbeck, 1994; Burt, Bartholomew, Usseglio, Bauman, & Sale, 2009; Clark & Edwards, 1999; Diamant, Tuvia, Baranes, & Golani, 1986; Rilov & Benayahu, 2000; Wilhelmsson, Öhman, Ståhl, & Shlesinger, 1998). In contrast to Rilov and Benayahu (2000), Arena *et al.* (2007) observed greater species richness on concrete (MMA Offshore) pillars (the main component of the O.A.R) and shipwrecks, respectively. Fishing on dive reefs can rapidly reduce target fish populations and drastically decrease the value of a dive site for tourism (Brock, 1994). Dive wrecks are good for fishing and divers but bad for fish (Arena, 2013). In line with this, Arena *et al.* (2007) suggested that the high vertical relief of four vessel reefs studied might have accounted for the increased settlement of juvenile fishes, leading to greater recorded fish abundance and species richness.

In another study, (Granneman & Steele, 2014) found that total fish tissue production tended to be greater on artificial reefs than natural reefs, with a positive correlation occurring between tissue production and the abundance of large boulders that were more numerous on artificial reefs. However, some authors note that, given sufficient time and similar structural features, differences in benthic community structure can become almost indistinguishable.

Five authors and their colleagues studied seven shipwrecks of differing ages (20 to 100 years old) and observed that the increasing age of the artificial reef influenced its degree of similarity to its adjacent natural

reef (Aseltine-Neilson, Bernstein, Palmer-Zwahlen, Riege, & Smith, 1999; Perkol-Finkel, Shashar, & Benayahu, 2006; Thanner, McIntosh, & Blair, 2006). This was most evident with stony coral cover. Moreover, Perkol-Finkel *et al.* (2006) noted a similar benthic community structure on a 119-year-old shipwreck to that of a neighboring natural reef. No studies have reported negative effects on the environment from artificial reefs save that old tires were unsuitable (Lindenberg, 1973; Nelson, Mueller, & Hemphill, 1994) (Hartwell, Jordahl, Dawson, & Ives, 1998) (Sherman & Spieler, 2006). Further, only a handful of studies report less fish biomass and abundance on artificial reefs when compared with the natural reefs (Carr & Hixon, 1997; Lindenberg, 1973; Simon, Joyeux, & Pinheiro, 2013; Thanner *et al.*, 2006), although this has frequently been treated as a dichotomic problem, attraction and production (Pickering & Whitmarsh, 1997).

These two hypotheses are only the extremes of a gradient that can change within and among species, depending on the availability of natural reefs, mechanisms of natural population limitation, fishery exploitation pressure, and life history dependence on reefs, and species-specific and age-specific behavioral characteristics (Simon *et al.*, 2013). In a meta-analysis of 39 global studies Paxton *et al.* notes that not one size fits all tools for fish community enhancement, but should be based on location specific EIS and resource needs to maximize benefits of marine biodiversity (Paxton *et al.*, 2020).

It is also recommended that as much of the superstructure, masts be retained as possible to aggregate planktivorous fish, and cutting as many holes in the hull as possible. This is because oceanographically a wreck is essentially a 2-D surface where the flow is around and over the vessel, rather than through the structure. It would be useful if the dive community could rotate or replace two acoustic receivers every 6 months for any acoustic tagged fish and sharks (Suthers 2015).

It is recommended an O.A.R (MMA Offshore) be installed as a corridor to Wedding Cake Island for ongoing biotic connectivity between the artificial and natural reefs. Additional anchors or mooring blocks (fish-friendly) may be necessary (Suthers, 2015). As no fishing ban is proposed here this link is expected to enhance both commercial and recreational fishing opportunities. This area is roughly 5 times the size of the fishing closure over the dive site, in line with NSW DPI artificial reef program enhancing recreational fishing (DPI, 2019).

2.2.1 Environmental perspectives on Australian dive wrecks—good or bad?

A 2019 study (Ilieva *et al.*, 2019) reported on 1,907 intentionally deployed dive wrecks worldwide, that serve as artificial reefs. Of these artificial reefs, 168 are in Australia (**Appendix 8**). Intriguingly, only 36

worldwide have monitoring assessments on their impact on the marine environment. Of those 36 monitored, 7 of the 12 sunk in Australia have been environmentally monitored (Ilieva et al., 2019).

Table 1: Intentionally sunk ships in Australia serving as artificial reefs and dive wrecks (Reeds, Johnston, Suthers, & Smith, 2017) -

Year	Ship name	\$Million ⁹ Annual	Type	Dimension	Location	Depth(m)	Assess
1982	Cheyne 111 ¹		Whaler	48 x 8 x 5	Albany WA	23	¹ No
1997	Ex-HMAS Swan	\$3.8	Destroyer	112 x 12 x 24	Dunsborough WA	30	² Yes
2001	Ex-HMAS Perth		Destroyer	134 x 14 x 24	Albany WA	26	³ Yes
2002	Lena ⁴		Pirate fishing boat		Bunbury WA	18	⁴ No
2002	Ex-HMAS Hobart		Destroyer	133 x 14 x 24	Yankalilla Bay SA	28	⁵ Yes
2003	South Tomi ⁶		Pirate fishing boat		Geraldton WA	16	⁶ No
2005	Saxon Ranger ⁷		Pirate fishing boat	38	Rockingham WA	20	⁷ No
2005	Rockingham Dive Trail ⁸		2 MV / 2 planes		Rockingham WA	16	⁸ No
2005	Ex-HMAS Brisbane	\$4.0	Destroyer	133 x 14 x 24	Sunshine Coast QLD	27	⁹ Yes
2009	Ex-HMAS Canberra	\$6.0	Destroyer	138 x 12 x 24	Barwon Heads Vic	28	¹⁰ Yes
2011	Ex-HMAS Adelaide	\$5.5	Destroyer	139 x 14 x 24	Avoca Beach NSW	34	¹¹ Yes
2018	Ex-HMAS Tobruk	\$12.0	Heavy landing ship	127 x 18 x 5	Hervey Bay Qld	29	¹² No
2022	Wonder Reef		Artificial reef	500x 500	Main Beach Qld	12-10m	No

(Cheynes, 2019)¹ (Lena, 2019)⁴ (South Tomi, 2003)⁶ (Ranger, 2005)⁷ (Rockingham, 2019)⁸ Revenue estimates are provided by St Helens Chamber of Commerce⁹ (Commerce, 2015)

(1) The ex-HMAS Tobruk was funded entirely by the QLD Government & Bundaberg and Fraser Coast Regional Council.

(2) Tourism QLD funded \$1.0m (Cummins, 2021) to dive store and dive promoters to market the dive wreck to overseas markets.

(3) The Wonder Reef cost of \$5m was funded by The City of the Goldcoast & the QLD Government under the Queensland Government's Growing Tourism Infrastructure Fund.

(Cheynes, 2019)¹ (Lena, 2019)⁴ (Tomi, 2003)⁶ (Ranger, 2005)⁷ (Rockingham, 2019)⁸

Scuba Diver, ANZ edition No 47 14th June 2022 and No 51 10th November 2022 gives an outstanding guide for divers for all the ex-HMAS dive wrecks.

2.2.1 Environmental perspectives on Australian Dive Wrecks- good or bad? continued-

Monitoring surveys for metal corrosion and biomass development have been carried out on the ex-HMAS *Swan* (MacLeod, Morrison, Richards, & West, 2004)², ex-HMAS *Perth* (Richards, MacLeod, & Morrison, 2009)³ and ex-HMAS *Hobart* (Morrison 2002, Richards 2003b)⁵. The Australian Institute for Maritime Archaeology (AIMA) reports that a new assessment is in process for the ex-HMAS *Hobart* (AIMA 2019)⁵. The ex-HMAS *Brisbane*⁶ was monitored for three years (Walker & Schlacher, 2014; Walker, Schlacher, & Schlacher-Hoenlinger, 2007). The authors state that the Brisbane is performing well as a premier dive attraction, enhancing recreational value with more than 200 dive days per year, and reducing the diving pressure on surrounding natural reefs. However, after just three years post-sinking, it is far too early to assess whether the dive wreck mimics the natural reefs. The ex-HMAS *Canberra*⁷ had an extensive environmental blueprint laid down prior to deployment (Crockett, 2009). After six months of deployment, 26 species of fish had colonised the wreck, with the most abundant species identified as mackerel, long fin pike, four leatherjacket species, blue-throated wrasse, bullseye perch, and southern goatfish (Crockett, 2010). *Note references 1-7 refer to Table 1.*



The ex-HMAS Canberra—now a rich marine habitat.

The monitoring process on the ex HMAS Adelaide has been summarised brilliantly by Reeds (Cardno, 2016) as follows:

“On 13 April 2011, the Ex-HMAS *Adelaide* was scuttled in front of an estimated 18,000 people off Avoca Beach, NSW. Firstly, a condition of

the deployment was that the dive wreck managers—the NSW Department of Primary Industry—Lands (DPI) must implement a Long-Term Monitoring and Management Plan (LTMMMP). The monitoring requirements included three main components: *reef communities*, *sediment quality*, and *bioaccumulation*.

2.2.1 Reef communities

13 reef community surveys were carried out over the five-year monitoring period, in addition to the baseline survey undertaken in April/May 2011 by Worley Parsons.

The full methods and results of all reef community surveys can be found in Worley Parsons (2011b) and Cardno (2016a and 2016b).

After a baseline survey (Worley Parsons 2011) and 13 post-scuttling surveys (Cardno 2016b) 42 taxa/taxon groups were identified on the vessel. The ten most numerically abundant taxa, in terms of percentage cover, are serpulid worms, barnacles and encrusting algae (57.8%), large barnacles and brown filamentous algae (7.2%), solitary ascidians (6.7%), serpulid polychaete (6.5%), jewel anemones (4.4%), brown filamentous algae (4.3%), kelp (2.3%), early colonising matrix (2.2%), base surface (1.3%) and red encrusting algae (1.3%) (Cardno 2016a and 2016b).

Fish taxa identified during the 13 post-scuttling surveys on the ex-HMAS *Adelaide* included 62 species from 31 families. There was a clear increase in the number of species identified over time. No species of threatened or protected fish were recorded (although anecdotal evidence suggests that grey nurse sharks (*Carcharias taurus*) may occasionally occur at the site.

No listed marine pest species were detected during the first five years of monitoring, however, it was noted that the survey methods adopted may mean that small and cryptic pest species would be difficult to identify, as they can be well camouflaged or found in crevices and overhangs.

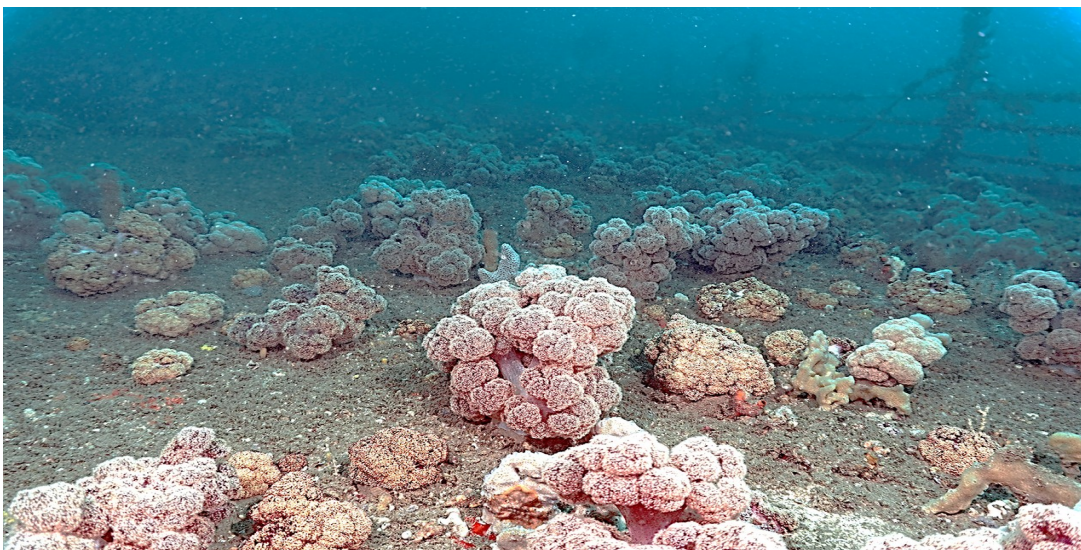
Paxton *et al.* in a meta-analysis of 39 global studies, from North America, Europe, Asia, Africa, and Australia demonstrated that artificial reefs exhibit similar fish density, biomass richness and diversity to neighboring rocky or coral reefs confirming our view that artificial reefs are effective habitat enhancement tools for fish communities (Paxton *et al.*, 2020).

Of great interest is a study by Suthers and colleagues (Folpp *et al.*, 2020) that showed that 3 species of *Sparidae* fish seen on artificial reefs were not attracted from the nearby rocky reefs and were produced by the addition of artificial reefs at estuary locations in Lake Macquarie, Botany Bay, and St George Basin NSW. The study showed that overall total fish abundance increased up to 20 times in each reef across a two-year period. Cauliflower Coral (*Dendronephthya australis*) has declined by 67.5% in the Port Stephens area and is listed as endangered under Part 7A Div. 2 of the Fisheries Act (Larkin *et al.*, 2021). The coral has not been known to occur any further south than Port Stephens until Dr David Harasti from the DPI located a large colony on the bow of the ex-HMAS *Adelaide* in August 2022. “There are 100s of *D. australis* colonies

on the deck at the bow section of the ex-HMAS Adelaide. They are doing very well as when we dived it in August 2022, they were looking very healthy with several rather large colonies” (Harasti, 2022).



On the bow of the ex-HMAS Adelaide D.australis in the foreground, Red Morwong, (Cheliodactylus fuscus) Old Wife (Enoplosus armatus) and Tarwhine (Rhabdosargus sarba) photo Dr David Harasti



100s of D. australis colonies on the deck at the bow section of the ex-HMAS Adelaide. A dive wreck sanctuary for an endangered coral. Photo Dr David Harasti DPI

Cauliflower coral is an important contributor to the biodiversity of the community it inhabits. It is linked to increased fish and invertebrate diversity including seahorses and pipefishes (Williamson et al., 2022). Poulos and colleagues report that soft coral has a significantly higher fish assemblages than those associated with sponges, seagrass, and sand habitats. In total 77 fish and 21 invertebrate species including juvenile snapper

(*Pagrus auratus*) a species of commercial and recreational importance, were located in the colonies in the Port Stephens Lakes Marine Parks (Poulos, Harasti, Gallen, & Booth, 2013)

2.2.1 Sediment quality

The aim of the sediment quality monitoring survey, as outlined in the LTMMP, was to gain an understanding of how metal corrosion and degradation of paint layers may be influencing/impacting on the marine environment and whether benthic organisms are likely to be affected by metal enrichment.

The LTMMP stipulated those sediments be tested for aluminum, iron, chromium, copper, lead, nickel, and zinc, as these metals are associated with the ship's materials, particularly the hull (which is made of steel) and the superstructure (which is composed of aluminum). In addition, metal concentrations in sediments recorded at 62 months post-scuttling (June 2016) were like those recorded one-month post-scuttling (May 2011) indicating no significant long-term effects on sediment quality as a result of the vessel being scuttled (aluminum was an exception). All metals measured for which ANZECC/ARMCANZ (2000) ISQG are available (i.e., chromium, copper, nickel, lead and zinc), had concentrations that were well below the ISQG low trigger values and therefore were not considered to be a contamination risk to the marine environment (see pages 33-34)

2.2.1 Bioaccumulation

Biomonitoring was carried out to determine whether resident biota were likely to be affected by zinc chromate paint, which may have been used on the aluminum alloy of the ex-HMAS *Adelaide* while in service.

Bioaccumulation surveys were undertaken one, seven-, and 15-months post-scuttling. In general, results indicated that zinc and chromium that could potentially leach from the exHMAS *Adelaide* would not affect the levels of these metals in filter feeders living in association with the vessel. Furthermore, the levels of zinc and chromium recorded in the tissues of sentinel species were generally similar to background levels recorded at their source and would not be of toxicological significance to the marine environment.'

2.2.1 In conclusion: dive wrecks good or bad for the environment.

The ex-HMAS *Adelaide* has set the gold standard for how to prepare, scuttle, and monitor a dive wreck. This example demonstrates that there is categorically no scientific basis for any objection to the proposal for a dive wreck in Sydney waters on environmental grounds. This proposal is undeniably positive for the marine environment. The creation of a proposed O.A.R to Wedding Cake Island from the dive site will also enhance both commercial and recreational fishing opportunities. (DPI, 2019). (Folpp et al., 2020).

2.2.2 Economic rationale

Ocean-going ships have an average life cycle of approximately 28-35 years. At the end of their lifespan, they are scrapped mainly for their recyclable steel (Glisson & Sink, 2006). However, it is this proposal's recommendation that a dive wreck is a much more sensible, sustainable, and economically viable option for the state of NSW than any other option. Consider the following:

In 2017, the ex-HMAS *Sydney* (IV) cost the Australian Federal Government over \$2.75m to tow and scrap in Fremantle WA after the NSW Government rejected the offer to create her as a dive wreck (Anon). A dive wreck has a useful life of up to 100 years or more , (De Baere et al., 2021)



the ex-HMAS Sydney (IV) being scrapped in Fremantle WA. for razor blades What an ignoble end for a great warrior?

The economic and community benefits of a dive wreck for the NSW community far outweigh scrapping and honor the work of her ships company. Our proposal estimates revenue over a five-year period of between \$12.5m and \$48m (**Appendix 1**). However, there is no reason to assume that the proposed dive wreck would not continue to earn income for the NSW community for the potential 100 years of its life—a far more sustainable option for a decommissioned ship than scrapping.



Diving on the ex-HMAS Adelaide a much greater fate than the scrapping option

Marine tourism and recreation activity is a rapidly increasing phenomenon (Orams, 2002). Dive wrecks, and the large and charismatic marine life they attract, sustain nature-based tourism markets (Gallagher & Hammerschlag, 2011). For example, the SS *Yongala*, which was wrecked off Townsville in 1911, is now regarded internationally as one of the greatest attractions for dive tourists (Cafiero, 1992). The *Yongala* has been rated as one of the world's top ten best dive shipwrecks in the world (Wood, 2012), and more than 10,000 divers from all over the world visit the wreck every year. At 110 meters long, she is one of the largest, most intact historic shipwrecks in the world, and has survived for 110 years (Wikipedia, 2016).

Other, more recent dive wrecks include the ex-HMAS *Tobruk*, which was sunk as a dive wreck off the coast of Bundaberg and the Fraser Coast on 28 June 2018. The Break O 'Day Council had previously submitted an unsuccessful proposal for the ex-HMAS *Tobruk* to be scuttled at Skeleton Bay, off the north-east coast of Tasmania (Communications, Maura Bedloe, 2016).

The HMAS *Darwin* was decommissioned in December 2017, and was to have been scuttled as a dive wreck at Skeleton Bay, however, the Tasmanian government declined to support the project (Mercury, 2018).

The proposed dive wreck at Coogee would follow the example of the ex-HMAS *Adelaide*—recognised as the leading example of an environmentally sustainable dive wreck.

Several factors support the proposed dive wreck at Coogee as an economically viable project:

- The proposed site is offshore from Coogee, will not be visible, from shore, and approximately four kilometres from Coogee Beach.
- The dive proposal will create 50 local employment opportunities (Matthew, 2023).
- The site satisfies all of criteria for a dive wreck site (**Appendix 5**).
- A dive wreck would provide a significant boost to tourism in eastern Sydney and NSW. The proposed dive wreck is expected to generate diving revenue of between \$1.9m and \$3.9m per annum. Tourism spend is estimated to be an additional \$1.5–\$6.9m—a total per annum revenue estimate of between \$3.4m and \$10.8m (**Appendix 1**). The estimated one-off cost of the project is approximately \$6.5m (**Appendix 7**). McMahon Services 2011, with some other estimates putting the cost as high as \$10m (Johnston, 2013).
- 5,200 tonnes of scrap from the ex-HMAS *Adelaide*—aluminum, brass, copper, lead and steel—was sold for an estimated \$1.4m, at current prices (Parker, 2016). Using an ex-navy vessel as a dive wreck will provide substantially more revenue than selling it for scrap. In addition, a dive wreck does not incur scrapping costs, which amounted to \$2.5m for the ex-HMAS *Sydney* (1V), with the full value of the scrap sale going to the scrapping contractor, rather than taxpayers.

In NSW, the scuba diving market is valued at \$300m (Nicholls 2014). Nationally, it is valued at \$1b from international visitors and \$547m from Australian divers (Worley Parsons 2009).

Beaver and Kelly (2015) value the market at \$2.2b—comprising club divers \$125m, domestic tourists (\$406m), and international tourists (\$1.7b). In NSW in 2015, dive-related spend was valued at \$513m. Nationally, nearly 2.1 million Australians participate in diving, snorkeling, and freediving each year (**Appendix 6**). These figures make a strong case supporting the allocation of financial resources to fund the project (**Appendix 7**). As previously mentioned, this proposal forecasts revenue over five years of \$12.4m (low) and \$48.6m (high), at a one-off cost of between \$6m and \$10m—a cost-benefit ratio of between 2.1 and 4.8 (**Appendix 1**).

In addition, a dive wreck site in Sydney will diversify dive offerings and create a more attractive destination for this market. Other studies have shown that specialist dive offerings do not flow solely to the industry but are also spread across the region where it is hosted. For example, from March 2013 – June 2014, shark divers in Australia contributed \$25.5m to the local economy (Huveneers et al., 2017). (Dicken, 2014) calculated that from July 2011– July 2012 in Sodwana Bay, South Africa, divers spent \$7.2m. (Du Preez, Dicken, & Hosking, 2012) calculated that the per capita spend on tiger shark diving in the Aliwal Shoal, South Africa, was \$198m. In Fiji, shark diving contributed \$55.5m to the Fijian economy (Vianna, Meeuwig, Pannell, Sykes, & Meekan, 2011). Vianna et al also demonstrated that scuba divers made a significant contribution to the Palau economy (Vianna, Meekan, Pannell, Marsh, & Meeuwig, 2012) Catlin *et al* demonstrated that, in 2006, whale shark divers in Ningaloo Marine Park WA, generated total expenditure in the region of \$6.0m and divers spent \$894 per trip. \$4.6m would have been lost to the region if whale shark tourism did not exist (Catlin, Jones, Norman, & Wood, 2010). Clearly diving provides a lucrative business for local economies. (Stolk, Markwell, & Jenkins, 2007).

Worldwide the economic value of dive wrecks and artificial reefs is substantial (Cater, 2008). For example, in Florida this activity in US dollars generates \$3.1b in output with more than 3330 artificial reef structures. The construction provide over 39000 jobs generates direct income and produce \$250m in state revenues, diving creates over 13000 jobs in excess of \$1b output, about \$417m income and \$80m in government revenue (Huth, Morgan, & Burkart, 2015).



‘I would spend \$200,000 on a new dive charter boat, if the dive wreck goes ahead.’

Yves Moulard, Scubaroo Dive Charters Sydney Dive Expo 2019

2.2.3 Research rationale

The Sydney Institute of Marine Science (SIMS) may undertake research projects at the proposed site, as Professor Iain Suthers writes:

“We appreciated the excellent progress with Marjorie O’Neil since the last state election and since our meeting with DPI minister Niall Blair at Parliament House. We also appreciated the heavily revised business plan and acknowledge that the \$10 million in decommissioning costs would be made up in economic activity within 10 years at a minimum. In fact, the promotion of eco-tourism could prove very worthwhile in a post-covid tourism boom. We understand that there is presently a lack of vessels to be decommissioned, and we point out our environmental concerns for using aluminium wrecks (let alone its scrap value). A Sydney Ferry would be cheaper and perhaps worthwhile?

SIMS strongly supports any marine initiative that could promote business and societal interest in the coast, and therefore we strongly support this initiative.

We hope this would reverse any downward trend in the uptake of scuba diving – in fact it is possible that the industry has turned a corner.

Therefore, SIMS supports the creation of a dive reef off Coogee Beach with the following 4 caveats:

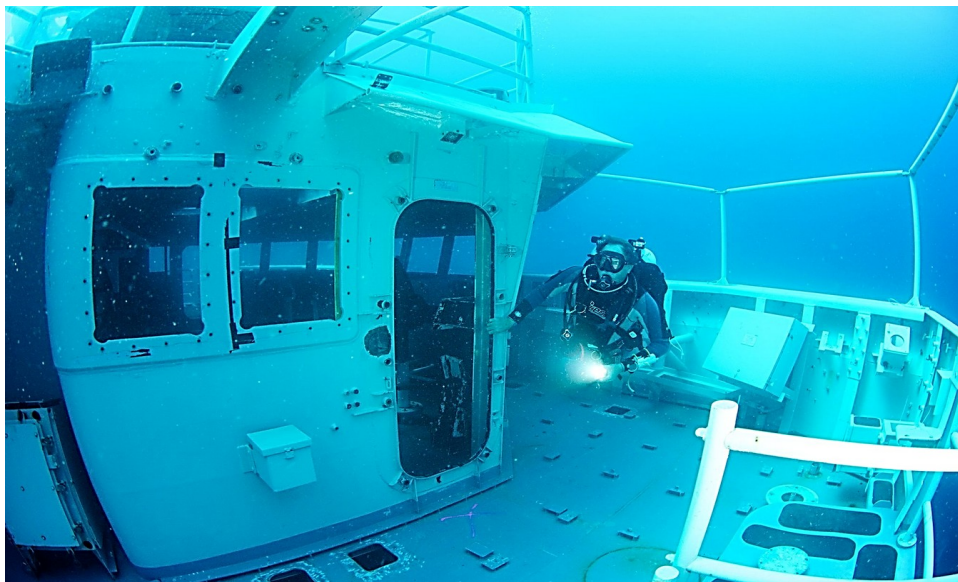
(1) that a research plan is articulated to examine the social, economic, and ecological consequences of the dive reef (e.g., usage rates, safety aspects and potential user conflicts among diving and fishing communities); (2) to study the ecological connectivity by fish and invertebrates between the Coogee reef and the rocky coastline via some designed artificial reefs. (3) that an environmental assessment is conducted to examine the environmental contamination over a time-course (at a few weeks, months and years later).(4) We are particularly interested in the study of the currents and the wave climate at the site, and the oceanographic conditions to assess the best placement of a reef in comparison to i) exHMAS Adelaide and ii) to any other coastal site that is popular with the dive companies. This would address our main scientific concern on the impact of ocean swell on diving at the proposed wreck site” (Suthers, 2020).

Other proposed areas of research

- fish connectivity with natural rocky reefs and a dive wreck.
- quantification of the role of planktivorous fish to the \$50b blue economy (Bennett *et al.*, 2016) based on tourism, fisheries, and sustaining recreational fishing around artificial reefs.
- assessment of fish movements with acoustic telemetry.
- researching links with artificial reefs outside the dive area.

- teaching with web cams on the reef and underwater sculptures in the lee of the dive wreck (Suthers, 2019).
- The dive wreck may attract large crustaceans (Howard, 1980) and is a potential site for a research project on the Sydney rock lobster (*Sagmariasus verreauxi*) (Spanier, Lavalli, & Edelist, 2011). The installation of passive collectors and concrete housings (Jensen, Collins, & Lockwood, 2012) for spiny lobster post-larval puerulus in the dive wreck prior to sinking may supplement natural habitats to increase survival rates of post-larvae by increasing the availability of settlement sites (Spanier *et al.*, 2011).

2.2.4 Community rationale



Diving on the ex-HMAS Adelaide Photo Rob Westerdyk

Dive wrecks are much sought-after by recreational scuba divers. When asked to state their most favoured type of artificial reefs to dive on, 76.5% of surveyed divers selected large ex-navy ships (Kirkbride-Smith, Wheeler, & Johnson, 2013). (Kirkbride-Smith, 2014) supports the view of GBSDC that the proposed dive wreck—a large ex-naval vessel in a preferred depth range—will meet the needs and expectations of recreational divers (Ditton, Osburn, Baker, & Thailing, 2002; Milon, 1989; Shani, Polak, & Shashar, 2012; Stolk, Markwell, & Jenkins, 2005).

In addition, dive wrecks are viewed as effective conservation tools (Stolk *et al.*, 2005). They provide a range of enhanced opportunities for divers, free divers and snorkelers beyond the physical experience of scuba diving, including historical significance, marine life photographic opportunities and support for management controls over dive wrecks (Edney, 2012). Dive wrecks also reduce the human impact on historic shipwrecks (Edney & Spennemann, 2015).



*Ex-Naval dive wrecks offer diverse experiences for divers—adventure, wildlife, photography, and history.
Image courtesy of PADI*

A land-based memorial to the men and women who served in all RAN ships would fit well into the Coogee coastline (John Byrne pers. com. 2017). There is also potential for a 24-hour camera link, to enable non-divers to experience the wreck from dry land. Bideci and Cater (Bideci & Cater, 2019) report on a project from the Lochaline Dive Centre, Scotland led by archaeological experts who have created a highly detailed underwater simulations of the wrecks that are available to divers and non-divers alike in three dimensional swim through models.

The community has shown strong support for the proposed dive wreck, and the proposal has a growing base of 18,000+ supporters, including:

- 3,700+ signatures on a Change.org petition (www.change.org Sydney Dive Wreck)
- 2,000+ likes on the Sydney Dive Wreck Facebook page, with a notable like from David Handley, Sculpture by the Sea See pages 42 & 43 for Recreational Fishing Alliance's concerns.
- 13,900 + signatures on a paper petition to be tabled in the NSW Parliament.

Articles about the proposed dive wreck published in The Beast Eastern Suburbs Community Magazine and Dive Log National Scuba Trade Magazine have been met with a positive response (Rowe, 2013; Rowe & Log, 2015).

Numerous letters of support have also been received from marine scientists, members of the dive community, Government, and political representatives (see **Section 2.5 Stakeholder and community support and Appendix 3**).

2.3 Strategic alignment with NSW Government objectives

The proposal to acquire and scuttle an ex-Navy ship with linked artificial fishing reefs off Sydney's coastline aligns with the strategic imperatives of the NSW Government as follows:

2.3.1 Marine Estate Management Strategy (MEMS)

The suggested dive wreck site at Coogee borders the NSW Government's Marine Estate Management Strategy 2018 (MEMS) (**Appendix 9**). The dive wreck proposal fully meets the primary objectives of the MEMS for the proposed Bronte-Coogee site

(https://www.marine.nsw.gov.au/_data/assets/pdf_file/0019/821323/Hawkesbury-site-Bronte-Coogee.pdf) as follows:

The proposed dive wreck site will:

- enhance the conservation of marine biodiversity.
- promote marine ecotourism in the bioregion.
- continue to provide for marine economic opportunities that are consistent with ecologically sustainable development—for example, low-risk commercial fishing activities.
- establish and maintain public infrastructure to support access and use of the bioregion—for example, moorings and boat ramps.
- enhance the intrinsic benefits derived by the community from the marine estate.
- enhance bequest values for current and future generations.
- reduce conflicts between users of the marine estate.
- provide enhanced recreational experiences for user groups.
- provide baseline monitoring areas (scientific reference sites).
- ensure that appropriate mechanisms exist for community involvement in the management of the marine estate.

- promote stewardship of the marine estate.

Unfortunately, the Marine Estate Management Authority (MEMA) did not examine the Sydney Dive Wreck business proposal. The proposal was listed as submissions received, despite the request by Minister Niall Blair in a meeting on 16th November 2016 at the NSW Parliament for MEMA to consider the proposal.

2.3.2 Tourism

The dive wreck and linked artificial fishing reefs proposal supports the NSW Government's focus on "marketing Sydney as one of the world's premier tourism and major events destinations" as well as contributing to the NSW Government's goal of "*tripling expenditure within the State's visitor economy by 2030*". This proposal also supports the broader strategy of "*developing and delivering initiatives that will drive visitor growth*".

<https://www.destinationnsw.com.au/about-us/strategies-and-plans>

Destination NSW's planning is directed at "*promoting the sustainable growth and development of tourism in NSW*". Destination NSW's strategy sets the bold vision for "*NSW to be the premier visitor economy of the Asia-Pacific by 2030*" and this proposal directly supports that vision.

<https://www.destinationnsw.com.au/about-us/strategies-and-plans/visitor-economy-strategy-2030>

The proposed dive wreck and fishing reefs will attract interstate and international tourists, who will be drawn by the opportunity to dive two ex-Navy vessels (the new proposed wreck and the ex-HMAS Adelaide off Avoca Beach) and fish adjacent artificial reefs. This opportunity will be far more appealing to divers and fishers, than just diving the considerably less accessible ex-HMAS-Adelaide. Morgan *et al.* using a travel cost model indicate an annual use value of \$A1,735 per diver on specific dive trips to the ex-USS *Oriskany*. However, if a second dive wreck is introduced, they estimate an increase of diver spend to \$A3,700 (Morgan *et al.*, 2009)

2.3.3 The Visitor Economy Strategy

The positive impact in scuttling an ex-Navy ship in Sydney waters will be felt by a wide range of stakeholders and supports the multiple ambitions of the Visitor Economy Strategy specifically aligning with the goals of providing:

- *Economic prosperity, jobs, and lifestyle opportunities for the people of NSW*
- *A compelling destination brand and iconic and world-renowned visitor experiences*
- *Sustainable visitor destinations*
- *Showcasing our (NSW) strengths*

A dive wreck will have a useful life of at least 100 years and this facility would require minimal investment after the initial purchase, preparation, EIS and sinking of the ship (De Baere et al., 2021) (Gabriel, 2004).

2.4 Expected outcomes.

The proposed dive wreck benefits commercial and recreational fishers from the proposed offshore artificial fishing reef linking the dive wreck to natural reefs. Research (Folpp et al., 2020) has shown that overall total fish abundance increased up to 20 times in both natural and artificial reefs across a two-year period.

Further a dive wreck as evidenced by the growth of an endangered soft coral, Cauliflower Coral, (*Dendronephthya australis*) on the ex-HMAS Adelaide is a positive enhancement to the marine environment (Harasti, 2022). See pages 19-23 for more information.

Apart from the marine environment, the positive impact in scuttling an ex-Navy ship in Sydney waters will be felt by a wide range of stakeholders, not least the business community. The NSW Government directly supports this section of the community through its Small Business Strategy recognising that “*small businesses contribute nearly \$370 billion to annual sales and service income*” and “*employ around 1.6 million people (41 per cent of the State’s private sector workforce)*”.

Placing an ex-Navy dive wreck in Sydney waters will increase revenues for dive shops through increased boat traffic, dive courses (notably wreck and deep-water courses) and the sale and hire of scuba equipment. A range of businesses in the proximity of the wreck site will also benefit, including cafes, restaurants, service stations, car hire, hotels, and ships chandleries.

In addition to intrastate visitors the proposed dive wreck will attract interstate and international tourists, drawn by the opportunity to dive free dive and snorkel two ex-Navy vessels (the new proposed wreck and the ex-HMAS Adelaide off Avoca Beach). This dual opportunity will be far more appealing to divers free divers and snorkelers than just diving, the less accessible, ex-HMAS Adelaide.

Morgan *et al.* using a travel cost model indicate an annual use value of \$A1,735 per diver on specific dive trips to the ex-USS Oriskany. However, if a second dive wreck is introduced, they estimate an increased diver spend to \$A3,700

Apart from divers and fishers the other key beneficiaries are:

- The NSW State Government
- The Department of Enterprise, Investment and Trade
- Destination NSW

- Sydney.com
- Bayside, Randwick, Woollahra, and Waverley local councils
- Professional dive associations
- Small businesses in Bayside, Randwick, Woollahra, and Waverley
- Sydney-based scuba diving operators
- The broader recreational scuba diving community
- Dive tourists (local, interstate, and international).
- Recreational and commercial fishers.

The following summarises the benefits of the project for each stakeholder group:

2.4.1 The NSW State Government

The sinking of an ex-Navy ship in Sydney waters for the purposes of recreational diving freediving and snorkeling delivers a facility that the active diving community of NSW—currently estimated at 8,000–16,000 divers—will continue to benefit from for the next 100 years (**Appendix 1**).

Summary of tangible benefits:

- Increased revenues of \$2.5m–\$9.7m over five years.
- Supporting the Government’s stated policies of:
 - Keeping our environment clean (divers’ free divers and snorkelers are extremely environmentally aware and strong advocates for the marine environment).
 - Tourism (attracting intrastate, interstate, and international visitors to Sydney).
 - The provision of recreational facilities (in alignment with current Office of Sport’s priorities) NSW Government commitments, with a much longer period of positive return for minimal ongoing operational costs.
 - The promotion of a healthy lifestyle, again in alignment with the Office of Sport’s priorities (scuba diving freediving and snorkeling requires and promotes good levels of health and fitness)
 - Support for small business (main financial beneficiaries are Sydney dive operators and local businesses in the vicinity of the dive site) Commercial and recreational fishers will benefit from the proposed offshore artificial fishing reef linking the dive wreck to natural reefs . Research has shown that overall total fish abundance increased up to 20 times in both natural and artificial reefs across a two-year period (Folpp et al., 2020).

2.4.2 The Department of Enterprise, Investment and Trade

The Department of Enterprise, Investment and Trade (DEIT) drives the New South Wales Government’s commitment to economic transformation and thriving communities.

<https://www.nsw.gov.au/enterprise-investment-trade>

The proposed dive wreck and offshore artificial fishing reef linking the dive wreck to natural reefs directly meets the following components of DEIT’s goals of:

- Commitment to economic transformation and thriving communities.
- Propelling the delivery of investment, business, lifestyle, entertainment, and cultural opportunities.

- Creating active and culturally rich communities across NSW, with access to local sporting programs and facilities

The DEIT cluster includes Destination NSW, Sydney.com and The Office of Sport.

2.4.3 Destination NSW

The scuttling of an ex-Navy ship and the creation of offshore artificial fishing reef linking the dive wreck to natural reefs, would support Destination NSW's Visitor Economy Strategy by providing:

- Economic prosperity, jobs, and lifestyle opportunities for the people of NSW
- A compelling destination brand as well as iconic and world-renowned visitor experiences
- Sustainable visitor destinations
- Showcasing our (NSW) strengths

The NSW Visitor Economy Strategy 2030 has five strategic pillars and sinking an ex-Navy ship off Sydney coast and the creation of offshore artificial fishing reef linking the dive wreck to natural reefs directly supports two of those three pillars and indirectly supports the other three.

<https://www.destinationnsw.com.au/wp-content/uploads/2020/12/nsw-ves-2030.pdf>

Strategic Pillar 3...Showcasing our strengths.

"NSW is a state of breathtaking diversity and bucket list visitor attractions and experiences. We will focus on existing strengths and develop new opportunities to ensure place making, destination marketing, events and visitor experiences drive visitation."

Key result areas:

- Increased average length of stay and yield (spend per visitor)
- Growth in visitation and expenditure for regional destinations
- Higher levels of repeat visitation

Strategic Pillar 5... Facilitating Growth

"Investing in infrastructure, job creation, industry resilience and sustainability, future planning, and better ways to do business will ensure the continued growth and future prosperity of the NSW visitor economy."

Key result areas:

- Increased public and private sector investment in visitor infrastructure.
- Improved access to visitor destinations and visitor attractions.
- Increased visitor satisfaction with accommodation and experiences.

“Many of the best-known icons, venues and natural attractions that draw visitors to Sydney and NSW are owned and managed by the state government (including the ex-HMAS Adelaide dive wreck off Avoca Beach NSW) Thousands of tour operators and commercial businesses help to activate these assets through the operation of tours, activities, and events, providing the world-class visitor experiences for which Sydney and NSW is world renowned. The NSW Government’s investment attraction strategy targets industries that grow the economy and leverage NSW’s natural endowments.”

2.4.4 Sydney.com

The ex-Navy ship and the creation of offshore artificial fishing reef linking the dive wreck to natural reefs_ would provide an extremely marketable attraction to add to Sydney’s ‘pulling power’. It would warrant being a destination and would be a distinctive feature around which to create a specific campaign.

2.4.5 The Office of Sport

The Office of Sport is the lead NSW Government agency for sport and active recreation and aims to increase the levels of physical activity of the people of NSW by providing the leadership, policies, programs, funding, and infrastructure necessary to enable higher rates of participation in sport and active recreation._

<https://www.sport.nsw.gov.au/what-we-do>

Scuba diving, free diving and snorkeling is a recreational sport that demands good levels of physical fitness “On average, the Professional Association of Dive Instructors (PADI) estimates that a diver burns around 600 calories an hour while diving. This is roughly equivalent to the calories burned while jogging. Scuba diving is great exercise. It combines cardiovascular resistance training with overall muscular toning in the arms, legs, and core muscles. There are also mental health benefits due to release of endorphins and the relaxing nature of floating weightless while exercising. <https://aquasportsplanet.com/this-is-why-scuba-diving-is-an-amazing-workout/>

We have no estimate on how many calories fisherman burn.

2.4.6 The Department of Planning and Environment

The vision for the NSW marine estate - which includes all marine waters and marine parks and reserves - is to have a healthy coast and sea managed for the greatest wellbeing of the community now and into the future.

<https://www.planning.nsw.gov.au/Policy-and-Legislation/Coastal-and-marine-management>

In turn the Department is a member agency of the NSW Marine Estate Management Authority (MEMA) which coordinates policies and programs for maintaining and improving the marine environment, including all marine waters and the State's network of marine parks and aquatic reserves. MEMA's vision for the NSW marine estate is to have a healthy coast and sea managed for the greatest wellbeing of the community, now and into the future.

<https://www.planning.nsw.gov.au/Policy-and-Legislation/Coastal-and-marine-management/Marine-estate-management>

MEMA has nine key initiatives, (**Appendix 9**) and the sinking of an ex-Navy vessel would directly support initiatives 2 and 8:

- Delivering healthy coastal habitats with sustainable use and development
- Enhancing social, cultural, and economic benefits.

The addition of an ex-Navy ship accessible to scuba divers free divers and snorkelers and the creation of offshore artificial fishing reef linking the dive wreck to natural reefs accessible to commercial and recreational fishers will meet MEMA's 'Enhancing social, cultural, and economic benefits' initiative in the follow areas:

- Participation (safety, health, and wellbeing)
- Participation (socialising and sense of community)
- Enjoyment - biodiversity and beauty (social intrinsic benefit)
- Economic - indirect values (intrinsic and bequest)
- Economic - direct values (individual enjoyment)

- Viability of business (employment and value of production)

2.4.7 Bayside, Randwick, Woollahra, and Waverley local councils

Given their proximity to the proposed dive site, these four councils are likely to receive the largest financial benefit from the project. Studies have shown that in addition to the actual revenues directly associated with the act of diving on such a wreck that there is an additional spend of between \$5.4m and \$31.3m over five years (**Appendix 1**).

A new scuba diving free diving and snorkeling attraction and the creation of offshore artificial fishing reef linking the dive wreck to natural reefs would support all four councils' policies as they relate to:

- The environment
- Sport and Leisure
- Business
- Social wellbeing
- Fishing camping and boat suppliers

2.4.8 Small businesses in Bayside, Randwick, Waverley and Woollahra

Studies have shown that direct dive spend ranges from 13%–26% of a diver's total expenditure. Perhaps more importantly, non-dive spend ranges from 74–87% of a diver's total expenditure (Escobedo, 2007; Pendleton, 2004).

Local businesses will benefit directly from this project, especially considering the findings of studies, which have shown that visitors always bring more to the economy than locals (Adams, Lindberg, & Stevely, 2006; Bell, Bonn, & Leeworthy, 1998; County, 2004; Huth et al., 2015; Johns, Leeworthy, Bell, & Bonn, 2001; Leeworthy, 2011a; Oh, Ditton, & Stoll, 2008; Tapsuwan & Asafu-Adjaye, 2008; Wheaton et al., 2008).

Marsden Jacobs Associates reports that in nature-based travel, day trip expenditures largely comprise shopping (28%), petrol (25%), food and beverages (12%) and takeaway or restaurant meals (20%). For overnight visits, major expenditure items are accommodation (25%), domestic airfares (15%), takeaway/restaurant meals (15%), petrol (10%), food and beverages (12%) and shopping (8%) (Jacob, 2017)

2.4.9 Professional dive associations

All the Professional Dive Associations are focussed on helping their certified free and scuba divers have a reason to keep on diving, past their initial Open Water certification.

The NSW-based professional dive associations that will benefit most from the proposed dive wreck are:

- PADI (Professional Association of Dive Instructors)
- SSI (Scuba Schools International)
- RAID (Rebreather Association of International Divers)
- TDI (Technical Diving International) and SDI (Scuba Diving International).

PADI trains approximately 75% of all Open Water Scuba certifications in NSW and will therefore reap the most benefit from the project.

It is likely that the presence of an ex-Navy vessel dive wreck site close to Sydney will, of itself, create enough new interest in diving to prompt an increase in new Open Water Scuba certifications. However, what is certain is that demand for specialty certifications, including PADI free diving, PADI Deep Diver or equivalent (certification to a depth of 40 meters) and Wreck Diver will increase markedly.

2.4.10 Sydney-based scuba diving operators

There are currently 11 dive stores operating in the Sydney area. All of those would benefit from having an ex-Navy wreck to dive in Sydney. Ex-HMAS Adelaide in Terrigal would still be a dive of choice but the travel time for all those shops and their students would be considerably reduced by having another dive wreck in Sydney.

The stores and their students would benefit from ease of access which would encourage an overall increase in the number of wreck and deep (over 18m and up to 40m) courses undertaken. This provides an improved experience for divers as well as extra revenue for the dive shops. This revenue would be in the form of certifications, for free diving, continued learning (Advanced, Deep and Wreck courses), boat trips and wreck merchandise.

The 18 dive operators (**Appendix 4**) located within easy access of the proposed location certify 4,000–5,000 new divers per year. This means that, in the last five years, 20,000– 25,000 new divers have been certified in the Sydney area. For the purposes of the business case embedded in this document, we have applied a much lower conservative estimate of 8,000-16,000 active scuba divers (**Appendix 1**).

In addition to their Open Water Certification (the first qualification for any diver), between 20% and 30% of those divers will progress to a higher certification or specialty that provides them with the training to safely undertake deeper dives. There is a measurable drop off in diving activity following initial certification, and this is reflected in the business plan.

Based on activity associated with the sinking of other ex-Navy vessels as dive wrecks, we estimate that dive certifications in Sydney will increase by 10–15% if a new ex-navy dive wreck is installed at the proposed location.

2.4.11 The recreational scuba diving community

As mentioned above the dive community, will benefit from having another attraction, in this case an ex-Navy ship. Divers will travel a long way for a dive experience as the visitor numbers for ex-HMAS Brisbane Mooloolaba, ex-HMAS Hobart Adelaide, ex-HMAS Tobruk Hervey Bay, ex-HMAS Canberra Melbourne, Ex-HMAS Perth Albany, and ex HMAS Swan Dunsborough, demonstrate.

Wrecks hold a ‘magical’ attraction for SCUBA divers. The history of the wreck itself, the sheer scale of the wreck and the fact that wrecks act as a reef and become a fish attracting device (FAD) makes for a special experience.

2.4.12 Dive tourists local, interstate, and international

As mentioned above divers tend to have higher than average disposable incomes and a willingness to travel significant distances to experience of Scuba destinations. (Sports & Fitness Industry Association 2020 survey <https://sfia.org/> . “How deep are scuba divers’ pockets?” Sayman and Sayman 2014) “There is no doubt that an ex-Navy ship which is so accessible to Sydney’s wide range of attractions would become a dive destination.

2.4.13 Recreational and commercial fishers

It is recommended reef balls (MMA Offshore) similar to the artificial reefs in the NSW Government’s O.A.R (DPI, 2019) be installed as a corridor to Wedding Cake Island for ongoing biotic connectivity between the dive site and natural reefs. Additional anchors or mooring blocks (fish-friendly) may be

necessary (Suthers, 2015). As no fishing ban is proposed here, this new artificial reef is expected to enhance both commercial and recreational fishing opportunities. The connecting reef is roughly 5 times the area of the dive site-fishing ban.

Whilst there is a fishing ban on the site, the dive wreck will have a spillover effect which will attract fish, crustaceans (Howard, 1980) and is a potential site to enhance the Sydney rock lobster fishery (*Sagmariasus verreauxi*) (Spanier et al., 2011). The installation of passive collectors and concrete housings (Jensen et al., 2012) for spiny lobster post-larval puerulus in the dive wreck prior to sinking may supplement natural habitats to increase survival rates of post-larvae by increasing the availability of settlement sites (Spanier et al., 2011) and may enhance commercial fishing. See page 42-44 for recreational and professional fishers' concerns.

2.4.14 Summary of Business Tourism and Local & NSW Government Objectives and Impacts.

“The economic benefit of the visitor economy to NSW is clear, but it is also important to highlight the social benefit delivered through a vibrant visitor sector. Positive travel experiences and connections with community are important contributors to social wellbeing, as are the shared experiences that come with entertainment, hospitality, and events from sporting to cultural. The visitor economy of NSW is not owned by any one stakeholder or business sector. It is co-owned and curated by a range of stakeholders including visitors, businesses, governments, residents, hosts, and the community. Only when all these stakeholders work together can the potential of the visitor economy be fully realised.”

NSW Visitor Economy Strategy 2030

<https://www.destinationnsw.com.au/wp-content/uploads/2020/12/nsw-ves-2030.pdf>

The proposed sinking of an ex-Navy vessel in Sydney waters has a wide range of beneficiaries beyond the scuba divers who will directly access the dive site.

We believe that, by taking a leading role in this project, the NSW Government will create a legacy, contribute to the State's bottom line, and fulfill several of the Government's policy positions. Just as importantly, leadership in this project will mean not ceding ground to the Queensland dive and tourism industry, which, with the support of the Queensland State Government, has recently sunk its second ex-Navy ship, the ex-HMAS *Tobruk*. And now funded a third dive site with the Gold Coast Wonder Reef in 2022.

2.5 Stakeholder and community support

Over the past eighteen years, the Sydney Dive Wreck Committee and the GBSDC (the proponents) have consulted widely with stakeholders and the broader Sydney community regarding this proposal. More than 110 letters of support and engagement have been received and are held on file (these are available on request from John Rowe at jcprowe@bigpond.net.au). (**Appendix 3**). Table 2.5.1 outlines the project's key stakeholder groups, their engagement with the dive wreck proponents, any issues and concerns raised by these groups, and how this proposal has addressed these concerns.

Table 2.5.1 Summary of stakeholders and community support

STAKEHOLDER GROUP	SDW ENGAGEMENT	CONCERNS RAISED	ADDRESSED BY
Commonwealth Government (Defence)	Meetings with Defence Minister (2013/2017)	None – very supportive	
NSW Government (Primary Industry)	Meeting with Niall Blair and Department November 2016	Four areas of concern raised: <ul style="list-style-type: none"> Financial Environmental Health and Safety Community engagement 	All concerns addressed in response to Department in December 2016 Submission made to MEMA (excluded from the strategy)
NSW Government (Tourism)	Meeting requested 2017		Previous ministers supportive
NSW Government (Environment)	Meeting with Minister scheduled August 2018		Minister supportive
Friends of Parliamentary Aquatic Recreation	Presentation at NSW Parliament	Funds needed for an EIS . Rec & Professional Fishers concerns need to be discussed.	
Randwick Council	Various meetings with individual councilors	Support still to be debated Version 17 BP sent to all councilors	
Randwick Tourism	Continuous involvement	Very supportive – Member of SDWOC	
Randwick Coastal Advisory Committee	Presentation	No concerns raised	Surprised no prior knowledge
Local precinct committees	Presentations or invitations to Coogee, Malabar, Maroubra, Clovelly, and Bronte Beach	Coogee Precinct object to proposal	No response from Malabar, Clovelly, and Maroubra. Invitations to meet to discuss objections
Sydney Coastal	Various meetings	No concerns raised	

Councils	2016/2017		
NPA Marine	Various meetings 2016/2017	No concerns raised	
Recreational Fishing Alliance of NSW (RFA)	Various meetings	Written commercial sector approval? Written charter sector approval? Written DPI approval? ACMA approval in writing? Announced funding for proposal. Increased boat ramp congestion? ROI on ex HMAS Adelaide? Final case to be prepared by NSW Government? Noncommercial divers' access?	Further discussion required RFA continued
NSW Recreational Fishing Advisory Council (RFNSW)	Meetings 2019	Not adverse to fishing closure like the Adelaide noted the socio-economic benefits of a dive wreck	RFNSW noted still a proposal.
Wildlife Fishing Coalition	Meetings with SFFP at NSW Parliament	Proposed site & link reef is a current fishing site	WFC to propose alternative sites
Professional Fisherman's' Association	More meetings needed. No problem if site is 33deg56'0"S 151deg17'20"E Richard Bagnato .	Version 17 dive wreck proposal sent	Trawl ban from Malabar to Long Reef, includes dive site
Coogee Chamber of Commerce	Various meetings 2016/2017	No concerns raised	Very supportive Member of SDWOC
Marine research organisations	Various meetings 2016/2017	No concerns raised. Scientific advisors appointed to review plans. Numerous letters of support from marine scientists	See pages 27-28
Nature Conservation Council	Correspondence and discussions 2016	No concerns raised	
Surf Live Saving Clubs	Presentations to South Maroubra No response from Clovelly Maroubra and Coogee clubs	No concerns raised	

Dive Industry of Australia	Continuous involvement	Very supportive Members of SDWOC	
Royal Australian Navy	Informal engagement with numerous ex-Navy staff	Very supportive Letters of support provided	
Sydney local community	Significant engagement (see details below)	Overall, very supportive	

The dive wreck proponents have been very actively engaged in raising awareness of the plans outlined in this proposal within the community in Sydney's east, particularly Coogee. The support has been very overwhelmingly positive, evidenced by:

- 13,900+ signatures on a paper petition to the NSW Legislative Assembly
- 3,500+ signatures on an online petition to the NSW Government
- 1,700+ Likes on the Sydney Dive Wreck Facebook page.

Over the last three years, the proponents have raised community awareness of the project at a wide range of community events and activities, including:

Stalls at major local community fairs and festivals:

- Randwick Eco Fair (2016, 2017, 2018)
- Randwick Spot Festival (2016, 2017, 2018, 2019)
- Coogee Family Fun Day (2016, 2017, 2018, 2019)
- Bondi Winter Magic Festival (2017, 2018, 2019)
- OZtek Dive Fair (2017, 2018)
- Sydney Boat Show (2017, 2018, 2019)
- Waverton Coal Loader Markets (2019)
- Kirribilli Markets (2019)
- Sutherland Shire Markets (2019)
- La Perouse MEMA (2019)
- Stands at popular community events and locations:
- Bondi Junction Station (2017) Bondi Beach Ocean Lovers Festival (2023)



- Bondi to Coogee Walk (10 events through 2016, 2017, 2018, 2019)
- Friends of Parliamentary Aquatic Recreation. Presentation November 2022
- Randwick Coastal Advisory Committee December 2022
- Media activities (audience figures in brackets see www.gordonsbayscubadivingclub.com for full video):
 - Channel 9 Sydney News Saturday (260,000)
 - Channel 9 Sydney News Sunday (400,000)
 - 2 x Daily Telegraph articles (1,998,000)
 - 2 x Radio 2UW interviews Greater Sydney (300,000)
 - 4 x ABC Radio 702 interview (audience tbc)
 - 2 x Weekly Southern Courier (130,000)
 - 2 x Wentworth Courier (audience tbc)
 - 2x Southern Courier
 - 4 x The Beast Magazine (122,000)
 - 1 x Bruce Notley-Smith's Community Newsletter (40,000)
 - Sun Herald 2 April 2023

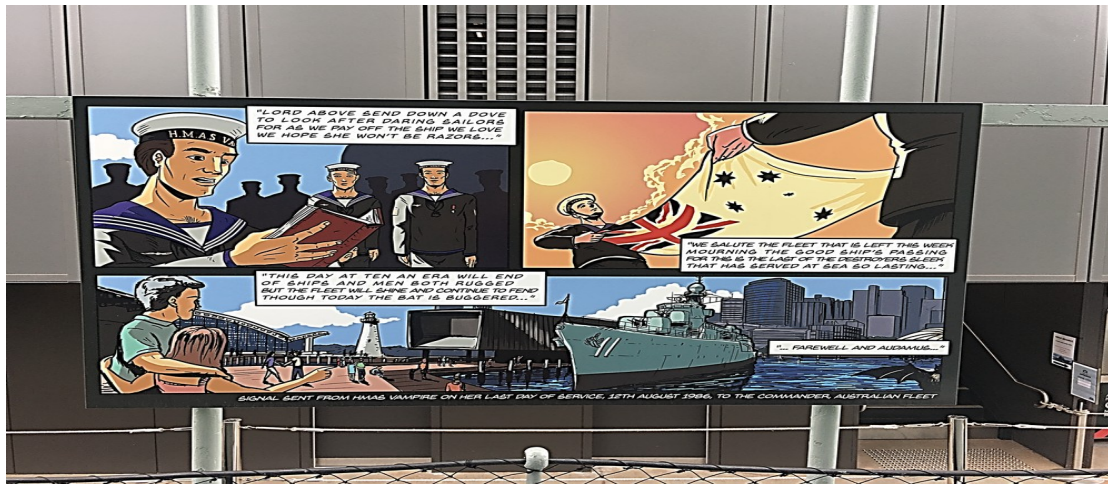


Danny Said, former Mayor of Randwick at the Coogee Family Fund Day December 2019

In addition, strong community support for the project is demonstrated in numerous letters of support from marine scientists, members of the dive community, government, and political representatives (**Appendix 3**).

One member of the ex-HMAS *Darwin* ship's company offered to take our petition to the ships decommissioning ceremony, demonstrating the crew's preference (as also seen on Facebook) for the vessel on which they have served to be scuttled as a dive wreck, rather than scrapped for razor blades,

However, further support for this view was received from the former commander of the ex-HMAS *Darwin*, Captain Will Martin (2004-2006), in a letter he wrote to the Minister for Defence, Senator Maryse Payne, regarding the future of the ex-HMAS *Adelaide* (**Appendix 3**): *'I hope you might be able to steer them (the Capability Acquisition and Sustainment Group) toward a solution that benefits divers, fishermen, scientists, and the economy of NSW.'*



This is the preferred option for the woman and men who serve “as we pay off the ship we love we hope she wont be razors”.Signal sent from HMAS Vampire (now at the Australian Maritime Museum) on her last day of service to the Commander Australian Fleet.

Community involvement in this project could also extend to a land-based memorial to the men and women who served in all RAN ships—a tribute that would fit well into the Coogee coastline (John Byrne pers. com. 2017). For non-divers a land-based video link to the dive wreck is possible.

2.5.1 Community Concerns about Potential Increase in Shark Attacks

1. In 2015 the NSW Government’s Shark Management Strategy (SMS) aimed to increase protection of ocean users while minimizing harm to sharks, turtles and marine mammals like dolphins and whales. Historically society’s attitudes to sharks was to protect humans from sharks but it has now evolved to accept the critical role of sharks as apex predators in the ocean and the need for their conservation (Martin, Curley, Wolfenden, Green, & Moltschaniwskyj, 2022).
2. Shark fatalities generate high emotional response in spite of the low incidents of attack (Crossley, Collins, Sutton, & Huveneers, 2014) as evidenced by the Australian Shark Incident Database (ASID) (Riley et al., 2022). On average 87 people drown annually at Australian beaches in contrast with 1.1 shark fatalities year⁻¹ in the past two decades (West, 2011). Shark incidents off Sydney’s eastern beaches are lower than the national average with 294 shark incidents since 1912, with 2 fatalities - one in 1936 and one in 2022 in Sydney’s eastern beaches. The emotional response to the 2022 incident is not reduced by saying that it was the first fatality in 59 years when the victim was identified as 35 year old Simon Nellist a dive instructor and ocean lover (Cassidy, 2022).
3. The dreadful consequences of shark fatalities are not assuaged by their very low likelihood of its occurrence, and also by the change in public perception from one that we need to protect humans from sharks to one where we must protect sharks from humans (Simpfendorfer, Heupel, White, &

Dulvy, 2011) Chapman reports that the published scientific reports on human fear of sharks fail to produce any characteristic data or trends (Chapman, 2017). (Heupel et al., 2015). Paul de Gelder an RAN clearance diver who lost his arm and a leg to shark attack wants to save the shark from being the most misunderstood predator in the world (Gelder, 2022).

4. Dive wrecks however do not attract the three shark species responsible for human attacks, the white shark (*Carcharodon carcharias*) the tiger shark (*Galeocerdo cuvier*) and the bull shark (*Carcharhinus leucas*) (McPhee, 2014) are ocean roamers, not lurking predators. Studies have shown white pointers travel over 3500 kilometers from the Southern Great Barrier Reef to Tasmania and New Zealand (Bruce, Stevens, & Malcolm, 2006) (Bruce, Harasti, Lee, Gallen, & Bradford, 2019). Tiger sharks (Holland, Wetherbee, Lowe, & Meyer, 1999) (Holmes et al., 2014) also have large scale migrations as do bull sharks (Carlson, Ribera, Conrath, Heupel, & Burgess, 2010) (Smoothey, Lee, & Peddemors, 2019). No “dangerous, sharks” were seen on the ex-HMAS Adelaide over the five-year monitoring period (Cardno, 2014, 2016, 2016a). The Wobbegong shark (*Orectalobus sp.*) a species not considered dangerous has a preference for artificial structures (Carraro & Gladstone, 2006) and one has taken up residence in the ex HMAS Adelaide. (See page 9).
5. There is potential for shark attack whenever we venture into the ocean for whatever purpose. There is an innate fear of shark attack, and reference to the unlikely occurrence of shark attack may not mitigate that fear. We have nothing to fear from sharks but fear itself.

3. Analysis of the proposal

3.1 Objectives and indicators

The following outlines what this proposal is seeking to achieve and how each desired outcome will be measured:

Table 3.1.1: Proposal objectives

KEY PROBLEM / OPPORTUNITY	KEY PROPOSAL OBJECTIVE	KEY SUCCESS INDICATOR
No dive wreck for Sydney	Acquire a decommissioned Navy ship	NSW Government agrees to fund project
No approved wreck site	Gazette a site under Crown Lands Act 1989 Complete an Environmental Impact Statement (EIS)	Site gazetted. EIS completed
Prepare the ship	Preparation in accordance with the London Protocol	Ship ready for sinking
Sink the ship	At site in accordance with Sec 4.2	Ship successfully sunk
Create the OAR	Enhance fishing	Increase catch

3.2 The base case

The base case – the state of the world without the proposal – means not taking up the following opportunities and benefits:

- A world class, challenging, exciting, and sustainable scuba dive experience for divers, snorkelers and free divers with varying interests and levels of experience.
- A safe dive wreck for divers, snorkelers, and free divers for Sydney
- Access for non-divers and divers to the Sydney dive wreck for commercial operators, non-commercial interests, educational establishments, researchers, and the public—both on- and off-site.
- An artificial reef linked to a natural reef that provides habitat and protection for a range of species naturally occurring within the dive site. And creating additional recreational and commercial fishing opportunities.
- A land-based monument to respect the history and heritage of the RAN ships and all who serve and have served in them.
- Enhanced tourism and increased revenue and employment opportunities for the citizens of NSW
- National and international recognition for the site as a demonstration of the productive and sustainable use of an ex-Navy ship—both as a dive site, with a fishing closure and as an O.A.R with no fishing closure that will contribute to marine environmental awareness. Also, creating additional recreational and commercial fishing opportunities by linking the dive site via an O.A.R to Wedding Cake Island.

There will be no dive wreck without this proposal; hence, there is no case for ‘no change’ or ‘business as usual’.

3.3 The preferred solution

In summary, the proposed dive wreck would:

- function as a new habitat for a multitude of fish and invertebrate species
- create effective marine habitats on what is otherwise a soft-bottomed, featureless environment
(Appendix 5)
- alter the connectivity patterns between natural reefs in a positive way creating additional recreational and commercial fishing opportunities.
- provide corridors so smaller fish can safely move from one reef to another.

Section 2.2 of this document: Rationale for investment provides further detail in support of this point.

3.3.1 Alternative options

Option 1: Do nothing

- With considerable public support (13,900+ signatures, 3500+ online petitions 1700+ likes on Facebook) the option to ‘do nothing’ is not an attractive one, as the community has shown it wants the project to proceed.
- Allowing an ex-Navy ship to be allocated to another state would mean a complete loss of the amenity for NSW.

Option 2: Do the minimum.

The minimum action in this case would be to allocate funds for a dive site assessment and EIS.

Option 3: Do later

This is a possible scenario, given the ongoing status of decommissioning RAN vessels.

3.4 Information about this proposal

The NSW Government has previously delivered a very similar project—the preparation, scuttling and ongoing management of the ex-HMAS *Adelaide* near Avoca Beach on the NSW Central Coast.

We recommend that the scope of works used for the management of that project during delivery and operations should be replicated for the Sydney Dive Wreck project, with the following modifications:

- Adjustments to the works model that may have been recommended from any project reviews conducted on the ex-HMAS *Adelaide* project.
- Adjustments to the scope of works model to include an interface with the Sydney Dive Wreck Organising Committee (SDWOC), which will be available in an advisory/consulting capacity for matters specific to the Sydney region.
- Inclusion of the NSW MP for Coogee on the Steering Committee
- Consideration given to the installation of web cameras on the Sydney Dive Wreck, and the creation of a marine display in the Coogee locality and the Australian National Maritime Museum.

- Consideration given to the creation of a land-based memorial in Coogee for people who have served on RAN ships.

(Refer to **Appendix 7**, which outlines some of the scope of works detailed for the ex-HMAS *Adelaide*).

3.4.1 Proposal exclusions

There are no specific exclusions in this proposal.

3.4.2 Related projects

As outlined above, the project to scuttle the ex-HMAS *Adelaide* as a dive wreck by the NSW Government off Avoca Beach in 2011 is a very similar project.

3.5 Projected costs

We recommend that the capital costs incurred for the management of the ex-HMAS *Adelaide* project during delivery and operations should be replicated for the Sydney Dive Wreck project, with the following modifications:

- Adjustments to the capital costs that may have been recommended from any project reviews conducted on the ex-HMAS *Adelaide* project.
- Adjustments to the capital costs to include an interface to the SDWOC, which will be available in an advisory/consulting capacity for matters specific to the Sydney region.
- Inclusion of the NSW MP for Coogee on the Steering Committee
- Quotations have been requested from potential firms.

We also recommend that the ongoing costs incurred for the management of the ex-HMAS *Adelaide* project, post-sinking, be replicated for the Sydney Dive Wreck project, with the following modifications:

- Adjustments to the ongoing costs that may have been recommended from any project reviews conducted on the ex-HMAS *Adelaide* project.
- Adjustments to the ongoing costs to include an interface to the SDWOC, which will be available in an advisory/consulting capacity for matters specific to the Sydney region.
- Annual maintenance costs for buoys and signage at the dive site are not expected to be significant, perhaps near \$1,500.00 per annum (Communications, Maura Bedloe, 2016).

It is expected that revenue collected from dive permits will easily cover ongoing maintenance costs.

3.6 Cost benefit analysis

This proposal forecasts revenue over five years of between \$12.4m (low) and \$48.6m (high) at a one-off cost of between \$6m and \$10m—a cost benefit ratio of between 2.1 and 4.8 (**Appendix 1**).

3.7 Financial appraisal

We would recommend that the financial appraisal used for the ex-HMAS *Adelaide* project during delivery and operations should be replicated for the Sydney Dive Wreck project, with the following modifications:

- Adjustments to the financial appraisal that may have been recommended from any project reviews conducted on the ex-HMAS *Adelaide* project.
- Adjustments to the financial appraisal to include an interface with the SDWOC, which will be available in an advisory/consulting capacity for matters specific to the Sydney region.
- Inclusion of the NSW MP for Coogee on the Steering Committee

This proposal overcomes the costly exercise of disposing of an obsolete navy ship. Other options for the disposal of decommissioned navy ships could include target practice for the Defence Forces, scrapping for metal, maritime museum pieces and backpacker accommodation (Defence, 2013). The value achieved by these one-off options does not compare with the lifelong revenue generated when an ex-navy vessel is sunk as a dive wreck. The creation of an O.A.R linking the dive site with Wedding Cake Island will enhance recreational and fishing opportunities.

3.8 Proposed funding arrangements

Table 3.8: Proposed capital funding contributions (\$000s)

STAGE	2024	2025	2026	2027	2028	Remainin g	TOTAL
Capital costs							
Funding sources							
NSW Gov	\$10m						
Industry contributions	\$0						
Community contributions	3000+ hours						
Other	\$0						
SUB-TOTAL	\$10m						

3.9 Financial health and support

There is no financial support for this project from non-government parties. The project is based entirely on funding from the NSW Government.

4. Implementation case

4.1 Program and milestones

We recommend that the program and milestones that were used for the management of the ex-HMAS *Adelaide* project during delivery and operations should be replicated on the Sydney Dive Wreck project, with the following modifications:

Adjustments to the program and milestones that may have been recommended from any project reviews conducted on the ex-HMAS *Adelaide* project.

4.2 Governance

We recommend that the governance plan incurred for the management of the ex-HMAS *Adelaide* project during delivery and operations should be replicated for the Sydney Dive Wreck project, with the following modifications:

- Adjustments to the governance that may have been recommended from any project reviews conducted on the ex-HMAS *Adelaide* project.
- Adjustments to the governance to include an interface to the SDWOC, which will be available in an advisory/consulting capacity for matters specific to the Sydney region.
- Inclusion of the NSW MP for Coogee on the Steering Committee.

Some specific points relating to the key personnel and organisational responsibilities, which we expect to be included in the governance model, include:

- Key sponsor/decision maker: Minister for Planning
- Steering Committee Chair: Minister for Planning
- Steering Committee Members:
 - Departmental Head of NSW Planning
 - Representative from the NSW Department of the Environment
 - Representative from the NSW Department of Tourism
 - Project Manager appointed by Department of Planning.

- Project Management Office representative
- MP for Coogee
- Representative(s) from Sydney Dive Wreck Organizing Committee
- Representative from National Parks NSW
- Representative from key subcontractor responsible for scuttling preparation (by invitation)

We can provide additional details on any of these areas if required however, as has been previously stated, as the NSW Government has already delivered a very similar project to this proposed project, we expect the governance model to be well established and understood.

4.3 Key risks

We recommend that any key risks that were identified in the management of the ex-HMAS *Adelaide* project during delivery and operations should be replicated on the Sydney Dive Wreck project, with the following modifications:

- Adjustments to any key risks that may have been recommended from any project reviews conducted on the ex-HMAS *Adelaide* project.
- Adjustments to any key risks to include an interface to the SDWOC, which will be available to act in an advisory/consulting capacity for matters specific to the Sydney region.
- Inclusion of the NSW MP for Coogee on the Steering Committee

The NSW Government commissioned Nation Partners (Wedgwood & Speechley, 2016) to conduct a risk assessment of the ex-HMAS *Sydney* and ex-HMAS *Tobruk* as dive wrecks. It is not clear if this document can be made public, but it has been provided to the GBSDC by Crown Lands (with the legal risks redacted).

The key risks of this proposed project were responded to at a meeting between the Minister for Primary Industry, Niall Blair, and representatives of the GBSDC. The meeting, which was arranged by the Member for Coogee Mr. Bruce Notley-Smith, was held at Parliament House on 16th November 2016.

The risk-related issues raised by the Department of Primary Industries (DPI) at this meeting (in italics) and the response provided by the GBSDC are summarised below:

4.3.1 Service delivery

No detailed planning has been undertaken, and significant uncertainty exists across the project lifecycle. Based on the experience with the Ex-HMAS Adelaide and other dive wrecks, the market for this technically demanding sport is small and largely confined to Sydney.

The minimum qualification for diving on the ex-HMAS *Adelaide* is Advanced Open Water scuba certification. In PADI diver education terms, technical diving involves at least one of the following conditions:

- Diving beyond a depth of 40 meters
- Required stage decompression.
- Diving in an overhead environment beyond 40 linear meters
- Accelerated decompression and/or the use of variable gas mixtures during the dive.

None of these conditions applies to our proposal and, accordingly, it is not correct to say that diving on the proposed Sydney wreck site would be ‘technically demanding’. In fact, the dive wreck is targeted at the recreational dive, free diving and snorkeling market—which had more than 2187m participants in 2015-2019 (**Appendix 6**). The creation of an O.A.R linking the dive site with Wedding Cake Island will enhance recreational and fishing opportunities.

To date, international and interstate dive tourism has been negligible on the Central Coast. When the ex-HMAS *Adelaide* was sunk there was not even a reference to scuba diving on Destination NSW’s website.

The market for diving on ex-Navy ships is significant. Worldwide, more than 1,900 vessels have been sunk as artificial reefs. We see a significant difference between attracting interstate and international divers to a location such as Avoca Beach for the ex-HMAS *Adelaide*, and a dive wreck in Sydney waters.

Using a travel cost model, Morgan *et al.* indicate an annual use value of \$A1735 per diver on specific dive trips to the ex-USS *Oriskany*—a dive wreck located in Florida, USA. However, if a second dive wreck was to be introduced to the region, the authors of this study estimate an increase in diver spend to \$A3,700 (Morgan *et al.*, 2009). This is an overall increase in revenue of 114% so the addition of a new dive wreck is only positive for revenue.

The Sydney tourist market is 24 times as large as the Central Coast market. Sydney is a major tourist hub, which attracted more than 31.5 million overnight visitors in 2015. Of these, 2.9 million were international. This compares to only 1.3 million overnights to the Central Coast for the same period, with just 41,000 of

those being international. Growth figures from Destination NSW (DNSW) confirm this difference, with Sydney recording over 9% annual growth in visitor expenditure. DNSW has also identified a significant Chinese market. 536,000 Chinese travelers visited NSW in 2015, and one in ten visitors from China went scuba diving during their trip to Australia (UTS: ACIR).

4.3.2 Health and safety

The depth of the water at Coogee may pose increased risk to the safety of divers at the proposed wreck site. The site selection and business case prepared by the proponent of the Coogee proposal is not adequate to substantiate the proposal for a project with an order of cost of some \$10m to Treasury.

The nominated site is only a suggested location for the Sydney Dive Wreck. The location proposed is a perfect site for a dive wreck for scuba divers. However, for a project that would attract significant public scrutiny, the location will need to be subject to a full and comprehensive analysis, like that produced by Worley Parsons (2009) for the ex-HMAS *Adelaide*.

We have prepared this business case based on a range of information—using a top-down approach, whereby we have extrapolated data from research studies based on typical revenue generated from dive wrecks worldwide, and from a bottom-up approach, based on statistics from the local Sydney dive industry.

We would also appreciate detailed information on how you arrived at the estimate of \$10m.

In our proposal, we quote a cost range of \$6m to \$10m—with the latter figure provided by the Minister for Defence in 2013.

The minimum figure of \$6m is based on our research. We have been quoted \$4.5m for ship preparation, \$1m for the O.A.R linking with Wedding Cake Island, and an estimate of \$0.5m to meet legal and regulatory requirements.

The approximate cost of converting the ship to scrap is around \$2m (BirdonGroup, 2019) with no possibility of earning any revenue. For an additional expenditure of \$4m, the state can acquire a dive wreck that has the potential to endure as a useable dive attraction for over 100 years. And an O.A.R to enhance fishing.

The question ignores the environmental, research and recreational values outlined in our proposal and ignores our suggestion to install on-site cameras to relay images of the wreck to non-diving community members, schools, and educational institutions. The proposed development of an artificial reef between Wedding Cake Island and the dive wreck will further enhance diving and fishing opportunities. More importantly, as it will be located outside the fishing closure of the dive wreck, this artificial reef will provide

recreational and commercial fishing opportunities similar to the O.A.R program in the NSW Government's O.A.R program (DPI, 2019). Research could also be done on the potential of the dive wreck to reinvigorate the Sydney rock lobster fishery.

4.3.3 Location

The location for the site is ill defined but appears to be deeper than the Ex-HMAS Adelaide site, which has recorded one fatality.

The nominated site is only a suggested location for the Sydney Dive Wreck. This site has been suggested because it is outside anchoring and telecommunication restrictions and has the perfect sandy sea floor for a dive wreck. It meets the criteria required for scuttling an ex-Navy ship but is subject to an EIS prior to final site and depth selection. We are interested in any other factors related to the nominated site that we should address prior to the EIS. We would also be prepared to support other nearby sites off the Sydney coast, if our nominated site is not satisfactory.

The depth at the proposed site is 35 m—marginally deeper than the ex-HMAS Adelaide at 33 m. We would accommodate a shallower depth for the dive wreck if that was recommended following the EIS. We are unable to comment on the fatality at the ex-HMAS Adelaide dive site, other than to refer to press reports that the diver suffered a cardiac arrest, which may or may not have been related to the dive.

4.3.4 Legal and regulatory

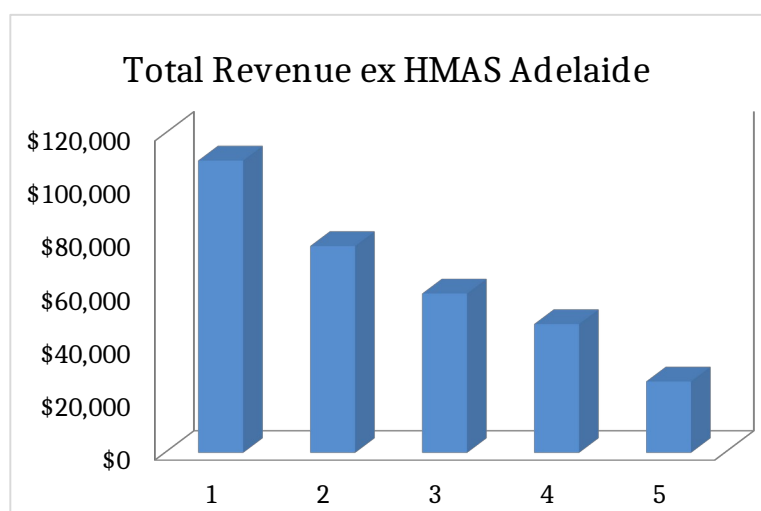
Onerous project regulation and no guarantee of approvals being granted. The deed burdens the NSW Government with all the contractual risk. There are several regulatory requirements that need to be met, including: obtaining a Commonwealth Sea Dumping permit, preparation of an Environmental Assessment Development Approval under NSW planning legislation. Experience, and the advice given at the compulsory briefing when the offer to treat was made for ships, suggests that the assessment instrument would need to be through an Environmental Impact Statement (EIS).

We fully expect that all the processes will be adequately addressed by the relevant areas, and do not see why this is a reason not to proceed to DoD EOI process.

4.3.5 Financial

Significant financial risk due to lack of formal business case. The project may not be financially viable.

Given the decline in numbers at the Ex-HMAS Adelaide dive wreck over time, development of a second dive wreck attraction is likely to fragment the limited market and impact on the viability of the existing Adelaide reserve. This would increase the cost burden on the NSW Government and impact on the businesses that depend upon the Adelaide reserve.



In addressing this question, we refer to previously quoted overseas research regarding the revenue generated by the ex-USS *Oriskany* dive wreck in Florida, USA:

Using a travel cost model, Morgan *et al.* indicate an annual use value of \$A1735 per diver on specific dive trips to the ex-USS *Oriskany*. However, if a second dive wreck was to be introduced, diver spend was estimated to increase to \$A3,700 per diver (Morgan *et al.*, 2009).

There are several reasons for the decline in revenue from the ex-HMAS *Adelaide*, including the lack of promotion of the dive site. The DNSW website did not mention scuba diving on the ex-HMAS *Adelaide*, listing only beaches, markets, surfing, and fishing as things to do at Avoca Beach. Additionally, the Sydney tourist market is 24 times as large as the Central Coast market and so potential visitation to the Sydney Dive Wreck site can be assumed larger than that for the ex-HMAS *Adelaide*.

The decline is also related to the ocean conditions for dive boats exiting the sand bar at Tuggerah Lakes and Brisbane Waters, resulting in only a 50% chance of diving. The deeper entrances to Sydney Harbour and Botany Bay provide an 80% chance of diving.

4.3.5 Financial (continued)

Pro Diving (deGroot, 2016) states that, based on their records dating back to October 2000, they have been able to conduct scuba diving outside Sydney Heads 80% of the time. This is due to two factors:

- Port Jackson Sydney Heads offers a deep-water exit and entry, which enables safe movement in and out of the Heads for dive boats in all but very rough to extreme sea conditions.
- The water off Sydney—both north and south—is quite deep, which creates far fewer issues with cresting swells and confused sea conditions out at sea. Only three areas along the NSW coast offer these conditions—Port Jackson, Botany Bay, and Jervis Bay. The rest of the coastline has shallow exit and entry points and relatively shallow water close to these exit/entry points.

The suggestion (Moltschaniwskyj, 2019) that a Sydney Dive Wreck would be subject to the same oceanic conditions leading to the 50% cancellation rate on the ex-HMAS *Adelaide* is contradicted by this industry statement.

Other factors are expected to contribute to more consistent visitation to the Sydney Dive Wreck site. The site offers other, diving options in the immediate vicinity, including grey nurse sharks at Magic Point, Wedding Cake Island, and Shark Point at Clovelly. A full list of adjacent dive sites is listed in the book *The Dive Spots of NSW* (Boshoff, 2022). Additionally, the Sydney site will be a short trip from many Sydney hotels and other accommodation, making it easier to access the ex-HMAS *Adelaide*, which is over two hours' drive from Sydney to Terrigal. The limited additional attractions in that area have also been a detractor for interstate and international visitors to the ex-HMAS *Adelaide*. Sydney, obviously, would not suffer from the same difficulty.

Adam Crouch, the MP for Terrigal, fully supports the Coogee proposal. In fact, an additional dive wreck in Sydney would assist the flagging revenue on the ex-HMAS *Adelaide*, with dive stores now able to promote two dive wreck destinations—a factor that has been shown to increase diver spend. This fact has been established and referred to earlier in the research by Morgan *et al.* regarding the ex-USS *Oriskany*.

Promotion of the Sydney Dive Wreck to potential visitors is expected to be strong. The SDWOC includes a former member from Randwick City Tourism who has already provided promotional support for our campaign and will continue to do so and the GBSDC Secretary has also been a member of the Tourism Committee.

4.3.6 Administrative Appeals Tribunal

The Commonwealth's experience with the preparation of the ex-HMAS Adelaide and the additional preparation cost because of the Administrative Appeals Tribunal (AAT) decision has made them highly risk averse. It is expected that any exposure to litigation would be borne completely by the state.

The AAT process for the ex-HMAS Adelaide may have led to some risk aversion in areas of the Government, but it has positive consequence for the Sydney Dive Wreck and future dive wreck proposals.

The No Ship Action Group (NSAG) in the AAT (149/2010.) before the hearing withdrew eleven environmental objections. The NSAG legal action led to the additional preparation costs estimated at \$2.6m. The AAT hearing was granted on the basis that the Minister had approved a sinking date before the sea-dumping permit was approved, not on environmental grounds. This additional level of preparation for a dive wreck is now well understood and has been included in indicative costing from organisations that may be engaged to perform the preparation for a vessel to be scuttled in Sydney waters. It is unlikely that any AAT challenge would be made for the Sydney Dive Wreck, given that all concerns raised relating to the ex-HMAS Adelaide would be factored into the proposal for the Sydney Dive Wreck. If an AAT challenge is raised, then it would be unlikely to be upheld given the 'precedent' of the ex-HMAS Adelaide decision. Such a legal challenge, after the AAT decision on the ex-HMAS Adelaide, may well be considered vexatious.

4.3.7 Stakeholders

Insufficient community engagement has been undertaken. The potential for the presence of a range of hazardous substances and experience with the ex-HMAS Adelaide project, means that significant local and more widespread opposition to the project would be likely.

A thorough community engagement process has been undertaken for this project **(see Section 2.5 Stakeholder and community support)**

While a range of potentially hazardous substances are present on all ex-Navy ships prior to disposal, all such hazards are removed prior to sinking. It is disingenuous to say that there are hazardous substances present, and therefore they will remain on the ship. The ex-HMAS Adelaide set the benchmark for how to prepare a ship as a dive wreck **(Appendix 7)**. In addition, the quarterly Cardno Ecology Lab reports on the Adelaide prove that there are no adverse reactions within the environment from the Adelaide **(Appendix 7(b))**.

Other perceived risks follow:

4.3.8 Dive wreck moving to shore.

Concerns have been expressed about the potential for ocean or weather events to cause the wreck to be displaced and move on to the shore at Coogee (Notley-Smith, 2013). For example, 120,000 years ago off the coast of Tonga, waves estimated to be 19-44 m in height deposited seven boulders on shore, each weighing between 70 and 1,600 tonnes (Frohlich et al., 2009). This is an unlikely scenario, given the expected wave climate off Coogee and the fact that the dive wreck is three times the weight of the Tongan boulders.

Additionally, initial research and informal consultation with environmental engineers makes this concern a most unlikely scenario. Calculations have been done for the ex-HMAS *Adelaide* (Worley Parsons 2009), a ship of some 3,800 tonnes. Worley Parsons estimates a slip of two meters for the ex-HMAS *Adelaide*, given a maximum wave height at Avoca Beach of 15.6m in 100 years. Prevailing wave conditions off Coogee are similar to Avoca (Short & Woodroffe, 2009) and fall generally in the 2-3 m wave height. Waves much higher than that are a rarity (Scheffers & Kelletat, 2003). Post storm surveys are conducted on the ex-HMAS *Adelaide* when wave heights exceed 5 meters. McLennans Diving Services concluded in its most recent report that the dive wreck is structurally sound (McLennan, 2022).

So, the hypothesis at this stage is that the prospect of the dive wreck ending up on the Coogee shore is most unlikely. If we should have prevailing oceanic conditions capable of moving a 4,000-tonne dive wreck located four kilometers offshore, sunk at a depth of 35 m and emplaced in seven meters of sand, then ship movement would be the least of any problems being experienced on shore.

However, consideration and close attention will need to be given to the assumptions made here with respect to the interaction of the wave climate with the ex-HMAS *Adelaide*, and these would need to be re-evaluated with respect to the proposed site at Coogee. As well as this, any changes to the wave climate at the proposed location compared to the site at Avoca, and any changes to the orientation and depth of the scuttled ship at this location would also need to be considered. It is likely that calculations will show similar results to those for the ex-HMAS *Adelaide* and that the stated hypothesis would be correct. However, for a project that will come under significant public scrutiny, these calculations and a comprehensive analysis of the site proposal would be required (Rowe, 2015), similar to that produced by Worley Parsons for the ex-HMAS *Adelaide*.

4.3.9 Heavy metals risk

Potential harmful effects of the dive wreck from lead-based paint and the copper-based anti-fouling system.

As a condition of scuttling, heavy metals monitoring is required for the ex-HMAS *Adelaide*. A site comparison survey for metal contamination was completed by Worley Parsons pre- and post-scuttling (Worley & Parsons, 2011). This survey showed sediment values are all below ANZECC/ARMCANZ national guidelines (ANZECC, 2000) so there is a very low risk of any adverse environmental effects. In addition, Cardno Ecology Lab conducted a study 21 months after the Worley Parsons survey and concluded that the impact to the marine environment and associated benthic biota as a result of metal corrosion and/or degradation of paint layers from the ex-HMAS *Adelaide* is considered unlikely (CardnoEcology, 2012).

Funds should be allocated for ongoing monitoring of the proposed wreck (Suthers 2015), although these would not be expected at the frequency and cost for the ex-HMAS *Adelaide*, resulting from the Administrative Appeals Tribunal (AAT) order. The fact remains that the *Adelaide* was ready to be sunk in an environmentally sensitive way (Worley & Parsons, 2009). The No Ship Action Group (NSAG) obtained a hearing before the AAT, based on the fact that Minister Peter Garrett had signed off on a sinking date before he had signed off on the Sea Dumping Permit for the dive wreck, not on the basis of the NSAG arguments that the process was environmentally unsustainable (AAT, 2010).

4.3.10 'Junk dumping exercise' – community concerns.

Table 1 summarises other impacts of the dive wreck. Community concerns, such as the proposal being a 'junk dumping exercise' (as suggested by *The Beast* (Rowe, 2013) article arose from a lack of accurate information about the proposal. Following the publication of this article, five positive responses were received from readers, and no negative comments were received.

The perception is that a grubby metal navy ship should not taint the sea. This view was evident in the NSAG opposition to the sinking of the ex-HMAS *Adelaide* off Avoca Beach. However, the NSAG's appeal before the AAT (149/2010.) has been best summarised by Cole & Abbs, as follows:

See also: Section 2.2.1 Environmental rationale, and Appendix 7(b).

‘NSAG originally had a long list of concerns, principally claiming that the marine environment would be polluted by the scuttling of ex-HMAS *Adelaide* due to leaching into the marine environment of polychlorinated biphenyls (PCBs) and heavy metals. Their Amended Statement of Issues in April 2010 raised ten issues for the Tribunal to review, but on the second day of the hearings in July, NSAG abandoned all but four items, dropping their claims regarding PCBs and most of the heavy metals. The case proceeded principally upon their concerns relating to potential harmful effects from lead-based paint and the copper-based anti-fouling system. NSAG also argued that the proposal was contrary to the international convention known as the London Protocol, arguing that the ship should be recycled for scrap metal.

The Tribunal heard evidence from several experts on these issues—Australian and American specialists in vessel preparation, environmental monitoring, and risk assessment. Evidence was also presented on environmental monitoring from other vessels placed as artificial reefs in Australian and American waters.

The NSW Government presented expert evidence that the risks of harm to the environment from PCBs, copper and lead were low or negligible. The type of lead present—lead tetroxide—is particularly inert and insoluble. The State contended that the proposed scuttling was consistent with the London Protocol as it entailed the deliberate placement of the ship for creating an artificial reef that will attract marine life, and hence was a form of reuse.

The Administrative Appeals Tribunal handed down its decision on 15 September 2010, allowing the scuttling of the ex-HMAS *Adelaide* to proceed with some extra conditions relating to the preparation of the ship and environmental monitoring. By this time, the project was delayed six months at a cost of \$1m. The Tribunal concluded that: “...all the information available to us points to a conclusion that there is no risk of harm to human health or the environment’ and “the level of pollutants now aboard the ship is low, and those that remain are either in very low quantities or inert and unlikely to cause any environmental problem”.

The Tribunal also concluded that the purpose of the scuttling—to create an artificial reef—is recognised by the Environment Protection (Sea Dumping) Act as a proper purpose and that “...there are benefits to the environment from the resulting marine habitats generated, as well as more general benefits to the community”. The parties had 28 days to appeal the Tribunal’s decision in the Federal Court, but neither party appealed.’ (Cole & Abbs, 2011).

4.4 Legislative regulatory issues and approvals

We would recommend that the legislative regulatory issues and approvals incurred for the management of the ex-HMAS *Adelaide* replicated on the Sydney Dive Wreck project, with the following modifications:

- Adjustments to the governance that may have been recommended from any project reviews conducted on the ex-HMAS *Adelaide* project
- Adjustments to the governance to include an interface to the SDWOC, which will be available in an advisory/consulting capacity for matters specific to the Sydney region.
- Inclusion of the NSW MP for Coogee on the Steering Committee

Table 4.4.1 Legislative Regulatory Issues and Approvals

Impact	Rating	Governance and comment
Ship	High	Departments of Planning, Primary Industries, Environment, Climate Change Workcover Destination NSW Randwick City Council Other bidders for the ship
Site selection aesthetics and approval	High	Junk your old boats at our beach? Artificial Reef Permit from DEHWA ¹ under the EP (Sea Dumping) Act 1981 ² . 30 m – 35 m depth EP&A Act Part 5 ³ , NSW CPA 1979 ⁴ , SEPP No71 ⁵ Coastal Protection
Commercial fishing	High	Fishing closure: potential contested resource NSW Fisheries Management Act 1994 ⁶ O.A.R link will enhance fishing.
Recreational fishing	High	Fishing closure: potential contested resource NSW Fisheries Management Act 1994 O.A.R link will enhance fishing.
Diving, snorkeling, spearfishing	Low	Complements existing dive sites, spear fishing closure contested resource SW Fisheries Management Act 1994
Sailing and boating	Medium	Contested resource ocean racing and wreck mooring
Marine Protected Areas	Low	The site borders the existing Bronte to Coogee Marine Protected Area NSW Environment Protection and Biodiversity Conservation Act (EPBC) 1999 NSW Threatened Species (TSC) Conservation Act NSW Fisheries Management Act 1994 The proposal meets all the objectives of Marine Estate Management Act 2014 No 72 (Appendix 10)
Historical shipwrecks	Low	No historical wrecks Commonwealth Historic Ship Wrecks Act (1976) NSW Heritage Act (1997)
Mineral and petroleum	Moderate	Previous proposals to sand mine offshore have been rejected
Telecommunication Cables	High	The site is outside the one nautical mile exclusion zone restriction Approval has been given from REACH Submarine cable protection
Anchoring restrictions	High	The site is outside anchoring restrictions NSW Maritime and Sydney Ports Corporation
Native title	Low	Commonwealth Native Title Act 1993

(1) Commonwealth Department of the Environment, Water, Heritage, and the Arts (2) Commonwealth Environment Protection (Sea Dumping) Act 1981 (3) NSW Environmental Planning and Protection Act (1979) Part 5.(4) NSW Coastal Protection Act 1979 (5) State Environmental Planning Policy No71 Coastal Protection (6) NSW Fisheries Management Act 1994

4.5 Proposed management activities

4.5.1 Risk management and operations

We would recommend that the risk management plan incurred on the management of the ex-HMAS *Adelaide* project during delivery and operations be replicated on the Sydney Dive Wreck project, with the following modifications:

- Adjustments to the risk management plan that may have been recommended from any project reviews conducted on the ex-HMAS *Adelaide* project
- Adjustments to the risk management to include an interface with the SDWOC, which will be available in an advisory/consulting for matters specific to the Sydney region.
- Inclusion of the NSW MP for Coogee on the Steering Committee.

4.5.2 Asset management and operations

We would recommend that the asset management and operations plan incurred on the management of the ex-HMAS *Adelaide* project during delivery and operations be replicated on the Sydney Dive Wreck project, with the following modifications:

- Adjustments to the asset management and operations that may have been recommended from any project reviews conducted on the ex-HMAS *Adelaide* project.
- Adjustments to the governance to include an interface with the SDWOC, which will be available in an advisory/consulting for matters specific to the Sydney region. Inclusion of the NSW MP for Coogee on the Steering Committee.

5. Conclusion

The former MP for Coogee, Bruce Notley-Smith, arranged a meeting at Parliament House on 16 November 2016 with the Minister for Primary Industry, Niall Blair. This followed a risk assessment (4.3) by the Department of Industry Lands on the dive wreck proposal. The consultants did not consider our proposal in their risk assessment. Questions raised by the Department of Primary Industries (DPI) as to why the department was not going to submit an expression of interest for the ex-HMAS *Sydney* (IV) was tabled and answered by the proposers (4.3). The Minister requested that the dive wreck proposal be considered in the context of a Sydney Marine Park and the Marine Estate. Consequently, an earlier proposal was tabled with the Marine Estate Management Authority (MEMA) on 31 March 2017 ((MEMA, 2017) Community and Stakeholder Engagement Report 2017). The GBSDC asserts that the November proposal is fully aligned with the objectives of the Marine Estate Management Act 2014 No 72 (Appendix 9). The November proposal was submitted to MEMA on 8 December 2017. On the 17th of September 2018, officers from the Department of Environment and Heritage responded that the dive wreck proposal was not considered in the MEMA assessment, despite the request by Minister Blair for it to be considered in the context of the Sydney Marine Park proposal. Coogee is a perfect site for a dive wreck for scuba divers.

However, for a project that would attract significant public scrutiny, this proposal will need to be subject to a full and comprehensive analysis, like that produced by Worley Parsons (2009) for the ex-HMAS *Adelaide*.

The ex-HMAS *Adelaide* has set the gold standard for how to prepare, scuttle, and monitor a dive wreck. The proposed linking O.A.R to Wedding Cake Island in the NSW Government's artificial reef program (DPI, 2019) will enhance both recreational and commercial fishing. This proposal demonstrates that there is categorically no scientific basis for any objection to the proposal for a dive wreck or linked O.A.R in Sydney waters on environmental grounds. This proposal is undeniably positive for the marine environment, divers, fishers, tourism, and the economy overall.

6. Appendices

Appendix 1: Five-year revenue, costs, and surplus

REVENUE HIGH EST.	Year 1	Year 2	Year 3	Year 4	Year 5	Total
No of divers	0	16,000	15,200	14,400	13,600	59,200
Dive revenue (\$K)	0	\$3,840	\$3,648	\$3,456	\$3,264	\$14,208
Tourism revenue* (\$K)	0	\$6,962	\$6,614	\$6,266	\$5,918	\$25,762
Total revenue (\$K)	0	\$10,802	\$10,262	\$9,722	\$9,182	\$39,970
REVENUE LOW EST.	Year 1	Year 2	Year 3	Year 4	Year 5	Total
No of divers	0	8,000	6,800	5,600	5,200	25,600
Dive revenue (\$K)	0	\$1,920	\$1,632	\$1,344	\$1,248	\$6,144
Tourism revenue* (\$K)	0	\$1,526	\$1,297	\$1,068	\$992	\$4,885
Total revenue (\$K)	0	\$3,446	\$2,929	\$2,412	\$2,240	\$11,029

*Includes meals, accommodation, transport, car hire, fuel, incidentals.

Five-year costs:

COST HIGH EST.	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Scuttling costs (\$K)	\$10,000					\$10,000
Maintenance costs (\$K)		\$15	\$15	\$15	\$15	\$60
Total cost (\$K)	\$10,000	\$15	\$15	\$15	\$15	\$10,060
COST LOW EST.	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Scuttling costs (\$K)	\$6,000					\$6,000
Maintenance costs (\$K)		\$15	\$15	\$15	\$15	\$60
Total cost (\$K)	\$6,000	\$15	\$15	\$15	\$15	\$6,060

Five-year surplus:

High revenue, low cost	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Surplus (\$K)	-\$6,000	\$10,787	\$10,247	\$9,707	\$9,167	\$33,910
Low revenue, high cost)	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Surplus (\$K)	-\$10,000	\$3,431	\$2,914	\$2,397	\$2,225	\$969

Rather than providing a single specific revenue and cost figure, a range has been provided for each of these cost and revenue elements.

The following factors and planning assumptions have been used to prepare the revenue, cost and surplus tables above.

Revenue:

The main factors influencing the revenue to the NSW government from Sydney Dive Wreck will be the following:

- Number of divers attending the wreck
- The geographic origin of divers (i.e. Sydney, interstate, international). Divers from interstate and international origin bring tourism revenue.
- Spend per diver (diving-specific items and general tourism spend (included meals, accommodation, transport, car hire, fuel, incidentals)
- National Park fees
- The time taken to prepare the ship for diving—which determines when revenue commences

The following assumptions were used in preparation of these estimates:

- Number of divers (based on dive industry estimates) Refer to the number in Table above.
- Geographic origin (ranging from 44% Sydney divers to 75% Sydney divers)
- Dive industry spend (ranging from \$152–\$222 per diver, per day)
- Tourism spend (ranging from \$450–\$660 per diver, per day)
- National Park fee (\$20 per diver, per day)
- A ‘decline rate’ has been factored into the diver numbers (ranging from 5%–15% per year).

- It is assumed that the activities required to prepare the dive wreck for use—from gifting of the vessel to the NSW Government to scuttling and commencement of diving activities—will be completed in 12 months. Revenue will commence in Year 2.

Cost:

As stated in other sections of the document, the best way to calculate the cost of this project is to apply relevant aspects of the costs incurred for preparing the ex-HMAS Adelaide. However, we do not have access to this cost information. As a result, the cost estimates provided are based on a ‘low’ figure of \$6m (based on an informal quote from a contracting organisation that has provided similar services) to a high figure of \$10m (based on advice from a senior Naval official).

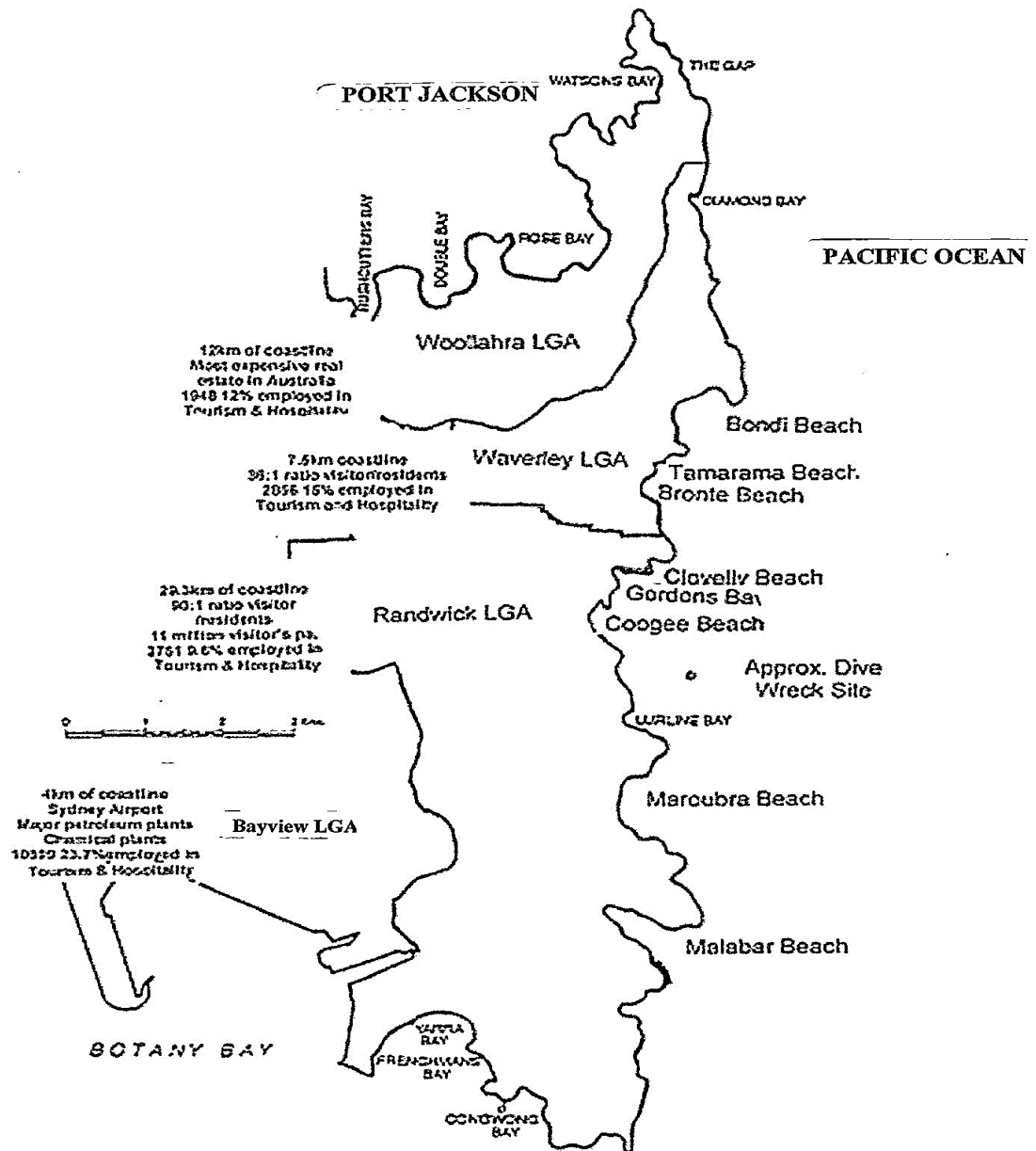
Surplus:

Two calculations have been used to calculate a range for the surplus. These are the ‘most favourable’ (highest revenue–lowest cost) and ‘least favorable (lowest revenue–highest cost).

The following references have been used to provide the data for the estimate of revenue, calculated from the best available information from the Australian dive industry and Australian and international studies:

(Adams et al., 2006; Anning, 2011; Beaver, 2015; Bell et al., 1998; Choi, Kelley, Murphy, & Thangamani, 2016; Clark, 2014; County, 2004; Ditton et al., 2002; Dowling & Nichol, 2001; Escobedo, 2007; Huth et al., 2015; Johns et al., 2001; Leeworthy, 2011b; Morgan et al., 2009; Oh et al., 2008; Paterson, 2016; Pendleton, 2004; Rhodes, Bell, & Pomeroy, 1994; Schaffer, 2011; Schaffer, Foster, & Lawley, 2008; Schaffer & Lawley, 2010; Shani et al., 2012; Tabata, 1992; Tapsuwan & Asafu-Adjaye, 2008; Wheaton et al., 2008; Wikipedia, 2016)

Appendix 2a: Local Government Areas (LGA) near proposed dive wreck



Appendix 2 (b) Total VISITORS (000) by LGA, NSW, Australia: pre-post COVID Y/E 2019 v 2021										
	International.		Domestic		Domestic		Total Domestic		Total Visitors	
Visitors (000)			Overnight		Day					
Covid	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
2 years ave.	2018-19	2020-21	2018-19	20-21	2018-19	20-21	2018-19	2020-21	2018-19	2020-21
Randwick	115	14	222	134	459	444	681	578	796	592
Woollahra	32	np	160	np	255	np	415	328	447	331
Waverley	108	12	168	np	440	np	607	279	715	291
Bayside	379	91	300	170	662	470	962	640	1341	731
Total LGA	622	np	848	np	1816	np	2665	1821	3286	1939
Sydney	2478	224	6428	2314	7072	3283	13500	5597	15978	5821
NSW	4377	476	36890	24400	68719	46995	105610	71394	109987	71870
Total Australia.	8616	965	111135	77294	226847	162330	337982	239624	346598	240500

<http://www.tra.gov.au/research/latest-nvs-report.html>

Appendix 2 (c) Total NIGHTS by LGA, NSW, Australia pre-post COVID Y/E 2019 v 2021

Nights (000)

	International		Domestic		Total Domestic		Total Nights		Total
			Day						
Covid	Pre	Post	Pre	Post	Pre	Post	Pre	Post	% -
2 years ave.	2018-19	2020-21	2018-19	2020-21	2018-19	2020-21	2018-19	2020-21	v 2021
Randwick	5236	749	680	484	680	484	5915	1233	380%
Woollahra	673	np	339	np	339	238	1012	291	247%
Waverley	3024	294	513	np	513	182	3536	475	644%
Bayside	4146	4106	678	376	678	376	4824	4482	8%
Total LGA	13079	np	2210	np	2210	1280	15288	6481	136%
Sydney	26104	3306	16623	6780	16623	6780	42726	10086	324%
NSW	96390	15678	115208	85064	115208	85064	211598	100742	110%
Total Australia	274135	42876	394717	298256	394717	298256	668852	341132	96%

<http://www.tra.gov.au/research/latest-nvs-report.html>

Appendix 3: Letters of support & engagement

Howard Robins	Artificial Reef Society of British Colombia			
Mike Kinley	Australian Maritime Safety Authority			
Mary- Louise Williams	Australian National Maritime Museum			
Tim Fischer	Australian Tourism Commissioner-call it Bonaparte's Reef			
Lorraine M Poulos	Bronte Summer Swim Club strongly supports			
Roy Gabriel	Canadian Artificial Reef Consultants (CARC)			
Karen Freyer	Independent candidate for Vacluse			
Ian Kiernan	Clean Up Australia-no response			
Will Martin	Commander ex-HMAS Darwin			
Bella Massey	Founder Immersia Free Diving Great idea fully support			
Julie Murley	Defence Disposals a response will be provided.			
John O'Loughlin	Defence Disposals- in the next ten years (none) would be suitable			
Geoff Plunkett	Department of Defence- Sea Dumping in Australia 2003			
Clover Moore	LGA Sydney Mayor Blackwattle Bay as a work site consideration			
John Jennings	LGA Geographe Bay Artificial Reef Society re ex-HMAS Swan			
Cardno	LGA Gold Coast City Council Sea Dumping Permit Application			
Gold Coast City	LGA Gold Coast Dive Precinct Business Management Plan			
Richard Nicholls	LGA Manly Council			
Danny Said	LGA Randwick City Council Mayor			
Tony Bowen	LGA Randwick City Council Councillor			
Murray Matson	LGA Randwick City Council Mayor			
Peter Moscat	LGA Waverley Council Mayor			
Paula Masselos	LGA Waverley Council Mayor			
Paul Fraser	LGA Woollahra Manager Open Spaces			
Geoff Rundle	LGA Woollahra Mayor			
Andrew Jones	Manly Hydraulics Laboratory			
Will Jones	Marine Discovery Centre Bondi Beach NSW			
Dan Duemmer	Maritime Authority (NSW)			
Niall Blair	MLC Minister for Lands and Water			
Robert Borsak	MLC			
Ben Franklin	MLC Minister for Aboriginal Affairs Arts Regional Youth Tourism			
Trevor Kahn (tk)	MLC tk DPI are not supportive as they were burnt by the Adelaide			
Mark Banasiak	MLC Ok as long as rec & commercial fishers not impacted			
Matthew Allen	MMA Offshore- Wonder Reef linked artificial reefs			
Roy Butler	MP for Barwon -Need funds for an EIS			
Paul Toole	MP for Bathurst Deputy Premier, Minister for Land Forestry Racing			
Bob Debus	MP for Blue Mountains Minister for the Environment			
Bruce Notley-Smith,	MP for Coogee			
Marjorie O'Neill	MP for Coogee			
Paul Pearce	MP for Coogee			
Dugaid Saunders	MP for Dubbo			
Melissa Price	MP for Durack			

Pru Goward	MP for Goulburn				
Matt. Thistlethwaite	MP for Kingsford-Smith- As Min. Vet. Affairs, Defence, the Republic				
Morris Iemma	MP for Lakemba- Premier of NSW NPA Dinner				
Jason Falinski	MP for Mackellar				
Michael Daley	MP for Maroubra				
Helen Dalton	MP for Murray				
Felicity Wilson	MP for North Shore-ref. to A. Marshall, S. Ayres, G. Upton				
Phil Donato	MP for Orange				
Andrew Stoner	MP for Oxley- Minister for Trade and Investment				
Stuart Ayres	MP for Penrith- Minister for Trade Tourism				
Sandra Nori	MP for Port Jackson- Minister for Tourism				
Steve Kamper	MP for Rockdale fully supports				
Christopher Hartcher	MP for Terrigal- Minister for the Central Coast				
Stephen Jones	MP for Throsby				
George Souris,	MP for Upper Hunter- NSW Minister for Tourism				
Gabrielle Upton	MP for Vacluse				
Peter Debnam	MP for Vacluse				
Malcolm Turnbull	MP for Wentworth				
Allegra Spender	MP for Wentworth				
Dave Sharma	MP for Wentworth				
Peter Garrett	MP Kingsford Smith				
Matt Thistlewaite	MP Kingsford Smith				
J Booth et al	NSW Department of Environment & Conservation NSW				
Liz Crosby	NSW Department of Industry				
Sam Hadad	NSW Department of Infrastructure Planning & Natural Resources				
Andrew Dooley	NSW Department of Lands				
Col Gellatly	NSW Department of Premier and Cabinet				
Darren Hale	NSW Department of Primary Industries				
Andrew Read	NSW Department of Primary Industries- Marine Parks				
Geoff Longhurst	NSW Department of Primary Industries-Conservation Manager				
Bill Talbot	NSW Department of Primary Industries-Fishery Ecosystems				
Bryan van der Walt	NSW Department of Primary Industries-Fisheries Enhancement				
Chris Weire	NSW Department of Primary Industries-Fisheries Enhancement				
Sarah Fairfull	NSW Department of Primary Industries-Marine Protected Areas				
John Diplock	NSW Department of Primary Industries-Recreational Fishing				
Tracey Macdonald	NSW Department of Primary Industries-Water Irrigation & Agriculture				
Heath Folpp	NSW Department of Primary Industry- Fisheries Enhancement Program				
David Nutley	NSW Heritage Office- No historic wrecks at site				
Sharam Saber et al	PADI Asia				
Mark Banasiak	Parliamentary Friends of Aquatic Recreation				
Roy Butler	Parliamentary Friends of Aquatic Recreation				
Marjorie O'Neill	Parliamentary Friends of Aquatic Recreation				
Adam Browning	Port Authority of NSW				
Robyn & Scot	Pro Dive Coogee				
Peter Gardiner	Pro Dive Sydney				
Eric Fielding-Smith	REACH Submarine Cable Protection-1 nautical mile exclusion zone				
Geoff Farr	REACH Submarine Cable Protection-1 nautical mile exclusion zone				

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John Sharp	Rex Air Deputy Chair			
Yves Moulard	Scubaroo- checked dive site at 33deg56'908"151deg16'755"			
David Johnston,	Sen. Minister for Defence			
Maryse Payne,	Sen. Minister for Defence			
Robert Hill	Sen .Minister for Defence			
Robert Hill	Sen .Minister for Defence			
Ian Campbell	Sen. Minister for the Environment & Heritage			
Alan Whitfield	Shire of Busselton, WA			
Geoff Cook	South Pacific Divers Club			
Peter Steinberg	Sydney Institute of Marine Sciences (SIMS)			
Iain Suthers	Sydney Institute of Marine Sciences (SIMS)			
Martina Doblin	Sydney Institute of Marine Sciences (SIMS)			
Pauline Ross	Sydney Institute of Marine Sciences (SIMS)			
Mark Scognamiglio	Sydney Institute of Marine Sciences (SIMS)			
Richard Bagnato	Sydney Ocean Trawl- dive site 33deg54' 151deg 16'54"no opposition			
Steven Lay	Telstra- sink site outside Southern Sydney Cable Protection Zone			
Margy Osmond	Tourism & Transport Forum- need to engage			
Lindsay Hermes	Tourism & Transport Forum- only support members			
Paul Sullivan	Wild Caught Coalition- OK	subject to a confirmed location		

Appendix 4: NSW Recreational dive centers—proximity to proposed Coogee site.

Recreational dive centers within 75 minutes' drive of proposed Coogee site:

1. Dive, Spear, Sport –1729 Pittwater Rd, Mona Vale NSW 2103
2. Dive Centre Bondi 198 Bondi Rd Bondi NSW 2026
3. Sydney Dive Charters New South Head Rose Bay NSW 2029
4. Pro Dive Manly – 9 Sydenham Rd, Brookvale NSW 2100
5. Dive Centre Manly – 10 Belgrave St, Manly NSW 2095
6. Southern Cross Divers – 235 Spit Rd, Mosman NSW 2088
7. Dive 2000 – 2 Military Rd, Neutral Bay NSW 2089
8. Frog Dive – Willoughby 539 Willoughby Rd, Willoughby NSW 2068
9. Pro Dive Alexandria GO2 184 Bourke Rd Alexandria NSW 2015
10. Adreno Online
11. Abyss Scuba Diving – 278 Rocky Point Rd, Ramsgate NSW 2217
12. Obsession Dive – Online
13. GEO Divers – 3 Horwood Pl, Parramatta NSW 2150
14. Pro Dive – 40 Kingsway, Cronulla NSW 2210
15. Sub Aquatics – 9 Newill St, Condell Park, 2200
16. Wilderness Sea and Ski – 137 George St, Liverpool NSW 2170
17. Windang Dive and Spearfishing – 324/328 Windang Rd, Windang NSW 2528
18. Shellharbour Scuba Centre – 41 Addison St, Shellharbour NSW 2529

Recreational dive centers within 120 minutes' drive of proposed Coogee site

1. Jervis Bay Sea Sports– 64 Owen St, Huskisson NSW 2540
2. Dive Imports Australia – 5/188 The Entrance Rd, Erina NSW 2250
3. Pro Dive Central Coast – 163 Wyong Rd, Killarney Vale NSW 2261

Recreational dive centers within 180 minutes' drive of proposed Coogee site:

1. Charlestown Diving Academy – 53a Ridley St, Charlestown NSW 2290
2. Feet First Dive 17/34 Stockton St, Nelson Bay NSW 2315
3. Let's Go Adventures Dive Nelson Bay 8 Teramby Rd, Nelson Bay NSW 2315

4. Dive Newcastle 2/2 Belmont St Swansea NSW 2281
5. Grey Nurse Charters 42 Chilcott St Lambton NSW 2299

Other recreational dive centers in NSW:

1. Dive Adventures Ulladulla – Kings Point Industrial Estate, 6 Aroo Rd, Ulladulla NSW 2539
2. South Coast Underwater Diving Academy –150 Princes Hwy, Ulladulla NSW 2539
3. Batemans Bay Dive Adventures – 6 Sharon Rd, Batemans Bay NSW 2536
4. Narooma Fishing and Dive Centre – 66 Princes Hwy, Narooma NSW 2546
5. Underwater Safaris – Centenary Dr, Narooma NSW 2546
6. Merimbula Divers Lodge – 1/15 Park St, Merimbula NSW 2548
7. Forster Dive Centre – 11-13 Little St, Forster NSW 2428
8. Dive Forster at Fisherman's Wharf – Cnr Memorial Drive & Little St, Forster 2428
9. Ricks Dive School – 19 Granite St, Port Macquarie NSW 2444
10. SCUBA Haven – 20 Merrigal Rd, Port Macquarie NSW 2444
11. Fish Rock Dive Centre – 134 Gregory St, South West Rocks NSW 2431
12. South West Rocks Dive Centre 5/98 Gregory St, South West Rocks NSW 2431
13. Jetty Dive Centre – 398 Harbour Dr, Coffs Harbour NSW 2450
14. Dive Quest – 30 Mullaway Dr, Mullaway NSW 2456
15. Byron Bay Dive Centre – 9 Marvell St, Byron Bay NSW 2481
16. Sundive Byron Bay – 11/8 Middleton St, Byron Bay NSW 2481
17. Blue Bay Divers – Brunswick Heads Boat Harbour, Old Pacific Highway, Brunswick Heads 2483
18. Tweed Sea Sports – 33 Machinery Dr, Tweed Heads South NSW 2486
19. Kirra Dive on the Tweed – 1/133 Wharf St, Tweed Heads NSW 2485
20. Seal Swim Australia 1 Bluewater Dr Narooma NSW 2546
21. Ocean Hut Complete Angler 23 Graham St Narooma NSW 2546
22. Island Charters Bluewater Dr Narooma NSW 2546

Appendix 5: Coogee wreck dive site characteristics

The proposed site at Coogee is considered a suitable location as it meets all the following desirable characteristics for a dive wreck site:

- A bare sandy bottom without extreme conditions, such as strong rips or currents.
- Appropriate depth to the seabed and underlying rock to ensure the scuttled vessel can penetrate the sand and remain stable and upright.
- Geological characteristics suitable for the ship to settle with no impact on local reefs and other geological features.
- An appropriate depth of water for diving (water depths around the Coogee site are between 30m and 34m)
- Safe for scuba diving, with good visibility
- Reasonable proximity to onshore infrastructure for dive operators
- The ability to attract marine life to colonise the artificial reef.
- Capacity to attract fish and increase local biodiversity.
- No sensitive marine habitats
- No natural reef or seagrass beds
- Meets navigational safety requirements.
- Minimal impact on commercial fisheries
- Minimal impact on the local coastline
- No impact on shipping lanes or navigational areas
- No impact on other legitimate uses that may operate in the area.

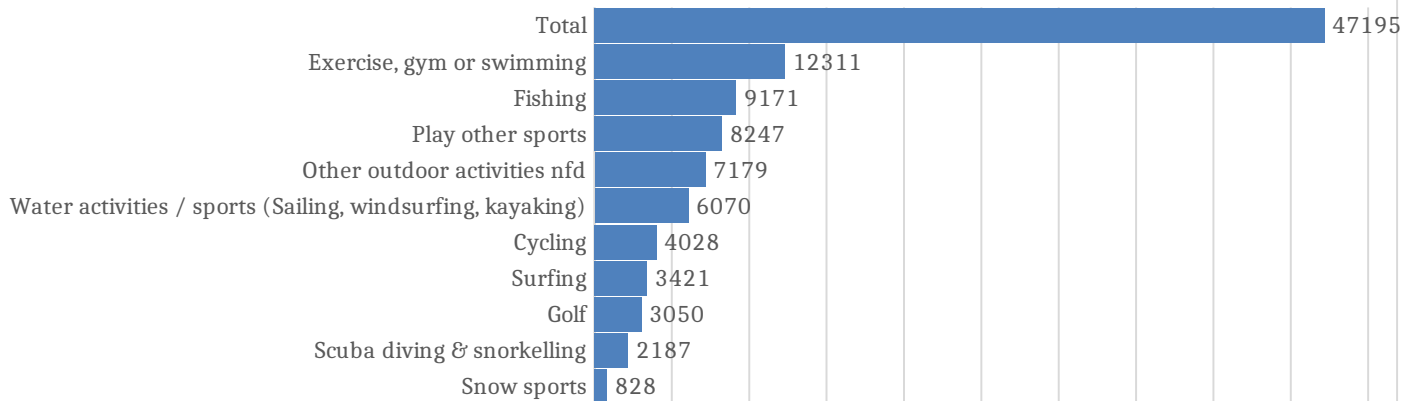


Appendix 6 Visitor sport participation rates

Visitor average sport participation rates in Australia 2015-2019

	2015-19	2015-19	2015-19	2015-19	
	International	Domestic day	Domestic o/n	Total	
Active outdoor / sports	5 yr. ave.	5yr ave.	5yr ave.	5yr ave.	
Snow sports	485	558	215	828	
Scuba free diving & snorkeling	858	921	320	2187	
Golf	1477	1606	1260	3050	
Surfing	1551	1704	1389	3421	
Cycling	1723	2039	1546	4028	
Sailing, windsurfing, kayaking	2682	3359	2304	6070	
Other outdoor activities nfd	2716	3247	3445	7179	
Play other sports	2995	3384	4423	8247	
Fishing	5159	5220	3643	9171	
Exercise, gym or swimming	5063	7036	5275	12311	
Total	19868	23310	21656	47195	
http://www.tra.gov.au/research/latest-nvs-report.html					

Visitor sport participation rates 000



Appendix 7: Ex-HMAS *Adelaide* background and scuttling process

Locations **Glebe Island Wharf No. 2, Sydney Harbour NSW**

Client	NSW Land and Property Management Authority
Contract	Scuttling of ex-HMAS <i>Adelaide</i> vessel for use as an artificial reef
Cost	\$6.5 million
Duration	18 months, 2011

The Australian Navy ship ex-HMAS *Adelaide* participated in the 1990/91 Gulf War, peacekeeping operations in East Timor in 1999, and was also deployed to the Arabian Gulf as part of the International Coalition against Terrorism in 2001 and 2004. She was Australia's first guided-missile frigate and was home-ported in Western Australia.

McMahon Services were contracted by the NSW Land and Property Management Authority to prepare the vessel for scuttling off the NSW mid-coast. This was an enormous task—stripping a fully operational war ship to make it a virtual skeleton. All environmental hazards required total removal.

The contractor was required to develop methods to make the vessel do what it was never design to do...sink. The vessel was littered with specially cut holes to let water in and air out when it was scuttled. The main task was to penetrate bulkheads and clearing pathways through the vessel so that divers had enough room to manoeuvre through safe thoroughfares.

Key milestones

Milestone 1: Establishment and vessel delivery

Milestone 2: Initial preparation and towage

Milestone 3: Design and ship preparation

Milestone 4: Scuttling

Milestone 5: Post-scuttling activities

Milestone 6: Handover, including ballasting details and Dangerous Goods and Materials Register

Unique processes

- Removal of zinc chromate and lead-based paint prior to hot work or friction cutting

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- Removal of 80 tonnes of lead ballast ‘pigs’ sealed inside the ballast tanks and in the auxiliary motor room bilges, attached to the keel between the ribs and stringers.
- The client and end user groups, including the dive community and environmental groups, were very pleased with the dive design and the considerable items of interest that were retained in the vessel, from the bridge to the engine rooms.
- Environmental groups were impressed with the standard of clean lines, particularly the removal of the hydrocarbons, insulation and dangerous materials.
- The project took approximately 18 months and 30,000+ hours to complete, with a steady crew of 20 personnel.

Materials removed.

- 80 tonnes of lead ballast
- Hydrocarbons – 145,000 litres of hydraulic oil lube oil, JP5 aviation fuel, diesel/oily bilge water, mercury switches in fire system (143 in total – sent to licenced recycler)
- Capacitors from 1,000+ fluorescent lights, potentially containing PCBs (2000)
- 2,000 fluorescent tubes containing mercury gases – removed and sent to licenced recycler
- 50 transformers containing potential PCBs
- 4,800 light globes from instrument panels, battle lamps, landing lights, etc.
- 5,100 fuses from electrical boards, communication boards, radars, instrument panels
- 450 various capacitors in electrical boxes and communication appliances
- Approximately 600 9V batteries from battle lamps
- Asbestos – including ducting, pipe flanges, and switchboards. Safely removed and disposed of via a licensed contractor



<http://www.mcmservices.com.au/media/videos/the-force-hmas-adelaide/the-force-hmas-adelaide>

<http://www.mcmservices.com.au/media/videos/hmas-adelaide-decommissioning-and-scuttling/hmas-adelaide-decommissioning-and-scuttling>

<http://www.mcmservices.com.au/news/the-final-journey-of-the-ex-hmas-adelaide>

<http://www.mcmservices.com.au/news/ex-hmas-adelaide-sent-to-a-watery-grave>

Appendix 8 Worldwide list of ships and airplanes sunk as dive wrecks.

(Ilieva et al., 2019) (Wikipedia, 2022).

In Australia apart from ships sunk as dive wrecks, the Australian Government has approved over 300 plus vessels sunk as artificial reefs* (Plunkett, 2003)

Year sunk	VESSEL	LOCATION	COUNTRY / TERRITORY
2022	Wonder Reef	Main Beach QLD	Australia
2022	SYDNEY DIVE SHOP BUSK BUSINESS CENTRE	COOMERONG BAY SCUBA DIVING CLUB	Malta
2021	P33 Patrol Boat	Marsaskala	Malta
2018	HMAS <i>Tobruk</i>	Bundaberg QLD	Australia
2017	<i>Gal ‘Oz</i> fishing trawler	Hertzliya, Israel	Israel
2017	USCGC <i>Tamaroa</i> (WMEC-166)	Cape May, New Jersey	United States
2016	Vis	Kamenjak, Istra	Croatia
2016	General Pereira D’Eca F477	Porto Santo Madeira	Portugal
2016	Airbus	Kusdaci	Turkey
2016	Ship	Karaburun	Turkey
2016	Ship	Dikili	Turkey
2016	Ship	Karaburum	Turkey
2015	Ship	Merselin Silifske	Turkey
2015	ARM <i>Uribe</i> (P121)	Rosarito Beach	Mexico
2015	USS <i>Comstock</i>	Checheng Township Pingtung	Taiwan
2015	HMCS <i>Annapolis</i>	British Columbia	Canada
2014	Ship	Erdine Sarus Bay	Turkey
2014	MV <i>Ærø sund</i>	South Fionan Sea	Denmark
2014	HTMS <i>Kledkaeo</i> (AKS-861)	Phi Phi Islands	Thailand
2013	Tug No. 2	Sliema	Malta
2013	Airplane C47	Kemer Ucadalar	Turkey
2013	T11 coastal patrol ship	Ko Chang	Thailand
2013	NRP <i>Almeida Carvalho</i> (A527)	Algarve	Portugal
2013	NRP <i>Hermenegildo Capelo</i> (F481)	Algarve	Portugal
2012	Ship	Samsun Kurupelit	Turkey
2012	HTMS Chang USS <i>Lincoln County</i>	Ko Chang	Thailand
2012	NRP <i>Zambeze</i> (P1147)	Algarve	Portugal
2012	NRP <i>Oliveira e Carmo</i> (F489)	Algarve	Portugal
2012	HTMS <i>Phetra</i> (LCT-764)	Ko Man Nok	Thailand
2012	HTMS <i>Mataphon</i> (LCT-761)	Ko Larn	Thailand
2012	USCGC <i>Mohawk</i>	Lee County, Florida	United States
2011	USS <i>Arthur W. Radford</i>	Cape May, New Jersey	United States
2011	HTMS <i>Sattakut</i> (LCI-742)	Koh Tao	Thailand
2011	HTMS <i>Prab</i> (LCI-741)	Chumphon	Thailand
2011	HMAS <i>Adelaide</i>	Avoca Beach, NSW	Australia
2011	USS <i>Kittiwake</i> (ASR-13)	Grand Cayman	Cayman Islands
2011	Ship	Didim	Turkey
2011	Ship	Kas, Cukurbag Peninsula	Turkey
2011	Ship	Airplane	Turkey
2010	Ship	Seferihisar Sigacik	Turkey
2009	P31	Comino	Malta
2009	Airplane	Kaz Incebogaz	Turkey
2009	Ship	Duzce	Turkey
2009	HMAS <i>Canberra</i>	Barwon Heads VIC	Australia
2009	USNS <i>Vandenberg</i>	Key West, Florida	United States
2008	Airplane C47	Bodrum, Pacoz Bright	Turkey
2007	USS <i>Cruise</i>	Delaware Bay	United States
2007	Ship	Kemer Ucadalar	Turkey
2007	Ship	Bodrum Karaada	Turkey
2007	HMNZS <i>Canterbury</i>	Bay of Islands	New Zealand
2007	USTS <i>Texas Clipper</i>	South Padre Island, Texas	United States

Appendix 9: Sydney Dive Wreck alignment with the Marine Estate Management Act (MEMA) No 72, 2014

MEMA OBJECTIVES	SDW REFERENCE	MET
(a) to provide for the management of the marine estate of New South Wales consistent with the principles of ecologically sustainable development in a manner that:	Overall	Yes
Promotes a biologically diverse, healthy and productive marine estate	Section 2.2.1 Environmental rationale	Yes
Facilitates economic opportunities for the people of New South Wales, including opportunities for regional communities	Section 2.2.2 Economic rationale	Yes
Facilitates the cultural, social and recreational use of the marine estate	Section 2.2.4 Community rationale	Yes
Facilitates the maintenance of ecosystem integrity	Section 2.2.1 Environmental values	Yes
Facilitates the use of the marine estate for scientific research and education	Section 2.2.3 Research values	Yes
Promotes the co-ordination of the exercise, by public authorities, of functions in relation to the marine estate	Section 4.2. Governance	Yes
Provides for the declaration and management of a comprehensive system of marine parks and aquatic reserves	Executive summary	Yes

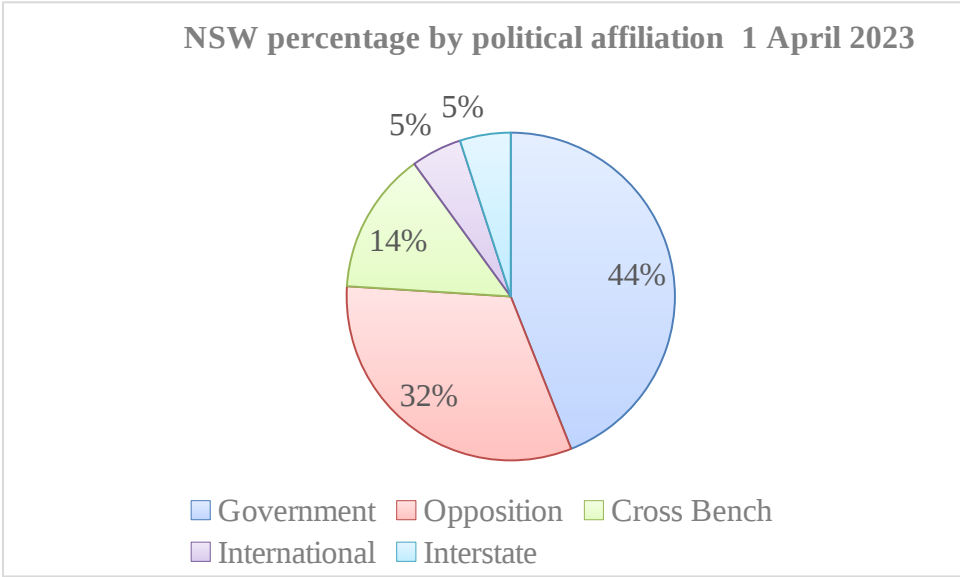
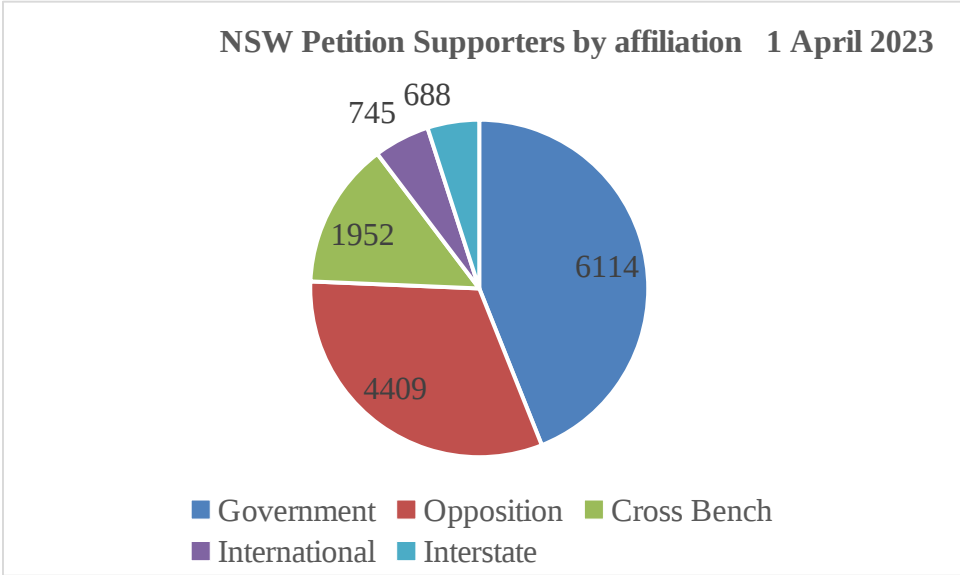
APPENDIX 10 NSW Electoral divisions petition analysis (highest to lowest signatures)

The following table shows the petition support for a dive wreck in Sydney waters as of 1st April 2023.

Electorate	<100	Electorate	>100	Electorate	>50	Electorate	>20
Coogee	2759	Kellyville	93	Wollongong	39	Swansea	11
Maroubra	1278	Wahroonga	84	Bathurst	37	Ballina	10
Manly	906	Goulburn	79	The Entrance	37	Maitland	10
International	745	Castle Hill	75	Cabramatta	36	South Coast	10
Sydney	736	Camden	74	Cessnock	36	Wyang	10
Willoughby	729	Parramatta	74	Shellharbour	34	Cootamundra	9
Interstate	688	Hawkesbury	71	Riverstone	33	Tamworth	9
Wakehurst	578	East Hills	67	Newcastle	32	Myall Lakes	8
Vaucluse	438	Davidson	66	Terrigal	31	Wallsend	8
Pittwater	411	Lake Macquarie	66	Port Stephens	28	Barwon	7
Heffron	356	Strathfield	65	Fairfield	27	Dubbo	7
Lane Cove	232	Charlestown	62	Keira	25	Upper Hunter	7
Balmain	190	Gosford	60	Kogarah	25	Oxley	6
Cronulla	189	Port Macquarie	60	Mt Druitt	24	Murray	5
Newtown	167	Auburn	58	Albury	23	Coffs Harbor	3
Kiama	165	Holsworthy	50	Macquarie Fields	23	Tweed Heads	3
Epping	147	Blacktown	46	Ryde	23	Lismore	1
Summer Hill	131	Blue Mountains	46	Bega	19	Leppington	0
North Shore	124	Bankstown	45	Clarence	18	Wagga Wagga	0
Hornsby	120	Granville	45	Liverpool	18		
Drummoyne	117	Campbelltown	44	Prospect	18		
Heathcote	114	Penrith	43	Monaro	17		
Oatley	113	Londonderry	41	North.Tablelands	14		
Rockdale	113	Miranda	40	Orange	14		
Canterbury	100	Badgerys Creek	39	Wollondilly	14		
	11646		1493		645		124
Total			1390				

Signatures			8				
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Appendix 10 (b) NSW Electoral divisions petition analysis (by political affiliation)



Appendix 11 Ship Availability www.navy.gov.au/fleet/ships-boats-craft/current-ships

Vessel	Launch	Earliest	Latest/ Actual (1) Decommissioned*	Vessel Type	Length
HMAS Mermaid*	1989		*Sep-21	Decommissioned*	37
Banalla (iii)	1990	2018	2025	Survey Ship, Coastal	37
Shepparton	1990	2018	2025	Survey Ship, Coastal	37
Anzac (iii)	1996	2024	2031	Frigate	118
Collins	1996	2024	2031	Submarine not suitable	77
Arunta	1998	2026	2033	Frigate	118
Huon	1999	2027	2034	Minehunter	52
Waller	1999	2027	2034	Submarine not suitable	77
Leeuwin	2000	2028	2035	Survey Ship (AGS)	71
Melville	2000	2028	2035	Survey Ship (AGS)	71
Gascoyne	2001	2029	2036	Minehunter	52
Sheean	2001	2029	2036	Submarine not suitable	77
Warramunga	2001	2029	2036	Frigate	118
Ballarat	2002	2030	2037	Frigate	118
Stuart (iii)	2002	2030	2037	Frigate	118
Parramatta	2003	2031	2038	Frigate	118
Rankin	2003	2031	2038	Submarine not suitable	77
Yarra	2003	2031	2038	Minehunter	52
Armidale	2005	2033	2040	Patrol Boat	57
Toowoomba	2005	2033	2040	Frigate	118
Albany	2006	2034	2041	Patrol Boat	57
Ararat*	2006		*Jul-22	Decommissioned*	57
Bathurst	2006	2034	2041	Patrol Boat	57
Larakia*	2006		*Mar-21	Decommissioned*	57
Maitland*	2006		*Apr-21	Decommissioned*	57
Perth	2006	2034	2041	Frigate	118
Pirie*	2006		*Mar-21	Decommissioned*	57
Sirius*	2006		*Dec-21	Decommissioned*	191
Broome	2007	2035	2042	Patrol Boat	57
Childers	2007	2035	2042	Patrol Boat	57
Launceston	2007	2035	2042	Patrol Boat	57
Maryborough	2007	2035	2042	Patrol Boat	57
Wollongong	2007		*Dec-22	Decommissioned*	57
Glenelg*	2008		*Dec-22	Decommissioned*	57
ADV Cape Fourcroy	?			Patrol Boat	58
ADV Cape Inscription	?			Patrol Boat	58

(1) The "earliest" and "latest" decommissioning dates are based on a working assumption that the typical life expectancy of an RAN ship is in the range of 25 to 28 years. Patrol boats were decommissioned after 14 years.

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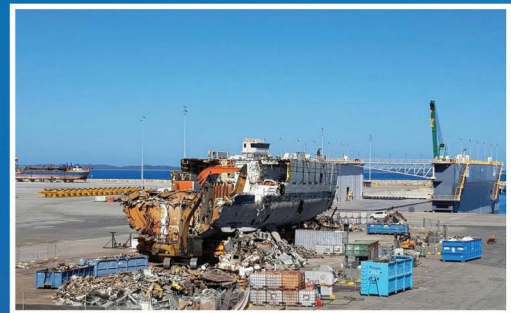
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SYDNEY DIVE WRECK BUSINESS CASE

Overwhelming community engagement and support

- Best option for an old ship?
Scrap it for \$2.5m? Like the ex HMAS Sydney's fate to be made into razor blades.
Or a dive wreck with an earning potential up to \$10m per annum and a life of over 100 years?
- Positive for the marine environment creating new habitats for endangered species like Cauliflower Coral now growing on the dive wreck sunk in 2011 off Avoca Beach.
- The site will not impact:
 - whale migration
 - shipping routes
 - professional or recreational fishing
 - telecommunication cables
 - no evidence for increase shark activity.
- Linked offshore artificial reefs (OAR) like the one off Vaucluse NSW will enhance recreational and professional fishing.



Ex HMAS Sydney being turned into razor blades

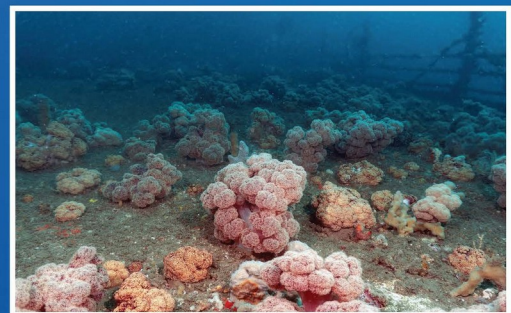


Photo of Cauliflower Coral courtesy Dr David Harasti DPI on the ex HMAS Adelaide August 2022



Photo courtesy [gettyimages.com.au/humpback-whale-australia](https://www.gettyimages.com.au/humpback-whale-australia)

