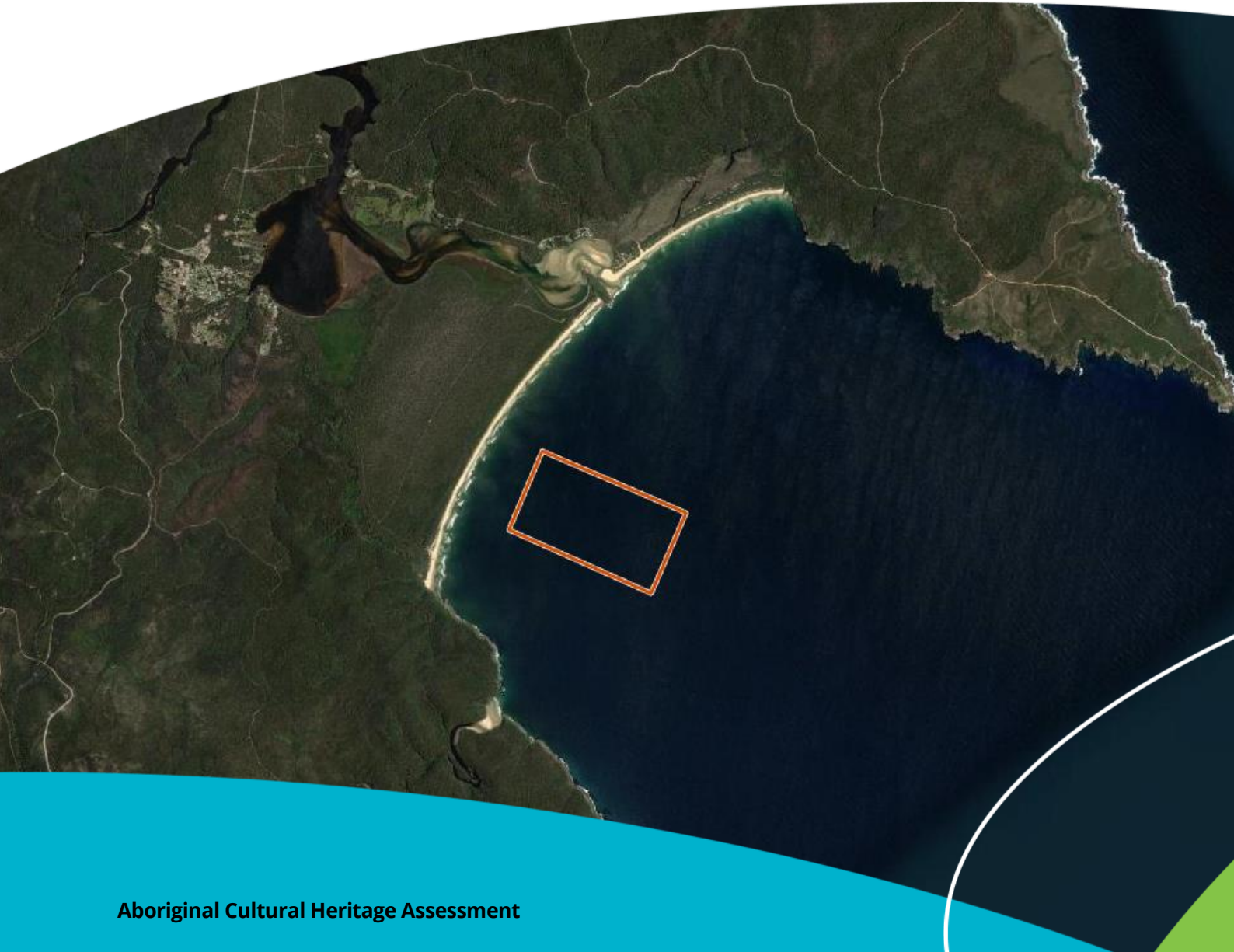




Aboriginal Cultural Heritage Assessment

South Coast Aquaculture Farms –
Eden 1 Seaweed Aquaculture Lease

Prepared for University of Wollongong on behalf of Auskelp Pty Ltd

30 July 2024

Biosis offices

New South Wales

Albury

Phone: (02) 6069 9200
Email: albury@biosis.com.au

Gosford

Phone: (02) 9101 8700
Email: gosford@biosis.com.au

Newcastle

Phone: (02) 4911 4040
Email: newcastle@biosis.com.au

Sydney

Phone: (02) 9101 8700
Email: sydney@biosis.com.au

Western Sydney

Phone: (02) 9101 8700
Email: sydney@biosis.com.au

Wollongong

Phone: (02) 4201 1090
Email: wollongong@biosis.com.au

Victoria

Ballarat

Phone: (03) 5304 4250
Email: ballarat@biosis.com.au

Melbourne

Phone: (03) 8686 4800
Email: melbourne@biosis.com.au

Wangaratta

Phone: (03) 5718 6900
Email: wangaratta@biosis.com.au



Document information

Report to:	University of Wollongong on behalf of Auskelp Pty Ltd
Prepared by:	Nathan Windram Sunday de Joux Charlotte Allen
Biosis project no.:	38971
File name:	38971.SouthCoastAquaFarmsEden.ACHA.FIN02.2024 0730
Citation:	Biosis 2024. South Coast Aquaculture Farms – Eden 1 Seaweed Aquaculture Lease Aboriginal Cultural Heritage Assessment. Report for University of Wollongong. Authors: Windram. N, de Joux. S, Allen. C. Biosis Pty Ltd, Wollongong, NSW. Project no. 38971

Document control

Version	Internal reviewer	Date issued
Draft version 01	Samantha Keats	24/04/2024
Draft version 02	Samantha Keats	22/05/2024
Final version 01	Charlotte Allen	26/06/2024
Final version 02	Samantha Keats	30/07/2024

Acknowledgements

Biosis gratefully acknowledges the contribution of the following people and organisations in undertaking this study:

- University of Wollongong: Anna Lewis, Michelle Voyer
- Auskelp Pty Ltd: Christopher Ride

Biosis staff involved in this project were:

- Jen Townsend (mapping)

Biosis acknowledges the Aboriginal and Torres Strait Islander peoples as Traditional Custodians of the land on which we live and work.

We pay our respects to the Traditional Custodians and Elders past and present and honour their connection to Country and ongoing contribution to society.

© Biosis Pty Ltd

This document is subject to copyright and may only be used for the purposes in respect of which it was commissioned and in accordance with the Terms of Engagement of the commission. Unauthorised use of this document in any form whatsoever is prohibited.

Disclaimer:

Biosis Pty Ltd has completed this assessment in accordance with the relevant federal, state and local legislation and current industry best practice. The company accepts no liability for any damages or loss incurred as a result of reliance placed upon the report content or for any purpose other than that for which it was intended.

Glossary

ACHA	Aboriginal Cultural Heritage Assessment
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
AIATSIS	Australian Institute of Aboriginal and Torres Strait Islander Studies
AR	Archaeological Report
AusKelp	AusKelp Pty Ltd
ACC	Antarctic Circumpolar Current
BP	Before present
Consultation requirements	<i>Aboriginal Cultural Heritage Consultation Requirements for Proponents</i>
CBD	Central business district
DECCW	Department of Environment, Climate Change and Water (now Heritage NSW)
DPHI	Department of Planning, Housing and Industry
DP	Deposited Plan
EAC	East Australian Current
EIS	Environmental Impact Statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
ESD	Ecologically Sustainable Development
Femtometres	One quadrillionth of one metre
Heritage Act	<i>Heritage Act 1977</i>
Heritage NSW	Heritage NSW, NSW Department of Climate Change, Energy, the Environment and Water
ICOMOS	International Council on Monuments and Sites
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
NNTT	National Native Title Tribunal
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NSW	New South Wales
NTSCORP	Native Title Services Corporation
PAD	Potential Archaeological Deposit
RAPs	Registered Aboriginal Parties
S	South
SSD	State Significant Development

Study area	Defined as 200 hectares located 656m offshore from Wonboyn Beach, in Disaster Bay, Eden NSW
Sverdrup	One million cubic metres per second
the Code	<i>Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW</i>
UoW	University of Wollongong

Summary

Biosis Pty Ltd (Biosis) was commissioned to undertake an Aboriginal Cultural Heritage Assessment (ACHA) of a proposed State Significant Development (SSD) of a seaweed aquaculture marine farm adjacent to Disaster Bay, Eden, New South Wales (NSW) (the study area). The marine farm is proposed by Auskelp Pty Ltd (Auskelp) and this assessment was commissioned by University of Wollongong (UoW), as part of a broader investigation into the social and cultural considerations of aquaculture development in NSW. The study area is located within the Tasman Sea, approximately 656 metres offshore from Wonboyn Beach and approximately 24 kilometres south of the Eden central business district (CBD).

The Department of Planning, Housing and Infrastructure (DPHI) is the Determining Authority and will assess the Environmental Impact Statement (EIS) to help them determine if the proposed development is likely to have a significant effect on the environment, including Aboriginal cultural heritage.

Consultation

The Aboriginal community was consulted regarding the heritage management of the project throughout its lifespan. Consultation has been undertaken as per the process outlined in the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010a) (consultation requirements). The appropriate government bodies were notified, and advertisements placed in the newspaper *Merimbula News Weekly* (28 June 2023), which resulted in the following Aboriginal organisations registering their interest (Table 1).

Table 1 List of registered Aboriginal parties and group contact

No.	Organisation	Contact person
1	Ngarigo and Djiringanj people	John Dixon
2	Guunamaa Dreamin Sites and Surveying	Richard Campbell
3	Thoorga Nura	John Carriage
4	Guntawang Aboriginal Resources Incorporated	Wendy Morgan
5	Barraby Cultural Services	Lee Field
6	Goobah Development PTY LTD (Murrin Clan/Peoples)	Basil Smith
7	Iris White	Iris White
8	Jason Davison	Jason Davison
9	Konanggo Aboriginal Cultural Heritage Services	Robert Young
10	Merrimans Local Aboriginal Land Council (LALC)	CEO
11	Thomas Dahlstrom Offers ACH value by using 3D Laser and Drone technology	Thomas Dahlstrom
12	South Coast NSW Aboriginal Elders	Owen Carriage
13	South Coast People	Sandy Chalmers
14	Bega LALC	CEO
15	Wagonga LALC	CEO
16	Eden LALC	CEO

No.	Organisation	Contact person
17	Gadu Elders	Maureen Davis
18	-	Bunja Smith
19	-	Aileen Blackburn

A search conducted by the Office of the Registrar, *Aboriginal Land Rights Act 1983* confirmed that the study area is in proximity to two areas for which there are registered Aboriginal owners: Gulaga National Park and Biamanga National Park. A search conducted by the National Native Title Tribunal (NNTT) listed no Registered Native Title Claims or Registered Indigenous Land Use Agreements within the study area. There is one unregistered Claimant Application within the study area, South Coast Peoples (NC2017/008).

Biosis contacted the registered Aboriginal parties (RAPs) to organise an on-site meeting to discuss the cultural significance of the study area as well as to cover the proposed works and discuss the findings of the initial background research. The invitation was presented between the 26 June 2023 and 20 July 2023 via email and phone call. None of the RAPs were able to attend the meeting dates proposed.

Upon registration, the Aboriginal parties were invited to provide their knowledge on the study area and on the proposal provided in the methodology. RAPs were requested to review the draft ACHA and provide any further comments regarding the tangible and intangible importance of the study area. One response was received from Guntawang Aboriginal Resources Incorporated on 14 June 2024, confirming their agreement and support of the ACHA and AR management recommendations. An outcome to the consultation process could not be rendered due to the limited number of responses and unavailability for the site meetings.

Responses from the RAPs are included in Appendix C and Appendix D.

Results

The ACHA assessment undertook background research for the proposed study area. Key considerations arising from the background research include:

- The highly erosional marine environmental forces within the study area.
- The aquatic nature of the study area.

There are 57 Aboriginal cultural heritage sites registered with the Aboriginal Heritage Information Management System (AHIMS) register. None of these sites are located within the study area. However, these search results indicate that the most common archaeological sites in the vicinity are artefact and shell sites. Local and regional assessment suggest that both shell middens and artefact scatters having existed along the coast prior to inundation as deposits of both were present in proximity to the study area. Based on estimates of sea level changes, it is suggested that Disaster Bay may have contained sites dominated by backed artefacts of silcrete, whereas coastal middens may have contained the remains of Mud Oyster.

An archaeological survey of the study area was deemed implausible under the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b) (the Code) due to the marine nature of the study area. However, the results of the desktop assessment and the seafloor visual survey strongly indicate that the environmental conditions of Disaster Bay have resulted in high levels of erosion and disturbance to the seafloor, with sediments being constantly displaced and redeposited into deeper areas. This suggests that any physical Aboriginal archaeological sites which may have been present within the study area have been destroyed by this harsh and unstable environment. While there may not be

any tangible Aboriginal cultural heritage remaining within the study area and Disaster Bay, it is highly likely that there are intangible Aboriginal cultural heritage values associated with this location.

Management recommendations

Prior to any development impacts occurring within the study area, the following is recommended:

Recommendation 1: Continued consultation with the registered Aboriginal parties

It is recommended that Auskelp continue to inform these groups about the management of Aboriginal cultural heritage sites within the study area throughout the life of the project. Regular updates should be sent to RAPs (minimum of every 6 months). This recommendation is in keeping with consultation requirements.

Recommendation 2: No further assessment is required.

No further archaeological investigation or works are required to be undertaken for the study area. In the event that unexpected finds, including human remains, are unearthed during any phase of the project please refer to Recommendation 5 below.

Recommendation 3: Stop works provision – Discovery of previously unidentified sites or objects

All Aboriginal places and objects are protected under the *NSW National Parks and Wildlife Act 1974* (NPW Act). This protection extends to Aboriginal objects and places that have not been identified but might be unearthed during the proposed works. Work must cease if Aboriginal objects or places are identified which have not previously been identified as part of this assessment or have not been approved for harm under an Aboriginal Heritage Impact Permit (AHIP). Heritage NSW and the archaeologist must be notified to make an assessment of the find and advise on subsequent management.

Recommendation 4: Stop work provision for any potential discovery of human remains

If any suspected human remains are discovered during any activity works, all activity in the vicinity must cease immediately. The remains must be left in place and protected from harm or damage. The following contingency plan describes the immediate actions that must be taken in instances where human remains, or suspected human remains are discovered. Any such discovery at the study area must follow these steps:

1. Discovery: If suspected human remains are discovered all activity in the vicinity must stop to ensure minimal damage is caused to the remains; and the remains must be left in place and protected from harm or damage.
2. Notification: Once suspected human skeletal remains have been found, the NSW Police must be notified immediately, and they will subsequently inform the Coroner's Office. Following this, and if the human remains are likely to be Aboriginal in origin, the find will be reported to the Aboriginal parties and Heritage NSW. If the find is likely to be non-Aboriginal in origin and more than 100 years in age, the Heritage Council of NSW will be notified of the find under s.146 of the *Heritage Act 1977* (Heritage Act).

Recommendation 5: Training and heritage induction

For all personnel, include a heritage induction in the site induction. This will inform as to when works should cease and a manager be contacted for further instruction.

Contents

Glossary.....	ii
Summary.....	iv
Consultation	iv
Results.....	v
Management recommendations.....	vi
1. Introduction.....	1
1.1. Project background.....	1
1.2. Study area	1
1.3. Proposed development.....	1
1.4. 1.4 Planning approvals	2
1.5. Restricted and confidential information.....	3
1.6. Aboriginal cultural heritage	3
2. Study area context	7
2.1. Oceanography.....	7
2.2. Coastal resources and fishing practices	10
2.3. Seafloor visual survey	12
2.4. Land Use History.....	12
3. Aboriginal cultural heritage context.....	16
3.1. Ethnohistory.....	16
3.2. Aboriginal heritage located in the study area	19
3.3. Interpretation of past Aboriginal land use.....	20
4. Aboriginal community consultation.....	23
4.1. Stage 1: Notification of project proposal and registration of interest	23
4.2. Stage 2 and 3: Presentation of information about the proposed project and gathering information about cultural significance.....	25
4.3. Stage 4: Review of draft ACHA report	26
5. Aboriginal cultural significance assessment.....	27
5.1. Introduction to the assessment process.....	27
5.2. Cultural (social significance) values.....	28
5.3. Historic values	28
5.4. Archaeological (scientific significance) values	29
5.5. Aesthetic values	29
5.6. Statement of significance.....	29

6.	Development limitations and mitigation measures	31
6.1.	Predicted physical impacts	31
6.2.	Ecologically Sustainable Development	31
6.3.	Management and mitigation measures	33
7.	Recommendations	34
	References	35
	APPENDICES	40
Appendix A.	Consultation log	41
	Stage 1: Notification of project proposal and registration of interest	41
	Stage 2: Presentation of information about the proposed project and gathering information about cultural significance	47
	Stage 4: Review of draft report	50
Appendix B.	Stage 1: Notification of project proposal and registration of interest	52
Appendix C.	Stage 2: Presentation of information about the proposed project and Stage 3: Gathering information about cultural significance	53
Appendix D.	Stage 4: Review of draft cultural heritage assessment report	54
Appendix E.	Archaeological report	55

Tables

Table 1	List of registered Aboriginal parties and group contact	iv
Table 2	List of registered Aboriginal parties	25
Table 3	Significance assessment criteria	30

Figures

Figure 1	Location of the study area	5
Figure 2	Study area detail	6
Figure 3	European Coastal Activity	15
Figure 4	Aboriginal sites within the vicinity of the study area	22

1. Introduction

1.1. Project background

UoW have successfully obtained a grant from the NSW Government for the provision of technical services to support a proposed SSD (SSD-41680467) for the development of an aquaculture lease near Eden for a seaweed and aquaculture farm, on behalf of Auskelp. The Eden aquaculture lease area (AL21/004) is located at Disaster Bay, Eden, NSW (Figure 1). The Secretary's Environmental Assessment Requirements (SEARs) were issued by the Department of Planning and Environment (DPE) (now DPHI) (22 May 2022). The SEARs obtained to date state that impacts to Aboriginal heritage must be addressed within the EIS in order to obtain Development Consent. Biosis has been commissioned by UoW on behalf of Auskelp to undertake an ACHA for the proposed SSD application.

This report details the investigation, consultation and assessment of Aboriginal cultural heritage undertaken for the study area. The Archaeological Report (AR) in Appendix E details the findings of the archaeological investigations conducted as part of the ACHA. As required under Section 2.3 of the Code, the AR provides evidence about the material traces of Aboriginal land use to support the conclusions and management recommendations in the ACHA.

The Department of Planning, Housing and Infrastructure is the Determining Authority and will assess SSD-41680467 to help them determine if the proposed development is likely to have a significant effect on the environment, including Aboriginal cultural heritage and potential impacts on Aboriginal Cultural fishing activities.

1.2. Study area

The study area is located within the Tasman Sea, approximately 656 metres offshore from Wonboyn Beach on the sea bed floor and approximately 24 kilometres south of the Eden CBD (Figure 1). It encompasses 200 hectares of ocean within Disaster Bay (Figure 2). The study areas are located closest to the:

- Bega Valley Shire, Local Government Area (LGA).
- Parish of Eden
- County of Auckland.

1.3. Proposed development

Auskelp are seeking consent and approval for the following activities:

- Construction and operation of a 200-hectare commercial marine aquaculture lease for seaweed production using longlines off Disaster Bay, approximately 1 kilometre east of the Australian Eastern Seaboard of Eden (AL21/004), including:
 - Construction of longlines within marine aquaculture lease areas.
 - Monitoring and maintaining longlines.

The proposed works will also include the transportation of materials and staff associated with the project to construct, monitor, and maintain longlines within marine aquaculture lease areas. This part of the project will

utilise the Port of Eden and Eden Multi-purpose Wharf to transfer equipment and staff required to construct, monitor and maintain the longlines in the lease areas.

A social impact assessment for regenerative aquaculture on the NSW South Coast resulted in the following key findings (Croft et al. 2024a):

- There is widespread support for regenerative aquaculture on the NSW South Coast. However, inadequate support for site selection is creating unacceptable risk to both communities and proponents.
- Inclusive and participatory regional planning is required to address environmental and social concerns for future site selection.
- Social impacts are strongly linked to environmental impacts and benefits, and perceptions of sustainability.

A study regarding the cultural values, right and interests of Aboriginal people and how they can be protected, enhanced and prioritised as the regenerative aquaculture industry develops was also undertaken. This study made the following conclusions and recommendations (Croft et al. 2024b):

- There is significant capacity and opportunity to develop a culturally sensitive and inclusive regenerative aquaculture industry on the South Coast of NSW.
- First nations organisations, government and industry and other relevant stakeholders should work together to co-design a strategic plan for First Nations involvement and leadership in a South Coast regenerative aquaculture industry.
- As there is existing interest, enthusiasm and capacity within a number of Aboriginal groups on the NSW South Coast, initial pilot projects (research trials) should be established through collaboration between First Nation organisations, universities, government and industry partners.
- Dedicated on Country, practice-based training programs can be implemented to upskill local Aboriginal people in a range of relevant areas to enable a First Nation-led regenerative aquaculture industry.
- To ensure projects are undertaken in a culturally appropriate way and in-keeping with Native Title requirements, cultural partnership pathway protocols should be developed for industry and government to guide the co-design process and negotiation of partnerships between Aboriginal and non-Aboriginal parties.

1.4. 1.4 Planning approvals

The proposed development will be assessed against Part 4 of the *Environmental Planning and Assessment Act 1979 NSW*. Other relevant legislation and planning instruments that will inform this assessment include:

- *Commonwealth Environment Protection and Biodiversity Conservation Act 1999.*
- NPW Act.
- *NSW National Parks and Wildlife Amendment Act 2010.*
- *Infrastructure State Environmental Planning Policy 2007.*

1.5. Restricted and confidential information

Appendix A in the AR (Appendix E) contains AHIMS information which is confidential and not to be made public. This is clearly marked on the title page for the Attachment.

1.6. Aboriginal cultural heritage

1.6.1. General description

According to Allen and O'Connell (2003), Aboriginal people have inhabited the Australian continent for the last 50,000 years. New evidence out of the Northern Territory has pushed this date back with the Malakanunja II rock shelter dated at around 65,000 years before present (BP) (Clarkson et al. 2017).

In NSW, according to Bowler et al. (2003), Aboriginal people have occupied the land for over 42,000 years. However, preliminary evidence presented by Biosis (2016) from a subsurface testing program in south-western NSW suggests Aboriginal people may have occupied the semi-arid zone of the region for 50,000 years.

Without being part of the Aboriginal culture and the productions of this culture, it is not possible for non-Aboriginal people to fully understand the meaning of site, objects and places to Aboriginal people – only to move closer towards understanding this meaning with the help of the Aboriginal community. Similarly, definitions of Aboriginal culture and cultural heritage without this involvement constitute outsider interpretations.

With this preface Aboriginal cultural heritage broadly refers to things that relate to Aboriginal culture and hold cultural meaning and significance to Aboriginal people (DECCW 2010a, pp. 3). There is an understanding in Aboriginal culture that everything is interconnected. In essence Aboriginal cultural heritage can be viewed as potentially encompassing any part of the physical and/or mental landscape, that is, 'Country' (DECCW 2010a, pp. iii).

Aboriginal people's interpretation of cultural value is based on their 'traditions, observance, lore, customs, beliefs and history' (DECCW 2010a, pp. 3). The things associated with Aboriginal cultural heritage are continually and actively being defined by Aboriginal people (DECCW 2010a, pp. 3). These things can be associated with traditional, historical or contemporary Aboriginal culture (DECCW 2010a, pp. 3).

1.6.2. Tangible Aboriginal cultural heritage

Three categories of tangible Aboriginal cultural heritage may be defined:

- Things that have been observably modified by Aboriginal people.
- Things that may have been modified by Aboriginal people, but no discernible traces of that activity remain.
- Things never physically modified by Aboriginal people (but associated with Dreamtime Ancestors who shaped those things).

1.6.3. Intangible Aboriginal cultural heritage

Examples of intangible Aboriginal cultural heritage would include memories of stories and 'ways of doing', which would include language and ceremonies (DECCW 2010a, pp. 3).

1.6.4. Statutory

Currently Aboriginal cultural heritage, as statutorily defined by the NPW Act, consists of objects and places which are protected under Part 6 of the Act.

Aboriginal objects are defined as:

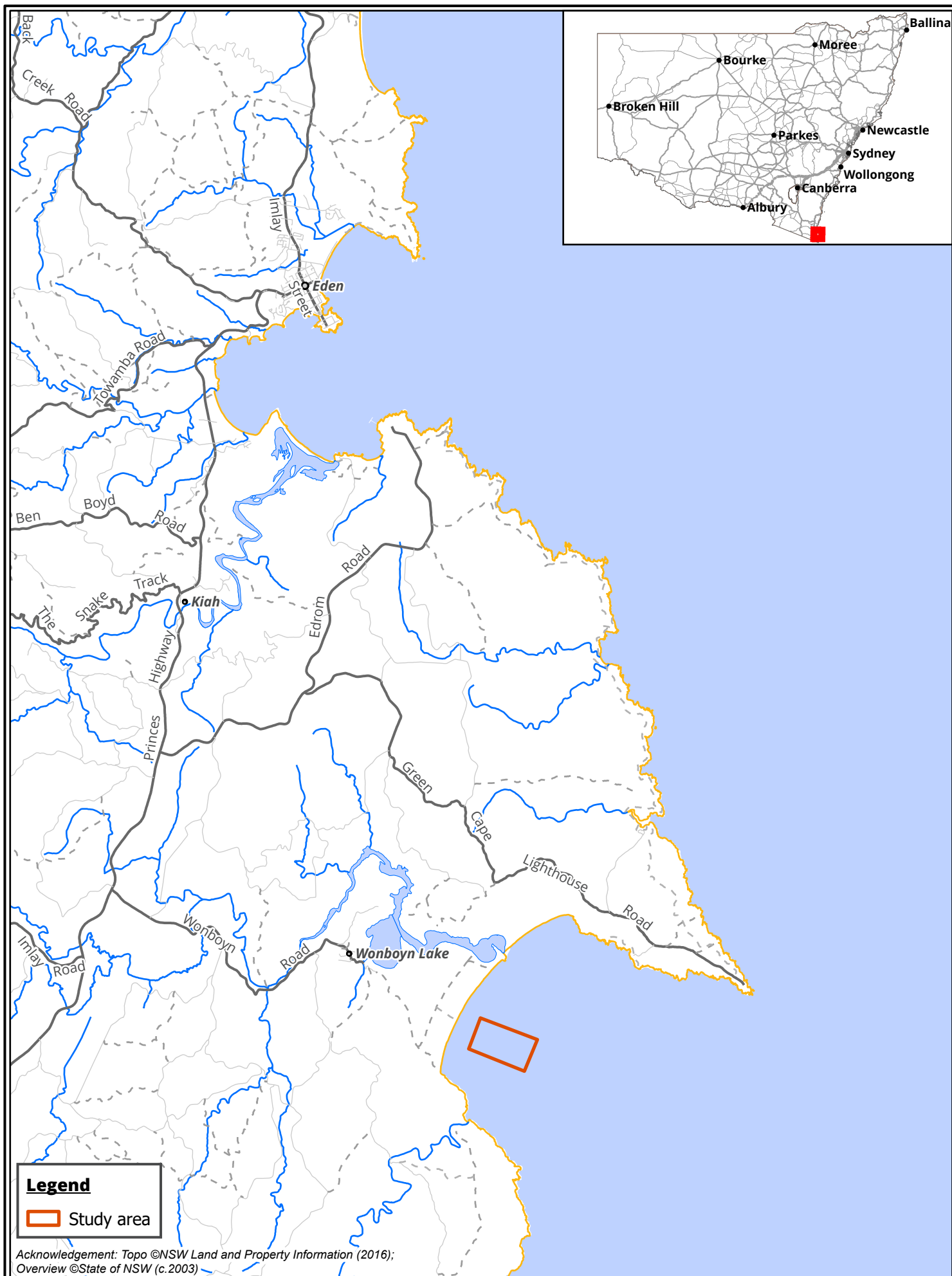
any deposit, object or material evidence...relating to the Aboriginal habitation of the area that comprises NSW, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains

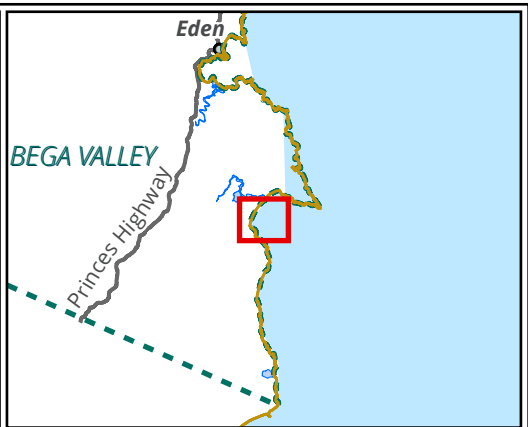
Aboriginal places are defined as a place that is or was of special Aboriginal cultural significance. Places are declared under Section 84 of the NPW Act.

1.6.5. Values

Aboriginal cultural heritage is valued by Aboriginal people as it is used to define their identity as both individuals and as part of a group (DECCW 2010a, pp. iii). More specifically it is used:

- To provide a:
 - 'Connection and sense of belonging to Country' (DECCW 2010a, pp. iii).
 - Link between the present and the past (DECCW 2010a, pp. iii).
- As a learning tool to teach Aboriginal culture to younger Aboriginal generations and the general public (DECCW 2010a, pp. 3).
- As further evidence of Aboriginal occupation prior to European settlement for people who do not understand the magnitude to which Aboriginal people occupied the continent (DECCW 2010a, p. 3).





- Legend**
- Study area
 - Lot

Figure 2 Study area detail

0 160 320 480 640 800
Metres

Scale: 1:20,000 @ A3
Coordinate System: GDA 1994 MGA Zone 56

biosis

Matter: 38971, Date: 12 December 2023,
Drawn by: JET, Checked by: NW, Last edited by: jtowndsend
Layout: 38971_F2_StudyArea_Eden
Project: P:\38900s\38971\Mapping\
38971_Eden.aprx

2. Study area context

This section discusses the study area in regard to its landscape, environmental and Aboriginal cultural heritage context. This section should be read in conjunction with the AR attached in Appendix E. The background research has been undertaken in accordance with the the Code.

The study area is located within Disaster Bay. The surrounding coastline is made up of two beaches with a central headland named Baycliff. To the north of the study area is Disaster Bay beach, a 2.4 kilometre curved beach which starts at the bae of the Green Cape headland and ends at the entrance of the Wonboyn Lake. Disaster Bay beach is backed by a 500 metre wide Holocene sand barrier, the beach along the embayment maintains a single bar, cut regularly by rips every 200 to 300 metres. To the south of the study area is Greenglades beach, a 4 kilometre long slightly curved beach with a Holocene barrier fronting Wonboyn Lake and further south borders the Nadgee Nature Reserve. There are two smaller seasonal creeks at the southern end which drain into the ocean during heavy rain (Figure 1, Figure 2).

2.1. Oceanography

The study area lies within the Tasman Sea, a marginal sea in the south-west Pacific Ocean between Australia and New Zealand. Its western margin comprises the eastern coastlines of Australia and Tasmania, the eastern margin by the Norfolk Ridge, the New Zealand western coastline and the Macquarie Ridge (Willem J. M. van der Linden 1970). The northern and southern boundaries of the Tasman Sea are poorly defined, with the northern boundary roughly aligning with the southern portion of the Great Barrier Reef. The southern boundary is best defined as the northern limit of the Indian Antarctic Ridge and Macquarie Island (1970).

The Tasman Sea floor is divided into six broad physiographic provinces:

- Australian Continental Margin.
- Tasman Basin.
- Lord Howe Rise.
- New Caledonia Basin.
- Norfolk Ridge.
- New Zealand Continental Margin .

The study area falls within the Australian Continental Margin which can be further divided into three provinces based upon physical characteristics relating to shelf and break width. These three provinces are:

- Northern Province – located between 24° and 27° South (S).
- Central Province – located between 27° and 32° S.
- Southern Province – located south of approximately 32° S.

The study area is located within the Southern Province. The shelf of the Southern Province generally extends less than 48 kilometres. With irregular rocky topography inshore, it is characterised by an outer shelf plain that ranges in depth from 45-90 femtometres (one quadrillionth of 1 metre) (John R. Conolly 1969). The shelf break occurs between depths of 80-100 femtometres where it merges into a steep continental slope. The shelf plain has three major terraces that occur at depths of 45-55 femtometres, 60-79 femtometres, and 70-80 femtometres; these occur along the shelf from 30°-35° S (Phipps, C. V. G. 1966). The varying depths of the

terraces suggests that there has been approximately 100 feet of movement in the outer shelf plain since the formation of the terrace. Generally, the terraces have a relief of 2-4 femtometres, representing erosion and beach formation during Holocene transgression when the sea level was reliably stationary. This process began approximately 17,000 years before present (BP), modern sea levels were reached about 3000 to 4000 BP (Curry, J. R. 1960, Shepard, F. P. 1963, John R. Conolly 1969).

The continental slope has an average gradient between 5°-8°, reaching gradients of 11° at the base of the slope. Numerous canyons indent the slope caused by density currents, which form from the pressure of gravity. These transport terrigenous (rock debris, mineral grains and clay minerals) sediment east towards the Tasman Basin (Willem J. M. van der Linden 1970). The continental rise is defined as an area built up of sediment fans at the foot of the continental slope. Gradients are less than 1° and the rise merges seaward with the abyssal plain (Willem J. M. van der Linden 1970).

The study area increases in depth at a gradient of 1.1°. As can be seen below in Photo 1, this gradient begins closest to shore at depths of -5 metres below sea level and accumulating further from shore at depths of -25 metres below sea level. The undersea landform for the entirety of Disaster Bay has been described as a very flat plain closer to the shoreline before transitioning to gentle slopes (Aus Seabed Marine 2023). Photo 1 presents a clear image of the seabed, which shows that the study area is dominated by the plains ocean landform with a slow decrease in depth as the distance from the shore increases.

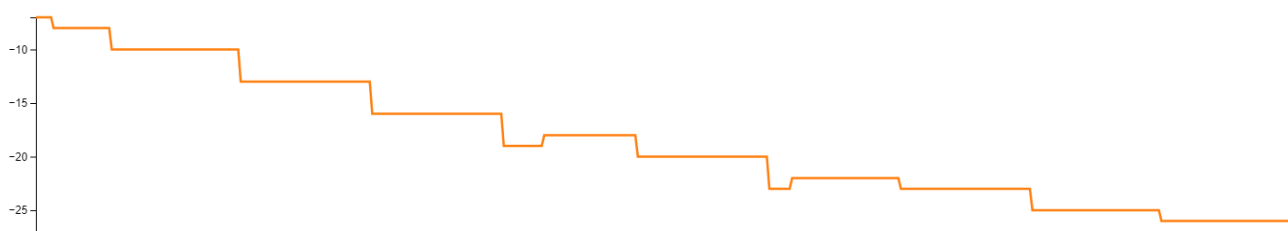


Photo 1 Elevation profile of the Eden Disaster Bay study area (Source: (Aus Seabed Marine 2023))

The composition of the seabed is primarily sand. Although this is indicative of the dominance of sand particles, the seabed may still contain small amounts of gravel and/or mud. Sand is a product of erosion and associated with bottom currents. This type of seabed appears in areas of the continental shelf and the continental slope where the intensity of sea currents decrease (Reidulv Boe, Lilja Run Bjarnadottir 2019). The study area is afforded a measure of defence from the rough colliding East Australian Current (EAC) and Antarctic Circumpolar Current (ACC) due to their position in coastally trapped waters. However, exposure to the highly erosional force of the stratigraphic Rosby wave, as well as shifting intertidal zones has ground the seafloor into sand.

2.1.1. Sea-state

The Tasman Sea is known to be a difficult and dangerous sea for sailors. Referred to as 'the Ditch', it is notorious for being unpredictable and prone to storms. Many sailors regard it as being one of the most dangerous stretches of water in the world, with wind and wave conditions being rough for most of the year (International Institute for Law of the Sea Studies 2023).

The South Equatorial Current inflow divides into branches roughly in the centre of the Great Barrier Reef region, the southward flowing portion accumulates into the EAC. Transport and variability of the EAC remain uncertain, with the mean being approximately 15 Sverdrup (equal to 1 million cubic metres per second) (Godfrey, J.S. and Golding, T.J. 1981). The EAC reaches maximum transport prior to separation from the coast, generally occurring north of Sydney. Most of the warm water flows back northward further offshore, or flows eastward along the mid-Tasman front to pass north of New Zealand (P.G. Baines 1989). Turbulent flow causes

eddies to form where the current recirculates, these deep warm-core eddies drift throughout the southern Tasman Sea, re-joining the EAC by merging with it or possibly escaping in the circumpolar current further south. There is no evidence of a substantial particle transportation occurring within the open Tasman Sea, as the bottom topography ensures that deep water is closed off (P.G. Baines 1989).

The tide within Disaster Bay reaches heights of 1.9 metres and lows of 0.22 metres (Bureau of Meteorology 2023). Overall sea levels based off of tide gauge data can be sourced from Permanent Service for Mean Sea Level Eden station located approximately 5 kilometres north-east, which displays sea level data up to 2020. Data obtained from this source indicates that the mean sea level in Disaster Bay is approximately 7100 millimetres (Photo 2), but has fluctuated since the 1980s, with a low of 6900 millimetres during the 1990s and a high of 7300 millimetres during 2017 (Permanent Service for Mean Sea Level 1986).

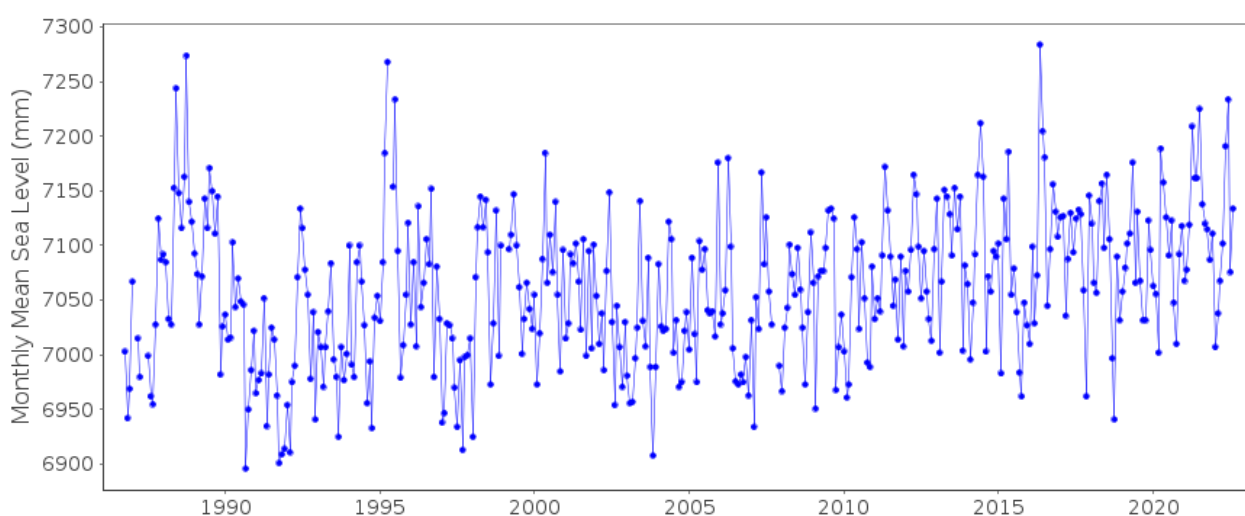


Photo 2 Monthly Mean Sea Level Eden Station 833 (Source: (Permanent Service for Mean Sea Level 1986))

This shifting sea level creates variation in the position of the intertidal zones, the high intertidal zone which floods during the peak of daily high tides and is consistently struck with pounding waves. The middle intertidal zone experiences constant ebb and flow twice a day, and the lower intertidal zone is always underwater except during the lowest of tides (NOAA 2023). The effect of the intertidal zone can be seen in the lateral movement of coastlines, with movements potentially covering several kilometres between high and low tide. Therefore, various parts of the intertidal zones may become exposed to erosion and deposition. Tidal currents can erode and transport sediment, generally currents in inlets similar to the study area are exposed to spatially asymmetric patterns of ebb and flow causing mass transport of both water and sediment (US Army Corps of Engineers 2023).

The far south coast of NSW is also subject to a unique form of Rossby wave. This is a wave generated from the rotation of the Earth, called a topographic Rossby wave. These deep waves generate exclusively within coastally trapped waters, such as bays and coves. They take the form of a column of fluid which develops anti-clockwise rotations if moving towards the shore, and clockwise rotations if moving towards deeper waters. These topographic Rossby waves produce upswelling, moving deeper waters towards the surface while also affecting sea level changes, current variation and the movement of sediments, and produce a significant erosional force (Photo 3) (P.G. Baines 1989).

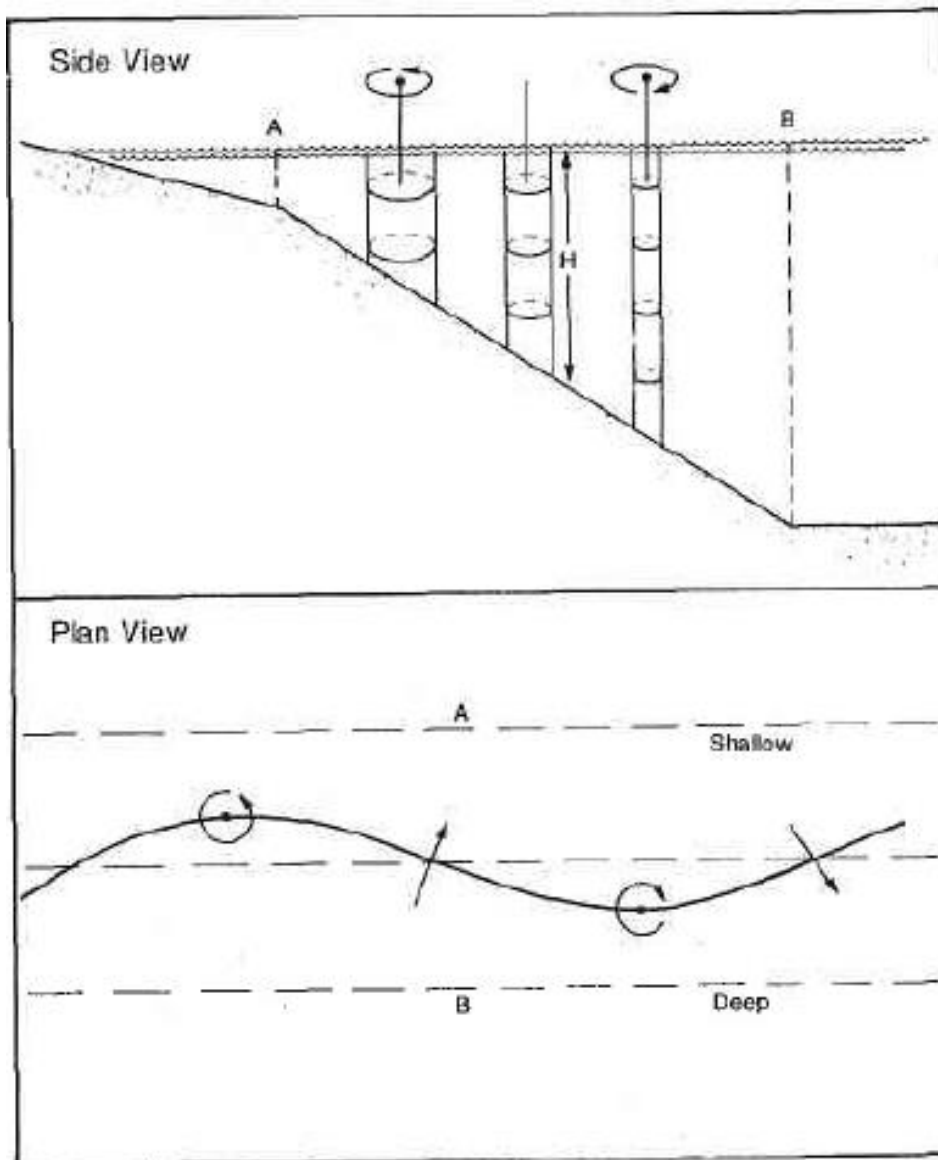


Photo 3 Schematic diagram illustrating the restoring force and direction of propagation for coastally trapped waves, based on potential vorticity conservation (Source: (P.G. Baines 1989))

2.2. Coastal resources and fishing practices

The wider regions inland include distinct ecological zones, including open forest and open woodland, with riparian vegetation extending along many of the watercourses. Each ecological zone hosts a different array of floral and faunal species, many of which would have been utilised according to seasonal availability. Aboriginal inhabitants of the region would have had access to a wide range of avian, terrestrial and aquatic fauna and repeated firing of the vegetation would have opened up the foliage allowing ease of access through and between different resource zones.

The Disaster Bay coastline includes a wide assortment of vegetation supported by this landscape, such as Saw Banksia *Banksia serrata*, Giant Honey-myrtle *Melaleuca armillaris* subsp. *armillaris*, Common Heath *Epacris impressa*, and Sandhill Sword-sedge *Lepidosperma concavum*. Other species of plants located along the Disaster Bay coastline include the Port Jackson Pine *Callitris rhomboidei*, the Manehu *Pteridium esculentum*, and Swamp Selaginella *Selaginella uliginosa* (Department of Planning, Industry and Environment 2020, pp. 58).

Native fauna that would have been present along the coastline in the vicinity of the study area include mammal species, such as the Southern Brown Bandicoot *Isodon obesulus obesulus*, Long-nosed Potoroo *Potorous tridactylus*, Eastern Pygmy-possum *Cercartetus nanus*, Bare-nosed Wombat *Vombatus ursinus*, Common Ringtail Possum *Pseudocheirus peregrinus*, and Bare-nosed Wombat *Vombatus ursinus* (Atlas of Living Australia 2022).

As well as being important food sources, animal products were also used for tool making and fashioning a myriad of utilitarian and ceremonial items. For example, tail sinews are known to have been used to make fastening cord, while 'bone points', which would have functioned as awls or piercers, have been identified in the archaeological record. Animals such as Possums were highly prized for their fur, with possum skin cloaks worn fastened over one shoulder and under the other (Attenbrow 2002).

Mollusc species identified close to the study area include the Shelf Limpet *Calptaea calyptaeformis*, Gunn's Screw Shell *Gazameda gunnii*, Undulate Volute *Amoria undulata*, and Venus Cockle *Placamen placidum*. The study area and surrounds are also inhabited by crustacean species, including the Balmain Bug *Ibacus peronii*, Shore Crab *Leptograpsus variegatus*, and Soldier Crab *Mictyris longicarpus*. The most populous fish species surrounding the study area include the Cowan young *Trachurus declivis*, Roundsnout Gurnard *Lepidotrigla mulhalli*, Crookspined Dragonet *Foetorepus calauropomus*, Dixon's Stingaree *Urolophus paucimaculatus*, Orange-spotted Leatherjacket *Meuschenia freycineti*, and Eastern School Whiting *Sillago fimbriata* (Atlas of Living Australia 2022).

The Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) describes cultural fishing practices along the south coast of NSW, stretching from Sydney to the Victorian border as 'adaptive'. Aboriginal fishers would have had to adapt to sea level change occurring over the past 20,000 years, with the sea reaching modern levels approximately 6000 BP (AIATSIS 2021). Aboriginal fishers developed new technologies to exploit the changing seascape, with bone-tipped spears and shellfish hooks. This allowed for more species to be taken from a wider range, fish and shellfish became the most important cornerstone of their economies, both eaten and traded (AIATSIS 2021).

Abalone was an important marine resource for the Aboriginal people of the south coast, collecting it for sustenance, by awaiting the high tide, cracking the shell in two, and employing the half shell as a pan to be placed over a fire ('The Yuin people and their traditional fishing practices', 2020). It would also be collected for trade, particularly as an export to Chinese communities during the late-19th century. Mullet was also harvested using plant nets, with whole families gathering to haul schools off of the beach. Everyone who helped received a share of the catch. This practice is continued today (AIATSIS 2021).

As saltwater people, fishing is seen as an integral part of Aboriginal culture. Fishing is a way to connect with Country, and the catching and sharing of fish and shellfish is how culture is practiced daily. It involves knowledge passed down from parents, grandparents, uncles and aunts to inform a fisher what time of year is best to get which species, which locations to visit and rules about what you cannot do. For example (AIATSIS 2021):

"With the abs [abalone] we were told, 'Don't take them big ones boys, get them smaller ones, the big ones are your breeding ones; does a farmer sell his breeding cattle and sheep?' – Murramarang Elder Tom Butler.

An additional expectation was that a fisher is to share what is caught. Particularly with those who are unable to fish, such as elders, small children, the sick or disabled, or just family members who are too busy to go. Sharing is a cultural and social obligation, with whole families and communities relying on a small group of dedicated fishers (AIATSIS 2021).

2.3. Seafloor visual survey

A visual survey of the seafloor within the study area was undertaken April 2024 by AusKelp as part of the project (AusKelp 2024). Inspections were carried out in nine locations within the study area. Visibility ranged from good, fair and average. All locations had similar characteristics, which are summarised below:

- Ocean desert.
- Areas of fine and coarse wave-sculpted sand sediment.
- Wild-cast Golden Kelp *Ecklonia radata* and Crayweed *Phyllospora comosa*.
- Areas of shales.
- Areas of crushed shell (approximately 1-3 millimetres in size, with some rarer pieces up to 5 millimetres in size).
- Areas of sand ridges.
- No coral or seagrass.
- No structures identified (i.e. ship wrecks).
- Flathead *Platycephalus* and other small fish observed.
- Sand appears lighter in colour the further from the shoreline.
- Sand appears more coarse closer to the shoreline.
- Sand appears more coarse and redder in colour the closer to the rocky shoreline in the southern portion of the study area.
- Sand appears to increase in fineness as depth of water increases.

The full report is presented in Appendix B of the AR in Appendix E.

2.4. Land Use History

2.4.1. Development of Eden

During 1828, Captain Thomas Raine, a Sydney based merchant and whaler, sent 25 men ashore in Snug Cove with the command of John Irvine to begin shore-based whaling operations. Rumours surrounding this operation began to circulate and detailed wild killer whales assisting whalers in their operations. During 1832, Peter Imlay, who was travelling from Launceston to Sydney in his chartered schooner *Elizabeth*, stopped at Twofold Bay to investigate. His inspection of Twofold Bay resulted in his inspiration to construct a port to take advantage of the wide bay with its safe harbours, allowing for the access of the rich pastoral areas beyond. Peter decided to settle there and begin a venture into whaling, agriculture and grazing (Eden Community Access Centre Inc 2023).

James Atkinson proposed to Governor Richard Bourke to settle Twofold Bay via emigration from Northern Ireland. Although Governor Bourke objected to Atkinson's plan, he was in favour of extending the colonial boundaries as far south as Twofold Bay and so despatched a letter to Earl of Aberdeen, Secretary of State for the Colonies on 4 July 1834. The Earl of Aberdeen rejected this proposition. However, during November of 1834, the British Government authorised the captain of *HMS Alligator* to seek and appropriate sites for settlement in Twofold Bay. Alexander, George and Peter Imlay established a whaling station at Snug Cove that year (Eden Community Access Centre Inc 2023).

Following a visit from Governor Bourke in 1835, the Legislative Council approved the granting of licences to de-pasture vacant Crown land beyond the limits of location (areas designated for legal colonial settlement). This legitimised the position of squatters, including the aforementioned Imlay brothers who obtained licences over tracts of land in the Twofold Bay area. The Imlay brothers sent the first recorded shipment of wool from Twofold Bay during 1836 (Eden Community Access Centre Inc 2023). Eight years later, Thomas Townsend was ordered to survey the site of Eden, writing into the Australasian Chronicle (Thomas Townsend 1842):

His Excellency the Governor has been pleased to direct it to be notified, for general information, that a settlement at Twofold Bay will be opened to location in the commencement of the month of March, 1843, and that some town allotments, as well as grazing lands, will be sold as early in that month as circumstances will admit of. The sale will take place, in Sydney, in the usual manner, and further notice will be given as soon as particulars are received from the Surveyor General.

On 7 December 1842, Oswald Brierly set off the Pathfinder Expedition from Monaro to Twofold Bay to determine prospects for a road between the two settlements. The Pathfinder Expedition arrived at Twofold Bay on 3 January 1843. On 9 March the first sale of land in the township of Eden occurred, resulting in Ben Boyd commencing construction of Boydtown. The Seahorse Inn was built, and Boyd proposed to base his steamship company at Twofold Bay. During this year the first cargo was sent from Eden to London by the Imlay brothers (Eden Community Access Centre Inc 2023).

Development around Twofold Bay continued rapidly from 1844 with the construction of a post office in Boydtown. In 1845, the road between Monaro to Eden via Pambula was constructed. The first post office in Eden was constructed in 1847 with operations at Boydtown ceasing. A customs house was built in Eden in 1848, and by 1849 the population of Eden was recorded as 49, with Boydtown recorded as 400. In Eden George Barclay opened a general store on Chandos Street (Eden Community Access Centre Inc 2023):

George Barclay, a slab built cottage containing 7 rooms plastered inside and rough coat outside, shingled roof" Later the business was moved into what is now the Great Southern Hotel.

By 1854 the population of Eden was recorded as 180 adults and 85 children. During 1857 the first government school started with an enrolment of 12 girls and 30 boys. The Eden courthouse building, the first police station and Great Southern Hotel were constructed this year, with the Parliamentary session of 1857 voting to construct a road from Eden to Bombala, the chief town of the extensive pastoral district of Maneroo. This road would be completed in 1859 (Eden Community Access Centre Inc 2023). During 1858 a new wharf, designated Egan Wharf, began construction. In the same year a church committee meeting on 5 July determining a location for the construction of a church in Eden; construction began in 1865 (The Goulburn Herald and County of Argyle Advertiser 1858).

The Kiandra Gold Rush began and brought in a floating population of approximately 4000 to Eden during 1860, Eden's first lighthouse is constructed on Lookout Point. Eden Cemetery which was in use from the 1830's is officially dedicated in 1863 (The Monaro Mercury, and Cooma and Bombala Advertiser 1863). A telegraph line is extended from Eden to Gabo Island, on a nearby island, the Sydney Morning Herald reported (The Sydney Morning Herald 1870):

A report has reached here that great quantities of human bones are lying exposed on a small island near Gabo ; they are believed to be the remains of those lost in the Monumental City, and buried on the island.

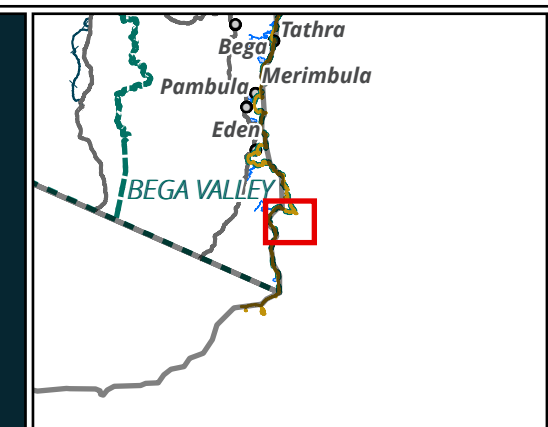
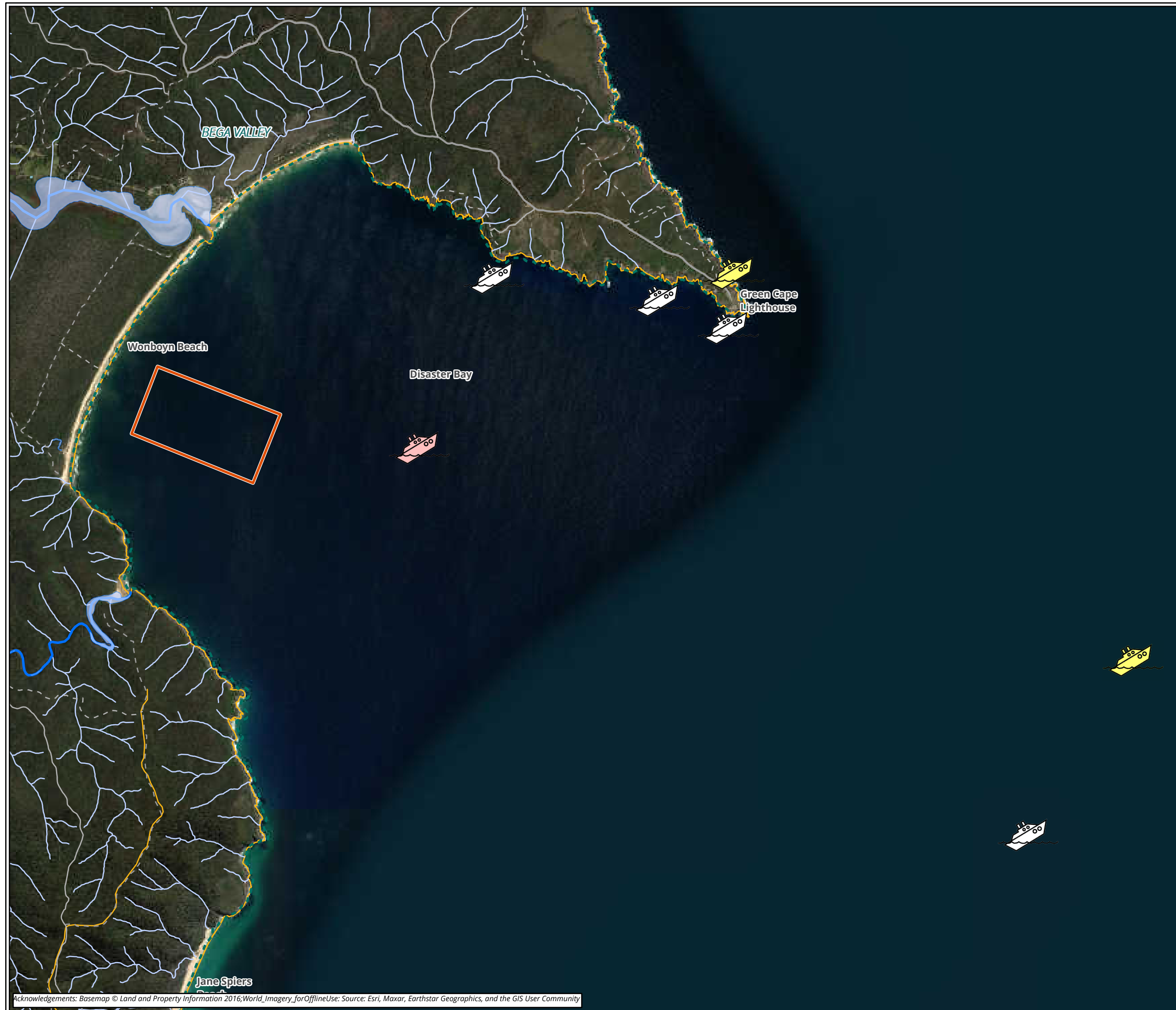
During 1879 funds for the construction of a lighthouse at Green Cape were allocated. The following year the site for the Green Cape Lighthouse was surveyed, with excavation of the site beginning in 1881. The Green Cape lighthouse was completed and began operating on 1 November 1883 (Eden Community Access Centre Inc 2023).

2.4.2. Modern shipwrecks within vicinity of the study area

The NSW far south coast has been a cause for concern to shipping due to the tumultuous strong seas which are frequently observed around the Disaster Bay area, with Disaster Bay itself having earned its name from the frequency of shipping disasters having occurred there. Disaster Bay has been subject to the wreck of numerous iron and much older timber wrecks, with many of the iron wrecks having their locations rediscovered, whereas the timber vessels, having been employed during an earlier period and lacking detailed records. Several salvage operations have been conducted in Disaster Bay, in areas that surround and include the study area, these operations have been conducted since the 1950s, and involved the use of diving bells and dredging equipment (NSW Heritage Office 1996). The purpose of including shipwreck data is twofold – firstly to illustrate the rough sea-state of the study area, as well as to demonstrate the modern interactions between humans and the seabed of Disaster Bay.

The following shipwrecks are known to have occurred in Disaster Bay:

- *City of Sydney* (Site ID 1969): Wrecked in 1854, and rests 22 metres below the ocean approximately 4 kilometres north-east of the study area (Register of British Shipping SMH 1862).
- *Shiralee* (Site ID 2762): Wrecked in 1978, not located.
- *New Guinea* (Site ID 895): Wrecked in 1911, and rests approximately 10 metres beneath the ocean, roughly 5 kilometres north-east of the study area (SMH 14/2, 5/7/1911 RBS 1911).
- *Ly-ee-Moon* (Site ID 1029): Wrecked in 1886, rests approximately 13 metres below the ocean and approximately 6 kilometres to the north-east of the study area (SMH 1/6, 2/6/, 10/6/1886 1886).
- *Terrance Star* (Site ID 2094): Wrecked in 1994, location unknown (Longford, Wayne and Maddison, Ruth 2005).



Legend

 Study area

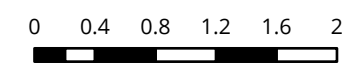
Shipwrecks

 Shipwreck site

 Shipwreck site - Approximate location:unlocated wreck

 Shipwreck Site - Impacted

Figure 3 European coastal activity



Scale: 1:50,000 @ A3
Coordinate System: GDA 1994 MGA Zone 56



Matter: 38971, Date: 20 July 2023,
Drawn by: JET, Checked by: NW, Last edited by: jtowndsend
Layout: 38971_FX_Shipwrecks_Eden
Project: P:\38900s\38971\Mapping\
38971_Eden.aprx

3. Aboriginal cultural heritage context

3.1. Ethnohistory

Aboriginal people have occupied Australia for at least 40,000 years and possibly as long as 60,000 (Bowler et al. 2003, Mulvaney & Kamminga 1999). By 35,000 years BP, all major environmental zones in Australia were occupied, including periglacial environments of Tasmania (Mulvaney & Kamminga 1999, pp. 114). Between 25,000 and 12,000 years BP (the Last Glacial Maximum) Australian temperatures went from moderate to dry and either intensely hot or cold (Mulvaney & Kamminga 1999, pp. 114). At this time the average monthly temperatures on land were 6-10°C lower and in southern Australia, coldness, drought and winds acted to change the vegetation structure from forests to grass and shrublands (Mulvaney & Kamminga 1999, pp. 115–116).

During the Last Glacial Maximum, sea levels dropped to approximately 130 metres below present, the Australian continent was correspondingly larger. With the cessation of glacial conditions, temperatures rose in conjunction with the rise in sea levels. By approximately 6000 BP sea levels had stabilised relative to their current position. With the changes in climate during the Holocene, Aboriginal people had to adjust not only with reduced landmass, but changing hydrological systems and vegetation; forests again inhabited the grass and shrublands of the Late Glacial Maximum (Mulvaney & Kamminga 1999, pp. 120).

Through radio carbon dating of cultural deposits, the occupation of the NSW south coast is estimated to have occurred during the Pleistocene (Boot 2002, Lampert 1971a, Ossa, P et al 1995). The nature of occupation in south-east Australia is generally thought to have been sporadic and low intensity, maintaining a low population level (McDonald 1994, pp. 67). For sites such as Sassafras, Burrill Lake, Bass Point and Currarong, to the north of the study area, an argument has been made to suggest they contain evidence of increased occupation and population intensity during the mid- to late-Holocene (Hughes, P. & R. Lampert 1982). Based on an increase in observed sedimentation rates and discard in rock-shelters in the southern area of Sydney Basin, Hughes (1977) suggested that a region-wide intensification of site use and population increase likely occurred between 5,000 and 2,000 years BP.

For the NSW south coast, population centres were organised in relation to coastal and hinterland resources. Multiple models of Aboriginal occupation have been proposed (Boot 2002). Bowdler (1970, pp. 5, 111) argued that during summer Aboriginal occupation of the coastal zone was intensive, with exploitation of inland resources occurring during periods of limited coastal resources. Lampert (1971b, pp. 63) proposed a model based on mixed coastal economy involving the exploitation of littoral, estuarine and land resources. Lampert argued that littoral resources contributed a much higher component to the Aboriginal diet than that which may have been obtained from forests. Lampert's model includes a differentiation of coastal sites based on different forms of resource exploitation including main sites (base camps), specialised sits and a third category of overnight camps (Lampert 1971b, pp. 62–64). Poiner (1976) proposed a model for seasonal occupations in which semi-nomadic occupation of the coast occurred during summer, with nomadic occupation reserved for winter in both hinterland and coastal areas. This is based on the assumption made by Boot (2002, pp. 7) that hinterland sites are small, far flung and few in number (New South Wales Archaeology Pty Ltd 2015).

Attenbrow's (1976) model of resource exploitation and movement suggests that the south coast hinterland and coastline were occupied on a year round basis, and that movement occurred only at the family or small group level, rather than as nomadic movement of entire populations seasonally. When arguing that coastal occupation was greater during summer when the maritime resources were more abundant, Attenbrow suggested that people living on the coast would also have harvested terrestrial resources. Attenbrow also

considered in greater detail the nature of hinterland occupation and argues that in summer, large groups would have resided in valleys, while small family groups would benefit from resources in mountainous landscapes. Family groups would have been more widely dispersed throughout the hinterland and along the coast during winter. Each group, particularly those occupying the coast, had a higher proportion of animal foods in their diet during the winter months. Vallance (1983) also argued that the south-coast economy was likely to have been based on a wide range of subsistence strategies that varied within and between seasons, and from year to year, and that short-term climatic variation would have affected subsistence strategies rather than longer term seasonal variation. Hiscock (1982) proposed that mass movement between the south coast and the hinterland occurred. He found associations of stone from hinterland sources with stone derived from the coast, reasoning this indicated that occupants of hinterland sites had an intimate knowledge of resources in both areas and therefore they were not just occupying in the short-term to escape winter coastal food scarcity.

Our understanding of Aboriginal people in the Eden area, and the records of historical colonial encounters has been reconstructed from minimal records produced during the periods of dispossession (Swain T 1993). Stanner (1977) describes the colonial and post-colonial period as a 'history of indifference' with little to no regard for history. For a period of time following the arrival of Europeans to Australia no ethnographic investigations were undertaken to learn about the society and cultural practices of Aboriginal people. As a result, attempting to research the advanced traditional cultures of various Aboriginal groups necessitates piecing together fragmentary information derived from annotations of disparate early observations. Knowledge of Aboriginal society in south-eastern NSW at the time of European occupation is minimal, with details relating to kinship, clan, territorial and religious organisation is largely unknown (Attenbrow 2002). Howitt (1904, pp. 81) identified the people of the far south-coast as the Yuin 'tribes', also called the Coast Murring tribes. The Yuin boundaries extend along the coast from the Shoalhaven River to the north to Cape Howe in the south (Mullett 1996, pp. 5). Howitt (1904) recognized a distinction between the people of the north and those of the south with the division lying between Moruya and Ulladulla. Tindale (1974) defined the area situated between Cape Dromedary and Bega as that belonging to the Djiringanj speaking people. The Map of Indigenous Australia places the study area in Bidwell (Bidawal) Country, but remains close to the boundary of Yuin and Bidawal Countries (Photo 4). Tindale (1974, pp. 203) describes Bidawal Country as extending along the coast from Green Cape NSW to Cape Everard in Victoria and inland to Delegate in NSW, and to the headwaters of the Cann and Bern rivers. Boundaries of Country can be fluid and change over time. As such, the study area likely holds value to both Yuin and Bidawal people.

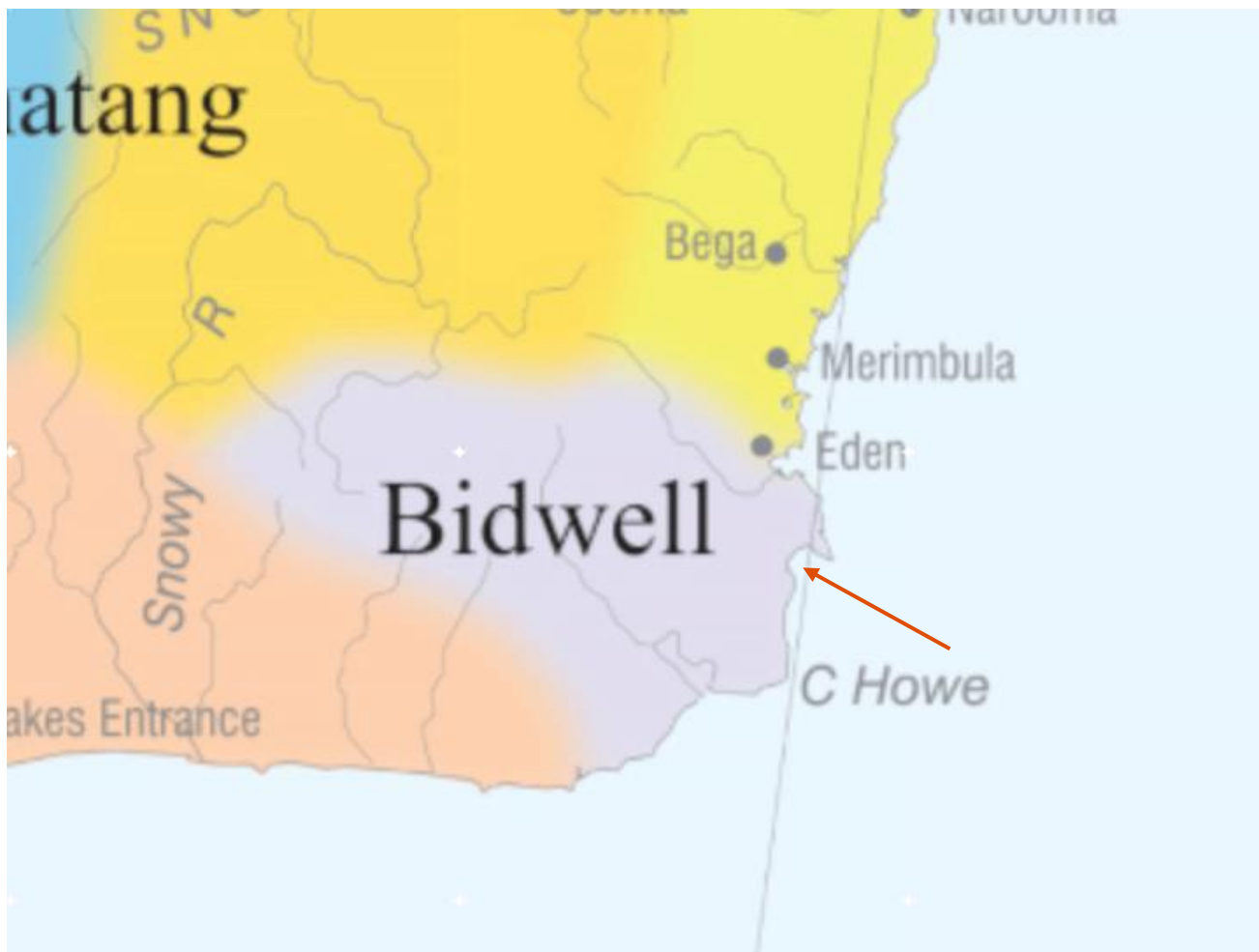


Photo 4 Extract of the Map of Indigenous Australia, with the location of the study area indicated by the orange arrow (Source: (Horton 1994))

Aboriginal people with heritage in coastal areas often identify as Saltwater People. For example, a Yuin person's identity may have derived primarily from both mother and father, with more unique aspects of identity likely to have come from totemic identity and specific relationships to country inherited via birth rights (Rose 1990). People would have travelled to and resided in different tracts of country, forming into temporary groups of varying personalities and clan compositions for the purposes of fulfilling a variety of economic, familial and ceremonial purposes. Archaeological conceptions of social groupings need to consider the multidimensional nature of groups based on clan, gender and age identities which are likely to have been both contemporaneously and generationally fluid.

Prior to European occupation the Aboriginal people of the south coast practiced a hunting, gathering and fishing economy. Robinson (Mackeness, G 1941) discussed the economy of the Bega area as follows:

... the zamia (is common) on the ranges... the nuts are collected in large quantities and by the Blacks called Bunggon. The Cabbage Palm... is another article of subsistence... The Phascomolya (Wombat) and the fish are the chief support of the natives, the latter are taken in Weirs. Eels and other fish in ponds are stupefied by an infusion of bark.

Robinson (Mackeness, G 1941) noted that fish weirs allowed large numbers of people to come together for sustained periods of time, providing an abundant source of food. Observations from Eden indicate that Aboriginal people relied heavily on coastal resources such as fish and shellfish, with camps located on coastal dunes or in close proximity to the coast (Sullivan 1982). Ethnohistoric records note that fishing methods

utilised on Black Ada Lagoon near Tathra approximately 50 kilometres north of Eden, involved a combined effort of people driving fish to one end of the lagoon where they could be easily speared (Bowdler 1970).

Boot's (1994) investigation, which drew from original archival sources of ethno-historical observations relating to the south coast region, lists a large number of faunal and floral species which have been recorded in the literature as having been utilised by Aboriginal people. The animals listed include fish, shark, eel, whales, seals, marine worms, shellfish, possum, kangaroo, wombat, birds, goanna and grub species. Plants harvested and utilised include kangaroo apple, native cranberry, honeysuckle, pigface, macrozamia, cabbage tree, fruit and yams.

The NSW far south coast has been exposed to adaptive approaches to coastal resource gathering as a result of changing sea levels over the past 20,000 years, reaching modern levels an estimated 6,000 BP (AIATSIS 2021). Cultural fishing practices met new challenges with new technologies, with fishers having to make use of bone-tipped spears and shellfish hooks allowing for a wider variety of fish and shellfish to be harvested in deeper waters. For saltwater people, fishing is seen as integral to culture, a way to connect with country, with the catching and sharing of fish a means to practice culture daily (AIATSIS 2021).

In 1798, Matthew Flinders set out in the *Norfolk* to explore the extent of the strait separating Van Diemen's Land (Tasmania) from the Australian mainland (May, W.E. 1948). During the voyage the *Norfolk* sought shelter during adverse winds, taking the opportunity to survey and name the bay they took cover in: Twofold Bay (Eden Community Access Centre Inc 2023). An excerpt from Flinders journal recorded what may be the first contact between local Aboriginals and Europeans near Eden (Eden Community Access Centre Inc 2023):

In order to make some profit of this foul wind, Mr. Bass landed early next morning to examine the country while I went with Mr. Simpson to commence a survey of Two-fold Bay. In the way from Snug Cove, through the wood, to the long northern beach, where I proposed to measure a baseline, our attention was suddenly called by the screams of three women, who took up their children and ran off in great consternation. Soon afterward a man made his appearance. He was of middle age, unarmed, except with a whaddie, or wooden scimitar, and came up to us seemingly with careless confidence. We made much of him, and gave him some biscuit; and he in return presented us with a piece of grisly fat, probably of a whale. This I tasted; but watching an opportunity to spit it out when he should not be looking, I perceived him doing precisely the same thing with our biscuit, whose taste was probably no more agreeable to him than his whale was to me. Walking onward with us to the long beach, our new acquaintance picked up from the grass a long wooden spear, pointed with a bone; but this he hid a little further on, making signs that he should take it on his return. The commencement of our trigonometrical operations was seen by him with indifference, if not contempt; and he quitted us, apparently satisfied that, from people who could thus occupy themselves seriously, there was nothing to be apprehended.

By the mid- to late-1880s, traditional Aboriginal life for Yuin and Bidawal people had been severely disrupted due to the initial ravages of disease combined with continued and accelerating loss of access to land. This was particularly so after the passing of the 1861 Robertson Land Acts, allowing for the purchase of Crown lands up to 320 acres (130 hectares), by any occupant of the British colony (National Museum Australia 2022); this increased the rate of dispossession of Aboriginal people from their traditional lands.

3.2. Aboriginal heritage located in the study area

The archaeological assessment of the study area has determined there is low potential for Aboriginal archaeological sites to be located within the study area.

The AR attached in Appendix E provides details of the archaeological assessment undertaken.

3.3. Interpretation of past Aboriginal land use

The study area is located on Yuin and / or Bidawal Country, within Disaster Bay off Wonboyn Beach at Eden, NSW. A total of 85 different AHIMS site types were identified within a 5 by 5-kilometre search centred upon the study area. None of these sites are located within the study area. However, these search results indicate that the most common archaeological sites in the vicinity are artefact and shell sites (Figure 4).

These search results align with the findings of previous archaeological assessment both regionally and locally, with artefact sites appearing frequently across the coast (Sullivan, M.E. 1982, Williams, D. 1995, Navin Officer Heritage Consultants 2000, Barber, M. 2002, Navin Officer Heritage Consultants 2003). Raw material types present regionally include fine grained siliceous stone, chert, quartz, quartzite, rhyolite, silcrete and volcanics with quartz and rhyolite dominating raw material counts (Navin Officer 1999). Shell middens were found to contain a variety of shellfish species, with upper middens found to contain edible mussel with low proportion of hairy mussel accumulated between 1200 BP and the time of European contact. Middle middens were found to contain both hairy mussel and mud oyster accumulated between 3000 and 2300 BP. Lower middens were found to contain mud oyster having accumulated from 3000 BP (Sullivan, M.E. 1982). Excavations uncovered distinct shell layers separated by layers of sterile sand. As proposed by Bowdler (1970) this may indicate periods of occupation taking place during times of abundance in coastal resources, with movement of populations. This theory was supported by the results of a Navin Officer (1999) survey of East Boyd which, based on evidence identified, determined these sites represent occasional activity over a long period of time rather than sustained occupation. Species identified in midden sites include Mussel, Hair Mussel, Mud Oyster, and Abalone.

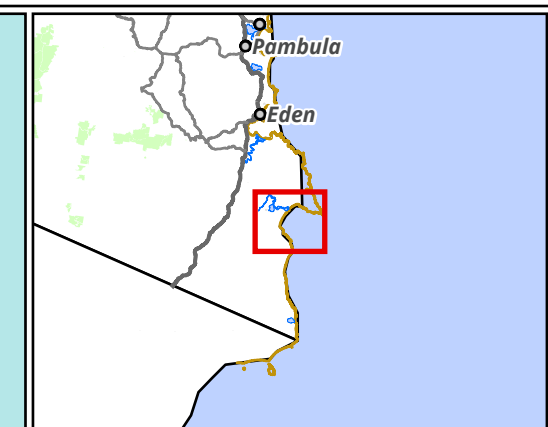
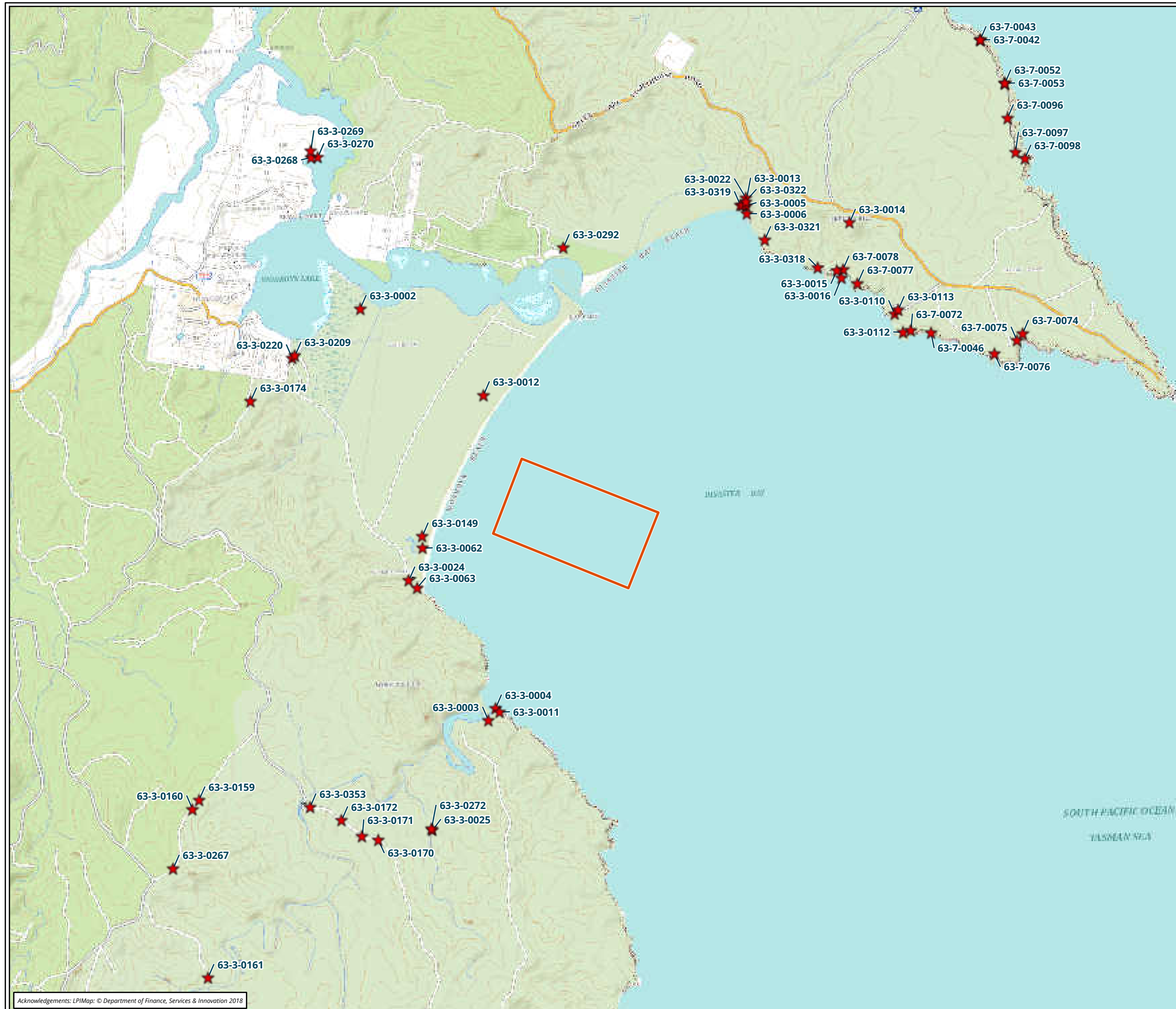
A local study conducted by Sarah. M. Colley (1997) encourages the possibility of both shell middens and artefact scatters having existed along the coast prior to inundation as deposits of both were present in proximity to the study area. Based on estimates of sea level changes, it is suggested that Disaster Bay may have contained sites dominated by backed artefacts of silcrete, whereas coastal middens may have contained the remains of Mud Oyster.

Cultural fishing practices across the NSW far south coast have previously been described as 'adaptive', with sea level changes occurring across a 20,000 year period, reaching modern levels an estimated 6000 BP (AIATSIS 2021). Fishers were required to adopt new technologies to enable exploitation of the changing sea scape. The use of bone-tipped spears and shell fish hooks allowed for a wider variety of fish and shellfish to be harvested in deeper waters, becoming the cornerstone of coastal economies for the purposes of consumption and trading (AIATSIS 2021). For saltwater people, fishing is seen as integral to culture. It is a way to connect with country, with the catching and sharing of fish a means to practice culture daily. Sharing is seen as a social and cultural obligation, with entire families relying on small groups of skilled fishers (AIATSIS 2021). With a heavy cultural reliance on ocean resources, as well as the numerous coastal midden sites locally, we can determine that coastal occupation has occurred and likely taken the shape of seasonal settlement. Even after the inundation of Disaster Bay, it has remained a place of cultural and resource-gathering importance.

It is highly likely the study area was exposed to coastal fishing activities and seasonal occupation due to the importance of coastal sites to traditional fishing practices and the daily practice of culture. The nature of previously reported archaeological sites regionally indicate that sites within the study area may have materialised as the remnants of oyster species and backed silcrete artefacts.

Archaeological survey of the study area was deemed implausible under the Code due to the marine nature of the study area. However, the results of the desktop assessment and the seafloor visual survey strongly indicate that the environmental conditions of Disaster Bay have resulted in high levels of erosion and disturbance to the seafloor, with sediments being constantly displaced and redeposited into deeper areas.

This suggests that any physical Aboriginal archaeological sites which may have been present within the study area have been destroyed by this harsh and unstable environment. While there may not be any tangible Aboriginal cultural heritage remaining within the study area and Disaster Bay, it is highly likely that there are intangible Aboriginal cultural heritage values associated with this location.

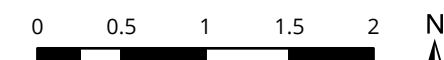


Legend

-  Study area
-  AHIMS

NOT TO BE MADE PUBLIC

Figure 4 AHIMS within the vicinity of the study area



Kilometers
Scale: 1:45,000@ A3
Coordinate System:
GDA 1994 MGA Zone 56



Matter: 38971, Date: 05 July 2023,
Drawn by: JET, Checked by: NW, Last edited by: jtowndsend
Location: P:\38900s\38971\Mapping\
38971_Eden,
Layout: 38971_FX_AHIMS

4. Aboriginal community consultation

Consultation with the Aboriginal community has been undertaken in compliance with the consultation requirements as detailed below. A consultation log of all communications with RAPs is provided in Appendix A.

4.1. Stage 1: Notification of project proposal and registration of interest

4.1.1. Identification of relevant Aboriginal stakeholders

In accordance with the consultation guidelines, Biosis notified the following bodies regarding the proposal:

- Bega Valley Shire Council.
- Heritage NSW, Department of Planning and Environment.
- NSW Native Title Services Corporation Limited.
- Office of the Registrar, Aboriginal Land Rights Act 1983 of Aboriginal Owners.
- NNTT.
- South East Local Land Services.
- Eden LALC.

A list of known Aboriginal stakeholders in the Bega Valley region was provided by Heritage NSW. A copy of this response is provided in Appendix B and includes:

- | | |
|--|--|
| • Badu (Murrin Clan/Peoples) | • Gunyuu (Murrin Clan/Peoples) |
| • Barraby Cultural Services | • Guunamaa Dreamin Sites and Surveying |
| • Bega LALC | • Iris White |
| • Bilinga (Murrin Clan/Peoples) | • Jason Davison |
| • Clive Freeman | • Jerringong (Murrin Clan/Peoples) |
| • Djirringanj Elders Federation | • Karrial (Murrin Clan/Peoples) |
| • Eden LALC | • Konanggo Aboriginal Cultural Heritage Services |
| • Ellen Mundy | • Merrimans LALC |
| • Gadu Elders | • Munyunga (Murrin Clan/Peoples) |
| • Gadhu Dreaming | • Murrumbul (Murrin Clan/Peoples) |
| • Gilay Consultants | • Ngarigo and Djirringanj people |
| • Girragirra Murun Aboriginal Corporation | • Ngurambang |
| • Goobah Development PTY LTD (Murrin Clan/Peoples) | • Nundagurri Aboriginal Corporation |
| • Guntawang Aboriginal Resources Incorporated | • Pemulwuy (Murrin Clan/Peoples) |

- RAW Cultural Healing
- South Coast NSW Aboriginal Elders
- South Coast Peoples
- Steven Holmes
- Thauaira
- Thomas Brown
- Thomas Dahlstrom Offers ACH value by using 3D Laser and Drone technology
- Thoorga Nura
- Twofold Aboriginal Corporation
- Wagonga Local Aboriginal Land Council
- Walbunja (Murrin Clan/Peoples)
- Walgalu (Murrin Clan/Peoples)
- Wingarra Wilay Aboriginal Corporation
- Wingikara (Murrin Clan/Peoples)
- Wullung (Murrin Clan/Peoples)
- Yerramurra (Murrin Clan/Peoples) and Taste of Tradition Native Aboriginal Corporation
- Yukumbruk
- Yurrandaali
- Yurwang Gundana Consultancy Cultural Heritage Services.

A search conducted by the Office of the Registrar, *Aboriginal Land Rights Act 1983* confirmed that the study area is in proximity to two areas for which there are registered Aboriginal owners: Gulaga National Park and Biamanga National Park. It was suggested that the Joint Management Coordinators for the Biamanga and Gulaga National Parks Boards of Management be contacted to ascertain whether the Boards of Management are interested in the project.

A search conducted by the NNTT listed no Registered Native Title Claims, or Registered Indigenous Land Use Agreements within the study area. There is one unregistered Claimant Application within the study area, South Coast Peoples (NC2017/008).

4.1.2. Public notice

In accordance with the consultation guidelines, a public notification was placed in the following newspaper:

- *Merimbula News Weekly* (28 June 2023).

The advertisement invited Aboriginal people who hold cultural knowledge to register their interest in a process of community consultation to provide assistance in determining the significance of Aboriginal object(s) and/or places in the vicinity of the study area. A copy of the public notice is provided in Appendix B.

4.1.3. Registration of Aboriginal parties

Aboriginal groups identified in Section 4.1.1 were sent a letter inviting them to register their interest in a process of community consultation to provide assistance in determining the significance of Aboriginal object(s) and/or places in the vicinity of the study area. In response to the letters and public notice, a total of 18 groups registered their interest in the project. Responses to registration from Aboriginal parties are provided in Appendix B. An additional party registered for the project on 26 January 2024 following a discussion with the UoW. This brings the total number of RAPs to 19.

A full list of Aboriginal parties who registered for consultation is provided below in Table 2

Table 2 List of registered Aboriginal parties

No.	Organisation	Contact person
1	Ngarigo and Djiringanj people	John Dixon
2	Guunamaa Dreamin Sites and Surveying	Richard Campbell
3	Thoorga Nura	John Carriage
4	Guntawang Aboriginal Resources Incorporated	Wendy Morgan
5	Barraby Cultural Services	Lee Field
6	Goobah Development PTY LTD (Murrin Clan/Peoples)	Basil Smith
7	Iris White	Iris White
8	Jason Davison	Jason Davison
9	Konanggo Aboriginal Cultural Heritage Services	Robert Young
10	Merrimans LALC	-
11	Thomas Dahlstrom Offers ACH value by using 3D Laser and Drone technology	Thomas Dahlstrom
12	South Coast NSW Aboriginal Elders	Owen Carriage
13	South Coast People	Sandy Chalmers
14	Bega Local Aboriginal Land Council	CEO
15	Wagonga Local Aboriginal Land Council	CEO
16	Eden Local Aboriginal Land Council	CEO
17	Gadu Elders	Maureen Davis
18	-	Bunja Smith
19	-	Aileen Blackburn

4.1.4. Registration of attendance for first meeting

Biosis contacted registered RAP groups to organise an on-site meeting to discuss the cultural significance of the study area as well as to cover the proposed works and discuss the findings of the initial background research. The invitation was presented between the 26 June 2023 and 20 July 2023 via email and phone call.

None of the RAPs were able to attend the meeting dates proposed.

4.2. Stage 2 and 3: Presentation of information about the proposed project and gathering information about cultural significance.

On 15 November 2023 Biosis provided RAPs with details about the proposed development works (project information pack) as well as the project methodology pack outlining the proposed ACHA process and methodology for this project. RAPs were given 28 days to review and prepare feedback on the proposed methodology. A copy of the project information and methodology pack is provided in Appendix C.

Biosis received feedback in one instance from Wendy Morgan of Guntawang Aboriginal Resources Incorporated, received via email correspondence on 28 November 2023:

As an Aboriginal Person who belongs to the land of the Yuin People I strongly support the Responsibilities and Roles that Biosis and the proponent have agreed to abide by including all of the dot points under the R&R...

4.3. Stage 4: Review of draft ACHA report

RAPs were provided with a copy of the draft ACHA and AR on 22 May 2024, and were requested to provide any comments on the report, and particularly any comments in relation to Aboriginal cultural significance of the study area and wider area. RAPs were given 28 days to review and provide feedback on the draft ACHA report by 20 June 2024. A copy of the draft ACHA and correspondence with RAPs is provided in Appendix D.

Biosis received feedback in one instance from Wendy Morgan of Guntawang Aboriginal Resources Incorporated [4] via email correspondence on 14 June 2024:

Guntawang Aboriginal Resource Inc agree and support the ACHA and Archaeological Report management recommendations.

5. Aboriginal cultural significance assessment

The two main values addressed when assessing the significance of Aboriginal sites are cultural values to the Aboriginal community and archaeological (scientific) values. This report will assess the cultural values of Aboriginal sites in the study area. Details of the scientific significance assessment of the study area is provided in Appendix E.

5.1. Introduction to the assessment process

Heritage assessment criteria in NSW fall broadly within the significance values outlined in the Australia International Council on Monuments and Sites (ICOMOS) *Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance* (Australia ICOMOS 2013) (the Burra Charter). This approach to heritage has been adopted by cultural heritage managers and government agencies as the set of guidelines for best practice heritage management in Australia. These values are provided as background and include:

- **Historical significance** (evolution and association) refers to historic values and encompasses the history of aesthetics, science and society, and therefore to a large extent underlies all of the terms set out in this section. A place may have historic value because it has influenced, or has been influenced by, a historic figure, event, phase or activity. It may also have historic value as the site of an important event. For any given place the significance will be greater where evidence of the association or event survives in situ, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment.
- **Aesthetic significance** (Scenic/architectural qualities, creative accomplishment) refers to the sensory, scenic, architectural and creative aspects of the place. It is often closely linked with social values and may include consideration of form, scale, colour, texture, and material of the fabric or landscape, and the smell and sounds associated with the place and its use.
- **Social significance** (contemporary community esteem) refers to the spiritual, traditional, historical or contemporary associations and attachment that the place or area has for the present-day community. Places of social significance have associations with contemporary community identity. These places can have associations with tragic or warmly remembered experiences, periods or events. Communities can experience a sense of loss should a place of social significance be damaged or destroyed. These aspects of heritage significance can only be determined through consultative processes with local communities.
- **Scientific significance** (Archaeological, industrial, educational, research potential and scientific significance values) refers to the importance of a landscape, area, place or object because of its archaeological and/or other technical aspects. Assessment of scientific value is often based on the likely research potential of the area, place or object and will consider the importance of the data involved, its rarity, quality or representativeness, and the degree to which it may contribute further substantial information.

The cultural and archaeological significance of Aboriginal and historic sites and places is assessed on the basis of the significance values outlined above. As well as the Burra Charter significance values guidelines, various government agencies have developed formal criteria and guidelines that have application when assessing the significance of heritage places within NSW. Of primary interest are guidelines prepared by the Australian Government, Heritage NSW and the Heritage Council, and the NSW Department of Planning and Environment. The relevant sections of these guidelines are presented below.

These guidelines state that an area may contain evidence and associations which demonstrate one or any combination of the Burra Charter significance values outlined above in reference to Aboriginal heritage. Reference to each of the values should be made when evaluating archaeological and cultural significance for Aboriginal sites and places.

In addition to the previously outlined heritage values, the Heritage NSW *Guidelines to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011) also specify the importance of considering cultural landscapes when determining and assessing Aboriginal heritage values. The principle behind a cultural landscape is that ‘the significance of individual features is derived from their inter-relatedness within the cultural landscape’. This means that sites or places cannot be ‘assessed in isolation’ but must be considered as parts of the wider cultural landscape. Hence the site or place will possibly have values derived from its association with other sites and places. By investigating the associations between sites, places, and (for example) natural resources in the cultural landscape the stories behind the features can be told. The context of the cultural landscape can unlock ‘better understanding of the cultural meaning and importance’ of sites and places.

Although other values may be considered – such as educational or tourism values – the two principal values that are likely to be addressed in consideration of Aboriginal sites and places are the cultural/social significance to Aboriginal people and their archaeological or scientific significance to archaeologists and the Aboriginal community. The determinations of archaeological and cultural significance for sites and places should then be expressed as statements of significance that preface a concise discussion of the contributing factors to Aboriginal cultural heritage significance.

5.2. Cultural (social significance) values

Cultural or social significance refers to the spiritual, traditional, historical and/or contemporary associations and values attached to a place or objects by Aboriginal people. Aboriginal cultural heritage is broadly valued by Aboriginal people as it is used to define their identity as both individuals and as part of a group (DECCW 2010a, pp. iii). More specifically it provides:

- A ‘connection and sense of belonging to Country’ (DECCW 2010a, pp. iii).
- A link between the present and the past (DECCW 2010a, pp. 3).
- A learning tool to teach Aboriginal culture to younger Aboriginal generations and the general public (DECCW 2010a, pp. 3).
- Further evidence of Aboriginal occupation prior to European settlement for people who do not understand the magnitude to which Aboriginal people occupied the continent (DECCW 2010a, pp. 3).

It is acknowledged that Aboriginal people are the primary determiners of the cultural significance of Aboriginal cultural heritage. No specific comments were received from RAPs regarding the cultural significance of the study area. However, given the context of the study area and vicinity, it has been assumed that the study area is part of a wider cultural landscape and is of high cultural significance.

5.3. Historic values

Historic significance refers to associations a place or object may have with a historically important person, event, phase or activity to the Aboriginal and other communities. The study area is not known to have any historic associations.

5.4. Archaeological (scientific significance) values

An archaeological scientific assessment was undertaken for the study area and is presented in detail as part of the attached AR (Appendix E), including a predictive statement describing the likelihood of encountering sites within the study area based off of a scale between low, medium and high.

Archaeological survey of the study area was deemed implausible under the Code due to the marine nature of the study area. However, the results of the desktop assessment and the seafloor visual survey strongly indicate that the environmental conditions of Disaster Bay have resulted in high levels of erosion and disturbance to the seafloor, with sediments being constantly displaced and redeposited into deeper areas. This suggests that any physical Aboriginal archaeological sites which may have been present within the study area have been destroyed by this harsh and unstable environment. While there may not be any tangible Aboriginal cultural heritage remaining within the study area and Disaster Bay, it is highly likely that there are intangible Aboriginal cultural heritage values associated with this location.

5.5. Aesthetic values

There is a diverse yet accessible literature regarding the identification of aesthetic values and determining aesthetic significance (Smith & Burke 2004, pp. 248–249). It is generally agreed that aesthetic values are an important part of cultural heritage significance; however, they are dependent on an individual's sensory response, which means determining aesthetic value is fraught with difficulty, and should be applied on a case-by-case basis as it is not always a value applicable to archaeological sites. However, when dealing with some types of sites aesthetic values and landscape context are an important consideration. The question 'does the place have a relationship between its parts and the setting which reinforces the quality of both', while originally proposed in an architectural context (Kerr 2013, pp. 15), is relevant also for many sites in a local setting—such as in forests, deserts, or coastlines, where there is often an important relationship between cultural sites and the natural environment, which contribute to the values of a 'sense of place'.

The study area is highly disturbed from environmental conditions but is a typical example of a coastal body of the NSW far south coast in its natural context. The wider environmental context of the study area is closely linked with Aboriginal cultural values and provides a context for Aboriginal sites that gives a strong sense of place. The Aboriginal community of the far south coast strongly identifies with the landscape of the study area, referring to themselves as saltwater peoples.

5.6. Statement of significance

The significance of sites was assessed in accordance with the following criteria:

- Requirements of the Code.
- The Burra Charter.
- *Guide to Investigating and Reporting on Aboriginal Heritage* (OEH 2011).

The combined use of these guidelines is widely considered to represent the best practice for assessments of Aboriginal cultural heritage. The identification and assessment of cultural heritage values includes the four values of the Burra Charter: social, historical, scientific and aesthetic values. The resultant statement of significance has been constructed for the study area based on the significance ranking criteria assessed in Table 3.

5.6.1. Statement of significance for the study area

The study area will be partially impacted by the proposed works, which, due to the nature of the works, will be limited. A desktop assessment has suggested that the Disaster Bay area was occupied at least seasonally by Aboriginal groups since at least 3000 BP. No sites have been identified within the study area, and the desktop assessment and seafloor visual survey indicates that the marine environmental conditions within the study area have likely destroyed *in-situ* archaeology through disturbance and redeposition of sediments into deeper areas. Material that may be buried deeper in the sandy sediment may not be offered significant protection, as the intertidal zones and topographic Rossby waves expose deeper layers of the seabed consistently and has since the sea level reached its modern height.

However, there is potential for intangible cultural heritage to be associated with the study area. Following Stage 4 consultation, the cultural heritage significance has been assessed as high. The historical significance of the site has also been assessed as low due to the lack of known historical associations. Due to the significant and ongoing disturbance caused by marine environmental conditions, the study area has been assessed as holding low archaeological potential. The study area is surrounded by a coastal landscape inclusive of headlands, and the relatively untouched coastal forest, which contribute to the wider context and sense of place; aesthetic significance is assessed as high.

Table 3 **Significance assessment criteria**

Site name	Criteria	Ranking
Disaster Bay study area	Cultural – Determinations made during the background research identify coastal sites along the NSW far south coast as holding great importance to saltwater people, as can be observed in Section 3.3. While no specific comments were received from RAPs during consultation, it has been assumed that the study area is of high cultural significance based on the wider cultural landscape context.	High
	Historical—the study area is not connected to any historical event or personage.	Low
	Scientific—the study area has been assessed as holding low archaeological potential due to ongoing significant disturbances.	Low
	Aesthetic—the study area is situated within a coastal landscape on the NSW far south coast; the area is surrounded by headlands and relatively undisturbed forest.	High

6. Development limitations and mitigation measures

The proposed works comprise the construction and operation of a 200-hectare commercial marine aquaculture lease for seaweed production using longlines off Disaster Bay. As part of this there will be the construction of longlines within marine aquaculture lease areas and monitoring and maintaining longlines.

The proposed works will also include the transportation of materials and staff associated with the project to construct, monitor, and maintain longlines within marine aquaculture lease areas. This part of the project will utilise the Port of Eden and Eden Multi-purpose Wharf to transfer equipment and staff required to construct, monitor and maintain the longlines in the lease areas.

Once the construction phase is completed, staff vehicular road transport to the (proposed) land base operations facilities will be via William Allen Road, Edrom where the Hatchery, Processing Facilities, Office and Service Vessel Mooring facilities are to be located. During the operational phase, materials and product transportation will almost exclusively involve the transport of seaweed seedstock and mature harvested seaweed from the farm to the Edrom Processing Facility. Routine ocean farm maintenance and monitoring of equipment will also be conducted via the same ocean routes.

Consultation undertaken outside of the ACHA process indicates that there is interest and support for the project within the Aboriginal community on the South Coast, not only for the positive environmental impact of the works but also for the regional economy, education and employment.

6.1. Predicted physical impacts

The desktop assessment and seafloor visual survey has indicated there is low potential for any Aboriginal archaeological sites to be currently present within the study area. This conclusion is largely based on the harsh environmental conditions which constantly displace and redeposit sediments from the bay into deeper areas and the observations and data gathered from the seafloor visual survey. The proposed works will therefore not impact any Aboriginal archaeological values.

6.2. Ecologically Sustainable Development

One of the primary aims of the NPW Act is the 'conservation of objects places and features ... of cultural value within the landscape, including ... places, objects and features of significance to Aboriginal people ...' ((s.2A(1)(b)(i)). The *Operational Policy: Protecting Aboriginal Cultural Heritage (Version 2)* (State of NSW and Office of Environment and Heritage NSW 2011) provides guidance to proponents in term of Ecologically Sustainable Development (ESD).

ESD has been defined in Part 3, 6. (2) Objective of the Authority of the *Protection of the Environment Administration Act 1991* (NSW). This outlines that the ESD requires the integration of economic and environmental considerations (including cultural heritage) in the decision-making process. Regarding Aboriginal cultural heritage, ESD can be achieved by applying the principle of intergenerational equity and the precautionary principle.

Intergenerational equity

The principle of intergenerational equity states that the present generation should make every effort to ensure the health, diversity and productivity of the environment – which includes cultural heritage – for the benefit of future generations.

In terms of Aboriginal cultural heritage, intergenerational equity can be considered in terms of the 'cumulative impacts' of any proposal to Aboriginal objects and places. For example, if few Aboriginal objects and places remain in a region (because of harm authorised under previous AHIPs), fewer opportunities remain for future generations of Aboriginal people to enjoy the cultural benefits of those Aboriginal objects and places.

Information about the significance of Aboriginal cultural heritage values associated with the Aboriginal objects and places proposed to be harmed will be relevant to the consideration of intergenerational equity and an understanding of the cumulative impacts of a proposal.

Where there is uncertainty, the precautionary principle should also be followed (see below).

The precautionary principle

The precautionary principle states that the lack of full scientific certainty about the threat of harm should not be used as a reason for not taking measures to prevent harm from occurring.

In applying the precautionary principle, decisions should be guided by:

- *a careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment (which includes cultural heritage)*
- *an assessment of the risk-weighted consequences of various options.*

The precautionary principle is relevant to Heritage NSW consideration of potential harm to Aboriginal cultural heritage where:

- *the proposal involves a risk of serious or irreversible harm to Aboriginal objects or places or to the value of those objects or places, and*
- *there is a lot of uncertainty about the significance of Aboriginal cultural heritage values of the Aboriginal objects or places proposed to be harmed.*

Where this is the case, a precautionary approach should be taken and all cost-effective measures implemented to prevent or reduce harm to the Aboriginal objects/place (State of NSW and Office of Environment and Heritage NSW 2011, pp. 26).

This assessment has concluded that there is low potential for any Aboriginal archaeological sites to have survived the environmental conditions within the study area. While there may not be any tangible Aboriginal cultural heritage remaining within the study area and Disaster Bay, it is highly likely that there are intangible Aboriginal cultural heritage values associated with this location. This information can only be confirmed by the RAPs as part of Aboriginal community consultation.

This assessment has been able to further our knowledge regarding the potential for intact Aboriginal archaeological sites in offshore locations, particularly those in the South Coast region of NSW. This assessment has also been able to collate and present the findings of desktop research undertaken for Aboriginal archaeology within the vicinity of the study area in a format consistent with current Heritage NSW guidelines and requirements.

6.3. Management and mitigation measures

Ideally, heritage management involves conservation of sites through the preservation and conservation of fabric and context within a framework of 'doing as much as necessary, as little as possible' (Australia ICOMOS 2013). In cases where conservation is not practical, several options for management are available. For sites, management often involves the salvage of features or artefacts, retrieval of information through excavation or collection (especially where impact cannot be avoided) and interpretation.

Avoidance of impact to archaeological and cultural heritage sites through design of the development is the primary mitigation and management strategy and should be implemented where practicable. The proposed works by design are minimal and will facilitate the growth of native species in an environment capable of sustaining them. Additionally, the study area is confined to an area of ocean heavily impacted by natural forces of disturbance. Therefore, impacts will avoid any known Aboriginal sites as there are no known Aboriginal sites within the study area, and the environmental conditions are unlikely to support their ongoing survival.

As part of the management and mitigation measures for the proposed works, an ACHA including consultation with the Aboriginal community was undertaken. This was done to determine the presence and nature of any potential Aboriginal sites so that appropriate management could be undertaken. The desktop assessment and seafloor visual survey did not identify the presence of any Aboriginal sites and the study area was assessed with low potential due to high levels of disturbances present. Consultation undertaken to date has not resulted in any corresponding management strategies.

7. Recommendations

The recommendations below respond specifically to the wishes of the RAPs. Recommendations regarding the archaeological value of the site, and the subsequent management of Aboriginal cultural heritage is provided in the archaeological report (Appendix E).

Recommendation 1: Continued consultation with the registered Aboriginal parties

It is recommended that Auskelp continue to inform these groups about the management of Aboriginal cultural heritage sites within the study area throughout the life of the project. Regular updates should be sent to RAPs (minimum of every 6 months). This recommendation is in keeping with consultation requirements.

Recommendation 2: No further assessment is required.

No further archaeological investigation or works are required to be undertaken for the study area. In the event that unexpected finds, including human remains, are unearthed during any phase of the project please refer to Recommendation 5 below.

Recommendation 3: Stop works provision – Discovery of previously unidentified sites or objects

All Aboriginal places and objects are protected under the NPW Act. This protection extends to Aboriginal objects and places that have not been identified but might be unearthed during the proposed works. Work must cease if Aboriginal objects or places are identified which have not previously been identified as part of this assessment or have not been approved for harm under an AHIP. Heritage NSW and the archaeologist must be notified to make an assessment of the find and advise on subsequent management.

Recommendation 4: Stop work provision for any potential discovery of human remains

If any suspected human remains are discovered during any activity works, all activity in the vicinity must cease immediately. The remains must be left in place and protected from harm or damage. The following contingency plan describes the immediate actions that must be taken in instances where human remains, or suspected human remains are discovered. Any such discovery at the study area must follow these steps:

1. **Discovery:** If suspected human remains are discovered all activity in the vicinity must stop to ensure minimal damage is caused to the remains; and the remains must be left in place and protected from harm or damage.
2. **Notification:** Once suspected human skeletal remains have been found, the NSW Police must be notified immediately, and they will subsequently inform the Coroner's Office. Following this, and if the human remains are likely to be Aboriginal in origin, the find will be reported to the Aboriginal parties and Heritage NSW. If the find is likely to be non-Aboriginal in origin and more than 100 years in age, the Heritage Council of NSW will be notified of the find under s.146 of the Heritage Act.

Recommendation 5: Training and heritage induction

For all personnel, include a heritage induction in the site induction. This will inform as to when works should cease and a manager be contacted for further instruction.

References

- AIATSIS 2021. *South Coast NSW Fishing, AIATSIS*, <https://aiatsis.gov.au/research/south-coast-nsw-fishing>.
- Allen J & O'Connell J 2003. 'The long and the short of it: archaeological approaches to determining when humans first colonised Australia and New Guinea', *Australian Archaeology*, 57: 5–19.
- Atlas of Living Australia 2022. *All Species List: Emery Reserve, Gerroa, NSW.*, accessed 1 December 2022, https://biocache.ala.org.au/explore/your-area#-34.7704|150.8111|12|ALL_SPECIES.
- Attenbrow V 1976., *Aboriginal Subsistence Economy on the Far South Coast of New South Wales, Australia. Unpublished BA (Hons) thesis*, University of Sydney, Sydney.
- Attenbrow V 2002. *Sydney's Aboriginal Past: Investigating the archaeological and historical records*, University of New South Wales Press Ltd, Sydney.
- Aus Seabed Marine 2023. *DER SRTM1 Second Over Australia Bathymetry topography, Aus Seabed*, <https://portal.ga.gov.au/persona/marine>.
- AusKelp 2024. *Disaster Bay Searfloor Visual Survey. Survey of Designated Lease Area AL21/004.*.
- Australia ICOMOS 2013. *The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance*, Australia ICOMOS, Burwood, VIC.
- Barber, M. 2002. *A subsurface archaeological investigation of a section of Bittangabee Campground Ben Boyd National Park, NSW.*.
- Biosis 2016. *Darcoola West Water Efficiency Scheme Aboriginal Cultural Heritage Assessment Report*, Report prepared for NSW Department of Primary Industries Water. A Atkinson, S Smith, J Cole. Biosis Pty Ltd. Sydney, NSW. Project no. 19860.
- Boot P 1994. 'Recent research into the prehistory of the hinterland of the south coast of New South Wales' in, *Archaeology in the North*, 1993 Australian Archaeological Association Conference, Sullivan M., NARU Darwin.
- Boot P 2002. *Didthul, Bhundoo, Gulaga and Wadbilliga: An archaeological study of the Aboriginals of the New South Wales South Coast Hinterland.*, Unpublished PhD thesis, Australian National University, Canberra.
- Bowdler S 1970., *Bass Point: the excavation of a south eastern Australian shell midden showing cultural and economic change*, BA Honours Thesis, University of Sydney.
- Bowler JM, Johnston H, Olley JM, Prescott JR, Roberts RG, Shawcross W, & Spooner NA 2003. 'New ages for human occupation and climatic change at Lake Mungo, Australia', *Nature*, 421, 6925: 837–840.
- Bureau of Meteorology 2023. *New South Wales Tide Tables*, http://www.bom.gov.au/oceanography/projects/ntc/nsw_tide_tables.shtml.
- Clarkson C, Jacobs Z, Marwick B, Fullagar R, Wallis L, Smith M, Roberts RG, Hayes E, Lowe K, Carah X, & Florin SA 2017. 'Human occupation of northern Australia by 65,000 years ago', *Nature*, 547, 7663: 306.

Croft F, Voyer M, Nichols R, Mifsud T, Solitei M, Boehme T, Gibbs L, & McIlgorm A 2024a. *Socio-Economic Considerations for Regenerative Aquaculture on the NSW South Coast*, Report prepared for Department of Regional NSW.

Croft F, Voyer M, Nichols R, Mifsud T, Solitei M, Boehme T, Gibbs L, & McIlgorm A 2024b. *First Nation Considerations for Regenerative Aquaculture on the NSW South Coast*, Report prepared for Department of Regional NSW.

Curry, J. R. 1960. 'Sediments and history of Holocene transgression continental shelf, northwest Gulf of Mexico.' in, *Recent Sediments, Northwest Gulf of Mexico*, Bulletin, American Association of Petroleum Geology.

DECCW 2010a. *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, New South Wales Government Department of Environment and Climate Change, Sydney NSW.

DECCW 2010b. Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW, Department of Environment, Climate Change and Water NSW, Sydney, NSW. <https://www.environment.nsw.gov.au/research-and-publications/publications-search/code-of-practice-for-archaeological-investigation-of-aboriginal-objects-in-nsw>.

Department of Planning, Industry and Environment 2020. *Soil Landscapes of Central and Eastern NSW*, NSW Office of Environment and Heritage, Sydney, NSW, http://www.water.nsw.gov.au/_data/assets/pdf_file/0005/547682/gde_risk_assessment_guidelines_volume_1_final_accessible.pdf.

Eden Community Access Centre Inc 2023. *A Glance at Eden's Rich History Timeline*, *Eden Timeline*, accessed 28 June 2023, <https://www.eden.nsw.au/eden-timeline/>.

Godfrey, J.S. and Golding, T.J. 1981. 'The Sverdrup relation in the Indian Ocean, and the Effect of Pacific-Indian Ocean throughflow on Indian Ocean Circulation and on the East Australian Current', *Journal of Physics Physical Oceanography*, 11, 771–9.

Hiscock, P 1982. A Technological Analysis of Quartz Assemblages from the South Coast. In S. Bowdler (ed) *Coastal Archaeology in Eastern Australia*. Proceedings of the 1980 Valla Conference on Australian Prehistory.

Horton D 1994. AIATSIS map of Indigenous Australia, Australian Institute of Aboriginal and Torres Strait Islander Studies.

Howitt AW 1904. *The Native Tribes of South-East Australia*, Macmillan & Co, London, UK.

Hughes, P 1977., *A Geomorphological Interpretation of Selected Sites in Southern Coastal New South Wales*, *Unpublished PhD thesis*, University of New South Wales.

Hughes, p. & R. Lampert 1982. 'Prehistoric population changes in southern New South Wales' in, *Coastal Archaeology in Eastern Australia: Proceedings of the 1980 Valla Conference on Australian Prehistory*, Prehistory, Department of Prehistory, Research School of Pacific Studies, the Australian National University, Australian National University.

International Institute for Law of the Sea Studies 2023. *About Tasman Sea, facts and maps*, *IISS*, accessed 29 June 2023, <https://iilss.net/about-tasman-sea-facts-and-maps/>.

John R. Conolly 1969. 'Western Tasman Sea Floor', *New Zealand Journal of Geology and Geophysics*.

- Kerr JS 2013. *Conservation Plan: A guide to the preparation of conservation plans for places of European cultural significance*, 7th edn, Australia ICOMOS.
- Lampert R 1971a. *Coastal Aborigines of Southeastern Australia*. In: *Prehistory of Australia*, Mulvaney D, Kamminga J (eds.), Smithsonian University Press.
- Lampert R 1971b. *Burrill Lake and Currarong: Coastal Sites in Southern New South Wales*. *Terra Australia* 1, Department of Prehistory, Research School of Pacific Studies, Australian National University, Canberra.,.
- Longford, Wayne and Maddison, Ruth 2005. *Terrace Star / Heritage NSW*, accessed 27 June 2023, <https://apps.environment.nsw.gov.au/dpcmaritimeheritageapp/ViewSiteDetail.aspx?siteid=2094>.
- Mackeness, G 1941. 'George Augustus Robinson's Journey into SE Australia 1844', *Australian Historical Society Journal and Proceedings*, 27, 5.
- May, W.E. 1948. 'The man who named Australia', *The Geographic Magazine*, 21, 8: 306–311.
- McDonald J 1994. *Dreamtime Superhighway: An Analysis of Sydney Basin Rock Art and Prehistoric Information Exchange*, Unpublished PhD thesis, Canberra.
- Mullett 1996., *Mystery Bay – Our Sacred Place*, Unpublished BA (Hons thesis), Department of Archaeology and Anthropology, Australian National University, Canberra.
- Mulvaney J & Kamminga J 1999. *Prehistory of Australia*, Allen and Unwin, St Leonards, NSW.
- National Museum Australia 2022. *1861: Introduction of Robertson Land Acts in New South Wales*, accessed 14 June 2023, <https://www.nma.gov.au/defining-moments/resources/robertson-land-acts>.
- Navin Officer 1999. *Proposed Mlti Purpose Wharf, Commercial Facility and Navy ammunitioning facility, Twofold Bay, NSW*,.
- Navin Officer Heritage Consultants 2000. *Proposed Multi Purpose Wharf, Commercial Facility and Navy Ammunitioning Facility. Twofold Bay. NSW. Further Cultural Heritage Assessment at East Boyd including Aboriginal Historic and Maritime Components*,.
- Navin Officer Heritage Consultants 2003. *CUltural Heritage Assessment of Proposed Commecial Facility Area at East Boyd Bay. NSW*,.
- New South Wales Archaeology Pty Ltd 2015. *Final v.1 Fairhaven Boat Ramp, Wallaga Lake, via Bermagui, NSW, Bega Valley*.
- NOAA 2023. *What is the intertidal zone?*, *National Oceanic and Atmospheric Administration*, <https://oceanservice.noaa.gov/facts/intertidal-zone.html#:~:text=The%20intertidal%20zone%20is%20the,extend%20for%20hundreds%20of%20meters>.
- NSW Heritage Office 1996. *Shipwrecks of Twofold Bay & Disaster Bay*, Report prepared for NSW Heritage Office. Tim, S, https://www.environment.nsw.gov.au/maritimeheritageapp/resources/Maritime/documents/twofoldbay_report.pdf.
- OEH 2011. *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW*, Office of Environment and Heritage, Department of Premier and Cabinet, Sydney NSW.

Ossa, P et al 1995. 'New Guinea 2 Cave: A Pleistocene site on the Snowy River, Victoria', *Archaeology in Oceania*, 30, 1.

Permanent Service for Mean Sea Level 1986. *Eden Station Information*, National Oceanography Centre, <https://psmsl.org/data/obtaining/stations/833.php>.

P.G. Baines 1989. 'The physical oceanography of Australian waters - a review*', *Australian Meteorological Magazine*, 37: 155–165.

Phipps, C. V. G. 1966. 'Evidence of Pleistocene warping of the New South Wales continental shelf', *Geological Survey Canberra*, 66, 15.

Poiner, G. 1976. 'The process of the year among Aborigines of the central and south coast of New South Wales', *Archaeology and Physical Anthropology in Oceania*, 11.

Register of British Shipping SMH 1862. *City of Sydney / Heritage NSW*, Heritage NSW, accessed 27 June 2023, <https://apps.environment.nsw.gov.au/dpcmaritimeheritageapp/ViewSiteDetail.aspx?siteid=1969>.

Reidulv Boe, Lilja Run Bjarnadottir 2019. *Sediments (grain size), Mareano - Collecting Marine Knowledge*.

Rose 1990. *Gulaga. A report on the cultural significance of Mt Dromedary to Aboriginal people. Present to the Forestry Commission of NSW and the NSW National parks and Wildlife Service.*,.

Sarah M. Colley 1997. *A pre- and post-contact Aboriginal shell midden at Disaster Bay, New South Wales south Coast*,.

Shepard, F. P. 1963. 'Thirty five thousand years of sea level' in, *Essays in Marine Geology*, Hancock Foundation, University of South California, Los Angeles.

SMH 1/6, 2/6/, 10/6/1886 1886. *Ly-ee-Moon / Heritage NSW*, accessed 27 June 2023, <https://apps.environment.nsw.gov.au/dpcmaritimeheritageapp/ViewSiteDetail.aspx?siteid=1029>.

SMH 14/2, 5/7/1911 RBS 1911. *New Guinea / Heritage NSW*, accessed 27 June 2023, <https://apps.environment.nsw.gov.au/dpcmaritimeheritageapp/ViewSiteDetail.aspx?siteid=895>.

Smith C & Burke H 2004. *The Archaeologists Field Handbook*, Allen & Unwin, Crows Nest.

Stanner W. E. H. 1977. 'The History of Indifference Thus Begins', *Aboriginal History*, 1, 1.

State of NSW and Office of Environment and Heritage NSW 2011. *Operational Policy: Protecting Aboriginal Cultural Heritage*,.

Sullivan H 1982. *Aboriginal Usage of the Forest Environment: an ethno-historical study of the south coast of NSW*, Technical report to the Aboriginal and Historic Resources Section, National Parks and Wildlife Service.

Sullivan, M.E. 1982. *Aboriginal Shell Middens in the Coastal Landscape of New South Wales*, Australian National University, Canberra.

Swain T 1993. *A Place for Strangers Towards a History of Australian Aboriginal Being*, Cambridge University Press, Cambridge.

The Goulburn Herald and County of Argyle Advertiser 1858. 'Country News', *The Goulburn Herald and County of Argyle Advertiser (NSW: 1848-1859)*.

The Monaro Mercury, and Cooma and Bombala Advertiser 1863. 'The Monaro Mercury, and Cooma and Bombala Advertiser 26 June 1863', *The Monaro Mercury, and Cooma and Bombala Advertiser*.

The Sydney Morning Herald 1870. 'The Sydney Morning Herald 16 April 1870', *The Sydney Morning Herald*.

'The Yuin people and their traditional fishing practices', 2020., Bega Valley.

Thomas Townsend 1842. 'Public Notice of Eden survey by Mr Thomas Townsend', *Australasian Chronicle*.

Tindale NB 1974. *Aboriginal Tribes of Australia: The Terrain, Environmental Controls, Distribution, Limits and Proper names*, Australian National University, Canberra.

US Army Corps of Engineers 2023. *Coastal Effects of Tides*, Institute for Water Resource Website, <https://www.iwr.usace.army.mil/Missions/Coasts/Tales-of-the-Coast/Coastal-Dynamics/Tides/Coastal-Effects-of-Tides/#:~:text=The%20geological%20significance%20is%20that,important%20role%20in%20local%20circulation.>

Vallance, B 1983., *Fishing, Weather and Site Location: An Esoteric Essay*. Unpublished Litt B. Thesis, ANU, Canberra.

Willem J. M. van der Linden 1970. 'Morphology of the Tasman Sea floor', *New Zealand Journal of Geology and Geophysics*.

Williams, D. 1995. *Subsurface probing at Old Road Creek, South of Eden, NSW for an Optus Communication Fibre Optic Cable*,.

