Ocean-based aquaculture for golden kelp farm

Application Number: **02813** Commencement Date: **12/03/2025** Status: **Locked**

1. About the project

1.1 Project details

1.1.1 Project title *

Ocean-based aquaculture for golden kelp farm

1.1.2 Project industry type *

Aquaculture

1.1.3 Project industry sub-type

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1.1.4 Estimated start date *

01/07/2025

1.1.4 Estimated end date *

01/07/2099

1.2 Proposed Action details

1.2.1 Provide an overview of the proposed action, including all proposed activities. *

Auskelp Pty Ltd (Auskelp) proposes to establish the "Eden 1" project, a 200-hectare ocean-based aquaculture kelp farm in Disaster Bay, off Wonboyn on the NSW far south coast. This initiative represents the first commercial ocean-based kelp farm in NSW and the first commercial cultivation of *Ecklonia radiata* (Golden Kelp) globally. The project aims to foster an environmentally positive and sustainable seaweed aquaculture industry, creating economic opportunities for the region while conserving marine ecosystems.

Project Commissioning
The proposed aquaculture farm is located within marine lease AL21/004, approximately 4.12 km East-South-East of Wonboyn village and 23 km South-South-West of Eden. Auskelp has secured a marine aquaculture lease and an aquaculture permit from the NSW Department of Primary Industries, contingent on Crown Lands' Landowner's Consent and State Significant Development (SSD) approval. The farm will utilize state-of-the-art longline structures, globally recognised as best practice for seaweed cultivation, ensuring efficient, sustainable, and biosecure operations. Growing rigs will be fastened to the seafloor using "screw-anchor" systems, ensuring minimal disturbance to the benthic environment. The longline rig structures have been designed to minimise the risk of marine fauna entanglement. All lines will be held taut to minimise the ability of fauna to become entangled.

The Disaster Bay site was selected for its optimal environmental and logistical conditions, including:

- Favourable ocean temperatures and nutrient upwellings.
- Naturally occurring *Ecklonia radiata* in the area.
- Minimal marine traffic, recreational use, and residential proximity.
- Proximity to aquaculture expertise and infrastructure in the Wonboyn and Eden regions.

Operational Phase
Eden 1 will cultivate *Ecklonia radiata* which is native to Disaster Bay, to support both domestic and international markets in food, animal feed, and carbon offset industries. The project will leverage locally sourced kelp seedstock to ensure minimal biosecurity risk. The long-term vision includes relocating laboratory operations to the Eden/Edrom area. Currently, seaweed gametophytes are cultivated in Melbourne from seedstock sourced from Disaster Bay.

The project is expected to create 40-60 direct jobs during its construction and operation phases, providing much-needed economic stimulus to a region recovering from bushfires, flooding, and the COVID-19 pandemic. It also aligns with local and state strategic priorities to support climate-resilient industries and diversify the aquaculture sector.

Decommissioning and Long-Term Impact
The design of Eden 1 prioritizes environmental sustainability and minimal disturbance to marine habitats. The site's sandy benthic habitat ensures no critical ecosystems are disrupted. Upon project decommissioning, all infrastructure will be removed, ensuring a minimal long-term environmental footprint.

Eden 1 represents a "nature-positive" initiative which will foster marine ecosystem restoration through kelp cultivation, carbon sequestration, and supporting sustainable industries. With its environmentally conscious design and operational practices, the Eden 1 project sets a precedent for future seaweed aquaculture development across Australia.

1.2.2 Is the project action part of a staged development or related to other actions or proposals in the region?

No

1.2.6 What Commonwealth or state legislation, planning frameworks or policy documents are relevant to the proposed action, and how are they relevant? *

Commonwealth

1. Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

- The proposed action will occur in waters utilised by marine, migratory and threatened species and has the potential to impact on Matters of National Environmental Significance (MNES). The proposed action is therefore being referred to the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) for potential impacts to MNES. As detailed within this Referral, no significant impacts are expected to occur as a result of the project.

2. Underwater Cultural Heritage Act (2018):

- This Act provides for the protection and permits for impacts on underwater cultural heritage. No impacts to underwater cultural heritage are expected from the proposed action, and therefore a permit has not been sought.

3. Native Title Act (1993):

- This Act provides for the recognition and protection of native title. No native title claims have been lodged over the proposed lease.

4. National Aquaculture Strategy (2017):

- Developed in consultation with the industry, State and Northern Territory governments, the Strategy aims to achieve an aquaculture industry growth target of $2 billion a year by 2027. The Strategy recognises that responsibility for aquaculture operation, development, monitoring and compliance is generally a matter for State jurisdictions.

New South Wales

1. Environmental Planning and Assessment Act 1979 (NSW)

- The Eden 1 Kelp Farm is classified as a State Significant Development (SSD), requiring an Environmental Impact Statement (EIS) before approval.
- The Secretary's Environmental Assessment Requirements (SEARs) must be met, covering marine biodiversity, coastal impacts, and cultural heritage.
- The proposed action has been deemed a State Significant Development under Section 4.12(8) of the Environmental Planning and Assessment Act 1979 (application number SSD-41680467). As the project is within coastal waters, which are considered environmentally sensitive areas of state significance, the project automatically triggers the SSD process. An Environmental Impact Statement (EIS) written to the Planning Secretary Environmental Assessment Requirements (SEARs) must be completed by May 2026. The SEARs will be assessed against relevant legislation and authorities, including the Biodiversity Conservation Act 2026 and Fisheries Management Act 1994.

2. NSW Marine Estate Management Act 2014

- Ensures that the project aligns with the sustainable use and conservation of NSW's marine estate.
- Disaster Bay has been assessed as an appropriate location for aquaculture under this framework.

3. NSW Fisheries Management Act 1994

- Regulates aquaculture leases, permits, and environmental safeguards for seaweed farming operations in NSW waters.
- The project requires an Aquaculture Permit from the NSW Department of Primary Industries (DPI).

4. NSW Marine Waters Sustainable Aquaculture Strategy (2018)

- Provides planning and environmental guidelines for sustainable aquaculture in NSW waters, ensuring minimal impact on marine biodiversity.

5. National Parks and Wildlife Act 1974 (NSW)

- Requires an Aboriginal Cultural Heritage Assessment to ensure that Indigenous cultural sites and traditional marine use areas are protected.

6. NSW Biodiversity Conservation Act 2016

- Regulates impacts on threatened species and marine biodiversity, ensuring that the kelp farm does not disrupt critical habitats.

7. NSW Coastal Management Act 2016

Ensures that aquaculture developments in coastal areas do not negatively impact coastal processes, marine ecosystems, or public access.

1.2.7 Describe any public consultation that has been, is being or will be undertaken regarding the project area, including with Indigenous stakeholders. Attach any completed consultation documentations, if relevant. *

The public consultation process for the Auskelp Eden 1 project has included multiple public engagement sessions, discussions with stakeholders, and ongoing consultation with Indigenous communities in accordance with NSW Department of Planning's *Social Impact Assessment Guideline for State Significant Projects*. Auskelp will continue engaging Indigenous stakeholders and other community members throughout the project's duration.

A Social Impact Assessment report has been produced by the University of Wollongong (Att 1 – Social Impact Report).

Public Consultation Process:

1. Research Workshops and Public Engagement:

• A research workshop was held on 14 September 2023 in Eden, organized in collaboration with an interactive information session by Auskelp Pty Ltd regarding the proposed seaweed farm at Disaster Bay.

• Approximately 35 people attended this session.

2. Additional Consultation Events:

• Three research workshops and a community drop-in session were conducted between July and September 2023 in Bermagui, Tura Beach, and Eden, as well as a drop-in session in Wonboyn.

• The workshops involved open forum public meetings, an invited closed forum meeting with the University of the Third Age (U3A) in Tura Beach, and an open community drop-in session.

• These sessions allowed proponents to introduce their project to local communities and facilitate ongoing conversations about its potential development.

3. Indigenous Consultation:

• The Aboriginal community has been consulted throughout the project in alignment with the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010b).

• The University of Wollongong and project proponents have committed to continued consultation with registered Aboriginal parties, providing regular updates (at least every six months) on Aboriginal cultural heritage management.

• The project's Aboriginal Cultural Heritage Assessment (ACHA) was undertaken to address potential cultural heritage impacts, and findings were included in the Environmental Impact Statement (EIS) required for development consent.

Feedback Received & Responses

The Social Impact Report (Att 1 – Social Impact Report), prepared by the University of Wollongong, identified a range of community perspectives:

General Support for Regenerative Aquaculture:

- Approximately 76% of survey participants expressed support for regenerative aquaculture in their local government area (Shoalhaven – 75%, Eurobodalla – 78%, Bega Valley – 75%).
- Many respondents highlighted potential benefits such as improved water quality, biodiversity enhancement, and job creation.
- Some stakeholders expressed optimism that regenerative aquaculture could revive regional economies by providing employment opportunities.

Concerns Raised:

- Environmental impacts – Participants raised concerns regarding potential impacts on marine wildlife (especially whales), coastal processes, and marine debris.
- Conflict with other ocean users – Some community members (particularly commercial fishers and tourism operators) were concerned about navigation impacts, competition for ocean space, and visual impacts.
- Trust in site selection process – Some residents, particularly in Bermagui, felt the site selection process lacked adequate community consultation and were wary of long-term impacts.

Project Response & Mitigation Measures:

- A Marine Fauna Interaction Plan has been developed to address concerns about whale entanglements and vessel strikes.
- The project is engaging with commercial fishers to ensure co-existence strategies are in place.

- Regular community updates will be provided to ensure transparency in environmental monitoring and site management.
- Additional public information sessions are planned in 2024 to maintain an open dialogue.

1.3.1 Identity: Referring party

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1.3.1.1 Is Referring party an organisation or business? *

Yes

Referring party organisation details

ABN/ACN	644315613
Organisation name	Auskelp Pty Ltd
Organisation address	KPMG Tower Two Collins Square, Level 36, 727 Collins Street, Docklands VIC 3008

Referring party details

Name	Chelsie Ride
Job title	
Phone	0409655558
Email	cc@ccride.net
Address	59 Nadgee Road, Wonboyn NSW 2551

1.3.2 Identity: Person proposing to take the action

1.3.2.1 Are the Person proposing to take the action details the same as the Referring party details? *

Yes

Person proposing to take the action organisation details

ABN/ACN	644315613
Organisation name	Auskelp Pty Ltd
Organisation address	KPMG Tower Two Collins Square, Level 36, 727 Collins Street, Docklands VIC 3008

Person proposing to take the action details

Name	Chelsie Ride
Job title	
Phone	0409655558
Email	cc@ccride.net
Address	59 Nadgee Road, Wonboyn NSW 2551

1.3.2.14 Are you proposing the action as part of a Joint Venture? *

No

1.3.2.15 Are you proposing the action as part of a Trust? *

No

1.3.2.17 Describe the Person proposing the action's history of responsible environmental management including details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the Person proposing to take the action. *

Auskelp Pty Ltd, established in 2019, has demonstrated a commitment to responsible environmental management through several key initiatives:

1. **Regenerative Aquaculture Practices:**

Auskelp focuses on cultivating ***Ecklonia radiata*** (Golden Kelp) in high-energy, open-ocean environments without the use of fertilizers, pesticides, or freshwater, aligning with sustainable aquaculture principles.

2. **Environmental Monitoring and Research:**

The company has implemented comprehensive testing programs in Twofold Bay and Disaster Bay, NSW, to assess the viability and environmental impact of Golden Kelp farming. These programs include real-time ocean condition monitoring and adaptive management strategies to ensure ecological sustainability.

3. **Community and Indigenous Engagement:**

Auskelp has actively engaged with local and Indigenous communities through public consultation sessions and collaborative research workshops. This engagement ensures that community perspectives are integrated into project development, fostering transparency and mutual benefit.

4. **Regulatory Compliance:**

The company adheres to relevant environmental regulations, including the NSW Environmental Planning and Assessment Act 1979, and has obtained necessary permits and licenses for its operations.

In addition:

- Auskelp has no past or present proceedings under Commonwealth, State or Territory law. Auskelp has not previously submitted any referrals or undertaken any actions under the EPBC Act.
- Auskelp is committed to best-practice environmental management and is an industry leader within the expanding seaweed industry in Australia.

Auskelp is collaborating with government, industry and research institutions who have an exemplary record of delivering aquaculture and seaweed-based innovation projects in Australia.

1.3.2.18 If the person proposing to take the action is a corporation, provide details of the corporation's environmental policy and planning framework

The Auskelp Eden 1 Kelp Farm Environmental Policy Framework ensures sustainable marine operations, regulatory compliance, and community & Indigenous engagement. It focuses on biodiversity conservation, water quality protection, climate benefits, and adaptive management. The framework aligns with NSW environmental regulations and seeks to establish best practices for regenerative aquaculture in Disaster Bay.

Environmental Policy Framework – Auskelp Eden 1 Kelp Farm, Disaster Bay, NSW

1. Purpose

The Auskelp Eden 1 Kelp Farm Environmental Policy Framework establishes guidelines for sustainable seaweed aquaculture in Disaster Bay. It ensures environmental protection, regulatory compliance, and best-practice marine stewardship.

2. Policy Summary

Auskelp Pty Ltd is committed to environmentally responsible kelp farming that enhances marine ecosystems while minimizing adverse impacts on water quality, biodiversity, and marine life. This policy aligns with NSW aquaculture regulations, the Environmental Planning and Assessment Act 1979, and global best practices in regenerative aquaculture.

3. Environmental Principles

• Sustainability: Support marine ecosystem resilience by maintaining water quality and biodiversity.

• Regulatory Compliance: Adhere to NSW Marine Waters Sustainable Aquaculture Strategy (NSW MWSAS) and the Environmental Impact Statement (EIS) requirements.

• Community & Indigenous Engagement: Engage local and Indigenous communities in decision-making processes.

• Monitoring & Adaptive Management: Implement real-time environmental monitoring and adjust operations accordingly.

4. Regulatory and Compliance Framework

The kelp farm must comply with:

• NSW Environmental Planning and Assessment Act 1979

• Fisheries Management Act 1994

• Marine Estate Management Act 2014

• National Parks and Wildlife Act 1974 (for Aboriginal cultural heritage)

• State Significant Development (SSD) assessment process for marine aquaculture

5. Environmental Management Strategies

5.1 Biodiversity Protection

• Conduct seafloor assessments before farm expansion.

• Implement a marine wildlife interaction plan to minimize impacts on whales and seabirds.

• Follow best practices for seaweed cultivation without synthetic inputs.

5.2 Water Quality & Pollution Control

• Establish a marine debris management plan, including tracking farm equipment.

• Ensure no chemical fertilizers or pesticides are used.

• Maintain kelp farms in locations with strong natural water flow to avoid excessive nutrient accumulation.

5.3 Climate & Carbon Sequestration

• Monitor kelp's potential for carbon sequestration.

• Research blue carbon credits and sustainable offsets.

5.4 Indigenous & Community Consultation

• Conduct regular public consultation sessions (at least every 6 months) with stakeholders.

• Ensure co-design with Indigenous groups on marine conservation and economic opportunities.

6. Environmental Monitoring & Reporting

• Implement real-time ocean condition monitoring.

• Submit annual environmental performance reports.

• Establish an independent environmental advisory panel for oversight.

7. Emergency Response & Adaptive Management

• Develop a contingency plan for severe weather or environmental disruptions.

• Implement a stop-work provision if unforeseen environmental damage occurs.

1.3.3 Identity: Proposed designated proponent

1.3.3.1 Are the Proposed designated proponent details the same as the Person proposing to take the action? *

Yes

Proposed designated proponent organisation details

ABN/ACN	644315613
Organisation name	Auskelp Pty Ltd
Organisation address	KPMG Tower Two Collins Square, Level 36, 727 Collins Street, Docklands VIC 3008

Proposed designated proponent details

Name	Chelsie Ride
Job title	
Phone	0409655558
Email	cc@ccride.net
Address	59 Nadgee Road, Wonboyn NSW 2551

1.3.4 Identity: Summary of allocation

Confirmed Referring party's identity

The Referring party is the person preparing the information in this referral.

ABN/ACN	644315613
Organisation name	Auskelp Pty Ltd
Organisation address	KPMG Tower Two Collins Square, Level 36, 727 Collins Street, Docklands VIC 3008
Representative's name	Chelsie Ride
Representative's job title	
Phone	0409655558
Email	cc@ccride.net
Address	59 Nadgee Road, Wonboyn NSW 2551

Confirmed Person proposing to take the action's identity

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

Same as Referring party information.

Confirmed Proposed designated proponent's identity

The Person proposing to take the action is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

1.4 Payment details: Payment exemption and fee waiver

1.4.1 Do you qualify for an exemption from fees under EPBC Regulation 5.23 (1) (a)? *

No

1.4.3 Have you applied for or been granted a waiver for full or partial fees under Regulation 5.21A? *

No

1.4.5 Are you going to apply for a waiver of full or partial fees under EPBC Regulation 5.21A?

No

1.4.7 Has the department issued you with a credit note? *

No

1.4.9 Would you like to add a purchase order number to your invoice? *

No

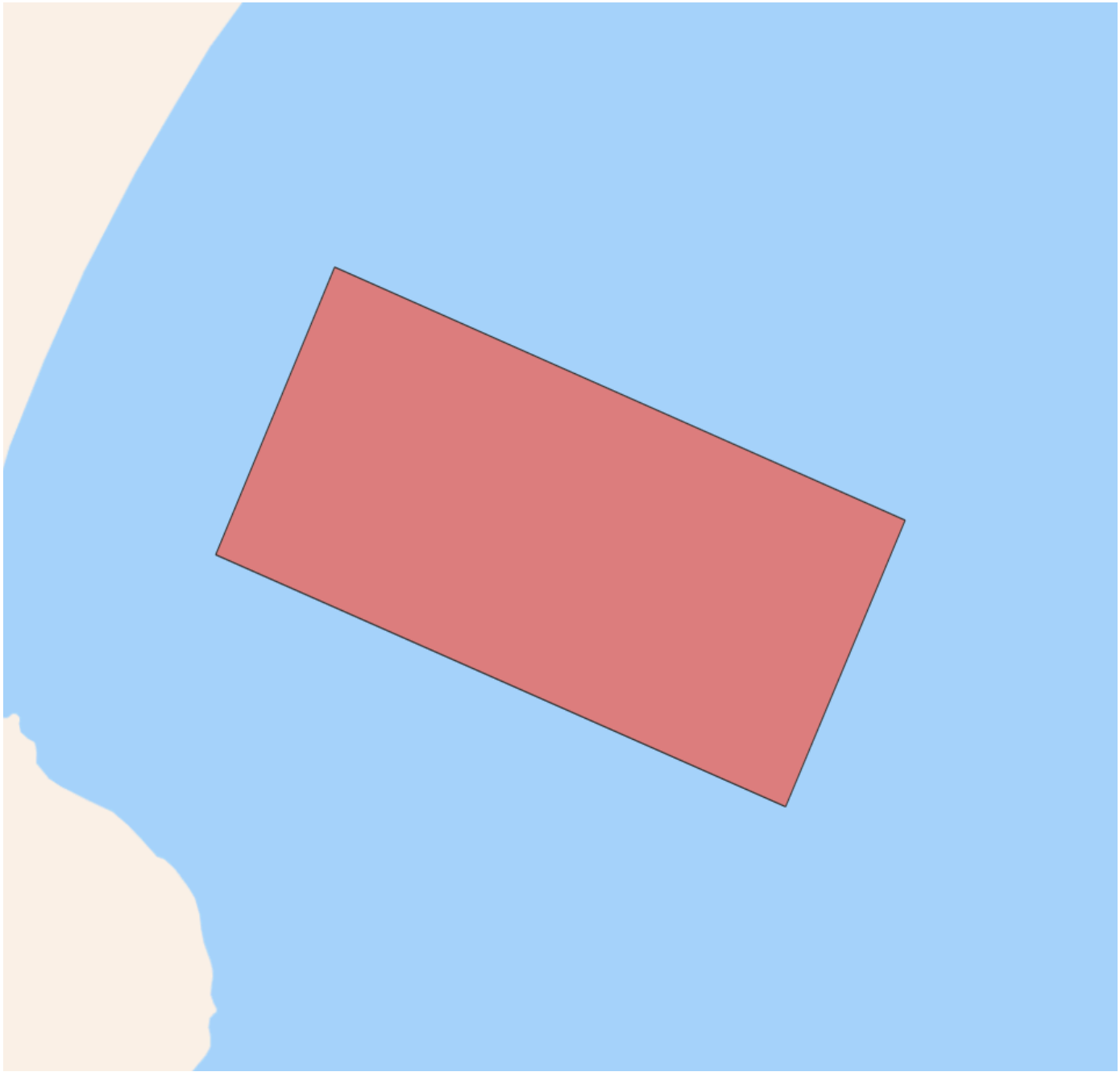
1.4 Payment details: Payment allocation

1.4.11 Who would you like to allocate as the entity responsible for payment? *

Person proposing to take the action

2. Location

2.1 Project footprint



Project Area: 194.84 Ha **Disturbance Footprint:** 194.84 Ha

2.2 Footprint details

2.2.1 What is the address of the proposed action? *

Offshore of Wonboyn Beach, Disaster Bay, NSW

2.2.2 Where is the primary jurisdiction of the proposed action? *

New South Wales

2.2.3 Is there a secondary jurisdiction for this proposed action? *

No

2.2.5 What is the tenure of the action area relevant to the project area? *

The lease area known as AL21/004 was put out for tender by NSW Department of Primary Industry 29 March 2021. On 18 May 2021, Auskelp were successful in obtaining a seaweed aquaculture lease over the area, conditional upon obtaining Landowners Consent from Crown Lands and State Significant Development consent from the NSW Department of Planning Industry and Environment. The area is zoned “Available for Aquaculture” in the NSW Government, Department of Primary Industries Marine Waters Strategy. The Eden 1 Ocean Kelp Farm’s land-based facilities include a staging, hatchery and processing plant located within existing buildings in Edrom NSW, and water access provided via the existing Multi-Purpose Wharf in Twofold Bay NSW. These will support seedstock production, drying, packaging, and transport logistics for kelp cultivation.

3. Existing environment

3.1 Physical description

3.1.1 Describe the current condition of the project area's environment.

The site of the proposed action is an ocean-based lease located 656m from Greenglades shoreline in Disaster Bay, Wonboyn on the far south NSW coast in the Tasman Sea.

The project area's environment can be described as an undisturbed, nearshore marine environment. The lease covers 200-hectares. The Bay is protected by Green Cape Headland to the North and the Nadgee region to the South.

Benthic surveys conducted in May 2024 confirmed a seafloor environment of soft unconsolidated sediments. The soft-sediment habitat is described as unrippled, well-sorted, semi-consolidated, thick (greater than 5 centimetres) mud. The lease area does not include any notable habitat features (i.e. rocky reef or seagrass meadows).

1. Seafloor Characteristics

- The area is classified as an "ocean desert", with fine and coarse wave-sculpted sand sediments.
- Small patches of crushed shells and shale.
- No coral or seagrass detected in the lease area.
- No existing structures or marine infrastructure found at the site.

2. Water Depth

• The site has depths ranging from **13.3m to 24.2m**.

3. Marine Life and Ecosystem

- Occasional sightings of Flathead fish but no significant marine biodiversity hotspots within the lease area.
- The closest marine reef ecosystem is approximately 1km away from the nearest boundary of the lease.

4. Environmental and Conservation Considerations

- The lease is outside of any Marine Protected Areas.

The closest protected areas are all terrestrial, and include:

- Nadgee Nature Reserve (800m away).
- Ben Boyd National Park (3km away).
- Cape Howe Marine National Park (51km away).

5. Oceanographic Conditions

- The area experiences strong tidal currents and regular ocean upwelling, which may enhance nutrient availability for kelp growth.
- The average water temperature ranges from 15°C in winter to 24°C in summer.

3.1.2 Describe any existing or proposed uses for the project area.

The far southern coastline of NSW and adjacent waters are renowned for their natural beauty and rich maritime history. This part of the NSW coastline supports a range of commercial and recreational industries including mussel and oyster farming, recreational fishing and boating as well as commercial shipping. No existing permanent uses exist within the lease site. Occasional recreational boating and fishing may occur within the lease area. Disaster Bay is within the “Available to Aquaculture” zone as designated by NSW DPI, meaning it is considered suitable for seaweed farming.

The lease area does not contain navigation channels, shipping routes or regular marine vessel traffic from commercial or recreational usage. The lease is not within or within proximity to a marine national park, marine park or aquatic reserve. The nearest heritage area is a historic shipwreck in the northeastern portion of Disaster Bay, approximately 3.5km from the lease. There is also no known native title claim on the marine area. Disaster Bay is undeveloped in terms of infrastructure and is not currently used for any other form of aquaculture. The closest aquaculture lease is used for oyster farming located in the Wonboyn estuary located approximately 3.5 km away from the proposed kelp farm.

Nearby Twofold Bay has approximately 37.5 hectares of ocean leases that are licenced for mussels and Common Kelp but no seaweed is grown on these leases at this time. The Wonboyn oyster and Eden mussel industries have been suffering losses due to the downstream impacts of flooding and fire events and the negative effects of rising ocean temperatures.

3.1.3 Describe any outstanding natural features and/or any other important or unique values that applies to the project area.

No outstanding natural features or important of unique values occur within the lease boundary. There are no marine national parks or nature reserves in proximity to the lease.

3.1.4 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The gradient and depth range of the AL21/004 project area in Disaster Bay, NSW, is as follows:

Depth Range: The lease area ranges from 13.3 meters to 24.2 meters in depth.

Gradient: The seafloor has a gradual slope with a mostly flat, sandy sediment base, transitioning slightly deeper towards the eastern boundary.

Oceanographic Factors: The site experiences strong tidal currents and periodic upwelling events, which influence nutrient availability and kelp growth.

Seafloor Composition: The substrate consists mainly of fine to coarse sand, with some crushed shell and shale deposits, and no coral or seagrass beds.

3.2 Flora and fauna

3.2.1 Describe the flora and fauna within the affected area and attach any investigations of surveys if applicable.

A review conducted using the EPBC Act Protected Matters Search Tool (PMST) found the potential for a variety of Commonwealth listed species to occur within the area, including marine species, threatened species and migratory species. The full list of species is presented in Att 2 – MNES Protected Matters Search.

As no land-based clearing or land-based disturbance is proposed as part of the proposed action, impacts to terrestrial MNES including TECs, flora and fauna species have been excluded from this assessment.

The nature of the project, being the growth a naturally occurring species of kelp, and minimal disturbance of habitat (both land and ocean-based) mean impacts to threatened species is extremely minimal. This includes disturbance to habitat, foraging and breeding grounds. The largest risk to marine and seabird species is interaction with infrastructure within the lease. To reduce the risk of injury and death, a Marine Fauna Interaction Plan will be implemented.

MARINE MAMMALS:

The PMST showed 14 species of marine mammals were reported as being possible, likely or known to occur in proximity to the project area. This included 6 whale species, 5 dolphin species and 2 seal species. Two whale species, the Humpback Whale and Southern Right Whale (EPBC Act listed *Endangered*), are known to occur within Disaster Bay. Both are migratory species that use the waters around southern Australia for feeding and movement in the summer months. The Blue Whale (EPBC Act listed *Endangered*), Killer Whale (Orca), Pygmy Right Whale, and the Indian Ocean Bottlenose Dolphin are considered likely to occur. While the Australian fur-seal, Long nosed fur-seal, Bryde's Whale, Dusky Dolphin, Common Dolphin, Risso's dolphin, Bottlenose dolphin and Minke whale may occur within the project area.

SHARKS

The PMST listed 7 species of shark as possible or known to occur in proximity to the project area. The Great White Shark (EPBC Act listed *Vulnerable*) is known to occur within the project area. The Mackerel Shark is considered likely to occur within the project area. The *Critically Endangered* (EPBC Act listed) Grey Nurse Shark (east coast population) may occur in the project area, however no critical habitat zone is mapped as occurring within the project area. Grey Nurse Shark's favour habitats with sandy-bottomed rocky gutters or rocky caves and are close to inshore rocky reefs or islands.

FISH

The Black Rockcod (EPBC Act listed *Vulnerable*) may occur within the project area, while the Blue Warehou is known to occur. Adult Black Rockcod inhabits caves, gutters and crevices while juveniles are found inshore, often in coastal rockpools and estuaries. The project area does not contain suitable habitat for adult or juveniles of this species. The PMST listed 25 species of Syngnathidae with potential to occur in the project area. This includes seahorses, sea dragons and pipefish. All Syngnathidae species are listed as *May* occur in the project area, however, there is no suitable habitat within the lease area.

MARINE REPTILES

Four sea turtle species are listed as likely or known to occur within the project area. Three species, the Green Turtle, Hawksbill Turtle and the Leatherback Turtle are known to occur within the project area, and the Loggerhead Turtle is considered likely to occur. The lease area does not contain, and is not within proximity to, habitat critical to the survival of marine turtles, including key breeding areas.

BIRDS

The PMST listed 52 seabird or shorebird species that have potential to occur within or in proximity to the marine base lease. The lease area is offshore and does not overlap or interfere with nesting sites for coastal bird species. Seabirds may use the area for foraging, but the low impact nature of Kelp farming is expected to have minimal impact.

3.2.2 Describe the vegetation (including the status of native vegetation and soil) within the project area.

The proposed action is within a marine aquaculture lease, and therefore the status of terrestrial vegetation and soil is not relevant. However, benthic surveys were undertaken in May 2024 by Auskelp to characterise the seafloor substrate and benthic environment. Video analysis were carried out in nine locations within the lease area. Visibility was generally good throughout the survey period. The survey identified fine sand with large areas of crushed shells and fine shale and wild-cast *Ecklonia radiata* specimens. No coral, rocky outcrops or seagrass were detected. The seafloor is considered an ocean desert.

3.3 Heritage

3.3.1 Describe any Commonwealth Heritage Places Overseas or other places recognised as having heritage values that apply to the project area.

No items of Commonwealth Heritage occur in the project footprint.

No underwater cultural heritage sites listed under the *Underwater Cultural Heritage Act 2018* occur in the project footprint.

3.3.2 Describe any Indigenous heritage values that apply to the project area.

Biosis Pty Ltd (Biosis) was commissioned to undertake an Aboriginal Cultural Heritage Assessment (ACHA) of the lease area. Please see Att 3 - ACHA Report.

A total of 57 Aboriginal cultural heritage sites were registered with the Aboriginal Heritage Information Management System (AHIMS) within the vicinity of the lease area. However, none of these registered sites are located near or within the lease boundary. An 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 unstable environment.

In the unlikely event that an unanticipated discovery of Aboriginal cultural heritage occurs through installation or removal of the mooring system, all sediment-disturbing activity in the immediate area will cease immediately and Aboriginal Heritage NSW will be contacted as soon as possible to inform them of the discovery and to seek advice on management of the area. The Commonwealth Minister will also be notified in accordance with requirements of the *Underwater Cultural Heritage Act 2018*.

3.4 Hydrology

3.4.1 Describe the hydrology characteristics that apply to the project area and attach any hydrological investigations or surveys if applicable. *

The Eden 1 project lease area experiences moderate wave energy with occasional storm-driven wave events. The East Australian Current dominates the hydrology, influencing water movement and nutrient transport. The tidal range is moderate, with the highest tide reaching 1.00m AHD. Overall, these conditions are favourable for kelp farming, as the moderate wave climate and currents enhance nutrient delivery while preventing sediment accumulation. A Coastal Processes assessment was undertaken by BMT Pty Ltd (BMT). Please see Att 4 – Coastal Processes Assessment.

1. Wave Heights & Conditions

Significant Wave Height (Hs):

Median offshore significant wave height: 1.5m.

Nearshore (inside Disaster Bay) wave height: 0.5m – 0.75m.

Extreme Wave Events:

1-year return period wave height: 4.00m.

10-year return period wave height: 5.58m.

100-year return period wave height: 7.15m.

Seasonality:

Little seasonal variation in wave heights.

Higher wave periods occur during winter months, influenced by storms.

2. Ocean Currents

Dominant Current Influence:

The site is influenced by the East Australian Current (EAC), which flows southward but can shift direction due to eddies and local wind forcing.

Current Speeds:

Surface currents exceed 1.0 m/s during strong events.

Near-seabed currents reach 1.11 m/s in extreme cases.

Tidal currents are weaker, peaking at 0.16 m/s.

3. Water Levels & Tidal Conditions

Tidal Variations:

Mean Sea Level (MSL): -0.046 m AHD.

Highest Astronomical Tide (HAT): 1.00 m AHD.

Lowest Astronomical Tide (LAT): -1.03 m AHD.

Extreme Water Levels:

1-year return period water level: 0.95m AHD.

100-year return period water level: 1.12m AHD.

4. Seasonal Temperature Variability

Summer (February - Peak Temperature): 21°C

Winter (August - Lowest Temperature): 15°C

Annual Range: 15°C to 21°C, with gradual transitions between seasons.

4. Impacts and mitigation

4.1 Impact details

Potential Matters of National Environmental Significance (MNES) relevant to your proposed action area.

EPBC Act section	Controlling provision	Impacted	Reviewed
S12	World Heritage	No	Yes
S15B	National Heritage	No	Yes
S16	Ramsar Wetland	No	Yes
S18	Threatened Species and Ecological Communities	Yes	Yes
S20	Migratory Species	Yes	Yes
S21	Nuclear	No	Yes
S23	Commonwealth Marine Area	No	Yes
S24B	Great Barrier Reef	No	Yes
S24D	Water resource in relation to large coal mining development or coal seam gas	No	Yes
S26	Commonwealth Land	No	Yes
S27B	Commonwealth Heritage Places Overseas	No	Yes
S28	Commonwealth or Commonwealth Agency	No	Yes

4.1.1 World Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.1.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.1.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

No World Heritage Areas are located within or in proximity to the lease area, and therefore no impact is expected.

4.1.2 National Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.2.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.2.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

No National Heritage Places are located within or in proximity to the lease area, therefore no impact is expected.

4.1.3 Ramsar Wetland

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.3.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.3.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

No Ramsar listed wetland areas are located within or near the lease area, therefore no impact is expected.

4.1.4 Threatened Species and Ecological Communities

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Threatened species

Direct impact	Indirect impact	Species	Common name
Yes		Acacia constablei	Narrabarba Wattle
Yes		Acacia lanigera var. gracilipes	
Yes		Amphibromus fluitans	River Swamp Wallaby-grass, Floating Swamp Wallaby-grass
Yes		Anthochaera phrygia	Regent Honeyeater
Yes		Ardenna grisea	Sooty Shearwater
Yes		Astrotricha sp. Howe Range (D.E.Albrecht 1054)	Long-leaf Star-hair
Yes		Balaenoptera musculus	Blue Whale
Yes		Botaurus poiciloptilus	Australasian Bittern
Yes		Caladenia tessellata	Thick-lipped Spider-orchid, Daddy Long-legs
Yes		Calidris acuminata	Sharp-tailed Sandpiper
Yes		Calidris canutus	Red Knot, Knot
Yes		Calidris ferruginea	Curlew Sandpiper
Yes		Callocephalon fimbriatum	Gang-gang Cockatoo
Yes		Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo
Yes		Carcharias taurus (east coast population)	Grey Nurse Shark (east coast population)
Yes		Carcharodon carcharias	White Shark, Great White Shark
Yes		Caretta caretta	Loggerhead Turtle
Yes		Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover
Yes		Chelonia mydas	Green Turtle
Yes		Climacteris picumnus victoriae	Brown Treecreeper (south-eastern)
Yes		Cryptostylis hunteriana	Leafless Tongue-orchid
Yes		Dasyornis brachypterus	Eastern Bristlebird
Yes		Dasyurus maculatus maculatus (SE mainland population)	Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population)

Direct impact	Indirect impact	Species	Common name
Yes		Dermochelys coriacea	Leatherback Turtle, Leathery Turtle, Luth
Yes		Diomedea antipodensis	Antipodean Albatross
Yes		Diomedea antipodensis gibsoni	Gibson's Albatross
Yes		Diomedea epomophora	Southern Royal Albatross
Yes		Diomedea exulans	Wandering Albatross
Yes		Diomedea sanfordi	Northern Royal Albatross
Yes		Epinephelus daemelii	Black Rockcod, Black Cod, Saddled Rockcod
Yes		Eretmochelys imbricata	Hawksbill Turtle
Yes		Eubalaena australis	Southern Right Whale
Yes		Falco hypoleucos	Grey Falcon
Yes		Fregetta grallaria grallaria	White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian)
Yes		Galeorhinus galeus	School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark
Yes		Gallinago hardwickii	Latham's Snipe, Japanese Snipe
Yes		Grantiella picta	Painted Honeyeater
Yes		Halobaena caerulea	Blue Petrel
Yes		Heleioporus australiacus flavopunctatus	Southern Owl Frog
Yes		Hirundapus caudacutus	White-throated Needletail
Yes		Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern)
Yes		Lathamus discolor	Swift Parrot
Yes		Limosa lapponica baueri	Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit
Yes		Litoria aurea	Green and Golden Bell Frog
Yes		Litoria raniformis	Southern Bell Frog,, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog
Yes		Litoria watsoni	Southern Heath Frog, Watson's Tree Frog
Yes		Macronectes giganteus	Southern Giant-Petrel, Southern Giant Petrel
Yes		Macronectes halli	Northern Giant Petrel
Yes		Melanodryas cucullata cucullata	South-eastern Hooded Robin, Hooded Robin (south-eastern)

Direct impact	Indirect impact	Species	Common name
Yes		Neophema chrysogaster	Orange-bellied Parrot
Yes		Neophema chrysostoma	Blue-winged Parrot
Yes		Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew
Yes		Pachyptila turtur subantarctica	Fairy Prion (southern)
Yes		Persicaria elatior	Knotweed, Tall Knotweed
Yes		Petauroides volans	Greater Glider (southern and central)
Yes		Petaurus australis australis	Yellow-bellied Glider (south-eastern)
Yes		Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)
Yes		Pomaderris parrisiae	Parris' Pomaderris
Yes		Potorous tridactylus trisulcatus	Long-nosed Potoroo (southern mainland)
Yes		Prototroctes maraena	Australian Grayling
Yes		Pseudomys fumeus	Smoky Mouse, Konoom
Yes		Pterodroma leucoptera leucoptera	Gould's Petrel, Australian Gould's Petrel
Yes		Pteropus poliocephalus	Grey-headed Flying-fox
Yes		Pycnoptilus floccosus	Pilotbird
Yes		Rhincodon typus	Whale Shark
Yes		Rostratula australis	Australian Painted Snipe
Yes		Seriolella brama	Blue Warehou
Yes		Stagonopleura guttata	Diamond Firetail
Yes		Sternula albifrons	Little Tern
Yes		Sternula nereis nereis	Australian Fairy Tern
Yes		Thalassarche bulleri	Buller's Albatross, Pacific Albatross
Yes		Thalassarche bulleri platei	Northern Buller's Albatross, Pacific Albatross
Yes		Thalassarche carteri	Indian Yellow-nosed Albatross
Yes		Thalassarche cauta	Shy Albatross
Yes		Thalassarche eremita	Chatham Albatross
Yes		Thalassarche impavida	Campbell Albatross, Campbell Black-browed Albatross
Yes		Thalassarche melanophris	Black-browed Albatross

Direct impact	Indirect impact	Species	Common name
Yes		Thalassarche salvini	Salvin's Albatross
Yes		Thalassarche steadi	White-capped Albatross
Yes		Thesium australe	Austral Toadflax, Toadflax
Yes		Thinornis cucullatus cucullatus	Eastern Hooded Plover, Eastern Hooded Plover
Yes		Uperoleia martini	Martin's Toadlet

Ecological communities

Direct impact	Indirect impact	Ecological community
No	No	Brogo Vine Forest of the South East Corner Bioregion
No	No	Lowland Grassy Woodland in the South East Corner Bioregion
No	No	River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria

4.1.4.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.4.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

The Eden 1 project is not expected to have a significant direct impact on threatened species or ecological communities. However, indirect impacts may occur due to potential habitat interactions, vessel activity, and changes in local marine conditions. An assessment of risks has been undertaken. Please see Att 5 - Auskelp Risk Assessment.

1. Identified Protected Matters in the Project Area

The EPBC Act Protected Matters Search lists the following threatened species:

- Three listed Threatened Ecological Communities (TECs), all of which are terrestrial and located outside the lease area. No land-based clearing or disturbance will occur, meaning there will be no impact on these TECs.
- 81 listed threatened species, including marine mammals, seabirds, fish, and reptiles.

Terrestrial species, including plants, frogs, birds, and mammals, have been excluded from this assessment as the project is entirely marine-based and does not involve land disturbance. However, for species that utilise the marine environment for foraging, movement, or breeding, potential impacts have been considered.

Given the nature of the project, a targeted ecological field survey was not conducted. Instead, a precautionary desktop-based approach was adopted. This approach is appropriate because:

- The project does not modify terrestrial or intertidal habitats, reducing the likelihood of direct impacts on land-based species.
- Many marine and coastal species have extensive home ranges, making point-in-time field surveys of limited value in assessing potential interactions.
- Comprehensive desktop records, including species distribution databases and previous ecological studies, provide sufficient evidence to determine the likelihood of species occurring within Disaster Bay and in proximity to the lease.

Key threatened species known to occur in the broader Disaster Bay region include:

Marine Mammals:

- EPBC Act Endangered: Southern Right Whale (*Eubalaena australis*) (EPBC Act Endangered) and Blue Whale (*Balaenoptera musculus*).
- Common and Bottlenose Dolphins (*Delphinus delphis*, *Tursiops aduncus*), Australian Fur Seal (*Arctocephalus pusillus doriferus*), and New Zealand Fur Seal (*Arctocephalus forsteri*).

Seabirds:

- Antipodean Albatross (*Diomedea antipodensis*), Black-browed Albatross (*Thalassarche melanophris*), and White-bellied Storm-Petrel (*Fregetta grallaria*).

Sharks and Fish:

- Grey Nurse Shark (*Carcharias taurus* east coast population), White Shark (*Carcharodon carcharias*), and Black Rockcod (*Epinephelus daemelii*), and Blue Warehou (Seriolella brama).

Marine Turtles:

- Loggerhead (*Caretta caretta*), Green (*Chelonia mydas*), Leatherback (*Dermochelys coriacea*), and Hawksbill (*Eretmochelys imbricata*).

Fish and Syngnathids (Seahorses, Pipefish, Seadragons):

- The EPBC Protected Matters Search identified 25 species of Syngnathidae with potential to occur in the region.

2. Direct Impacts (Minimal Risk) to threatened species

Marine Mammals and Turtles:

Direct impacts to marine mammals and turtles may occur if individuals come into contact with aquaculture infrastructure and operating vessels. However, the design and operational protocols of the Eden 1 project significantly reduce these risks:

- The lease area lies outside known primary migration corridors for baleen whales, reducing the likelihood of sustained interaction with listed threatened and migratory marine mammals.
- Kelp-growing longline rigs will be held taut and suspended in the water column, significantly reducing the risk of entanglement. The infrastructure is specifically designed to avoid loose or draping ropes that could pose an entrapment hazard to whales, dolphins, or turtles.

- All infrastructure associated with the project has been designed and will be installed to withstand storm conditions, reducing the likelihood of breakage or displacement. In the event of severe weather, monitoring protocols will be implemented to identify and recover any storm-related debris, minimising potential impacts on marine fauna.
- Vessel operations within the lease will be limited, infrequent, and conducted at slow speeds, in line with best-practice maritime wildlife protocols. These measures further reduce the already low probability of vessel strike or noise disturbance to marine mammals, or to turtle species.

Seabirds:

Seabirds may forage in the project area and could theoretically be disturbed by human activity or infrastructure. However, direct impacts are expected to be minimal due to the nature and scale of operations:

- The project area is offshore and not used for nesting or breeding by seabird species.
- Infrastructure associated with the farm does not include elevated or above-water structures that might pose a collision risk or attract roosting birds.
- No fishing, baiting, or attractant activities will occur, eliminating artificial food sources that might alter seabird foraging behaviour or increase interaction rates of migratory seabird species.
- Direct disturbance from vessel activity is expected to be very low, as operations are infrequent, brief, and use small craft comparable to existing local maritime traffic.

Sharks:

Direct interaction with shark species is highly unlikely due to the passive nature of seaweed aquaculture:

- The project infrastructure does not include any active feeding, discharge, or fish stock that might attract shark species.
- The minimal benthic footprint of the screw-anchor system ensures that important sandy-bottom foraging grounds or juvenile habitats are not disturbed.
- As kelp farming does not involve nets, cages, or bait, there are no entanglement risks or artificial attractants for predatory species.

Fish and Syngnathids (Seahorses, Pipefish, Seadragons):

- These species typically inhabit seagrass beds, coral, or reef environments, none of which are present within the lease area based on benthic surveys.
- As such, direct impacts to Syngnathidae or other fish species are considered negligible. The habitat present (well-sorted, unconsolidated sandy substrate) is not considered critical or preferred habitat for these taxa.

3. Potential Indirect Impacts (Moderate Risk)

Marine mammals and turtles:

- No night works are proposed and no artificial lighting will be used during the construction or operation of the project, eliminating the risk of light pollution affecting nocturnal navigation, foraging, or breeding behaviours of cetaceans and marine turtles.
- Noise generated by vessel activity will be minimal, limited to low-speed transit comparable to recreational boating. This significantly reduces the risk of behavioural disturbance to sensitive marine mammals, including cetaceans.
- Installation of screw anchors will be a short-term activity and conducted using accepted methods that produce only low-level, temporary underwater noise that is not expected to disturb marine mammal and turtle species in the long-term. Noise impacts are expected to be minor and temporary.
- The project location lies outside primary whale migration corridors, and the low intensity and short duration of construction-related activities further minimise any risk of disruption to migration pathways.

Seabirds:

- The lease area is offshore and not a significant nesting or breeding site for seabirds.
- No night-time operations or artificial lighting will occur, avoiding disruption to seabird orientation, foraging behaviour, or nocturnal roosting patterns.
- The project does not involve any baiting, feeding, or fishing activities that could attract seabirds or alter their natural behaviour.
- Noise associated with occasional vessel activity is expected to be low and consistent with ambient maritime traffic, posing negligible disturbance to migratory seabirds using the area for foraging.
- At a very local scale, kelp farms can alter water movement, potentially influencing plankton availability, which may affect some fish or seabirds.

- However, considering the localised nature of the project and the open waters within which it is located, minor changes to water flow and nutrients dynamics are expected to be localised and temporary. There is strong evidence that kelp farms can enhance local biodiversity, supporting fish and invertebrate populations.

Sharks:

- No artificial lighting will be used, preventing disorientation or attraction of shark species.
- The project avoids baiting, fish farming, or discharge of organic waste—common attractants for shark species—eliminating artificial feeding cues.
- Noise from vessel activity and short-term anchor installation is not anticipated to affect shark behaviour, given their tolerance to low-frequency ambient sound and absence of sensitive nursery or aggregation areas nearby.

Summary

The Eden 1 project has been designed to **minimise risks** to threatened and migratory species through careful site selection, infrastructure design, and ongoing monitoring. With the proposed mitigation measures, the likelihood of significant direct or indirect impacts is considered **low**.

4.1.4.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

No

4.1.4.6 Describe why you do not consider this to be a Significant Impact. *

The proposed action has been assessed under the *Significant Impact Criteria* of threatened species and it is unlikely to have a significant impact on threatened species.

This assessment has been undertaken on Critically endangered species (however, no species assessed as likely to occur are critically endangered) and endangered species (Northern Royal Albatross, Shy Albatross, Gould's Petrel, Southern Giant Petrel, Blue Whale, Southern Right Whale, Leatherback Turtle and Loggerhead Turtle).

Lead to a long-term decrease in a population

The proposed action is expected to have minimal impact on the existing populations of endangered seabird species, including the albatross and petrel species listed above. It is also expected to have minimal impact on the Southern Right Whale, Blue Whale, Leatherback Turtle and Loggerhead Turtle populations. The sites small size and the mobility of these species, combined with measures to manage noise, vessel movement and entanglement substantially reduce the risk of long-term population decline. The design of the rig, being taut and fixed structures, limits the initial risk of entanglement, which will be further reduced through a *Marine Fauna Interaction Management Plan* (see Att 6 - MFIMP).

Reduce an area of occupancy

The proposed action is not expected to reduce the area of occupancy for endangered species. Each species listed above have large areas of occupancy and the localised nature of the project means the area of occupancy utilised by these species will not be affected.

Fragment an existing population

The proposed action is unlikely to fragment a population. The species listed above are highly mobile and are adept at navigating around potential barriers. Lighting at the project site is not proposed as part of the Eden 1 project, therefore there is no risk of light pollution interfering with the range of an existing population. Although noise or vessel disturbance may temporarily affect behaviour, it is not expected to impact their ability to feed, disperse, or migrate.

Adversely affect habitat critical to survival

The proposed action is not expected to affect habitat critical to the survival of endangered species. While the Blue Whale and Southern Right Whale have BIAs overlapping the project area, the disturbance of the seafloor associated with screw anchors is extremely localised, and unlikely to affect the extensive habitat for these species. There are no critical breeding areas near the study for the Northern Royal Albatross, Shy Albatross, Gould's Petrel and Southern Giant Petrel. These species have large ranges and known breeding areas. Considering the localised nature of the project and the nature of the project, it is not expected to impact habitat that is critical to feeding, fly-overs of breeding. The project area is also not considered habitat critical to the survival of the Leatherback Turtle or Loggerhead Turtle.

Disrupt the breeding cycle of a population

The proposed action is not expected to disrupt the breeding cycle of a population. The Southern Right Whale is the only species that may breed in proximity to the project area. Standard boating measures will be taken to minimal disturbance to cetaceans, including maintaining minimum distances from individuals. The risk of entanglement is considered low due to rig design, but measures will be in place to deal with such an event to minimise the risk of injury or death.

Reduce habitat quality

The proposed action is not expected to reduce the habitat quality of endangered species. The proposed location of the project lacks sensitive benthic habitat, and direct impacts are expected to be minor and localised to the site of the screw anchors. The growth of a locally occurring kelp species is not expected to alter seabird or shorebird habitat. It is also not expected to reduce the habitat quality for cetaceans and turtle species.

Result in invasive species becoming established

The use of a locally occurring kelp species and with appropriate management of vessels, invasive species are not expected to be established as a result of the project. Vessels will be maintained to reduce biofouling. The risk of introducing an invasive species as a result of the project is considered highly improbable.

Introduce disease

The proposed action is not expected to introduce a disease. Local seedstock will be used to generate the kelp for farming. Ropes used for seeding will be sourced reputable marine providers and are free from antifouling or chemicals (otherwise the baby kelp does not grow) and will therefore be uncontaminated. More than three years of ocean testing in

Twofold Bay and Disaster Bay have been conducted under Section 37 testing licences to determine the optimum rope types and seeding practices.

Interfere with recovery

The proposed action is unlikely to interfere with the recovery plan of an Endangered listed species. Recovery plans list threats such as vessel collision, noise, habitat modification, entanglement and pollution for seabirds. However, impacts are expected to be minor, localised and with appropriate management measures in place to avoid significant impact.

Vulnerable species (Black-brown Albatross, Buller's Albatross, Indian Yellow-nosed Albatross, Salvin's Albatross, Southern Royal Albatross, White-capped Albatross, Wandering Albatross, Antipodean Albatross, Sooty Shearwater, Great White Shark, Whale Shark, Green Turtle and Hawksbill Turtle)

Lead to a long-term decrease in a population

The proposed action is expected to have minimal impact on the existing populations of vulnerable seabird species, including the albatross and shearwater species listed above. Albatross and petrel species may forage or fly over the lease area, but entanglement risk is very low due to the design of the rig structure. Migration pathways are not expected to be disrupted as no additional lighting is proposed as part of the operation. Impacts are expected to be localised and minor, with control measures in place to further mitigate risk.

The proposed action is also expected to have minimal impact on the Great White Shark, Whale Shark, Green Turtle and Hawksbill Turtle populations. The site's small size and the mobility of these species, combined with measures to manage noise, vessel movement and entanglement substantially reduce the risk of long-term population decline. The design of the rig, being taught and fixed structures, limits the initial risk of entanglement, which will be further reduced through a *Marine Fauna Interaction Management Plan*.

Reduce an area of occupancy

The proposed action is not expected to reduce the area of occupancy for vulnerable marine species. While biologically important areas for albatross foraging occur over the project area, these species have large ranges across southern Australian waters, making a reduction in their area of occupancy extremely unlikely. Similarly, the Great White Shark, Whale Shark, Green Turtle and Hawksbill Turtle have large areas of occupancy, and the small, localised size of the project is not expected to reduce the area of occupancy.

Fragment an existing population

The project is unlikely to fragment an important population of a vulnerable species. No significant barres to dispersal have been identified. The project's small footprint and lack of significant habitat mean that highly mobile species can move around the lease without being displaced.

Adversely affect habitat critical to survival

The proposed action is not expected to adversely affect critical habitats for vulnerable species. Biologically important areas for foraging Albatross occur over the study area. However, the listed albatross species have wide-ranging habitats. The localised footprint of the project area will not impact critical habitat or nesting/breeding areas.

Disrupt the breeding cycle of a population

The proposed action is not expected to disrupt the breeding cycle of a population. Migration pathways will not be significantly impact given the localised area of the project compared to the travel distances of Albatross species and the Whale Shark.

Result in invasive species becoming established

The use of a locally occurring kelp species and with appropriate management of vessels, invasive species are not expected to be established as a result of the project. Vessels will be maintained to reduce biofouling. The risk of introducing an invasive species as a result of the project is considered highly improbable.

Introduce disease

The proposed action is not expected to introduce a disease. Local seedstock will be used to generate the kelp for farming. Ropes used for seeding will be sourced reputable marine providers and are free from antifouling or chemicals (otherwise the baby kelp does not grow) and will therefore be uncontaminated. More than three years of ocean testing in Twofold Bay and Disaster Bay have been conducted under Section 37 testing licences to determine the optimum rope types and seeding practices.

Interfere with recovery

The proposed action is unlikely to interfere with the recovery plan of Vulnerable listed species. Recovery plans list threats such as vessel collision, noise, habitat modification, entanglement and pollution for seabirds. However, impacts are expected to be minor, localised and with appropriate management measures in place to avoid significant impact.

Critically endangered and endangered ecological communities

The PMST returned three TECs, all of which are terrestrial. No land-based clearing or disturbance is proposed as part of the project. Therefore, the proposed action is not expected to have a significant impact on these ecological communities.

4.1.4.7 Do you think your proposed action is a controlled action? *

No

4.1.4.9 Please elaborate why you do not think your proposed action is a controlled action. *

An assessment of potential impacts on threatened species shows the impacts are minor and localised, and that the proposed action is unlikely to have a significant impact. On this basis, the proposed action is not considered to be a controlled action.

4.1.4.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

The risk of significant long-term environmental impacts as a result of the proposed action is extremely low. The growth of a naturally occurring kelp species, using local seedstock and state-of-the-art rig design to minimise entanglement, and well-managed vessel operations, significantly reduces the risk of significant impact. Site-specific operational plans and practices that build upon existing industry best-practice in New South Wales Aquaculture will be implemented. The project will be delivered under a Marine Fauna Interaction Management Plan, developed under guidance from NSW DPI.

The Eden 1 Kelp Farm has incorporated several avoidance and mitigation measures to ensure minimal environmental impact, particularly regarding marine biodiversity, water quality, and protected species.

Mitigation Measures to Reduce Impact

- A Marine Fauna Interaction Management Plan has been developed (please see Att 6 - MFIMP) to manage the risk of entanglement and outline protocol for the safe release of entrapped fauna.
- Entanglement Risk Prevention: Maintain tensioned longline systems and use weighted ropes.
- Environmental Compliance Reporting: Conduct annual impact assessments in line with EPBC Act guidelines.

Additional Information:

Assessment of Marine Fauna Entanglement Risk at the Eden 1 Kelp Farm

The risk of fauna entanglement in the Eden 1 Kelp Farm is assessed as low due to several mitigation measures and historical data.

Location & design factors:

- Longline infrastructure used to grow kelp will kept under tension, preventing slack lines that could pose entanglement risks to marine fauna.
- The risk of marine species becoming entangled in the longline infrastructure is considered extremely low. However, it is possible whales, seabirds, dolphins, seals, sharks, and turtles could enter the lease area and the small risk of fauna interaction with lease infrastructure and this must be managed in this case.
- Auskelp will implement a *Marine Fauna Interaction Management Plan* (please see Att 6). However, procedures for the release of entangled fauna are considered a secondary control. Rig design and regular observations of the lease are considered the primary controls in place to reduce the risk of marine fauna injury and death. With all control measures in place, there is a very low risk of harm from entanglement.

Historical context:

- No recorded cases of whale entanglement in kelp farming infrastructure globally.
- Comparisons with oyster and mussel farming operations show no significant entanglement issues over decades of operation.

Monitoring & management:

- Wildlife observers will monitor the farm for any interactions.
- Protocols for reporting and mitigation are in place if an entanglement occurs.
- A *Marine Fauna Interaction Management Plan*, designed in consultation with NSW DPI, will be implemented. Procedures include monitoring of the lease for entangled animals and will ensure any animal that is entangled is freed by suitable qualified persons.

Ocean seafloor

Minimal impacts are expected as a result of the placement and establishment of the mooring system. The longline infrastructure will be suspended above the seabed and will not have an ongoing disturbance on benthic habitat. Seafloor disturbance will be restricted to the footprint of the screw anchors, which will be removed at the conclusion of the project. Benthic surveys showed the seafloor consists of sand with small shell fragments. No major habitat features were detected within the lease.

Collision

There is a small possibility of marine fauna injury or death from vessel collision. Wildlife management measures, including commercial maritime standards of boat operations, such as the reduction of speed maintenance of a minimum distance from marine mammals will be introduced to reduce the potential for vessel strike. Given the limited scale of boating operations and the management of boating operations, the likelihood of vessel strike has been assessed as low. Qualified personnel will operate vessels ensuring maritime safety is upheld.

No feed, fertiliser, pesticides or fresh water to be used

Unlike fish farming, for instance, kelp farming is very unlikely to affect species behaviour, including foraging habits and breeding. The static nature of the rig infrastructure; the absence of added feed, fertiliser, pesticides or freshwater; and the use of a locally occurring kelp species, limits the chance of the project interrupting species behaviours. Local seedstock will be used, which minimises the risk of introducing invasive species, marine pathogens and parasites. Overall, the risk of the project becoming a biosecurity risk is considered extremely low.

Extreme Weather and Infrastructure Safety

- Infrastructure designed to withstand 1-in-100-year extreme weather events.
- Regular inspections and maintenance will be conducted to ensure integrity and prevent debris loss.

4.1.4.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

As no significant impacts are anticipated, no offsets are proposed as part of the action.

4.1.5 Migratory Species

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	Species	Common name
Yes		Actitis hypoleucos	Common Sandpiper
Yes		Apus pacificus	Fork-tailed Swift
Yes		Ardenna carneipes	Flesh-footed Shearwater, Fleshy-footed Shearwater
Yes		Ardenna grisea	Sooty Shearwater
Yes		Balaenoptera edeni	Bryde's Whale
Yes		Balaenoptera musculus	Blue Whale
Yes		Calidris acuminata	Sharp-tailed Sandpiper
Yes		Calidris canutus	Red Knot, Knot
Yes		Calidris ferruginea	Curlew Sandpiper
Yes		Calidris melanotos	Pectoral Sandpiper
Yes		Caperea marginata	Pygmy Right Whale
Yes		Carcharhinus longimanus	Oceanic Whitetip Shark
Yes		Carcharias taurus	Grey Nurse Shark
Yes		Carcharodon carcharias	White Shark, Great White Shark
Yes		Caretta caretta	Loggerhead Turtle
Yes		Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover
Yes		Chelonia mydas	Green Turtle
Yes		Dermochelys coriacea	Leatherback Turtle, Leathery Turtle, Luth
Yes		Diomedea antipodensis	Antipodean Albatross
Yes		Diomedea epomophora	Southern Royal Albatross
Yes		Diomedea exulans	Wandering Albatross
Yes		Diomedea sanfordi	Northern Royal Albatross
Yes		Eretmochelys imbricata	Hawksbill Turtle
Yes		Eubalaena australis	Southern Right Whale
Yes		Gallinago hardwickii	Latham's Snipe, Japanese Snipe
Yes		Hirundapus caudacutus	White-throated Needletail

Direct impact	Indirect impact	Species	Common name
Yes		Lagenorhynchus obscurus	Dusky Dolphin
Yes		Lamna nasus	Porbeagle, Mackerel Shark
Yes		Limosa lapponica	Bar-tailed Godwit
Yes		Macronectes giganteus	Southern Giant-Petrel, Southern Giant Petrel
Yes		Macronectes halli	Northern Giant Petrel
Yes		Megaptera novaeangliae	Humpback Whale
Yes		Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew
Yes		Orcinus orca	Killer Whale, Orca
Yes		Rhincodon typus	Whale Shark
Yes		Sternula albifrons	Little Tern
Yes		Thalassarche bulleri	Buller's Albatross, Pacific Albatross
Yes		Thalassarche carteri	Indian Yellow-nosed Albatross
Yes		Thalassarche cauta	Shy Albatross
Yes		Thalassarche eremita	Chatham Albatross
Yes		Thalassarche impavida	Campbell Albatross, Campbell Black-browed Albatross
Yes		Thalassarche melanophris	Black-browed Albatross
Yes		Thalassarche salvini	Salvin's Albatross
Yes		Thalassarche steadi	White-capped Albatross

4.1.5.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.5.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

Migratory species that have the potential to occur near the project area fall into the same categories as those identified as threatened species, including:

- Seabirds,
- Turtles
- Marine mammals, and;
- Sharks.

Of the species with potential to occur in the area, 28 migratory species may experience direct or indict impacts. 20 of these species are also listed as threatened species under the EPBC Act (except for Gould's Petrel which is EPBC Act listed Endangered) and have been assessed in the previous section: *Threatened Species*. Additional species that are listed as migratory (and not threatened under the EPBC Act) include the Flesh-Foot Shearwater, Little Tern, Bryde's Whale, Orca, Humpback Whale, Pygmy Right Whale, Oceanic Whitetip Shark and Mackerel Shark.

The types of impacts predicated to affect migratory species are very similar as those presented for threatened species.

1. Direct Impacts (Minimal Risk)

Migratory Marine Mammals and Turtles:

Direct impacts to migratory marine mammals and turtles may occur if individuals come into contact with aquaculture infrastructure, vessels, or during brief installation activities. However, the design and operational protocols of the Eden 1 project significantly reduce these risks:

- The lease area lies outside known primary migration corridors for baleen whales, reducing the likelihood of sustained interaction with migratory species such as the Humpback Whale (*Megaptera novaeangliae*) and Southern Right Whale (*Eubalaena australis*).
- Kelp-growing longlines will be held taut and suspended in the water column, significantly reducing the risk of entanglement. The infrastructure is specifically designed to avoid loose or draping ropes that could pose an entrapment hazard the migratory pathways of marine mammals and turtles.
- All infrastructure associated with the project has been designed and will be installed to withstand storm conditions, reducing the likelihood of breakage or displacement. In the event of severe weather, monitoring protocols will be implemented to identify and recover any storm-related debris, minimising potential impacts on migratory species using the area for movement.
- Vessel operations within the lease will be limited, infrequent, and conducted at slow speeds, in line with best-practice maritime wildlife protocols. These measures further reduce the already low probability of vessel strike or noise disturbance to migratory marine mammals, or to turtle species.

Migratory Seabirds:

- Seabirds may forage in the project area and could theoretically be disturbed by human activity or infrastructure. However, direct impacts are expected to be minimal due to the nature and scale of operations:
- The project area is offshore and not used for nesting or breeding by migratory seabird species, including those listed under the EPBC Act such as the Southern Royal Albatross (*Diomedea epomophora*) or Southern Giant-Petrel (*Macronectes giganteus*)
- Infrastructure associated with the farm does not include elevated or above-water structures that might pose a collision risk or attract roosting birds.
- No fishing, baiting, or attractant activities will occur, eliminating artificial food sources that might alter seabird foraging behaviour or increase interaction rates of migratory seabird species.
- Direct disturbance from vessel activity is expected to be very low, as operations are infrequent, brief, and use small craft comparable to existing local maritime traffic.

Migratory Sharks:

Direct interaction with shark species is highly unlikely due to the passive nature of seaweed aquaculture:

- The project infrastructure does not include any active feeding, discharge, or fish stock that might attract or change the behaviour of migratory sharks including White Sharks (*Carcharodon carcharias*) or the Oceanic Whitetip Shark (*Carcharhinus longimanus*).
- The minimal benthic footprint of the screw-anchor system ensures that sandy-bottom foraging grounds are not disturbed.
- As kelp farming does not involve nets, cages, or bait, there are no entanglement risks or artificial attractants for migratory predatory species.

Summary:
All direct impacts associated with the Eden 1 kelp farm are limited to potential interactions with suspended infrastructure and occasional vessel movements. However, the passive, low-impact design of the project and the nature of kelp aquaculture operations provide strong mitigation against these risks. With no feeding, harvesting of fauna, or disruptive equipment used, and no critical habitats present within the lease area, the potential for harm to marine wildlife is very low.

2. Indirect Impacts (Negligible Risk)

Migratory Marine mammals and turtles:

- No night works are proposed and no artificial lighting will be used, eliminating the risk of light pollution affecting nocturnal navigation, foraging, or breeding behaviours of migratory cetaceans and marine turtles.
- Noise generated by vessel activity will be minimal, limited to low-speed transit comparable to recreational boating. This significantly reduces the risk of behavioural disturbance to sensitive marine mammals, including cetaceans.
- The rigging system is not expected to generate underwater noise, as it has been specifically designed without metal latchings or components that could cause background noise during operation.
- Installation of screw anchors will be a short-term activity and conducted using accepted methods that produce only low-level, temporary underwater noise that is not expected to disturb migratory marine mammal and turtle species in the long-term. Noise impacts are expected to be minor and temporary.
- The project location lies outside primary whale migration corridors, and the low intensity and short duration of construction-related activities further minimise any risk of disruption to migration pathways.

Migratory Seabirds:

- The lease area is offshore and not a significant nesting, movement pathways or breeding site for migratory seabirds.
- No night-time operations or artificial lighting will occur, avoiding disruption to seabird orientation, foraging behaviour, or nocturnal roosting patterns.
- The project does not involve any baiting, feeding, or fishing activities that could attract seabirds or alter their natural behaviour.
- Noise associated with occasional vessel activity is expected to be low and consistent with ambient maritime traffic, posing negligible disturbance to migratory seabirds using the area for foraging.

Migratory Sharks:

- No artificial lighting will be used, preventing disorientation or attraction of shark species.
- The project avoids baiting, fish farming, or discharge of organic waste—common attractants for shark species—eliminating artificial feeding cues.
- Noise from vessel activity and short-term anchor installation is not anticipated to affect shark behaviour, given their tolerance to low-frequency ambient sound and absence of sensitive nursery or aggregation areas nearby.

Summary

Indirect risks to migratory species from the Eden 1 project are considered negligible, with no night works or artificial lighting, minimal vessel noise, and low-impact, short-term installation methods. The lease area is outside key migration corridors, and the infrastructure has been designed to avoid noise, light, or behavioural disruption to migratory marine mammals, turtles, seabirds, or sharks.

4.1.5.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

No

4.1.5.6 Describe why you do not consider this to be a Significant Impact. *

This section focuses on species that are listed only as migratory. Potential impacts to threatened species that are also migratory are assessed under threatened species. Migratory species that were not assessed as threatened species include:

- Two species of seabirds (Flesh-Foot Shearwater and Little Tern).
- Three marine mammals (Bryde's Whale, Orca, Humpback Whale, Pygmy Right Whale and Dusky Dolphin).
- And two shark species (Oceanic Whitetip Shark and Mackerel Shark).

The types of impacts predicted to affect migratory species listed above are the same as those presented for threatened species.

4.1.5.7 Do you think your proposed action is a controlled action? *

No

4.1.5.9 Please elaborate why you do not think your proposed action is a controlled action. *

The proposed action has been assessed under the significant impact criteria of migratory species and it is considered unlikely to have a significant impact on migratory species for the following reasons:

Substantially modify, destroy or isolate an area of important habitat

There is no known critical habitat for the listed migratory species in the area of the project. Therefore, the proposed action would not modify, destroy or isolate an area of proposed habitat.

Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the species

As discussed for threatened species, the proposed action is unlikely to result in an invasive species establishing.

Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species

There is no evidence that any migratory listed cetaceans meet the criteria of an 'ecologically significant proportion' of a population in the study area. Additionally, migratory species that occur in the area are highly mobile (e.g. marine mammals and sharks) or the project area does not contain suitable breeding habitat (e.g. for seabirds). Therefore, the proposed action would not seriously disrupt the lifecycle of an ecologically significant proportion of the population of a migratory species.

Under the significant impact criteria for migratory species, the proposed action is not considered a controlled action.

4.1.5.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

The mitigation measures proposed above for threatened species are also considered suitable to mitigate potential impacts on migratory species.

4.1.5.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

As no significant impacts are anticipated, no offsets are proposed as part of the action.

4.1.6 Nuclear

4.1.6.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.6.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action does not include nuclear aspects.

4.1.7 Commonwealth Marine Area

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.7.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.7.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action is not within a Commonwealth Marine Area.

4.1.8 Great Barrier Reef

4.1.8.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.8.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action is not in proximity to the Great Barrier Reef.

4.1.9 Water resource in relation to large coal mining development or coal seam gas

4.1.9.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.9.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action is not associated with a water resource in relation to a large coal mining development or coal seam gas.

4.1.10 Commonwealth Land

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.10.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.10.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action is not located on or near Commonwealth land, and therefore no impacts are expected.

4.1.11 Commonwealth Heritage Places Overseas

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.11.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.11.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action is not near any Commonwealth Heritage Places Overseas, therefore no impacts are expected.

4.1.12 Commonwealth or Commonwealth Agency

4.1.12.1 Is the proposed action to be taken by the Commonwealth or a Commonwealth Agency? *

No

4.2 Impact summary

Conclusion on the likelihood of significant impacts

You have indicated that the proposed action will likely have a significant impact on the following Matters of National Environmental Significance:

None

Conclusion on the likelihood of unlikely significant impacts

You have indicated that the proposed action will unlikely have a significant impact on the following Matters of National Environmental Significance:

- World Heritage (S12)
- National Heritage (S15B)
- Ramsar Wetland (S16)
- Threatened Species and Ecological Communities (S18)
- Migratory Species (S20)
- Nuclear (S21)
- Commonwealth Marine Area (S23)
- Great Barrier Reef (S24B)
- Water resource in relation to large coal mining development or coal seam gas (S24D)
- Commonwealth Land (S26)
- Commonwealth Heritage Places Overseas (S27B)
- Commonwealth or Commonwealth Agency (S28)

4.3 Alternatives

4.3.1 Do you have any possible alternatives for your proposed action to be considered as part of your referral? *

No

4.3.8 Describe why alternatives for your proposed action were not possible. *

The NSW Government's *Seaweed Industry Prospectus* (2024) outlines the significant economic and environmental potential of seaweed aquaculture in Australia. The report highlights that by 2030, NSW could capture between A$900 million and A$2.3 billion of the global seaweed market, representing approximately 6–14% of projected global demand (NSW Government, 2024). This growth is driven by increasing demand for seaweed-based products across multiple sectors, including nutraceuticals, pet food, animal feed additives, methane-reducing supplements, and alternative proteins.

Ecklonia radiata, the species proposed for cultivation, is a native kelp species with rapid growth rates and high ecological and commercial value. The species has been identified as a priority for cultivation due to its potential benefits in reducing methane emissions in livestock, enhancing gut health, and providing natural antioxidants (NSW Government, 2024). Given its widespread occurrence along the NSW coastline, *Ecklonia radiata* is a highly suitable species for the development of a sustainable seaweed aquaculture industry.

An alternative timeline for this proposed action is not feasible due to the urgent need to establish foundational infrastructure for this emerging industry. The *Seaweed Industry Prospectus* (2024) highlights that seaweed farming is critical for achieving Australia's climate targets, supporting regional job creation, and reducing pressure on marine ecosystems by providing sustainable alternatives to plastics, livestock feed, and carbon sequestration initiatives.

Additionally, there is an immediate need for sustainable solutions to address pressing environmental and economic challenges, including:

- Reducing agricultural methane emissions through seaweed-based livestock feed supplements.
- Developing biodegradable plastic alternatives to combat plastic pollution.
- Enhancing carbon sequestration to support Australia's net-zero targets.

Without urgent action, Australia risks falling behind international competitors in the seaweed industry. The *Prospectus* underscores the importance of early investment in commercial-scale projects to develop the expertise, supply chains, and research capacity needed to support large-scale seaweed farming in Australia (NSW Government, 2024).

This project will be Australia's first commercial ocean-based seaweed farm, playing a critical role in:

- Building industry expertise and establishing best practices for large-scale cultivation.
- Strengthening regional supply chains to support domestic and international markets.
- Providing research opportunities to improve cultivation methods and environmental benefits.

By initiating the project now, we can ensure long-term sustainability, economic viability, and environmental benefits, while positioning NSW as a global leader in climate-smart aquaculture (NSW Government, 2024).

5. Lodgement

5.1 Attachments

1.2.7 Public consultation regarding the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att 1 - Social Impact Report.pdf Socio-economic considerations for regenerative aquaculture on the NSW south soast	01/03/2024	No	High

3.2.1 Flora and fauna within the affected area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att 2 - MNES Protected Matters Search.pdf MNES protected matters search report generated in November 2024	11/11/2024	No	High

3.3.2 Indigenous heritage values that apply to the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att 3 - ACHA Report.pdf Eden 1 Aquaculture Lease Aboriginal Cultural Heritage Assessment prepared by Biosis Pty Ltd	30/07/2024	No	High

3.4.1 Hydrology characteristics that apply to the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att 4 - Coastal Processes Report.pdf Desktop assessment of coastal processes in Disaster Bay to provide baseline metocean data.	05/10/2022	No	High

4.1.4.2 (Threatened Species and Ecological Communities) Why your action has a direct and/or indirect impact on the identified protected matters

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att 5 - Auskelp Risk Assessment.pdf Auskelp Eden 1 Risk Assessment	11/11/2023	No	High
#2.	Document	Att 6 - Marine Fauna Interaction Management Plan.pdf Outlines procedures and protocols to reduce the likelihood of entanglement, vessel strikes, and behavioural disturbances to marine fauna.	06/03/2025	No	High

5.2 Declarations

Completed Referring party's declaration

The Referring party is the person preparing the information in this referral.

ABN/ACN	644315613
Organisation name	Auskelp Pty Ltd
Organisation address	KPMG Tower Two Collins Square, Level 36, 727 Collins Street, Docklands VIC 3008
Representative's name	Chelsie Ride
Representative's job title	
Phone	0409655558
Email	cc@ccride.net
Address	59 Nadgee Road, Wonboyn NSW 2551

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ By checking this box, I, **Chelsie Ride of Auskelp Pty Ltd**, declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

Completed Person proposing to take the action's declaration

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

Same as Referring party information.

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ I, **Chelsie Ride of Auskelp Pty Ltd**, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf or for the benefit of any other person or entity. *

☑ I, **Chelsie Ride of Auskelp Pty Ltd**, the Person proposing the action, consent to the designation of **Chelsie Ride of Auskelp Pty Ltd** as the Proposed designated proponent for the purposes of the action described in this EPBC Act Referral. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

✓ Completed Proposed designated proponent's declaration

The Proposed designated proponent is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ I, **Chelsie Ride of Auskelp Pty Ltd**, the Proposed designated proponent, consent to the designation of myself as the Proposed designated proponent for the purposes of the action described in this EPBC Act Referral. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *